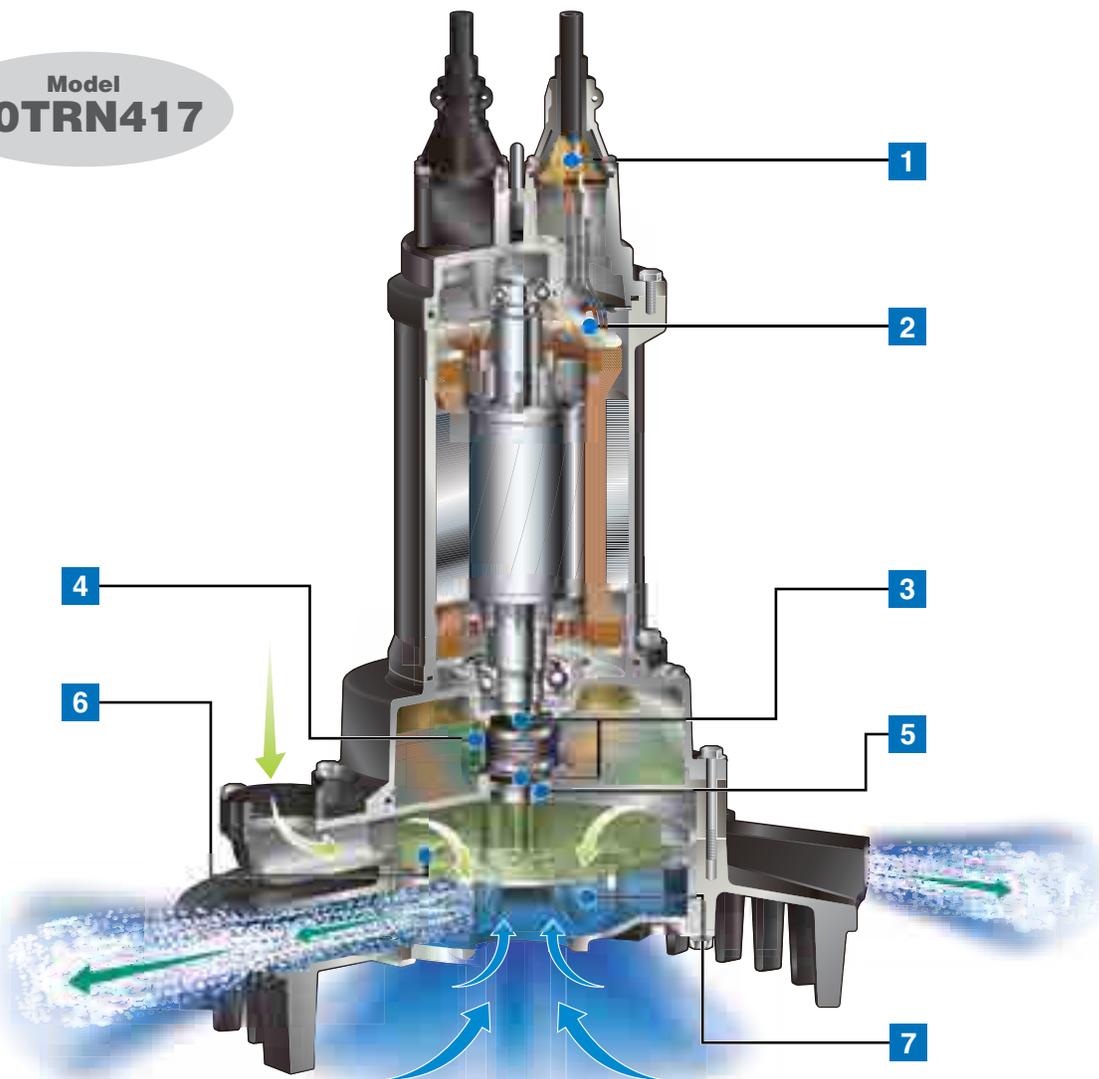


Submersible Self-aspirating Aerators: TRN series

The aspirated air, mixed with water viciously by mechanical forces inside the impeller and guide vane, transforms into tiny bubbles. Moreover, the mixed flow of air and water is evenly discharged in multiple directions along the circumference.

Model
80TRN417



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

Single-phase:

Detects excess heat, therefore, protecting the pump against overheating and dry-running.

Three-phase:

React to excessive heat caused by dry-running. The bimetal strip opens to cause the control panel to shut the power supply.

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 are made of NBR or FPM (FKM) which provides higher resistance to heat and chemicals.

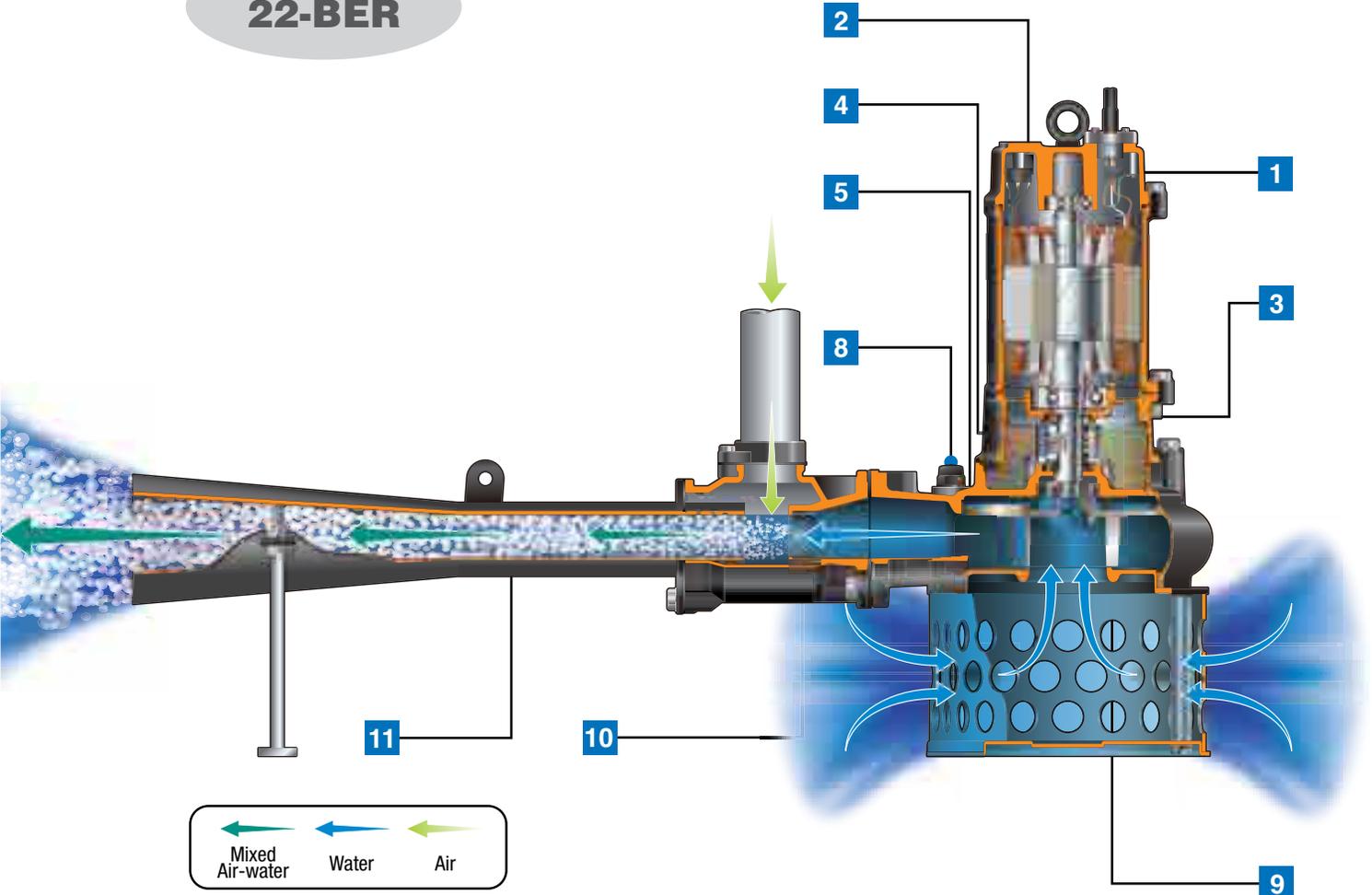
4 Oil Lifter [Patented]

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.

Submersible Self-aspirating Jet Aerators: BER Series

With the jet injector mechanism, the aspirated air mixes with water and is ejected through the diffuser, simultaneously agitating and aerating the ponded water. The mixed air-water is ejected powerfully in one direction, which effectively agitates the water across a wide area.

Model 22-BER



Mixed Flow of Air-water

Tiny bubbles are discharged in multiple/one direction, whereby creating convective currents that agitate the water. As the bubbles rise, a large amount of oxygen dissolves in the water.

5 Oil Seal

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

6 Air Seal Mechanism (TRN)

Protects the mechanical seals by flooding the air passage with an "air seal" that prevents water from contacting the mechanical seals during operation. This proprietary technology helps to prolong the service-life of the mechanical seals.

7 Special Semi-open Impeller & Suction Cover (TRN)

Generates a liquid flow that causes negative pressure to form on the backside of the impeller vanes and draw in air from above the water's surface. Both the impeller and suction cover are highly wear-resistant 410 stainless steel casting.

8 Air Release Valve (BER)

Fitted on the pump casing to prevent the air lock. When air flows through the valve, the ball stays at the bottom, but when the pumped water starts to flow, the ball closes the outlet because of its buoyancy.

9 Semi-open Channel Impeller (BER)

Minimizes the possibility of trouble due to clogging by foreign matters.

10 Nozzle Ring (BER)

Channels the water discharged from the pump into a jet, as part of the jet injector mechanism.

11 Diffuser (BER)

Creates a mixed flow of air and water by injecting the aspirated air into the water.

TRN –Submersible Self-Aspirating Aerators–

Submersible aerators that generate tiny bubbles to produce a high amount of dissolved oxygen and enable efficient aeration and agitation

The TRN-series is a submersible self-aspirating aerator designed for aeration and mixing of wastewater. The liquid flow generated by Tsurumi's proprietary semi-open impeller causes negative pressure to form on the backside of the impeller vanes and draw in air from above the water's surface. The aspirated air, mixed with water viciously by mechanical forces inside the impeller and guide vane, transforms into tiny bubbles. Moreover, the mixed flow of air and water is evenly discharged in multiple directions along the circumference. The compounded action of the air lift and convective currents that are generated in the process makes aeration and agitation very efficient and increases the amount of oxygen dissolved in the water.



50TRN45.5



80TRN417



150TRN440

Model	Air-inlet Bore in	Motor Output HP	Phase	Starting Method	Solids Passage in	Max. Water Depth ^{*2} ft	No. of Outlets	Dimensions L x H in	Dry Weight ^{*3} lbs	Cable Length ft
32TRN2.75	32	1	Three	D. O. L.	0.394	11.5	6	14 5/8 x 18 5/8	121	32
32TRN21.5	32	2		D. O. L.	0.394	11.5	6	14 5/8 x 18 5/8	121	32
50TRN42.2	50	3		D. O. L.	0.472	11.8	6	26 x 27 1/8	309	32
50TRN43.7	50	5		D. O. L.	0.472	13.1	6	26 x 27 5/16	331	32
50TRN45.5	50	7.5		D. O. L. ^{*1}	0.591	13.1	6	26 x 32 7/8	375	32
80TRN47.5	80	10		D. O. L. ^{*1}	0.591	14.8	6	26 x 34 3/16	419	32
80TRN412	80	16		Star-Delta	0.591	19.7	6	26 x 35 3/8	441	32
80TRN417	80	23		Star-Delta	0.591	19.7	6	26 x 37 11/16	485	32
100TRN424	100	32		Star-Delta	0.886	19.7	8	38 9/16 x 48 1/4	960	32
150TRN440	150	54		Star-Delta	0.886	19.7	8	38 9/16 x 57 7/16	1280	32

*1 Star-Delta available upon request

*2 Max. water depth is the load limit of the motor. The load placed on the motor increase the deeper the submersible aerator is installed, therefore if the aerator is operated below the max. water depth, the overload will trip the motor protection device and stop the aerator from running continuously.

*3 Weights excluding cable

Included Accessory

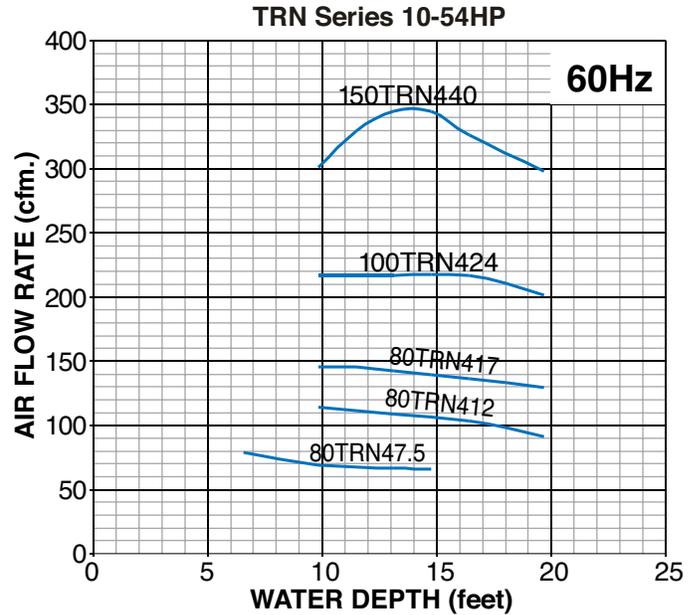
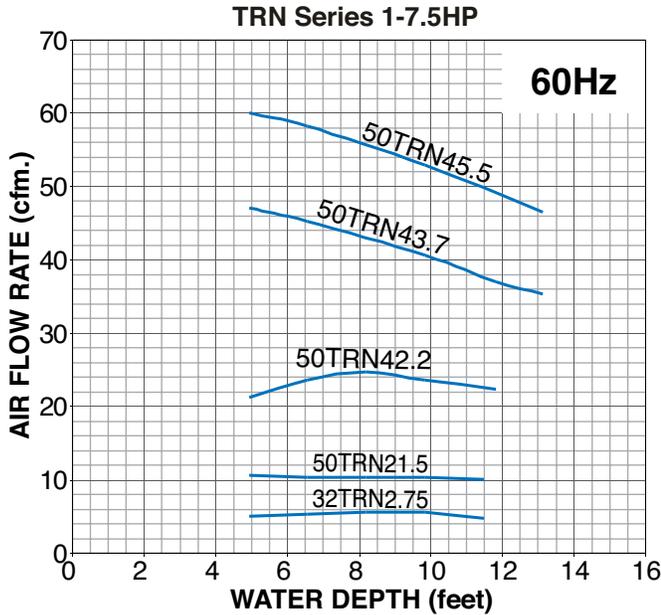
- Silencer & Valve Set

Optional Accessory

- Stand
- Draft Tube

Air Flow Rate - Water Depth Curves

The air flow rates are expressed at the standard condition, i.e. temperature of 20°C, 1 atm and may vary by up to approximately 5%.



Note:

The air flow rates are expressed at the standard condition, i.e. temperature of 68°F (20°C), 1 atm. (Result may vary by up to approximately 5%.)

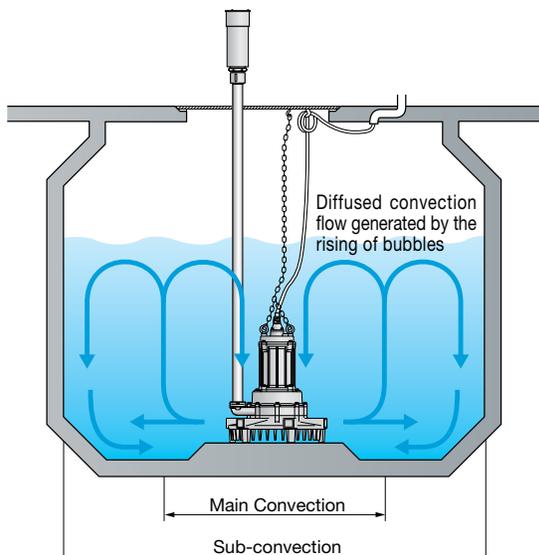
Convection Pattern & Recommended Tank Dimensions

Main Convection

Convection made by rising bubbles. (The minimum distance that must be provided between each aerator)

Sub-convection

The maximum convection that can keep solids suspended to prevent sedimentation of solids.



Model	Max. Water Depth ft	Main Convection Øft	Sub-convection	
			Circular Tank Øft	Square Tank ft
32TRN2.75	11.5	4.6	11	10
32TRN21.5	11.5	5.9	15	13
50TRN42.2	11.8	7.9	20	18
50TRN43.7	13.1	9.8	23	21
50TRN45.5	13.1	12.5	30	26
80TRN47.5	14.8	14.4	33	30
80TRN412	19.7	17.1	39	36
80TRN417	19.7	18.4	43	38
100TRN424	19.7	20.1	48	43
150TRN440	19.7	24.0	56	49

- Tank dimensions are given at max. water depth. Dimensions will vary according to equipment depth.
- For good quality aeration and agitation, it is recommended to install a haunch on the bottom of the tank.

BER –Submersible Self-Aspirating Jet Aerators–

Submersible jet aerators optimized for pre-aeration and prevention of bacterial spoilage

The BER Series is a submersible self-aspirating jet aerators combined a submersible pump with a venturi-jet based diffuser. The liquid flow generated by the submerged pump causes negative pressure to form around the nozzle, whereby drawing in air from above the water's surface. With this jet injector mechanism, the aspirated air mixes with water and is ejected through the diffuser, simultaneously agitating and aerating the ponded water. The mixed air-water is ejected powerfully in one direction, which effectively agitates the water across a wide area.



22-BER



TOS-15BER

Model		Air-inlet Bore in	Motor Output HP	Phase	Starting Method	Solids Passage in	Max. Water Depth ^{*2} 60Hz ft	Dimensions L x H in		Dry Weight ^{*3} lbs		Cable Length ft
Free Standing	Guide Rail Fitting							Free Standing	Guide Rail Fitting	Free Standing	Guide Rail Fitting	
8-BERS2	TOS-8BERS2	1	1	Three	D. O. L.	0.79	11.5	26 9/16 x 22 1/2	21 5/8 x 24 1/2	77	66	32
8-BER4	TOS-8BER4	1	1	Three	D. O. L.	0.79	11.5	26 9/16 x 18 1/4	21 5/8 x 20 1/4	62	51	32
15-BER3	TOS-15BER3	1 1/4	2	Three	D. O. L.	0.79	13.1	35 1/4 x 22 1/8	25 9/16 x 23 3/4	95	75	32
22-BER5	TOS-22BER5	2	3	Three	D. O. L.	1.38	14.8	45 9/16 x 23 3/4	27 9/16 x 30 3/16	165	134	32
37-BER5	TOS-37BER5	2	5	Three	D. O. L.	1.38	16.4	45 13/16 x 29 5/8	27 9/16 x 32 15/16	201	170	32
55-BER7	TOS-55BER7	2	7.5	Three	D. O. L.	1.38	19.7	55 11/16 x 37 1/16	29 1/2 x 39 5/8	328	291	32

^{*1} Figure in () shows the solids passage of the pump with a strainer.

^{*2} Max. water depth is the load limit of the motor. The load placed on the motor increase the deeper the submersible aerator is installed, therefore if the aerator is operated below the max. water depth, the overload will trip the motor protection device and stop the aerator from running continuously.

^{*3} Weights excluding cable
Weights of guide rail fitting excluding duckfoot bend

Included Accessories

Free Standing

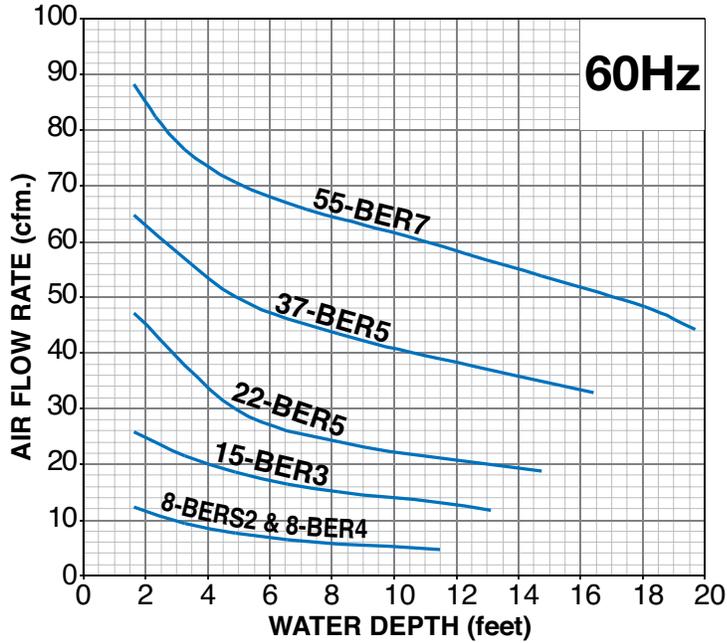
- Silencer & Valve Set
- Lifting Chain 5m (with Shackles)
- Suction Casing
- Screwed Flange
- Diffuser
- Diffuser Base

Guide Rail Fitting

- Silencer & Valve Set
- Lifting Chain 5m (with Shackles)
- Guide Support
- Guide Hook
- Suction Casing
- Screwed Flange
- Diffuser

Air Flow Rate - Water Depth Curves

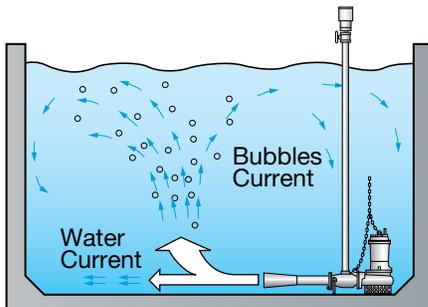
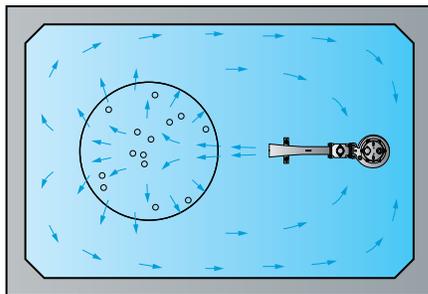
The air flow rates are expressed at the standard condition, i.e. temperature of 20°C, 1 atm and may vary by up to approximately 5%.



Note:

The air flow rates are expressed at the standard condition, i.e. temperature of 68°F (20°C), 1 atm. (Result may vary by up to approximately 5%.)

Convection Pattern & Recommended Tank Dimensions



Model	Motor Output HP	Max. Tank Dimension			Max. Water Depth ft
		Length ft	Width ft	Depth ft	
8-BERS2	1	10	7	11.5	11.5
8-BER4	1	10	7	11.5	11.5
15-BER3	2	13	11	13.1	13.1
22-BER5	3	16	16	14.8	14.8
37-BER5	5	20	20	16.4	16.4
55-BER7	7.5	23	23	19.7	19.7

Specifications

		TRN									
		32TRN2.75	32TRN21.5	50TRN42.2	50TRN43.7	50TRN45.5	80TRN47.5	80TRN412	80TRN417	100TRN424	150TRN440
PUMP	Air-inlet Bore in	1.5		2			3			4	6
	Air-inlet Connection	Threaded Oval Flange								JIS 10kg/cm ² Flange	
	Diffuser	—									
	Solids Passage in	3/8	1/2			9/16			7/8	1	
	Impeller	Special Semi-open									
		410 Stainless Steel Casting									
	Suction Cover	410 Stainless Steel Casting									
	Middle Plate	—	410 Stainless Steel						410 Stainless Steel Casting		
	Oil Seal	Nitrile Butadiene Rubber									
	Air Passage & Guide Vane / Casing	Gray Cast Iron									
Shaft Seal	Dual Inside Mechanical Seals (with Oil Lifter)										
	Silicon Carbide										
MOTOR	Type	Continuous-duty Rated, Dry-type Induction Motor									
	Output HP	1	2	3	5	7.5	10	16	23	32	54
	Phase	Three									
	Pole	2			4						
	Speed 60Hz RPM	3600			1800						
	Insulation	F									
	Starting Method	D.O.L.				D.O.L.* ²			Star-Delta		
	Motor Protector (built-in)	CTP						MTP			
	Lubricant oz	47	172			203			338	541	
		Turbine Oil (ISO VG32)									
	Frame	Gray Cast Iron									
	Shaft	420 Stainless Steel									
	Power Cable ft	32				32			32		
PVC				Chloroprene Rubber							
Max. Water Depth 60Hz ft	11.5	11.8	13.1		14.8	19.7					
No. of Outlets ft	6 (Multiple Directions)								8 (Multiple Directions)		
Dry Weight**	Free Standing lbs	121	309	331	386	423	470	959	1285		
	Guide Rail Fitting lbs	—									

*¹ All weights excluding cable

Weights of guide rail fitting excluding duckfoot bend

*² Star-Delta available upon request

*³ Figure in () shows the solids passage of the pump with a strainer.

			BER				
			8-BER	15-BER	22-BER	37-BER	55-BER
PUMP	Air-inlet Bore	in	1	1.5	2		
	Air-inlet Connection		Threaded Oval Flange				
	Diffuser		Structure Steel + Nylon Coated				
	Solids Passage	in	0.78		1.38		
	Impeller		Channel				
			Gray Cast Iron				
	Suction Cover		Gray Cast Iron				
	Middle Plate		—				
	Oil Seal		Nitrile Butadiene Rubber				
	Air Passage & Guide Vane / Casing		Gray Cast Iron				
Shaft Seal		Dual Inside Mechanical Seals (with Oil Lifter)					
		Silicon Carbide					
MOTOR	Type		Continuous-duty Rated, Dry-type Induction Motor				
	Output	HP	1	2	3	5	7.5
	Phase		Three				
	Pole		2		4		
	Speed 60Hz	RPM	3600		1800		
	Insulation		E	F			
	Starting Method		D.O.L.				
	Motor Protector (built-in)		CTP				
	Lubricant	oz	15	30	45		145
			Turbine Oil (ISO VG32)				
	Frame		Gray Cast Iron				
	Shaft		420 Stainless Steel				
	Power Cable	ft	32				32
		PVC				Chloroprene Rubber	
Max. Water Depth 60Hz	ft	11.5	13.1	14.8	16.4	19.7	
No. of Outlets		1 (One Direction)					
Dry Weight* ¹	Free Standing	lbs	62	95	165	201	313
	Guide Rail Fitting	lbs	51	75	161	192	278

*¹ All weights excluding cable

Weights of guide rail fitting excluding duckfoot bend

*² Star-Delta available upon request

*³ Figure in () shows the solids passage of the pump with a strainer.

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