# TSURUMI PUMP

## BZ - SERIES
SINGLE VANE - SEWAGE & WASTE WATER PUMPS

# SPECIFICATIONS

## FEATURES

1. Single Vane, Cast Iron, impeller passes 3“ diameter solids without clogging providing for highly efficient pumping of raw sewage and waste water.
2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.
3. Highly efficient, continuous duty, air filled, copper wound motor with class F, insulation minimizes the cost of operation.
4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extend operational life.

## APPLICATIONS

1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.
2. Decorative waterfalls, fountains and fish ponds.
3. Raw water supply from rivers or lakes.

OIL LIFTER (PAT. PEND.) EQUIPPED

## SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 4” Npt (100 mm) |
| Horsepower Range | 2 ~15 Hp. (1.5 ~ 11 kW) |
| Performance Range Capacity | 105.7 ~ 951.0 Gpm. (.40 ~ 3.60 $m^3$/min) |
| Head | 21.0 Ft. ~ 101.7Ft. (6.4 ~ 31.0 m) |
| Maximum water temperature | 104$^0$ F. (40$^0$ C.) |
| Materials of Construction | |
| Casing | ASTM 48 Class 35 Cast Iron |
| Impeller | ASTM 48 Class 35 Cast Iron |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 35 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Enclosed Single Vane, solids handling. |
| Solids Handling Capability | 3.15” (80 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 1800 Rpm, 60 Hz. |
| Voltage, Phase | 208-230, 230 or 440, 460 or 575 V. (3 Phase) |
| Insulation | Class F |
| Accessories | Submersible Power Cable 32’ (10 m) |
| Operational Mode | Manual |

## STANDARD

## OPTIONS

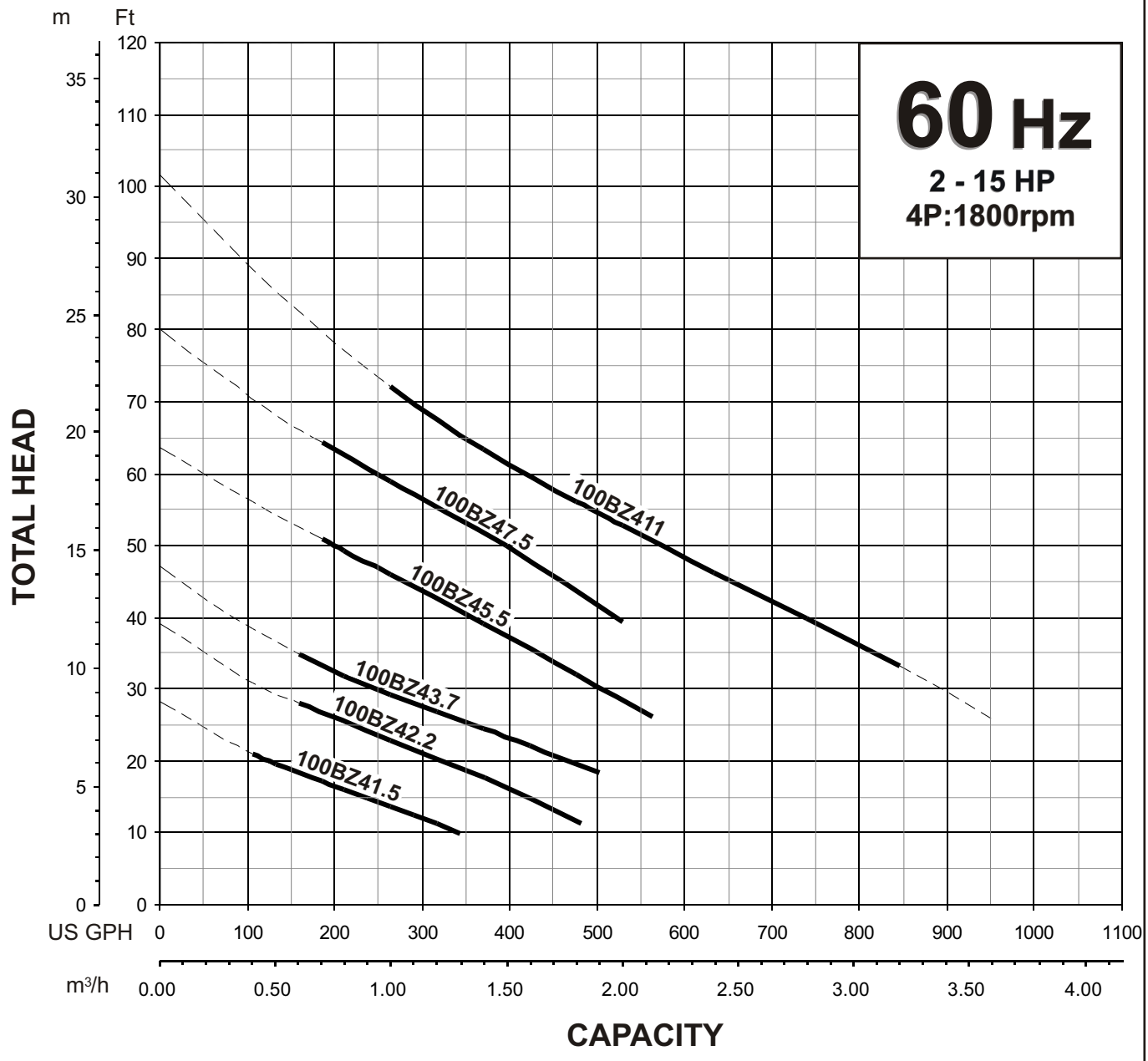
Nema 3R inverter available for 230 V.,1 Ph. operation from 2~5 Hp.

Length as Required

Model
TOS Slide rail system

| TSURUMI PUMP | BZ - SERIES<br>SEWAGE & WASTEWATER PUMPS | PERFORMANCE RANGE |
|---|---|---|

# PERFORMANCE RANGE




**REMARKS:** **Not Recommended For Continuous Operation On Dashed Curve.**

TSURUMI PUMP

# BZ - SERIES

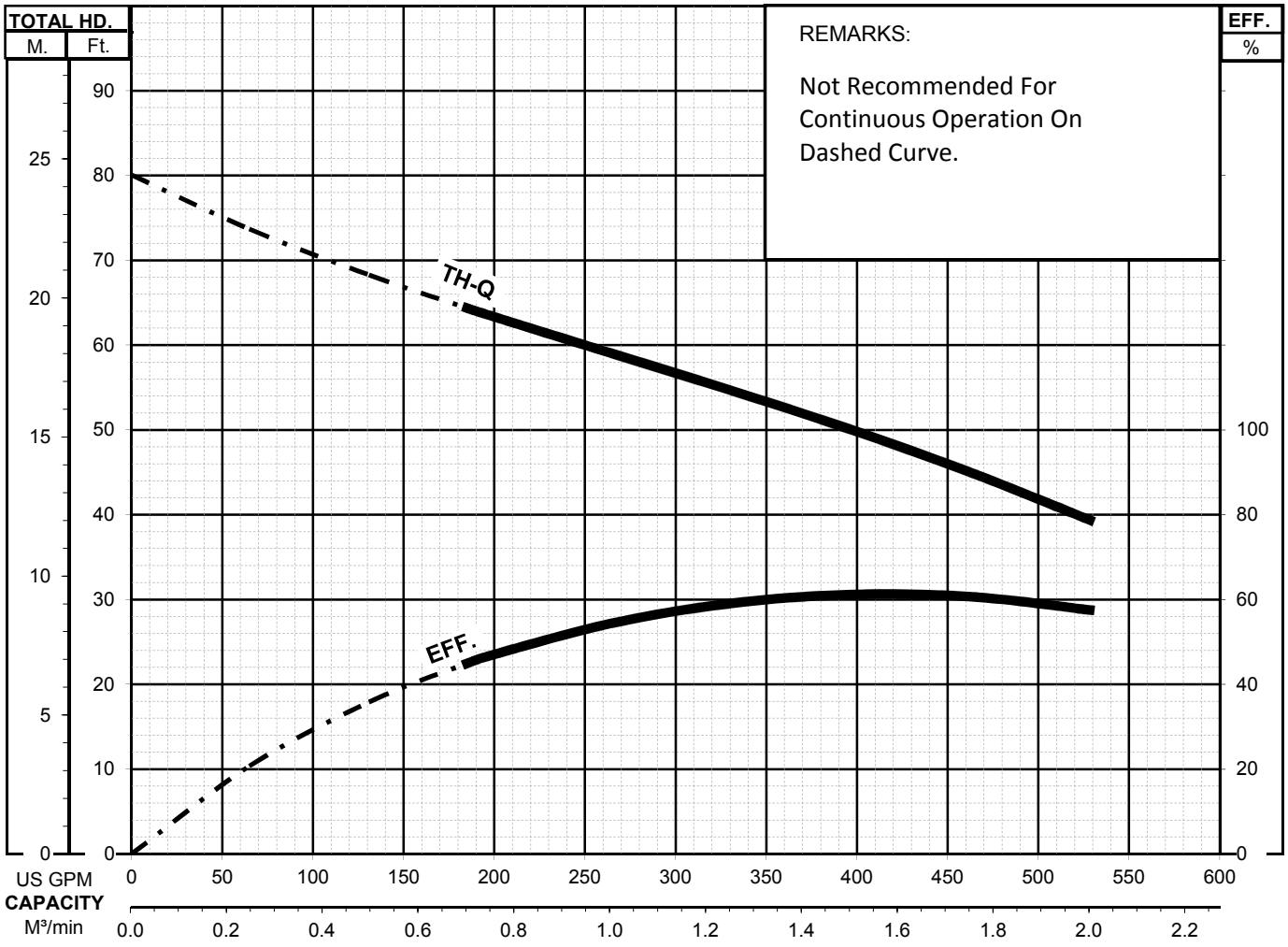
**SEWAGE & WASTEWATER PUMPS**

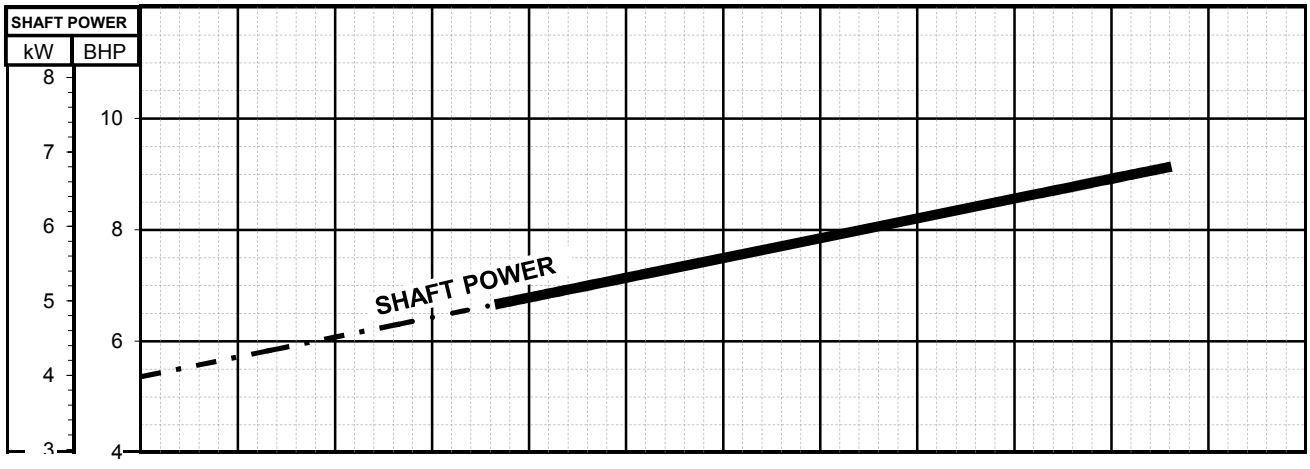
**PERFORMANCE CURVE**

| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100BZ47.5-65 | 4"/100mm | 10 | 7.5 | 1735 | 3.15"/80mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Sewage & Wastewater Pump | 3 | 208-230/460/575 | 29.8-28.0 / 14.0 / 11.5 | 60 | Direct On Line | F |

| CURVE No. | DATE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - |

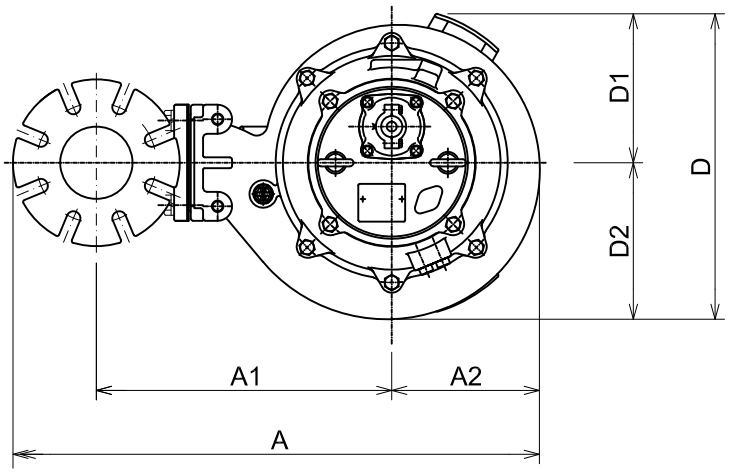


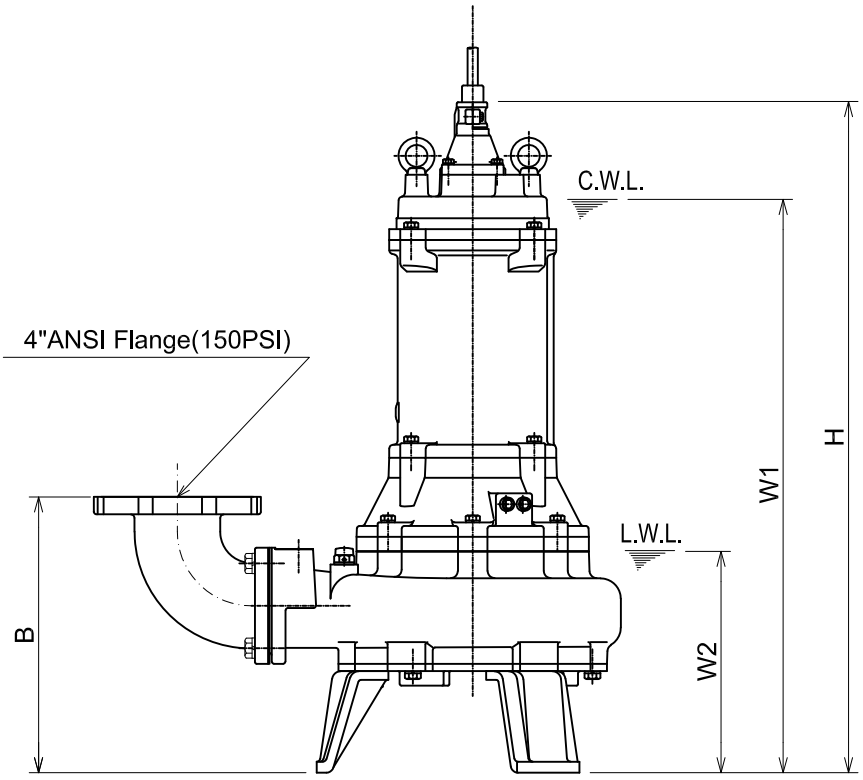



TSURUMI PUMP | BZ-SERIES SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**100BZ45.5 -65**
**100BZ47.5 -65**

Bend model:
BEND100-100 ANSI




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| **100BZ45.5-65** | 7.5 | 4" | 29 | 16 7/16 | 8 1/16 | 11 | 14 15/16 | 16 9/16 | 8 1/2 | 8 1/16 | 36 7/16 | 31 4/8 | 12 | 375 |
| **100BZ47.5-65** | 10 | 4" | 29 | 16 7/16 | 8 1/16 | 11 | 14 15/16 | 16 9/16 | 8 1/2 | 8 1/16 | 37 3/16 | 32 1/4 | 12 | 417 |

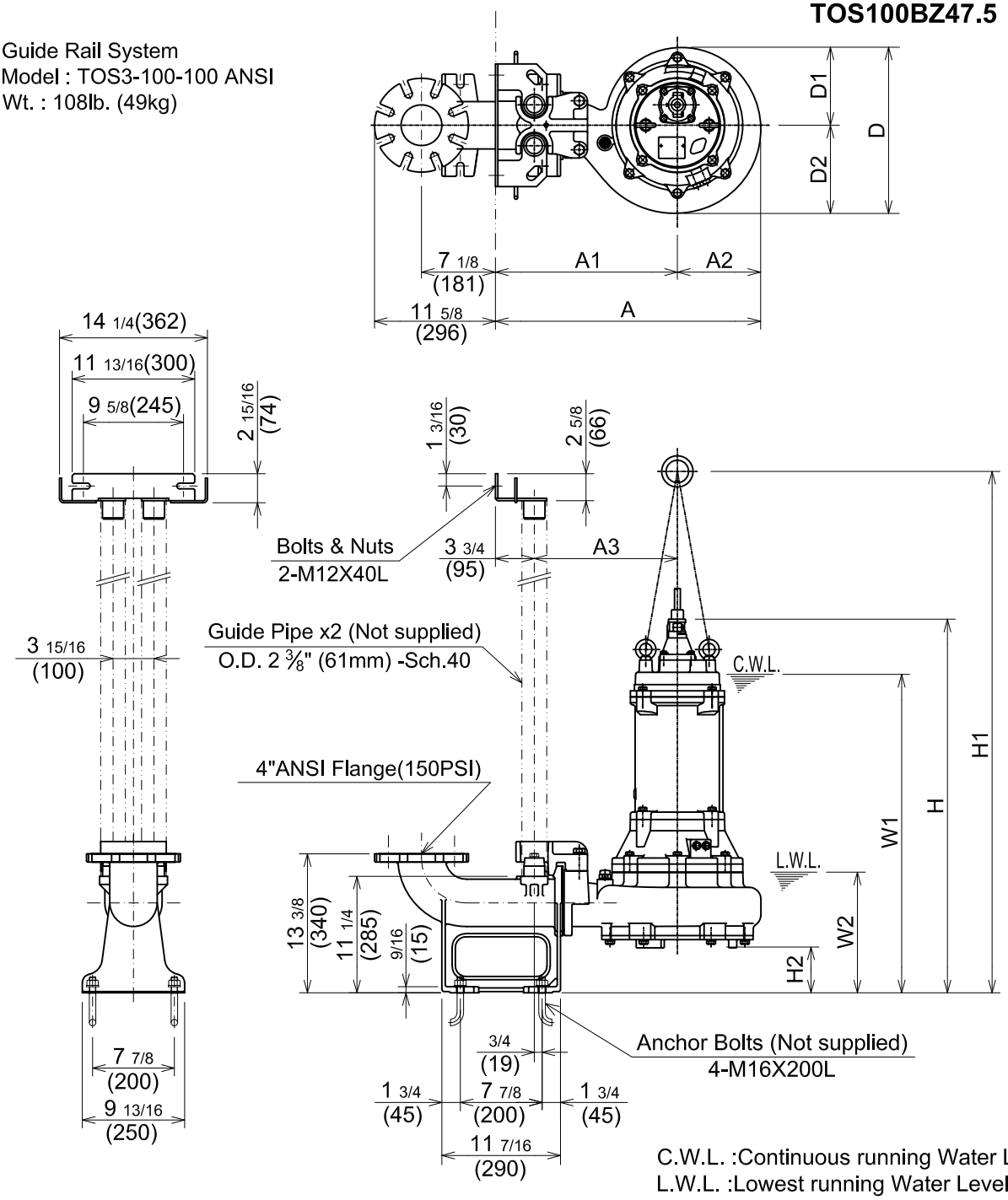
**DIMENSIONS:METRIC (mm)** *Excluding Cable

| Model | kW | NOM. | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| **100BZ45.5-65** | 5.5 | 100 | 736 | 417 | 204 | 280 | 380 | 421 | 216 | 205 | 925 | 800 | 305 | 170 |
| **100BZ47.5-65** | 7.5 | 100 | 736 | 417 | 204 | 280 | 380 | 421 | 216 | 205 | 945 | 820 | 305 | 189 |

TSURUMI PUMP | BZ-SERIES SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100BZ45.5 -65
## TOS100BZ47.5 -65

Guide Rail System
Model : TOS3-100-100 ANSI
Wt. : 108lb. (49kg)




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (lbs.) |
| TOS100BZ45.5-65 | 7.5 | 4" | 25 9/16 | 17 1/2 | 8 1/16 | 13 3/4 | 16 | 7 1/2 | 8 1/2 | 36 | 50 1/4 | 4 5/16 | 31 1/8 | 11 5/8 | 370 |
| TOS100BZ47.5-65 | 10 | 4" | 25 9/16 | 17 1/2 | 8 1/16 | 13 3/4 | 16 | 7 1/2 | 8 1/2 | 36 13/16 | 51 1/4 | 4 5/16 | 31 7/8 | 11 5/8 | 412 |

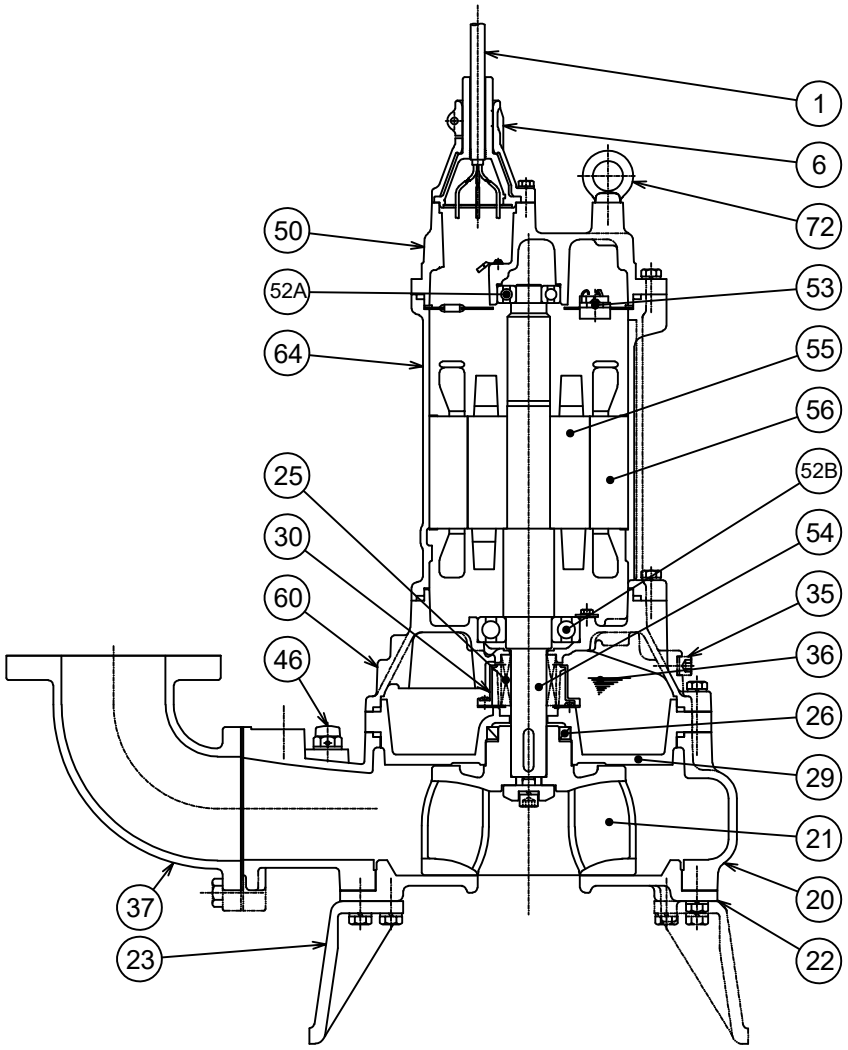
**DIMENSIONS:METRIC (mm)** *Excluding TOS & Cable

| Model | kW | NOM. | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (kg) |
| TOS100BZ45.5-65 | 5.5 | 100 | 649 | 445 | 204 | 350 | 406 | 190 | 216 | 914 | 1276 | 110 | 790 | 295 | 168 |
| TOS100BZ47.5-65 | 7.5 | 100 | 649 | 445 | 204 | 350 | 406 | 190 | 216 | 935 | 1301 | 110 | 810 | 295 | 187 |

Jun. 17

| TSURUMI PUMP | BZ-SERIES<br>SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**100BZ45.5 -65**
**100BZ47.5 -65**




| | BZ45.5 | BZ47.5 |
|---|---|---|
| ＊1 | AWG 12/4-32ft | AWG 10/4-32ft |
| ＊2 | #AC-6305ZZC3 | #AC-6306ZZC3 |

| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM, AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath *1 | | | 1 |
| 6 | Staffing Box | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35A | | | 1 |
| 26 | Oil Seal | NBR / TC608212 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Plastic W/(GF+MD)40 | | | 1 |
| 35 | Oil Plug | Stainless Steel / M12x14L | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4" ANSI Flange(150PSI) | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 46 | Air Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | *2 | | | 1 |
| 52B | Lower Bearing | #6309ZZC3 | | | 1 |
| 53 | Motor Protector | | | | 1 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class 30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

TSURUMI PUMP | BZ - SERIES SEWAGE & WASTEWATER PUMPS | SAMPLE SPECIFICATIONS

## 1. SCOPE OF SUPPLY -

Furnish and install TSURUMI Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM (_____$m^3$/min) at _____Feet ( _____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed The motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

## 2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, and discharge elbow shall be manufactured from gray cast iron, ASTM A48 CLASS 35. Unit(s) shall have a field adjustable and or replaceable, cast iron wear plate or wear rings. Internal and external surfaces coming into contact with the pumpage shall be protected by a fused polymer coating. All exposed fasteners shall be stainless steel. All units shall be furnished with a discharge elbow with 150 lb. (10 $kg/cm^2$) flat face flange and NPT companion flange. Impellers shall be of the single vane, enclosed, solids handling design equipped with back pump out vanes and shall be slip fit to the shaft and key driven. The pump casing shall incorporate an air relief valve.

## 3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber and further protected by an exclusionary oil seal located between the bottom seal faces and the fluid being pumped. The oil chamber shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Mechanical seals shall rated to preclude the incursion of water up to 42.6 PSI. (98.4 Ft.). Units shall have silicon carbide mechanical seal faces. Mechanical seal hardware shall be stainless steel.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., 3 Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 20 starts per hour. Motor(s) shall be air filled, copper wound, class F insulated with built in thermal protection for each winding. Motor shaft shall be 420 or 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. On units up to 10 Hp. (7.5 kW), the bottom bearing shall be single row, double shielded, C3, deep groove type ball bearings. On units 15 Hp. (11 kW), the bottom bearing shall be two row, double shielded, C3, deep groove type ball bearings. The top bearing on all units shall be single row, double shielded, C3, deep groove type ball bearings. Motor housing and bearing housing shall be gray cast iron, ASTM A48 CLASS 30. Motors shall be D.O.L. or Star-delta start (15 Hp.), and shall be suitable for across the line start or variable speed applications, utilizing a properly sized variable frequency drive.

## 5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. Units up to 5 Hp. shall be supplied with a cable entrance that incorporates built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. On units 7.5 Hp. and above, the cable entrance shall incorporate built in strain relief, and combination three way mechanical compression sealing with a fatigue reducing/thermal expansion rubber boot. The power cable shall be field replaceable utilizing standard submersible pump cable. The cable entrance assembly on all units shall contain an anti-wicking block to eliminate water incursion into the motor due To capillary wicking should the power cable be accidentally damaged.