

SERIES  
**UT/U**

SUBMERSIBLE  
SEWAGE PUMPS

VORTEX IMPELLER



# Submersible Sewage Pumps with Vortex Impeller

Tsurumi UT/U-series pumps are heavy-duty submersible pumps equipped with a vortex impeller for pumping sewage and wastewater. The semi-vortex design provides a solids passage that is 70% or more\* of the discharge bore, thus reducing troubles caused by the clogging of fibrous solids to a minimum. The UTZ-series pumps are automatic models equipped with a simple float switch that prevents dry-running operation and reduces power consumption. These series lineup offer discharge bores ranging from 40 - 80 mm and 2-pole motors of 0.25 - 3.7 kW, and a guide rail fitting device that enables easy installation and maintenance.

Tsurumi pumps come packed with a number of original technologies we have developed and honed over years of research, including an anti-wicking cable, motor protector, dual inside mechanical seals with silicon carbide face and Oil Lifter. Highly reliable and durable, Tsurumi pumps are designed and built for sound quality and prolonged continuous operation.

The UT/U-series pumps have accumulated various track record and know-how in a wide range of industrial and water treatment applications for many years. These pumps can be used in manholes and kitchens to drain sewage and wastewater, feed raw water to sewage/wastewater treatment tanks (Johkasou/septic tank), and stabilize operations of pump stations and water treatment facilities, all the while considerably reducing maintenance costs.

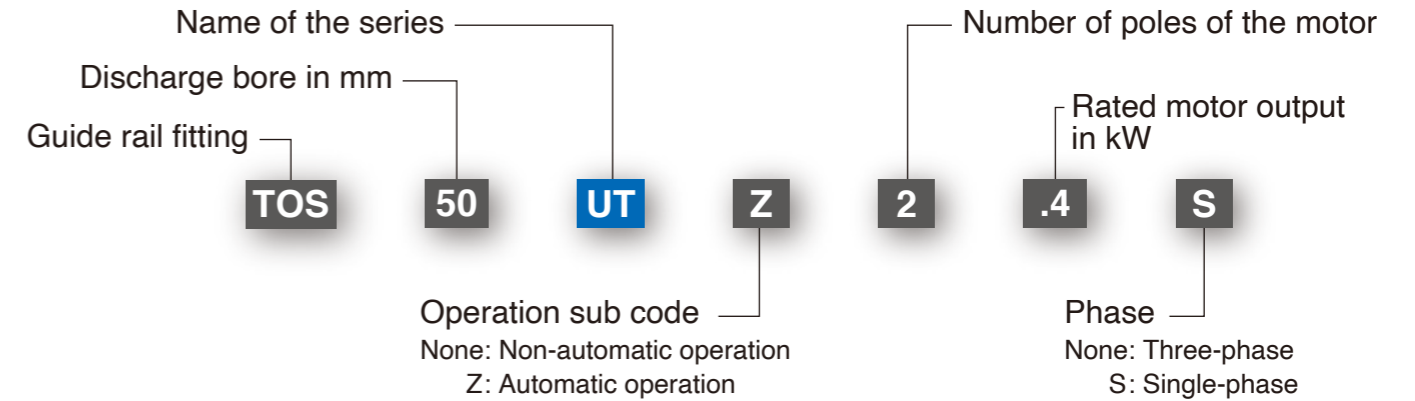
\* excluding model 80U21.5



## Selection Table

Motor Output (kW)		0.25	0.4	0.75	1.5	2.2	3.7
UT/UTZ	1 1/2" 40 mm						
	2" 50 mm						
U	2" 50 mm						
	3" 80 mm						

## Model Number Designation



## Float Switches

Tsurumi offers different types of float switches (liquid level sensors). A micro-switch is incorporated in all types. For details, refer to the float switches catalog [ID105].

**Model MT-1** is an economy-type float switch. A teardrop body design with an integrated counterweight, MT-1 float switch is an ideal water level sensor for highly dense scum-filled wastewater. Moreover, equipped with the SPDT switch, it can be used as a water level sensor for filling as well as emptying operations.



**Model MC-2** is a heavy-duty type float switch with a shock absorber. Having equipped with a high grade micro switch, the MC-2 assures trouble-free operation in the liquid containing much suspended solids and floating scum. Either of the two contacts, normally-open or normally-close, can be selected as required.



## Options (U-series only)

### Seawater-Resistant Version

In seawater, a material's resistance to corrosion can be seen clearly. When metals with different potentials are brought into contact in seawater, only the metal of lower potential corrodes. As the difference in potential increases, the metal of lower potential corrodes faster. As an option, Tsurumi can supply pumps with parts made of higher electric potential metal as the sacrificial anode.

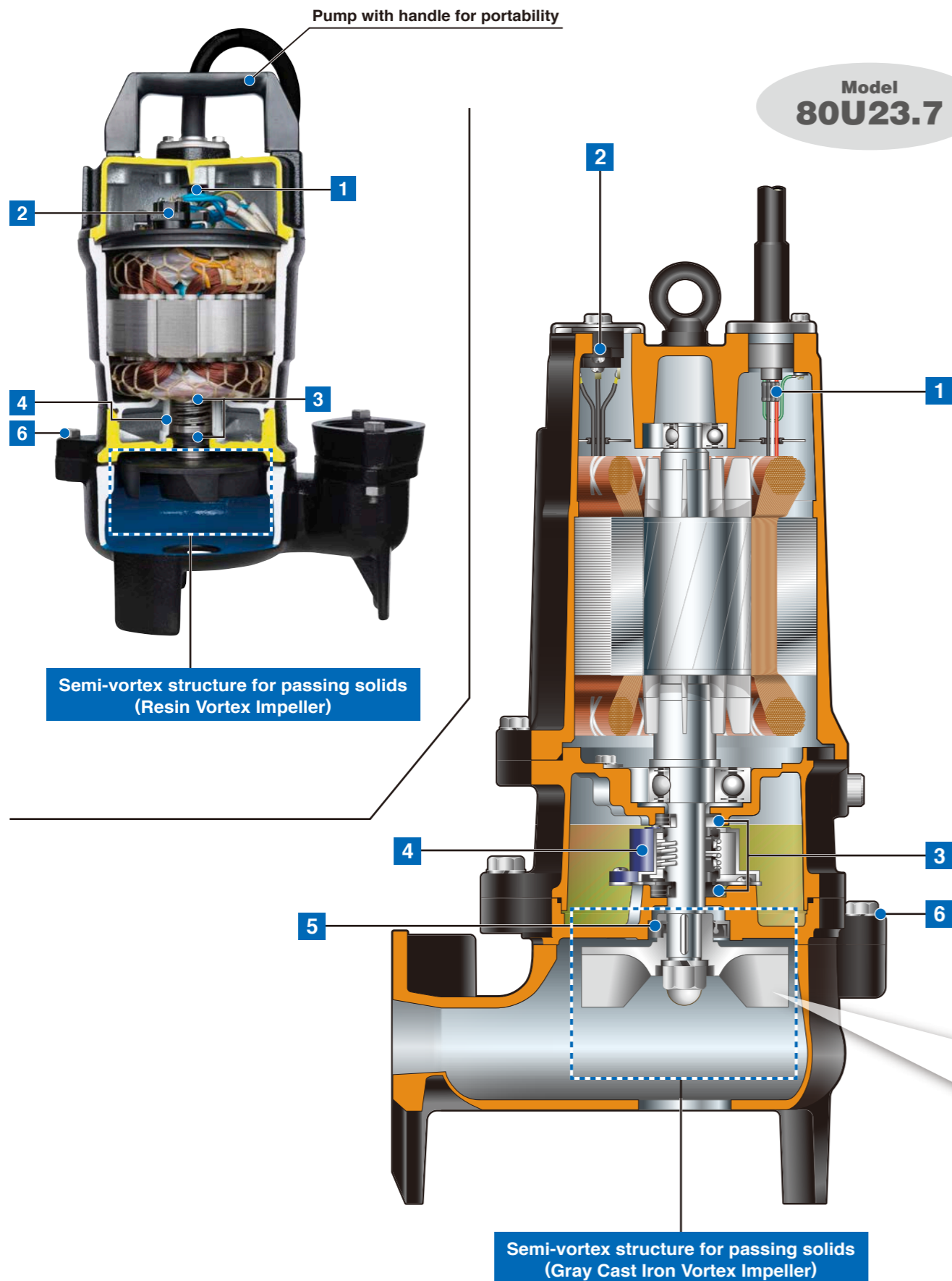
### High Temperature Liquids Version

Tsurumi's submersible pumps are applicable to high temperature liquids of up to 80°C. Pumps of the standard specification can discharge liquids of up to 40°C. However, there are many fields that need to discharge higher temperature liquids, e.g., discharging industrial water from a power plant or ironworks, or discharging hot spring water from a mine in a volcanic zone.



**Model  
50UT2.4**

**Model  
80U23.7**



Semi-vortex structure for passing solids  
(Resin Vortex Impeller)

Semi-vortex structure for passing solids  
(Gray Cast Iron Vortex Impeller)

**1 Anti-wicking Cable Entry**

Prevents water incursion due to capillary action should the cable sheath be damaged or the end of cable submerged. Also prevents moist air from infiltrating the motor housing and condensation from forming inside the housing due to temperature differences between the housing and outside air.

**2 Motor Protector**

**Miniature Thermal Protector** (0.4 kW and below of single-phase motor)  
Detects excess heat, therefore, protecting the pump against overheating and dry-running.  
**Circle Thermal Protector**  
Directly cuts the motor circuit if excessive heat builds up or overcurrent occurs in the motor.

**3 Dual Inside Mechanical Seals with Silicon Carbide Face**

Isolated in the oil chamber where a clean, non-corrosive and abrasion-free lubricating environment is maintained. Compared with the water-cooled outside mechanical seal, it reduces the risk of failure caused by dry-heating and adhering matter. The silicon carbide provides 5 times higher corrosion, wear and heat resistance than the tungsten carbide. Rubber parts of the upper and lower fixing rings are made of NBR or FPM (FKM), which provides higher resistance to heat and chemicals.

**4 Oil Lifter**

Provides lubrication and cooling of the seal faces down to 1/3 of normal oil level, thus maintaining a stable shaft sealing effect and prolonging seal life longer. The Oil Lifter is Tsurumi original design.

**5 Oil Seal (excluding UT-series)**

Used as a "Dust Seal", it protects the mechanical seal from abrasive particles.

**6 Back Pull-out Design**

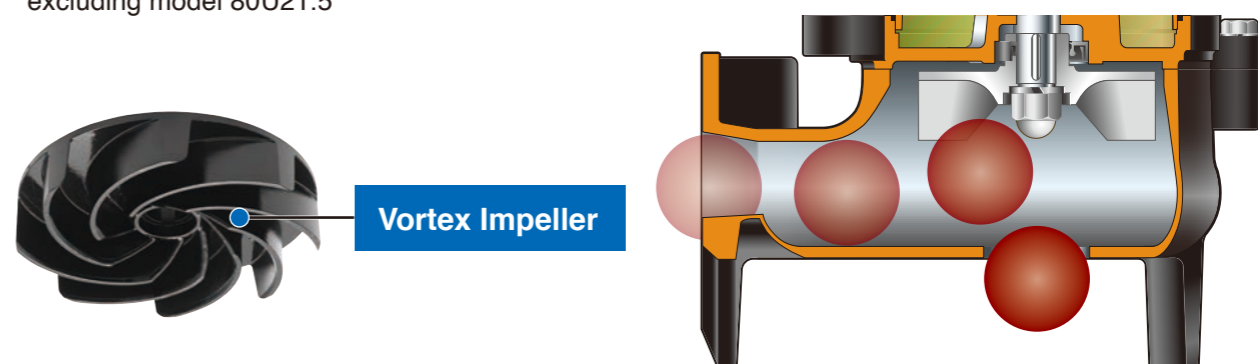
Enables the motor to be separated from the pump unit with the impeller attached, by removing the bolts between the oil casing and the pump casing. This design facilitates maintenance and inspection of the principal parts of the pump.

**Semi-vortex structure for passing solids (Vortex Impeller)**

**– Solids upwards of 70%\* of discharge bore passed through the pump –**

As the UT/U-series pump's impeller rotates, centrifugal forces create a vortex between the impeller and pump casing, causing fluid to flow through the pump. The wide casing and semi-vortex structure combine to minimize trouble due to clogging of solids and fibrous material.

\* excluding model 80U21.5



Vortex Impeller

# UT (0.25-0.75 kW) –Vortex Impeller–

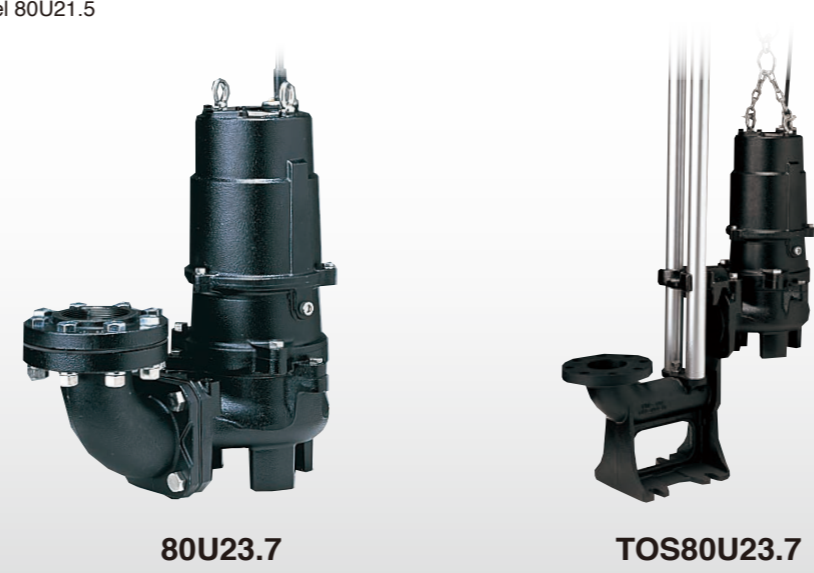
The UT-series is a 2-pole motor, compact and economical type submersible pump equipped with a vortex impeller for sewage and wastewater. The semi-vortex design provides a wide 35 mm large solids passage that reduces clogging of solid matter to a minimum. In addition, the UTZ-series is an automatic model equipped with a simple float switch that prevents dry-running operation and reduces power consumption.



# U (1.5-3.7 kW) –Vortex Impeller–

The U-series is a 2-pole motor, compact type submersible pump equipped with a vortex impeller for pumping sewage and wastewater. The semi-vortex design provides a solids passage that is 70% or more\* of the discharge bore, thus reducing troubles caused by the clogging of fibrous solids to a minimum. Rotation of the impeller produces vortex flow in the pump casing, which allows those solid matters to be pumped out with minimum contact to the impeller.

\* excluding model 80U21.5

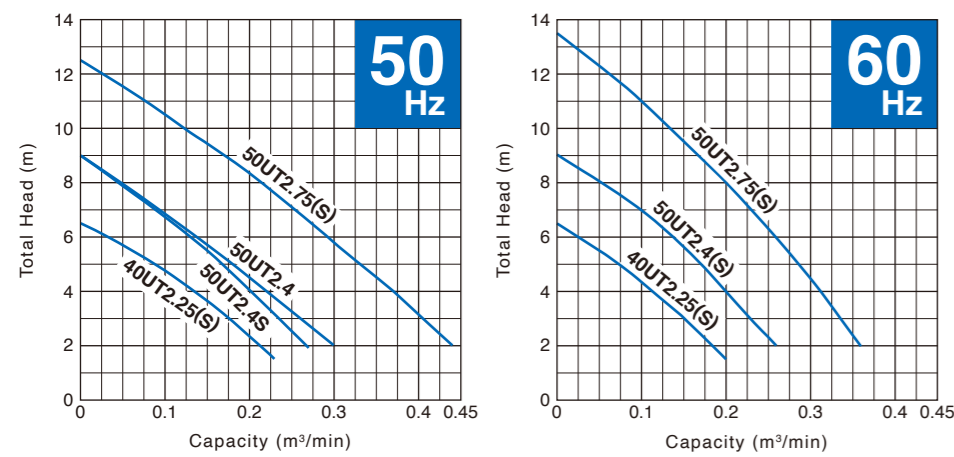


# Specifications

		UT			UTZ -Automatic-			U				
		40UT2.25S 40UT2.25	50UT2.4S 50UT2.4	50UT2.75S 50UT2.75	40UTZ2.25S	50UTZ2.4S	50UTZ2.75S	50U21.5	80U21.5	80U22.2	80U23.7	
PUMP	Discharge Bore	mm	40	50	40	50	50	80	80	80	80	
	Discharge Connection		Threaded Oval Flange				Threaded Oval Flange*2	Threaded JIS 10 kg/cm <sup>2</sup> Flange				
	Solids Passage	mm	35				46	56				
	Impeller		Vortex									
			Glass-fiber Reinforced Resin (PPO-GF)						Gray Cast Iron			
	Oil Seal		—						Nitrile Butadiene Rubber			
	Casing		Gray Cast Iron									
	Shaft Seal		Dual Inside Mechanical Seals (with Oil Lifter)									
			Silicon Carbide									
	Shaft Sleeve		304 Stainless Steel						—			
MOTOR	Type	Continuous-duty Rated, Dry-type Induction Motor										
	Output	kW	0.25	0.4	0.75	0.25	0.4	0.75	1.5	2.2	3.7	
	Phase		Single			Single			Three			
			Three			Single			Three			
	Pole		2									
	Speed (S.S.) 50/60Hz	min <sup>-1</sup>	3000/3600									
	Insulation		E						F			
	Starting Method		Capacitor Run			Capacitor Run			D.O.L.			
	Motor Protector (built-in)		MTP			CTP			CTP			
			CTP			MTP			CTP			
Lubricant	ml	160						840	1080	1320		
		Turbine Oil (ISO VG32)										
Frame		Gray Cast Iron										
Shaft		403 Stainless Steel						420 Stainless Steel				
Power Cable	m	5						6				
		PVC										
Automatic Control Device		—			Float Switch			—				
Dry Weight*1	Free Standing	kg	13.5		16.5		13.5	16.5	30	40	55	62
	Guide Rail Fitting	kg	13		15.5		—					

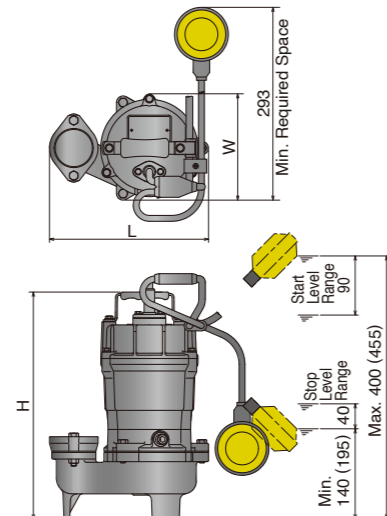
## Performance Curves

Standard and Automatic models have the identical performance.



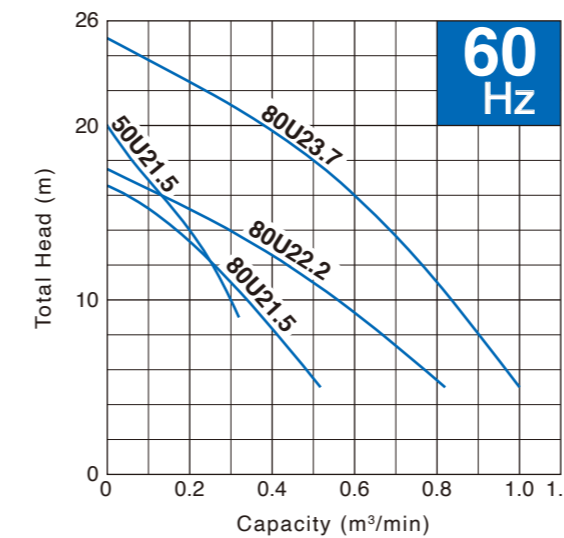
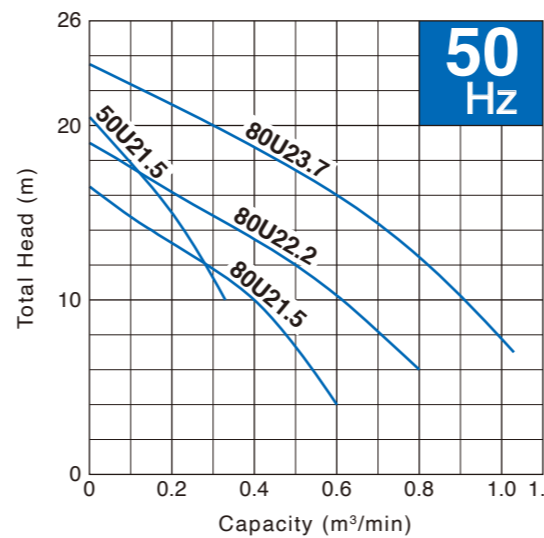
## Dimensions (Float Action)

Unit: mm



\*The figure in parentheses is for the 50UTZ2.75S.

## Performance Curves



Discharge Bore mm	Model		Motor Output kW	Phase	Starting Method	Solids Passage mm	Dimensions L x W x H mm		Dry Weight*1 kg		Cable Length m
	Free Standing Standard	Guide Rail Fitting Automatic					Standard	Automatic	Standard	Automatic	
40	40UT2.25S	40UTZ2.25S	0.25	Single	Capacitor Run	35	239 x 161 x 350	239 x 161 x 345	13.5	13.5	5
	40UT2.25	—	0.25	Three	D.O.L.		239 x 161 x 350	—	13	—	
50	50UT2.4S	50UTZ2.4S	0.4	Single	Capacitor Run	242 x 161 x 350	242 x 161 x 345	13.5	13.5		
	50UT2.4	—	0.4	Three	D.O.L.	242 x 161 x 350	—	13	—		
	50UT2.75S	50UTZ2.75S	0.75	Single	Capacitor Run	242 x 161 x 406	242 x 161 x 401	16.5	16.5		
	50UT2.75	—	0.75	Three	D.O.L.	242 x 161 x 387	—	15.5	—		

\*1 All weights excluding cable

\*2 For use in combination with the guide rail fitting, order the pump and the TOK4-A guide rail fitting individually.

Discharge Bore mm	Model		Motor Output kW	Phase	Starting Method	Solids Passage mm	Dimensions L x W x H mm		Dry Weight* kg		Cable Length m
	Free Standing	Guide Rail Fitting					Free Standing	Guide Rail Fitting	Free Standing	Guide Rail Fitting	
50	50U21.5	TOS50U21.5	1.5	Three	D.O.L.	35	297 x 202 x 466	658 x 202 x 478	30	35	6
	80U21.5	TOS80U21.5	1.5			46	420 x 202 x 499	607 x 202 x 601	40	36	
80	80U22.2	TOS80U22.2	2.2			56	502 x 240 x 562	641 x 240 x 647	55	51	
	80U23.7	TOS80U23.7	3.7			56	502 x 234 x 565	641 x 234 x 650	62	58	

\* All weights excluding cable

Weights of guide rail fitting excluding duckfoot bend

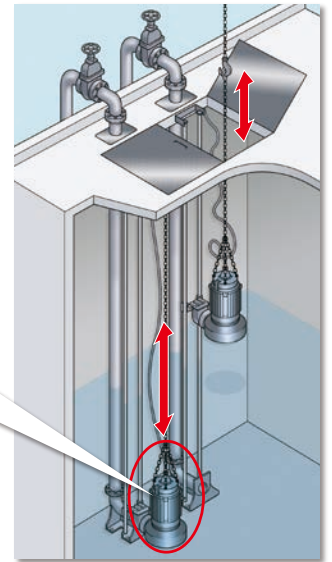
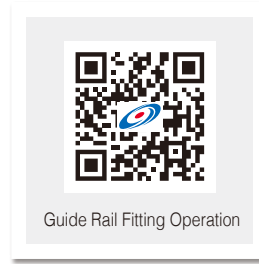
\*1 All weights excluding cable

Weights of guide rail fitting excluding duckfoot bend

\*2 Discharge connection for guide rail fitting is a threaded JIS 10 kg/cm<sup>2</sup> flange.

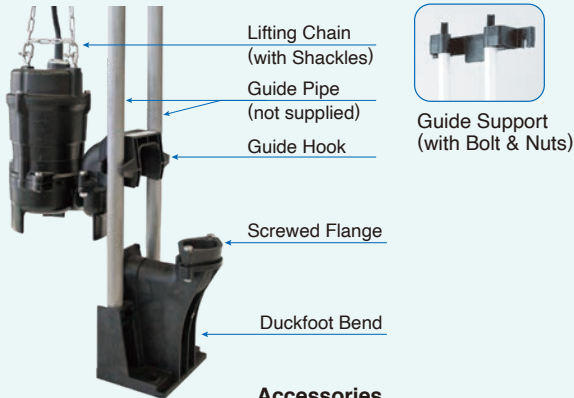
# Guide Rail Fitting System

Every Tsurumi sewage/wastewater pump can be used in combination with a guide rail fitting system. The 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. The type of compatible guide rail fitting set varies depending on the pump model. Refer to the selection table of each pump model for the selection of the right combination.



## TOK (UT-series)

The TOK set is a resin made guide rail fitting system suitable for use with a small cast iron made pump.

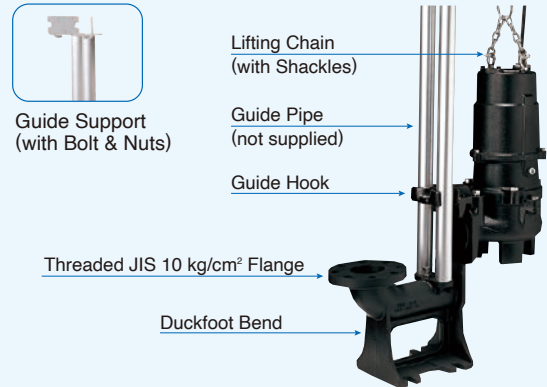


### Accessories

- Duckfoot Bend
- Guide Hook
- Guide Support
- Lifting Chain 4 m

## TOS (U-series)

The TOS set is the standard guide rail fitting system made of cast iron and is suitable for use with a cast iron pump.

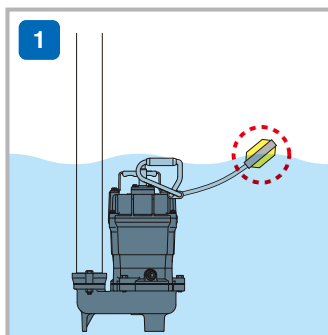


### Accessories

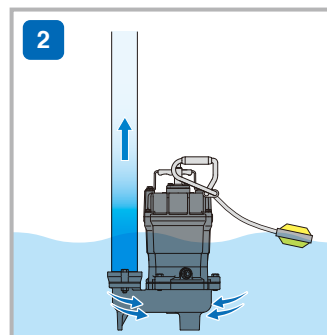
- Duckfoot Bend
- Guide Support
- Guide Hook
- Lifting Chain 5 m
- Threaded JIS 10 kg/cm<sup>2</sup> Flange

## Automatic Model (UTZ-series)

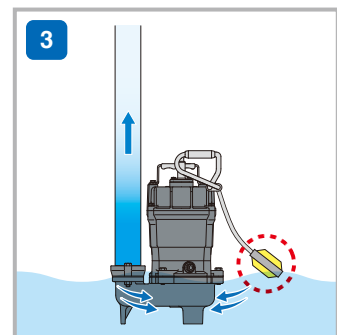
The automatic model only operates when sufficient water is present. It not only reduces power consumption but also extends the life of wear parts of the pump as it eliminates dry-running that causes early wear-out.



Pump starts operating when the water level rises to a preset level.



Pump keeps running while the float switch remains on.



When the water level lowers to the preset level, pump stops operating.





We reserve the right to change the specifications and designs without prior notice. The OO series and model OO are indicated with our series/model codes in this catalog.

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