



# Submersible **Stainless Steel** Pumps

## SQ/SFQ/BQ/CQ



# Tsurumi submersible stainless steel pumps. An immediate solution for the customer need for high durability in the draining of corrosive liquids.

## Stainless Steel Components

All components in contact with liquid are made of stainless steel or stainless steel casting. The following are the materials of main components:

SQ-Series: 304 Stainless Steel (SUS304)\*  
SFQ-Series: Stainless Steel Casting (SCS 14)\*  
BQ & CQ Series: Stainless Steel Casting (SCS13)\*

\*For other standards, please refer to MATERIAL CONVERSION LIST on the back cover.

## Motor Protector

A thermal protector is incorporated in the pumps of up to 7.5 kW motor. The protector is installed in the motor housing and it directly cuts the motor circuit if excessive heat builds up or an overcurrent is caused by an electrical or mechanical failure.

The pump with 11kW motor has three thermal protectors embedded in each winding of the three-phase motor. These protectors are connected in series, with their wires led out of the motor. Should the winding's temperature rise to the actuating level, the bimetal strip opens to cause the control panel to shut down the power supply.



## Cable Entry

Every cable has an anti-wicking block at the cable entry section of 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.

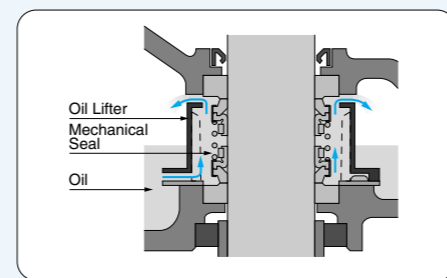


## Motor

The motor is a dry-type, squirrel-cage induction motor, housed in a watertight casing, and conforms to insulation classes E or F. In each of these insulation classes, all standard pumps can be used in ambient temperatures up to 40°C.

## Oil Lifter (Patented)

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.



## Mechanical Seal

The 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.

## Impeller

Each pump incorporates an impeller which is designed to suit the pump's application. The same material used in the pump casing is also used for the impeller.

## Model Number Designation

**80 SFQ A 2 3.7 S H**

Discharge bore in millimeters: 80  
Name of the series: SFQ  
Operation sub code: A (Automatic operation)  
Number of poles of the motor: 2  
Sub code for the pumping head: H (High head)  
Phase: S (Single-phase)  
Rated motor output in kilowatts: 3.7  
(This model does not exist.)

# SQ

## Vortex Impeller

## Features

### Ideal for Less-contamination Pumping

All components in contact with liquid are made of 304 stainless steel (SUS304) or stainless steel casting (SCS13). In addition to the feature that a non-toxic white oil is used as the lubricant, the pump is suitable for the applications where contamination to the liquid is not desired.

### Efficient Motor Cooling

The flow-thru design\* always cools the motor and permits the unit to operate at low water levels for extended periods of time. (\* Pumped liquid flows around the motor on its way to the top discharge.)

### Compact and Lightweight

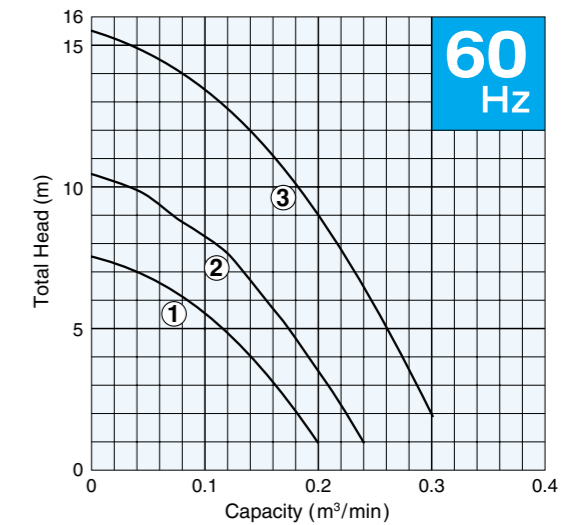
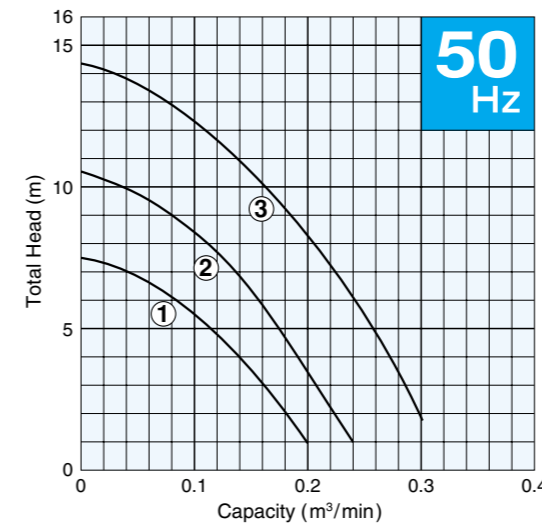
The design allows the overall dimensions of the pump to be reduced for installation in narrow locations.

### Automatic Model Available (Model SQA)

Tsurumi offers the automatic model of the SQ-series. This model can be identified by the symbol, A, added to the model code.



## Performance Curves



## Standard Specifications 50/60Hz

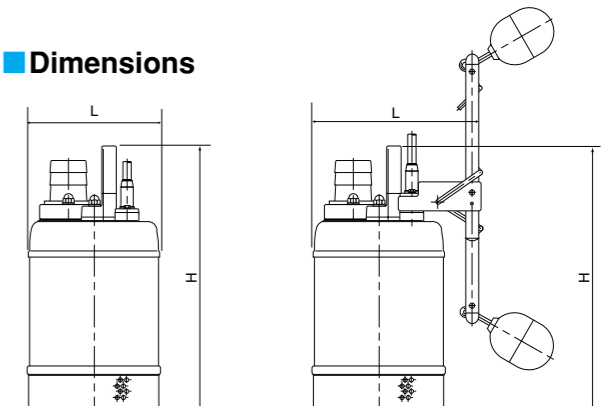
Curve No.	Discharge Bore mm	Standard Model	Automatic Model	Motor Output kW	Phase	Speed (S.S.) min <sup>-1</sup>	Starting Method	Solids Passage mm	Cable Length m	Cable Code	Dimensions L × H (mm)		Dry Weight* (kg)	
											Standard Model	Automatic Model	Standard Model	Automatic Model
1	40	40SQ2.25S	40SQA2.25S	0.25	Single	3000/3600	Capacitor Run	6	5	a	180 × 364	229 × 364	12.5	13.0
	40	40SQ2.25	—	0.25	Three	3000/3600	D.O.L.	6	6	A	180 × 364	—	12.0	—
2	50	50SQ2.4S	50SQA2.4S	0.4	Single	3000/3600	Capacitor Run	6	5	a	180 × 364	229 × 364	12.5	13.0
	50	50SQ2.4	—	0.4	Three	3000/3600	D.O.L.	6	6	A	180 × 364	—	12.0	—
3	50	50SQ2.75	—	0.75	Three	3000/3600	D.O.L.	6	6	A	180 × 384	—	14.0	—

\* All weights excluding cable

## Applications

- Draining effluent from brewery and pickle factory, etc.
- Supplying freshwater to breeding pond
- Circulating freshwater in aquarium

## Dimensions



# SFQ 50 · 80mm (0.4 ~ 3.7kW)

## Semi-open Impeller

### ■ Features

#### Austenitic Stainless Steel for Wetted Parts

At the metal components that come in contact with liquid are made of stainless steel casting (SCS14) or 316 stainless steel (SUS316).

#### Corrosion-resistant Mechanical Seal

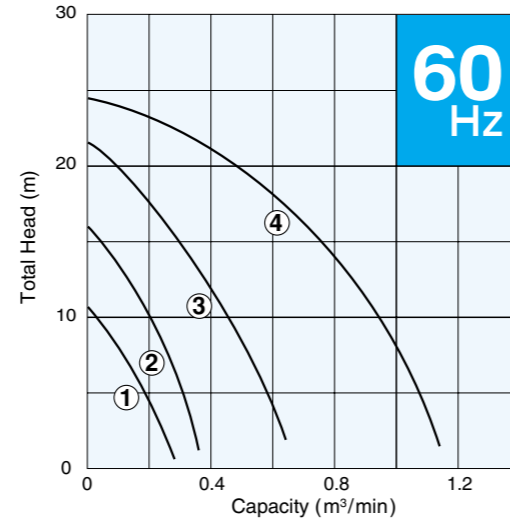
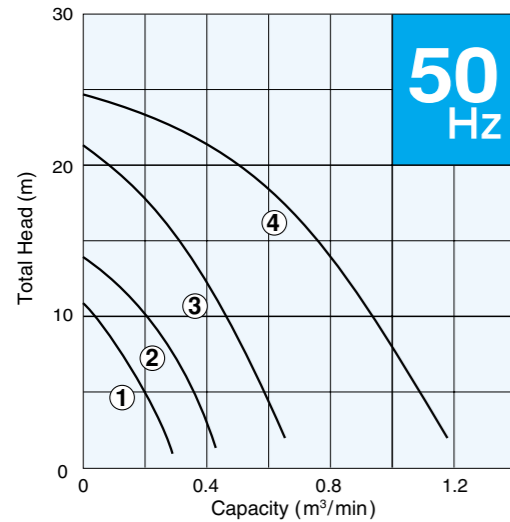
The SFQ-series is equipped with a special mechanical seal. The seal has superb corrosion resistance because silicon carbide is used for the seal faces while the gaskets are made of fluoro-rubber.

#### Powerful Pumping of Corrosive Liquids

The SFQ-series is ideal for the transfer and/or draining of corrosive liquids in chemical and pharmaceutical plants, laboratories, etc.



### ■ Performance Curves



### ■ Standard Specifications 50/60Hz

Curve No.	Discharge Bore mm	Model	Motor Output kW	Phase	Speed (s.s.) min <sup>-1</sup>	Starting Method	Solids Passage mm	Cable Length m	Cable Code	Dimensions L×H mm	Dry Weight** kg
1	50	50SFQ2.4S	0.4	Single	3000/3600	Capacitor	6	5	a	252×426	21
	50	50SFQ2.4	0.4	Three	3000/3600	D.O.L.	6	6	A	252×397	20
2	50	50SFQ2.75	0.75	Three	3000/3600	D.O.L.	6	6	A	252×397	20
3	80	80SFQ21.5	1.5	Three	3000/3600	D.O.L.	6	6	A	329×484	36
4	80	80SFQ23.7	3.7	Three	3000/3600	D.O.L.	15	6	C (E*)	359×542	52

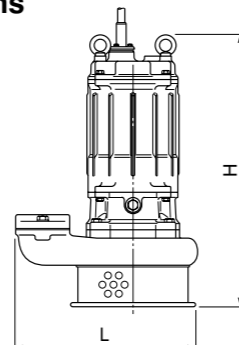
\* 200-240V

\*\* All weights excluding cable

### ■ Applications

- Draining wastewater from chemical plant, plastic plant, etc.
- Draining effluent from hospital and laboratory, etc.

### ■ Dimensions



# SFQ 80mm (5.5 ~ 11kW)

## Semi-open Impeller

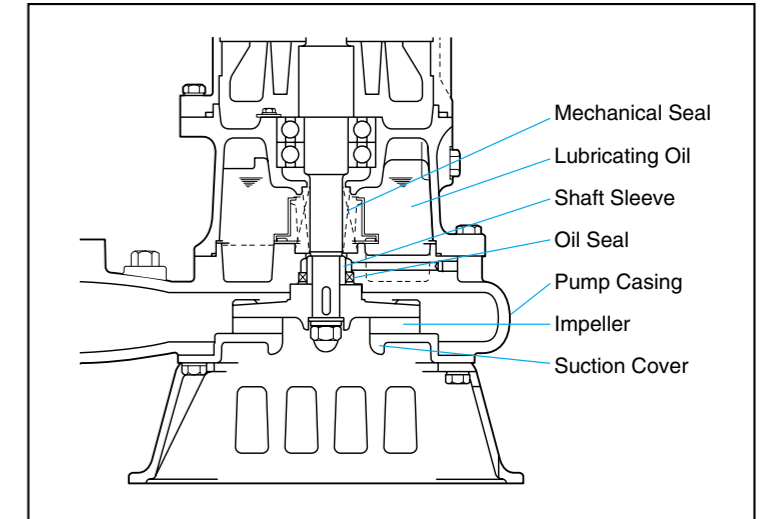
### ■ Features

#### Seal Pressure Relief System

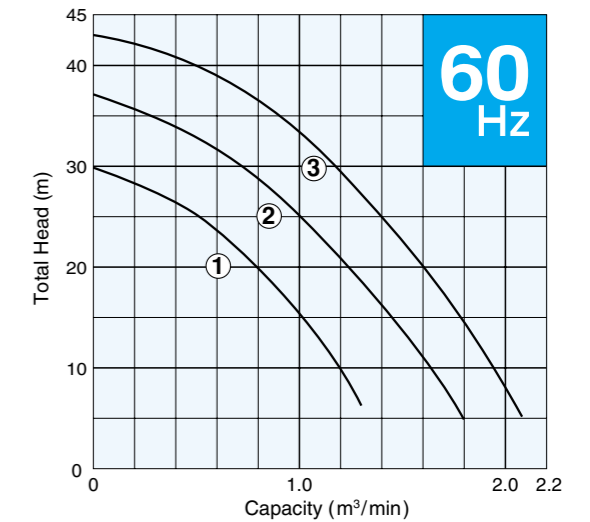
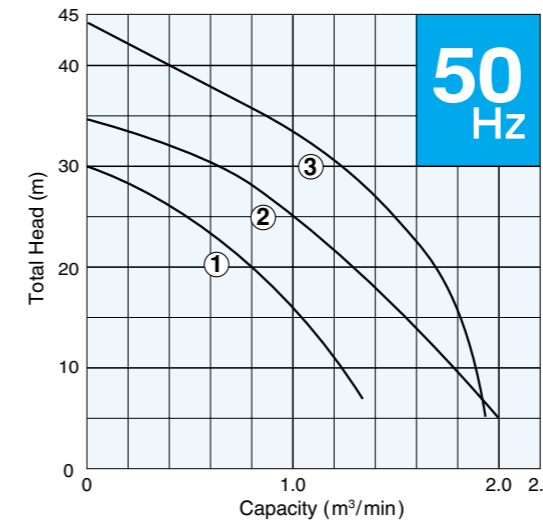
The SFQ-series of 5.5kW and over has a seal pressure relief system. This system features an independent pump casing separate from the oil casing in which the mechanical seal is housed. Installed between these two components is an intermediate chamber which is opened to the outside. Thanks to this system, the mechanical seal is only subject to static pressure (submergence pressure) with no pumping pressure operating on the mechanical seal.

#### Guide Rail Fitting Model Available

The SFQ-series of 5.5kW and over is available with guide rail fittings. Guide rail fitting accessories are made of stainless steel casting (SCS14) or 316 stainless steel (SUS316). Pumps in this series have a 'TOS' identifier on top of their model codes.



### ■ Performance Curves



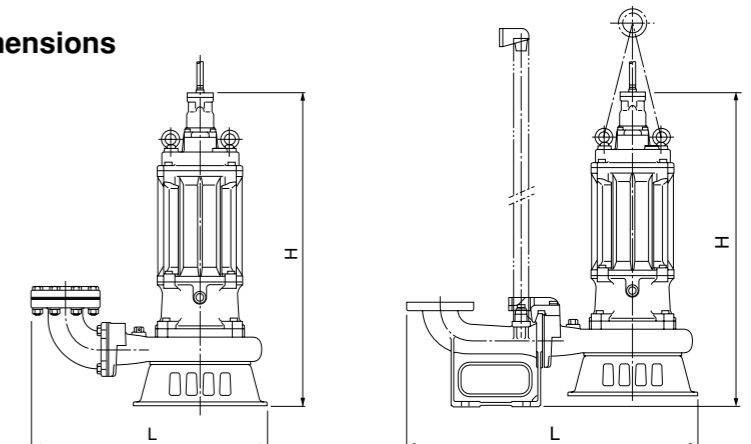
### ■ Standard Specifications 50/60Hz

Curve No.	Discharge Bore mm	Free Standing Model	Guide Rail Fitting Model	Motor Output kW	Phase	Speed (s.s.) min <sup>-1</sup>	Starting Method	Solids Passage mm	Cable Length m	Cable Code	Dimensions L×H (mm)		Dry Weight* (kg)	
											Free Standing	Guide Rail Fitting	Free Standing	Guide Rail Fitting
1	80	80SFQ25.5	TOS80SFQ25.5	5.5	Three	3000/3600	D.O.L.	18	8	G	635×844	808×875	124	113
2	80	80SFQ27.5	TOS80SFQ27.5	7.5	Three	3000/3600	D.O.L.	23/20	8	I	635×844	808×875	123	112
3	80	80SFQ211	TOS80SFQ211	11	Three	3000/3600	Star-Delta	23	8	K	635×892	808×923	143	132

\* All weights excluding cable

Weights of guide rail fitting model excluding duckfoot bend

### ■ Dimensions



# BQ

## Channel Impeller

### ■ Features

#### All Wetted Parts Made of Stainless Steel

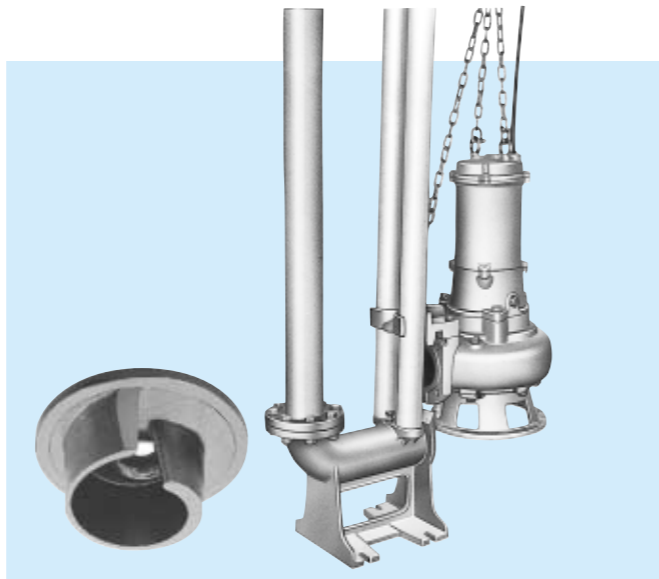
As parts of popular B-series, Tsurumi has come up with BQ-series made of stainless steel casting (SCS13). The shaft, bolts and nuts are made of 304 stainless steel (SUS304) or 316 stainless steel (SUS316). It is suitable for pumping wastewater containing solids and corrosive substances.

#### Single-channel, Solid Handling Impeller

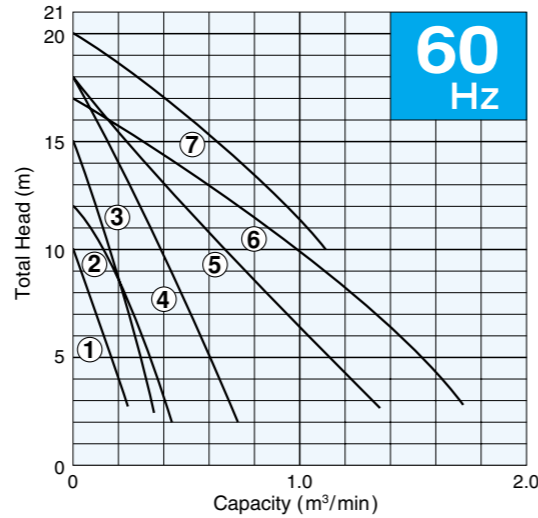
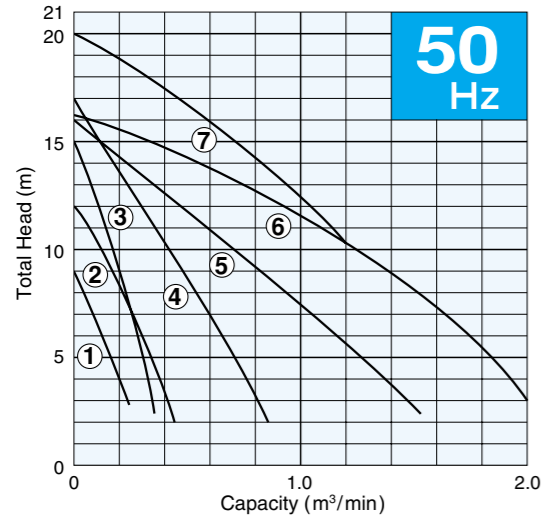
The widely opened volute casing and a single-channel impeller allow the pump to pass the solid matters from inflow to discharge with minimal blockage.

#### Guide Rail Fitting Model Available

The BQ-series is available with guide rail fittings. Guide rail fitting accessories are made of stainless steel casting (SCS13) or 304 stainless steel (SUS304). Pumps in this series have a 'TOS' identifier on top of their model codes.



### ■ Performance Curves



### ■ Standard Specifications 50/60Hz

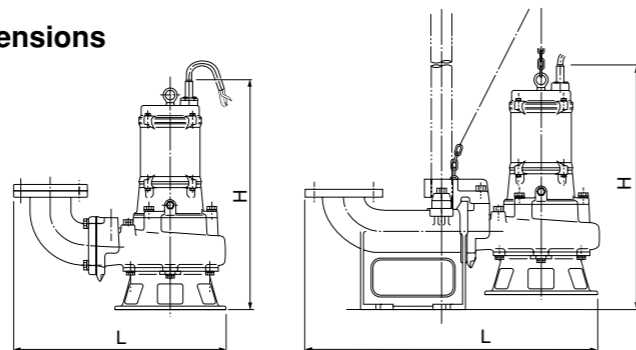
Curve No.	Discharge Bore mm	Free Standing Model	Guide Rail Fitting Model	Motor Output kW	Phase	Speed (s.s.) min <sup>-1</sup>	Starting Method	Solids Passage mm	Cable Length m	Cable Code	Dimensions L×H (mm)		Dry Weight** (kg)	
											Free Standing	Guide Rail Fitting	Free Standing	Guide Rail Fitting
1	50	50BQ2.4	TOS50BQ2.4	0.4	Three	3000/3600	D.O.L.	19/17	6	A	340×450	556×508	25	24
2	50	50BQ2.75	TOS50BQ2.75	0.75	Three	3000/3600	D.O.L.	20/24	6	A	410×506	625×546	40	39
3	50	50BQ2.75H	TOS50BQ2.75H	0.75	Three	3000/3600	D.O.L.	20	6	A	409×483	625×527	40	39
4	80	80BQ21.5	TOS80BQ21.5	1.5	Three	3000/3600	D.O.L.	25	6	A	424×558	646×608	50	48
5	100	100BQ42.2	TOS100BQ42.2	2.2	Three	1500/1800	D.O.L.	40	6	C	603×653	821×695	93	86
6	100	100BQ43.7	TOS100BQ43.7	3.7	Three	1500/1800	D.O.L.	53/45	6	C(E*)	603×735	821×772	109	102
7	100	100BQ43.7H	TOS100BQ43.7H	3.7	Three	1500/1800	D.O.L.	35	6	C(E*)	637×727	855×769	109	102

\* 200~240V  
\*\* All weights excluding cable  
Weights of guide rail fitting model excluding duckfoot bend

### ■ Applications

- Draining wastewater from chemical plant, plastic plant, etc.
- Draining effluent from hospital and laboratory, etc.

### ■ Dimensions



# CQ

## Cutter Impeller

### ■ Features

#### All Wetted Parts Made of Stainless Steel

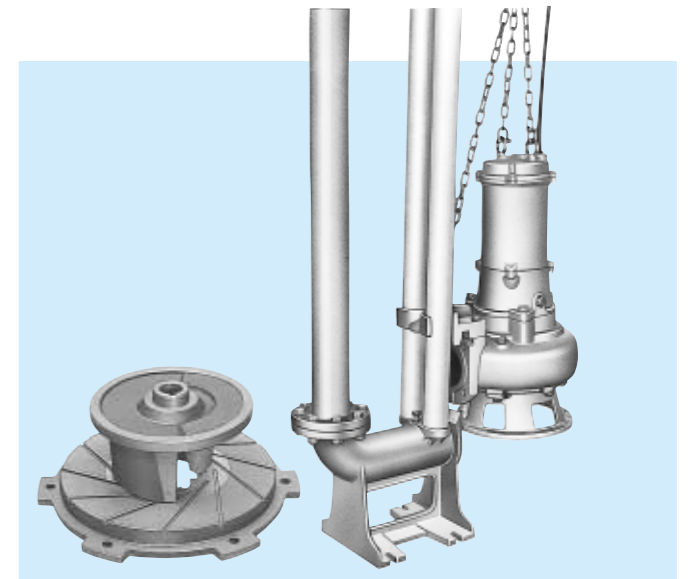
The CQ series, which belongs to the C (cutter pump) series, is built with stainless steel casting (SCS13). The shaft, bolts and nuts are made of 304 stainless steel (SUS304) or 316 stainless steel (SUS316). It is suitable for pumping wastewater containing corrosive liquid and/or fibrous material.

#### Efficient Cutter Mechanism

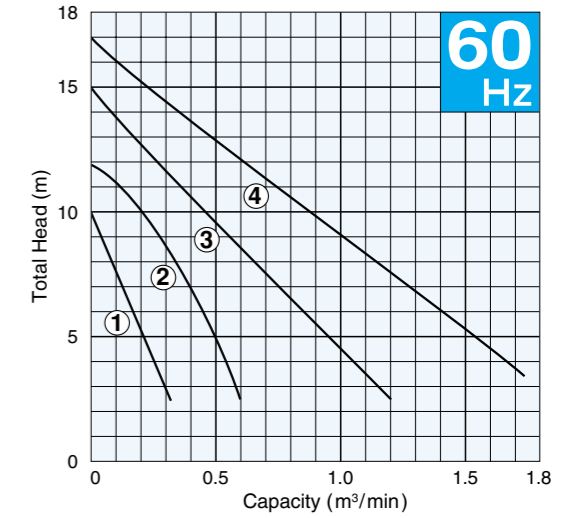
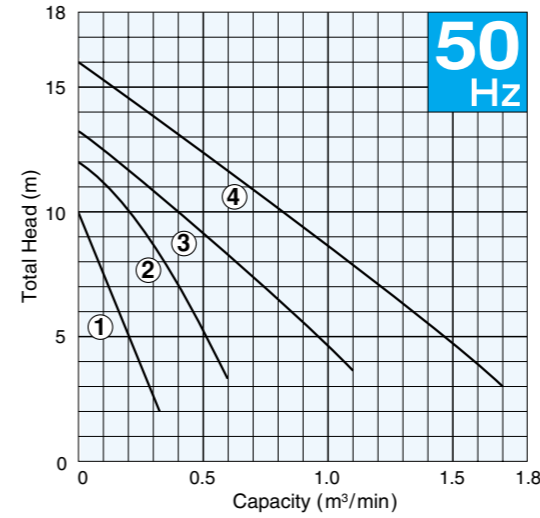
A sintered tungsten carbide alloy edge is brazed on the stainless steel impeller vane, and it rotates on a saw-tooth suction port of the stainless steel suction cover. This mechanism cuts fibrous matters flowed into the impeller and discharge them.

#### All Models Available with Guide Rail Fitting

The CQ-series is available with guide rail fittings. Guide rail fitting accessories are made of stainless steel casting (SCS13) or 304 stainless steel (SUS304). Pumps in this series have a 'TOS' identifier on top of their model codes.



### ■ Performance Curves



### ■ Standard Specifications 50/60Hz

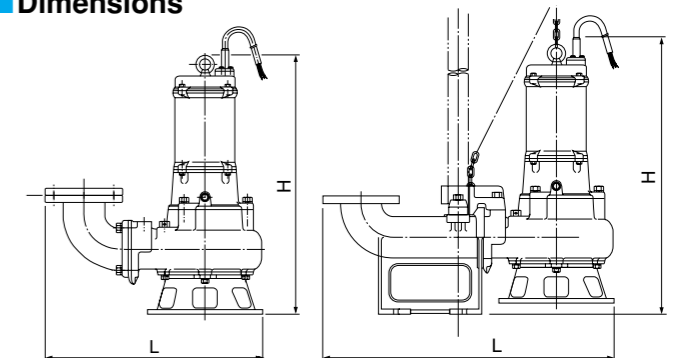
Curve No.	Discharge Bore mm	Free Standing Model	Guide Rail Fitting Model	Motor Output kW	Phase	Speed (s.s.) min <sup>-1</sup>	Starting Method	Solids Passage mm	Cable Length m	Cable Code	Dimensions L×H (mm)		Dry Weight** (kg)	
											Free Standing	Guide Rail Fitting	Free Standing	Guide Rail Fitting
1	50	50CQ2.75	TOS50CQ2.75	0.75	Three	3000/3600	D.O.L.	18	6	A	409×483	625×527	40	39
2	80	80CQ21.5	TOS80CQ21.5	1.5	Three	3000/3600	D.O.L.	29	6	A	424×559	646×608	50	48
3	100	100CQ42.2	TOS100CQ42.2	2.2	Three	1500/1800	D.O.L.	35	6	C	603×653	821×695	93	86
4	100	100CQ43.7	TOS100CQ43.7	3.7	Three	1500/1800	D.O.L.	55	6	C(E*)	603×735	821×772	109	102

\* 200~240V  
\*\* All weights excluding cable  
Weights of guide rail fitting model excluding duckfoot bend

### ■ Applications

- Draining wastewater from chemical plant, plastic plant, etc.
- Draining effluent from hospital and laboratory, etc.

### ■ Dimensions



## CABTYRE CABLE CODE REFERENCE

### Single-Phase

Code	No. of Cables	Cores × mm <sup>2</sup>	Outer Dia. mm	Material
a	1	3 × 1.25	10.1	PVC

### Three-Phase

Code	No. of Cables	Cores × mm <sup>2</sup>	Outer Dia. mm	Material
A	1	4 × 1.25	11.1	PVC
C	1	4 × 2.0	11.8	
E	1	4 × 3.5	13.9	
G	1	4 × 3.5	14.1	Chloroprene Rubber
I	1	4 × 5.5	16.8	
K	3	4 × 3.5	14.1	
		3 × 3.5	12.9	
		2 × 1.25	9.8	

## GUIDE RAIL FITTING SYSTEM

The 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.

When the SFQ, BQ or CQ series is ordered with guide rail fitting, the following accessories will come with the pump as standard equipment (Attach 'TOS' to its model code.):

- Lifting Chain 5m (with Shackles)
- Guide Support (with Bolts & Nuts)
- Guide Hook (with Bolts)
- Duckfoot Bend
- Guide Connector (with Bolts)
- JIS 10kg/cm<sup>2</sup> Flange (with Packing, Bolts & Nuts)

### Note:

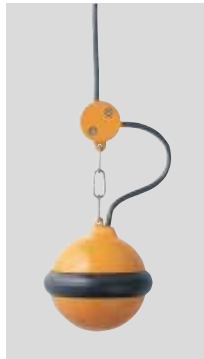
The material variation of these accessories is subject to the pump material.

## SPECIAL ACCESSORIES

### FLOAT SWITCHES

Tsurumi offers two types of float switches (liquid level sensors). A micro switch is incorporated in both types.

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.



Model RF-5 is an economy type float switch which can detect upper/lower-limit water levels with single float. The snap on-off action ensures stable operation in clean or wastewater containing suspended solids or oil and fat.



## MATERIAL CONVERSION LIST

Material	JIS	ASTM/AISI	DIN	BS
Stainless Steel	SUS304	304	X5 CrNi 18-10	304S31
	SUS316	316	X5 CrNiMo 17-12-2	316S31
Stainless Steel Casting	SCS13	CF 8	G-X6 CrNi 18-9	304C15
	SCS14	CF 8M	G-X6 CrNiMo 19-11-2	316C16

\* The above table is based on JIS and shows the nearest foreign standard.

### SEAWATER PUMPS

Tsurumi offers a range of submersible seawater pumps, the TM-series under the common trade name, Marinemate. All the wetted parts of this series are made of titanium and resin that have superb corrosion resistivity against seawater. The TM-series is available in variations from 0.25kW single-phase to 3.7kW three-phase. (For more details, refer to the TM-series catalog [IA119].)



We reserve the right to change the specifications and designs for improvement without prior notice.

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