# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

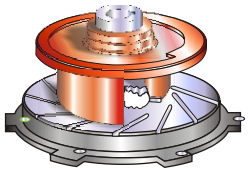
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

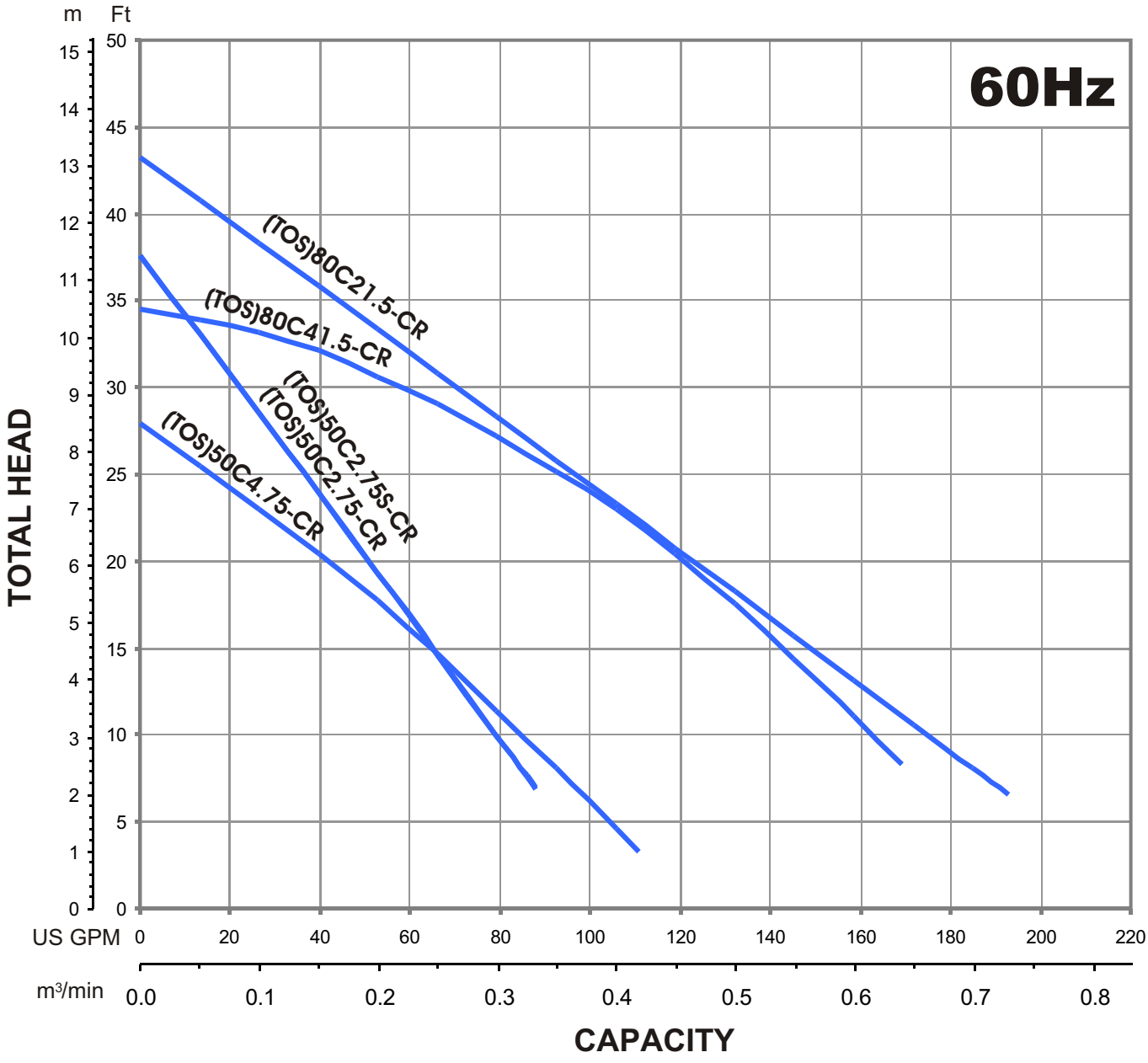
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

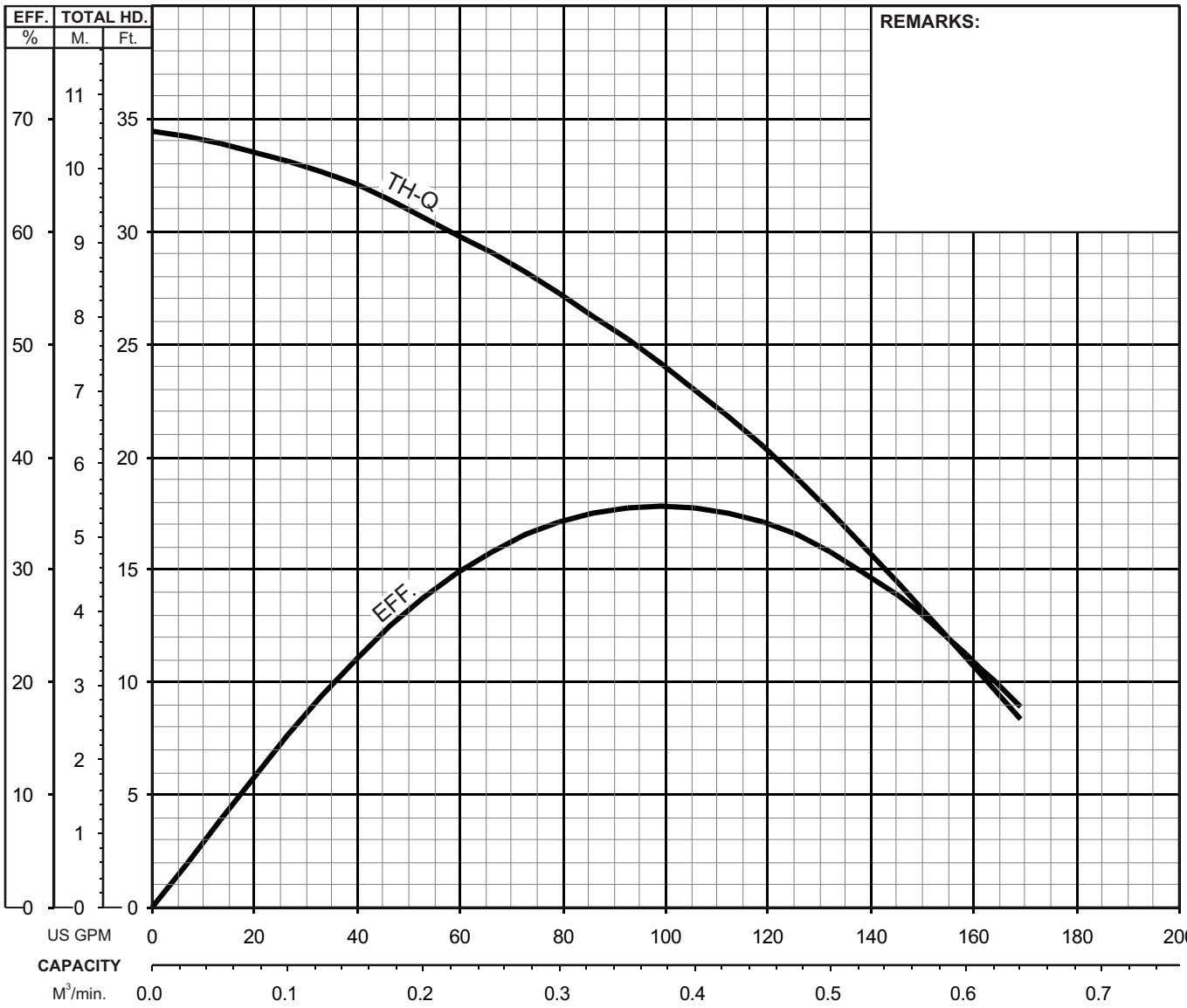
## PERFORMANCE CURVE

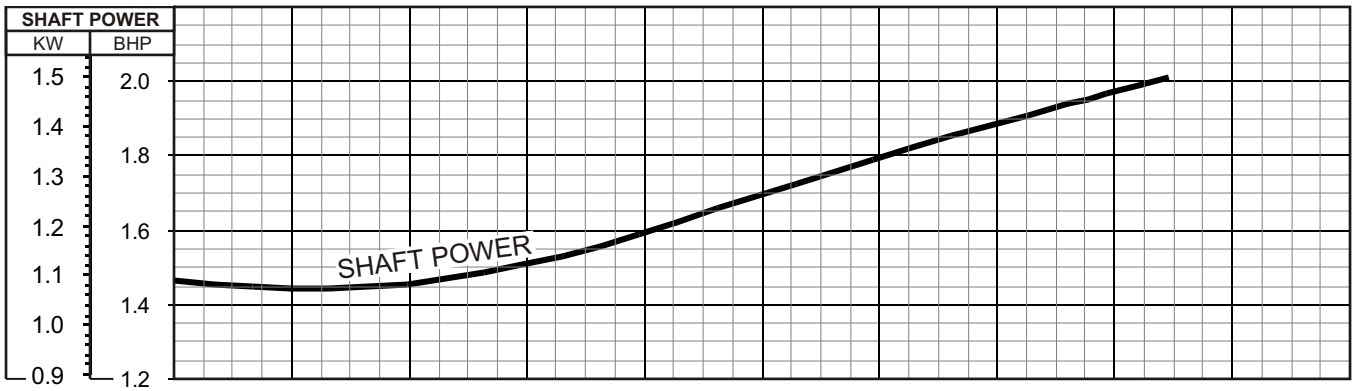
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C41.5-CR -63 | 3"/80mm | 2 | 1.5 | 1670 | 1.26"/32mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 6.6-6.4 / 3.2 / 2.6 | 60 | Direct On Line | F |

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

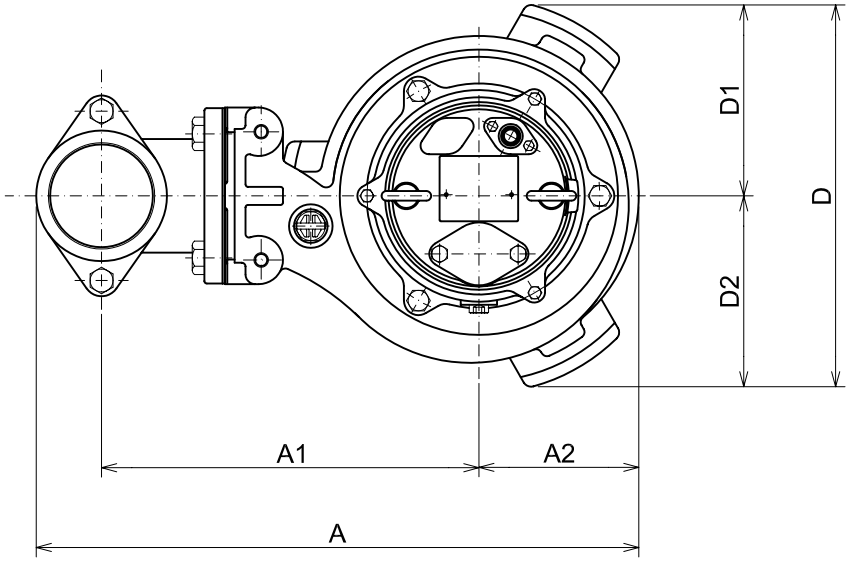
REMARKS:

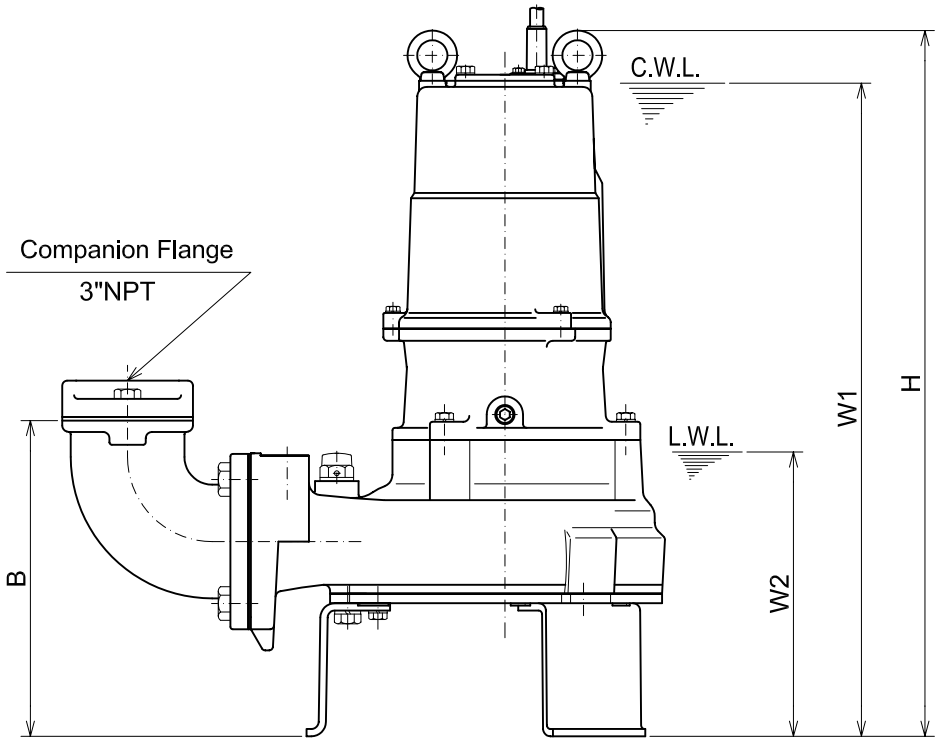


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 80C41.5-CR -63




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 80C41.5-CR -63 | 2 | 3" | 19 5/8 | 12 5/16 | 5 3/16 | 10 1/4 | 12 7/16 | 6 1/4 | 6 1/4 | 23 | 21 1/4 | 9 1/4 | 119 |

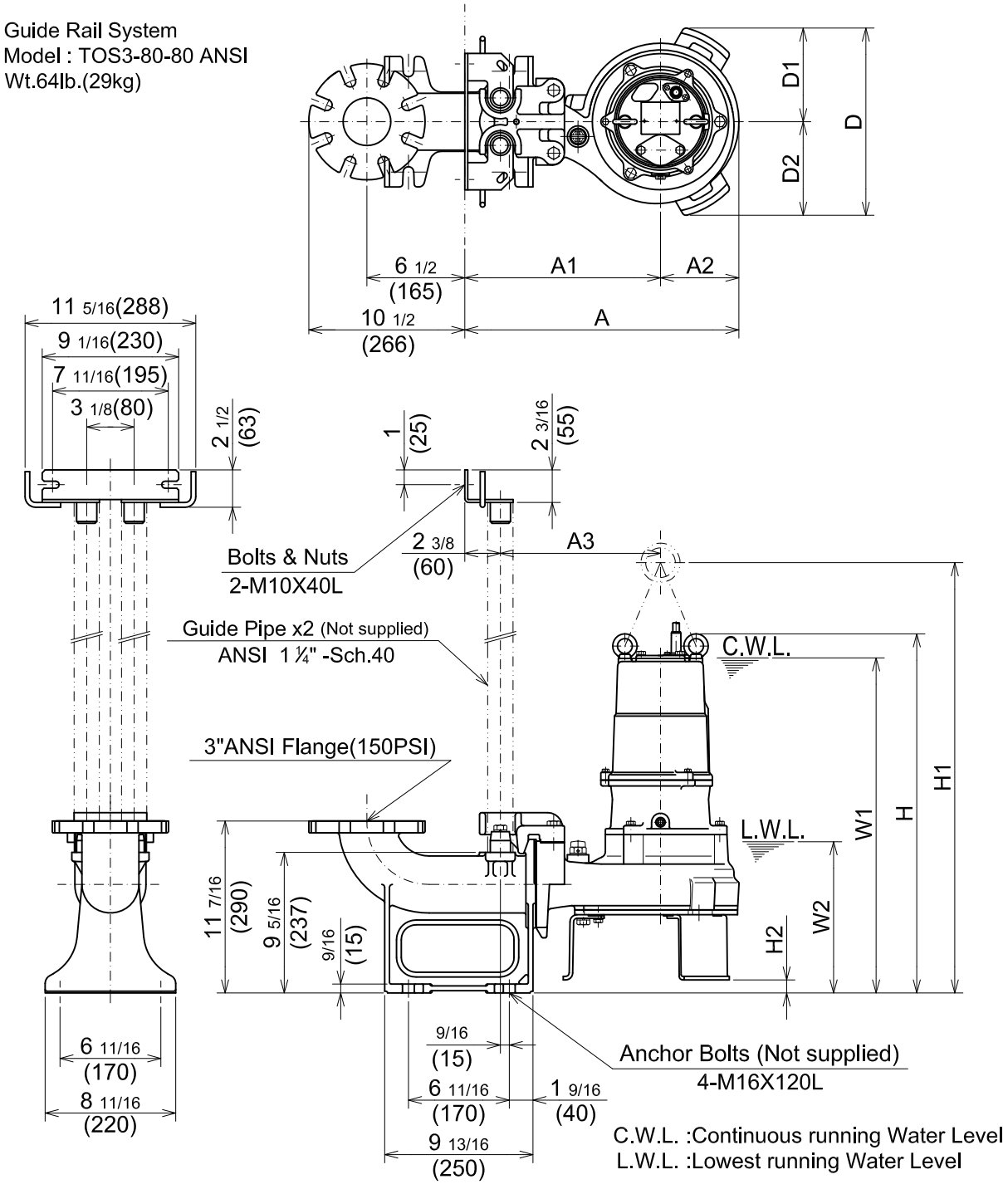
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 80C41.5-CR -63 | 1.5 | 80 | 498 | 312 | 132 | 261 | 316 | 158 | 158 | 584 | 540 | 235 | 54 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS80C41.5-CR -63

Guide Rail System
Model : TOS3-80-80 ANSI
Wt.64lb.(29kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C41.5-CR -63 | 2 | 3" | 18 3/16 | 13 | 5 3/16 | 10 5/8 | 12 7/16 | 6 1/4 | 6 1/4 | 23 7/8 | 28 5/8 | 7/8 | 22 1/4 | 10 | 112 |

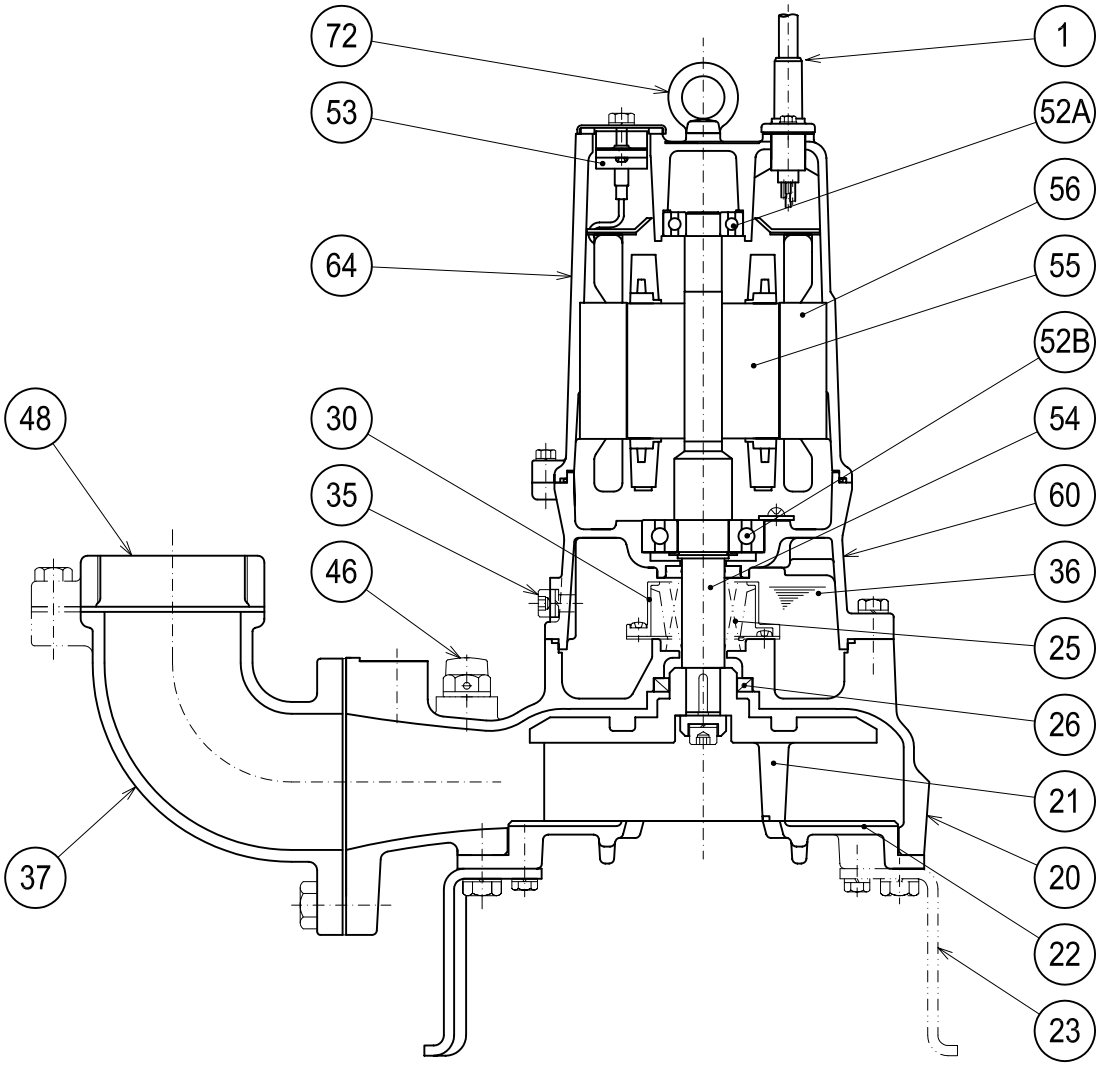
*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C41.5-CR -63 | 1.5 | 80 | 462 | 330 | 132 | 270 | 316 | 158 | 158 | 606 | 726 | 22 | 565 | 255 | 51 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

**80C41.5-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 16/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Suction Strainer | Steel (Hot Rolled) | A1011 | EN 10111 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-25 | | | 1 |
| 26 | Oil Seal | NBR / TC40588 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 48 | Companion Flange | Cast Iron / NPT 3" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6303ZZC3 | | | 1 |
| 52B | Lower Bearing | #6306ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

# C - SERIES
## SEWAGE & WASTE WATER CUTTER PUMPS

# SPECIFICATIONS

## FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

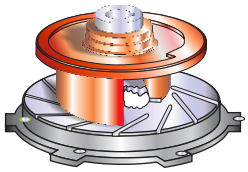
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8” N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62･ (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32’ (10 m) |

## STANDARD

## OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

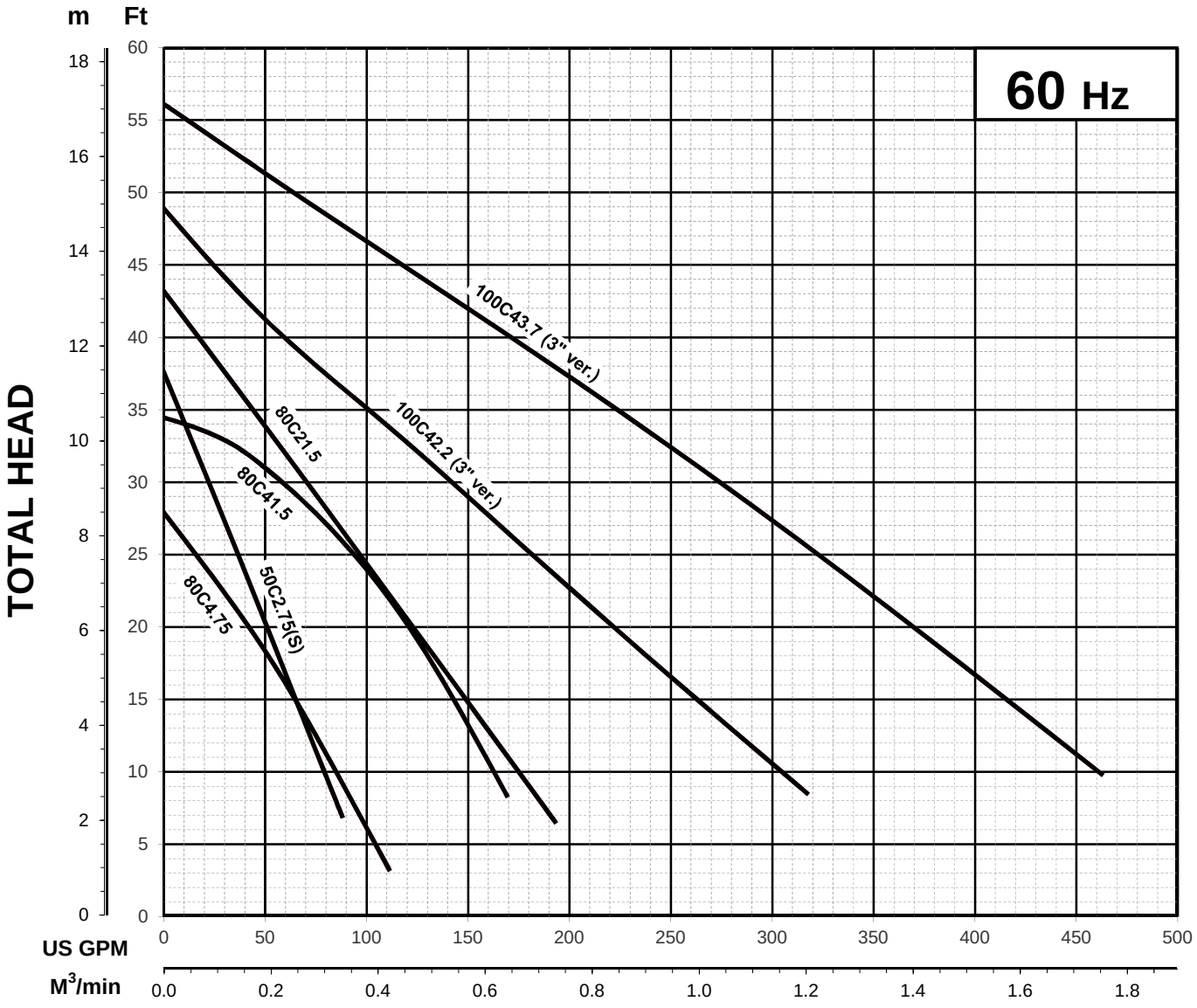
TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

PERFORMANCE RANGE

## GROUP PERFORMANCE RANGE




**Note**

Ex.

Oct-22

TSURUMI PUMP

# C - SERIES

**CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS**

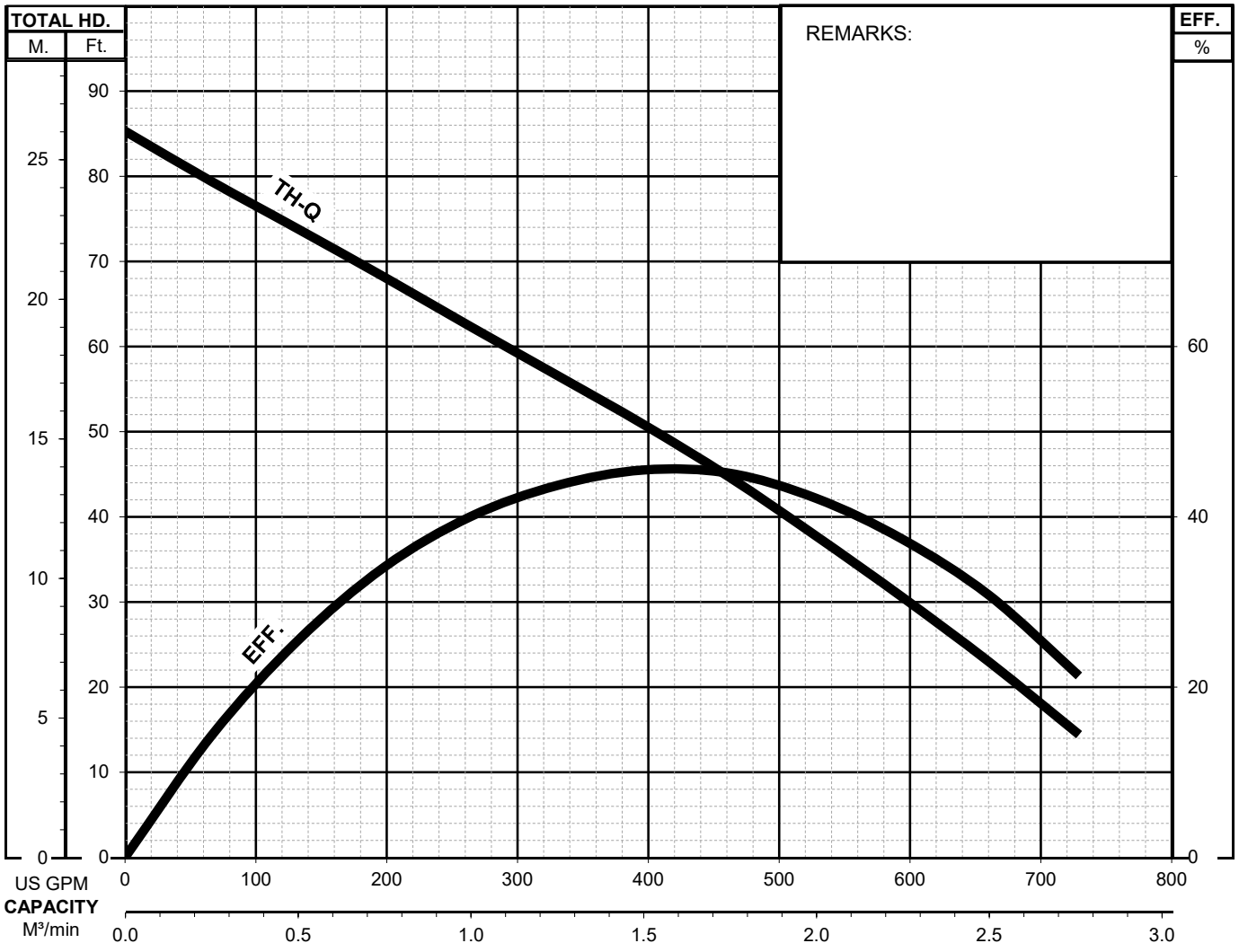
**PERFORMANCE CURVE**

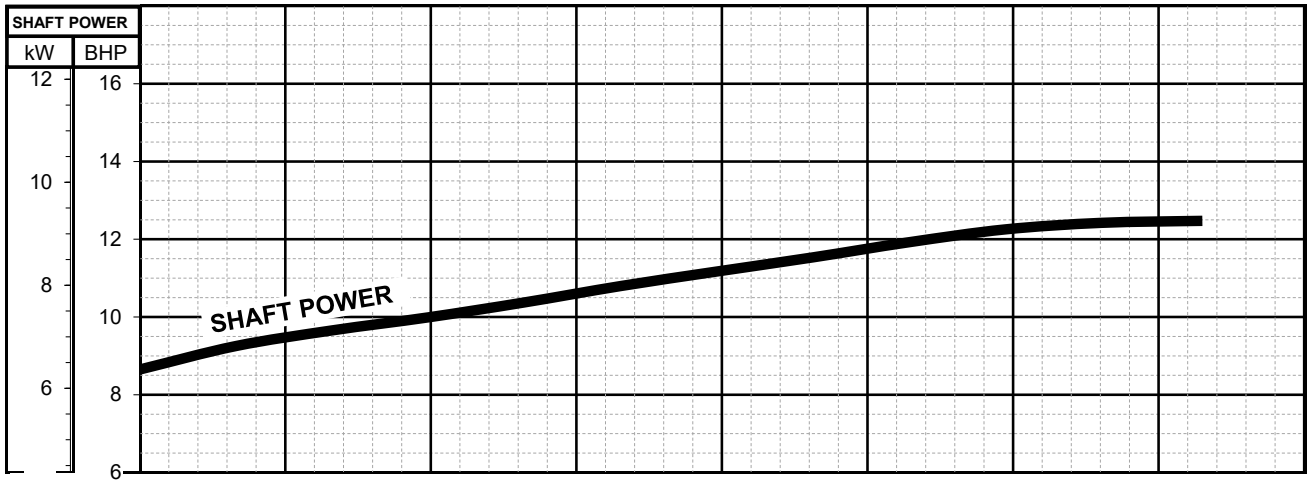
| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 100C411-CR -64 | 4"/100mm | 15 | 11 | 1739 | 1.97"/50mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 41.4-38 / 19 / 14.7 | 60 | Star-Delta | F |

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

REMARKS:



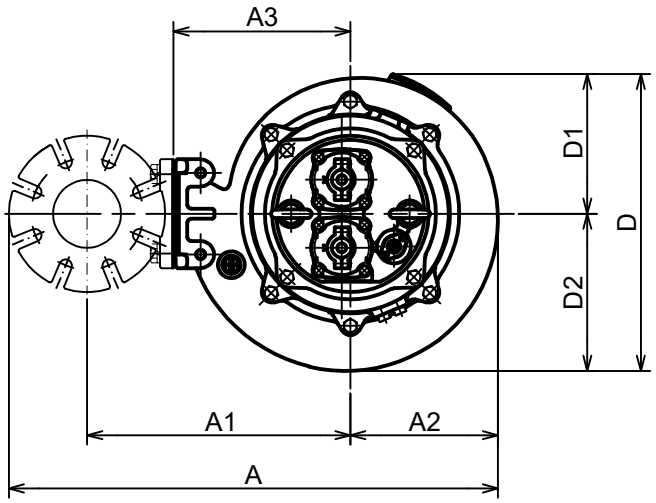



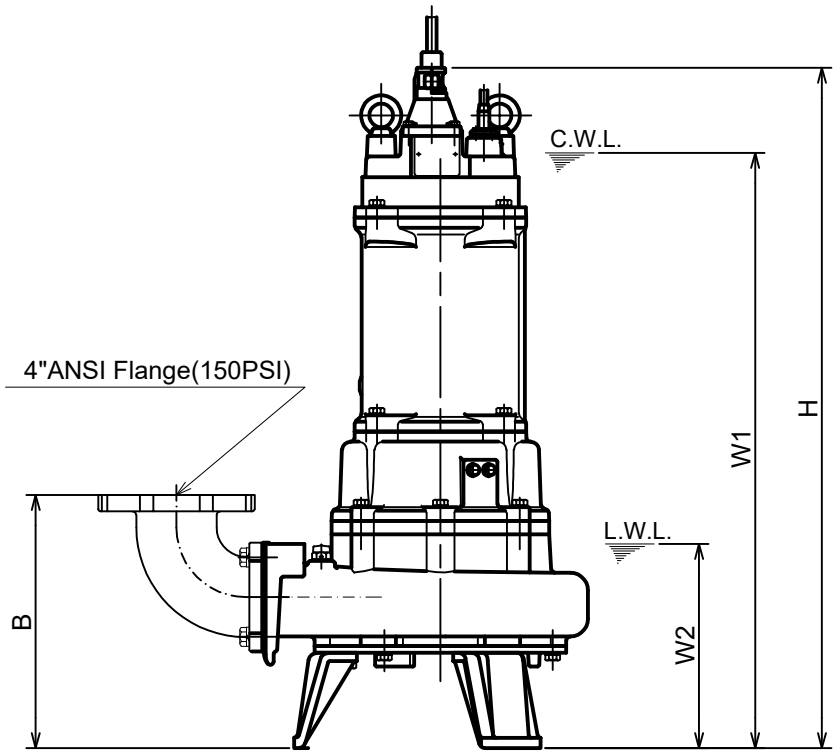
May. 2021

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## 100C411-CR -64

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.) |
| 100C411-CR-64 | 15 | 4" | 28 11/16 | 15 5/8 | 8 9/16 | 10 1/4 | 14 5/8 | 17 3/16 | 8 1/16 | 9 1/8 | 39 3/8 | 34 1/2 | 11 3/4 | 384 |

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

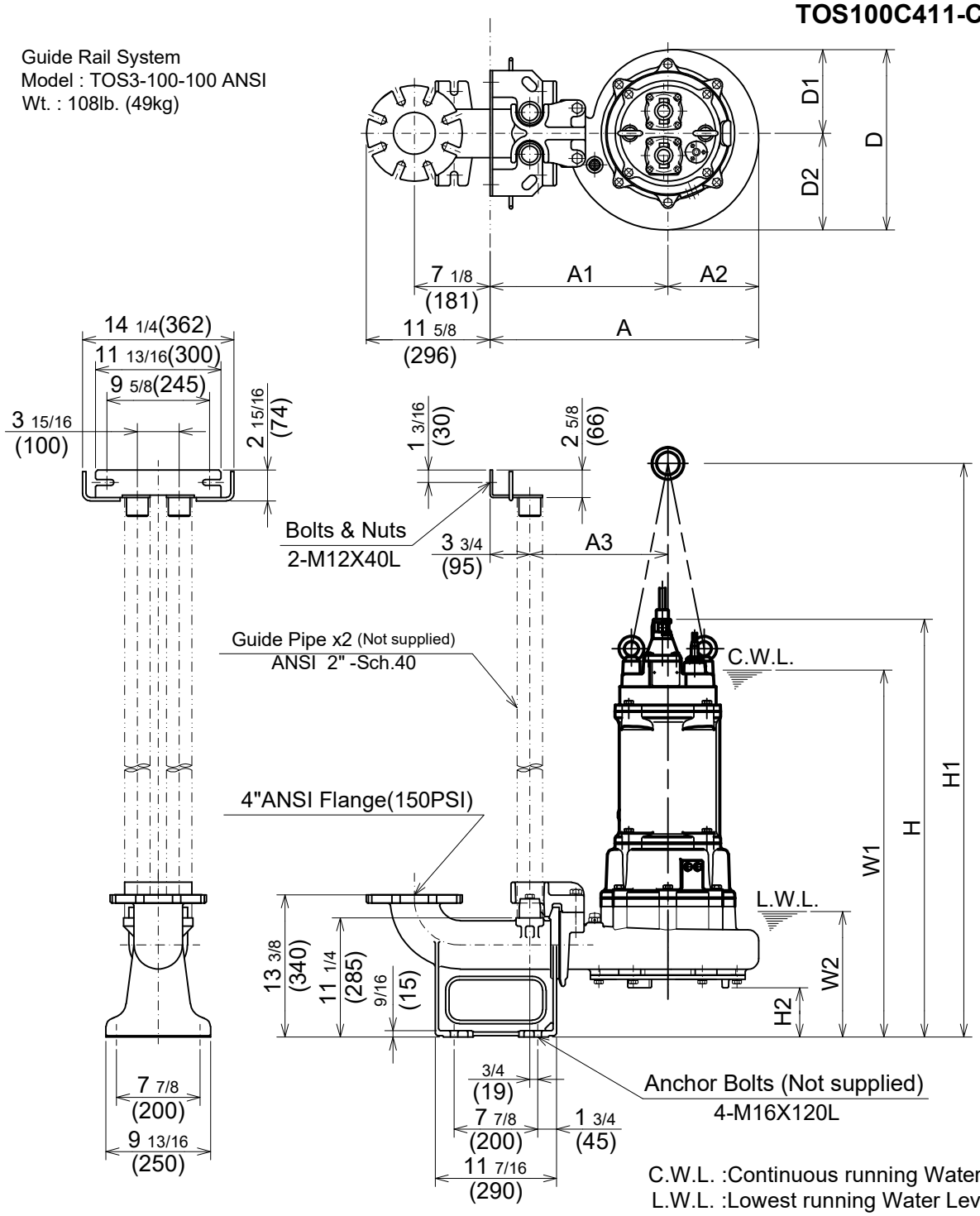
| Model | kW | NOM. | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 100C411-CR-64 | 11 | 100 | 729 | 397 | 217 | 260 | 372 | 436 | 205 | 231 | 1000 | 875 | 300 | 174 |

May. 2021

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C411-CR -64

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.) |
| TOS100C411-CR-64 | 15 | 4" | 25 1/2 | 16 3/4 | 8 9/16 | 13 | 16 15/16 | 7 7/8 | 9 1/8 | 39 5/16 | 53 11/16 | 4 5/8 | 34 1/2 | 11 3/4 | 379 |

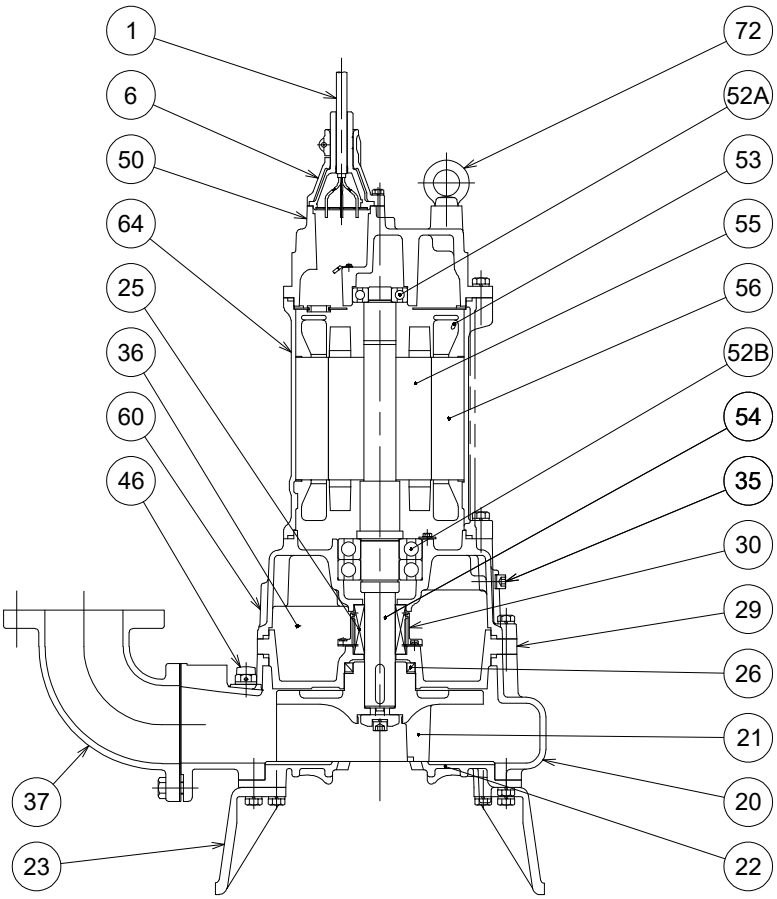
**DIMENSIONS:METRIC (mm)** *Excluding TOS & Cable

| 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) |
| TOS100C411-CR-64 | 11 | 100 | 642 | 425 | 217 | 330 | 431 | 200 | 231 | 998 | 1364 | 118 | 875 | 300 | 172 |

Dec.2020

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**100C411-CR -64**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | ASTM, AISI CODE | RELATED DIN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 12/4-32ft | | | 1 |
| | Power Cable | Chloroprene Sheath AWG 12/3-32ft | | | 1 |
| | Control Cable | PVC Sheath AWG 16/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 2 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 ClassIII TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-40X | | | 1 |
| 26 | Oil Seal | NBR / TC709212 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | #6306ZZC3 | | | 1 |
| 52B | Lower Bearing | #6310ZZD2C3 | | | 2 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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 30B. Unit(s) shall have a field adjustable and or replaceable, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 25B or 30B(7.5 Hp. and above). Motors shall be D.O.L. or Star-delta start (15 Hp. and above), 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.

# TSURUMI PUMP

# C - SERIES
## SEWAGE & WASTE WATER CUTTER PUMPS

# SPECIFICATIONS

## FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

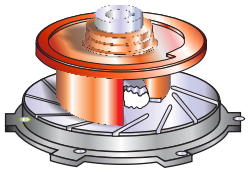
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8” N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62･ (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32’ (10 m) |

## STANDARD

## OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

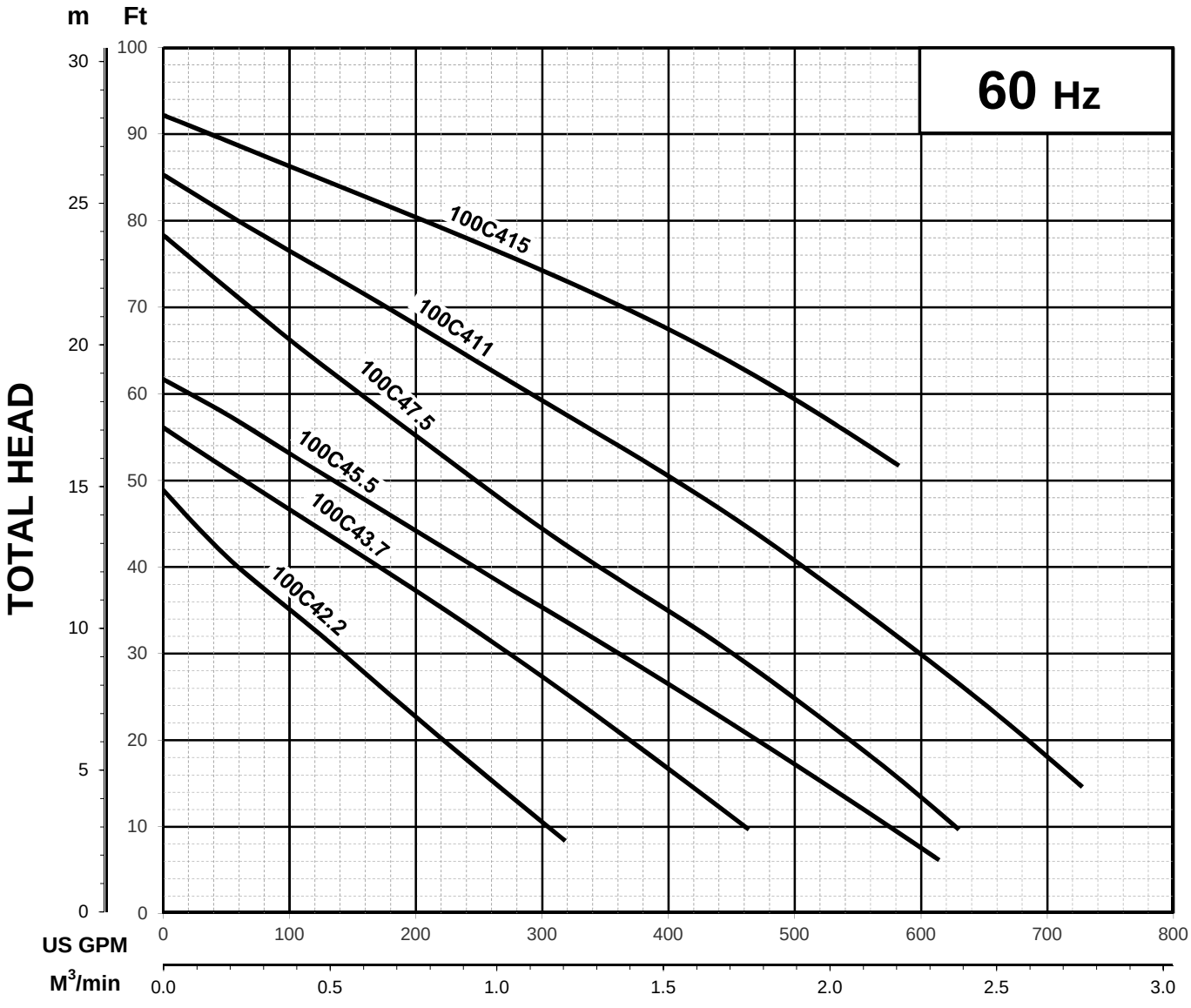
TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

PERFORMANCE RANGE

## GROUP PERFORMANCE RANGE




**Note**

Ex.

TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

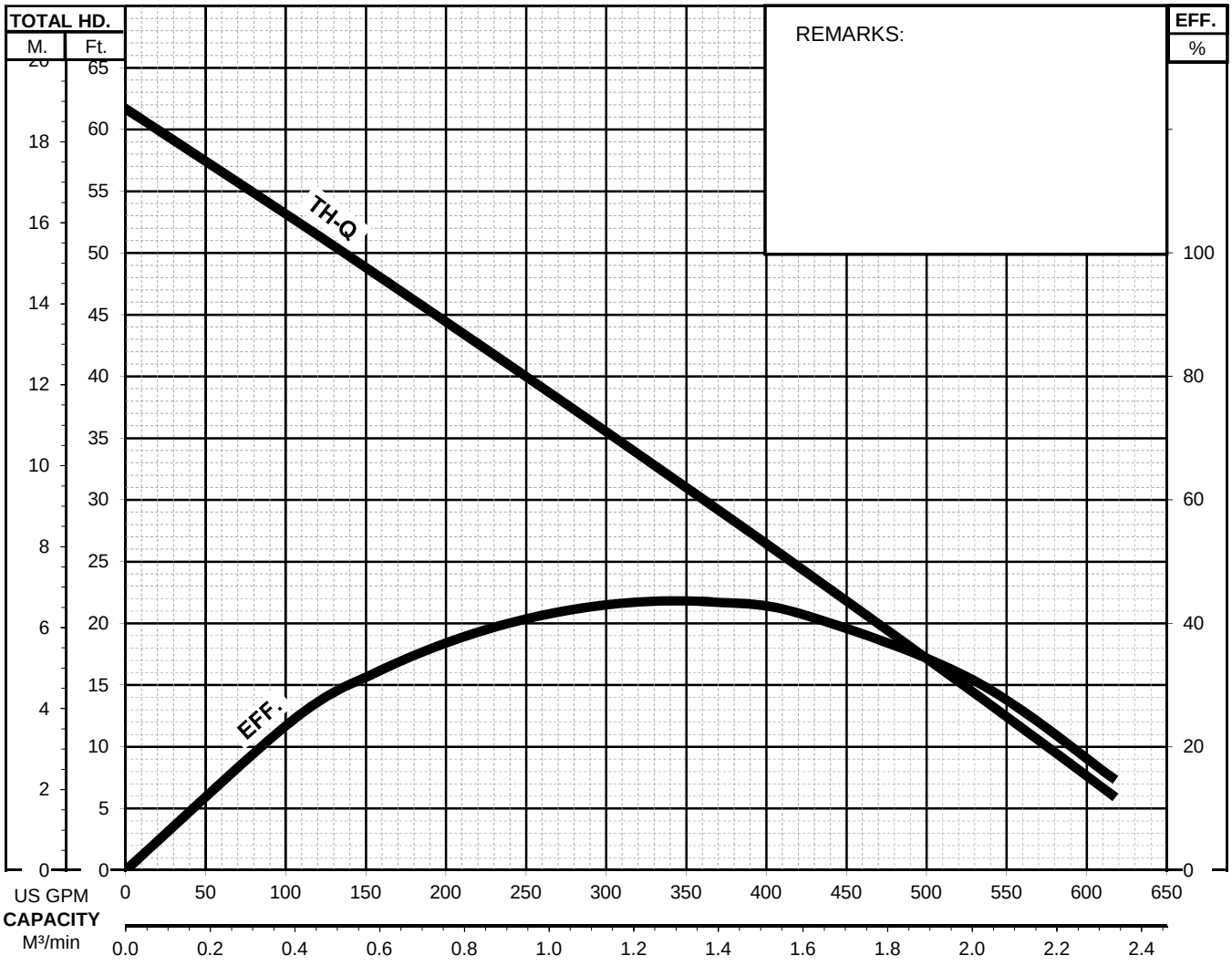
PERFORMANCE CURVE

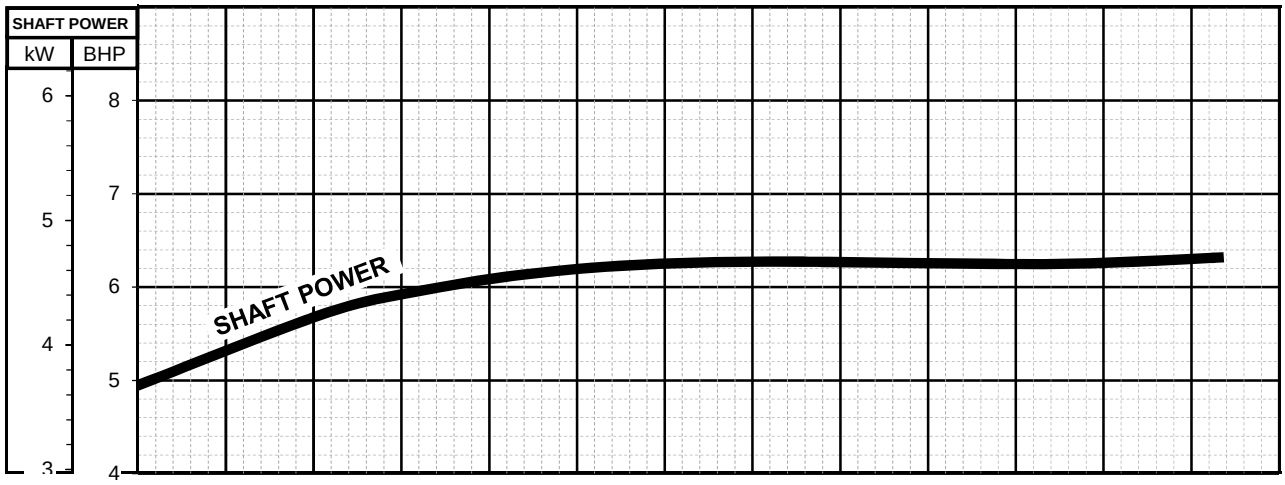
| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C45.5-CR -64 | 4"/100mm | 7.5 | 5.5 | 1731 | 1.57"/40mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230/460/575 | 22.2-20.8 / 10.4 / *** | 60 | Direct On Line | F |

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

REMARKS:

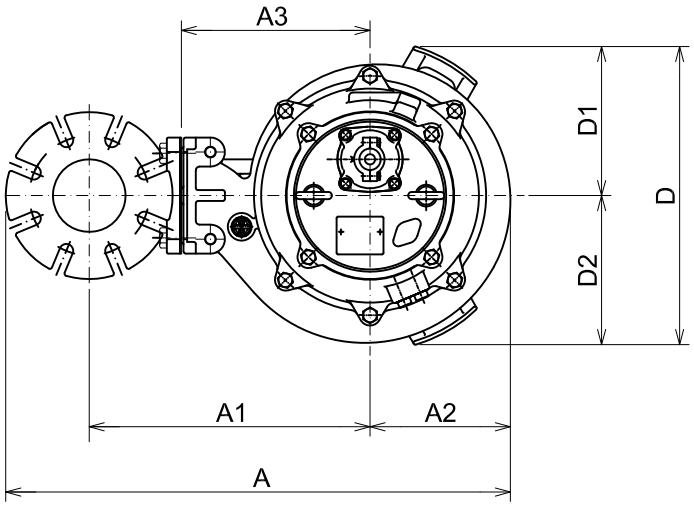


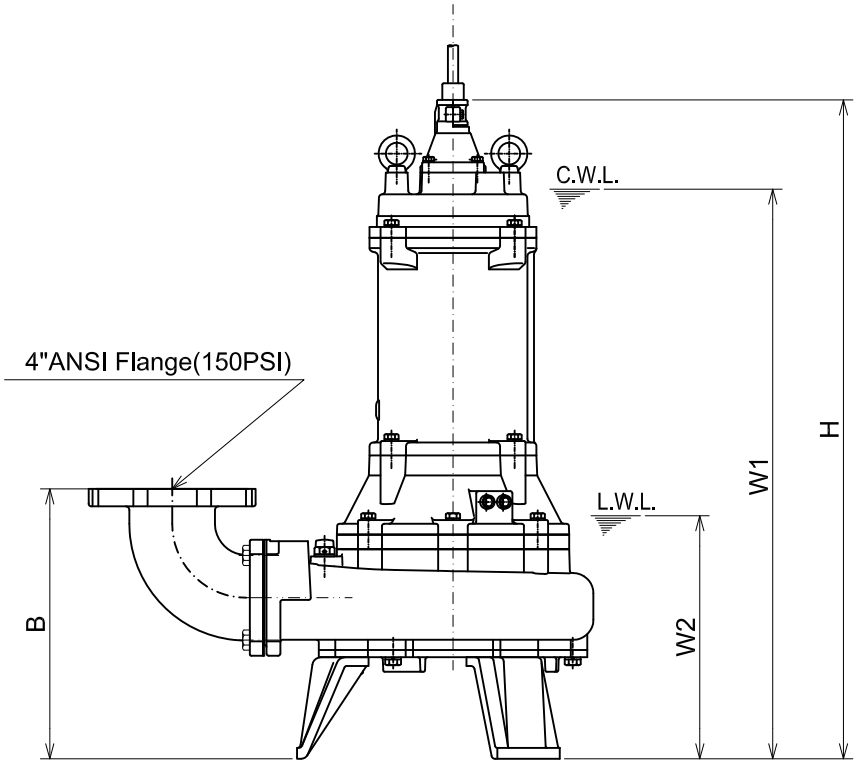



**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

**100C45.5-CR -64**
**100C47.5-CR -64**

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. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C45.5-CR -64 | 7.5 | 4" | 27 13/16 | 15 5/8 | 7 5/8 | 10 1/4 | 14 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 35 3/4 | 30 7/8 | 13 1/4 | 293 |
| 100C47.5-CR -63 | 10 | 4" | 27 13/16 | 15 5/8 | 7 5/8 | 10 1/4 | 14 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 36 9/16 | 31 3/4 | 13 1/4 | 317 |

*Excluding Cable.

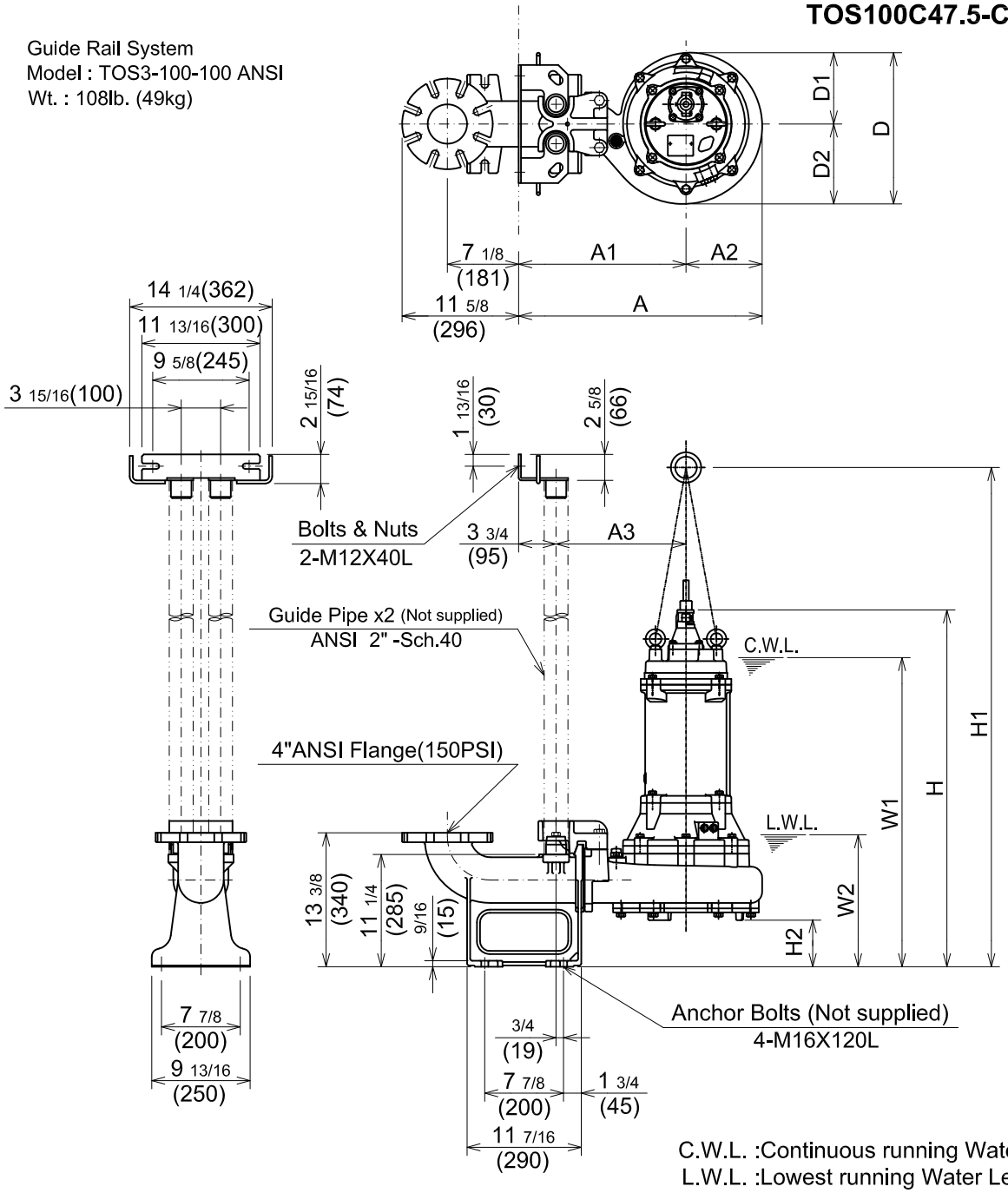
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C45.5-CR -63 | 5.5 | 100 | 706 | 397 | 194 | 260 | 372 | 410 | 205 | 205 | 908 | 785 | 335 | 133 |
| 100C47.5-CR -63 | 7.5 | 100 | 706 | 397 | 194 | 260 | 372 | 410 | 205 | 205 | 929 | 805 | 335 | 144 |

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C45.5-CR -64
## TOS100C47.5-CR -64

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. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C45.5-CR -64 | 7.5 | 4" | 24 3/8 | 16 3/4 | 7 5/8 | 13 | 15 1/8 | 7 1/8 | 8 | 35 11/16 | 49 15/16 | 4 5/8 | 30 7/8 | 13 1/4 | 278 |
| TOS100C47.5-CR -64 | 10 | 4" | 24 3/8 | 16 3/4 | 7 5/8 | 13 | 15 1/8 | 7 1/8 | 8 | 36 1/2 | 50 7/8 | 4 5/8 | 31 3/4 | 13 1/4 | 302 |

*Excluding TOS & Cable.

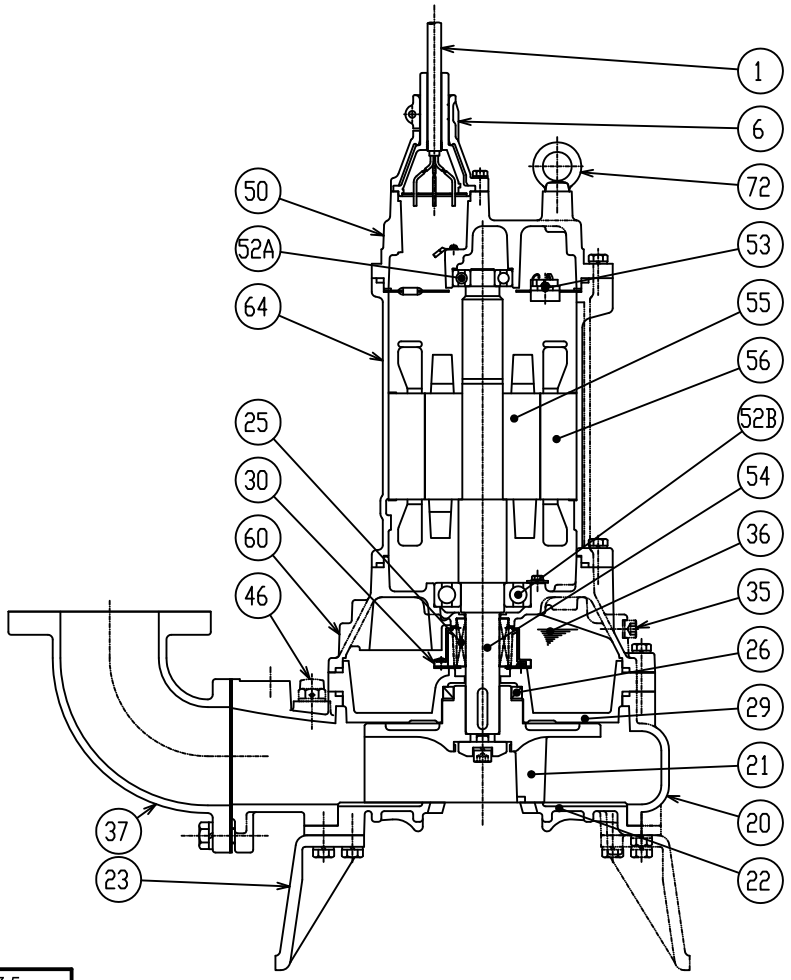
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C45.5-CR -64 | 5.5 | 100 | 619 | 425 | 194 | 330 | 384 | 181 | 203 | 906 | 1268 | 118 | 785 | 335 | 126 |
| TOS100C47.5-CR -64 | 7.5 | 100 | 619 | 425 | 194 | 330 | 384 | 181 | 203 | 927 | 1293 | 118 | 805 | 335 | 137 |

Apr.17

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**100C45.5-CR -64**
**100C47.5-CR -64**




| | C45.5 | C47.5 |
|---|---|---|
| ＊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 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC608212 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | 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 Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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 30B. Unit(s) shall have a field adjustable and or replaceable, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 25B or 30B(7.5 Hp. and above). Motors shall be D.O.L. or Star-delta start (15 Hp. and above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

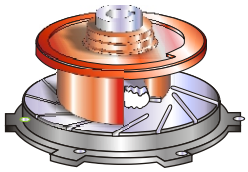
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

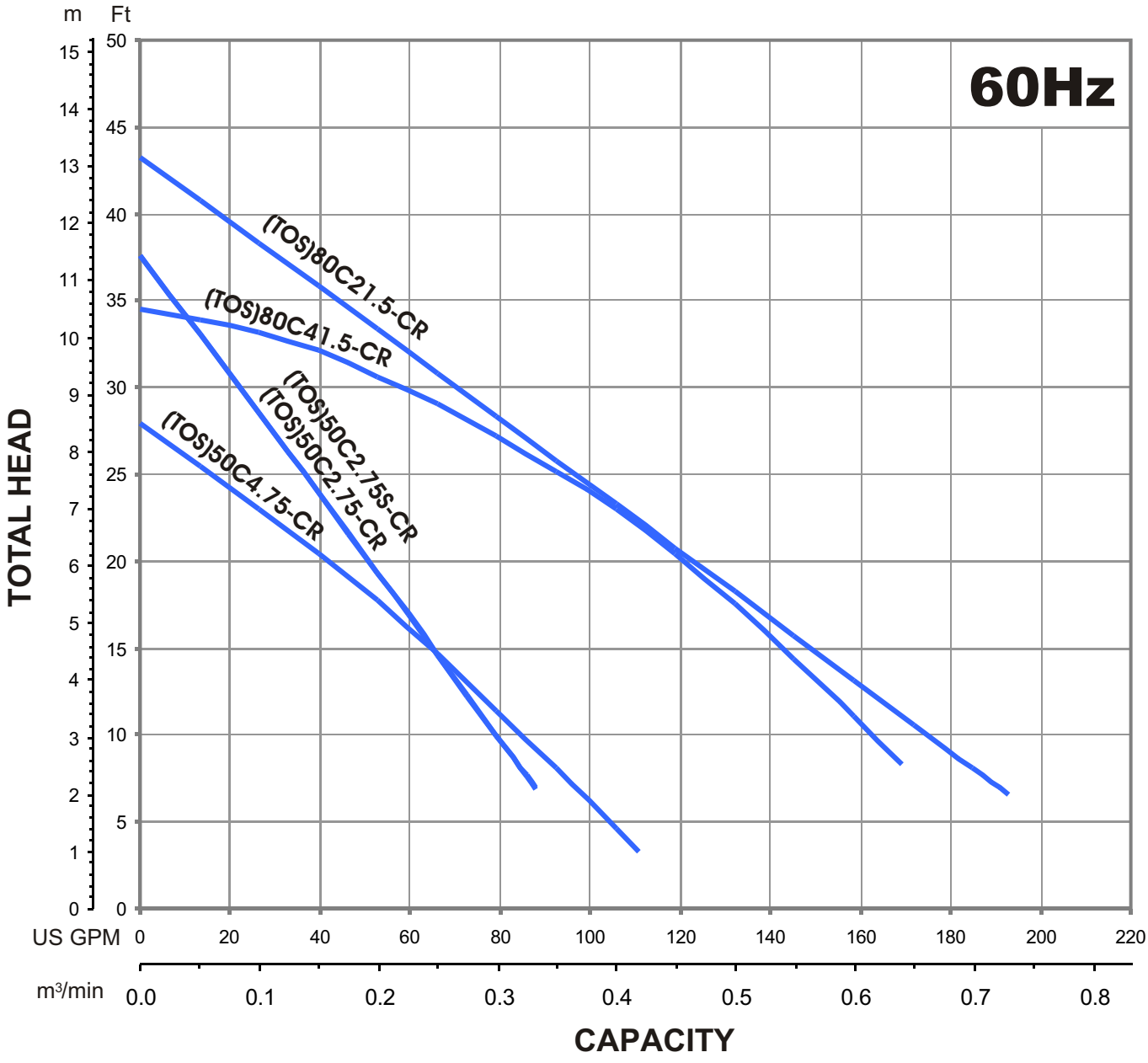
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



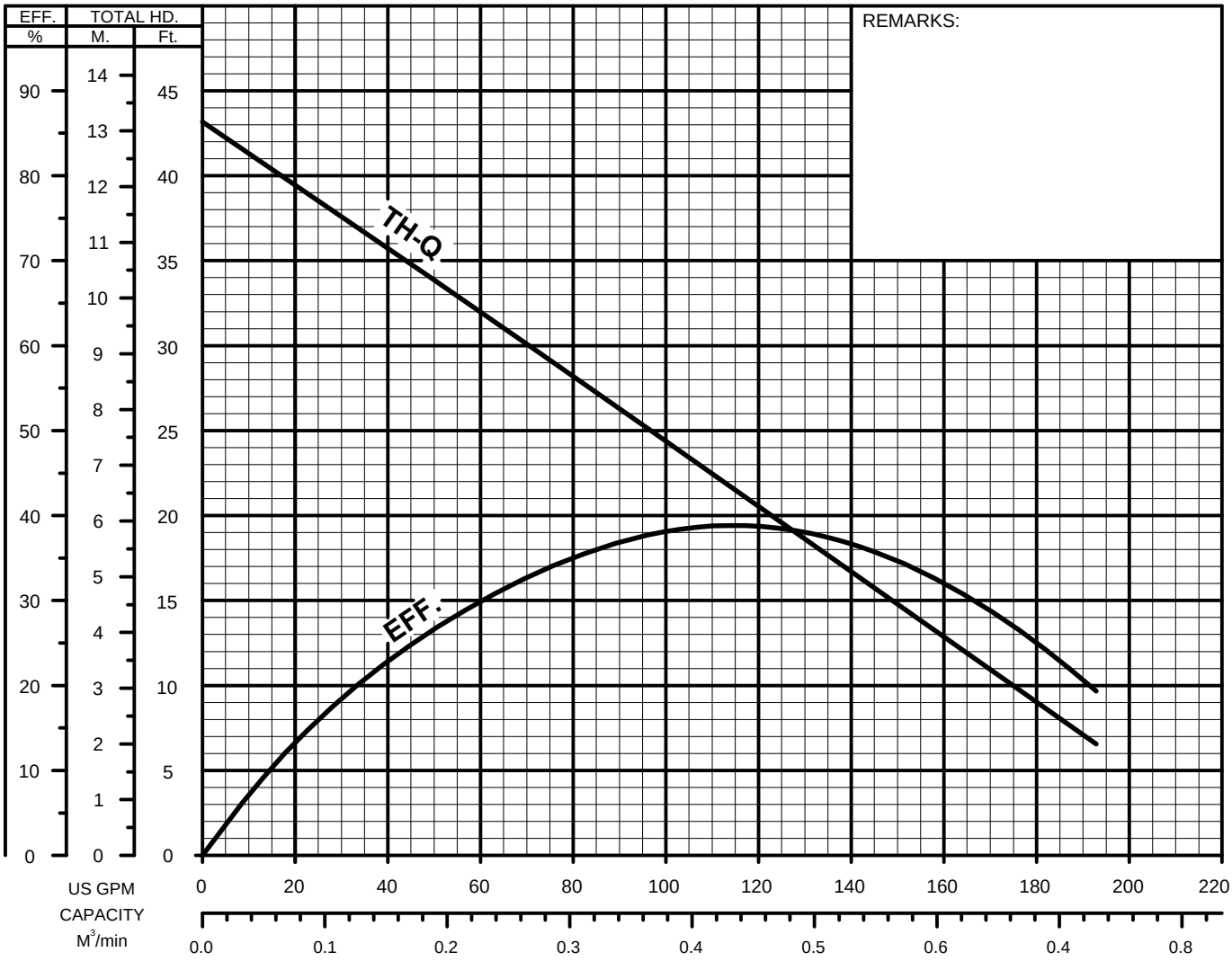
**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **PERFORMANCE CURVE**

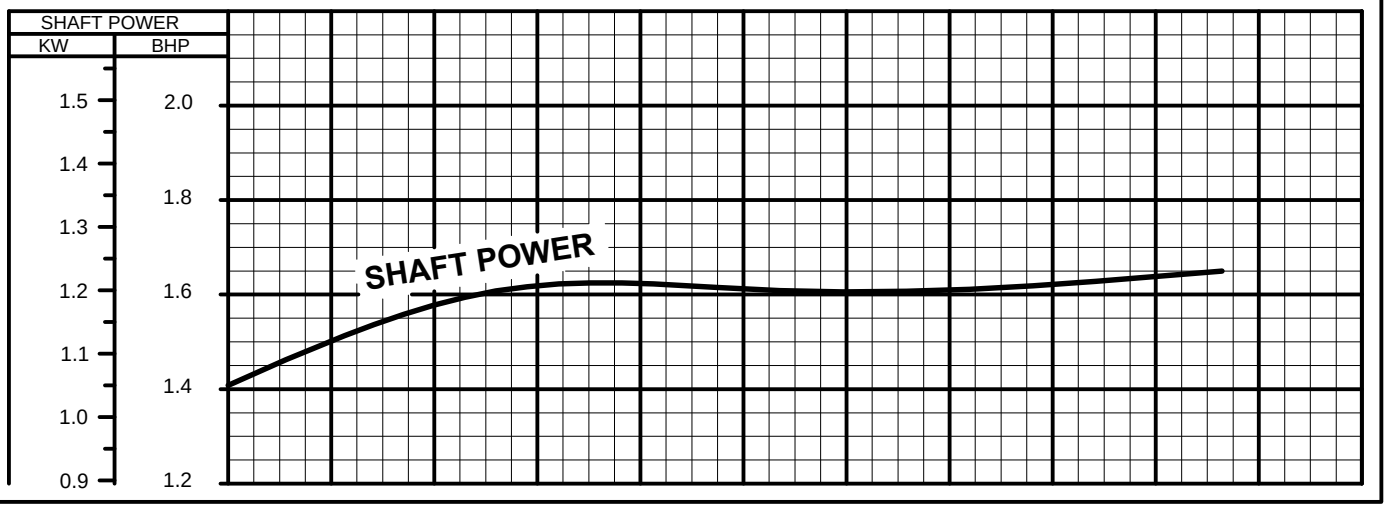
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)80C21.5-CR -62 | 3"/80mm | 2 | 1.5 | 3400 | 1.18"/30mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230/460/575 | 6.2-5.9/3.1/2.3 | 60 | Direct On Line | F |

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

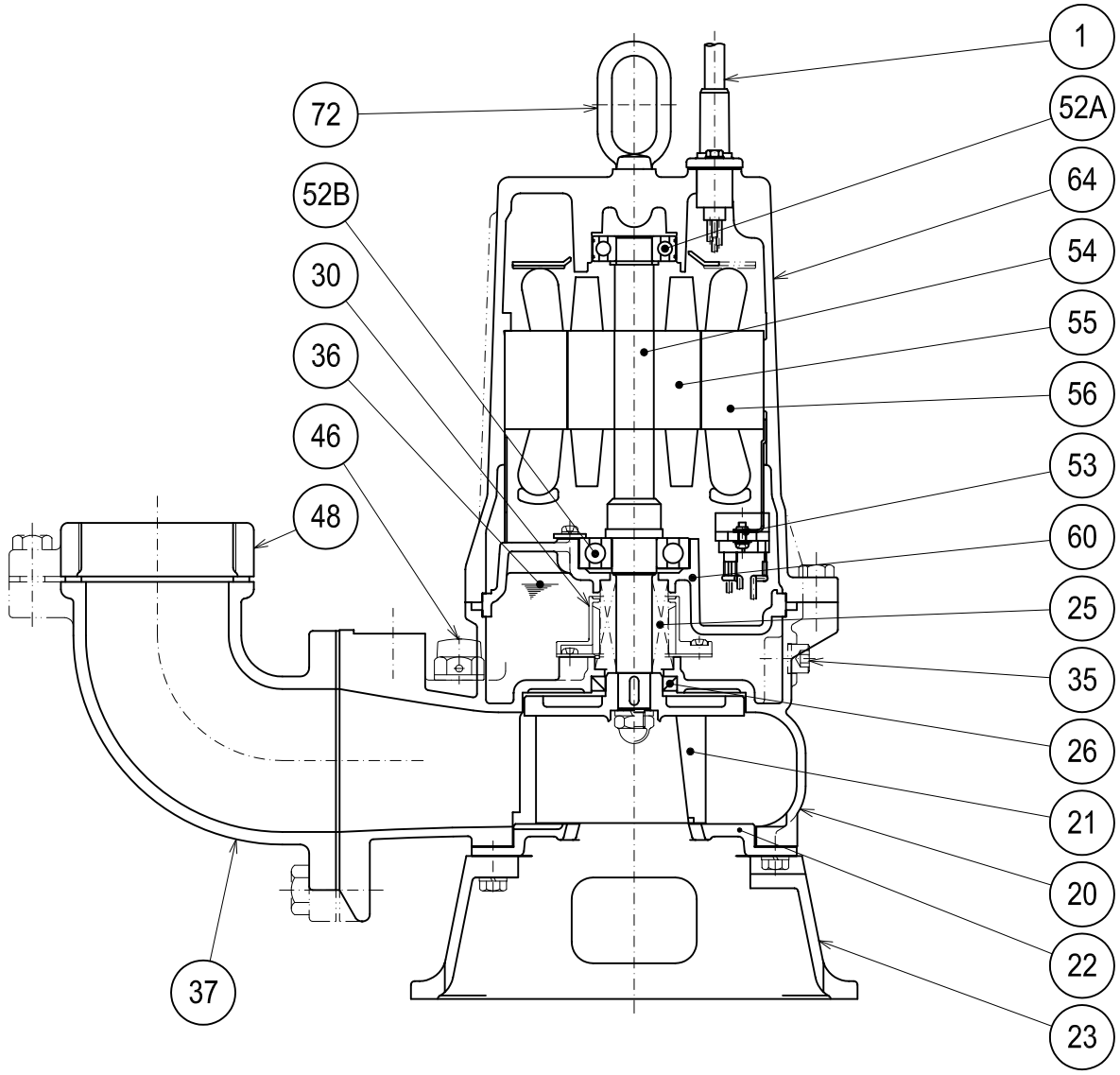
REMARKS:



TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

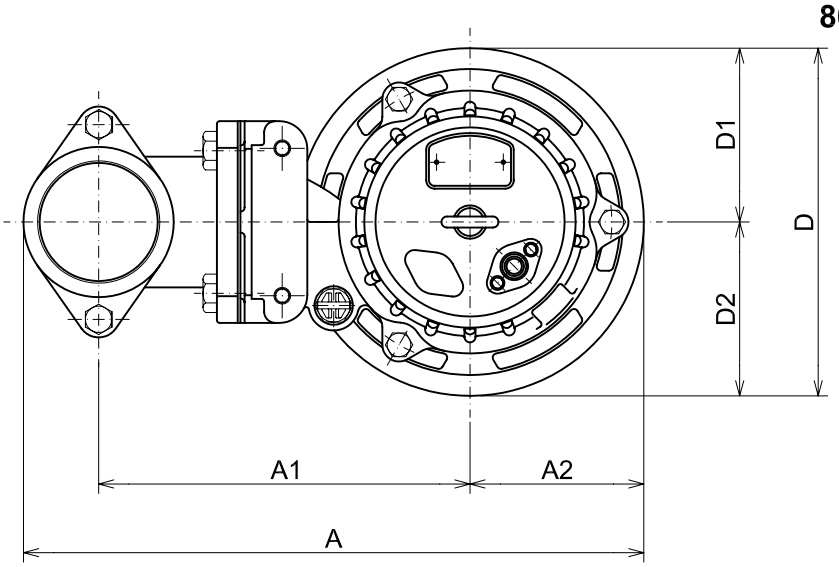
**80C21.5-CR -62**

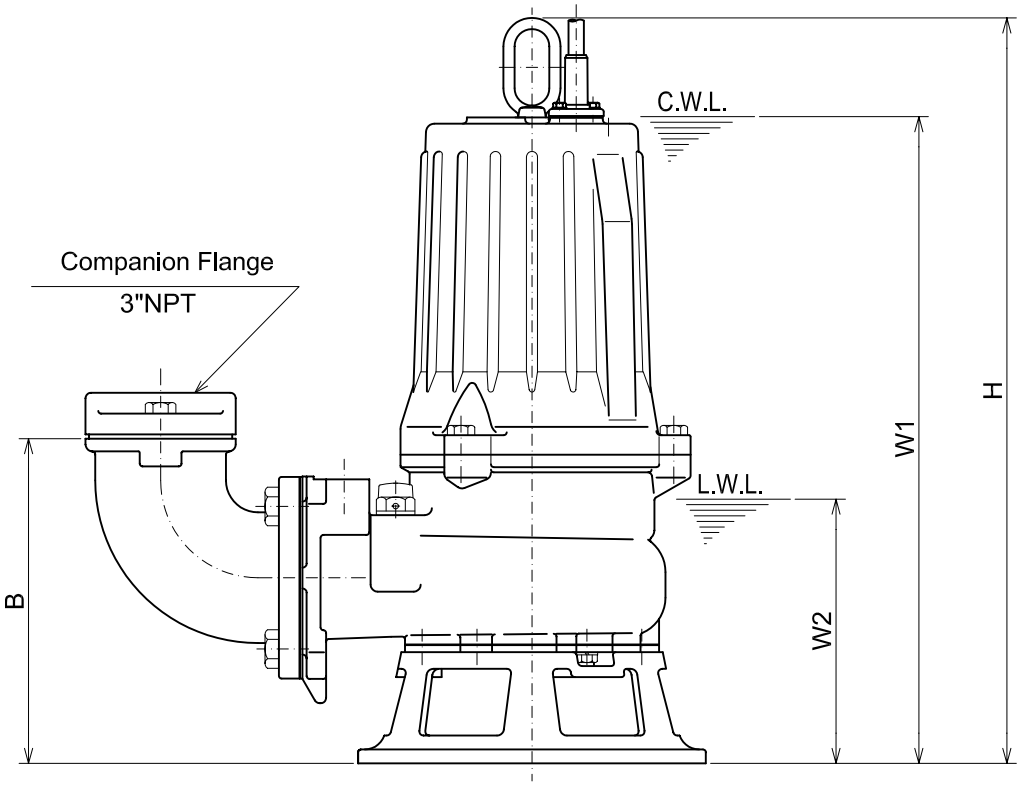



| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 16/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Suction Strainer | Ductile Cast Iron | A536 65-45-12 | EN 1563 GJS-450-10 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-20 | | | 1 |
| 26 | Oil Seal | NBR / TC32488 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 48 | Companion Flange | Cast Iron / NPT 3" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6204ZZC3 | | | 1 |
| 52B | Lower Bearing | #6305ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 1 |

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS |
|---|---|---|

## 80C21.5-CR -62




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

**DIMENSIONS:USCS(Inch)**

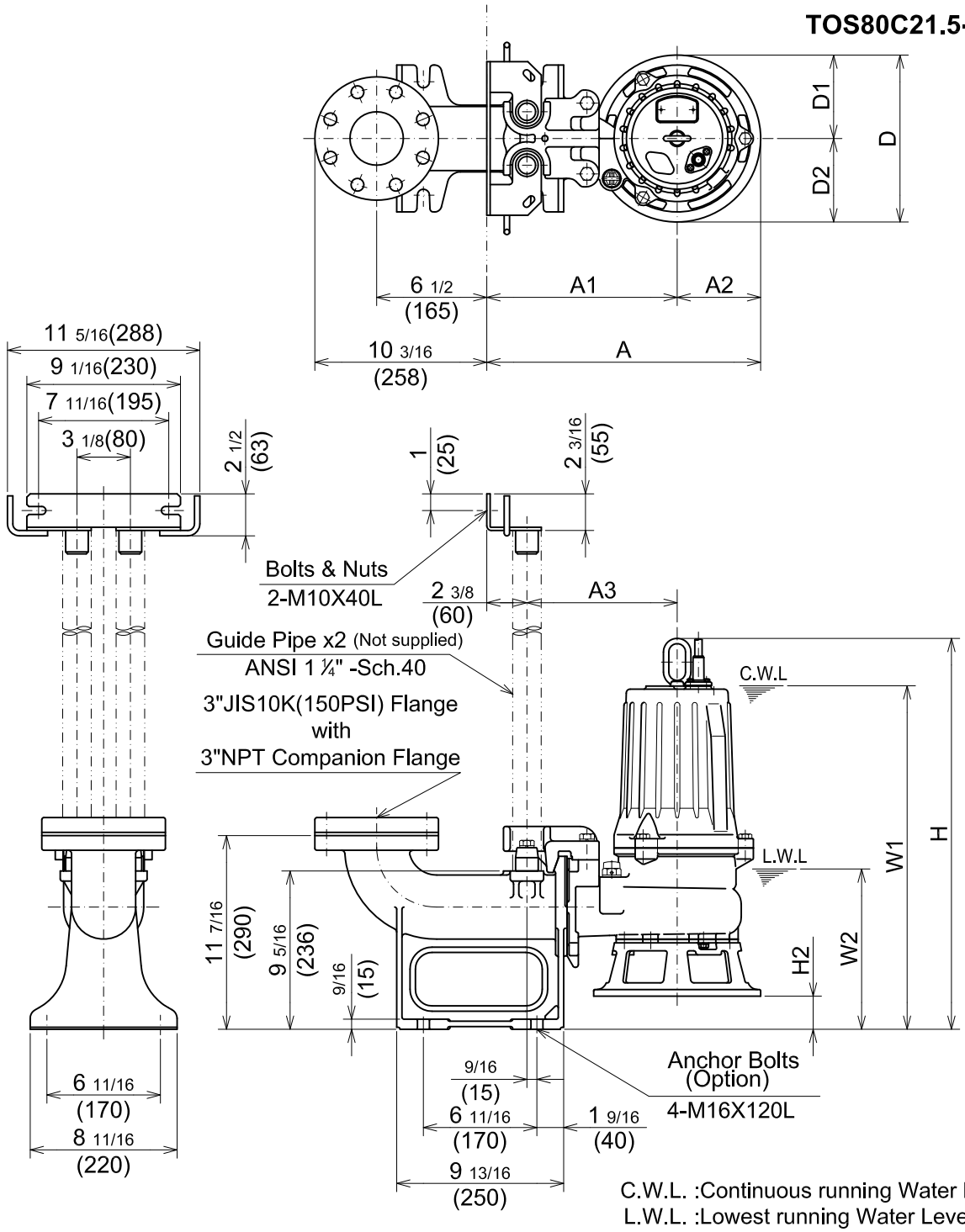
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 80C21.5-CR -62 | 2 | 3" | 17 9/16 | 10 1/2 | 4 15/16 | 9 3/16 | 9 13/16 | 4 15/16 | 4 15/16 | 21 1/8 | 18 1/4 | 7 1/2 | 79 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 80C21.5-CR -62 | 1.5 | 80 | 446 | 267 | 125 | 234 | 250 | 125 | 125 | 536 | 465 | 190 | 36 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS80C21.5-CR -62




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H2 | W1 | W2 | |
| TOS80C21.5-CR -62 | 2 | 3" | 16 1/8 | 11 1/4 | 4 15/16 | 8 7/8 | 9 13/16 | 4 15/16 | 4 15/16 | 23 1/16 | 1 15/16 | 20 1/4 | 9 1/2 | 75 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H2 | W1 | W2 | |
| TOS80C21.5-CR -62 | 1.5 | 80 | 410 | 285 | 125 | 225 | 250 | 125 | 125 | 586 | 50 | 515 | 240 | 34 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

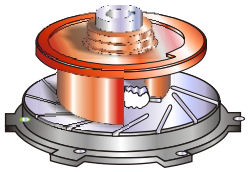
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

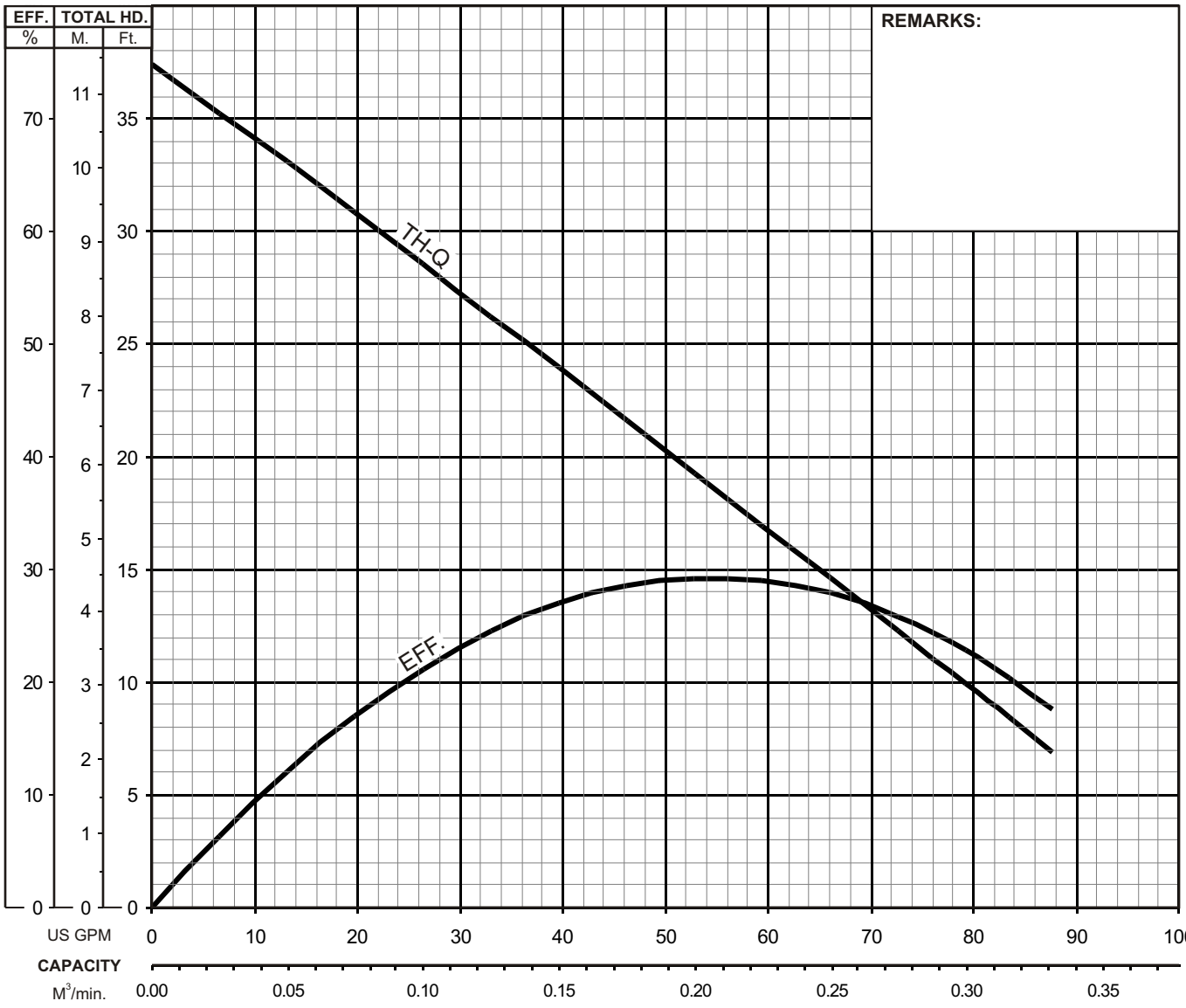
## PERFORMANCE CURVE

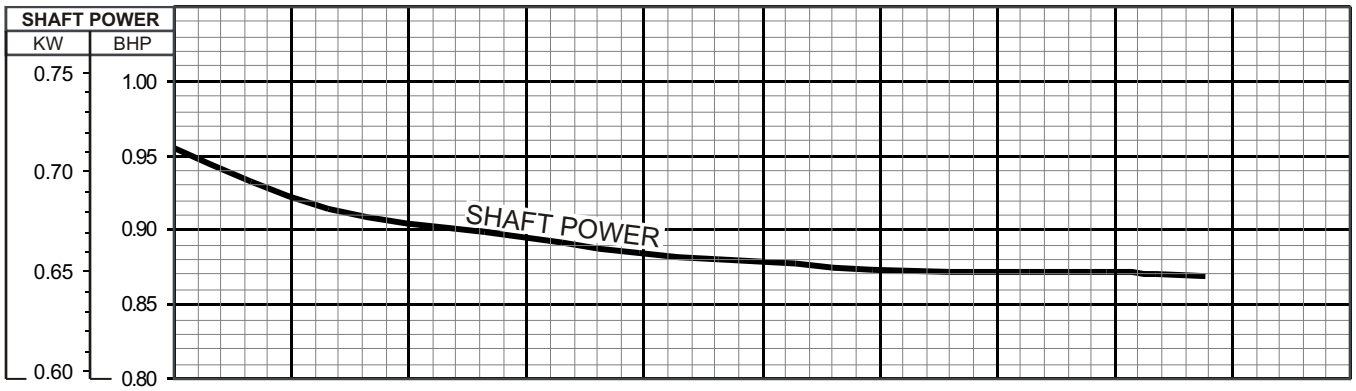
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 50C2.75-CR -63 | 2"/50mm | 1 | 0.75 | 3380 | 0.83"/21mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230 / 460 / 575 | 3.5-3.5 / 1.8 / 1.4 | 60 | Direct On Line | E |

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

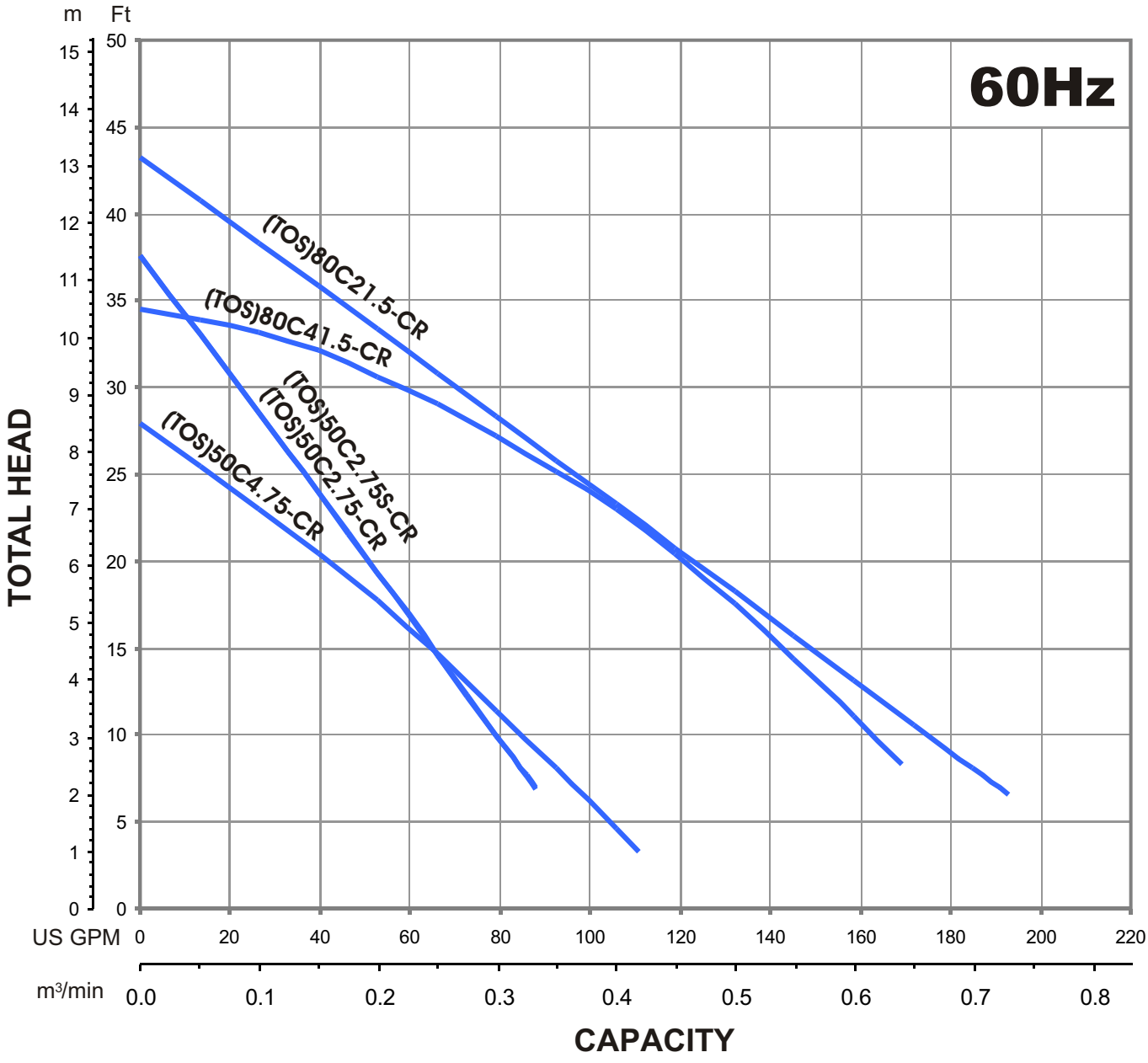
REMARKS:



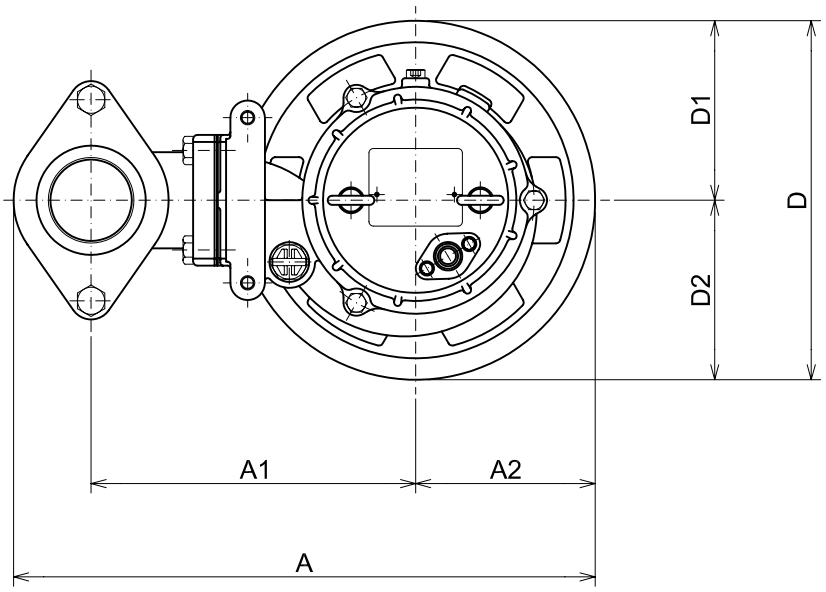
| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

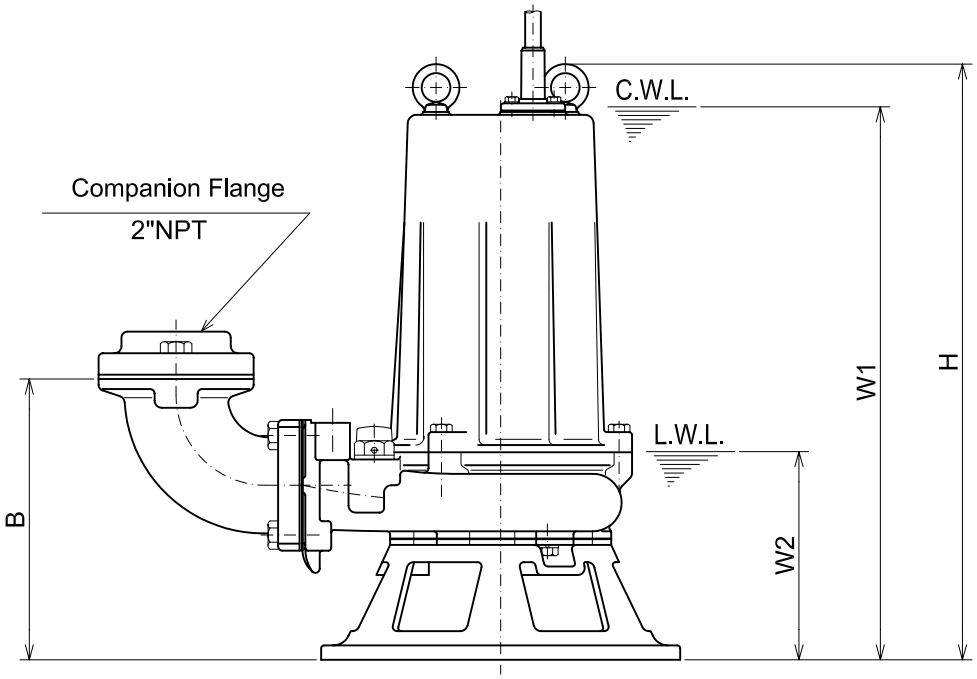
## GROUP PERFORMANCE RANGE



| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS |
|---|---|---|

## 50C2.75-CR -63




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

**DIMENSIONS:USCS(Inch)**

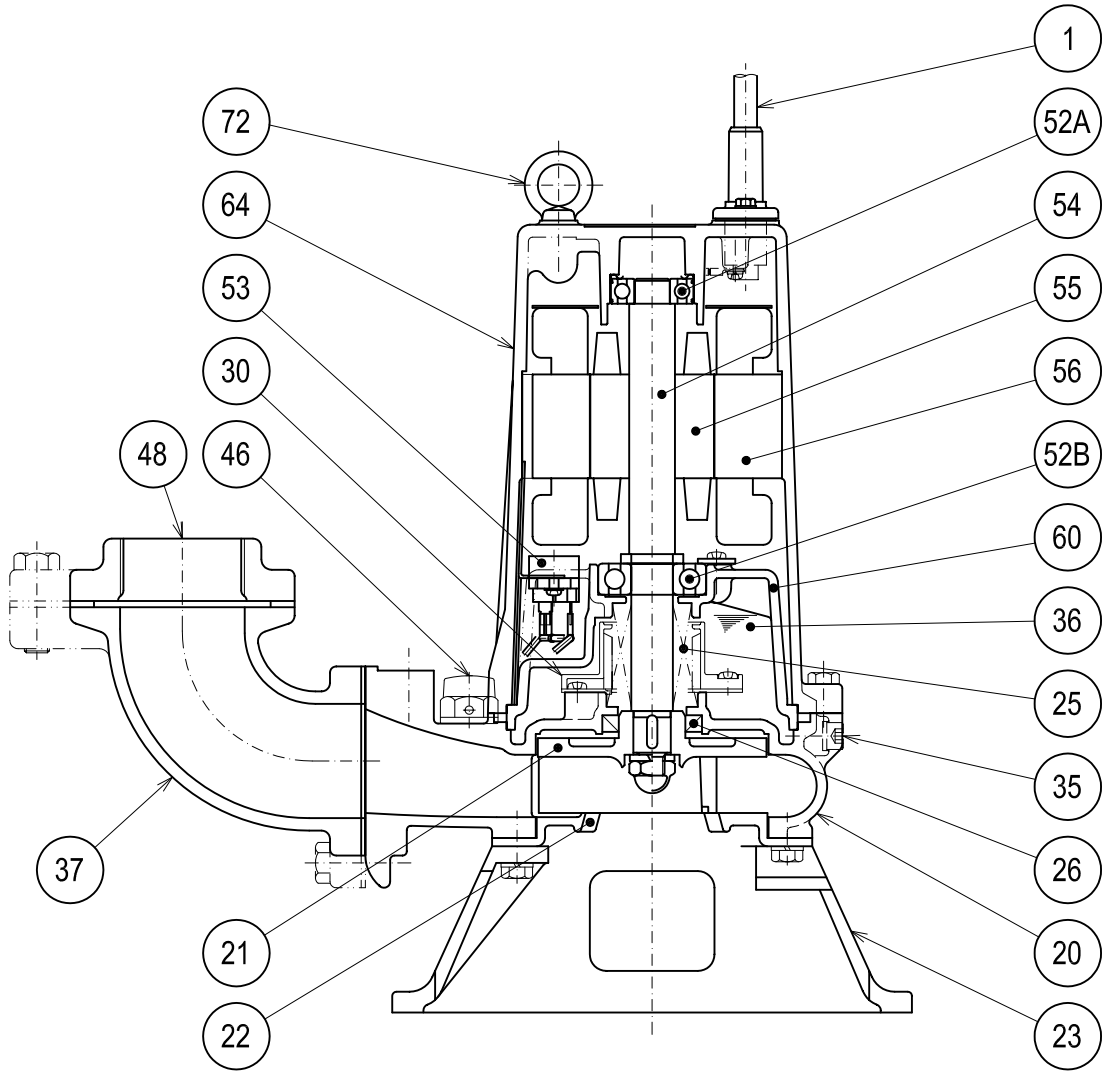
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 50C2.75-CR -63 | 1 | 2" | 15 15/16 | 8 7/8 | 4 15/16 | 7 11/16 | 9 13/16 | 4 15/16 | 4 15/16 | 16 5/16 | 15 1/8 | 5 3/4 | 53 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 50C2.75-CR -63 | 0.75 | 50 | 405 | 226 | 125 | 196 | 250 | 125 | 125 | 415 | 385 | 145 | 24 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

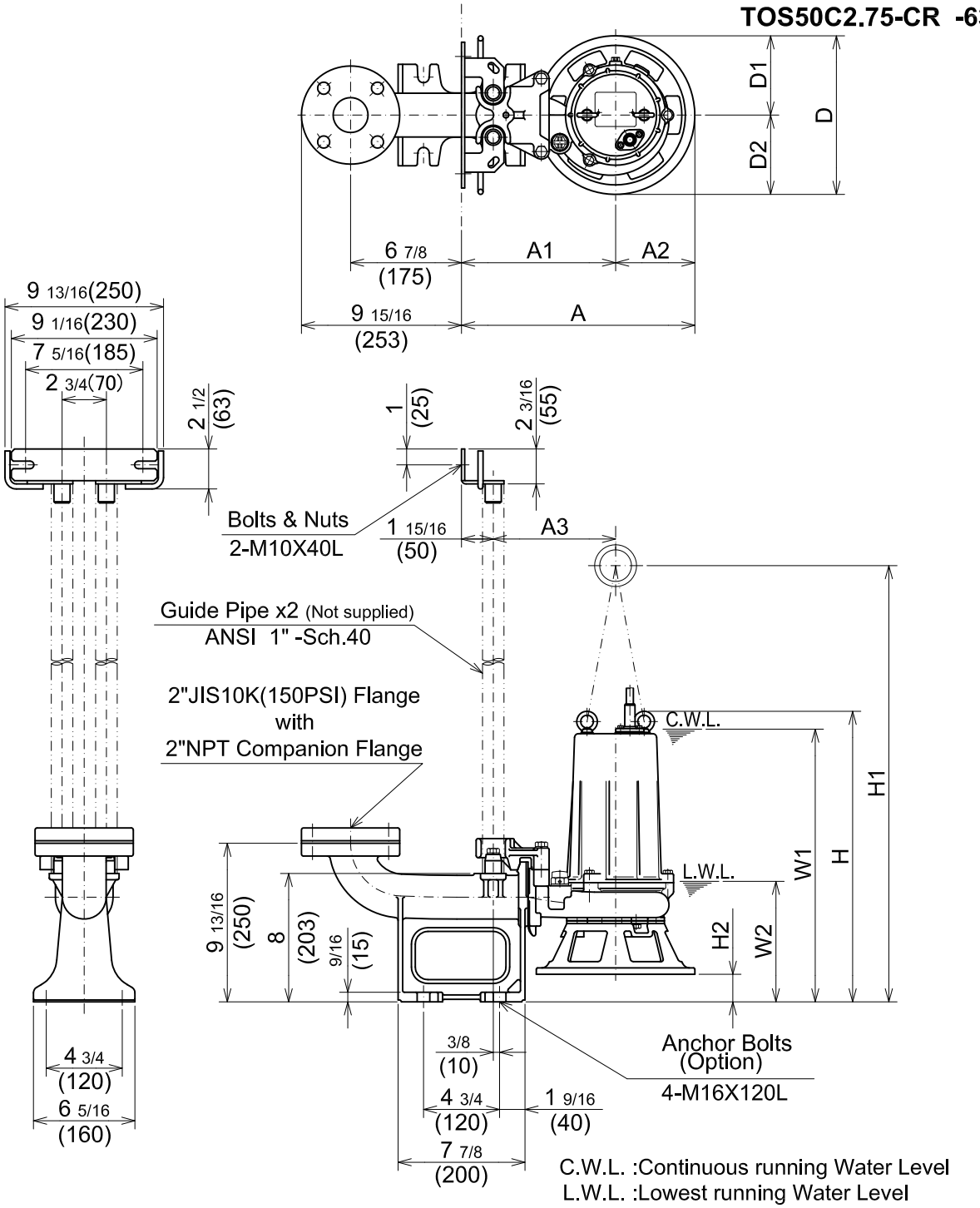
**50C2.75-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 16/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Suction Strainer | Ductile Cast Iron | A536 65-45-12 | EN 1563 GJS-450-10 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-20 | | | 1 |
| 26 | Oil Seal | NBR / TC32488 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 48 | Companion Flange | Cast Iron / NPT 2" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6203ZZC3 | | | 1 |
| 52B | Lower Bearing | #6304ZZC3 | | | 1 |
| 53 | Motor Protector | | | | 1 |
| 54 | Shaft | Stainless Steel | S 40300 | 1.4000 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS50C2.75-CR -63




**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS50C2.75-CR -63 | 1 | 2" | 14 1/2 | 9 9/16 | 4 15/16 | 7 5/8 | 9 13/16 | 4 15/16 | 4 15/16 | 18 1/16 | 27 1/8 | 1 3/4 | 16 7/8 | 7 1/2 | 51 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS50C2.75-CR -63 | 0.75 | 50 | 368 | 243 | 125 | 193 | 250 | 125 | 125 | 458 | 688 | 44 | 430 | 190 | 23 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

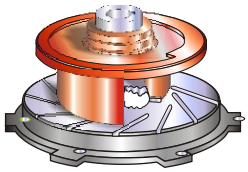
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

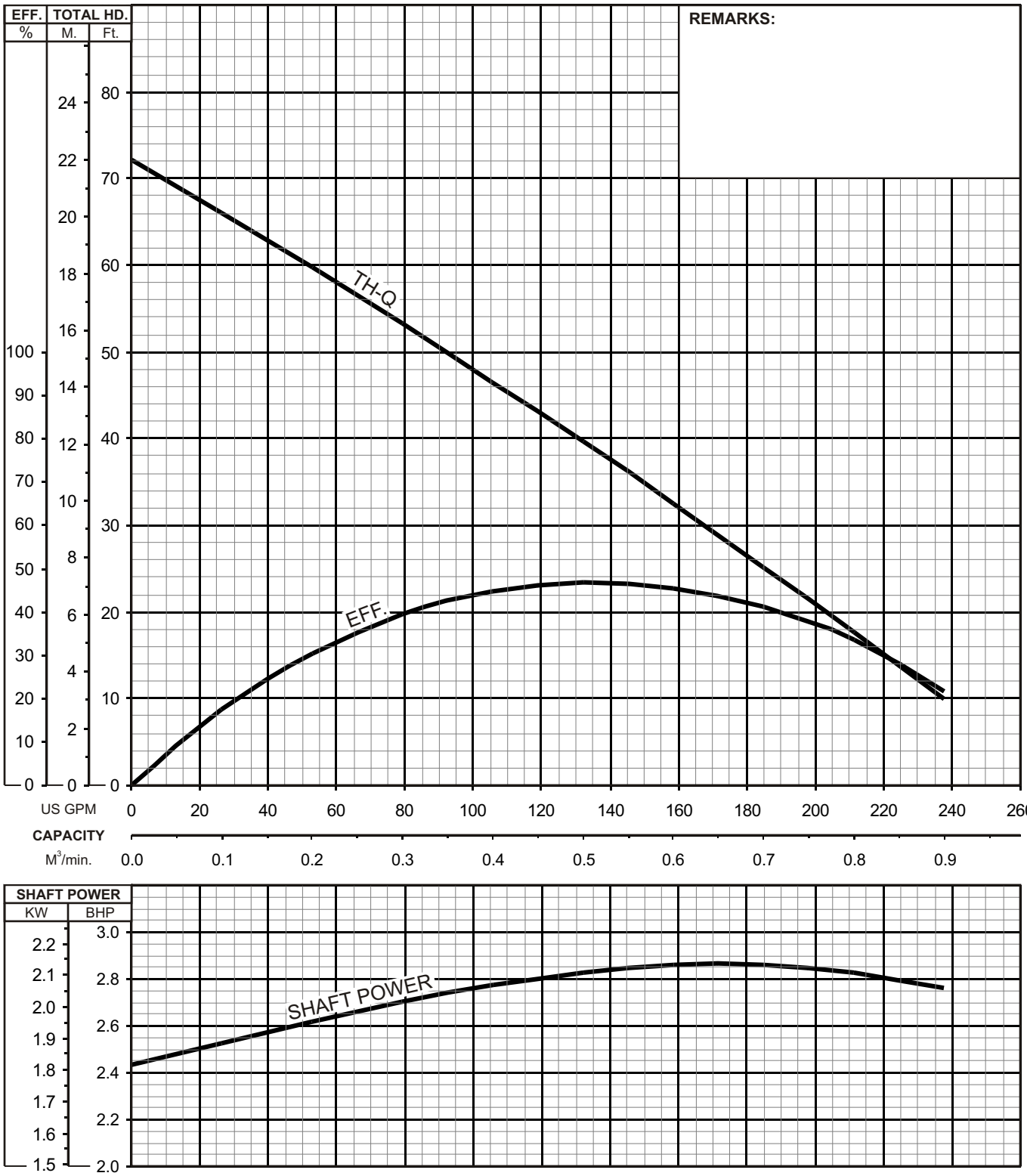
## PERFORMANCE CURVE

| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C22.2-CR -61 | 3"/80mm | 3 | 2.2 | 3490 | 0.79"/20mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 10.0 - 9.8 / 4.9 / 3.8 | 60 | Direct On Line | F |

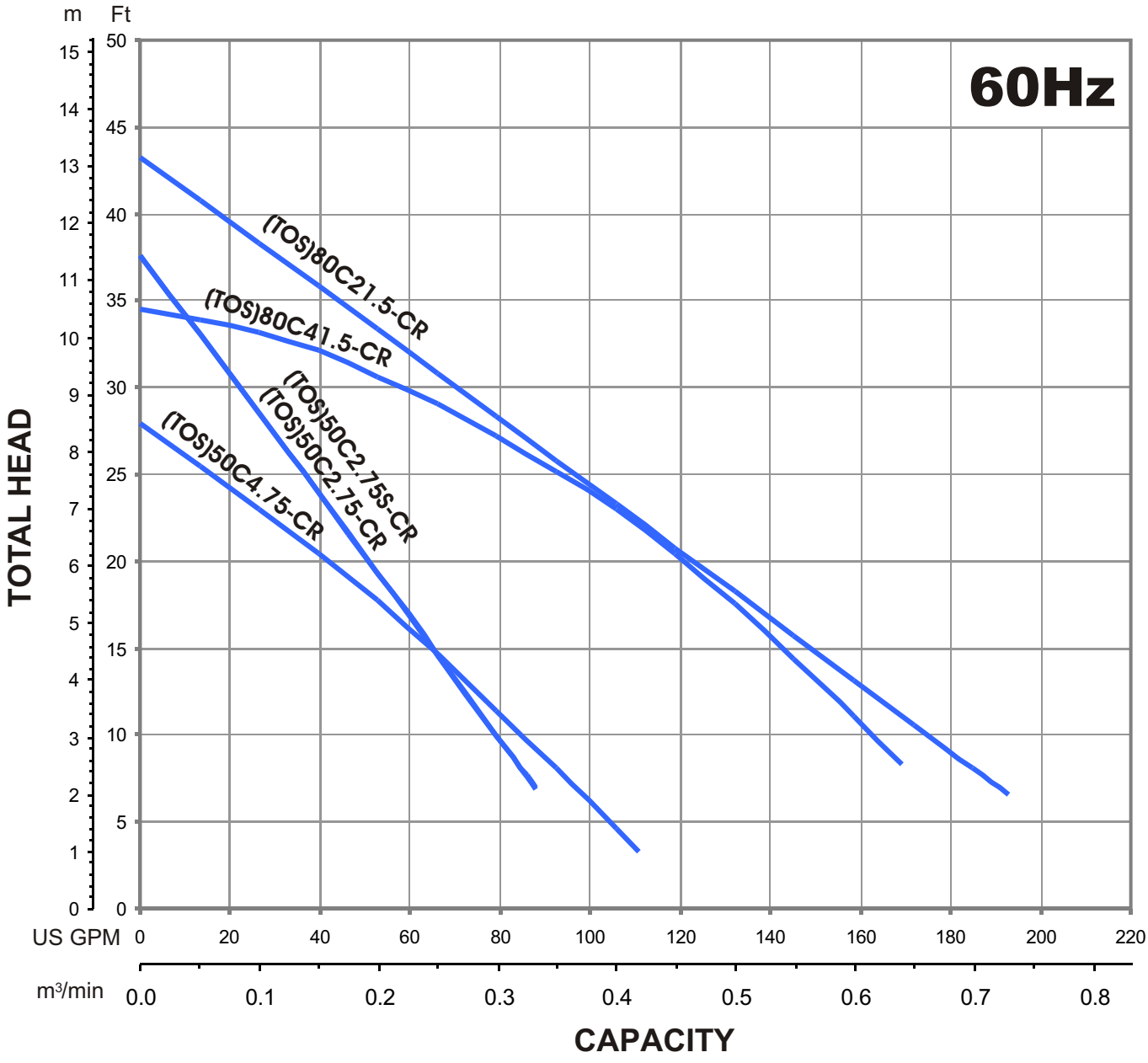
| CURVE No. | DATE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - |

REMARKS:



| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

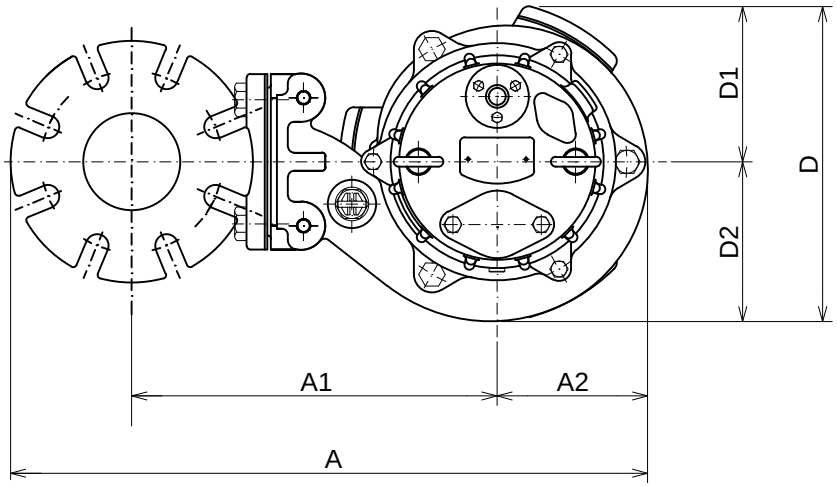
## GROUP PERFORMANCE RANGE

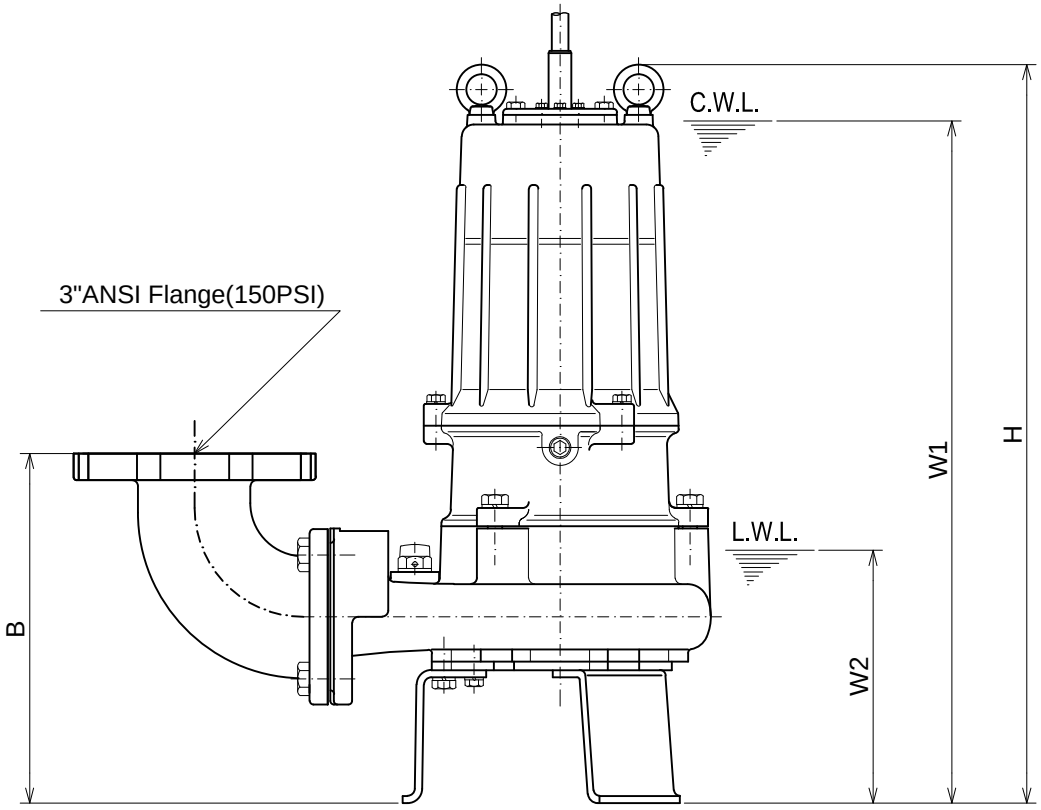


**TSURUMI PUMP** | **C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS** | **DIMENSIONS**

**80C22.2-CR -61**
**80C23.7-CR -61**

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 80C22.2-CR -61 | 3 | 3" | 21 1/8 | 12 5/16 | 4 15/16 | 11 3/8 | 10 1/4 | 5 1/16 | 5 3/16 | 24 1/16 | 22 1/4 | 8 1/4 | 135 |
| 80C23.7-CR -61 | 5 | 3" | 21 1/8 | 12 5/16 | 4 15/16 | 11 3/8 | 10 1/4 | 5 1/16 | 5 3/16 | 24 1/16 | 22 1/4 | 8 1/4 | 137 |

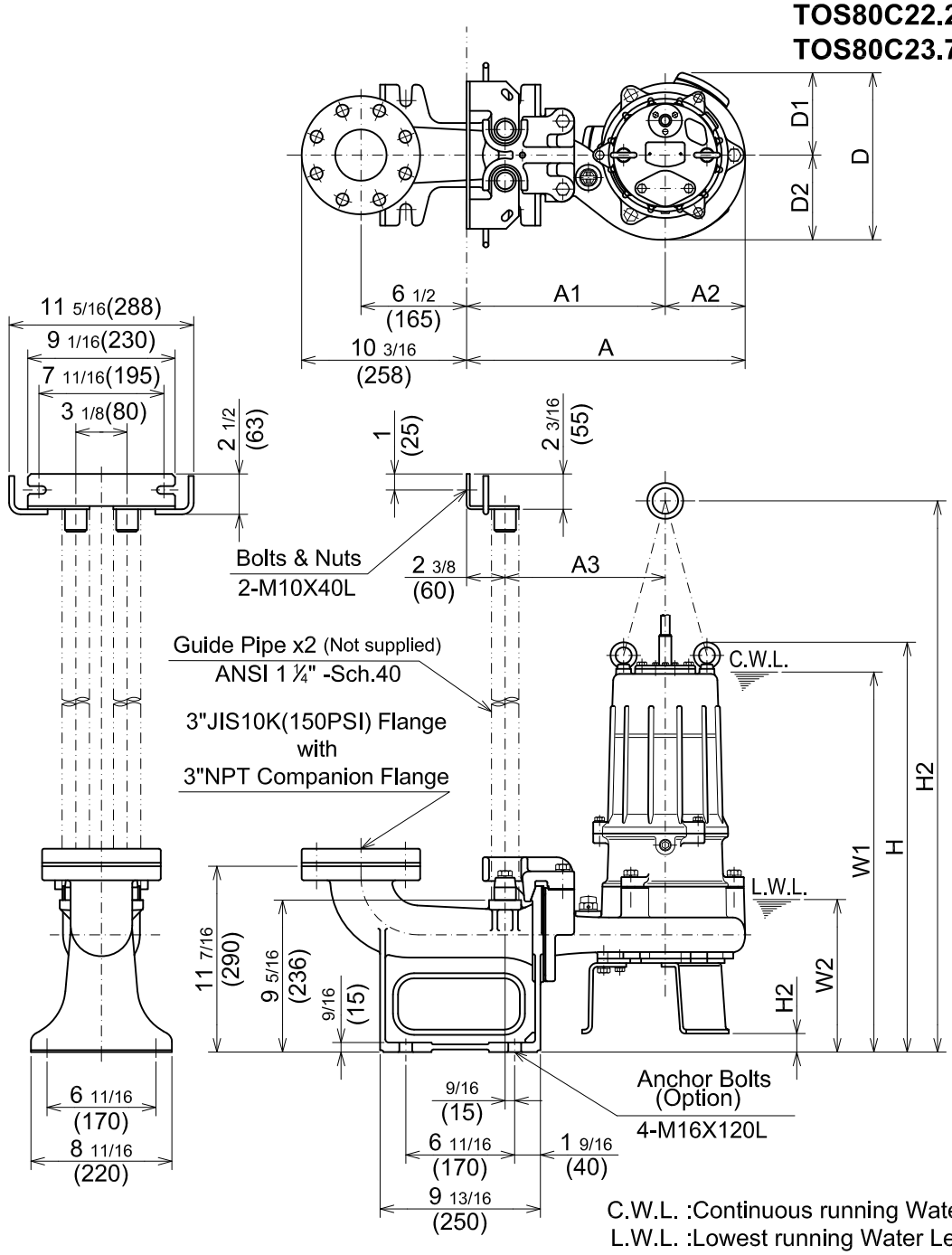
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 80C22.2-CR -61 | 2.2 | 80 | 537 | 312 | 125 | 289 | 260 | 128 | 132 | 611 | 565 | 210 | 61 |
| 80C23.7-CR -61 | 3.7 | 80 | 537 | 312 | 125 | 289 | 260 | 128 | 132 | 611 | 565 | 210 | 62 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**TOS80C22.2-CR -61**
**TOS80C23.7-CR -61**




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

**DIMENSIONS:USCS(Inch)**

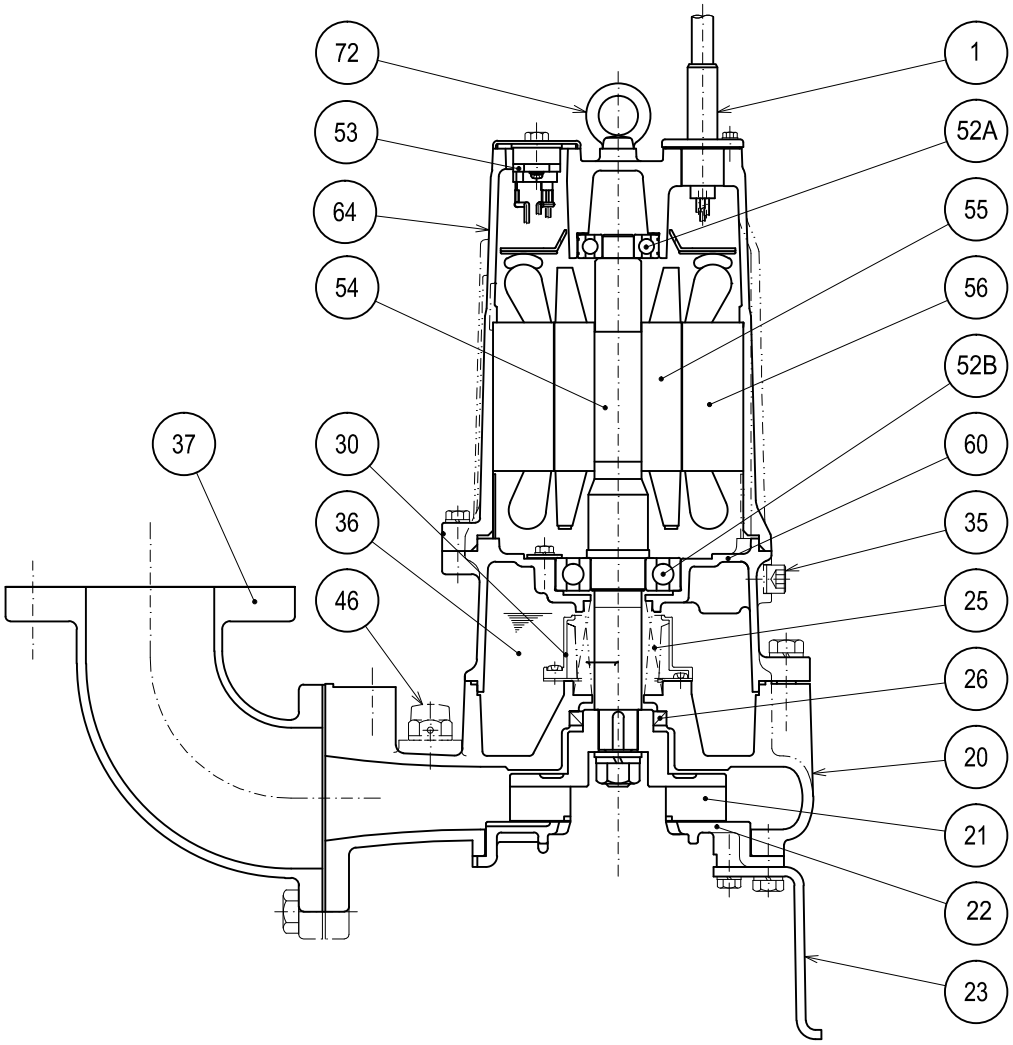
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C22.2-CR -61 | 3 | 3" | 17 1/8 | 12 3/16 | 4 15/16 | 9 13/16 | 10 1/4 | 5 1/16 | 5 3/16 | 25 3/16 | 33 7/8 | 1 1/8 | 23 3/8 | 9 1/2 | 130 |
| TOS80C23.7-CR -61 | 5 | 3" | 17 1/8 | 12 3/16 | 4 15/16 | 9 13/16 | 10 1/4 | 5 1/16 | 5 3/16 | 25 3/16 | 33 7/8 | 1 1/8 | 23 3/8 | 9 1/2 | 132 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C22.2-CR -61 | 2.2 | 80 | 435 | 310 | 125 | 250 | 260 | 128 | 132 | 640 | 860 | 29 | 595 | 240 | 59 |
| TOS80C23.7-CR -61 | 3.7 | 80 | 435 | 310 | 125 | 250 | 260 | 128 | 132 | 640 | 860 | 29 | 595 | 240 | 60 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

**80C22.2-CR -61**
**80C23.7-CR -61**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 12/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-30 | | | 1 |
| 26 | Oil Seal | NBR / TC45629 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 1 |
| 52B | Lower Bearing | #6307ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

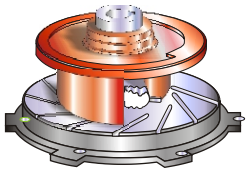
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

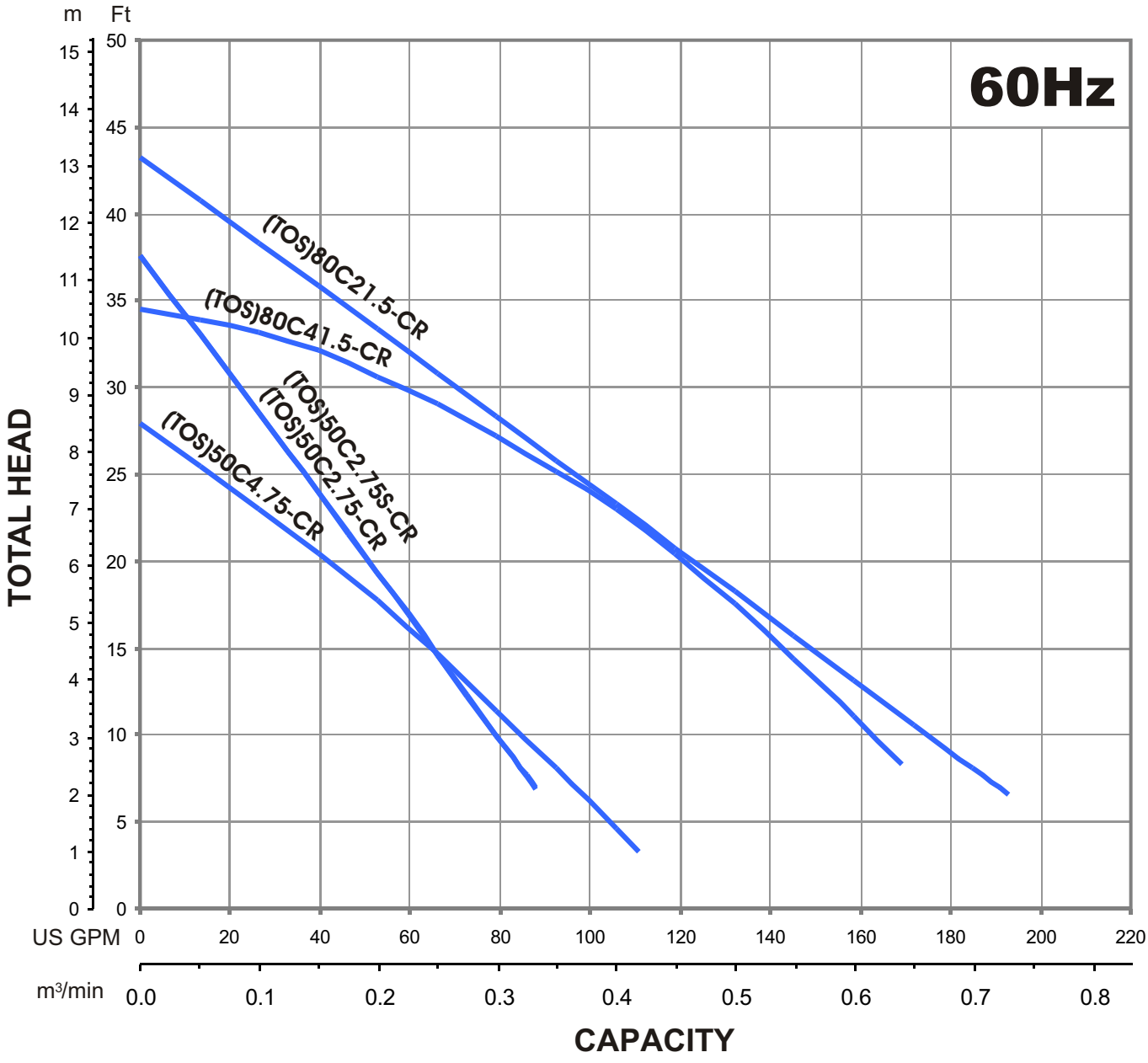
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



May-21

TSURUMI PUMP

# C - SERIES

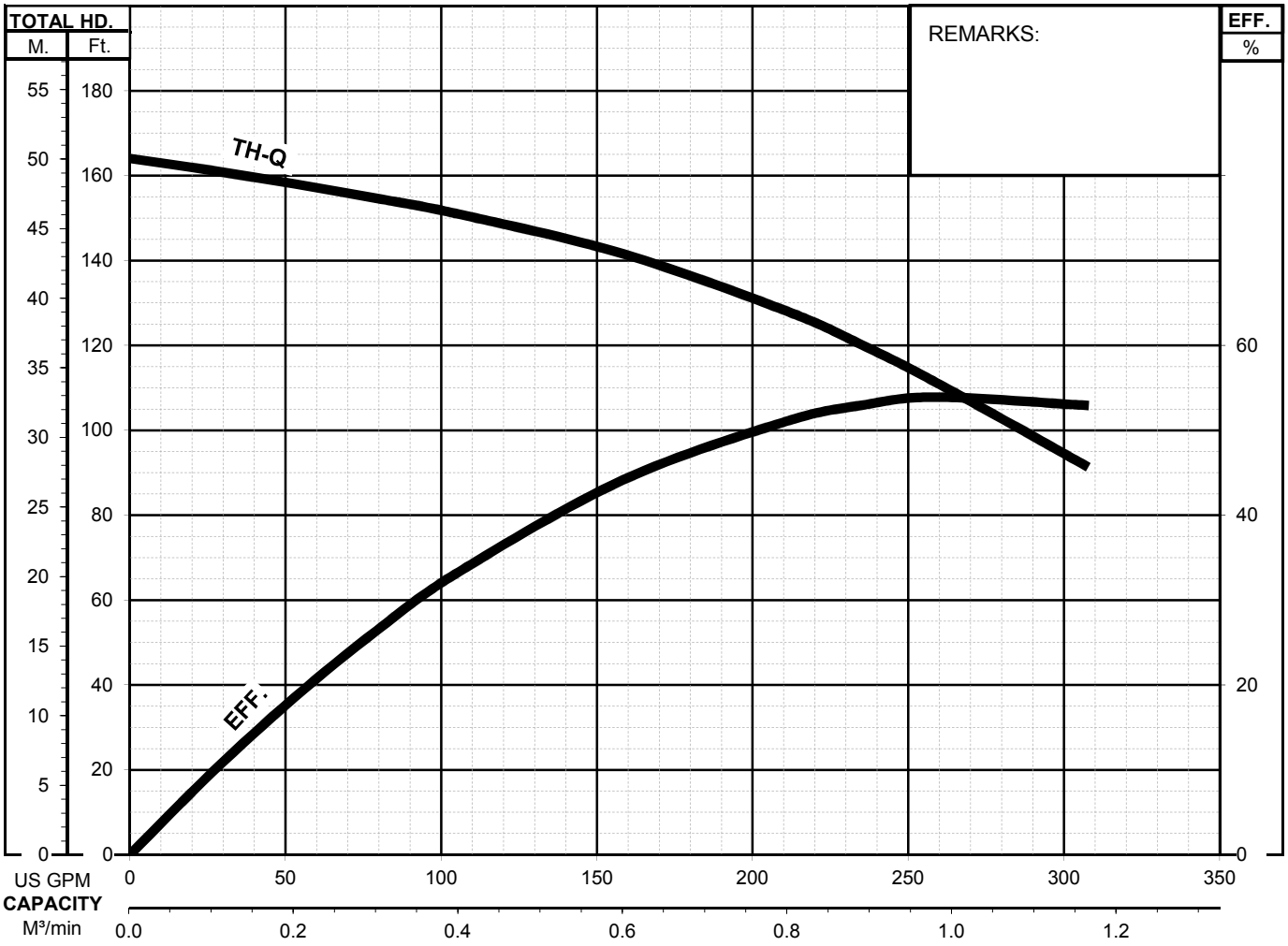
**CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS**

**PERFORMANCE CURVE**

| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C211-CR -62 | 3"/80mm | 15 | 11 | 3525 | 0.98"/25mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 40.8-39.2 / 19.6 / 15.4 | 60 | Direct On Line | F |

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

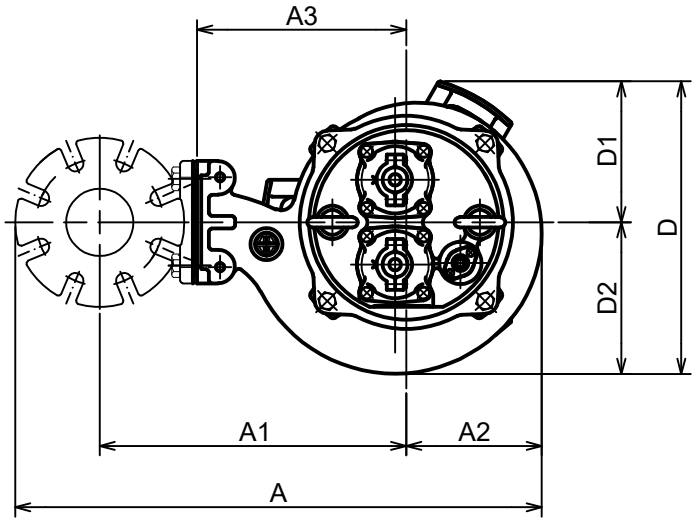


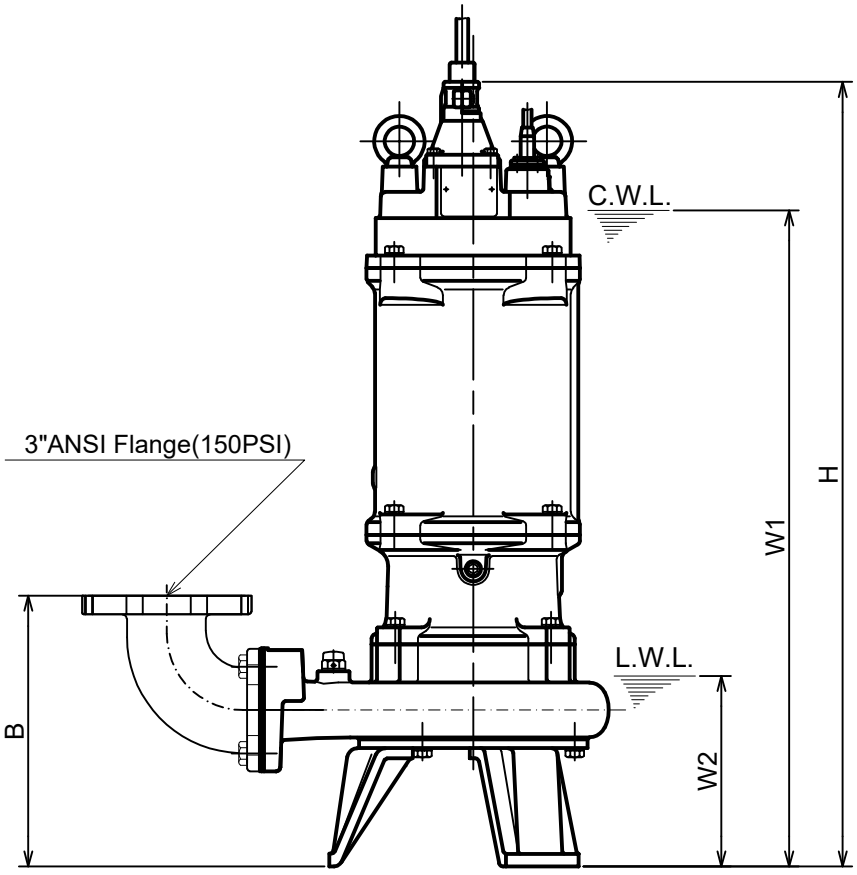

May. 2021

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS |
|---|---|---|

## 80C211-CR -62

Bend model:
BEND80-80 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.) |
| 80C211-CR-62 | 15 | 3" | 24 15/16 | 14 5/8 | 6 5/16 | 9 13/16 | 12 5/8 | 13 9/16 | 6 9/16 | 7 1/16 | 36 1/2 | 30 1/2 | 8 7/8 | 331 |

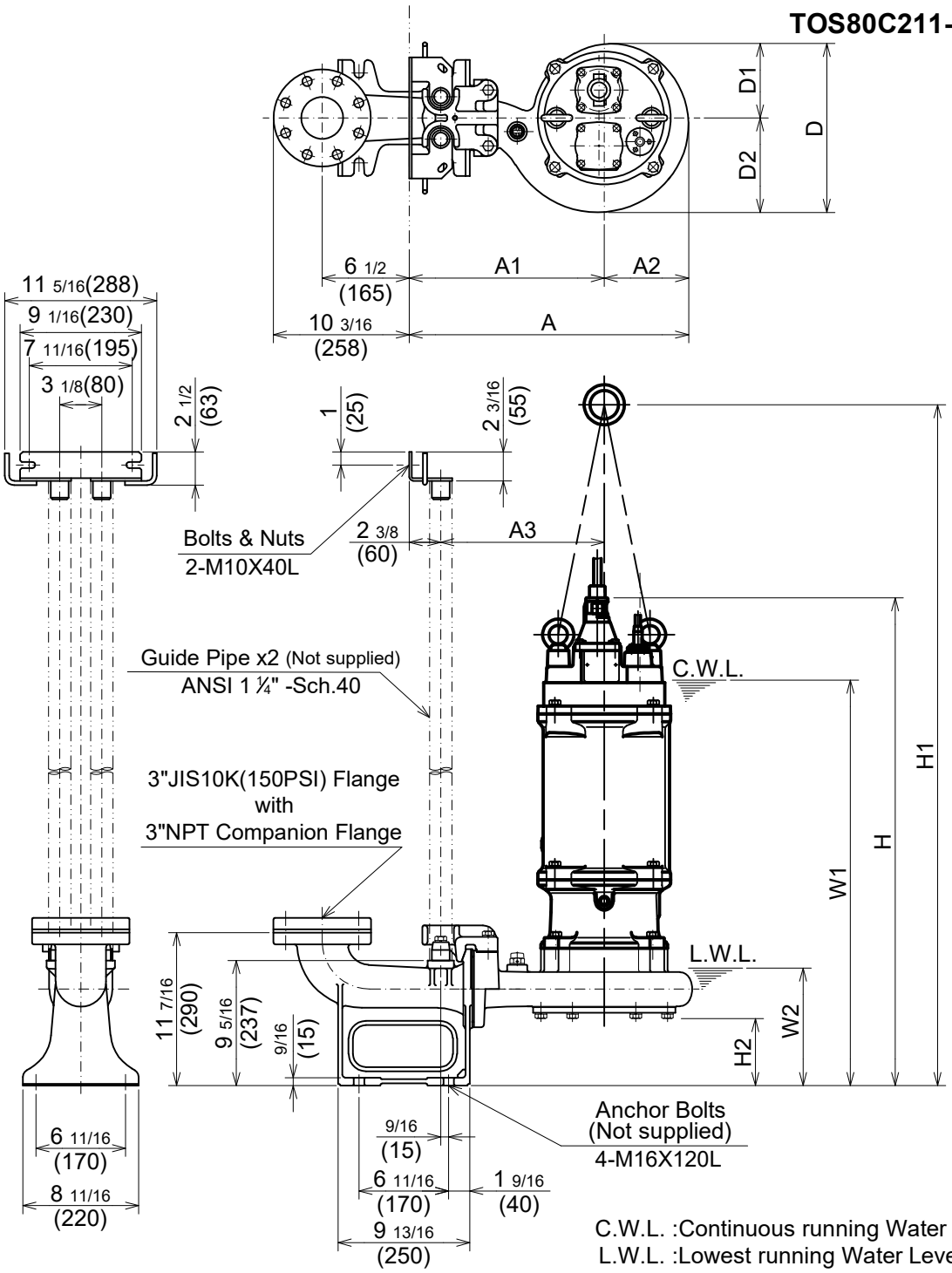
**DIMENSIONS:METRIC (mm)** *Excluding Cable

| 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) |
| 80C211-CR-62 | 11 | 80 | 633 | 372 | 160 | 250 | 320 | 345 | 166 | 179 | 927 | 775 | 225 | 150 |

May. 2021

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS80C211-CR -62




**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.) |
| TOS80C211-CR-62 | 20 | 3" | 20 7/8 | 14 9/16 | 6 5/16 | 12 3/16 | 12 5/8 | 5 9/16 | 7 1/16 | 36 7/16 | 50 13/16 | 5 | 30 3/8 | 8 5/8 | 293 |

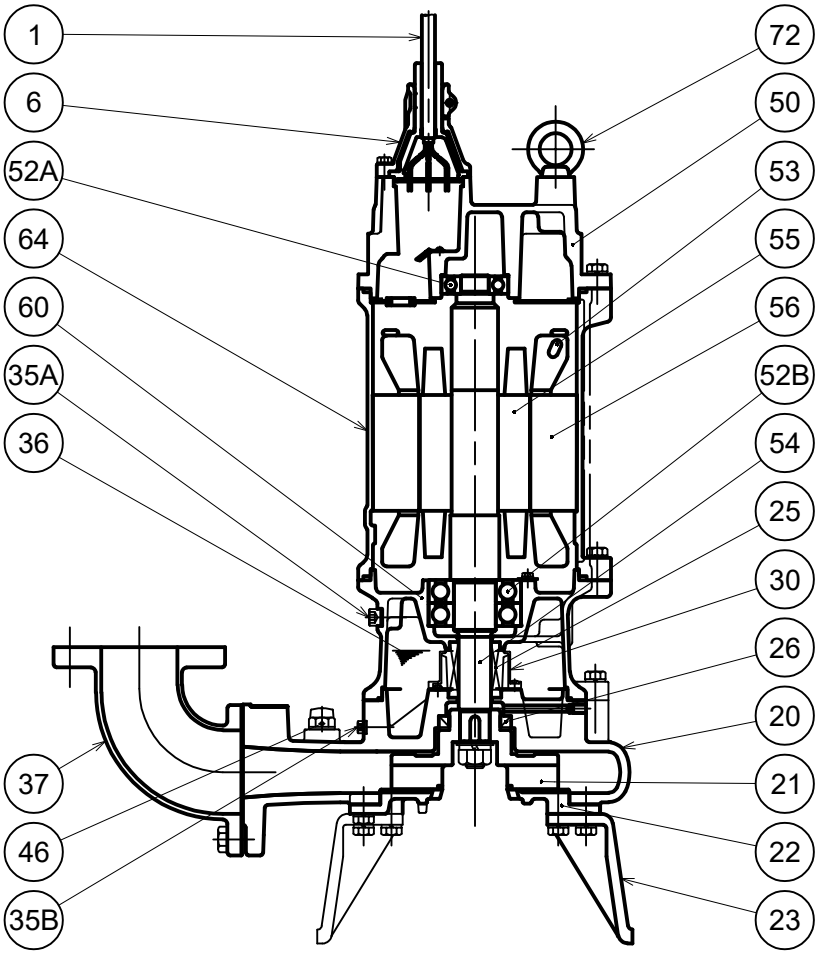
**DIMENSIONS:METRIC (mm)** *Excluding TOS & Cable

| 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) |
| TOS80C211-CR-62 | 15 | 80 | 530 | 370 | 160 | 310 | 320 | 141 | 179 | 925 | 1291 | 127 | 770 | 220 | 133 |

Jun.2024

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**80C211-CR -62**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | ASTM, AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 6/4-32ft | | | 1 |
| | Control Cable | PVC Sheath AWG 16/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 ClassIII TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 ClassIII TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC557812 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35A | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 35B | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 52A | Upper Bearing | #6305ZZC3 | | | 1 |
| 52B | Lower Bearing | #6308ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

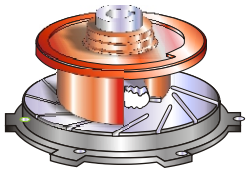
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

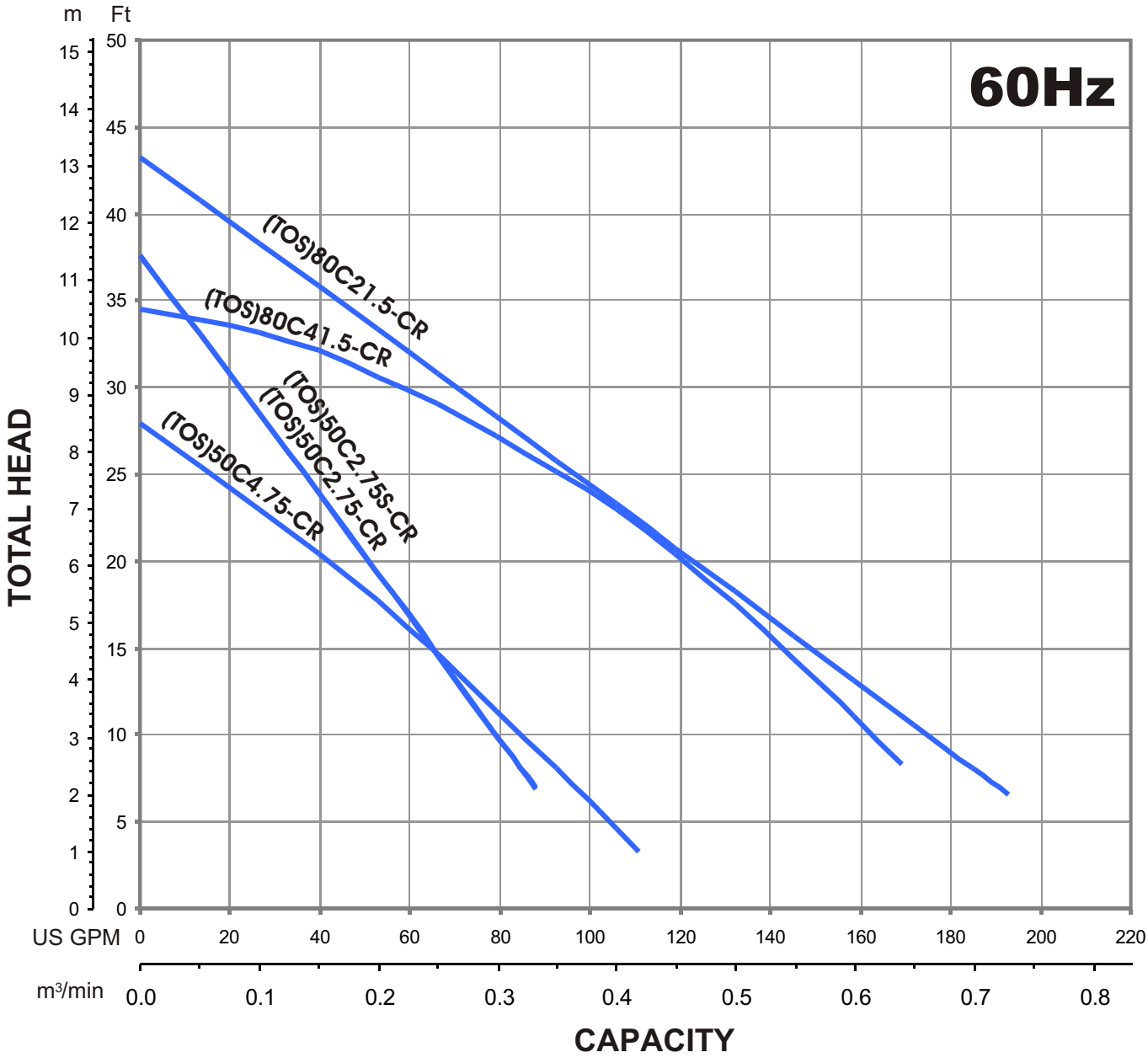
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

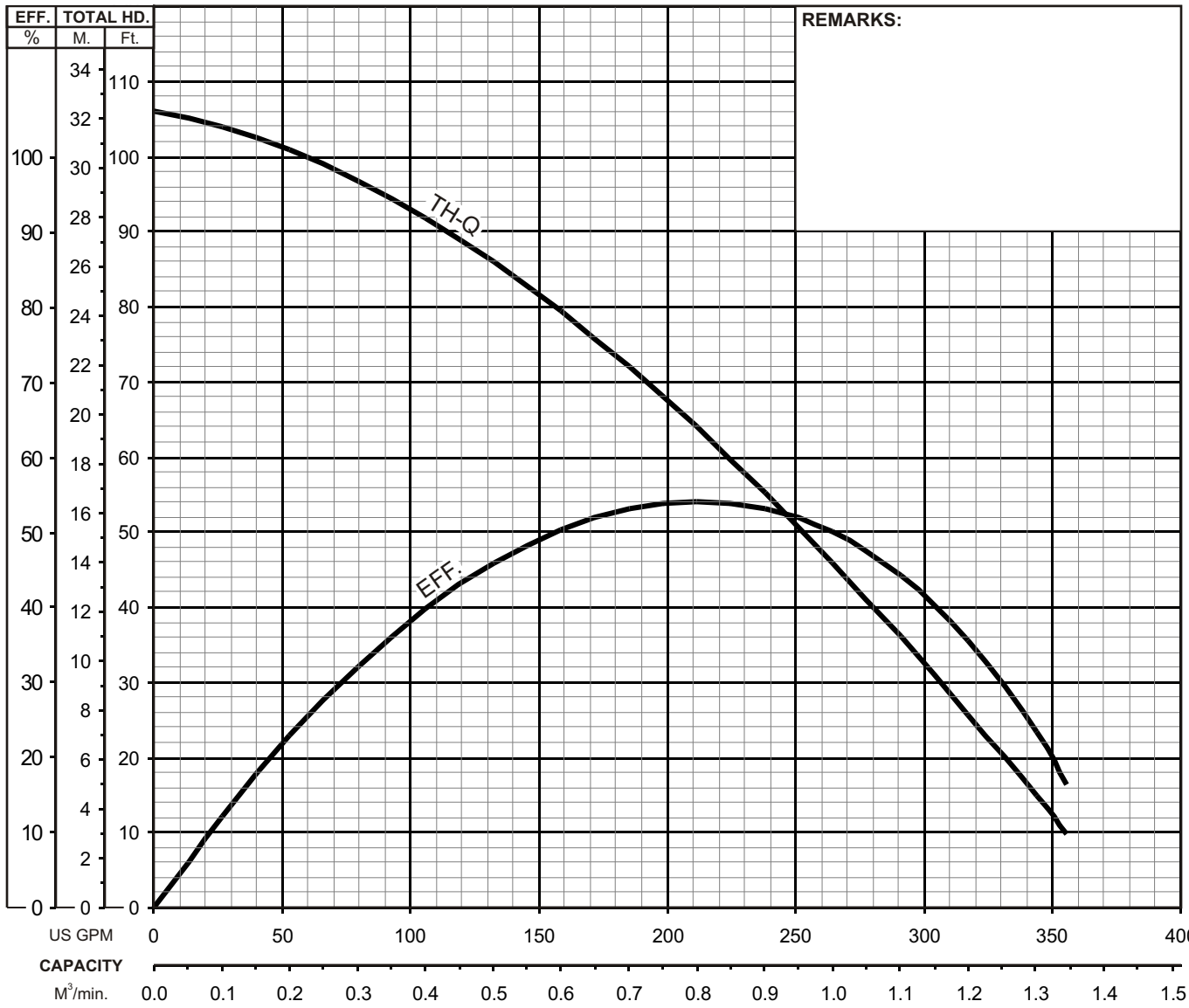
## PERFORMANCE CURVE

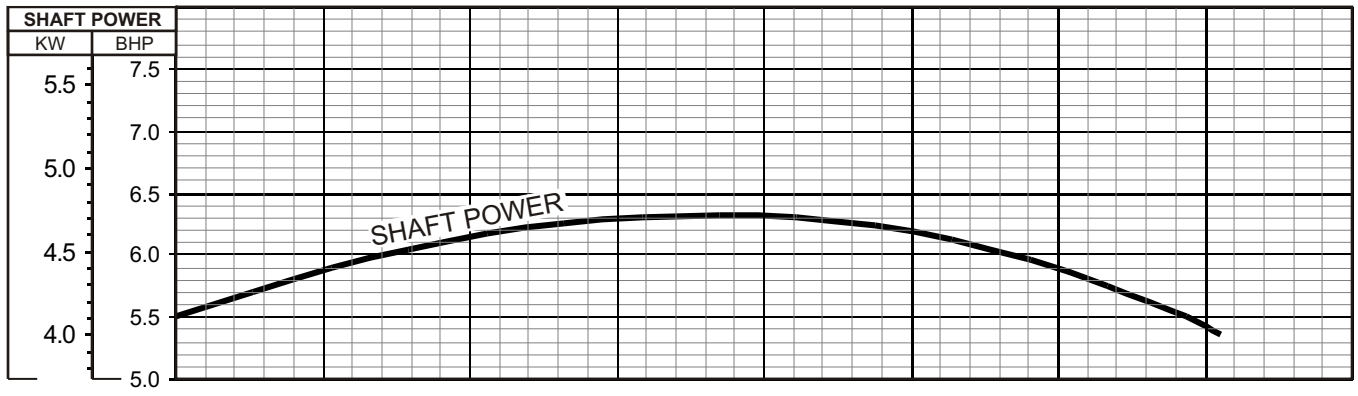
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C25.5-CR -61 | 3"/80mm | 7.5 | 5.5 | 3545 | 0.91"/23mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 22.3-21.4 / 10.7 / 8.3 | 60 | Direct On Line | F |

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

REMARKS:

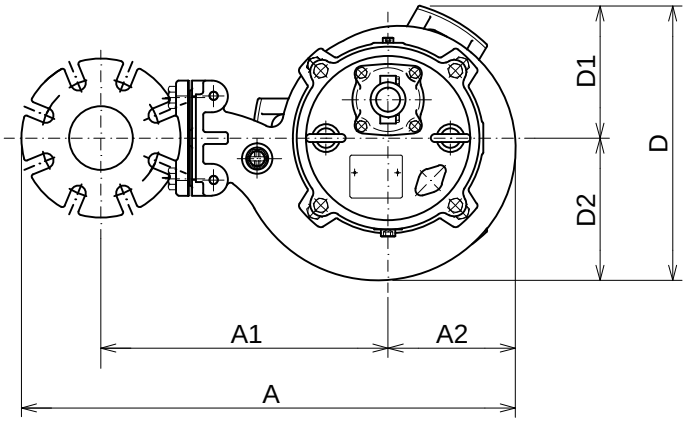


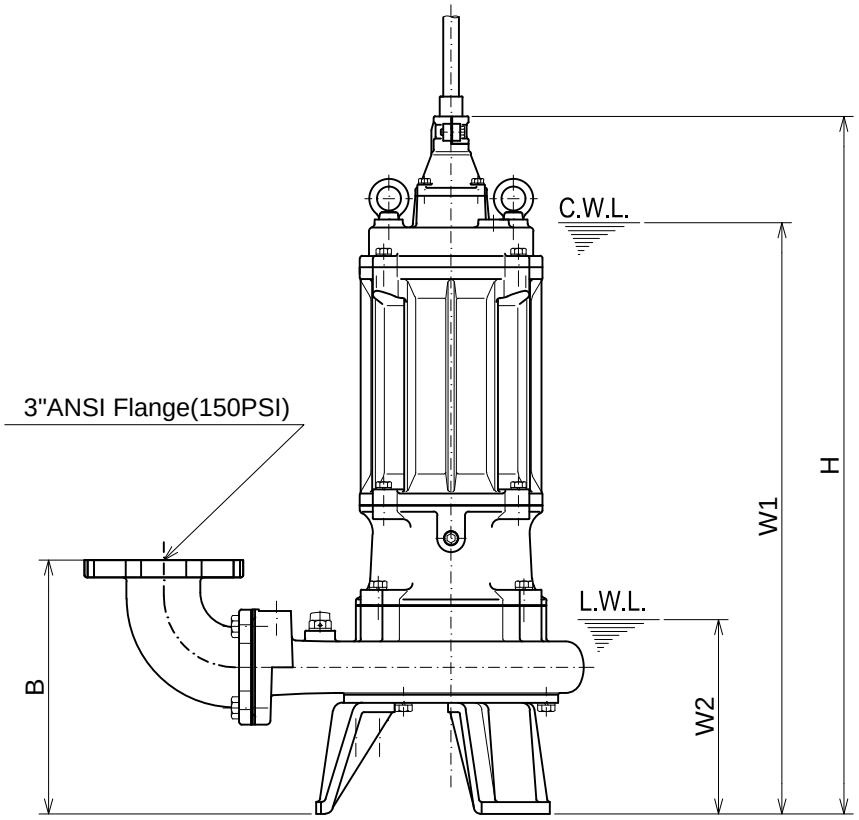



TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**80C25.5-CR -61**
**80C27.5-CR -61**

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 80C25.5-CR -61 | 7.5 | 3" | 24 15/16 | 14 5/8 | 6 5/16 | 12 5/8 | 13 9/16 | 6 9/16 | 7 1/16 | 34 5/8 | 29 3/8 | 9 5/8 | 274 |
| 80C27.5-CR -61 | 10 | 3" | 24 15/16 | 14 5/8 | 6 5/16 | 12 5/8 | 13 9/16 | 6 9/16 | 7 1/16 | 34 5/8 | 29 3/8 | 9 5/8 | 280 |

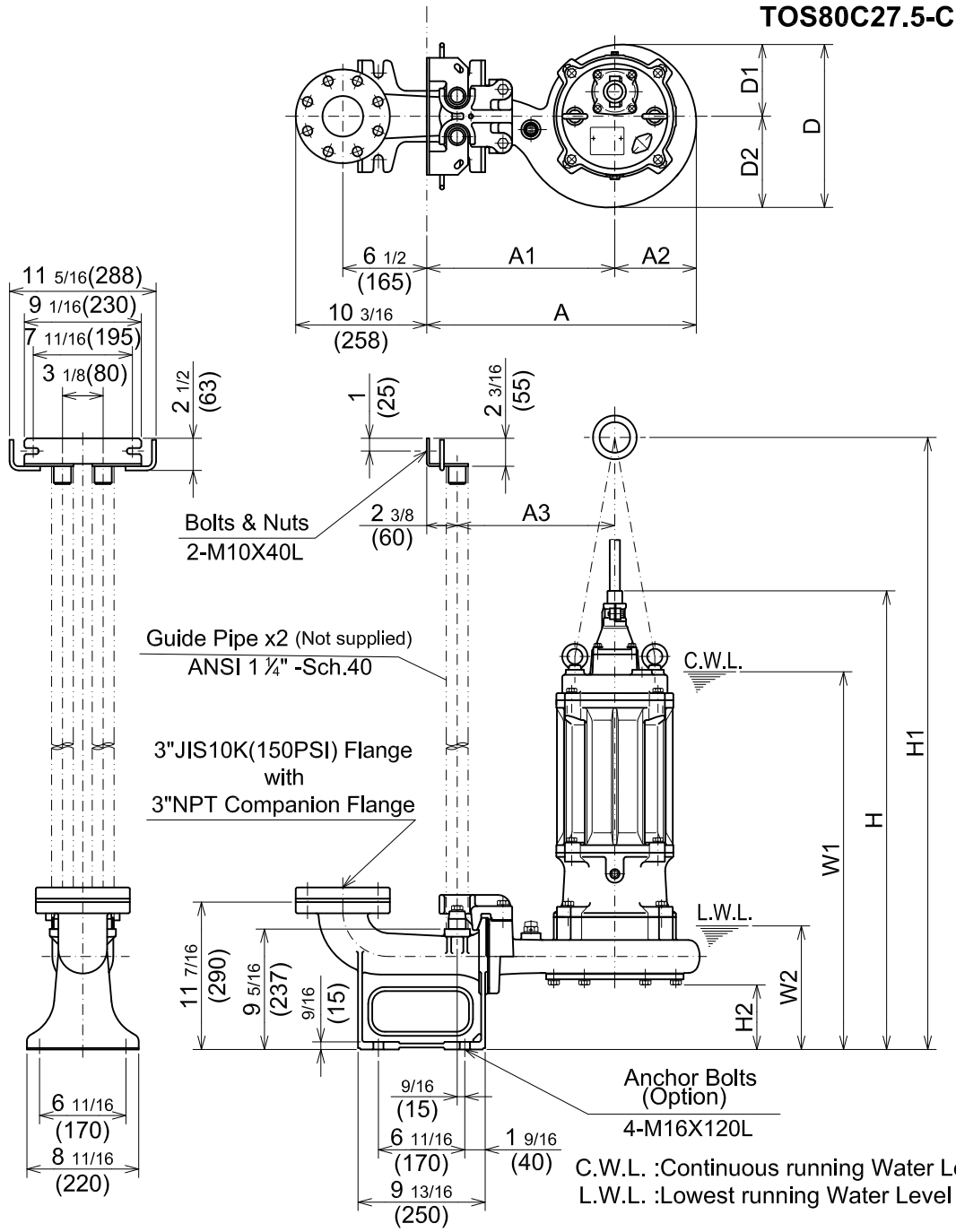
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 80C25.5-CR -61 | 5.5 | 80 | 633 | 372 | 160 | 320 | 345 | 166 | 179 | 879 | 745 | 245 | 124 |
| 80C27.5-CR -61 | 7.5 | 80 | 633 | 372 | 160 | 320 | 345 | 166 | 179 | 879 | 745 | 245 | 127 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**TOS80C25.5-CR -61**
**TOS80C27.5-CR -61**




**DIMENSIONS:USCS(Inch)**

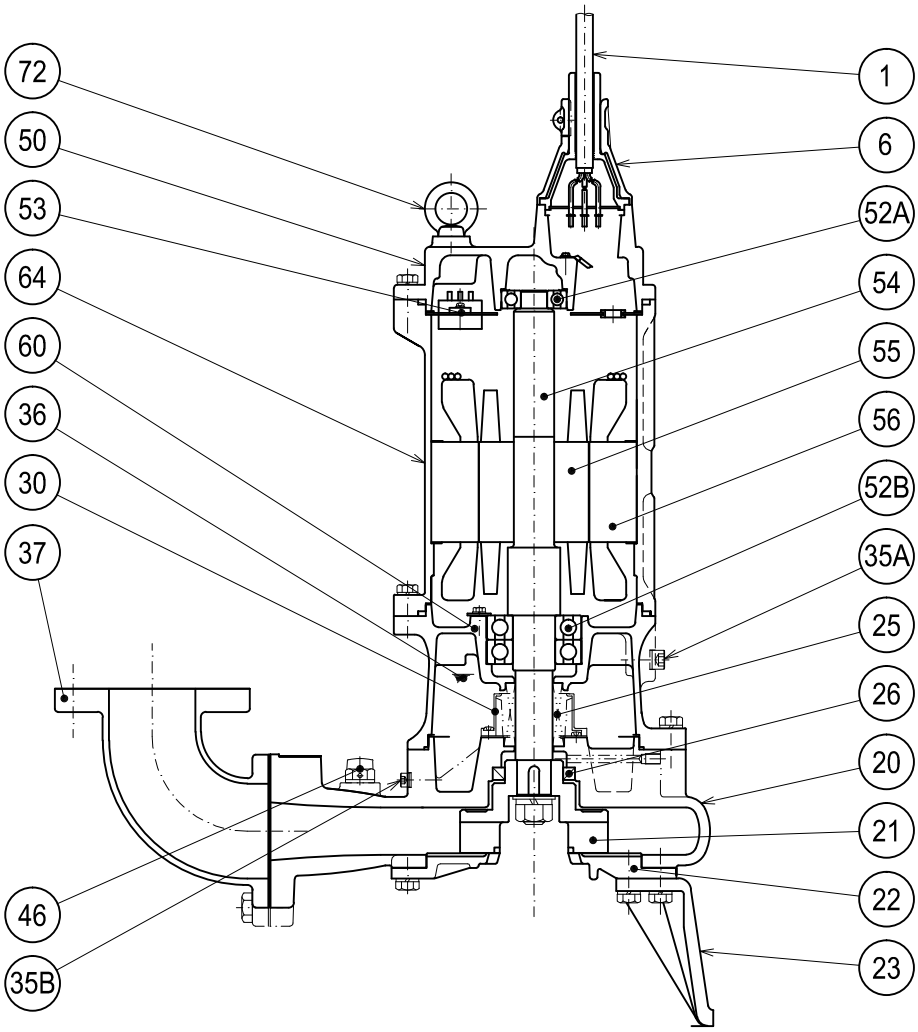
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C25.5-CR -61 | 7.5 | 3" | 20 7/8 | 14 9/16 | 6 5/16 | 12 3/16 | 12 5/8 | 5 9/16 | 7 1/16 | 35 1/2 | 47 3/8 | 5 | 29 3/8 | 9 5/8 | 265 |
| TOS80C27.5-CR -61 | 10 | 3" | 20 7/8 | 14 9/16 | 6 5/16 | 12 3/16 | 12 5/8 | 5 9/16 | 7 1/16 | 35 1/2 | 47 3/8 | 5 | 29 3/8 | 9 5/8 | 271 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C25.5-CR -61 | 5.5 | 80 | 530 | 370 | 160 | 310 | 320 | 141 | 179 | 902 | 1204 | 127 | 745 | 245 | 120 |
| TOS80C27.5-CR -61 | 7.5 | 80 | 530 | 370 | 160 | 310 | 320 | 141 | 179 | 902 | 1204 | 127 | 745 | 245 | 123 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

**80C25.5-CR -61**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 12/4-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC557812 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35A | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 35B | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 52A | Upper Bearing | #6305ZZC3 | | | 1 |
| 52B | Lower Bearing | #6308ZZD2C3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

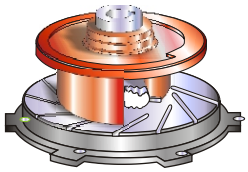
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

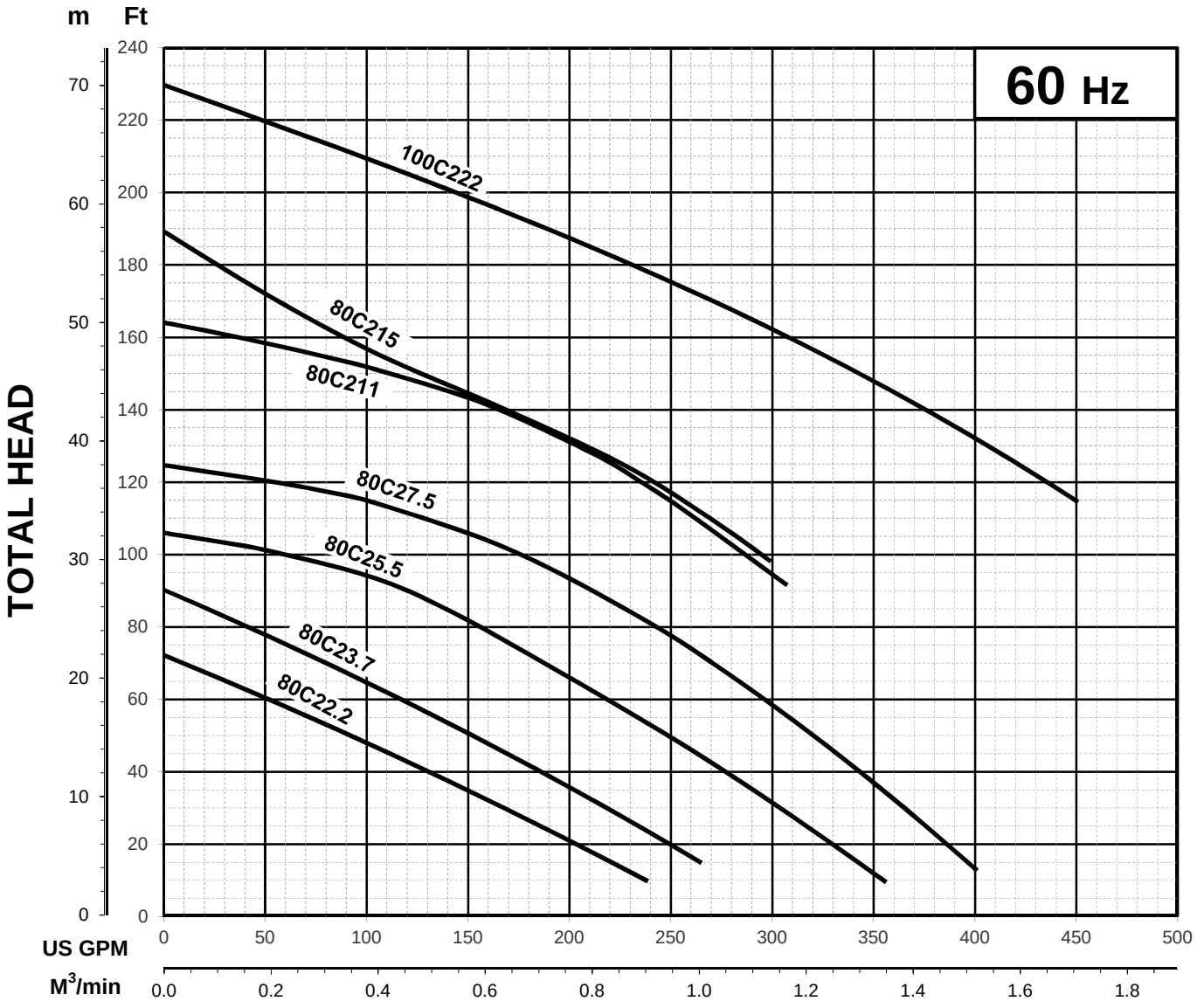
TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

PERFORMANCE RANGE

## GROUP PERFORMANCE RANGE




**Note**

Ex.

# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

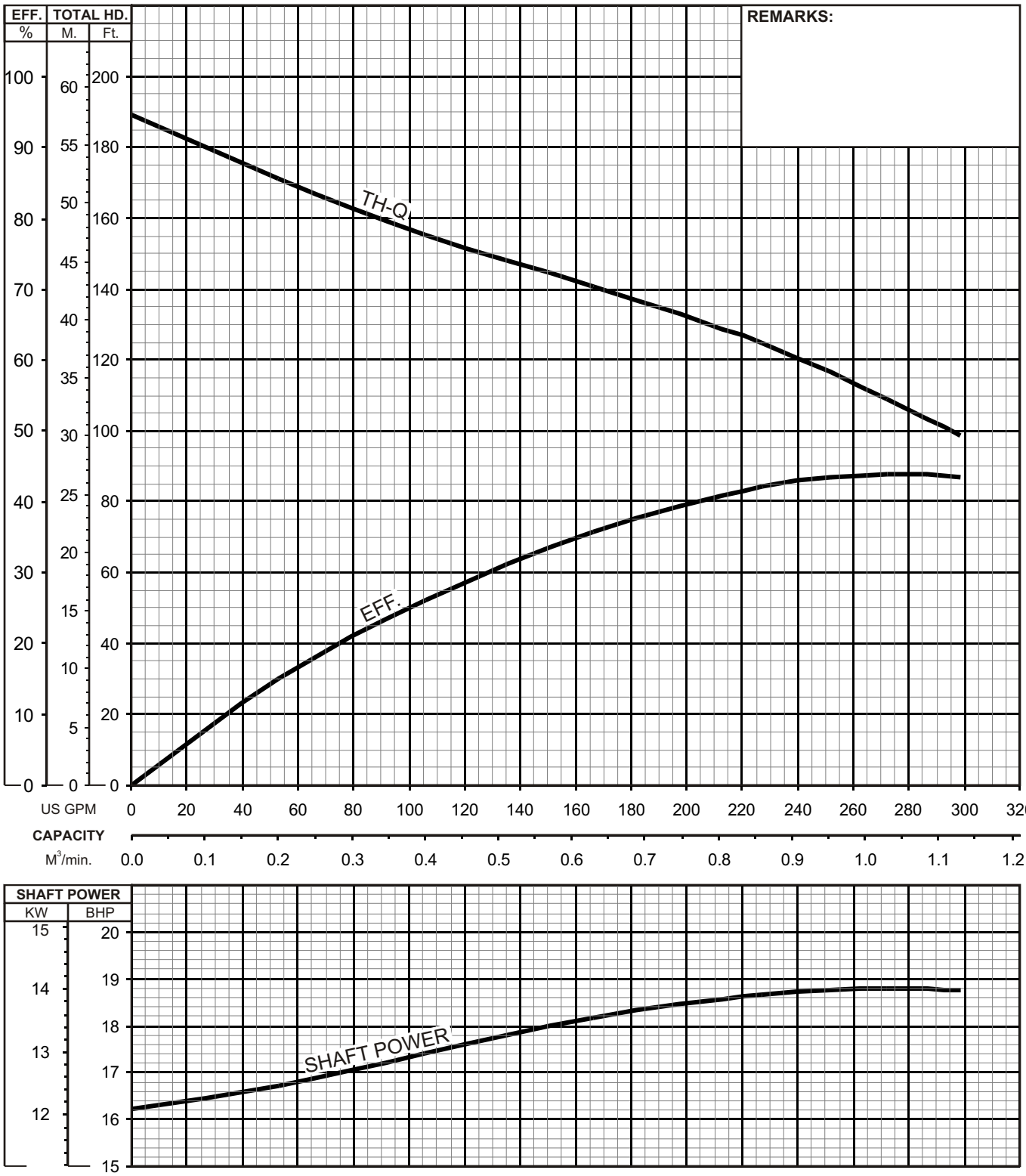
## PERFORMANCE CURVE

| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C215-CR -61 | 3"/80mm | 20 | 15 | 3465 | 1.02"/26mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208/230/460/575 | 54 / 50 / 25 / 20 | 60 | Star-Delta | F |

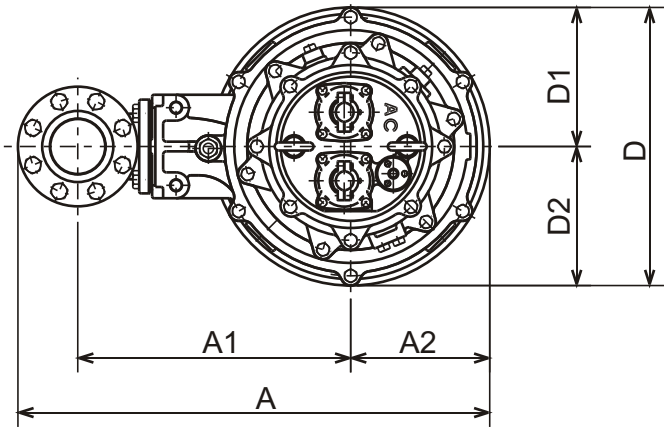
| CURVE No. | DATE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - |

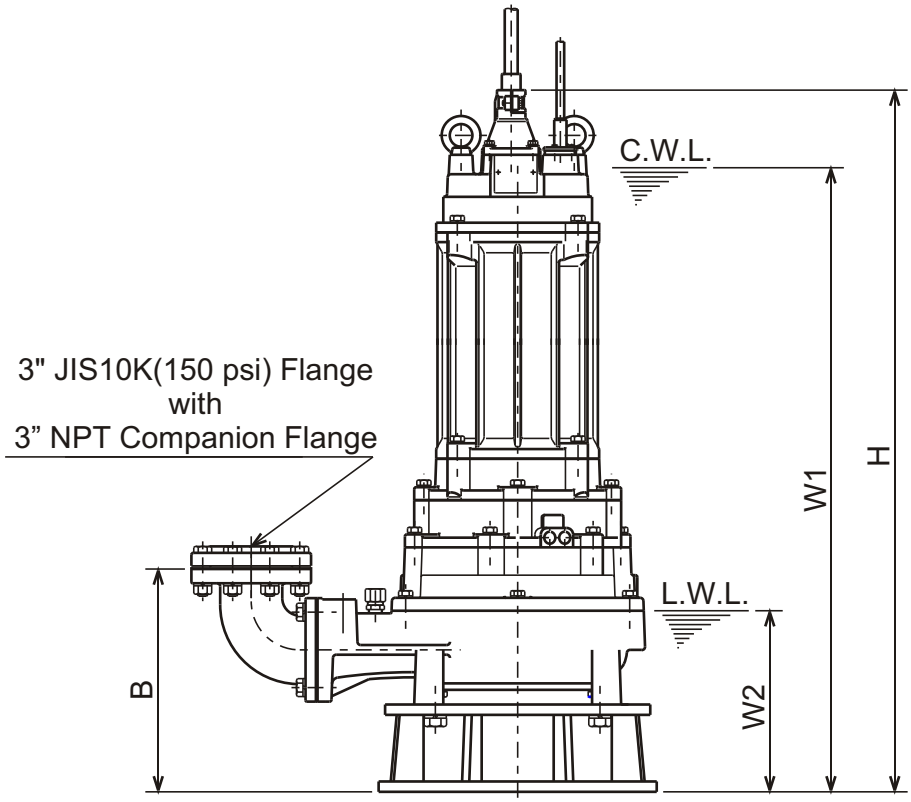
REMARKS:



TSURUMI PUMP | C - SERIES CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**80C215-CR-61**




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 80C215-CR-61 | 20 | 3" | 28 3/4 | 16 1/2 | 8 7/16 | 13 5/8 | 16 15/16 | 8 7/16 | 8 1/2 | 42 3/4 | 38 | 11 | 882 |

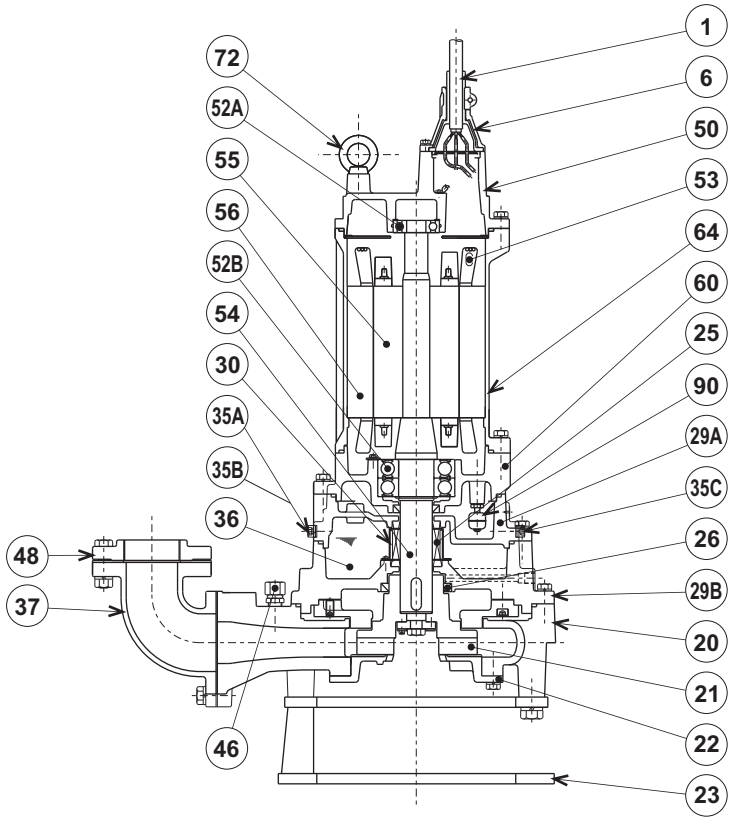
**DIMENSIONS:METRIC (mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 80C215-CR-61 | 15 | 80 | 730 | 422 | 215 | 345 | 430 | 215 | 215 | 1085 | 965 | 280 | 400 |

# TSURUMI PUMP

## C - SERIES
### CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

## SECTIONAL VIEW



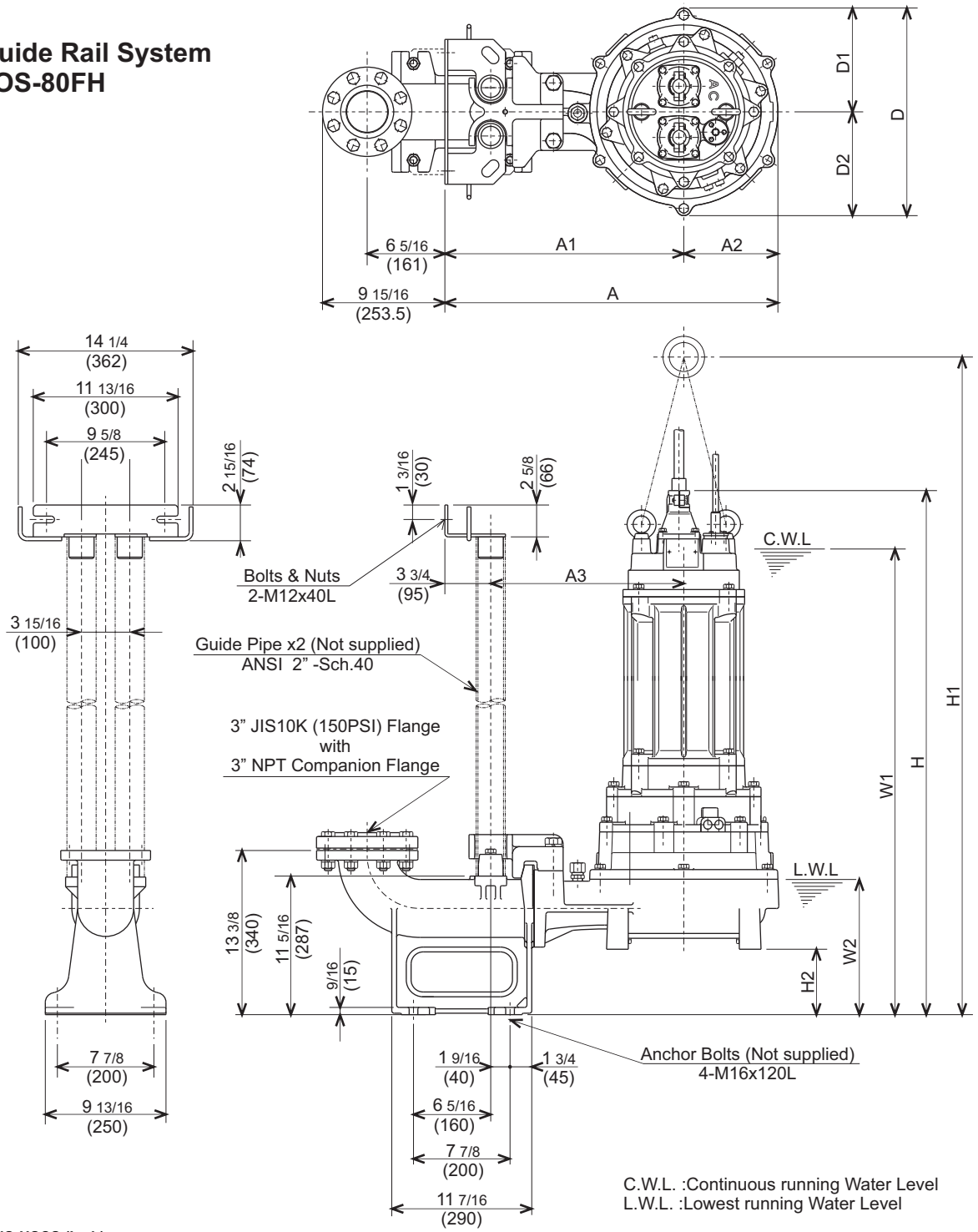

**80C215-CR-61**

| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | ASTM, AISI CODE | RELATED DIN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG10/4-32ft | | | 1 |
| | Power Cable | Chloroprene Sheath AWG10/3-32ft | | | 1 |
| | Control Cable | Chloroprene Sheath AWG16/4-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 2 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tuungsten Carbide | A532 Class‡ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class‡ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pumpr Stand | Steel | A283 Grade D | EN 10025 S275 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-50T | | | 1 |
| 26 | Oil Seal | NBR / TC851013 | | | 1 |
| 29A | Casing Cover | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 29B | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | Steel (Cold Rolled ) | A109/A1008 | EN 10130 | 1 |
| 35A | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 35B | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 35C | Drain Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE10W-20 | | | 1 |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Stainless Steel | S 30400 | 1.4301 | 1 |
| 48 | Companion Flange | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | #6306ZZC3 | | | 1 |
| 52B | Lower Bearing | #6311ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |
| 90 | Leak Sensor (Float) | | | | 1 |

TSURUMI PUMP | C - SERIES CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS80C215-CR-61

**Guide Rail System**
**TOS-80FH**




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (lbs.) |
| TOS80C215-CR-61 | 20 | 3" | 27 3/16 | 19 1/2 | 7 11/16 | 15 3/4 | 16 15/16 | 8 7/16 | 8 7/16 | 42 3/4 | 64 3/8 | 5 3/8 | 38 | 11 | 820 |

**DIMENSIONS:METRIC (mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (kg) |
| TOS80C215-CR-61 | 15 | 80 | 690 | 495 | 195 | 400 | 430 | 215 | 215 | 1086 | 1635 | 136 | 965 | 280 | 370 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

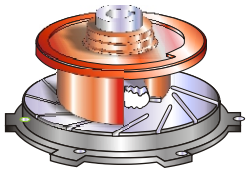
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

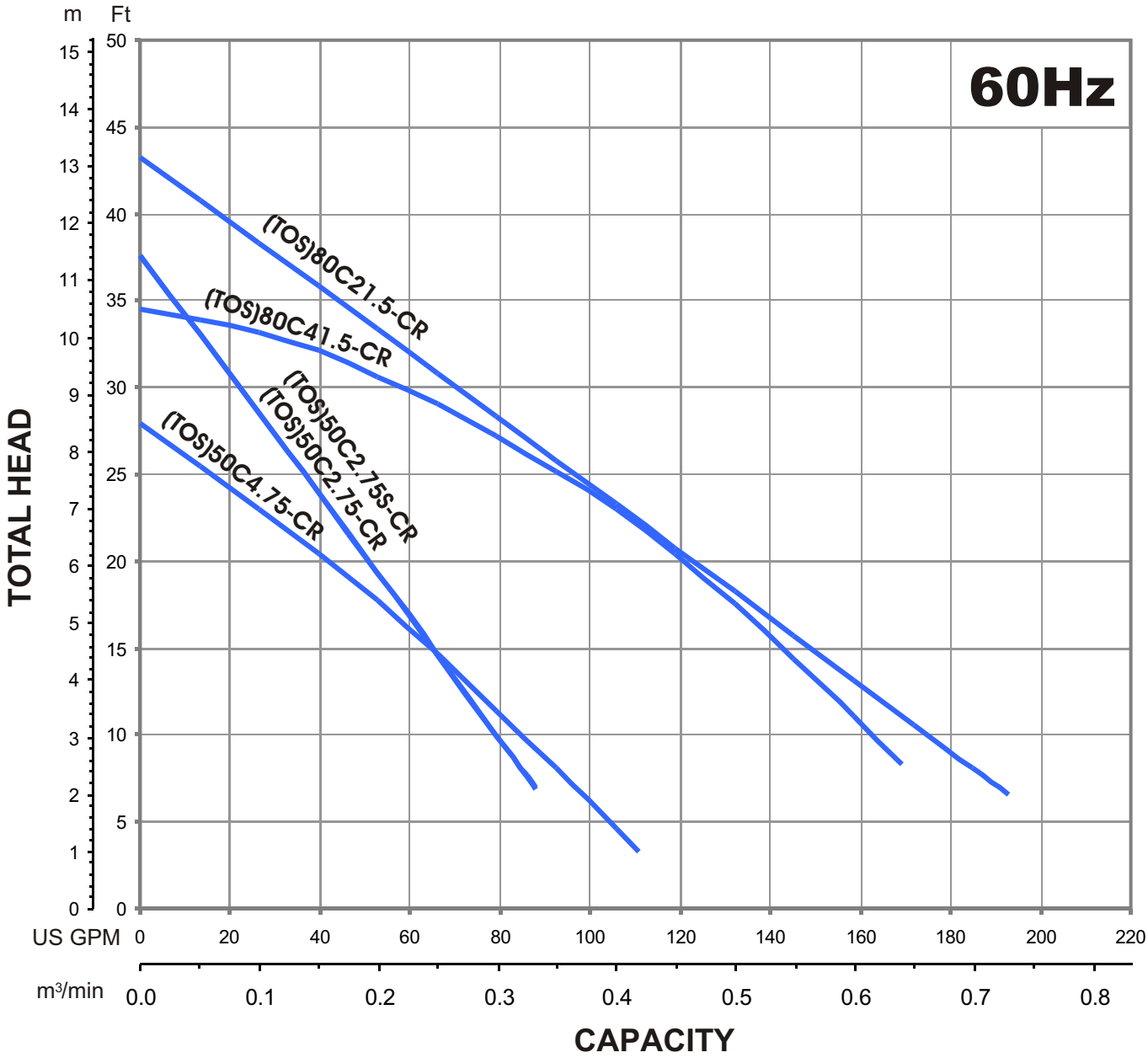
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



Mar-22

TSURUMI PUMP

# C - SERIES

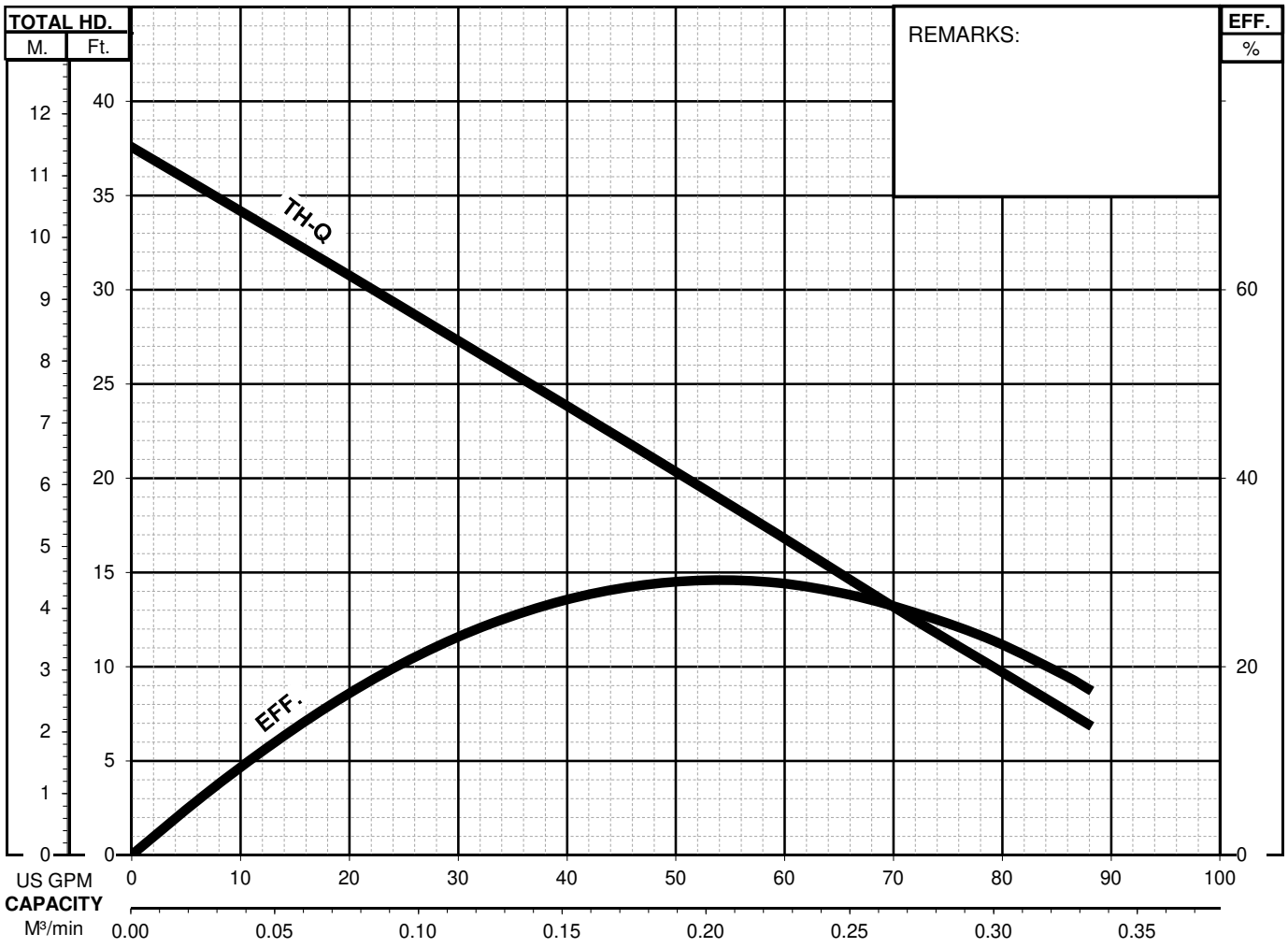
**CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS**

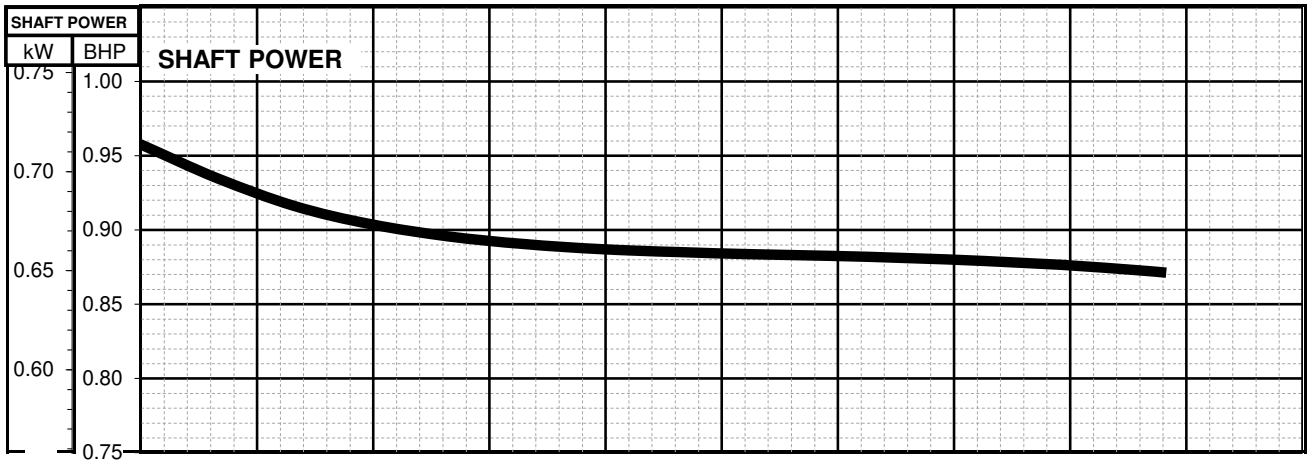
**PERFORMANCE CURVE**

| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 50C2.75S-CR -63 | 2"/50mm | 1 | 0.75 | 3455 | 0.83"/21mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 1 | 115 / 230 | 11.7 / 5.9 | 60 | Capacitor-Start | E |

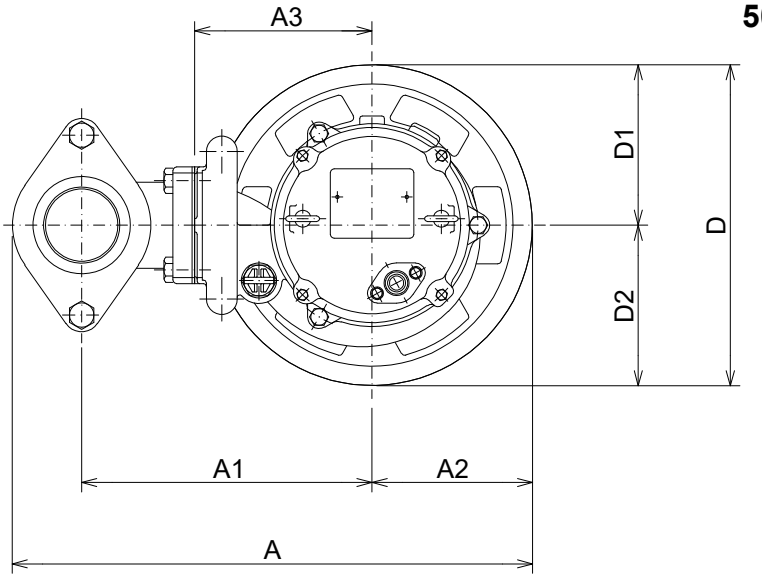
| CURVE No. | DATE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - |

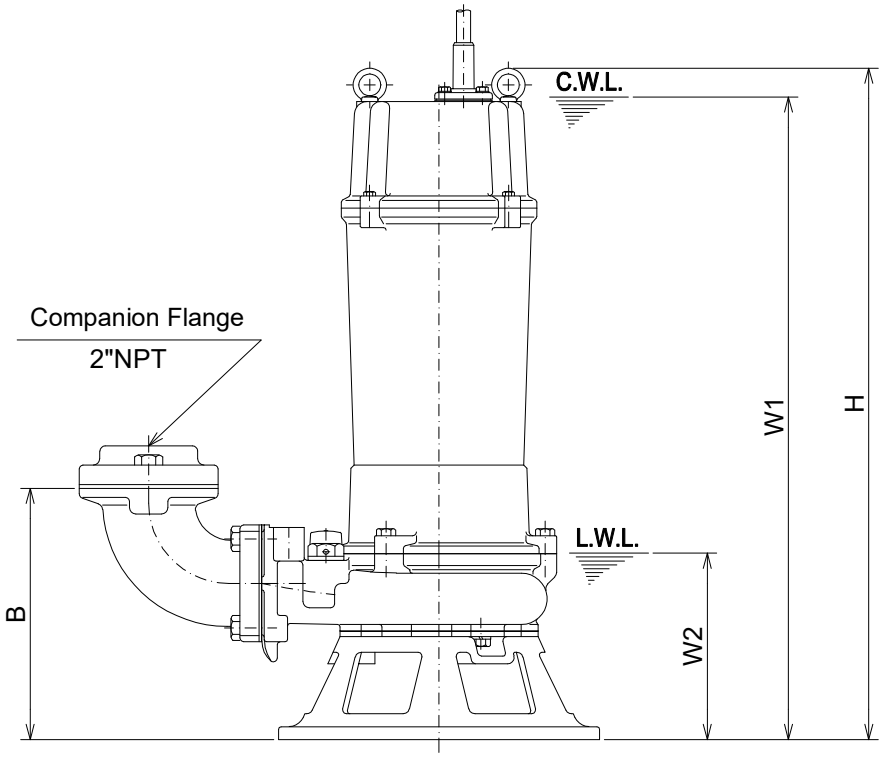


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 50C2.75S-CR -63




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

**DIMENSIONS:USCS (Inch)**

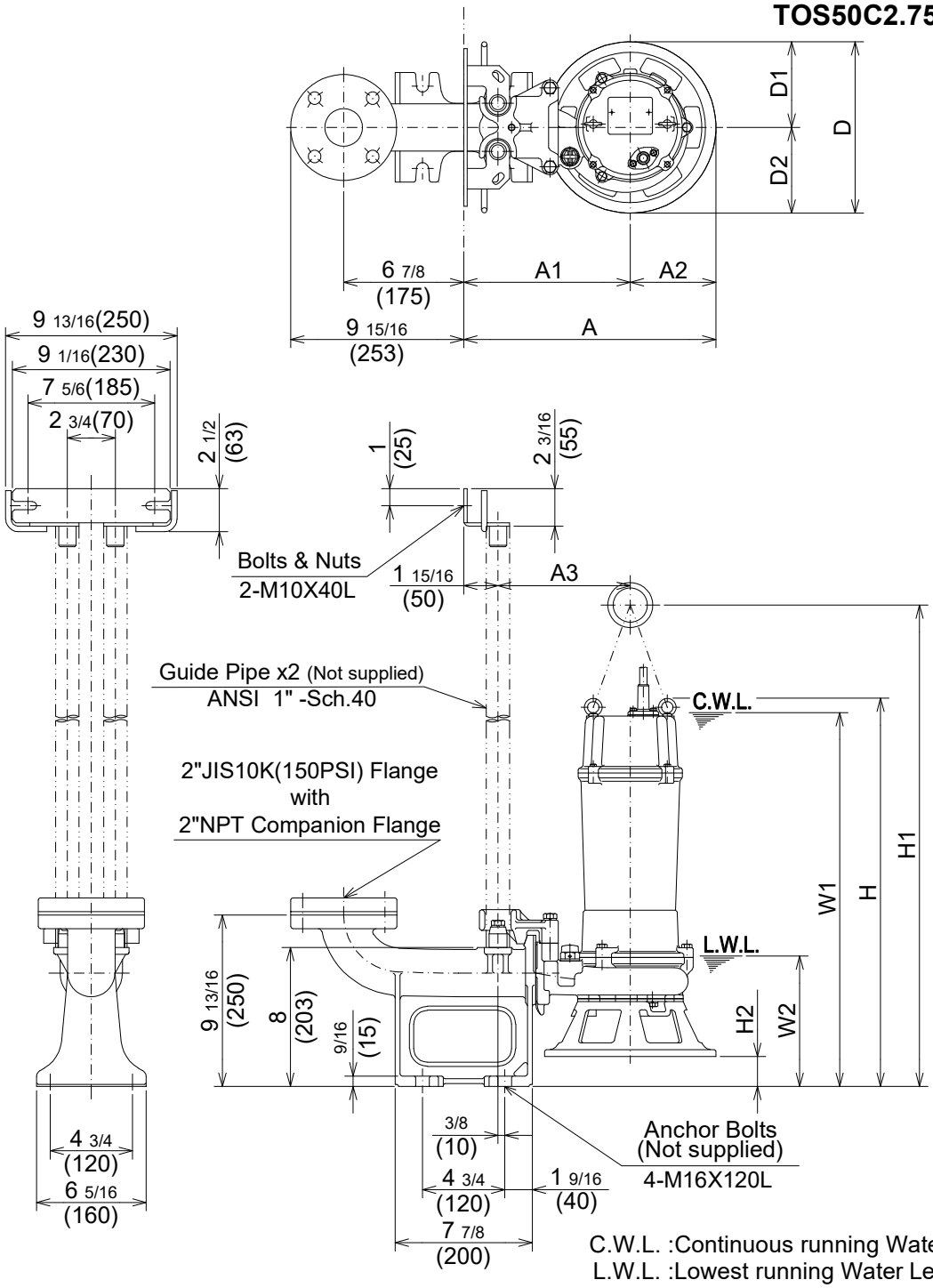
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 50C2.75S-CR-63 | 1 | 2" | 15 15/16 | 8 7/8 | 4 15/16 | 5 7/16 | 7 11/16 | 9 13/16 | 4 15/16 | 4 15/16 | 20 9/16 | 19 5/8 | 5 3/4 | 71 |

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

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 50C2.75S-CR-63 | 0.75 | 50 | 405 | 226 | 125 | 138 | 196 | 250 | 125 | 125 | 523 | 500 | 145 | 32 |

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS50C2.75S-CR -63




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (lbs.) |
| TOS50C2.75S-CR-63 | 1 | 2" | 14 1/2 | 9 9/16 | 4 15/16 | 7 5/8 | 9 13/16 | 4 15/16 | 4 15/16 | 22 5/16 | 27 3/8 | 1 3/4 | 21 1/2 | 7 1/2 | 66 |

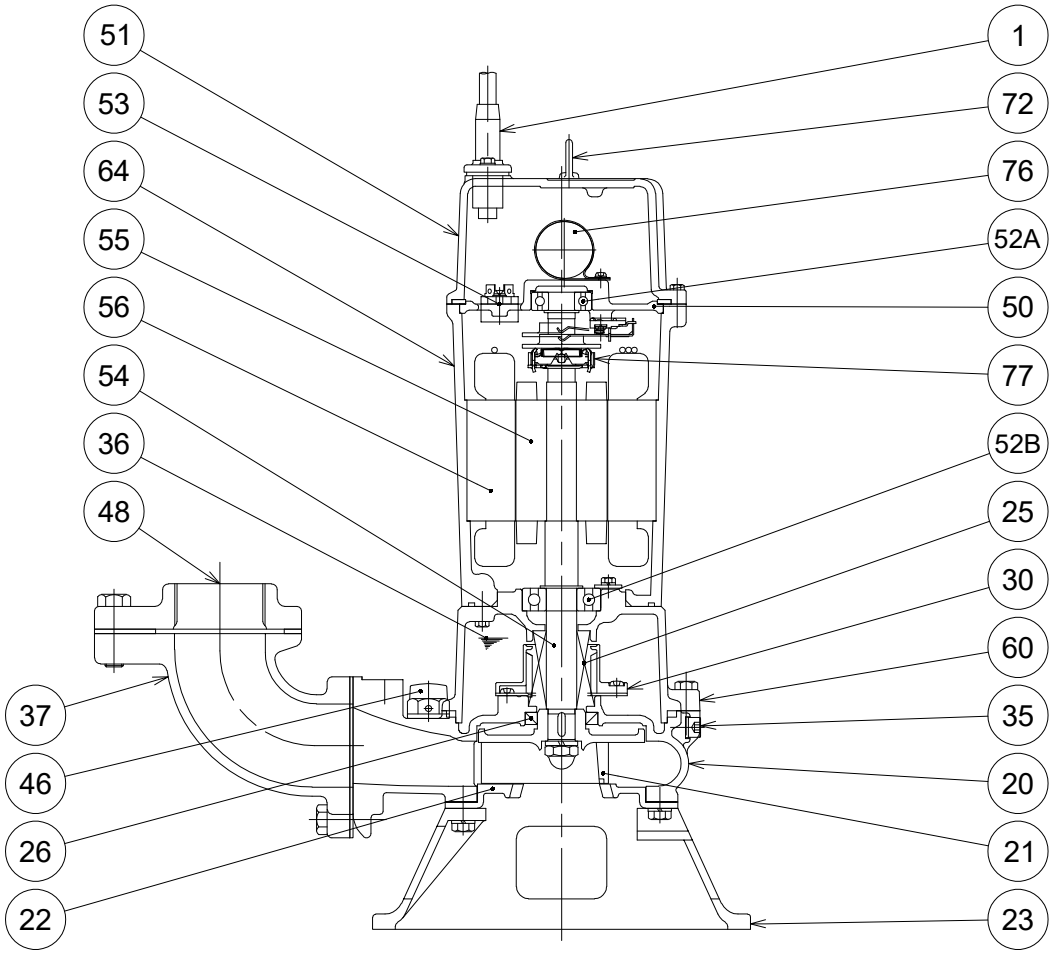
**DIMENSIONS:METRIC (mm)** * Excluding TOS & Cable

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (kg) |
| TOS50C2.75S-CR-63 | 0.75 | 50 | 368 | 243 | 125 | 193 | 250 | 125 | 125 | 567 | 695 | 44 | 545 | 190 | 30 |

Mar.2022

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**50C2.75S-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM, AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 16/3-20ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 ClassIII TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Strainer Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-20 | | | 1 |
| 26 | Oil Seal | NBR / TC32488 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Valve | Nylon | | | 1 |
| 48 | Companion Flange | Cast Iron / NPT 2" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 51 | Head Cover | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 52A | Upper Bearing | #6203ZZC3 | | | 1 |
| 52B | Lower Bearing | #6304ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |
| 76 | Capacitor | | | | 1 |
| 77 | Centrifugal Switch | | | | 1 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

# SPECIFICATIONS

## FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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.

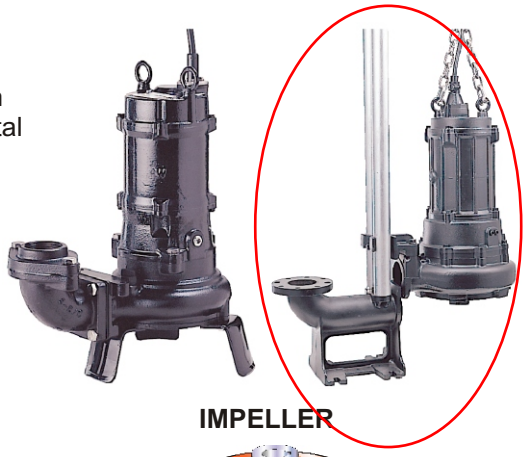
## APPLICATIONS

1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

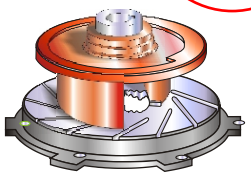
2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.



IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## STANDARD

## OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

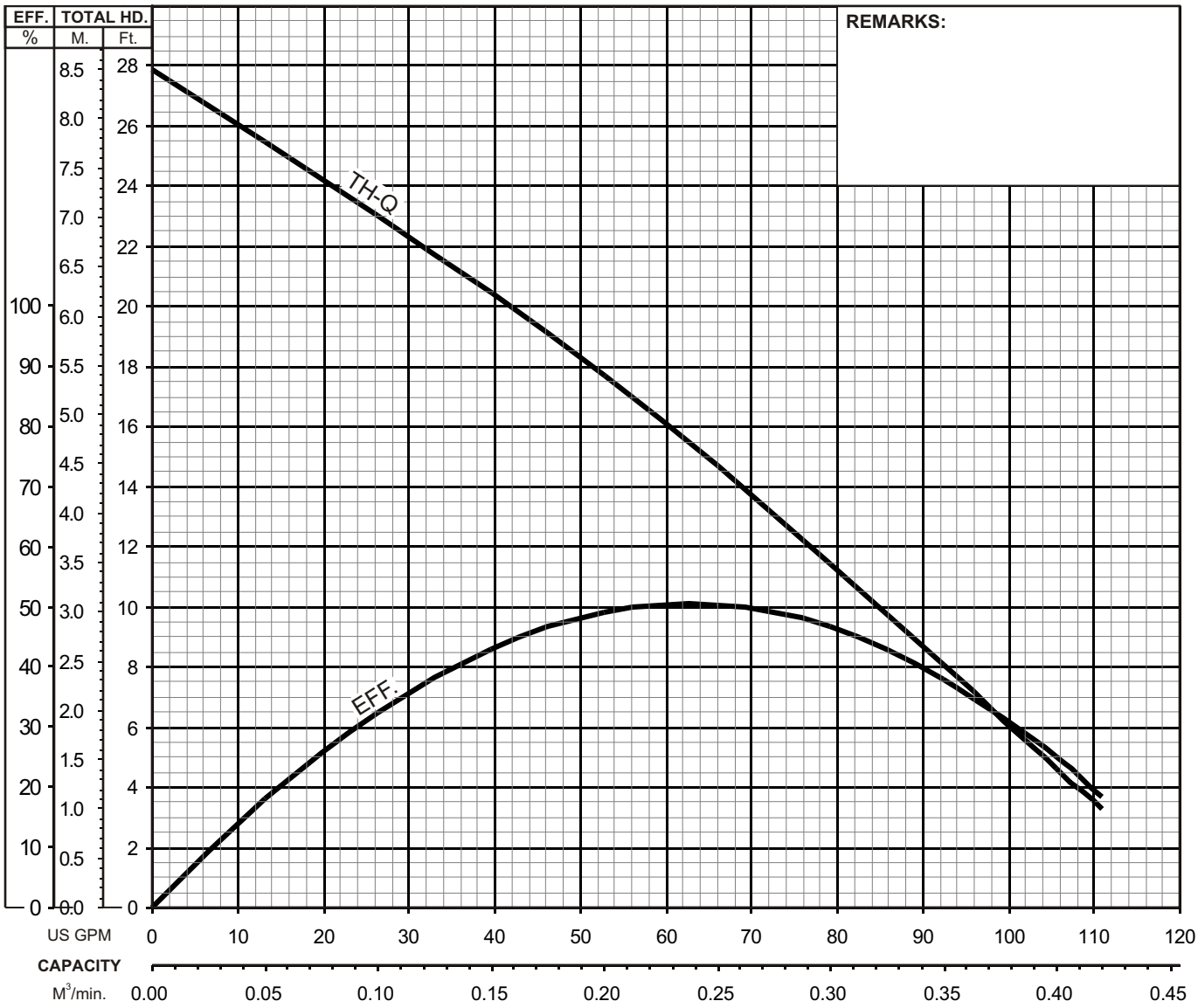
## PERFORMANCE CURVE

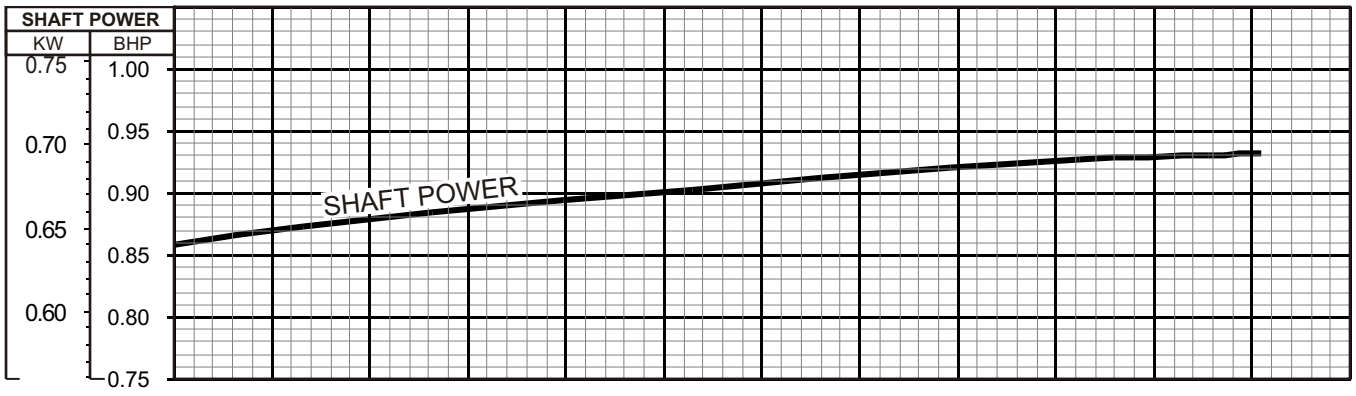
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 50C4.75-CR -63 | 2"/50mm | 1 | 0.75 | 1690 | 1.02"/26mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 3.6-3.5 / 1.8 / 1.5 | 60 | Direct On Line | E |

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

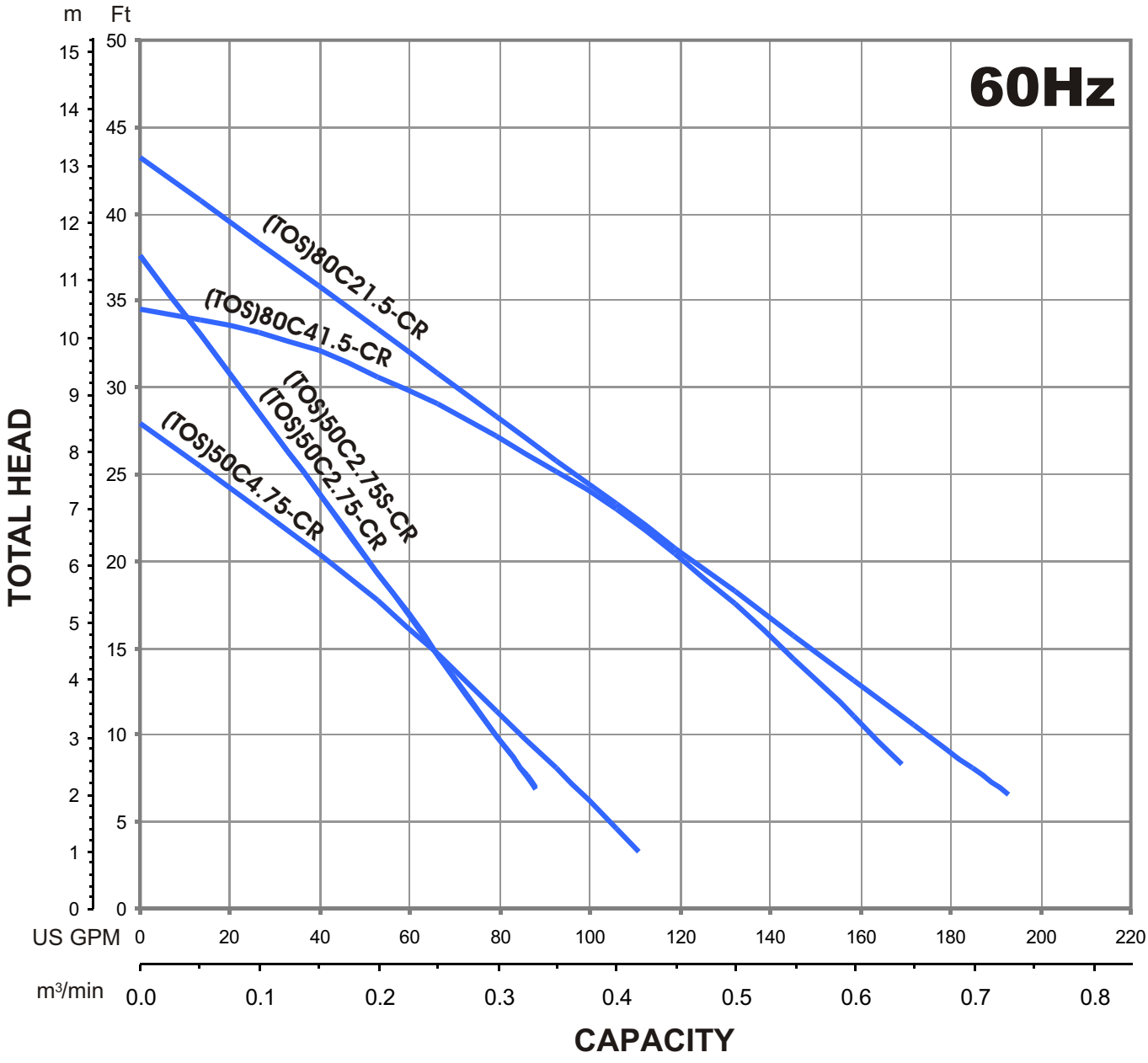
REMARKS:



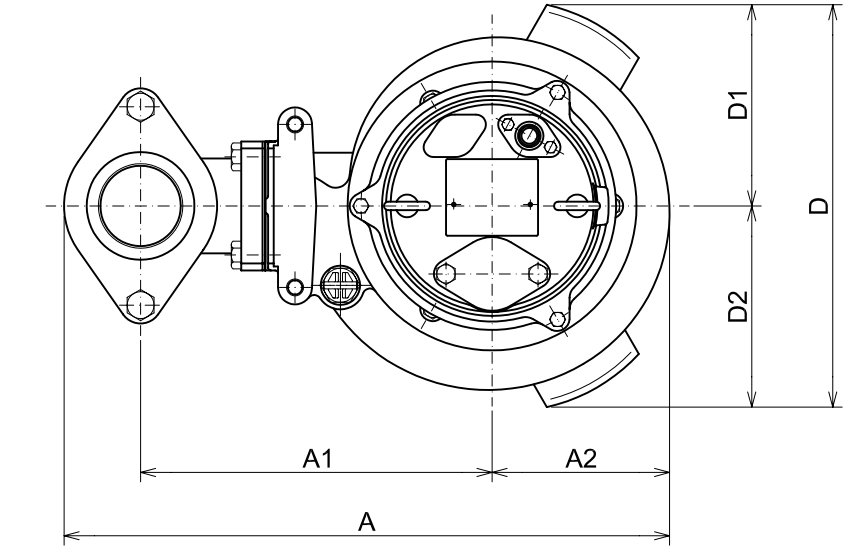
| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

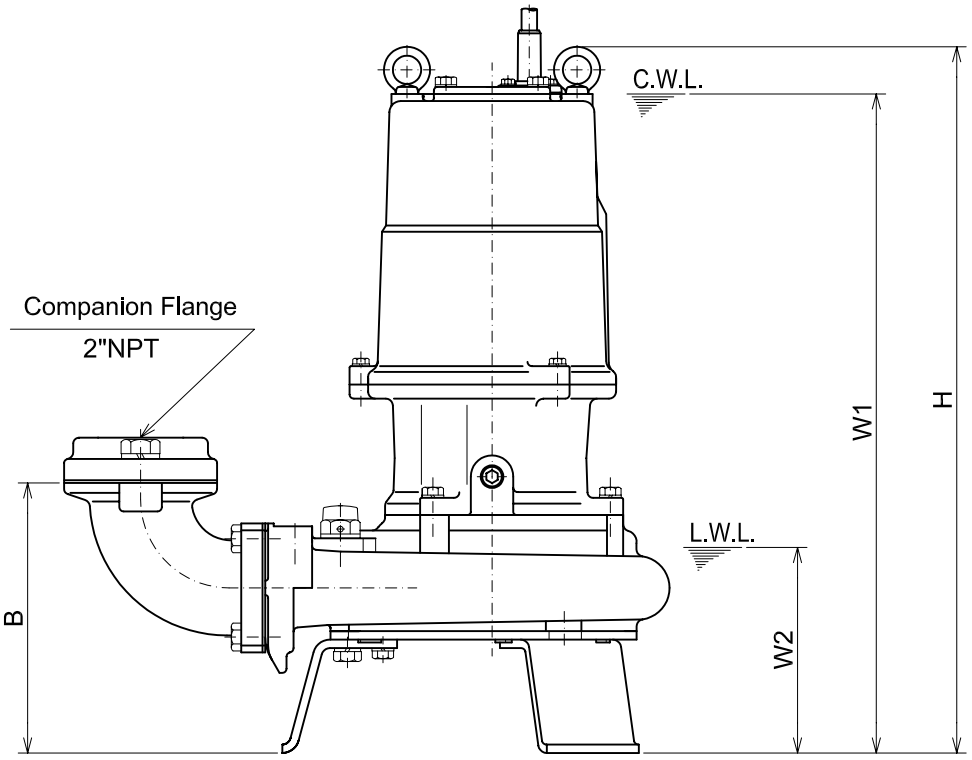
## GROUP PERFORMANCE RANGE



| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS |
|---|---|---|

## 50C4.75-CR -63




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 50C4.75-CR -63 | 1 | 2" | 16 13/16 | 9 3/4 | 4 15/16 | 7 1/2 | 11 3/16 | 5 9/16 | 5 9/16 | 19 5/8 | 18 1/4 | 5 3/4 | 104 |

**DIMENSIONS:METRIC(mm)**

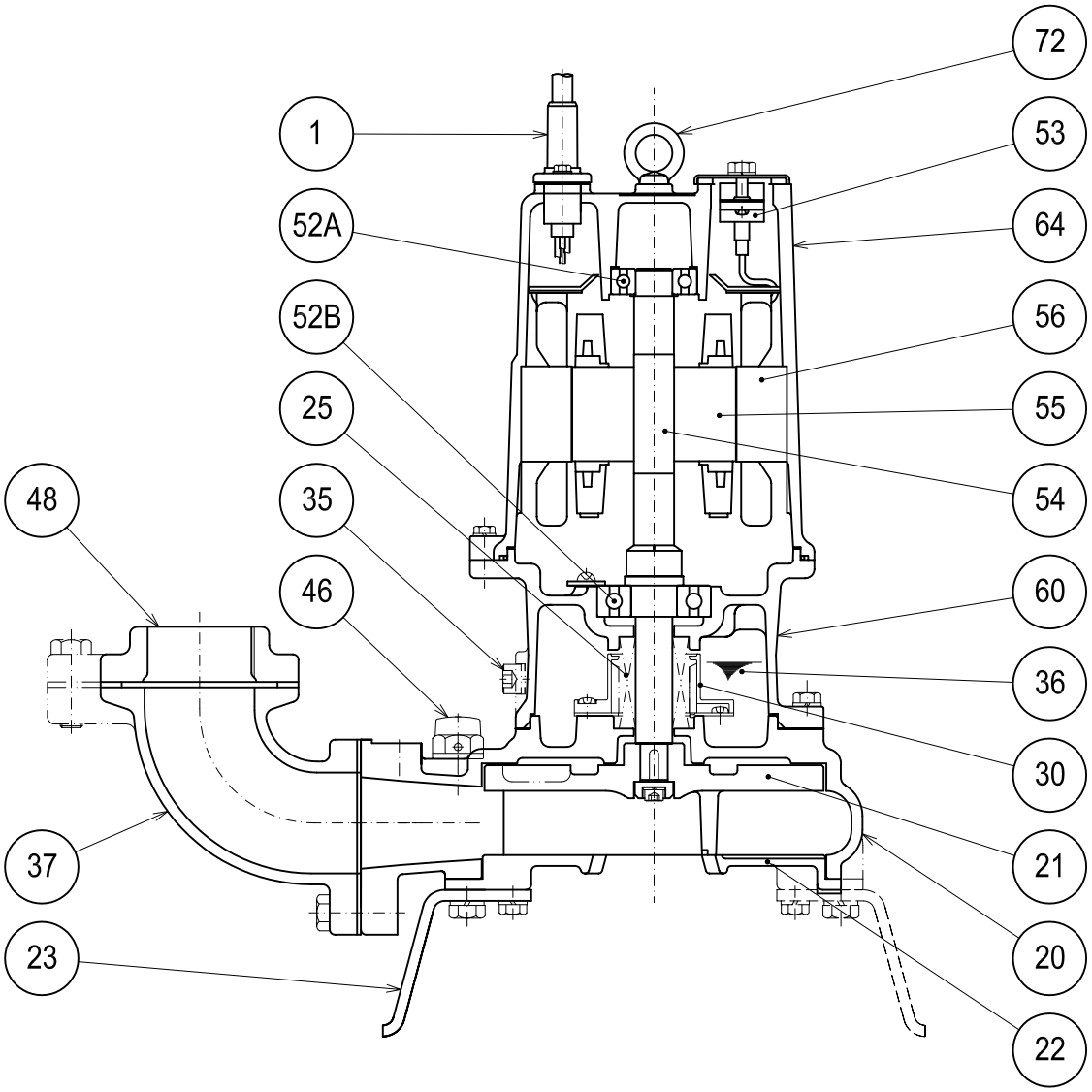
| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 50C4.75-CR -63 | 0.75 | 50 | 427 | 248 | 125 | 191 | 284 | 142 | 142 | 499 | 465 | 145 | 47 |

TSURUMI PUMP

# C-SERIES
## CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

SECTIONAL VIEW

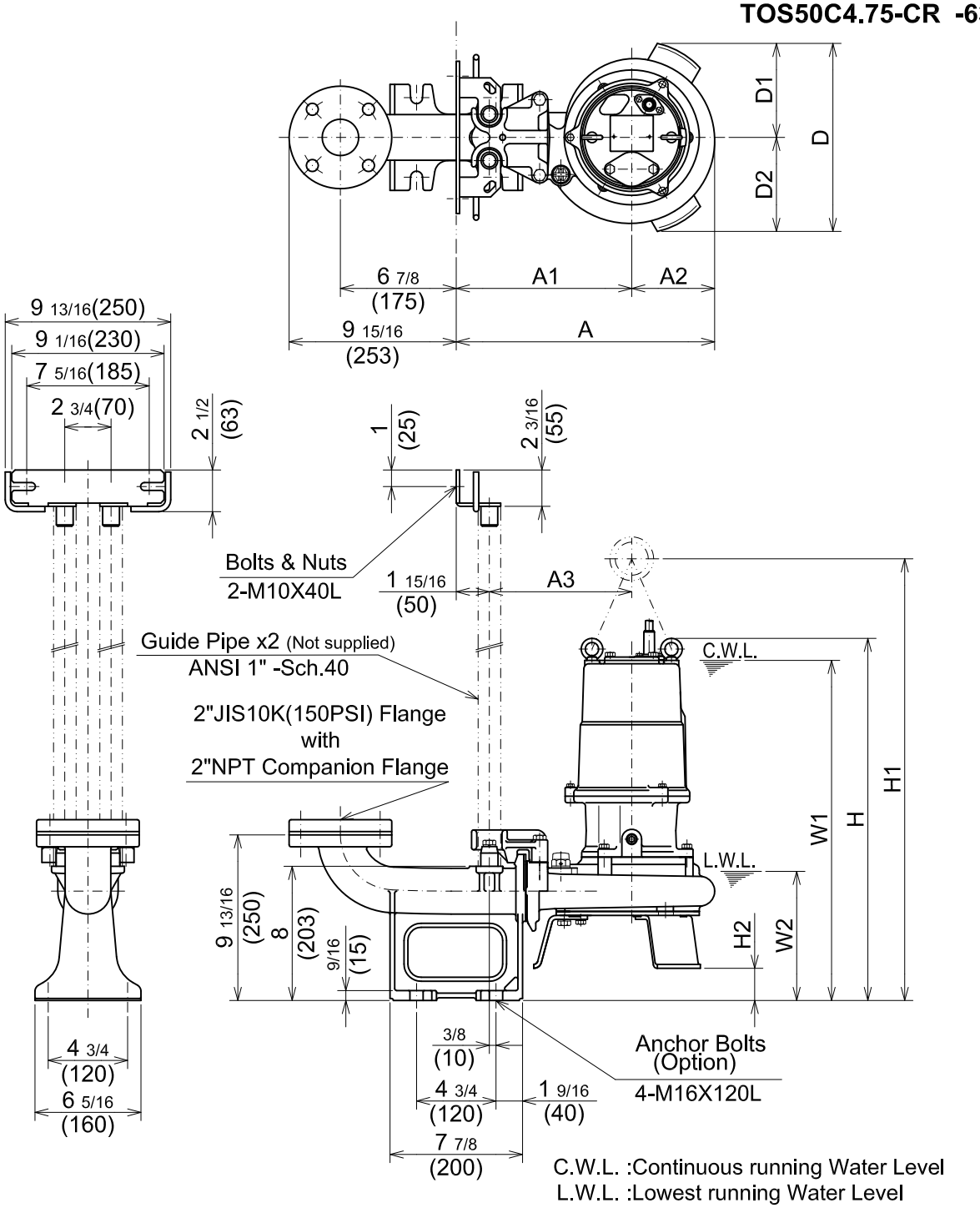
**50C4.75-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 16/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chome Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Suction Strainer | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-20 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 48 | Companion Flange | Cast Iron / NPT 2" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6204ZZC3 | | | 1 |
| 52B | Lower Bearing | #6305ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS50C4.75-CR -63




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS50C4.75-CR -63 | 1 | 2" | 15 3/8 | 10 7/16 | 4 15/16 | 8 7/16 | 11 3/16 | 5 9/16 | 5 9/16 | 21 9/16 | 26 1/4 | 1 7/8 | 20 1/4 | 7 5/8 | 90 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS50C4.75-CR -63 | 0.75 | 50 | 390 | 265 | 125 | 215 | 284 | 142 | 142 | 547 | 667 | 48 | 515 | 195 | 41 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

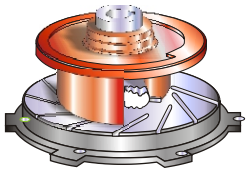
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

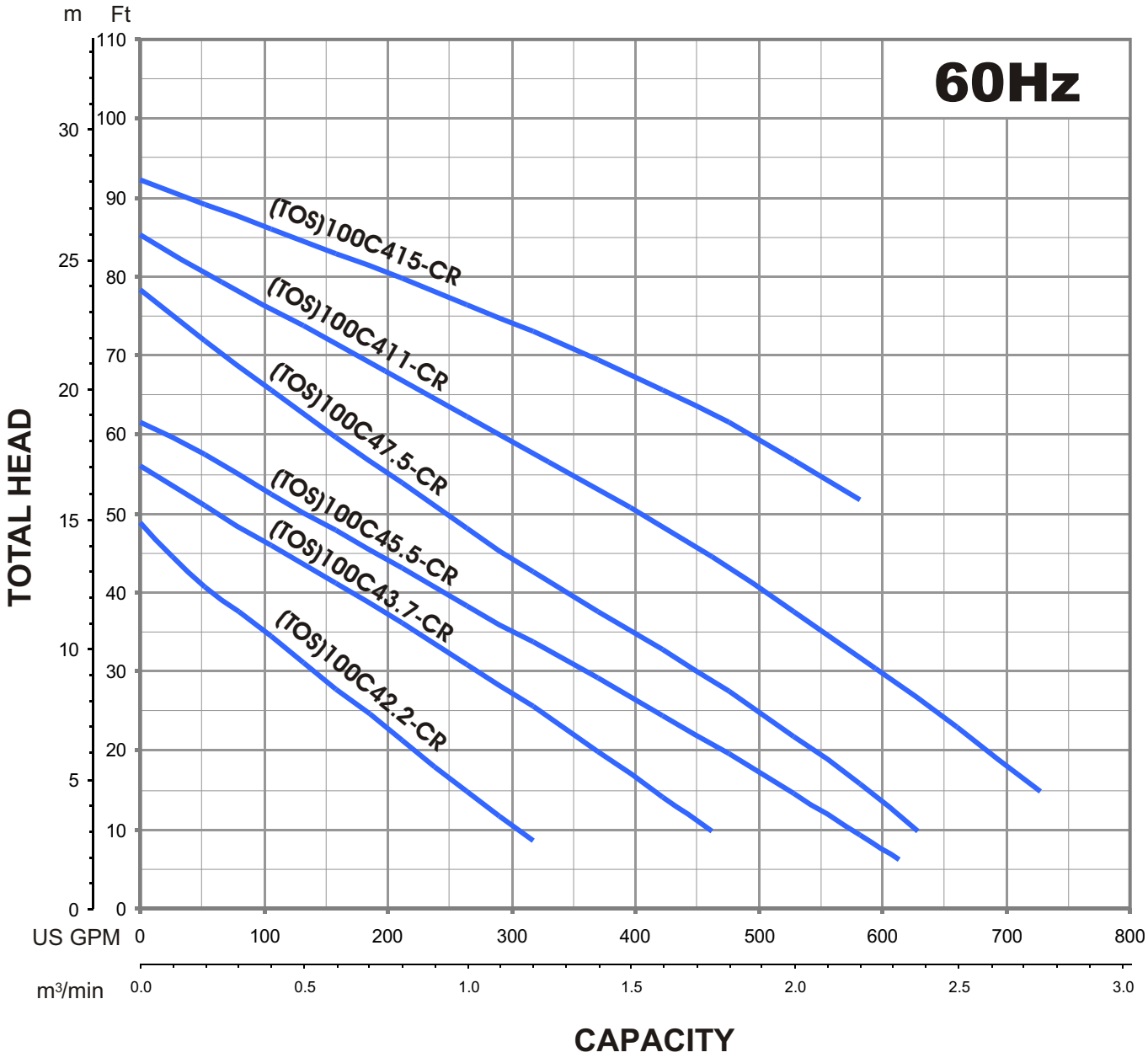
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 4″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C-SERIES
## CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

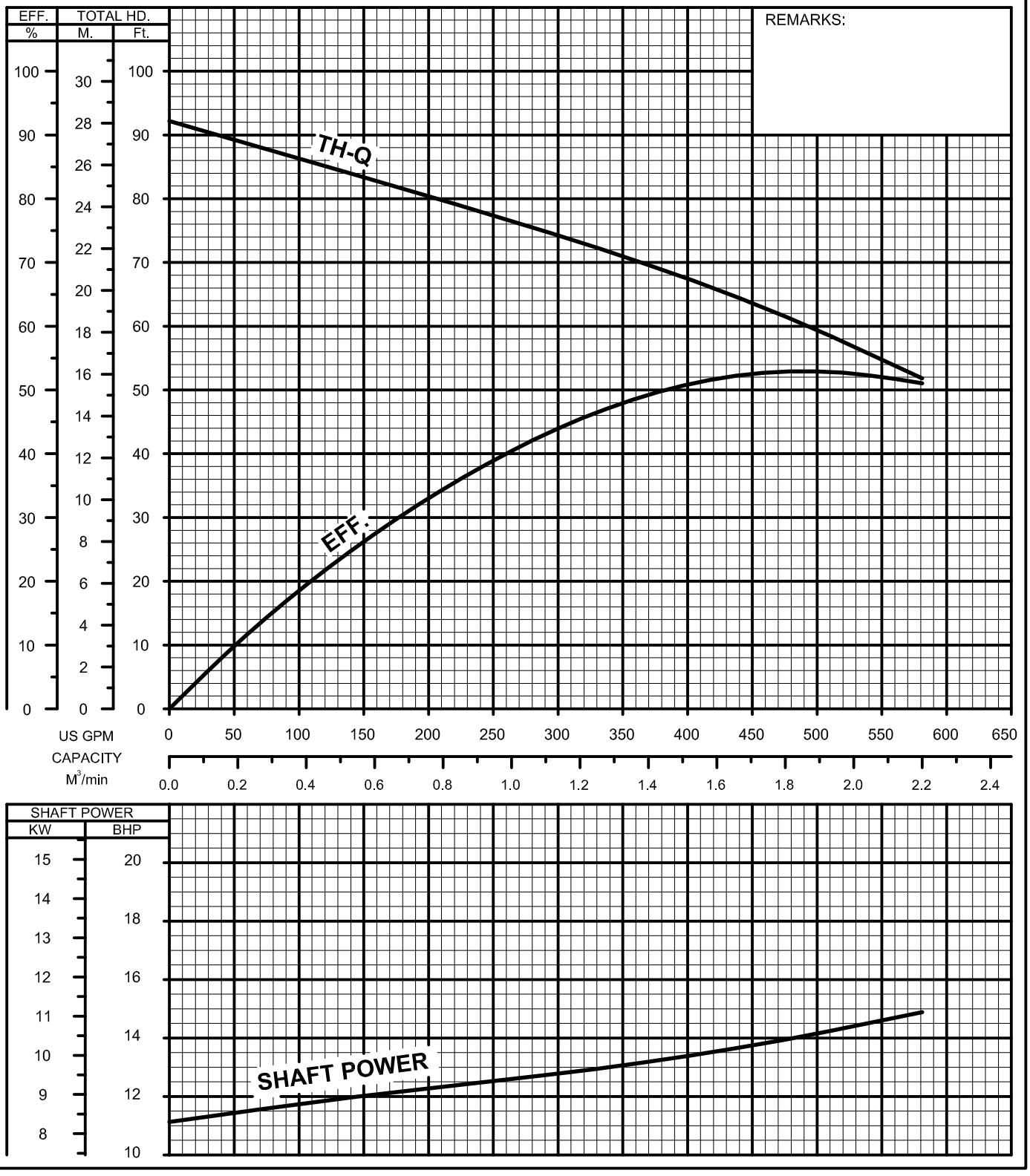
## PERFORMANCE CURVE

| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C415-CR -63 | 4"/100mm | 20 | 15 | 1739 | 1.57"/40mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230/460/575 | 56.4-53.2 / 26.6 / 21.6 | 60 | Star-Delta | F |

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

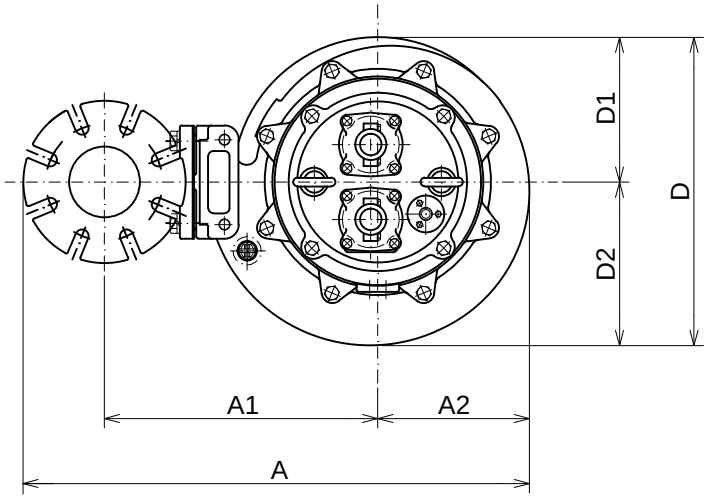
REMARKS:

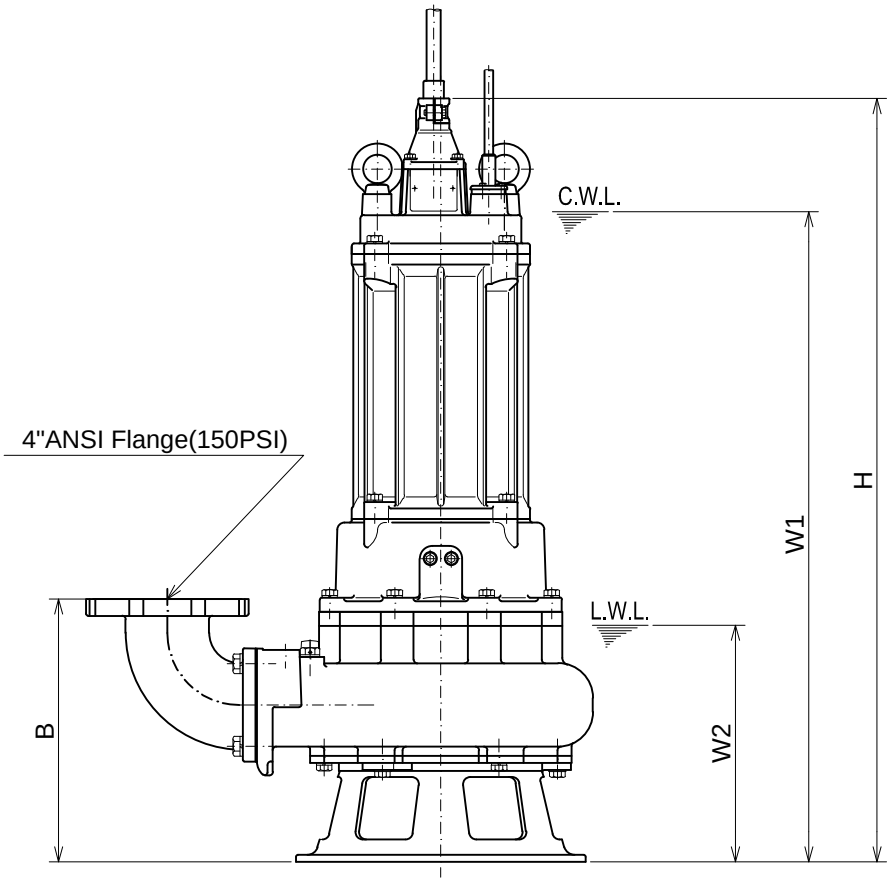


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C415-CR -63

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. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C415-CR -63 | 20 | 4" | 28 5/8 | 15 5/8 | 8 7/16 | 14 5/8 | 17 3/16 | 8 1/16 | 9 1/8 | 42 1/2 | 36 1/4 | 13 1/4 | 695 |

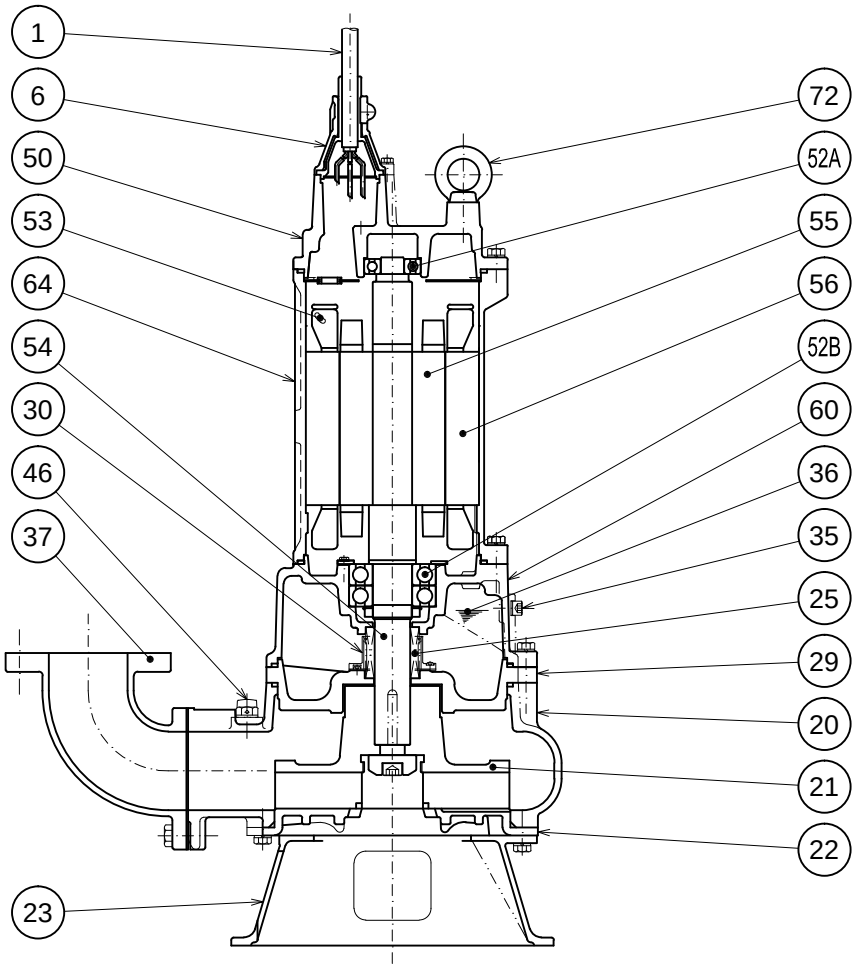
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C415-CR -63 | 15 | 100 | 727 | 397 | 215 | 372 | 436 | 205 | 231 | 1080 | 920 | 335 | 315 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

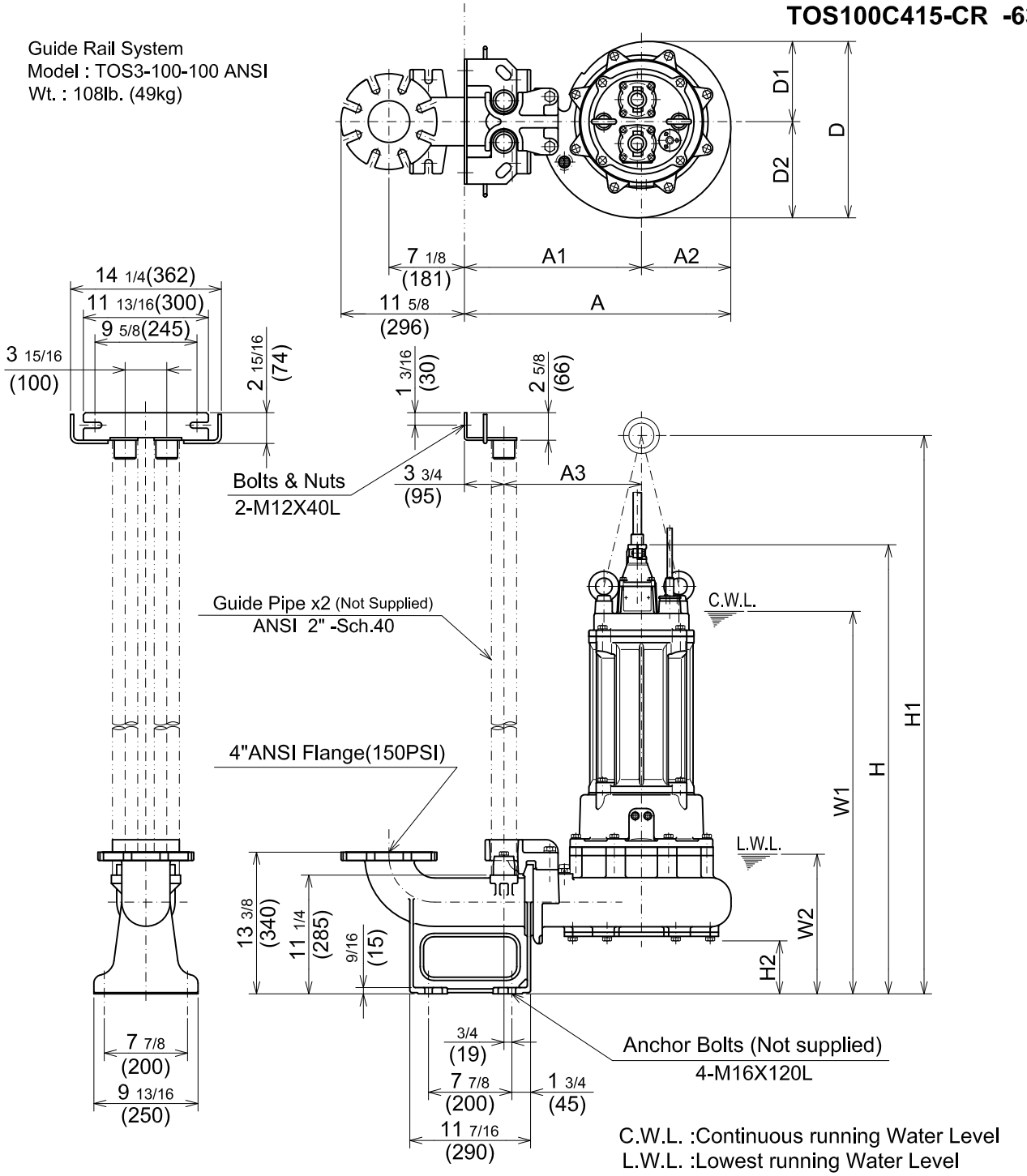
**100C415-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 10/4-32ft | | | 1 |
| | Power Cable | Chloroprene Sheath AWG 10/3-32ft | | | 1 |
| | Control Cable | Chloroprene Sheath AWG 16/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 2 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Strainer Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-45 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6306ZZC3 | | | 1 |
| 52B | Lower Bearing | #6310ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C415-CR -63




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C415-CR -63 | 20 | 4" | 25 3/16 | 16 3/4 | 8 7/16 | 13 | 16 11/16 | 7 5/8 | 9 1/8 | 42 7/16 | 55 3/4 | 5 | 36 1/4 | 13 1/4 | 463 |

*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C415-CR -63 | 15 | 100 | 640 | 425 | 215 | 330 | 424 | 193 | 231 | 1078 | 1416 | 127 | 920 | 335 | 210 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

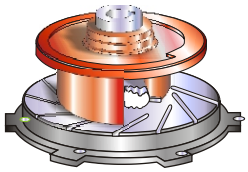
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

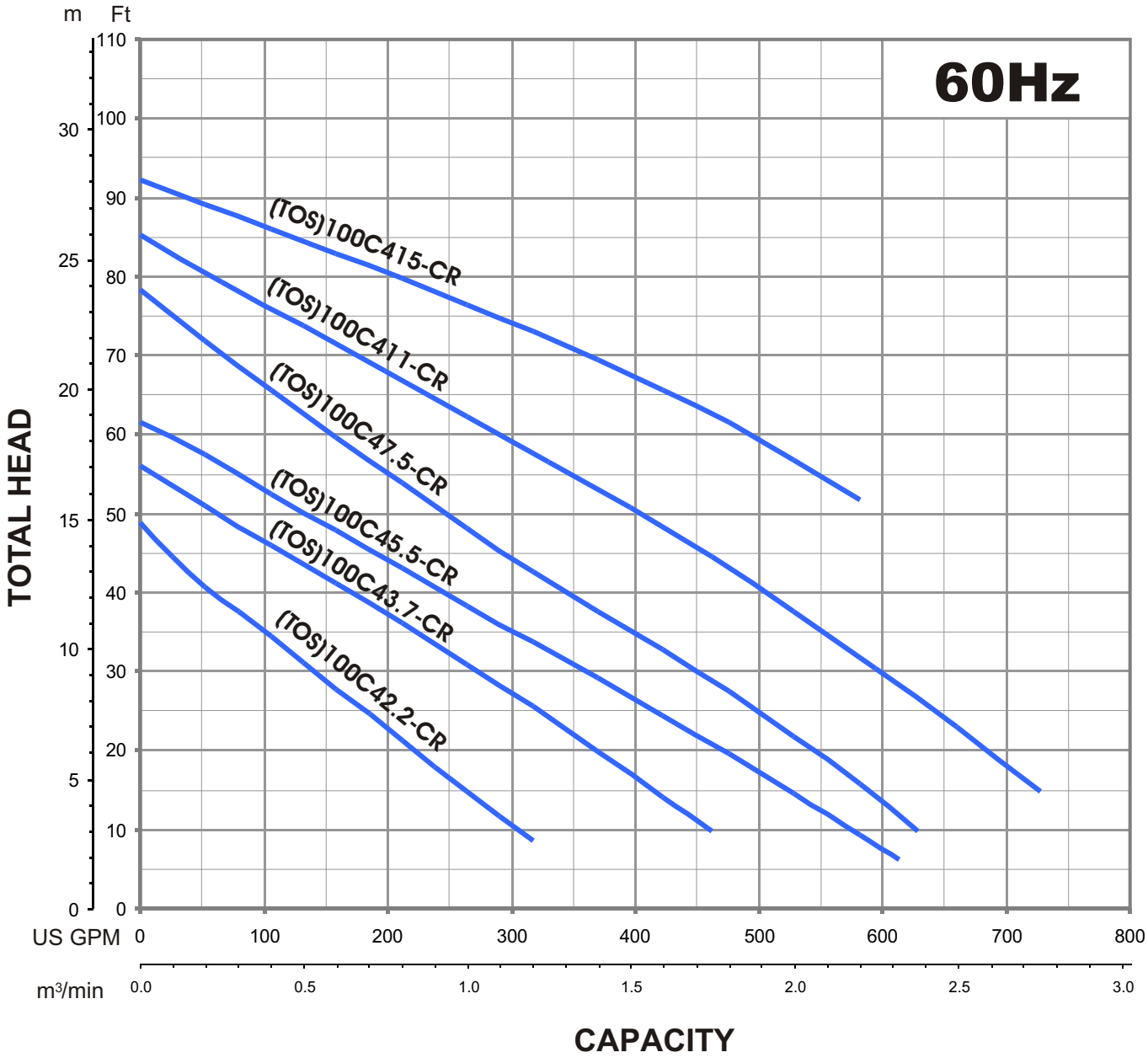
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 4″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C-SERIES
## CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

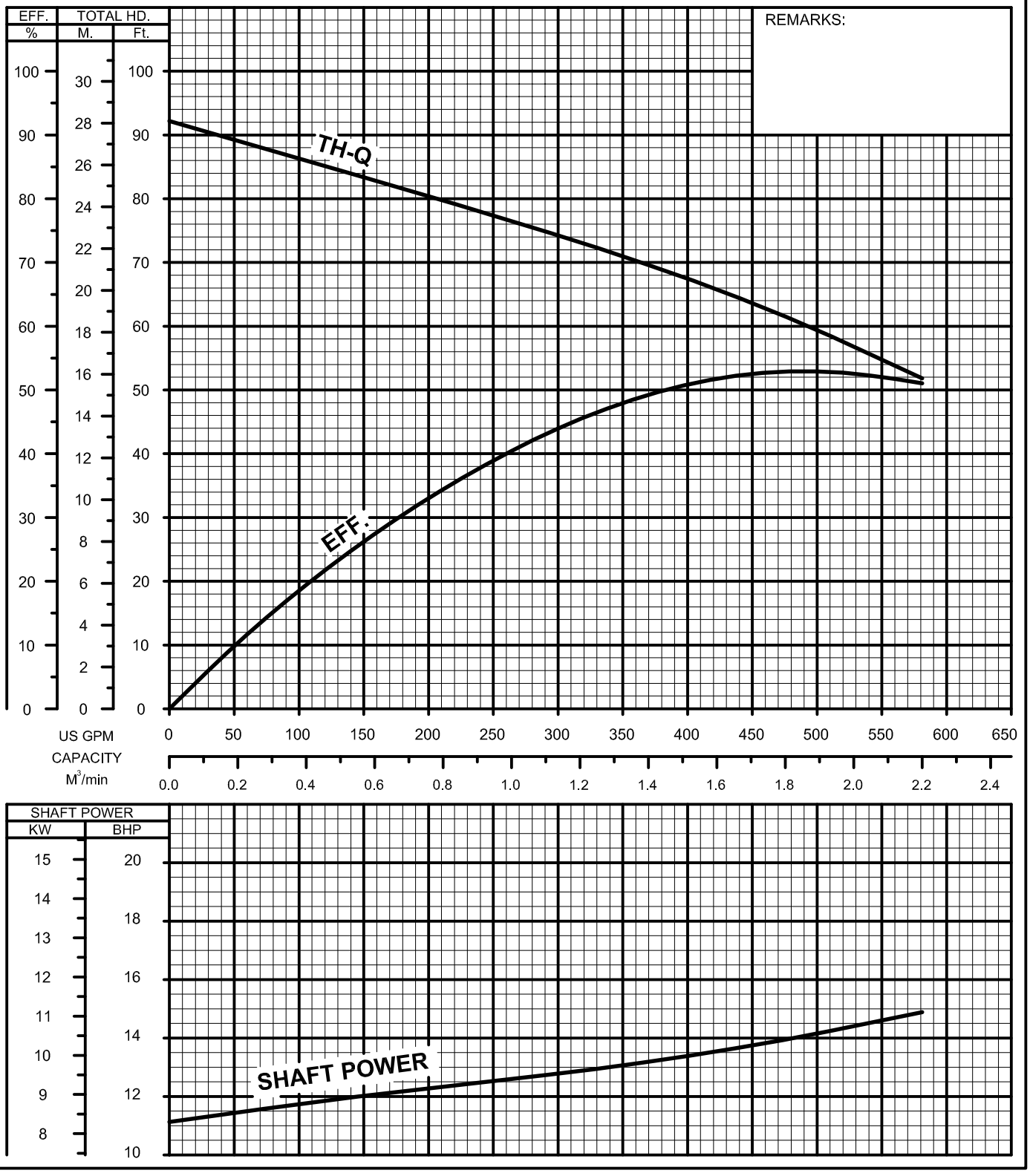
## PERFORMANCE CURVE

| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C415-CR -63 | 4"/100mm | 20 | 15 | 1739 | 1.57"/40mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230/460/575 | 56.4-53.2 / 26.6 / 21.6 | 60 | Star-Delta | F |

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

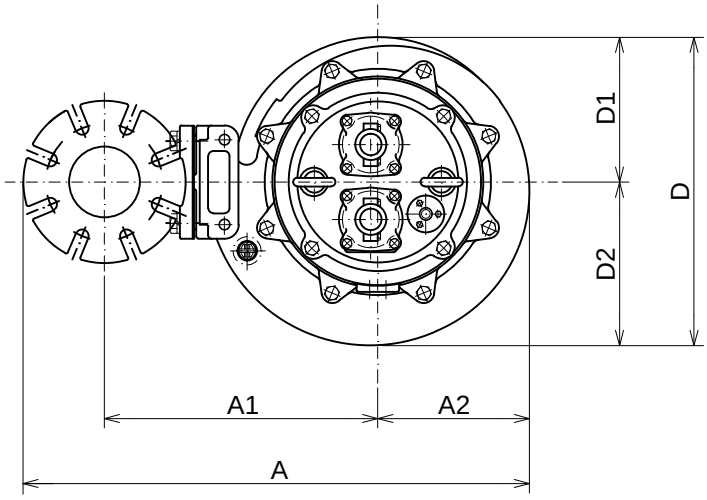
REMARKS:

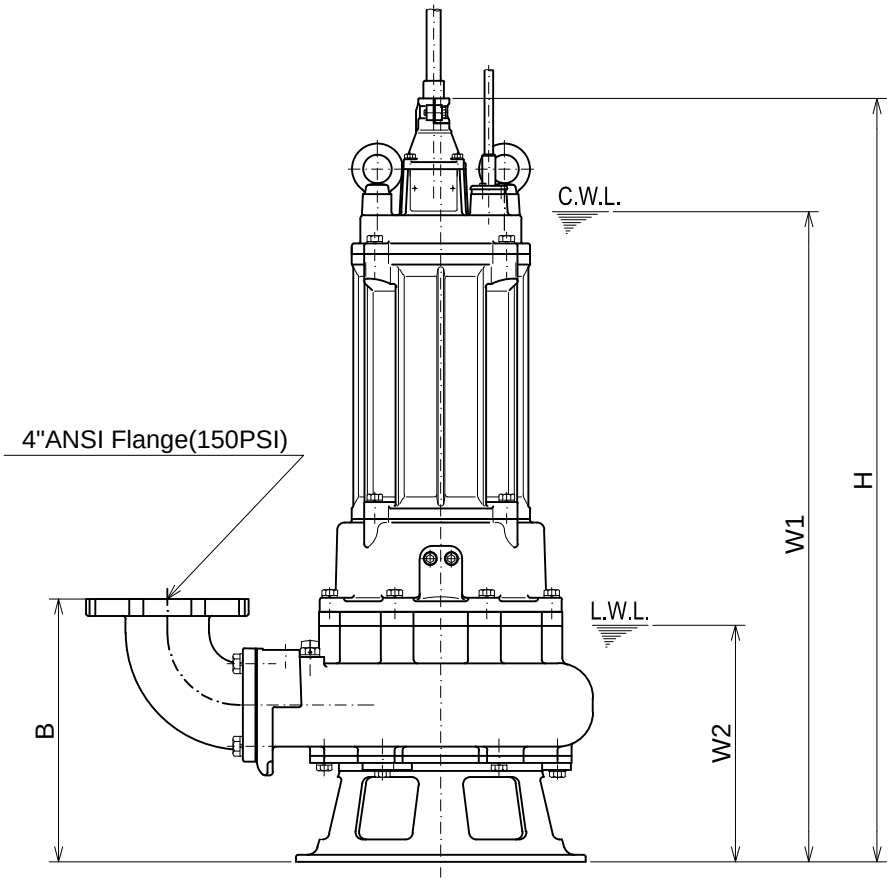


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C415-CR -63

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. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C415-CR -63 | 20 | 4" | 28 5/8 | 15 5/8 | 8 7/16 | 14 5/8 | 17 3/16 | 8 1/16 | 9 1/8 | 42 1/2 | 36 1/4 | 13 1/4 | 695 |

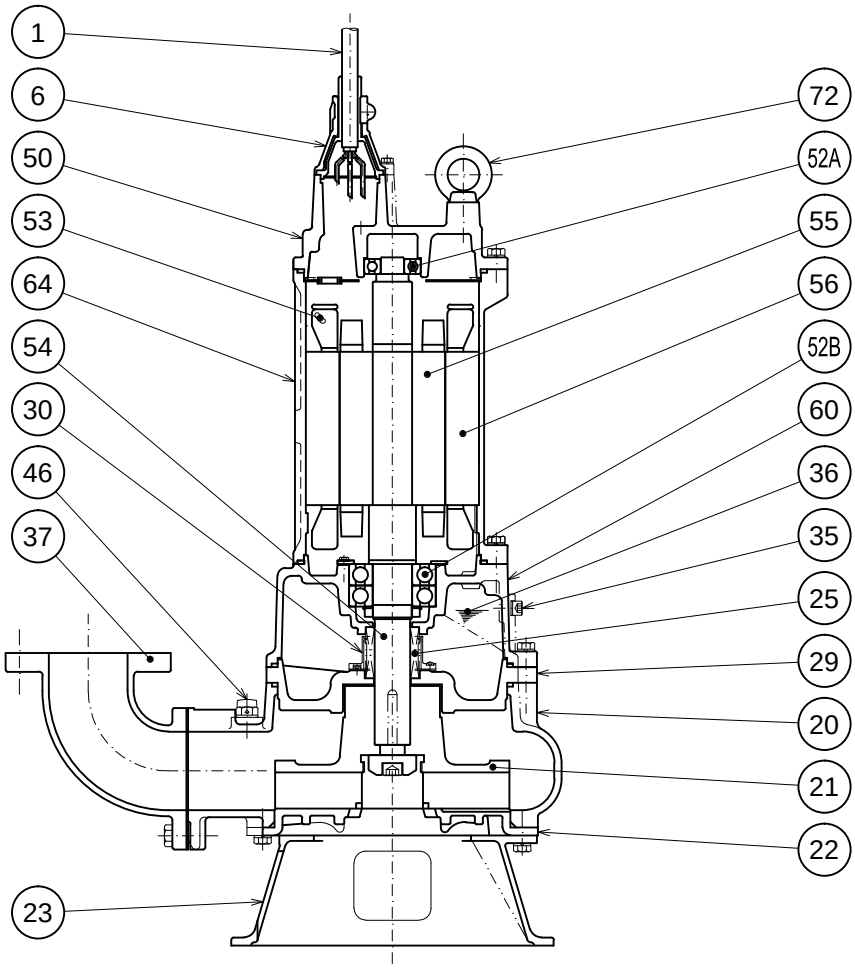
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C415-CR -63 | 15 | 100 | 727 | 397 | 215 | 372 | 436 | 205 | 231 | 1080 | 920 | 335 | 315 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

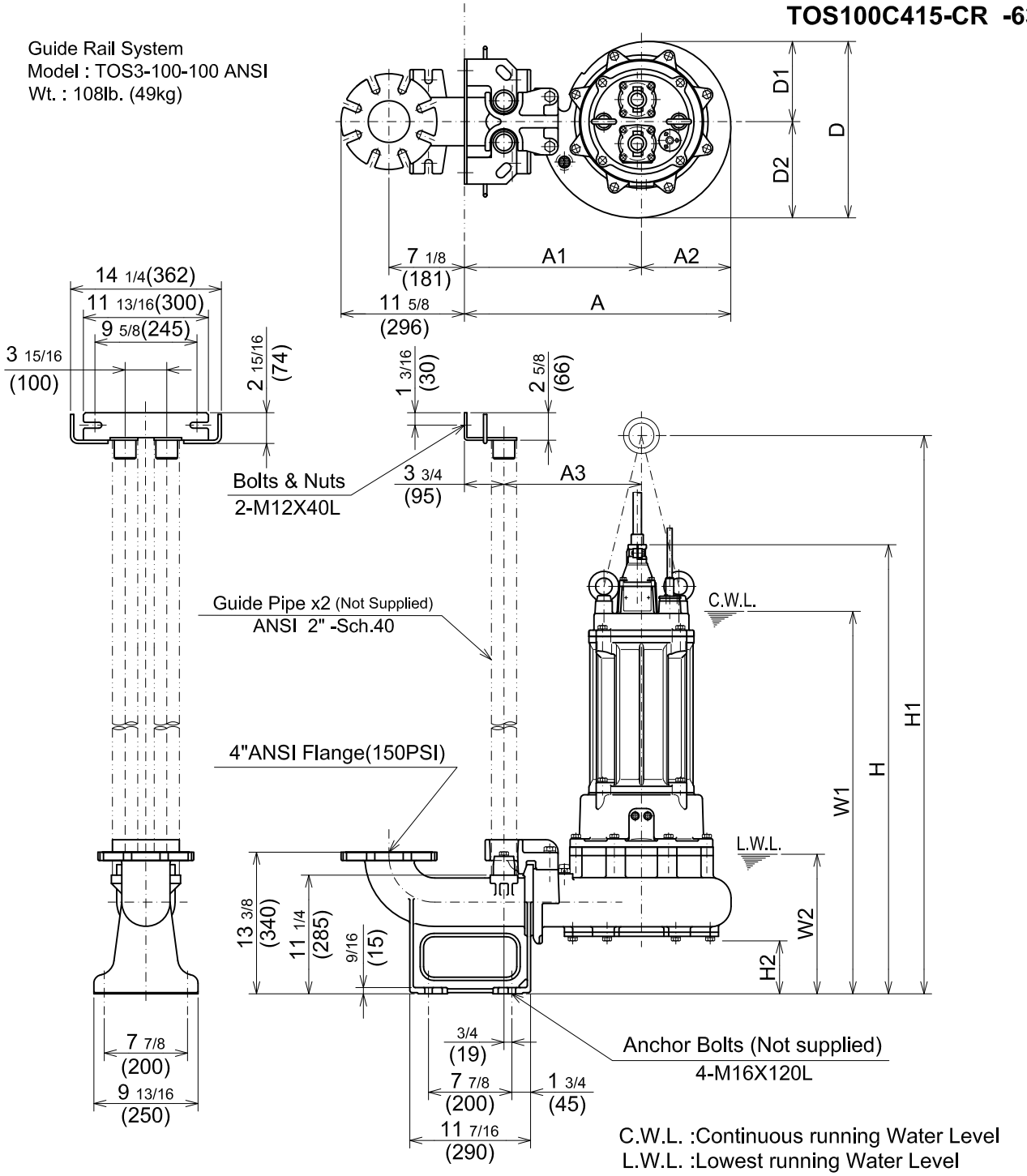
**100C415-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 10/4-32ft | | | 1 |
| | Power Cable | Chloroprene Sheath AWG 10/3-32ft | | | 1 |
| | Control Cable | Chloroprene Sheath AWG 16/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 2 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Strainer Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-45 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6306ZZC3 | | | 1 |
| 52B | Lower Bearing | #6310ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C415-CR -63




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C415-CR -63 | 20 | 4" | 25 3/16 | 16 3/4 | 8 7/16 | 13 | 16 11/16 | 7 5/8 | 9 1/8 | 42 7/16 | 55 3/4 | 5 | 36 1/4 | 13 1/4 | 463 |

*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C415-CR -63 | 15 | 100 | 640 | 425 | 215 | 330 | 424 | 193 | 231 | 1078 | 1416 | 127 | 920 | 335 | 210 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

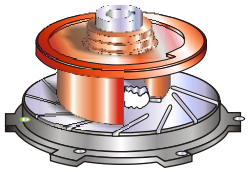
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

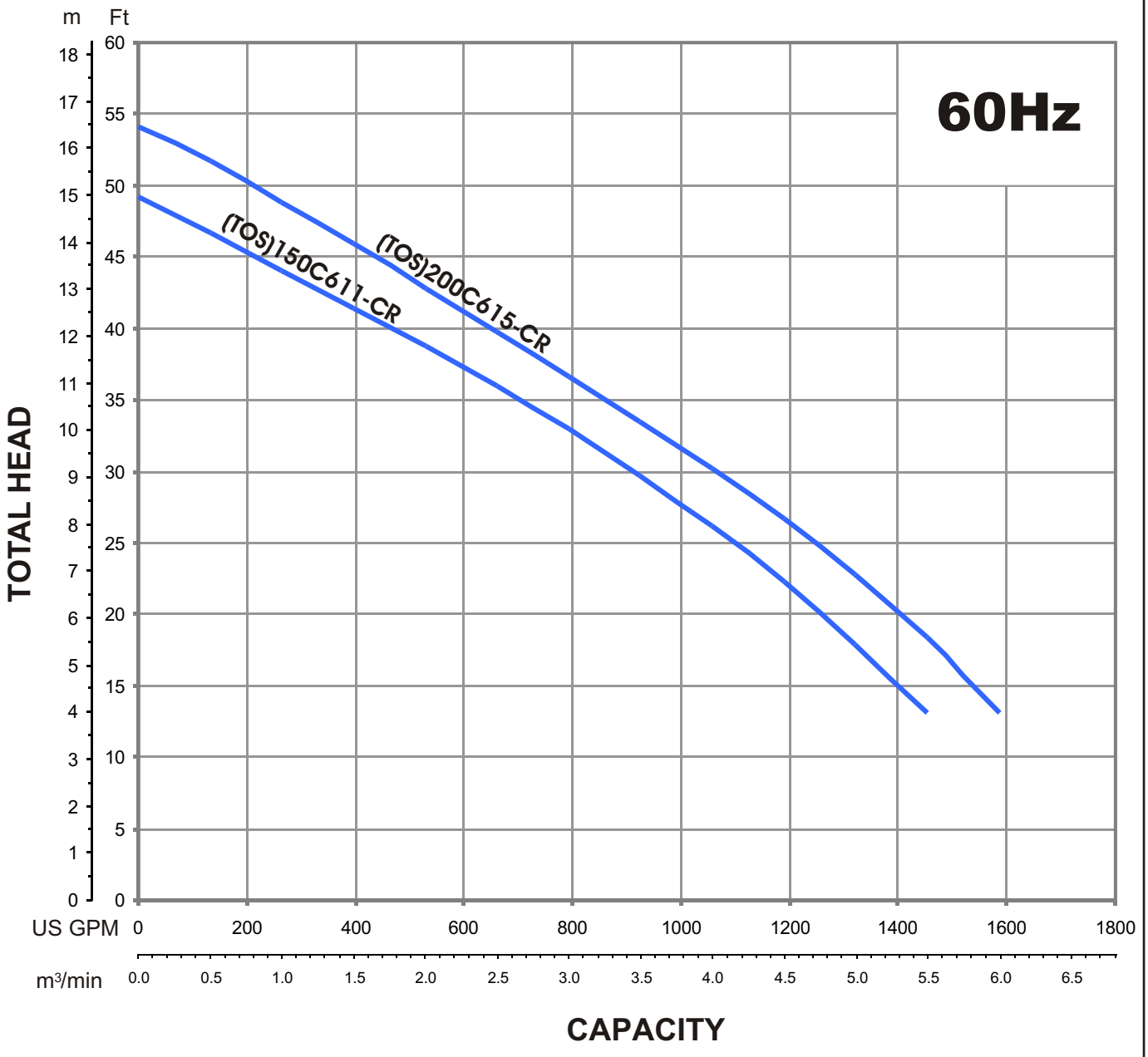
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 6″ - 8″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C-SERIES
CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

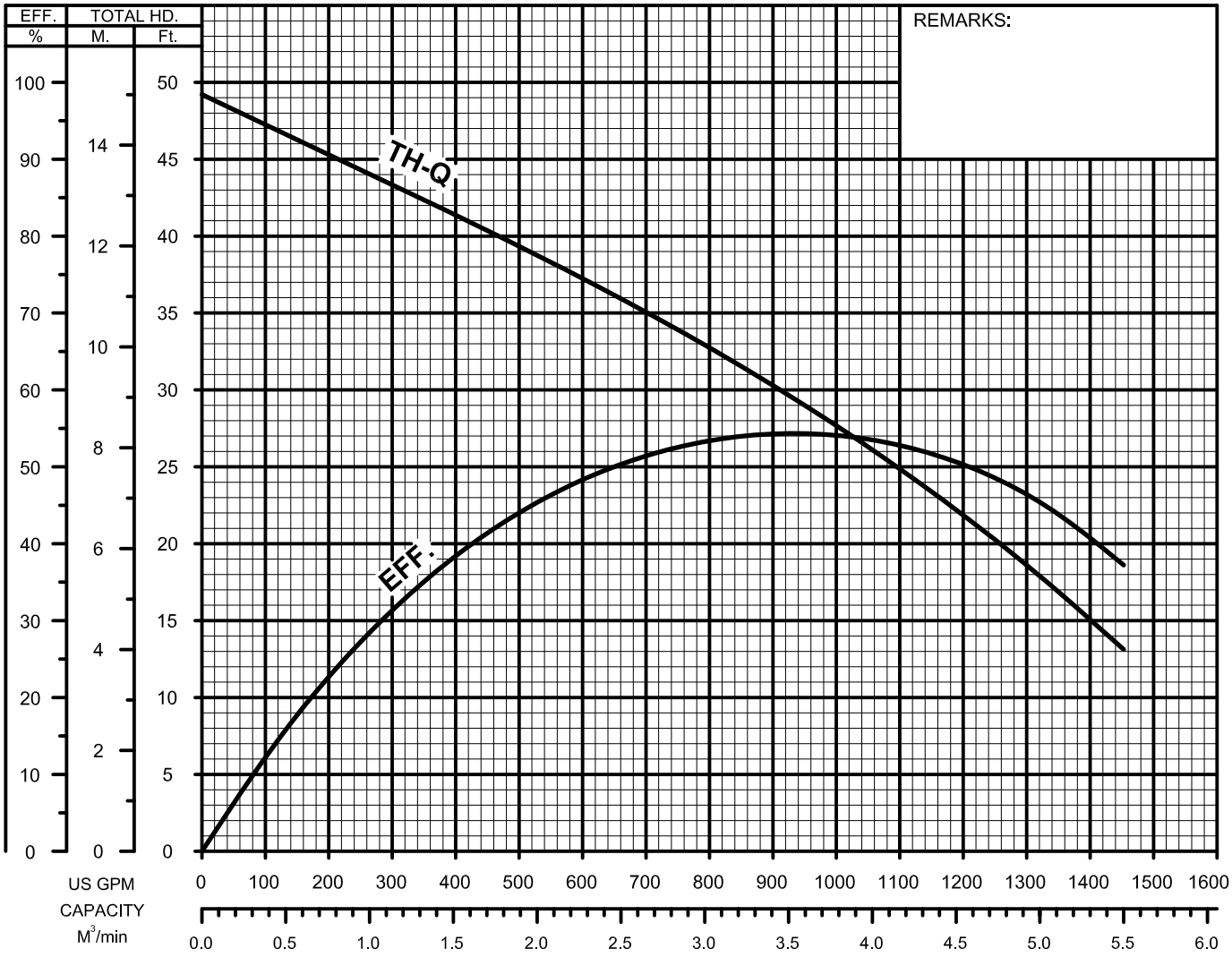
## PERFORMANCE CURVE

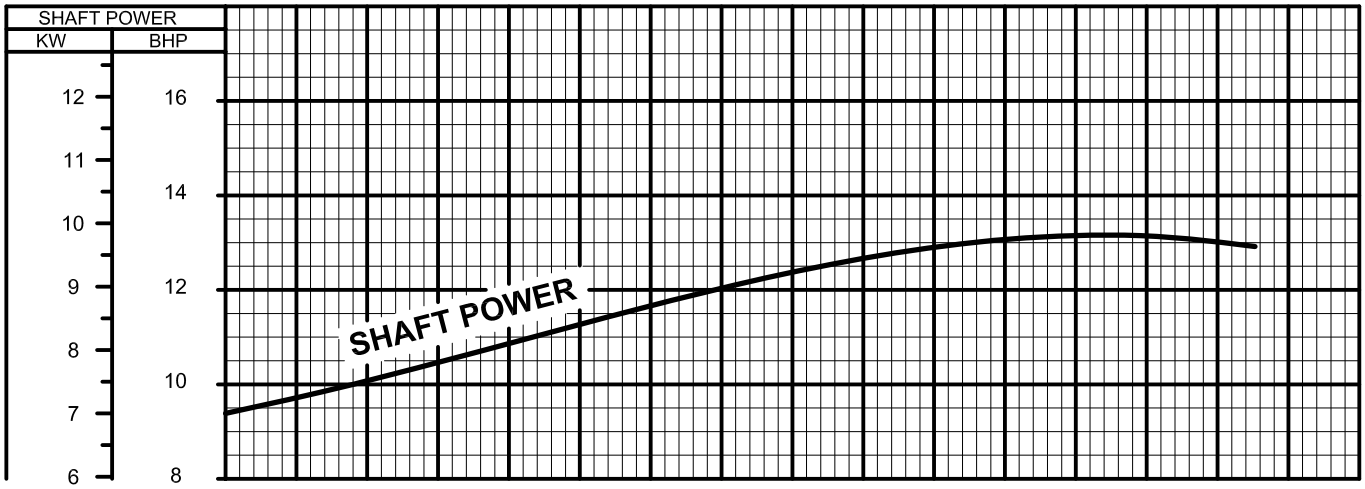
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)150C611-CR -61 | 6"/150mm | 15 | 11 | 1140 | 3.62"/92mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 230/460/575 | 39.0/19.5/15.5 | 60 | Direct On Line | B |

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

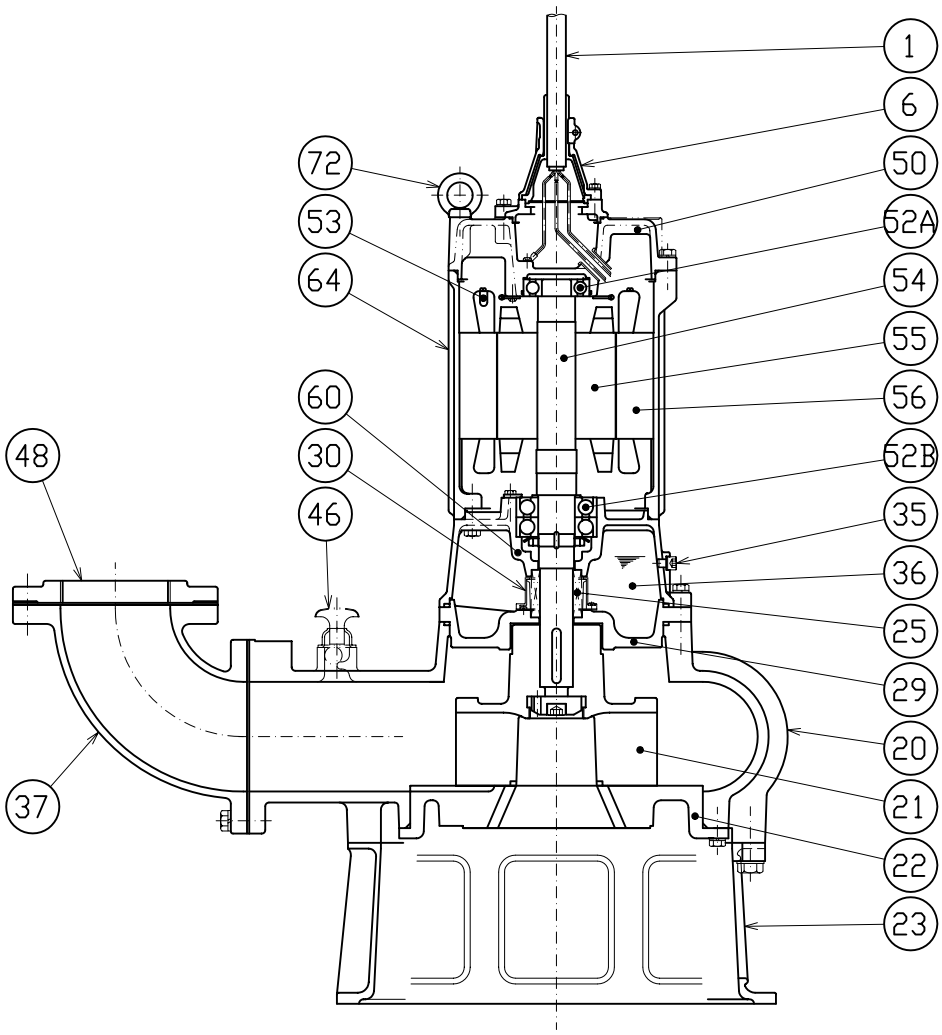
REMARKS:



| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

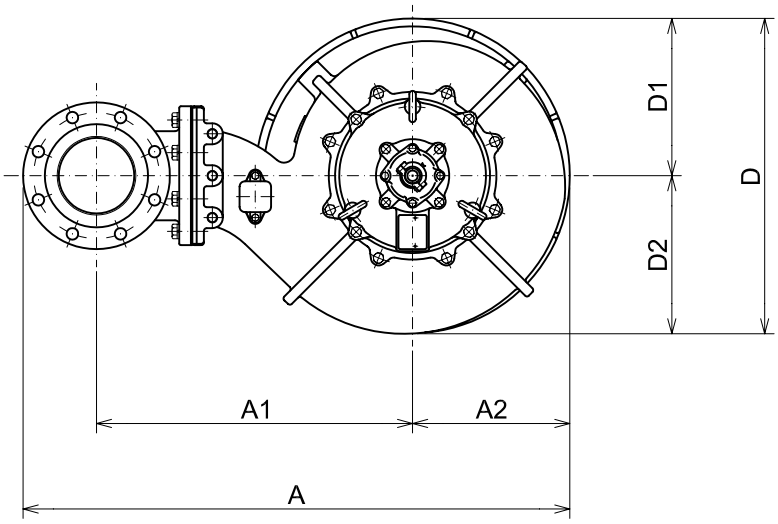
**150C611-CR -61**

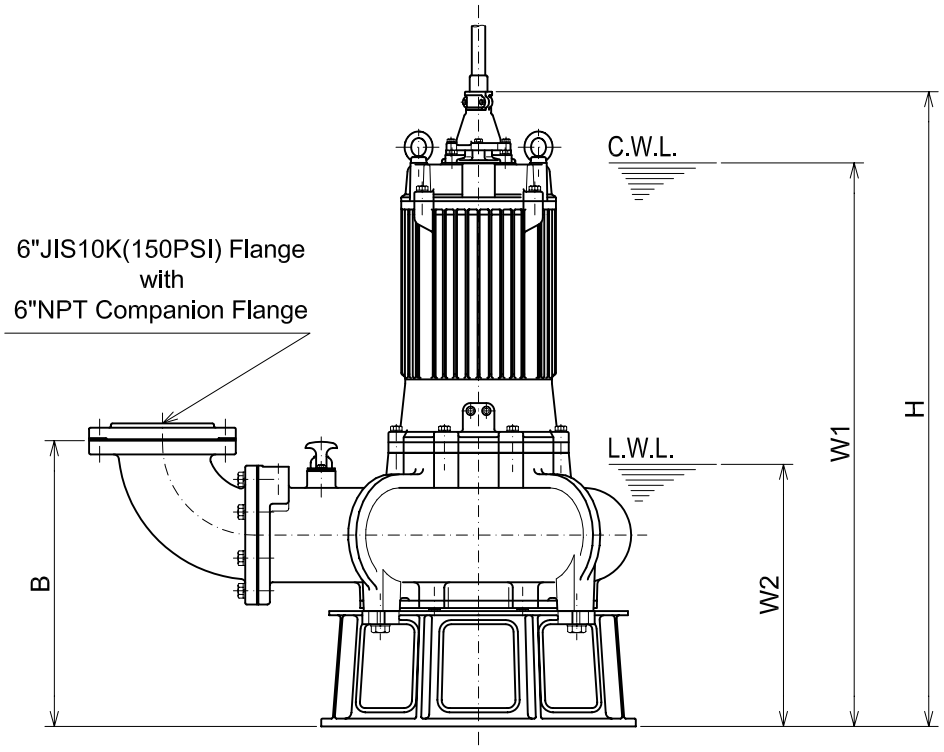



| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 8/4, 14/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Malleable Cast Iron | A47 Grade 32510 | EN 1562 GJMB-350-10 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-45 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | 1 |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Steel (Cold Rolled ) | A109/A1008 | EN 10130 | 1 |
| 48 | Companion Flange | Cast Iron / NPT 6" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | #6308ZZC3 | | | 1 |
| 52B | Lower Bearing | #6310ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 3 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 150C611-CR -61




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

**DIMENSIONS:USCS(Inch)**

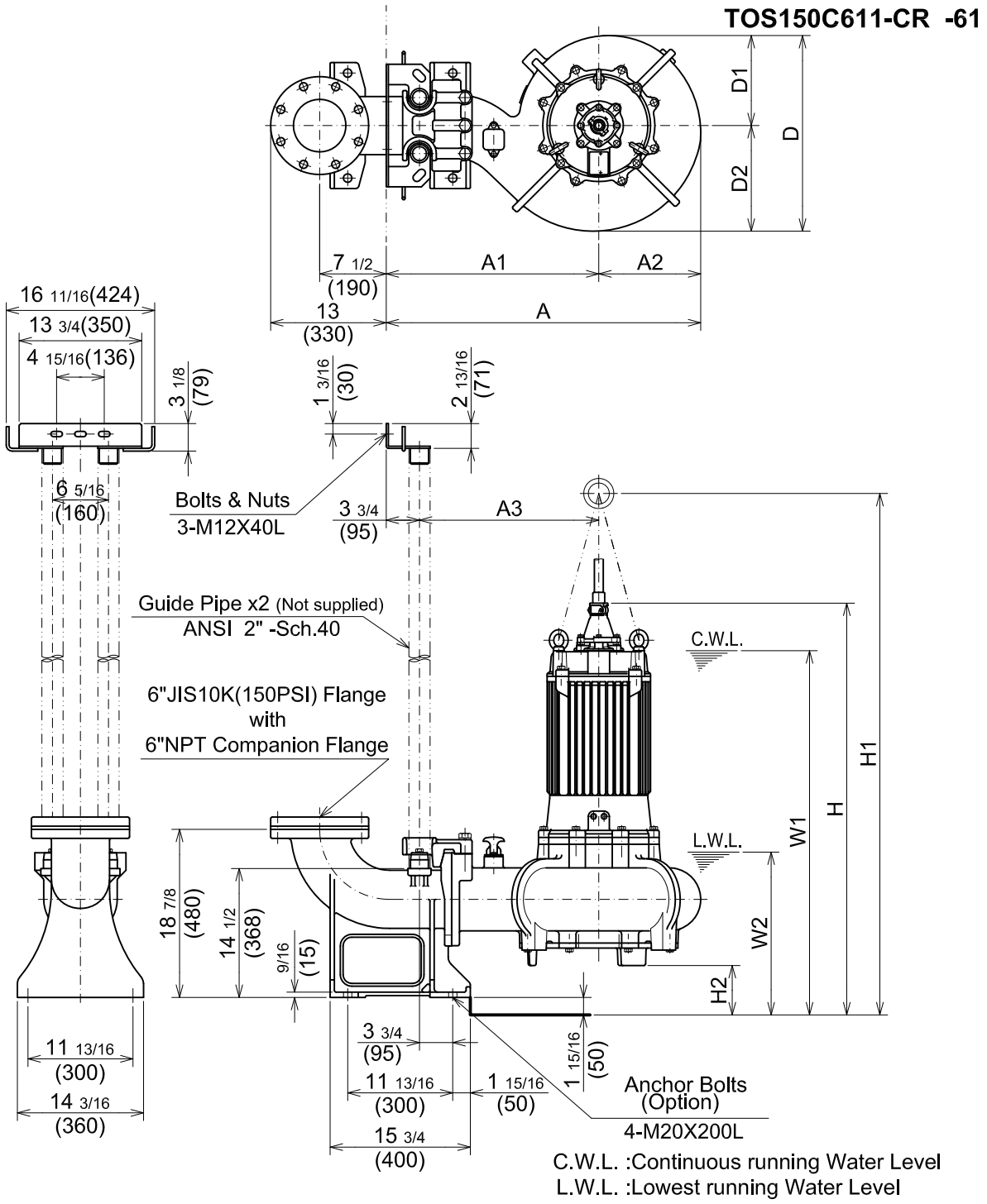
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 150C611-CR -61 | 15 | 6" | 41 1/16 | 23 3/4 | 11 13/16 | 21 7/16 | 23 11/16 | 11 13/16 | 11 7/8 | 47 11/16 | 42 3/8 | 19 5/8 | 950 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 150C611-CR -61 | 11 | 150 | 1043 | 603 | 300 | 545 | 602 | 300 | 302 | 1211 | 1075 | 500 | 430 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS150C611-CR -61




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS150C611-CR -61 | 15 | 6" | 35 3/8 | 23 7/8 | 11 7/16 | 20 3/16 | 22 | 10 1/8 | 11 7/8 | 46 5/16 | 58 5/8 | 5 9/16 | 41 | 18 1/4 | 880 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS150C611-CR -61 | 11 | 150 | 898 | 607 | 291 | 512 | 559 | 257 | 302 | 1176 | 1489 | 141 | 1040 | 465 | 400 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

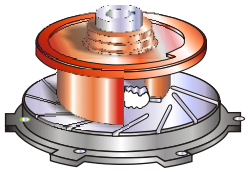
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C-SERIES
## CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

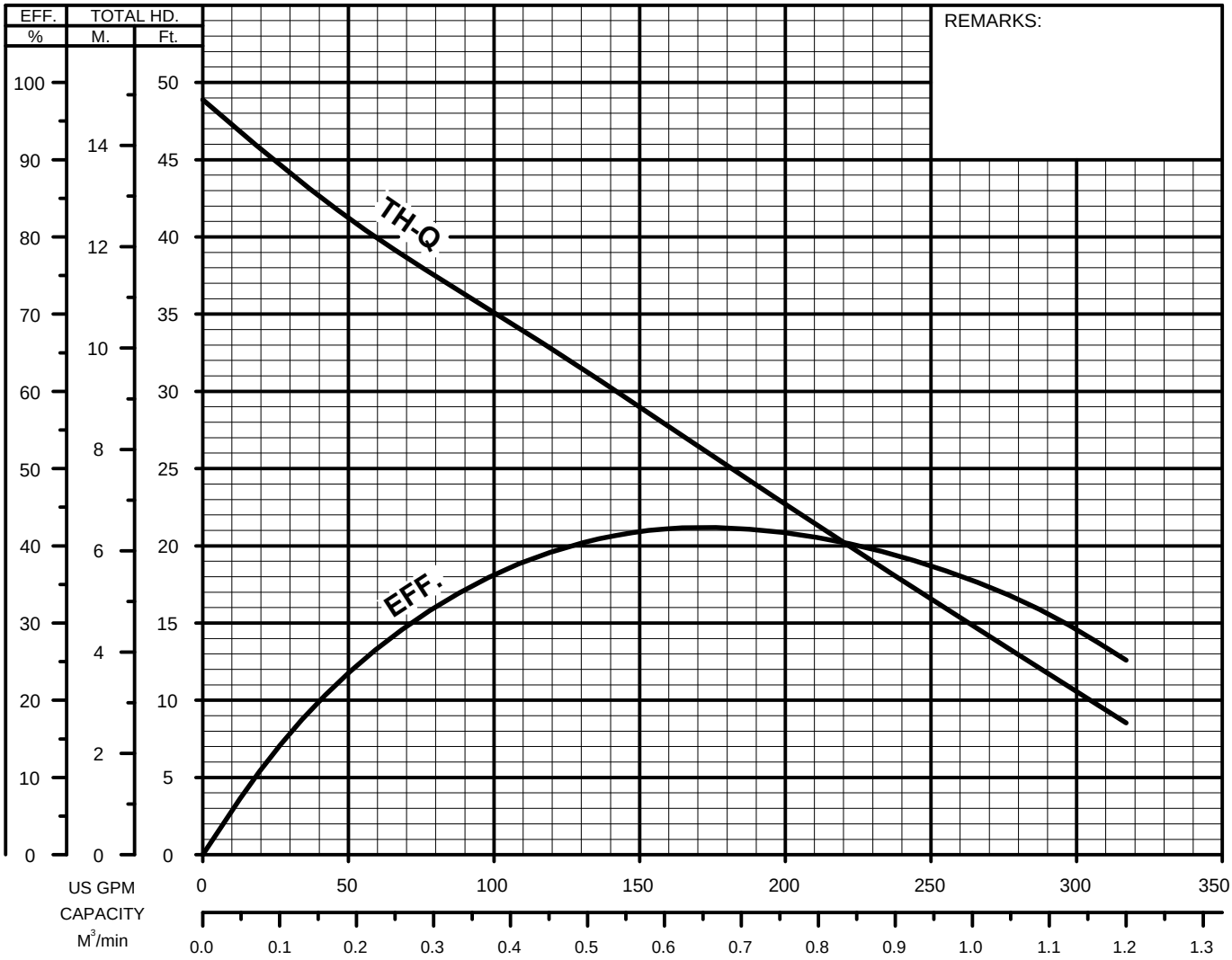
## PERFORMANCE CURVE

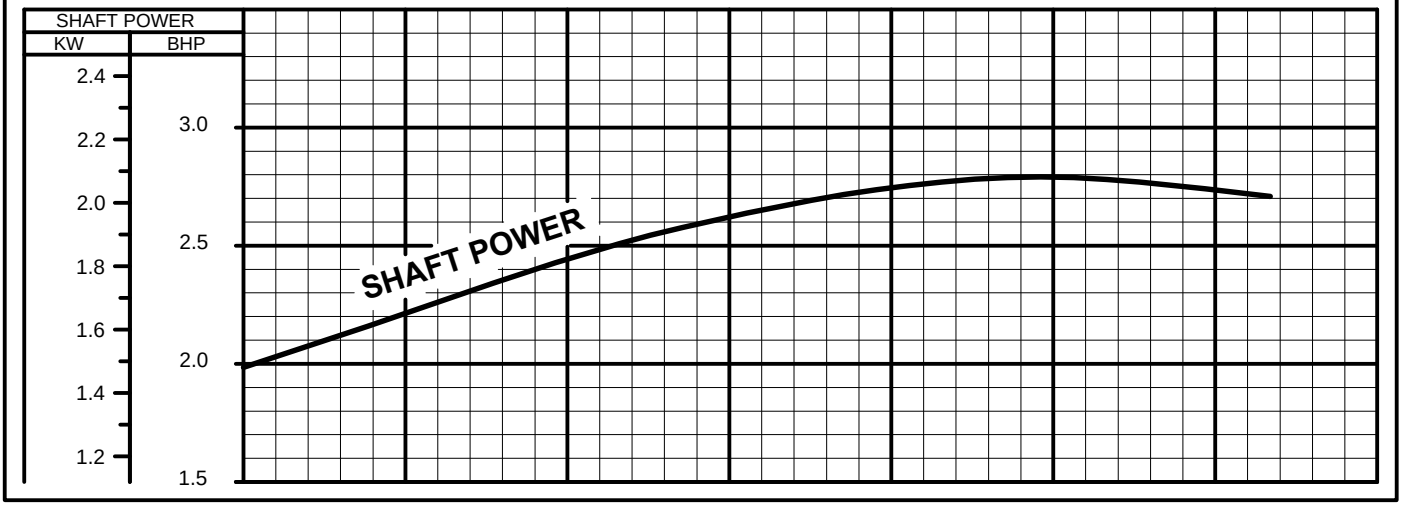
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C42.2-CR -62 | 4"/100mm | 3 | 2.2 | 1700 | 1.73"/44mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230/460/575 | 9.4-8.5/4.3/3.5 | 60 | Direct On Line | E |

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

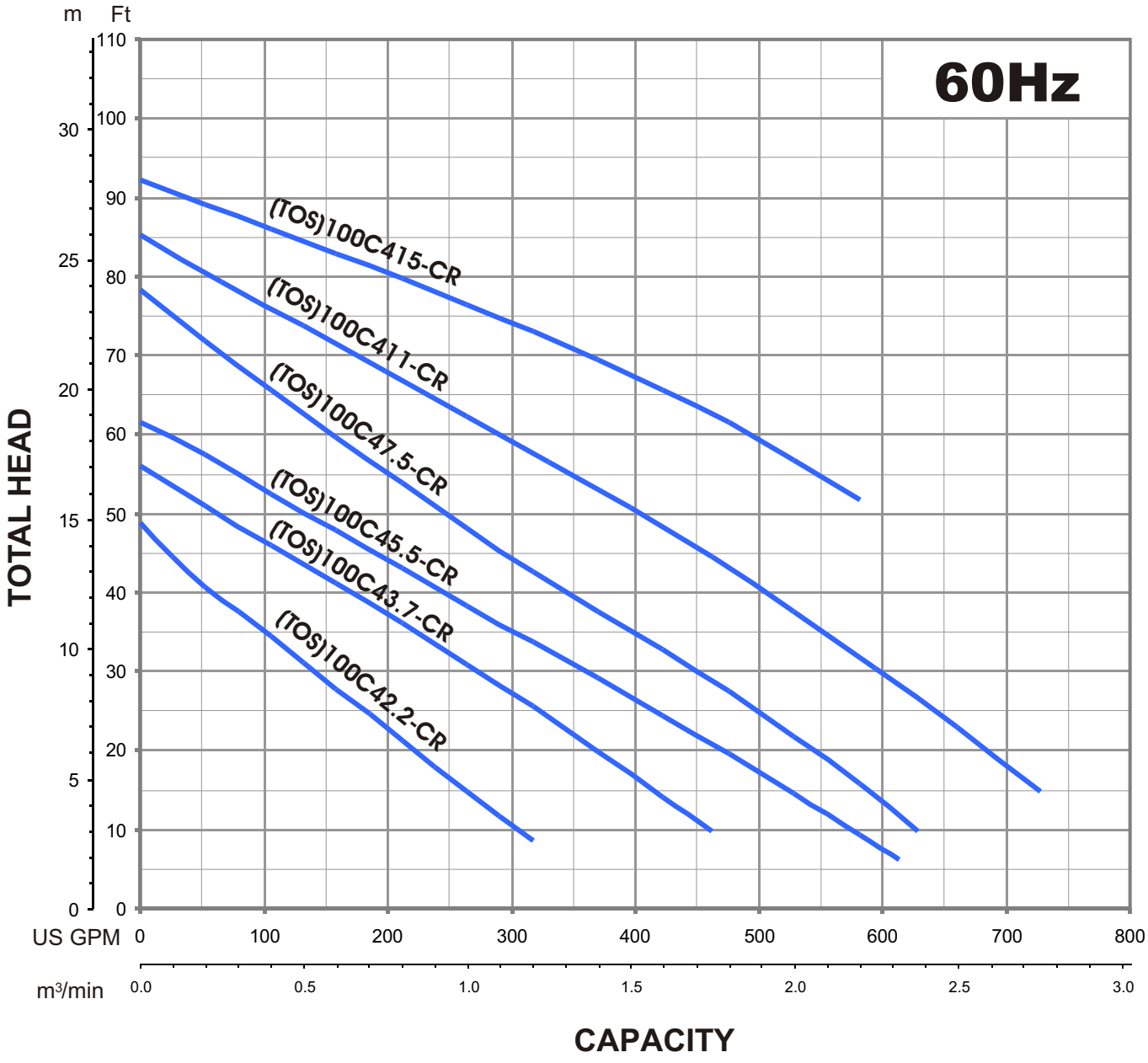
REMARKS:



| TSURUMI PUMP | C series 4″ | PERFORMANCE RANGE |
|---|---|---|

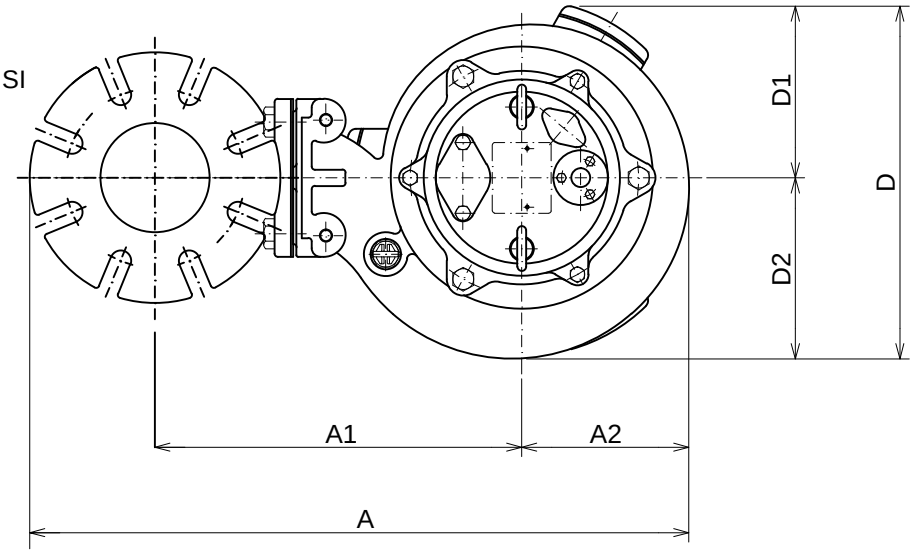
## GROUP PERFORMANCE RANGE

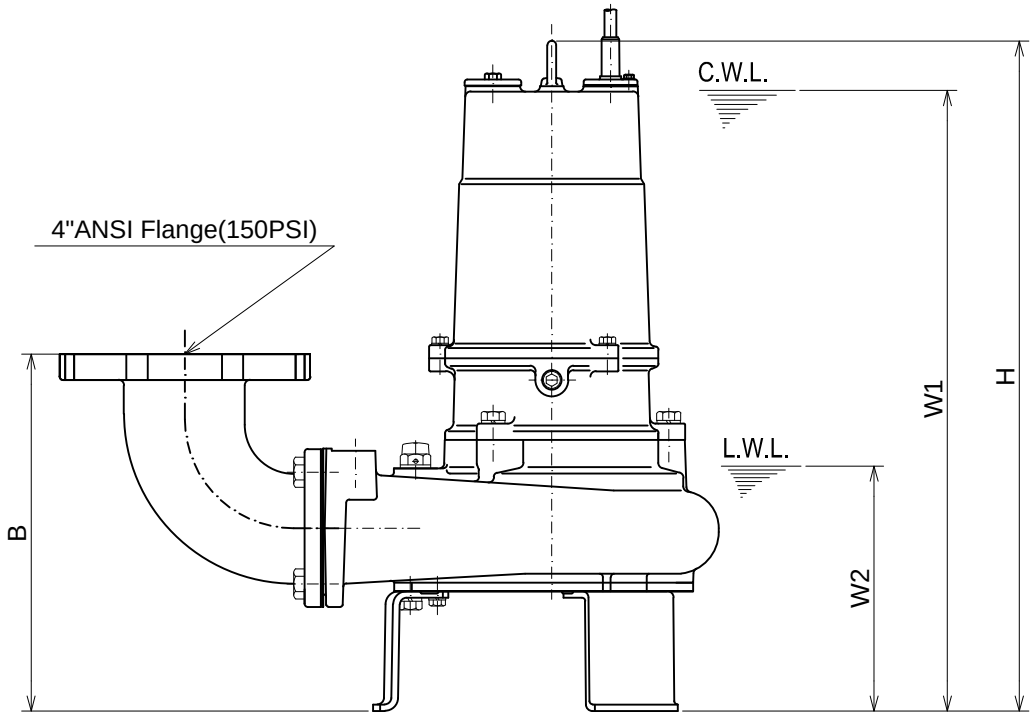


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C42.2-CR -62

Bend model:
BEND80-100 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C42.2-CR -62 | 3 | 4" | 24 3/16 | 13 9/16 | 6 1/16 | 12 15/16 | 12 3/4 | 6 1/4 | 6 9/16 | 24 1/4 | 22 1/2 | 8 7/8 | 148 |

*Excluding Cable.

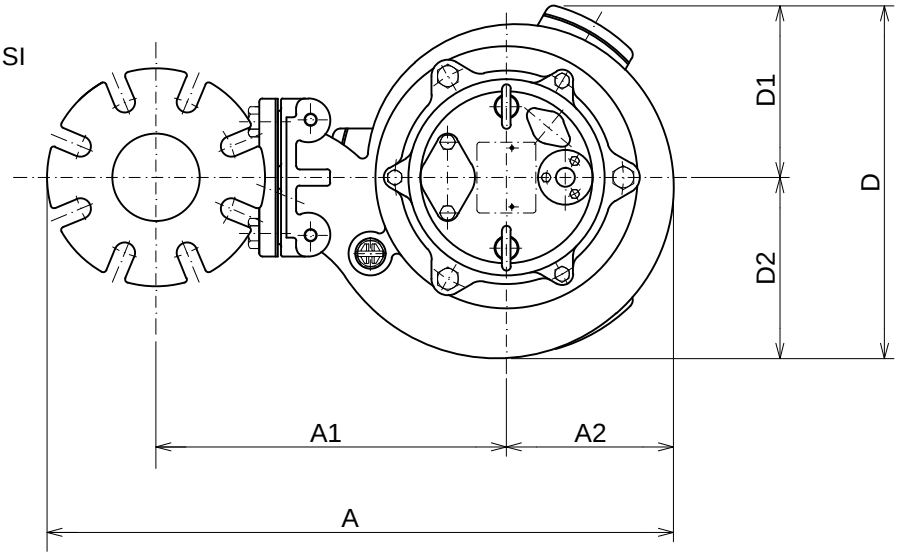
**DIMENSIONS:METRIC(mm)**

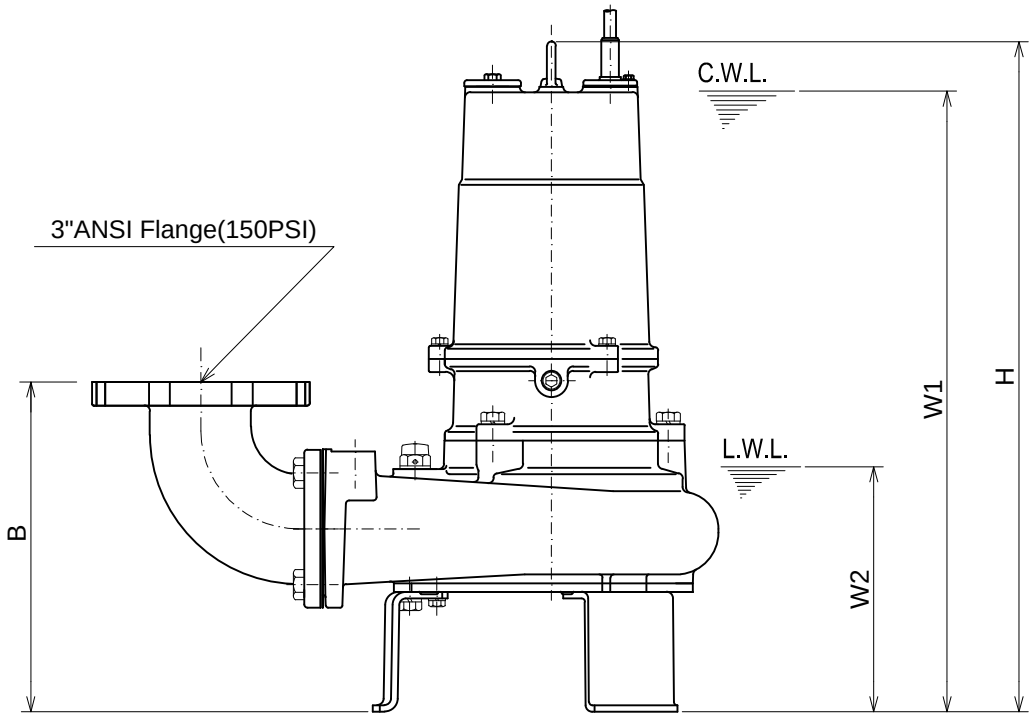
| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C42.2-CR -62 | 2.2 | 100 | 614 | 345 | 154 | 328 | 324 | 158 | 166 | 616 | 570 | 225 | 67 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C42.2-CR -62 (3"Dis.)

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C42.2-CR -62 | 3 | 3" | 23 | 13 | 6 1/16 | 11 15/16 | 12 3/4 | 6 1/4 | 6 9/16 | 24 1/4 | 22 1/2 | 8 7/8 | 146 |

*Excluding Cable.

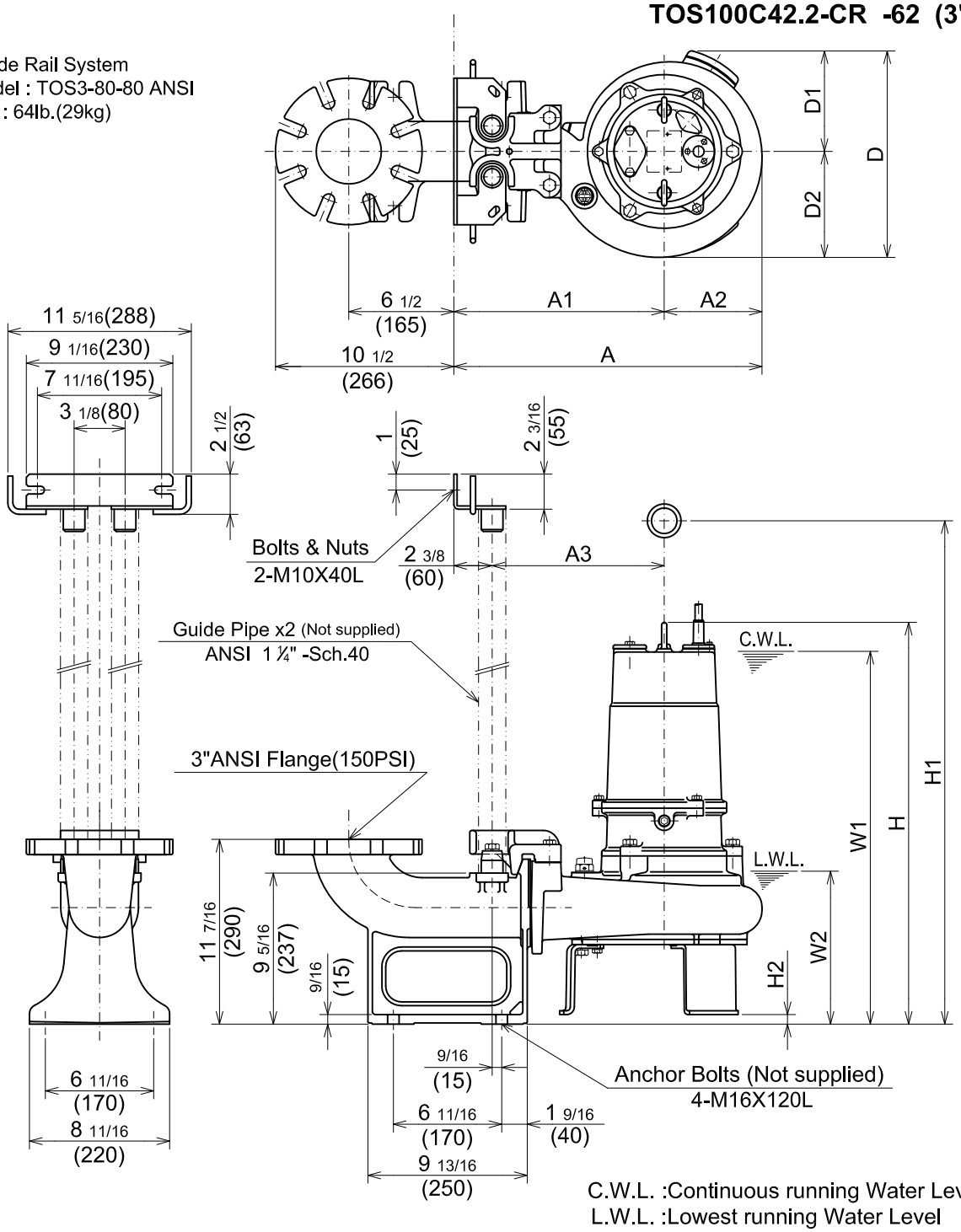
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C42.2-CR -62 | 2.2 | 80 | 584 | 330 | 154 | 303 | 324 | 158 | 166 | 616 | 570 | 225 | 66 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C42.2-CR -62 (3"Dis.)

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb.(29kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 3 | 3" | 19 1/16 | 13 | 6 1/16 | 10 5/8 | 12 3/4 | 6 1/4 | 6 9/16 | 24 13/16 | 31 1/8 | 9/16 | 23 | 9 1/2 | 141 |

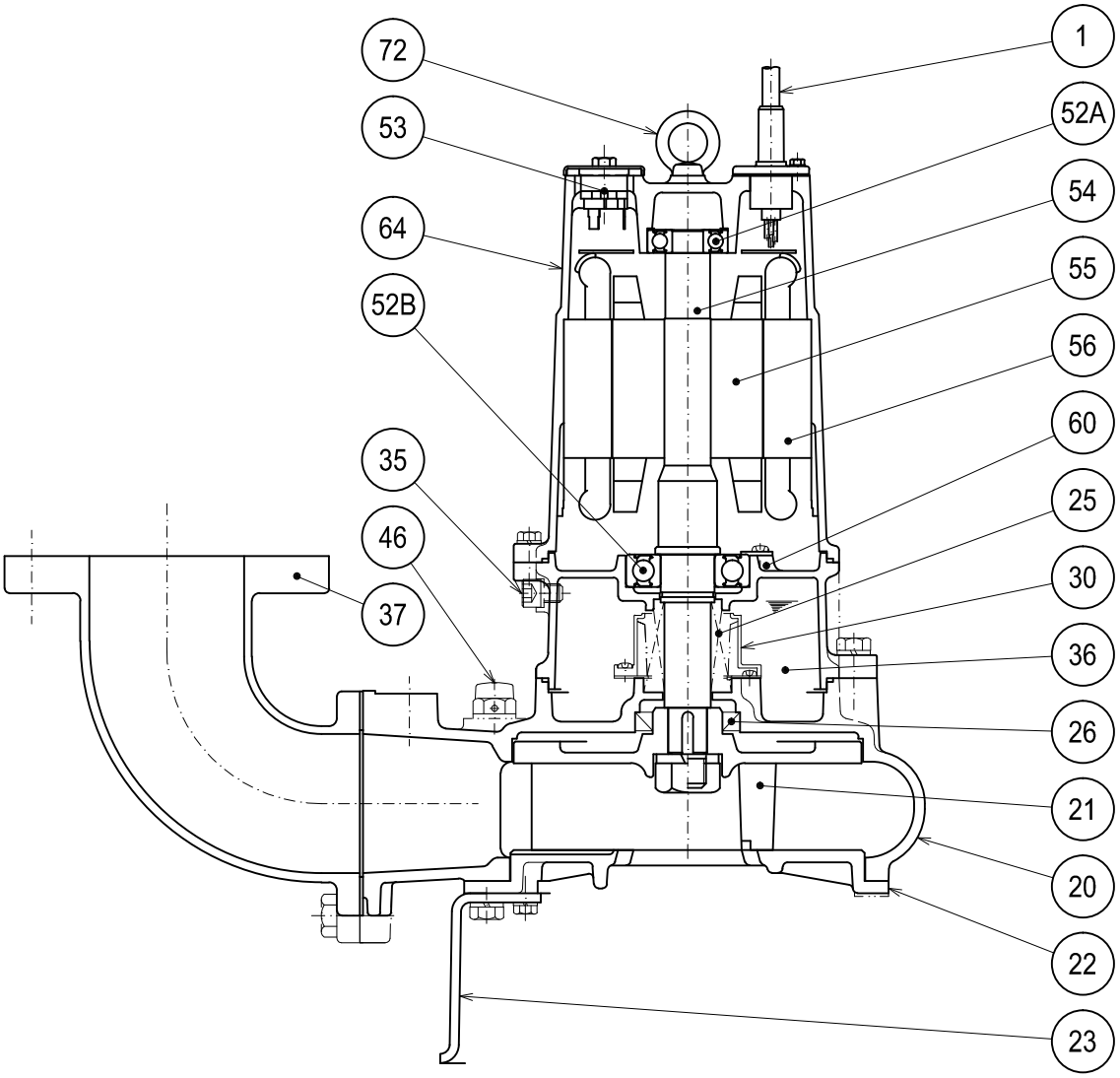
*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 2.2 | 80 | 484 | 330 | 154 | 270 | 324 | 158 | 166 | 631 | 790 | 15 | 585 | 240 | 64 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

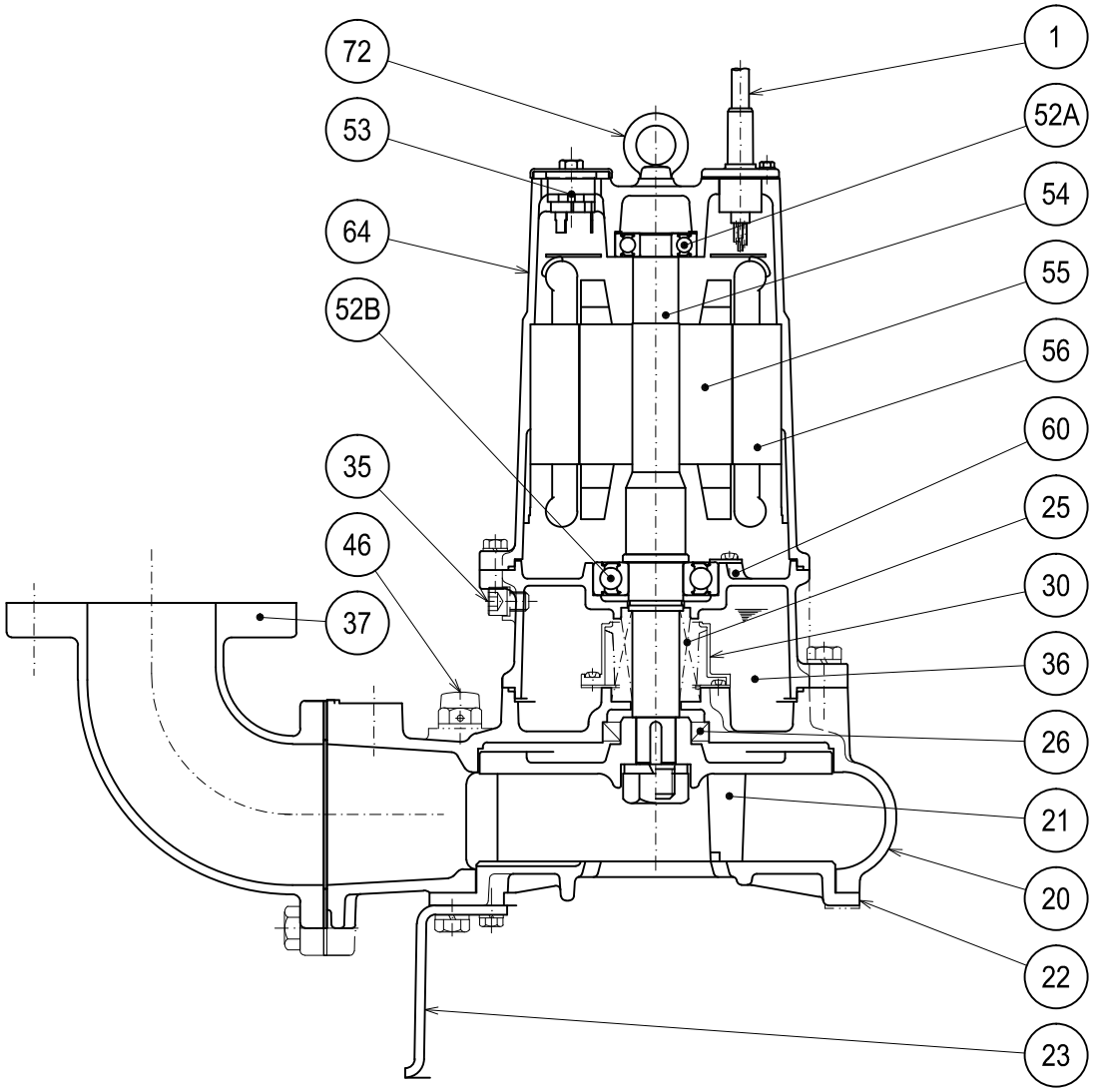
**100C42.2-CR -62**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 14/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-30 | | | 1 |
| 26 | Oil Seal | NBR / TC456812 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 1 |
| 52B | Lower Bearing | #6307ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

## 100C42.2-CR -62 (3"Dis.)

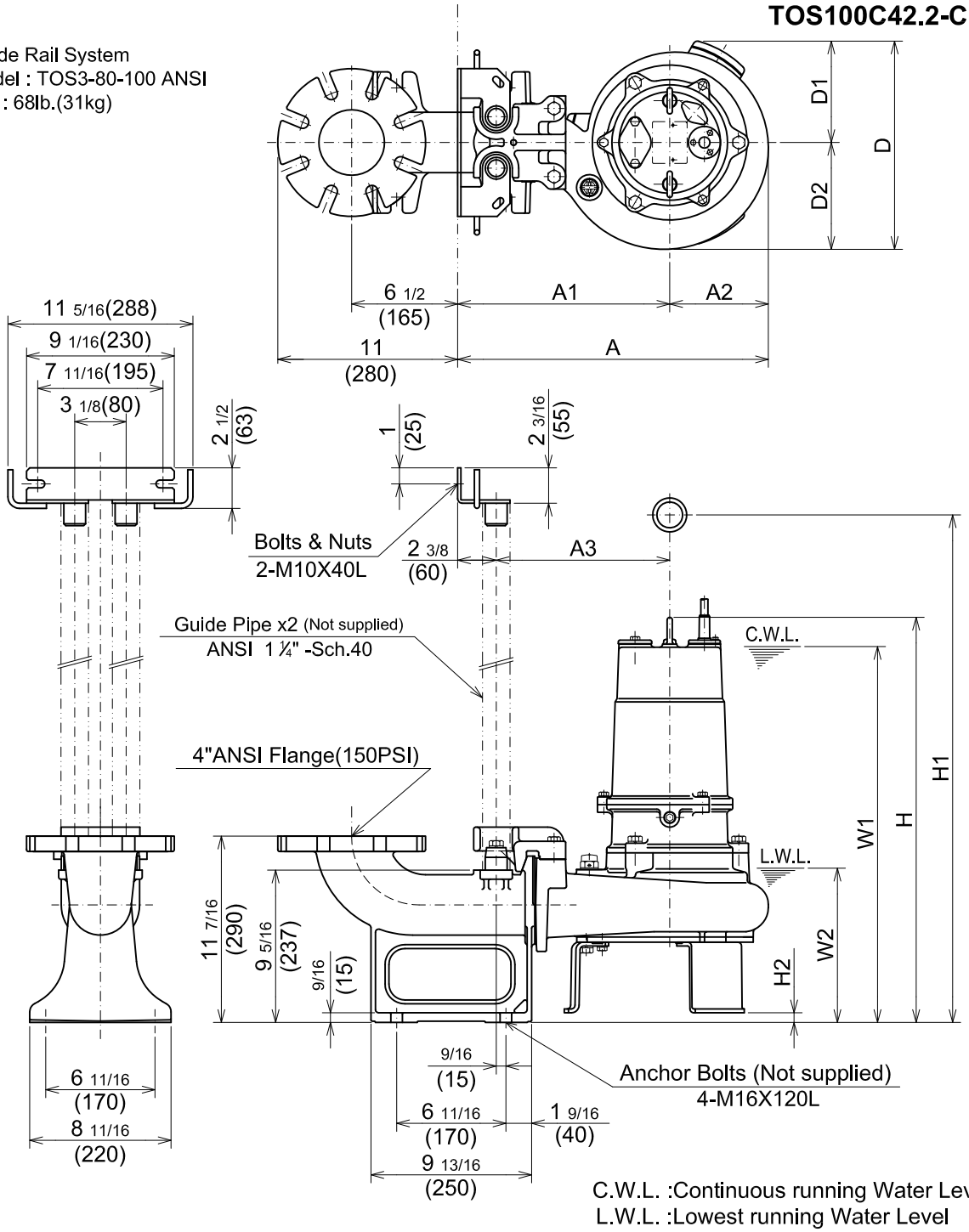



| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 14/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-30 | | | 1 |
| 26 | Oil Seal | NBR / TC456812 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 1 |
| 52B | Lower Bearing | #6307ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C42.2-CR -62

Guide Rail System
Model : TOS3-80-100 ANSI
Wt. : 68lb.(31kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 3 | 4" | 19 1/16 | 13 | 6 1/16 | 10 5/8 | 12 3/4 | 6 1/4 | 6 9/16 | 24 13/16 | 31 1/8 | 9/16 | 23 | 9 1/2 | 141 |

*Excluding TOS & Cable.

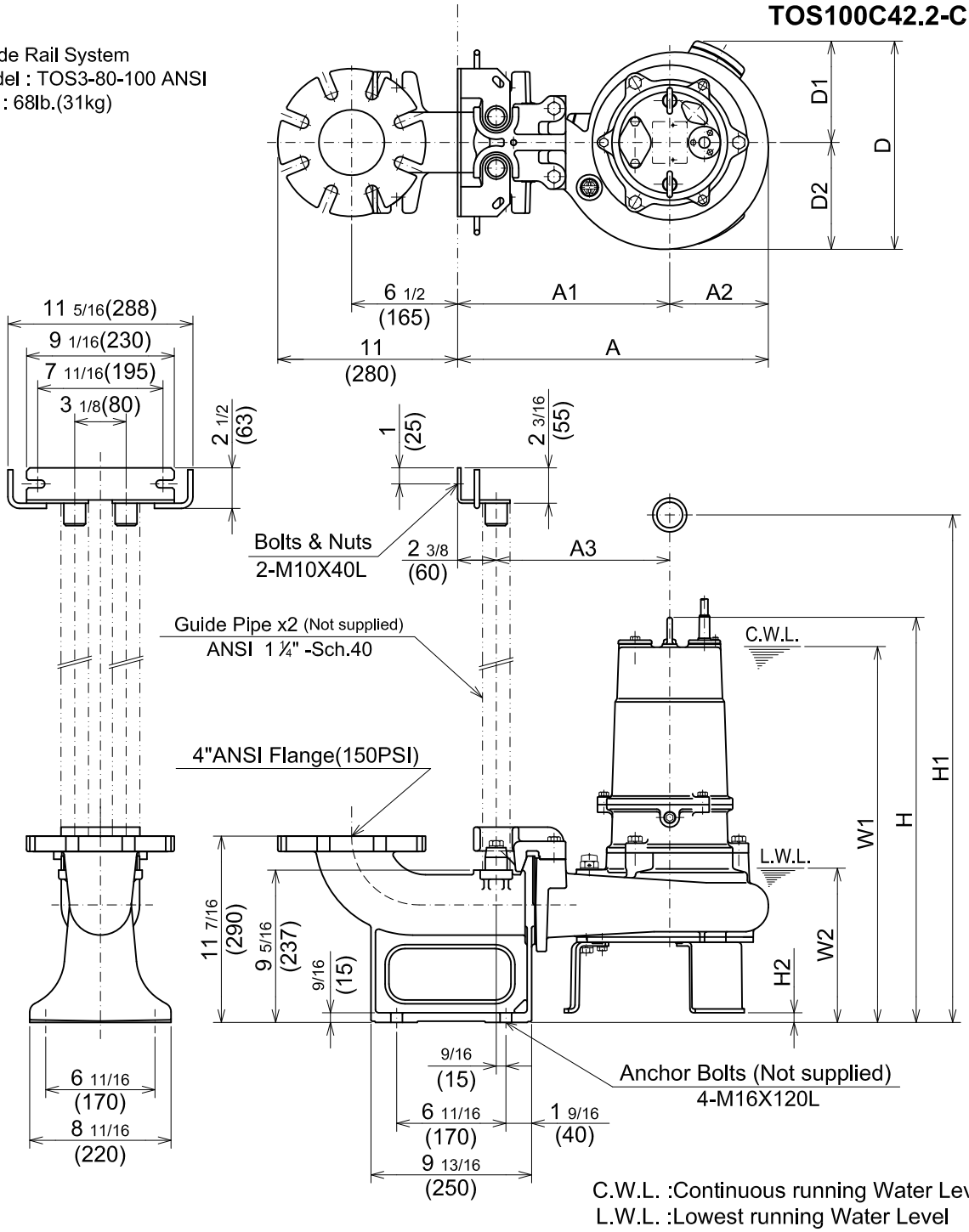
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 2.2 | 100 | 484 | 330 | 154 | 270 | 324 | 158 | 166 | 631 | 790 | 15 | 585 | 240 | 64 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C42.2-CR -62

Guide Rail System
Model : TOS3-80-100 ANSI
Wt. : 68lb.(31kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 3 | 4" | 19 1/16 | 13 | 6 1/16 | 10 5/8 | 12 3/4 | 6 1/4 | 6 9/16 | 24 13/16 | 31 1/8 | 9/16 | 23 | 9 1/2 | 141 |

*Excluding TOS & Cable.

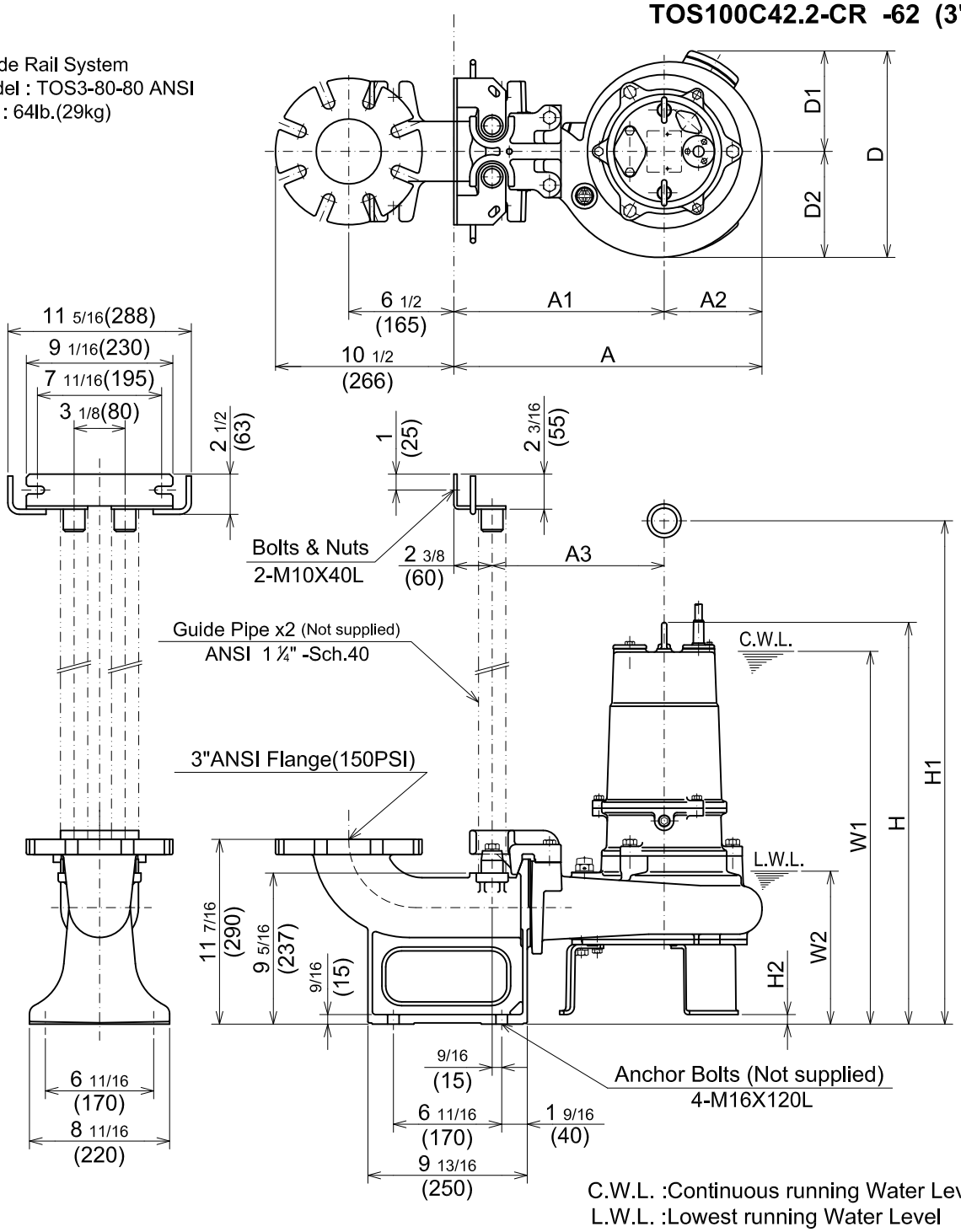
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 2.2 | 100 | 484 | 330 | 154 | 270 | 324 | 158 | 166 | 631 | 790 | 15 | 585 | 240 | 64 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C42.2-CR -62 (3"Dis.)

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb.(29kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 3 | 3" | 19 1/16 | 13 | 6 1/16 | 10 5/8 | 12 3/4 | 6 1/4 | 6 9/16 | 24 13/16 | 31 1/8 | 9/16 | 23 | 9 1/2 | 141 |

*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C42.2-CR -62 | 2.2 | 80 | 484 | 330 | 154 | 270 | 324 | 158 | 166 | 631 | 790 | 15 | 585 | 240 | 64 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

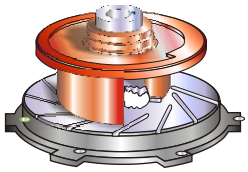
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

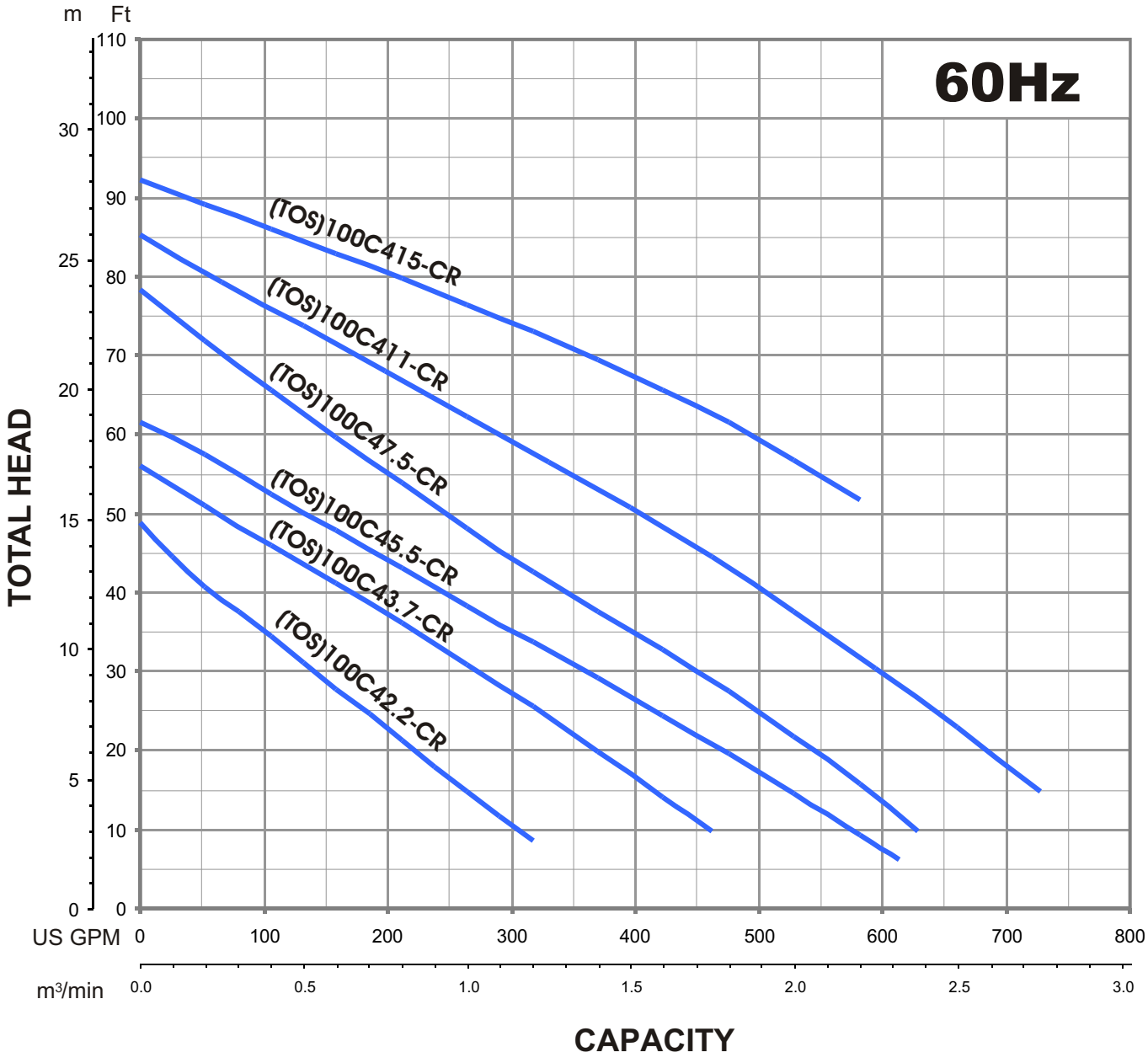
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 4″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C-SERIES
CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

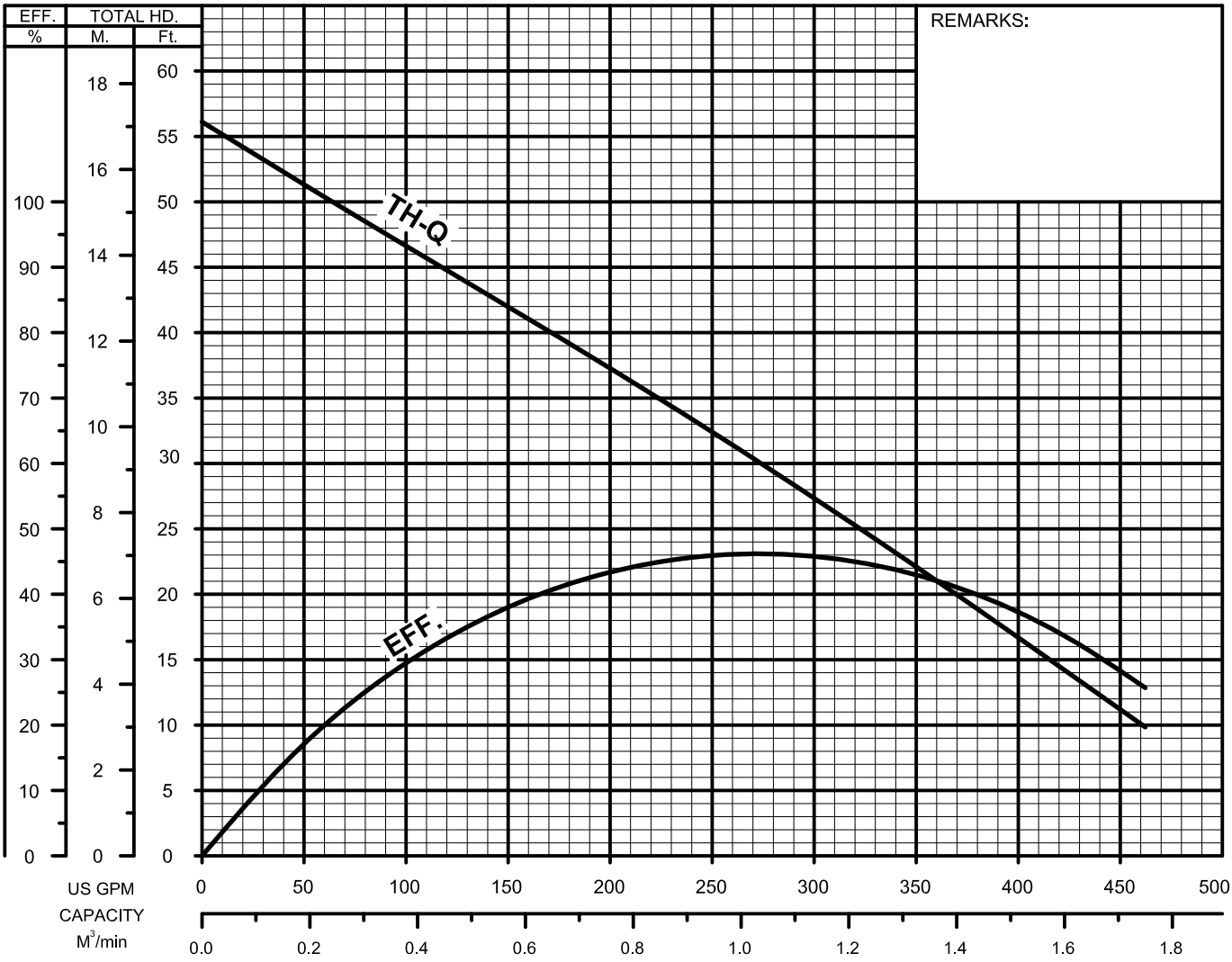
## PERFORMANCE CURVE

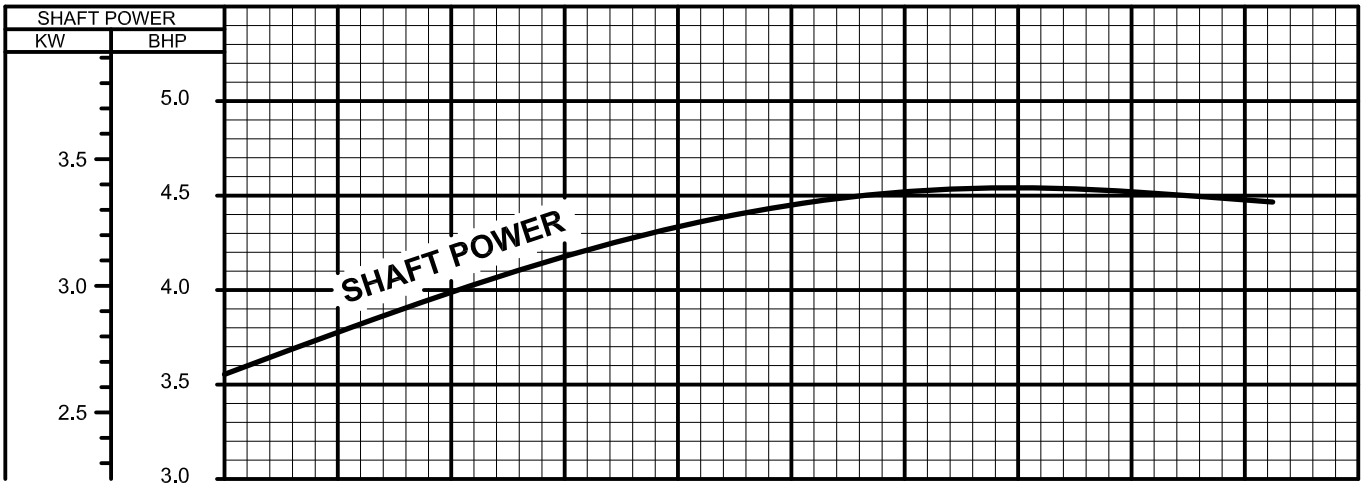
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C43.7-CR -62 | 4"/100mm | 5 | 3.7 | 1690 | 2.17"/55mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 208-230 / 460 /575 | 15.0-13.8 / 6.9 / 5.4 | 60 | Direct On Line | E |

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

REMARKS:

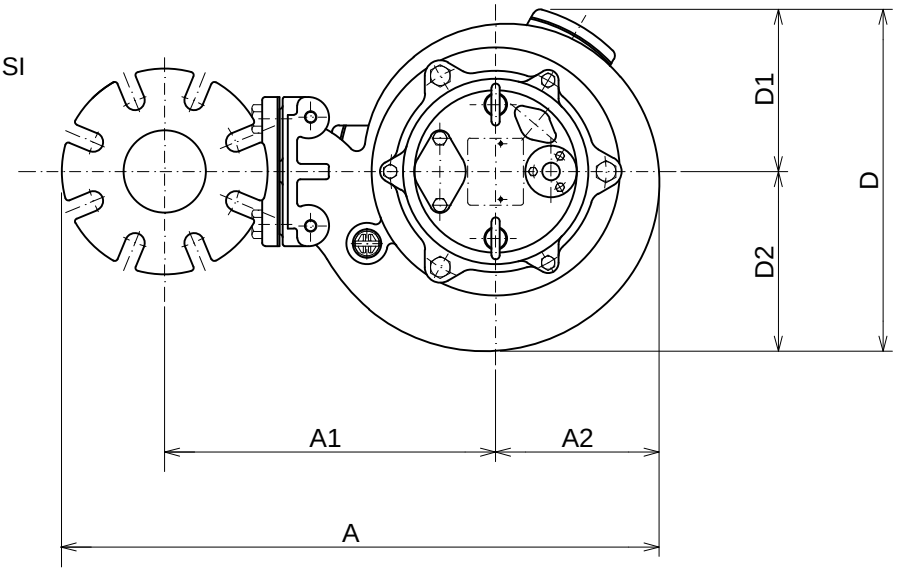


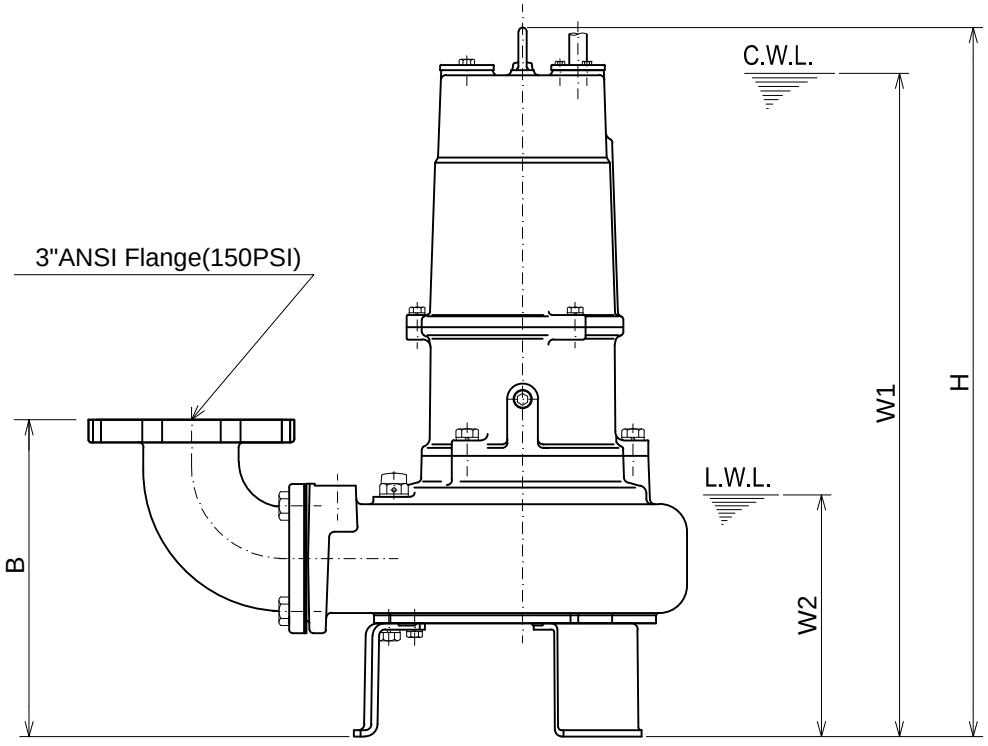



TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C43.7-CR -63 (3"Dis.)

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C43.7-CR -63 | 5 | 3" | 23 3/16 | 13 | 6 1/4 | 12 1/8 | 13 1/8 | 6 1/4 | 6 7/8 | 27 3/16 | 25 3/8 | 9 1/4 | 175 |

*Excluding Cable.

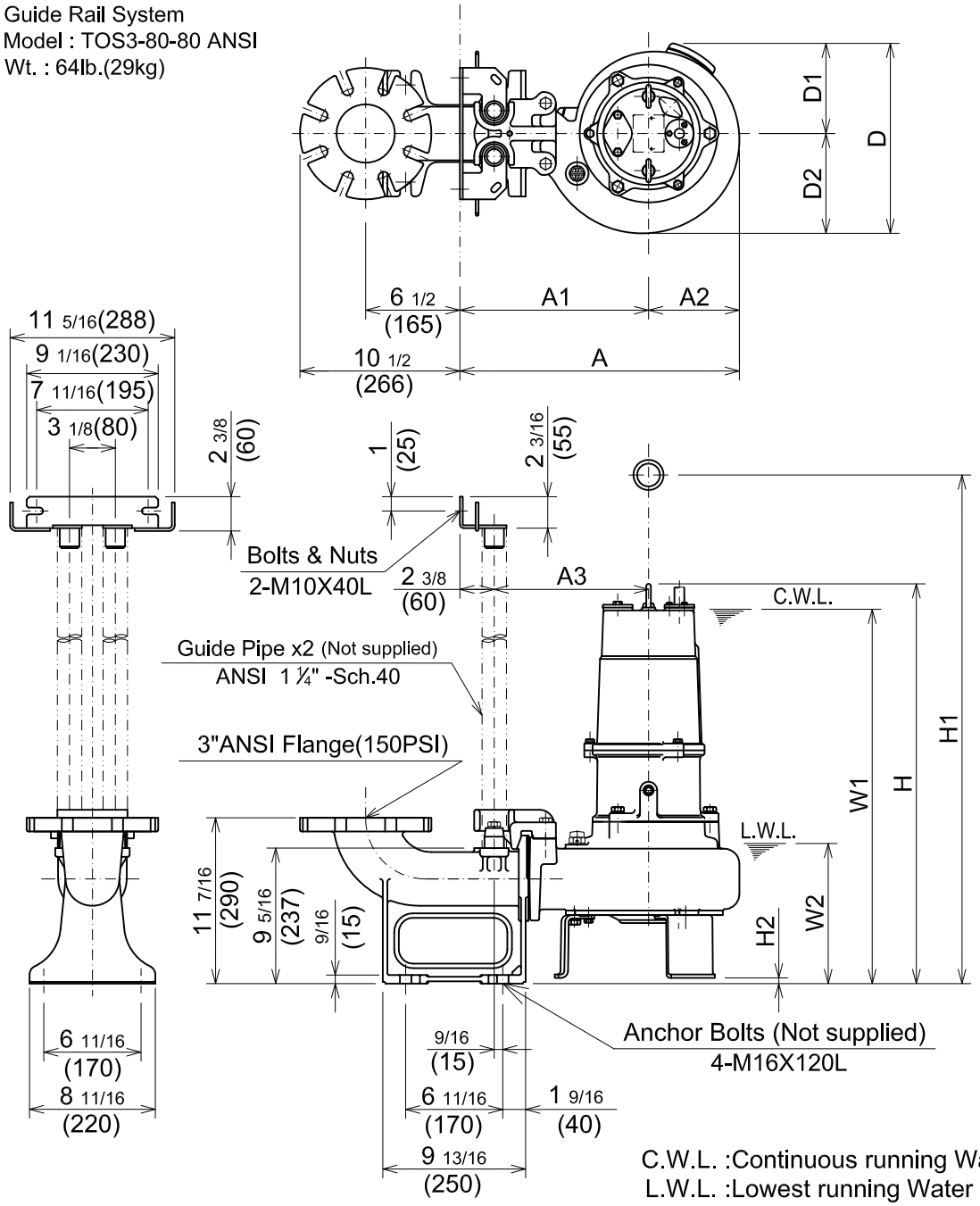
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C43.7-CR -63 | 3.7 | 80 | 589 | 330 | 159 | 308 | 333 | 158 | 175 | 690 | 645 | 235 | 79 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C43.7-CR -62 (3"Dis.)

Guide Rail System
Model : TOS3-80-80 ANSI
Wt. : 64lb.(29kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C43.7-CR -62 | 5 | 3" | 19 1/4 | 13 | 6 1/4 | 10 5/8 | 13 1/8 | 6 7/16 | 6 1/4 | 27 9/16 | 33 7/8 | 3/8 | 25 3/4 | 9 5/8 | 176 |

*Excluding TOS & Cable.

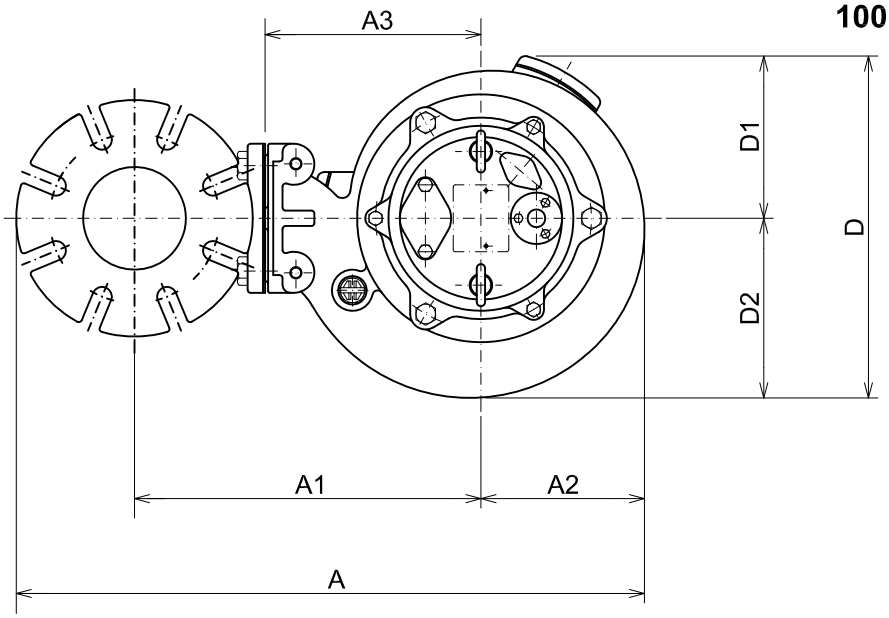
**DIMENSIONS:METRIC(mm)**

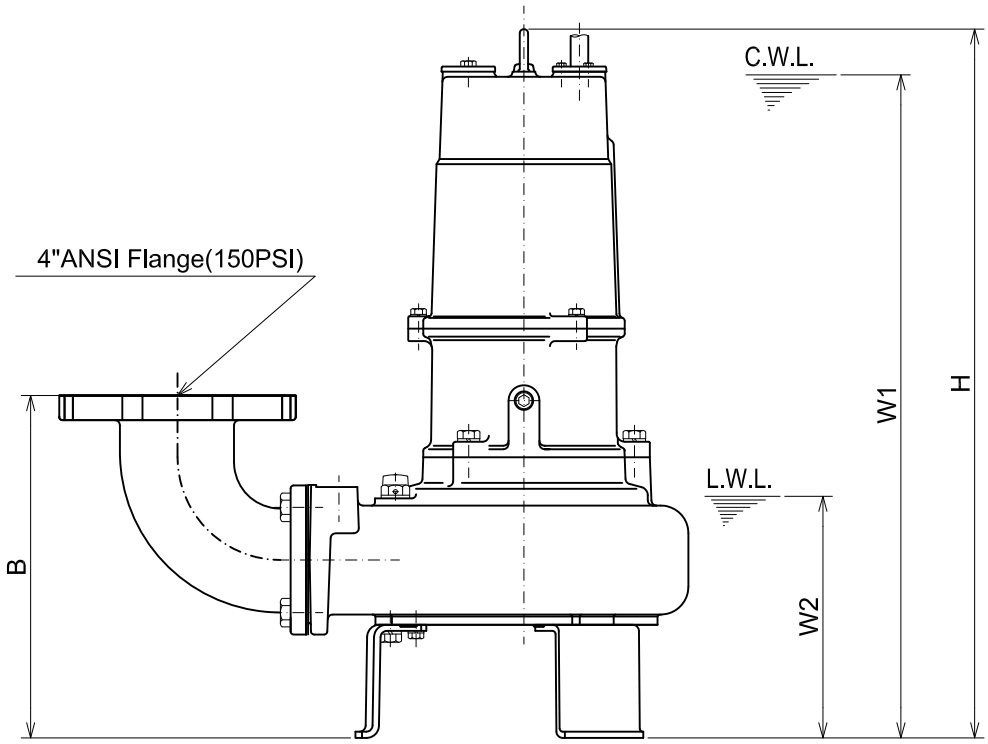
| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C43.7-CR -62 | 3.7 | 80 | 489 | 330 | 159 | 270 | 333 | 158 | 175 | 700 | 860 | 10 | 655 | 245 | 80 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C43.7-CR -63

Bend model:
BEND80-100 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C43.7-CR -63 | 5 | 4" | 24 3/8 | 13 9/16 | 6 1/4 | 8 1/4 | 13 1/8 | 13 1/8 | 6 1/4 | 6 7/8 | 27 3/16 | 25 3/8 | 9 1/4 | 183 |

*Excluding Cable.

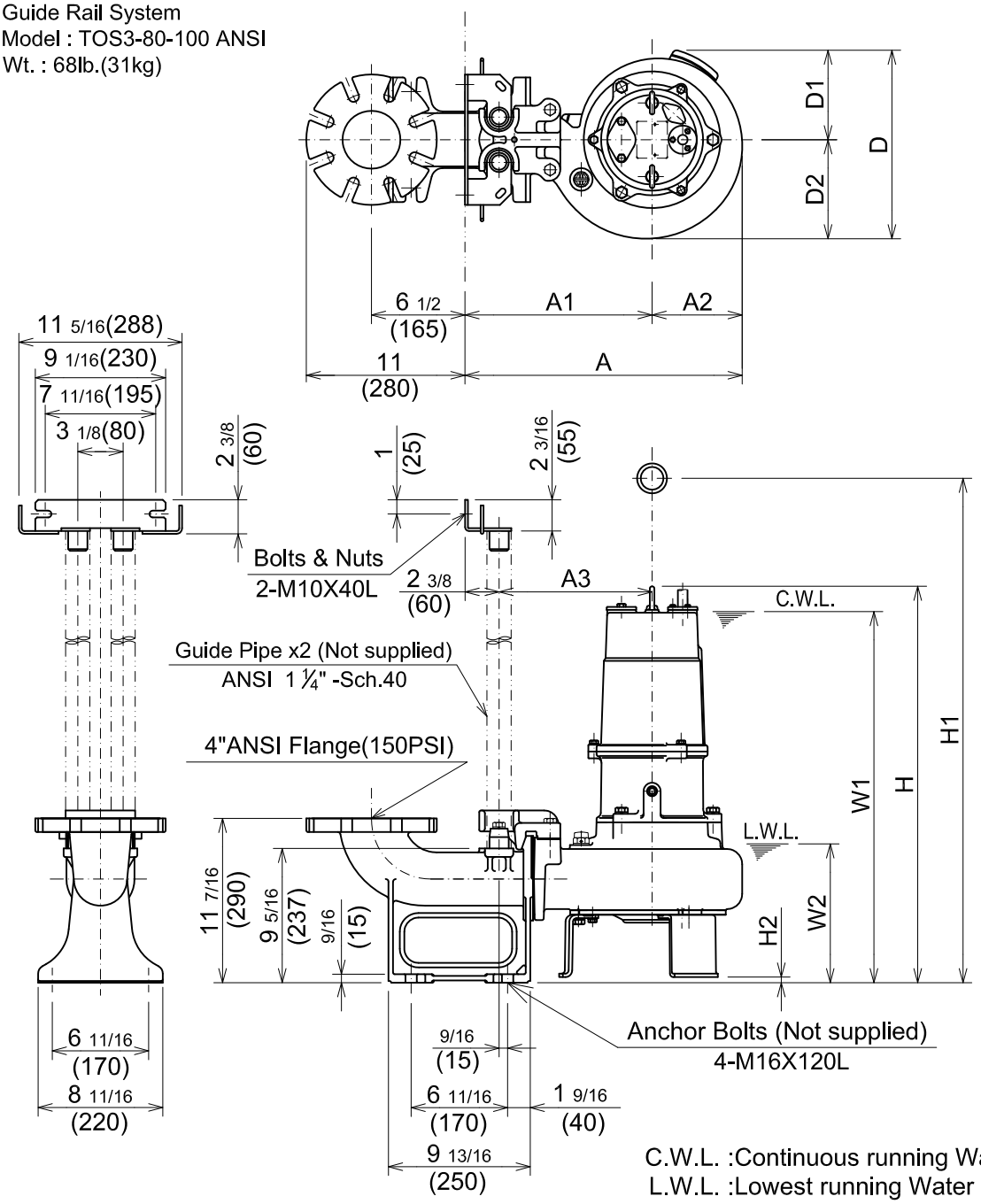
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C43.7-CR -63 | 3.7 | 100 | 619 | 345 | 159 | 210 | 333 | 333 | 158 | 175 | 690 | 645 | 235 | 83 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TOS100C43.7-CR -63

Guide Rail System
Model : TOS3-80-100 ANSI
Wt. : 68lb.(31kg)




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C43.7-CR -63 | 5 | 4" | 19 1/4 | 13 | 6 1/4 | 10 5/8 | 13 1/8 | 6 7/16 | 6 1/4 | 27 9/16 | 33 7/8 | 3/8 | 25 3/4 | 9 5/8 | 176 |

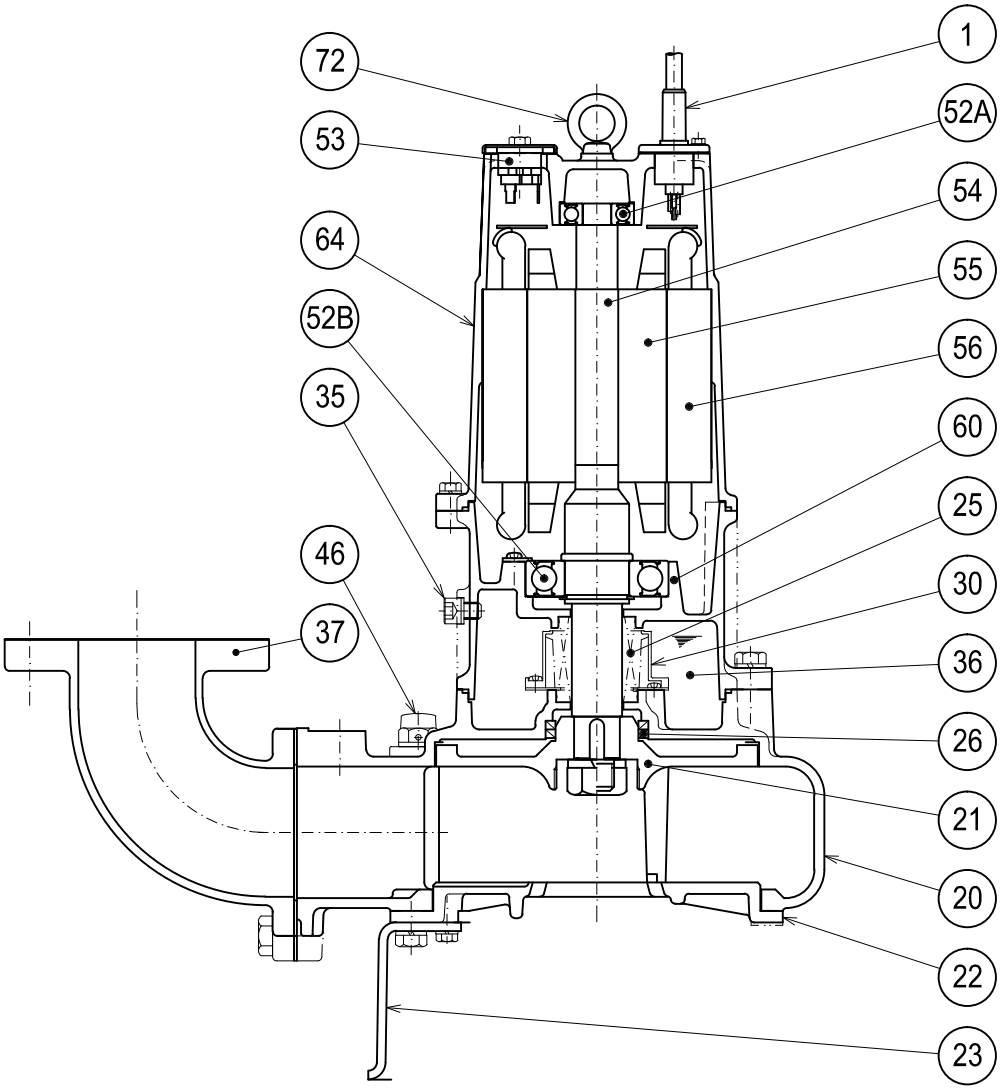
*Excluding TOS & Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C43.7-CR -63 | 3.7 | 100 | 489 | 330 | 159 | 270 | 333 | 158 | 175 | 700 | 860 | 10 | 655 | 245 | 80 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

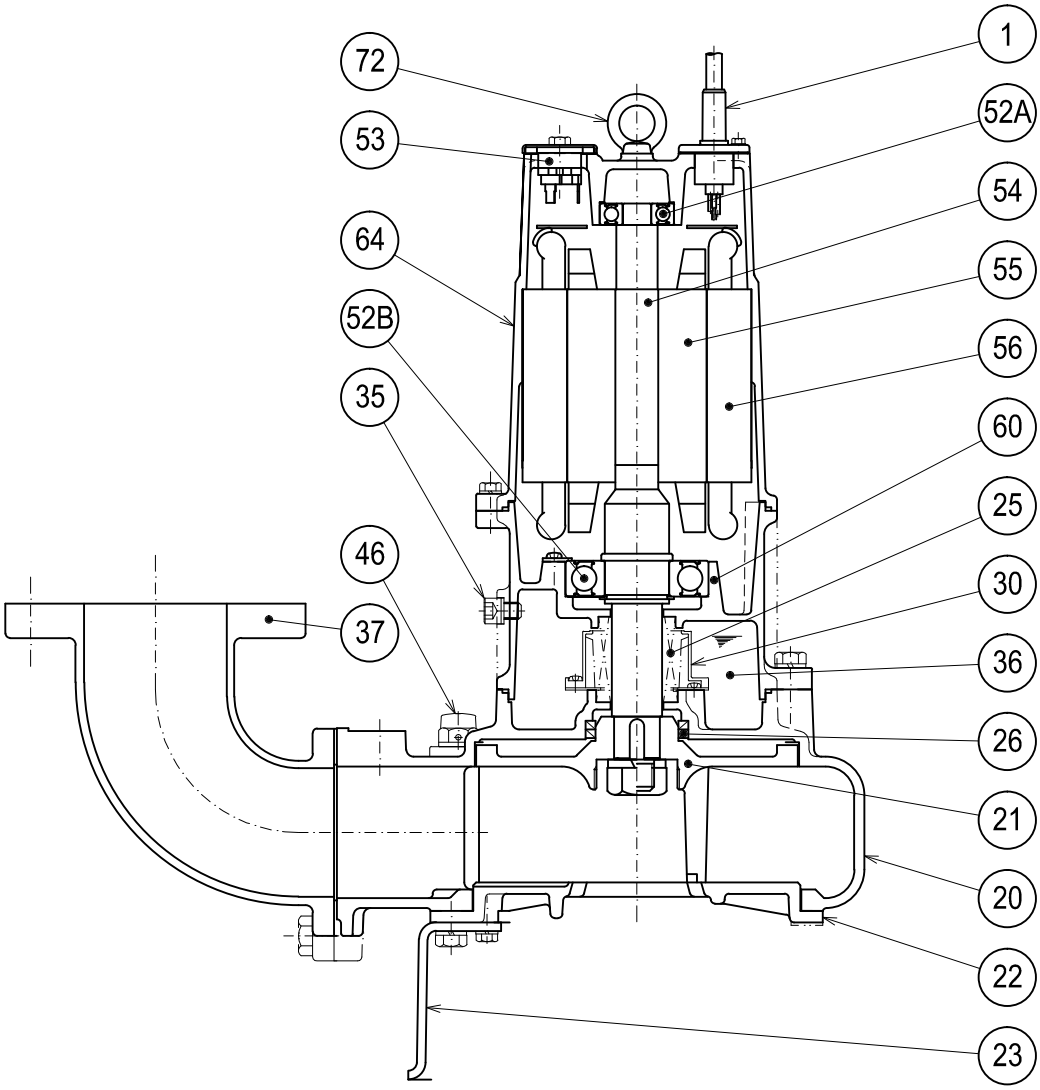
**100C43.7-CR -63 (3"Dis.)**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 12/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC58726 | | | 2 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

**100C43.7-CR -63**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 12/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC58726 | | | 2 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

# C - SERIES
## SEWAGE & WASTE WATER CUTTER PUMPS

# SPECIFICATIONS

## FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

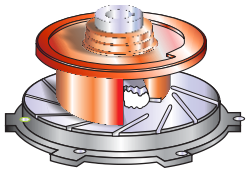
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8” N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62･ (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32’ (10 m) |

## STANDARD

## OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

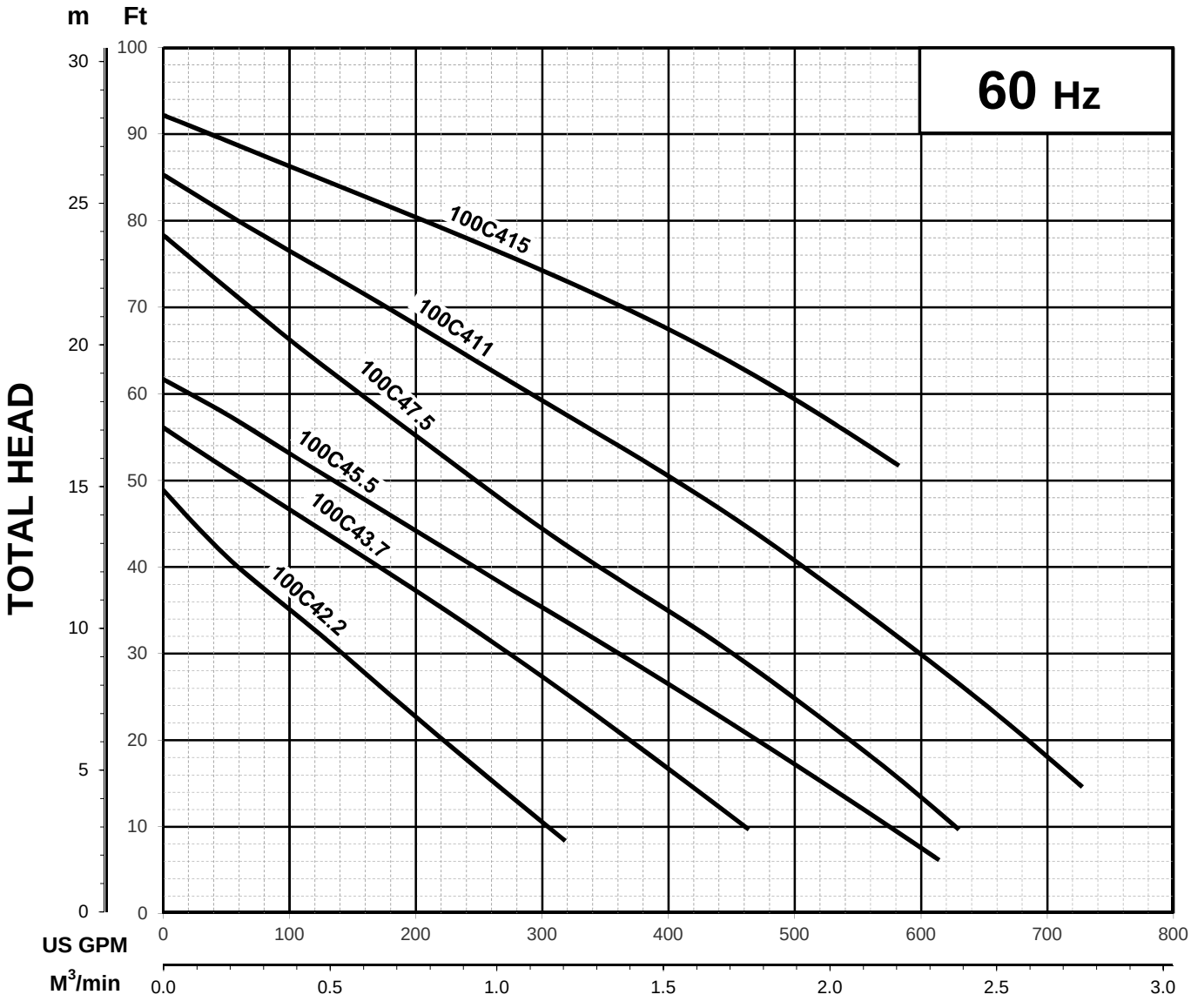
TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

PERFORMANCE RANGE

## GROUP PERFORMANCE RANGE




**Note**

Ex.

TSURUMI PUMP

# C - SERIES

CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

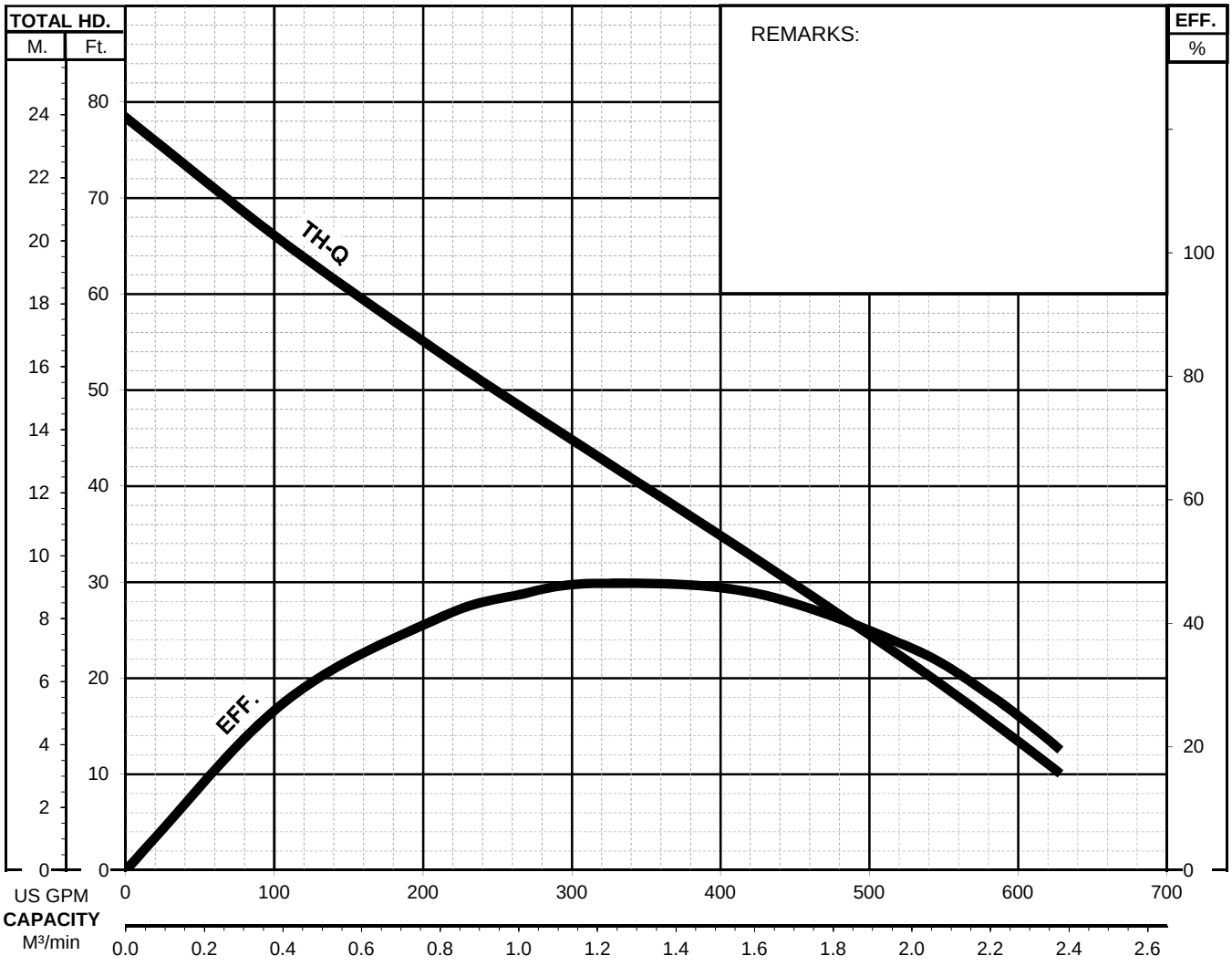
PERFORMANCE CURVE

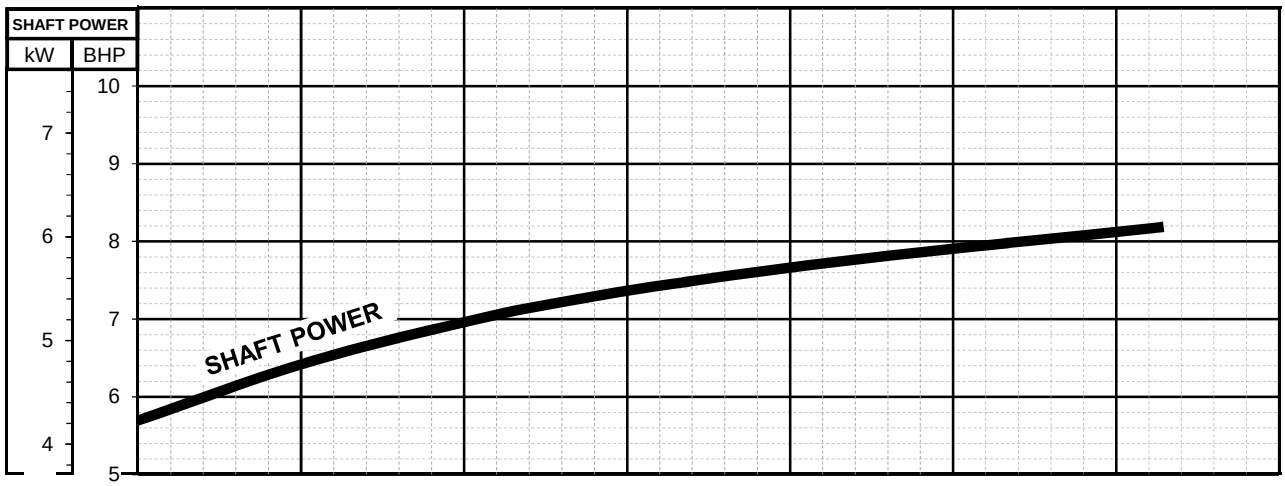
| MODEL | BORE | HP | kW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS)100C47.5-CR -64 | 4"/100mm | 10.0 | 7.5 | 1735 | 1.57"/40mm | Water | 1.0 | 1.123cSt. | 60°F |

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

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

REMARKS:

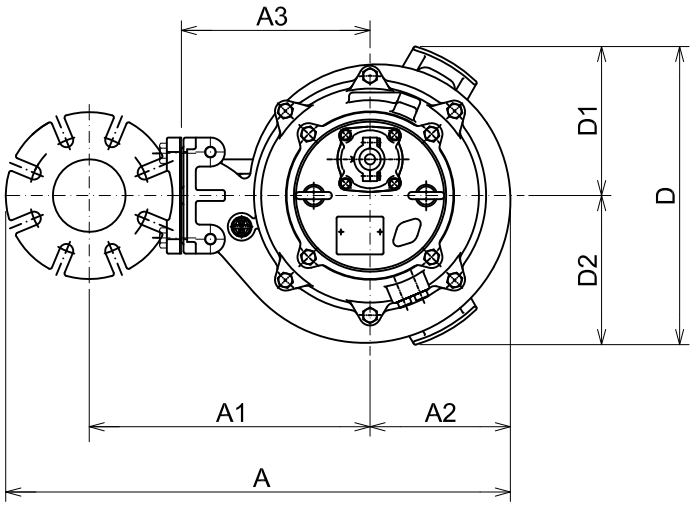


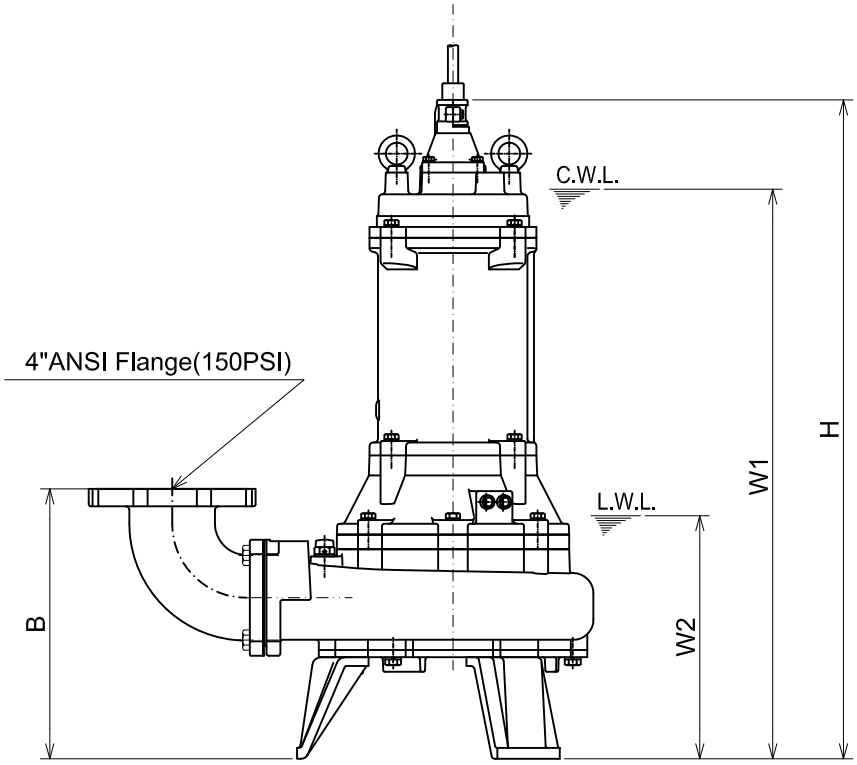



**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

**100C45.5-CR -64**
**100C47.5-CR -64**

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. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C45.5-CR -64 | 7.5 | 4" | 27 13/16 | 15 5/8 | 7 5/8 | 10 1/4 | 14 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 35 3/4 | 30 7/8 | 13 1/4 | 293 |
| 100C47.5-CR -63 | 10 | 4" | 27 13/16 | 15 5/8 | 7 5/8 | 10 1/4 | 14 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 36 9/16 | 31 3/4 | 13 1/4 | 317 |

*Excluding Cable.

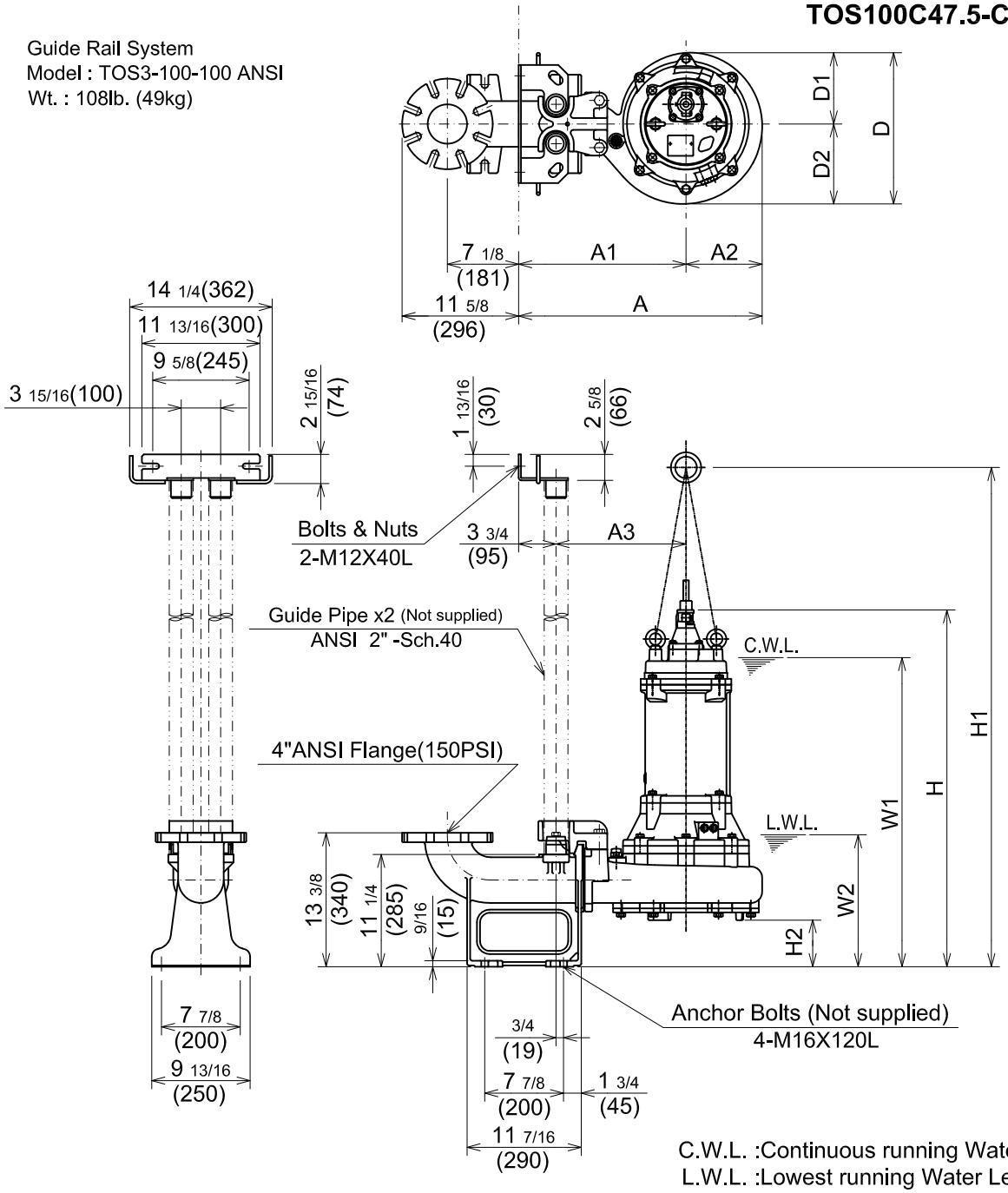
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | |
| 100C45.5-CR -63 | 5.5 | 100 | 706 | 397 | 194 | 260 | 372 | 410 | 205 | 205 | 908 | 785 | 335 | 133 |
| 100C47.5-CR -63 | 7.5 | 100 | 706 | 397 | 194 | 260 | 372 | 410 | 205 | 205 | 929 | 805 | 335 | 144 |

**TSURUMI PUMP** | **C-SERIES** CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C45.5-CR -64
## TOS100C47.5-CR -64

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. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C45.5-CR -64 | 7.5 | 4" | 24 3/8 | 16 3/4 | 7 5/8 | 13 | 15 1/8 | 7 1/8 | 8 | 35 11/16 | 49 15/16 | 4 5/8 | 30 7/8 | 13 1/4 | 278 |
| TOS100C47.5-CR -64 | 10 | 4" | 24 3/8 | 16 3/4 | 7 5/8 | 13 | 15 1/8 | 7 1/8 | 8 | 36 1/2 | 50 7/8 | 4 5/8 | 31 3/4 | 13 1/4 | 302 |

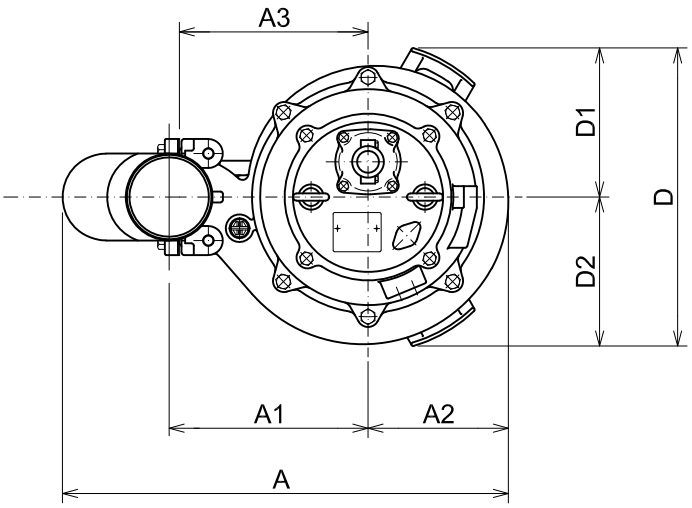
*Excluding TOS & Cable.

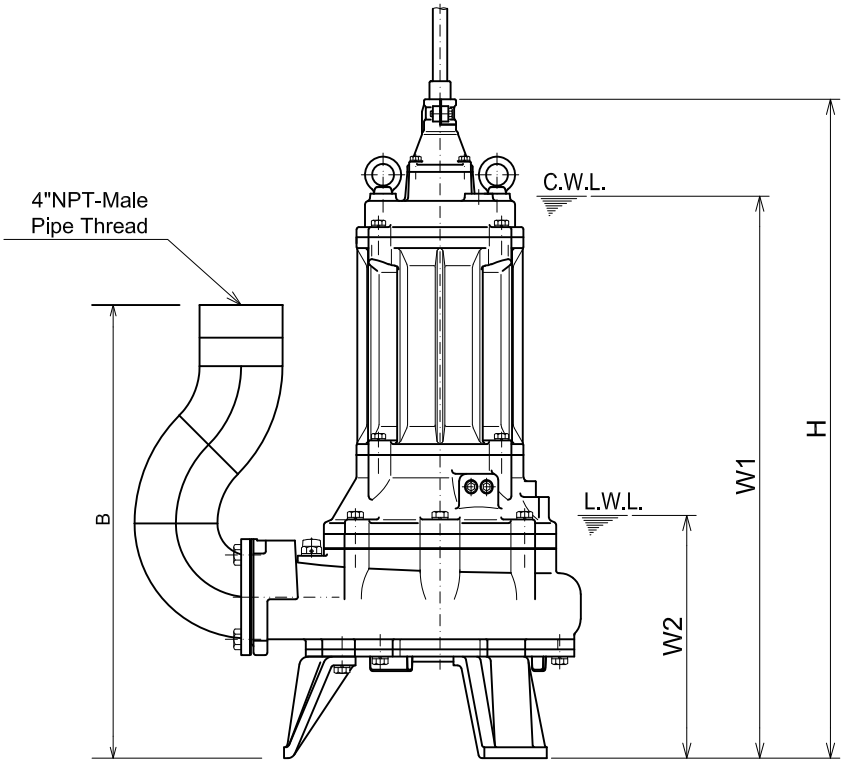
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | *Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS100C45.5-CR -64 | 5.5 | 100 | 619 | 425 | 194 | 330 | 384 | 181 | 203 | 906 | 1268 | 118 | 785 | 335 | 126 |
| TOS100C47.5-CR -64 | 7.5 | 100 | 619 | 425 | 194 | 330 | 384 | 181 | 203 | 927 | 1293 | 118 | 805 | 335 | 137 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**100C45.5-CR -63**
**100C47.5-CR -63**
**(Dis. 4")**




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 100C45.5-CR -63 | 7.5 | 4" | 24 1/8 | 10 13/16 | 7 5/8 | 10 1/4 | 24 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 35 3/4 | 30 1/2 | 13 1/4 | 278 |
| 100C47.5-CR -63 | 10 | 4" | 24 1/8 | 10 13/16 | 7 5/8 | 10 1/4 | 24 5/8 | 16 1/8 | 8 1/16 | 8 1/16 | 36 9/16 | 31 1/2 | 13 1/4 | 320 |

*Excluding Cable.

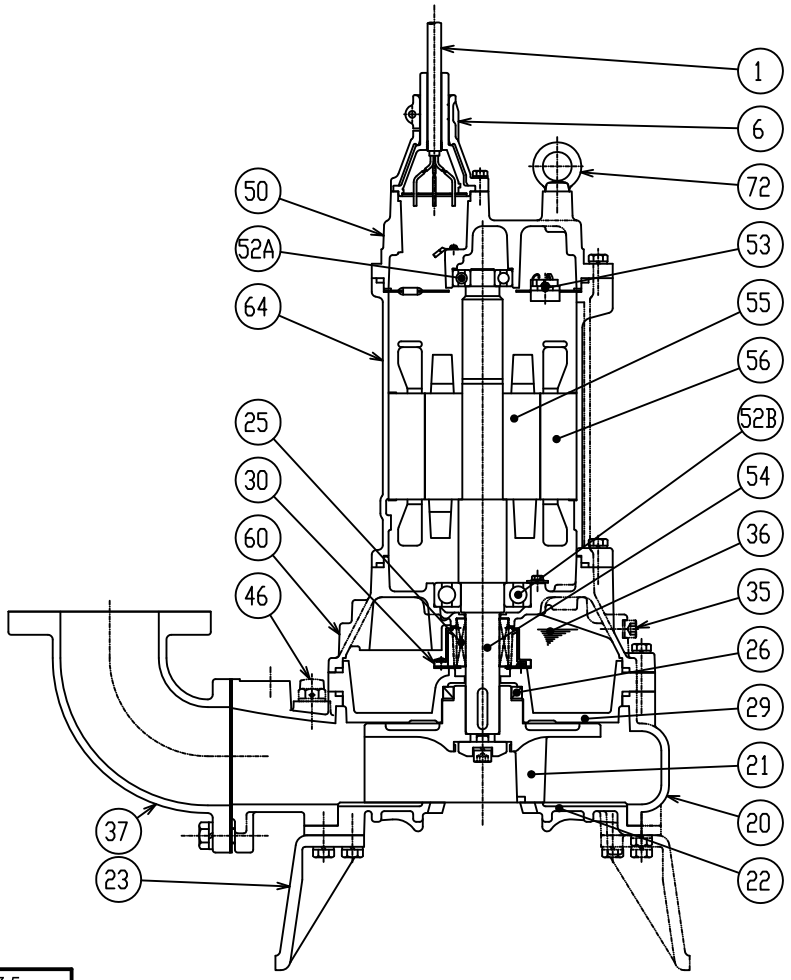
**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 100C45.5-CR -63 | 5.5 | 100 | 613 | 275 | 194 | 260 | 625 | 410 | 205 | 205 | 908 | 775 | 335 | 126 |
| 100C47.5-CR -63 | 7.5 | 100 | 613 | 275 | 194 | 260 | 625 | 410 | 205 | 205 | 929 | 800 | 335 | 145 |

Apr.17

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

**100C45.5-CR -64**
**100C47.5-CR -64**




| | C45.5 | C47.5 |
|---|---|---|
| ＊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 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC608212 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | 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 Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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 30B. Unit(s) shall have a field adjustable and or replaceable, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 25B or 30B(7.5 Hp. and above). Motors shall be D.O.L. or Star-delta start (15 Hp. and above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

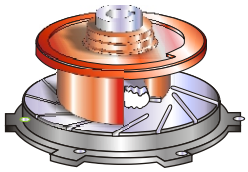
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

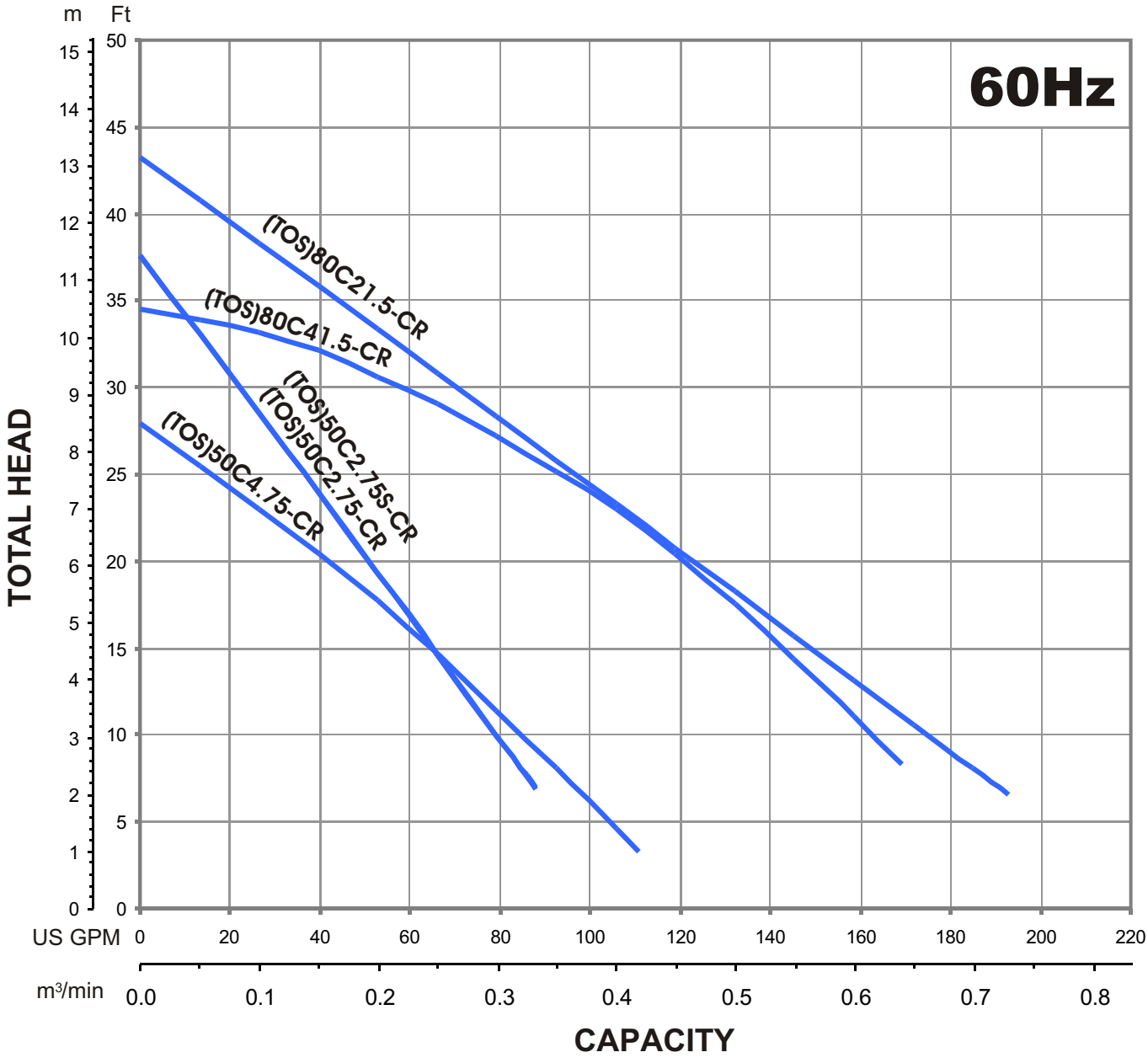
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

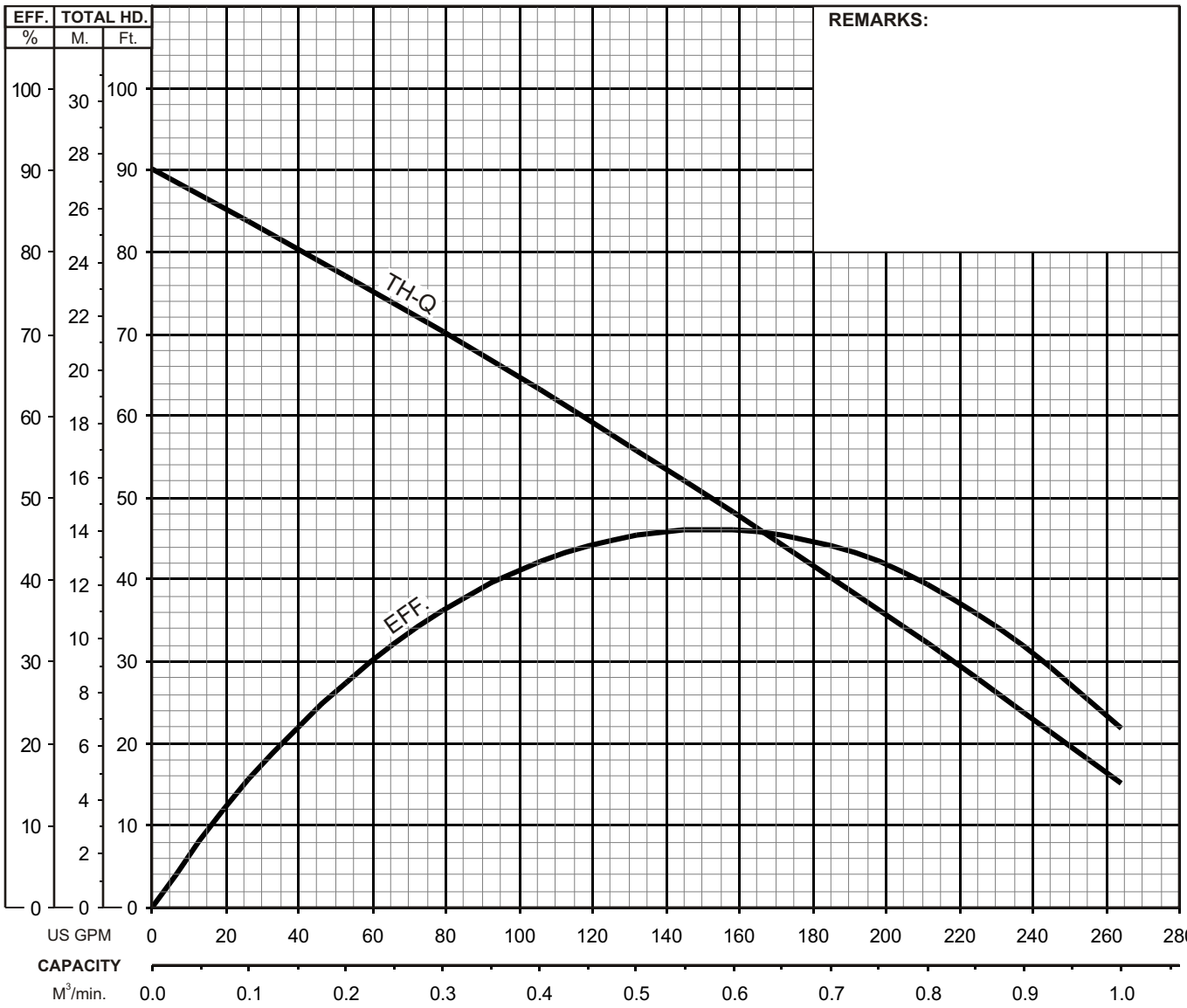
## PERFORMANCE CURVE

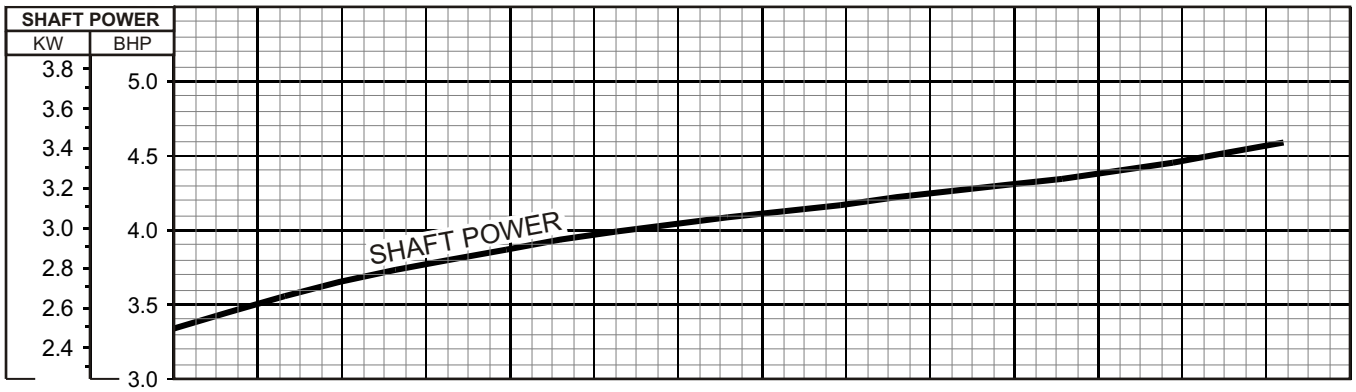
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C23.7-CR -61 | 3"/80mm | 5 | 3.7 | 3410 | 0.87"/22mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 14.4 - 13.6 / 6.8 / 5.3 | 60 | Direct On Line | F |

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

REMARKS:

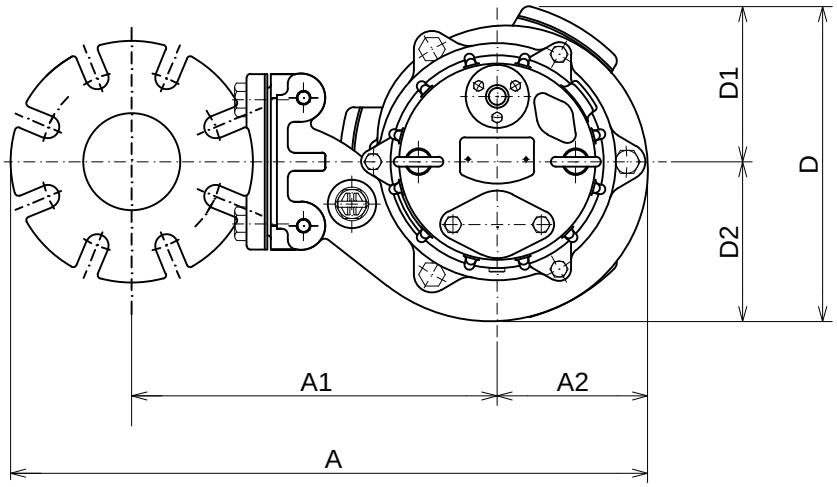


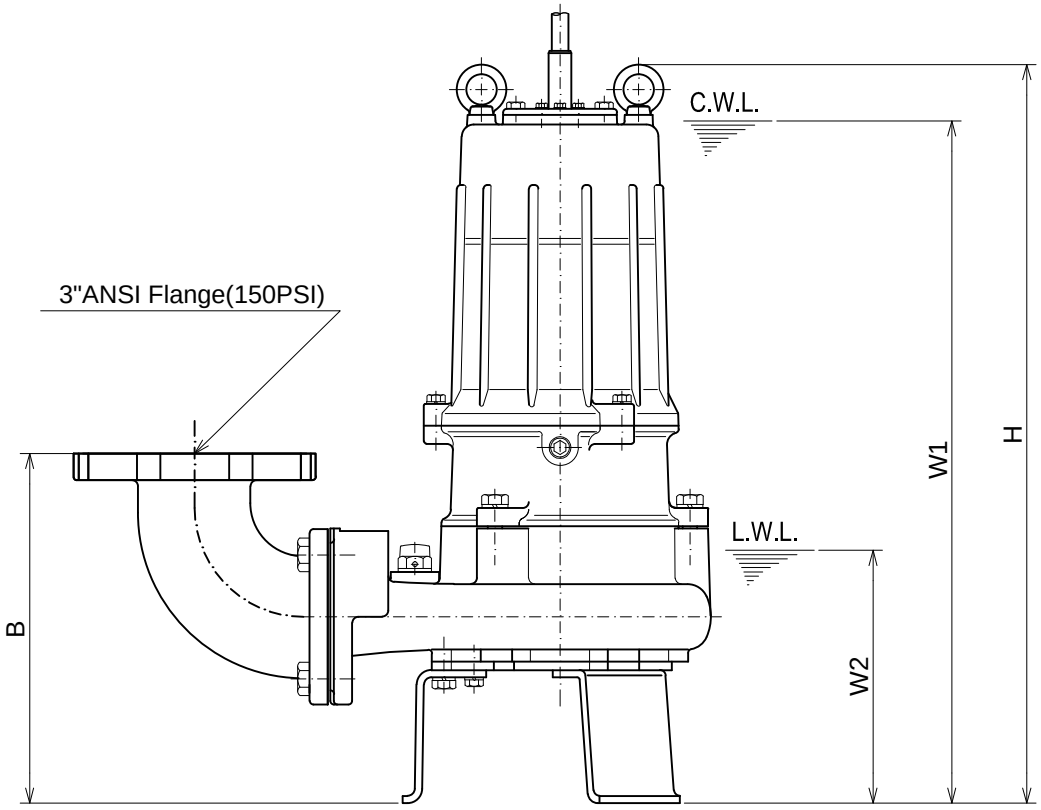



**TSURUMI PUMP** | **C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS** | **DIMENSIONS**

**80C22.2-CR -61**
**80C23.7-CR -61**

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 80C22.2-CR -61 | 3 | 3" | 21 1/8 | 12 5/16 | 4 15/16 | 11 3/8 | 10 1/4 | 5 1/16 | 5 3/16 | 24 1/16 | 22 1/4 | 8 1/4 | 135 |
| 80C23.7-CR -61 | 5 | 3" | 21 1/8 | 12 5/16 | 4 15/16 | 11 3/8 | 10 1/4 | 5 1/16 | 5 3/16 | 24 1/16 | 22 1/4 | 8 1/4 | 137 |

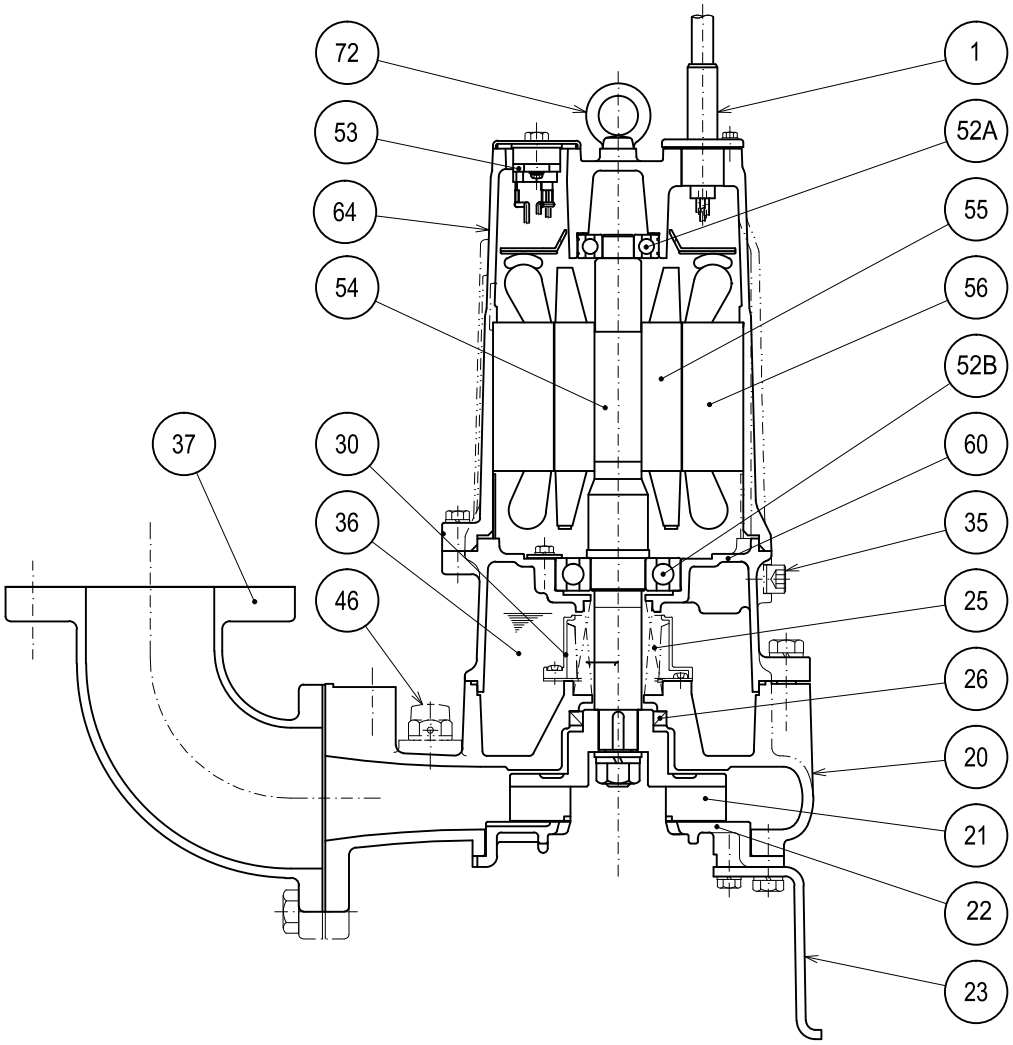
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 80C22.2-CR -61 | 2.2 | 80 | 537 | 312 | 125 | 289 | 260 | 128 | 132 | 611 | 565 | 210 | 61 |
| 80C23.7-CR -61 | 3.7 | 80 | 537 | 312 | 125 | 289 | 260 | 128 | 132 | 611 | 565 | 210 | 62 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

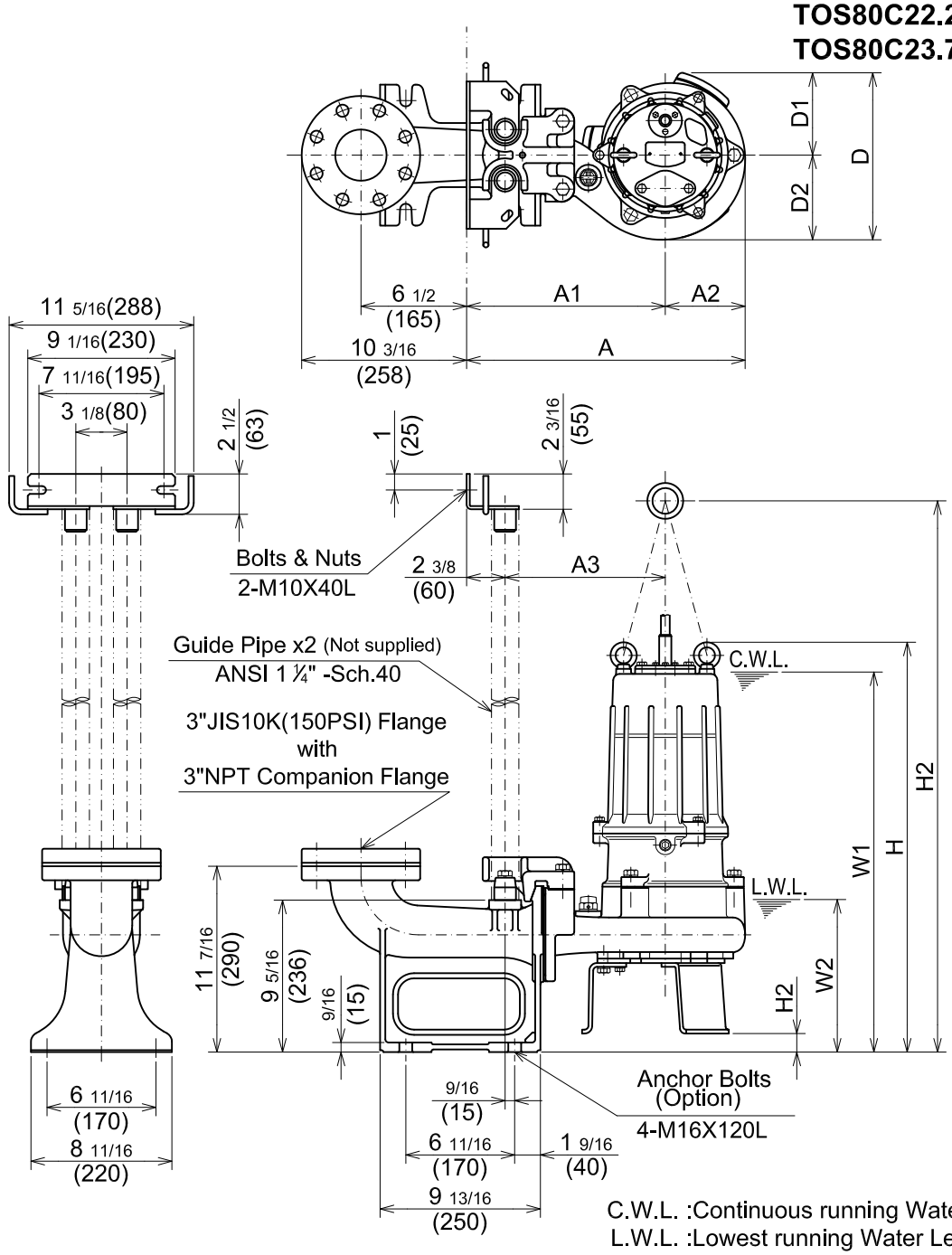
**80C22.2-CR -61**
**80C23.7-CR -61**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | PVC Sheath AWG 12/4-32ft | | | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Steel | A283 Grade D | EN 10025 S275 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-30 | | | 1 |
| 26 | Oil Seal | NBR / TC45629 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 52A | Upper Bearing | AC-#6304ZZC3 | | | 1 |
| 52B | Lower Bearing | #6307ZZC3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**TOS80C22.2-CR -61**
**TOS80C23.7-CR -61**




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C22.2-CR -61 | 3 | 3" | 17 1/8 | 12 3/16 | 4 15/16 | 9 13/16 | 10 1/4 | 5 1/16 | 5 3/16 | 25 3/16 | 33 7/8 | 1 1/8 | 23 3/8 | 9 1/2 | 130 |
| TOS80C23.7-CR -61 | 5 | 3" | 17 1/8 | 12 3/16 | 4 15/16 | 9 13/16 | 10 1/4 | 5 1/16 | 5 3/16 | 25 3/16 | 33 7/8 | 1 1/8 | 23 3/8 | 9 1/2 | 132 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C22.2-CR -61 | 2.2 | 80 | 435 | 310 | 125 | 250 | 260 | 128 | 132 | 640 | 860 | 29 | 595 | 240 | 59 |
| TOS80C23.7-CR -61 | 3.7 | 80 | 435 | 310 | 125 | 250 | 260 | 128 | 132 | 640 | 860 | 29 | 595 | 240 | 60 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

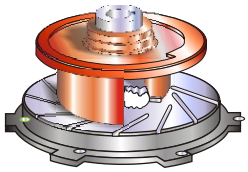
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

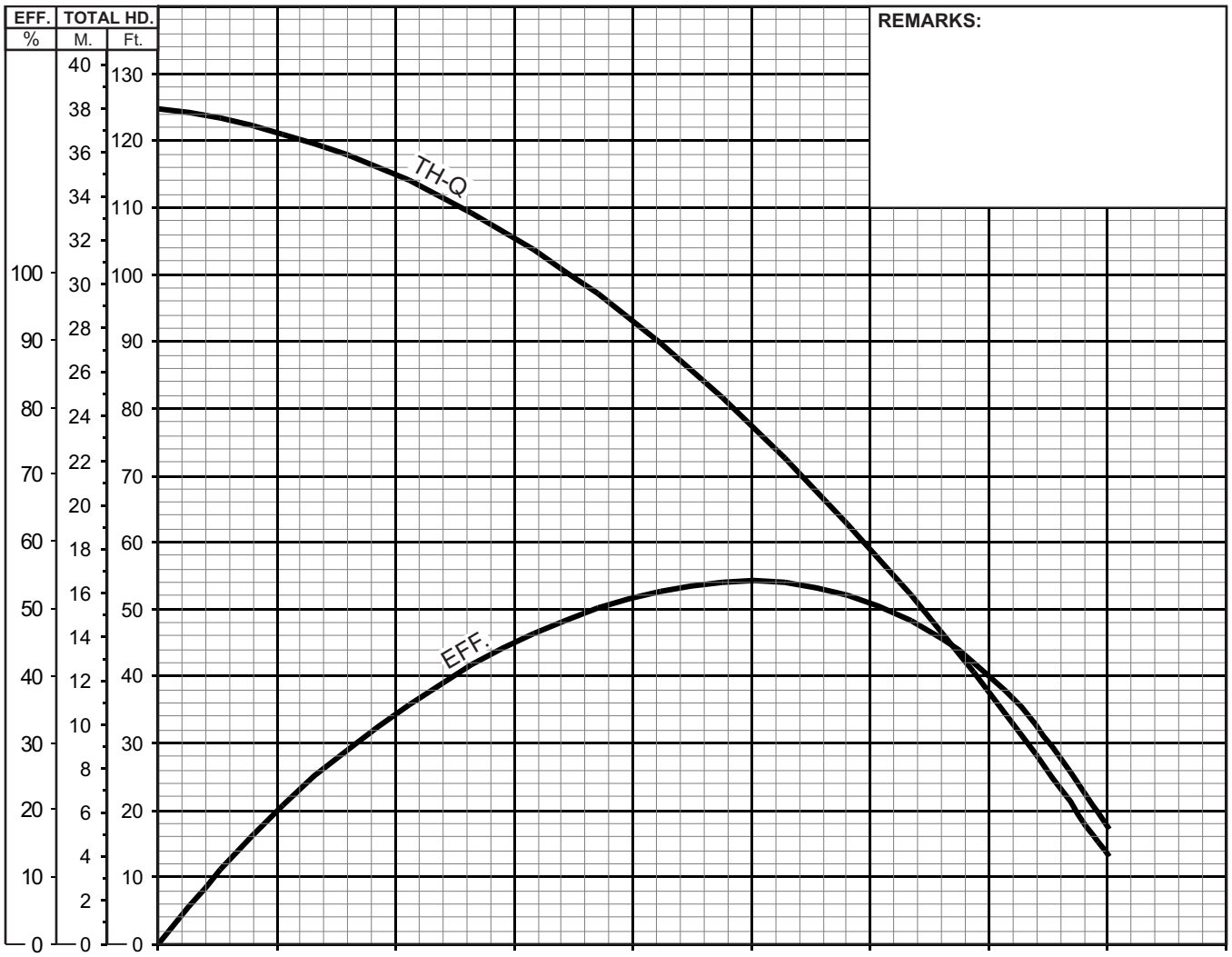
## PERFORMANCE CURVE

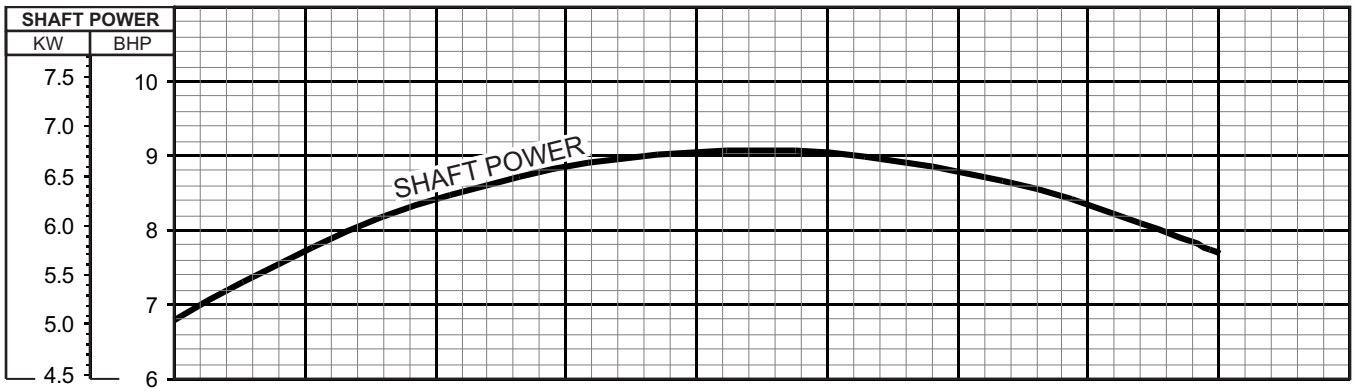
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 80C27.5-CR -61 | 3"/80mm | 10 | 7.5 | 3545 | 0.91"/23mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 208-230/460/575 | 26.9-25.6 / 13.0 / 10.2 | 60 | Direct On Line | F |

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

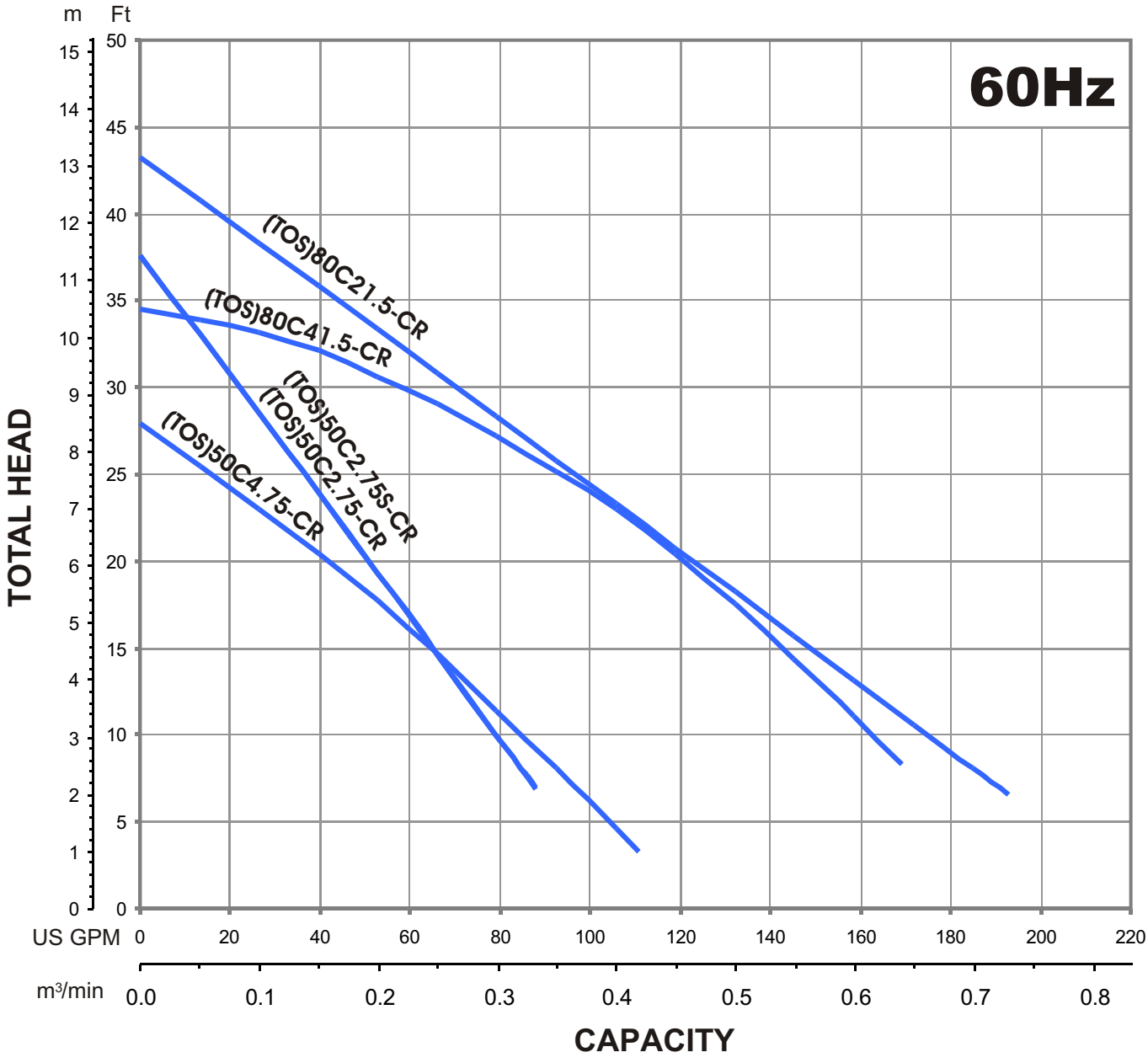
REMARKS:



| TSURUMI PUMP | C series 2″ - 3″ | PERFORMANCE RANGE |
|---|---|---|

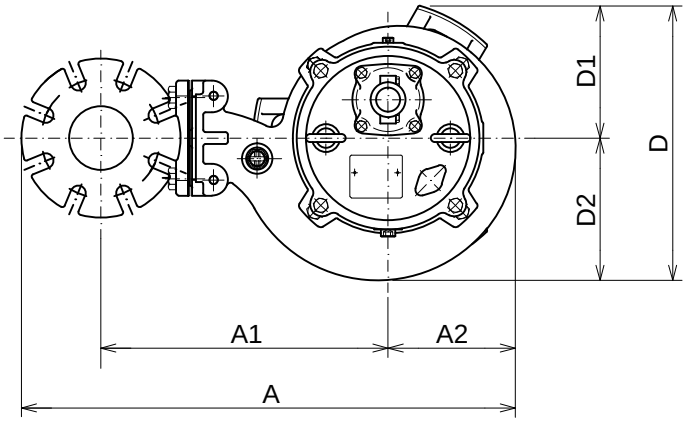
## GROUP PERFORMANCE RANGE

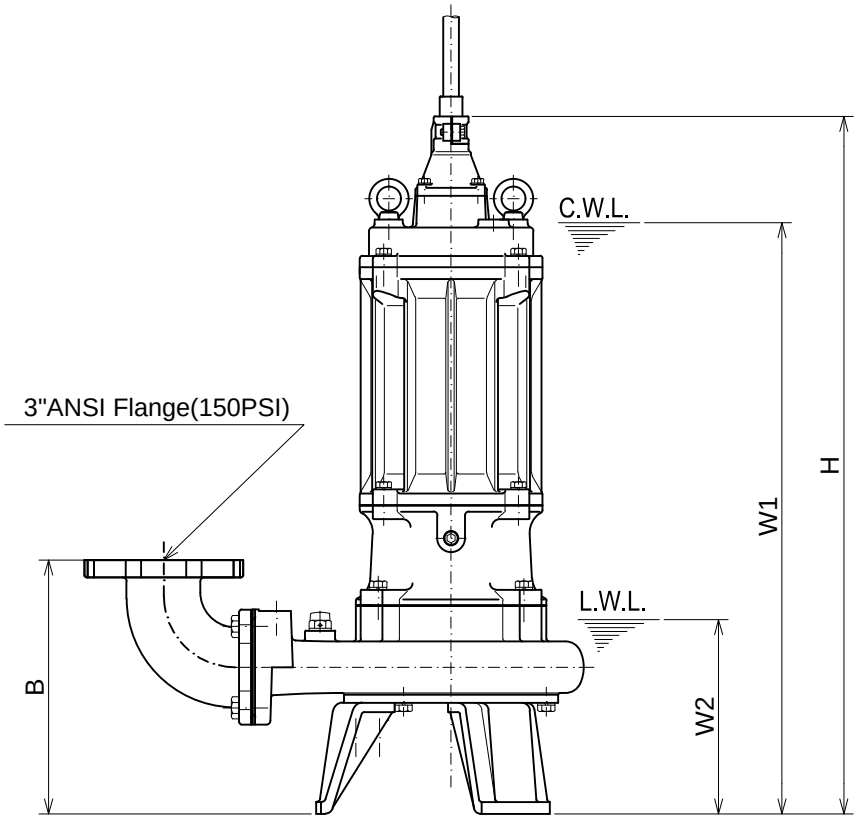


TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**80C25.5-CR -61**
**80C27.5-CR -61**

Bend model:
BEND80-80 ANSI




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 80C25.5-CR -61 | 7.5 | 3" | 24 15/16 | 14 5/8 | 6 5/16 | 12 5/8 | 13 9/16 | 6 9/16 | 7 1/16 | 34 5/8 | 29 3/8 | 9 5/8 | 274 |
| 80C27.5-CR -61 | 10 | 3" | 24 15/16 | 14 5/8 | 6 5/16 | 12 5/8 | 13 9/16 | 6 9/16 | 7 1/16 | 34 5/8 | 29 3/8 | 9 5/8 | 280 |

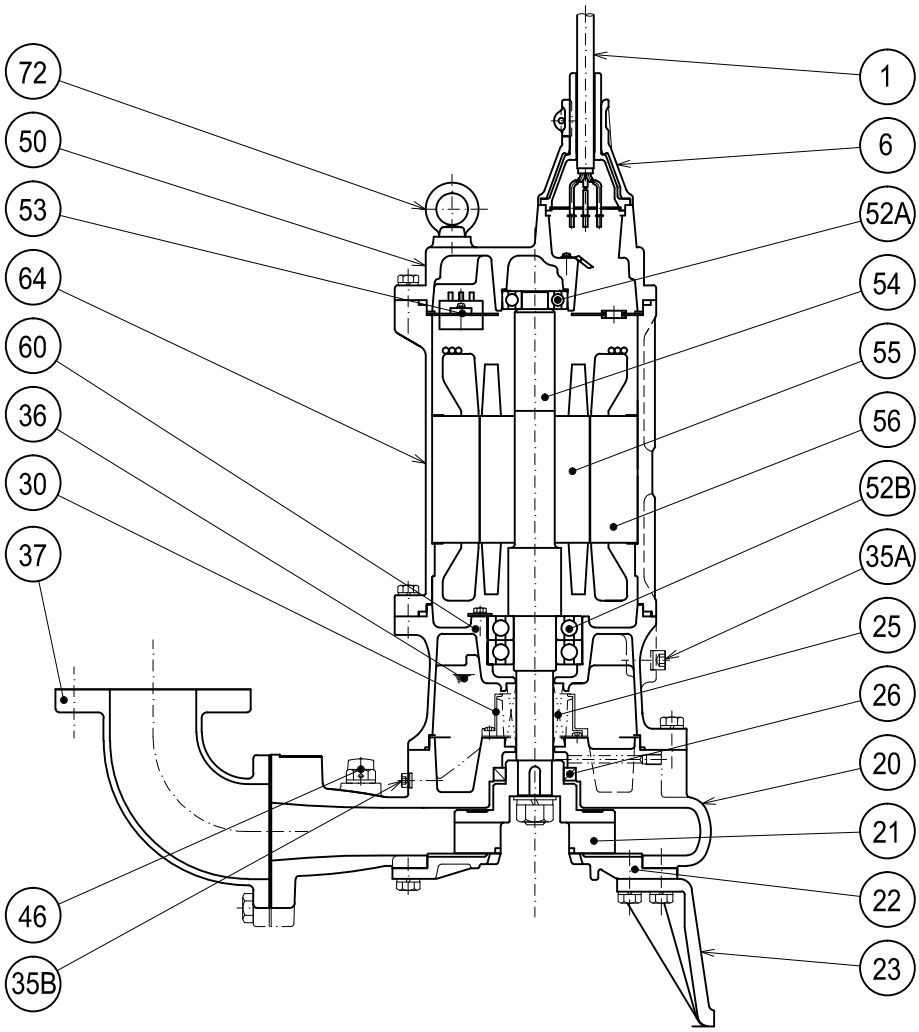
*Excluding Cable.

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 80C25.5-CR -61 | 5.5 | 80 | 633 | 372 | 160 | 320 | 345 | 166 | 179 | 879 | 745 | 245 | 124 |
| 80C27.5-CR -61 | 7.5 | 80 | 633 | 372 | 160 | 320 | 345 | 166 | 179 | 879 | 745 | 245 | 127 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW

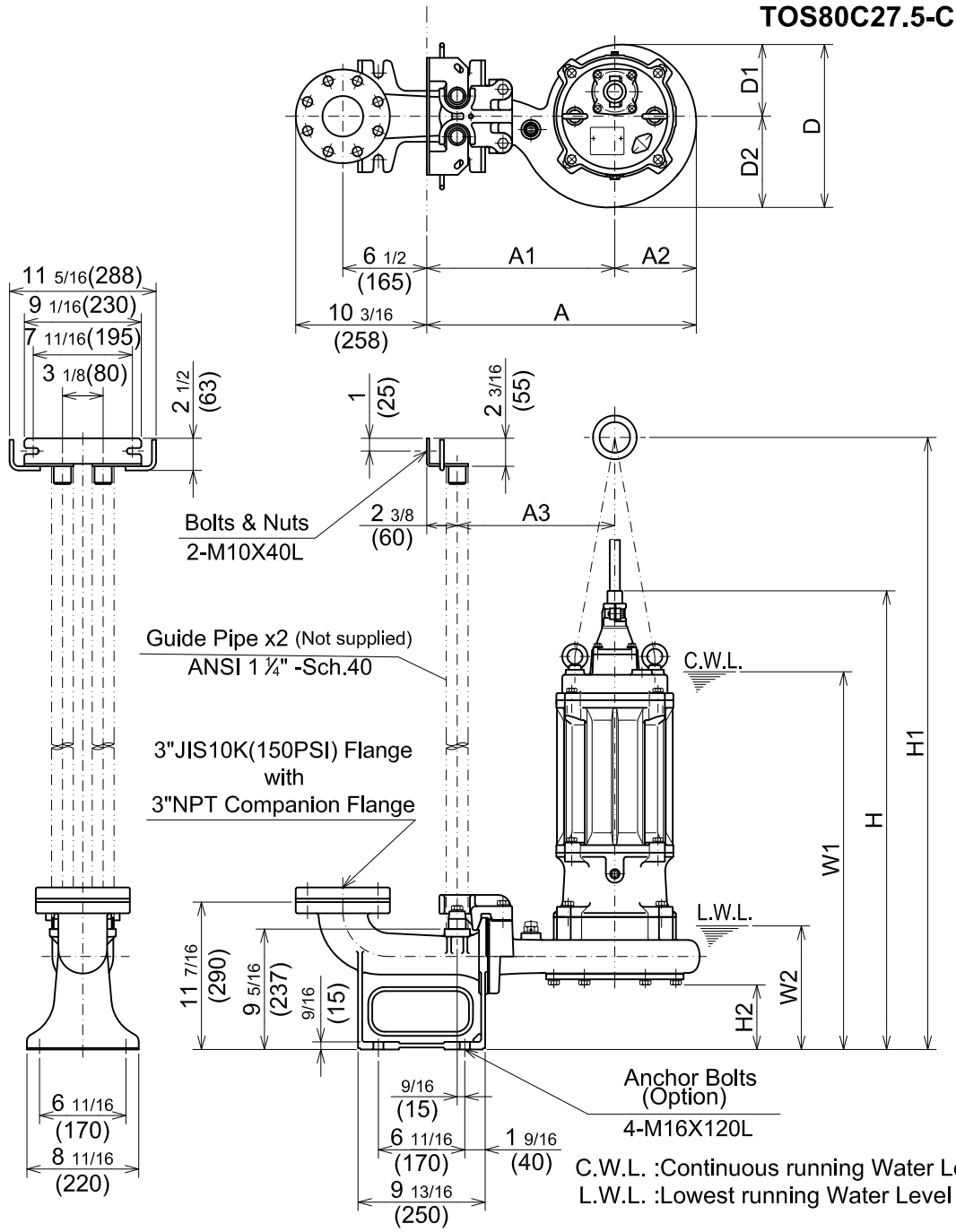
**80C27.5-CR -61**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 10/4-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 3 |
| 25 | Mechanical Seal | Silicon Carbide / H-35 | | | 1 |
| 26 | Oil Seal | NBR / TC557812 | | | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35A | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 35B | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron / 3"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Nylon | | | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 52A | Upper Bearing | #6305ZZC3 | | | 1 |
| 52B | Lower Bearing | #6308ZZD2C3 | | | 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 Class25B | EN 1561 GJL-150 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class25B | EN 1561 GJL-150 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 2 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

**TOS80C25.5-CR -61**
**TOS80C27.5-CR -61**




**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C25.5-CR -61 | 7.5 | 3" | 20 7/8 | 14 9/16 | 6 5/16 | 12 3/16 | 12 5/8 | 5 9/16 | 7 1/16 | 35 1/2 | 47 3/8 | 5 | 29 3/8 | 9 5/8 | 265 |
| TOS80C27.5-CR -61 | 10 | 3" | 20 7/8 | 14 9/16 | 6 5/16 | 12 3/16 | 12 5/8 | 5 9/16 | 7 1/16 | 35 1/2 | 47 3/8 | 5 | 29 3/8 | 9 5/8 | 271 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TOS80C25.5-CR -61 | 5.5 | 80 | 530 | 370 | 160 | 310 | 320 | 141 | 179 | 902 | 1204 | 127 | 745 | 245 | 120 |
| TOS80C27.5-CR -61 | 7.5 | 80 | 530 | 370 | 160 | 310 | 320 | 141 | 179 | 902 | 1204 | 127 | 745 | 245 | 123 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

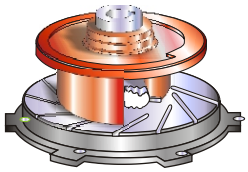
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

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

Length as Required

TOS Slide rail system

# TSURUMI PUMP

## C-SERIES
CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

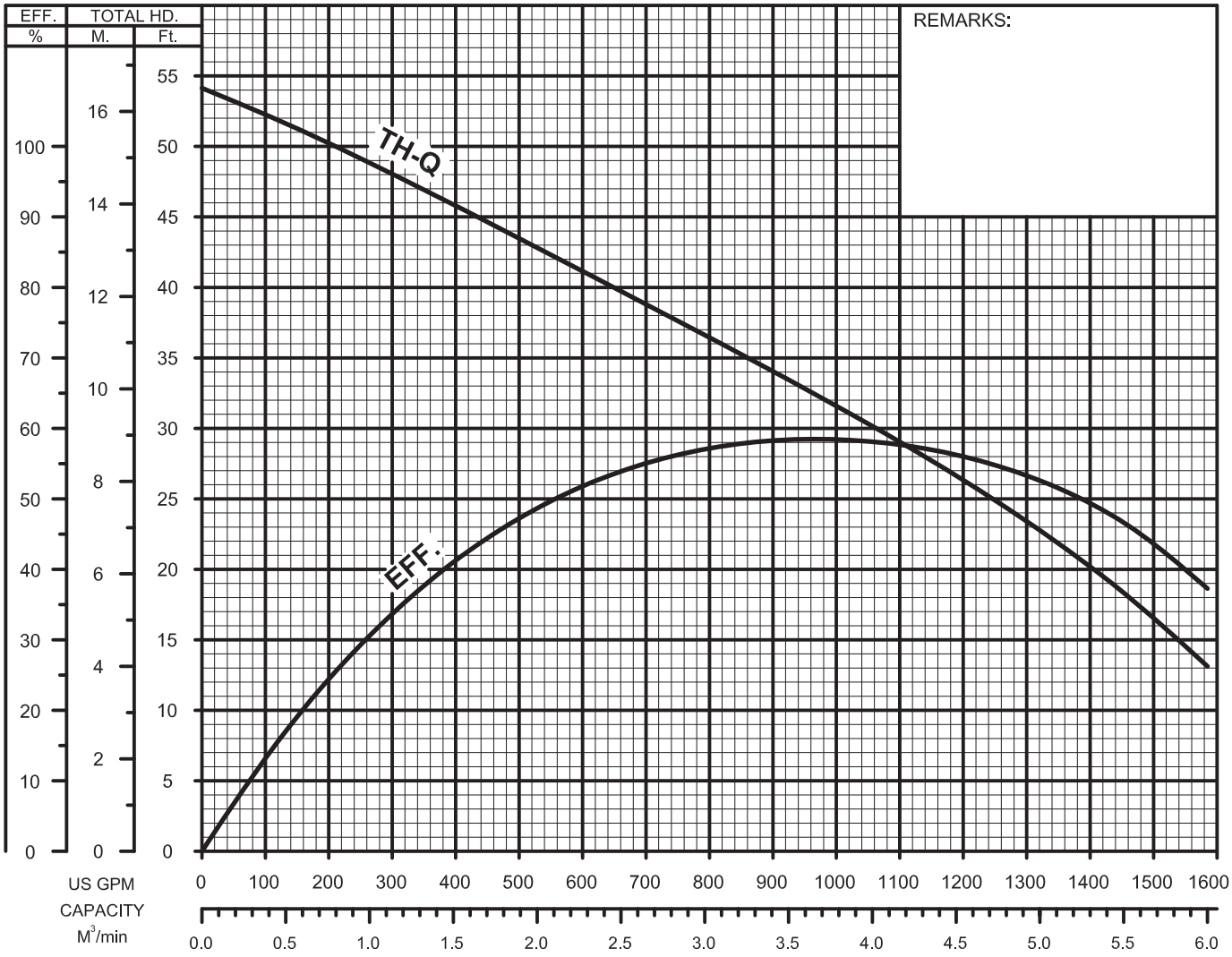
## PERFORMANCE CURVE

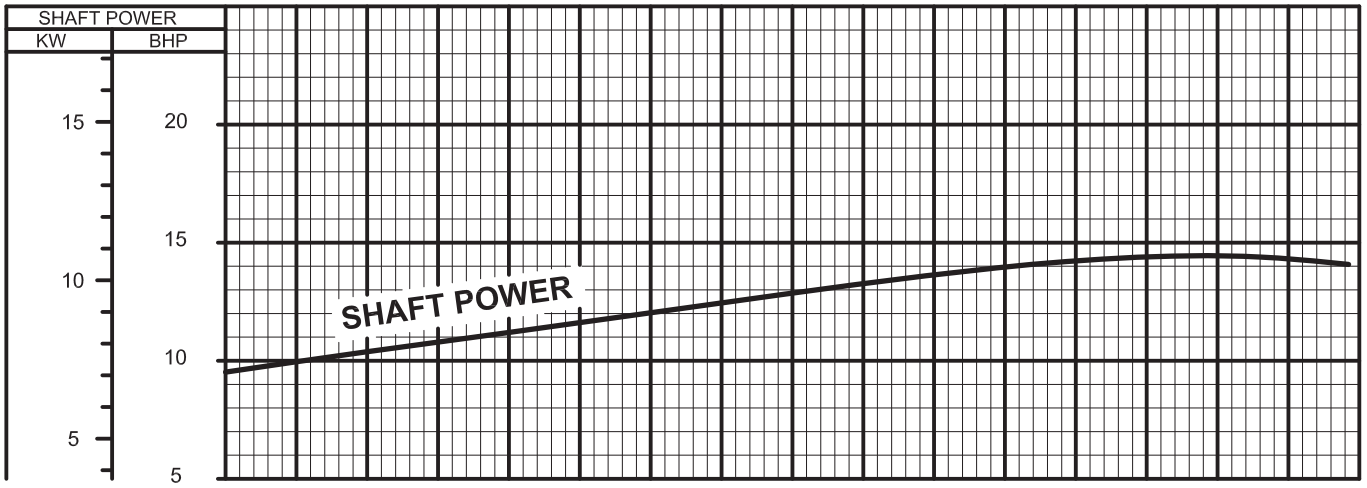
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA. | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TO)200C615-CR -61 | 8"/200mm | 20 | 15 | 1120 | 3.62"/92mm | Water | 1.0 | 1.123cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS.CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type-Sewage&Wastewater | 3 | 230/460/575 | 52/26/21 | 60 | Direct On Line | B |

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

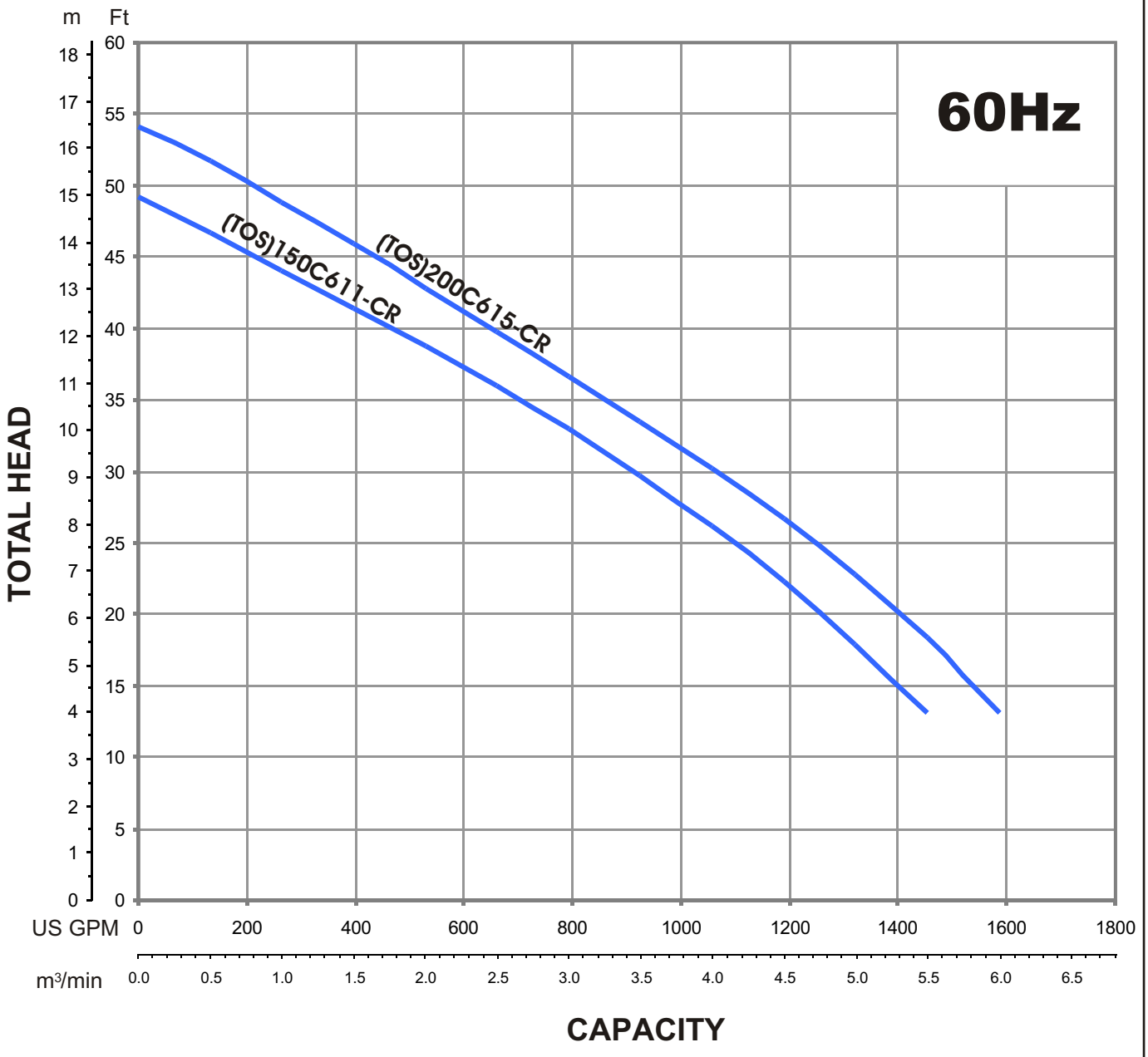
REMARKS:



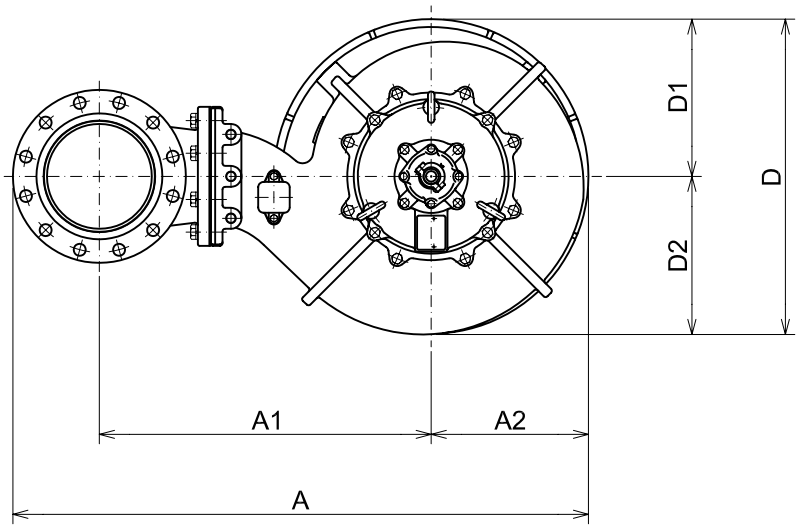
| TSURUMI PUMP | C series 6″ - 8″ | PERFORMANCE RANGE |
|---|---|---|

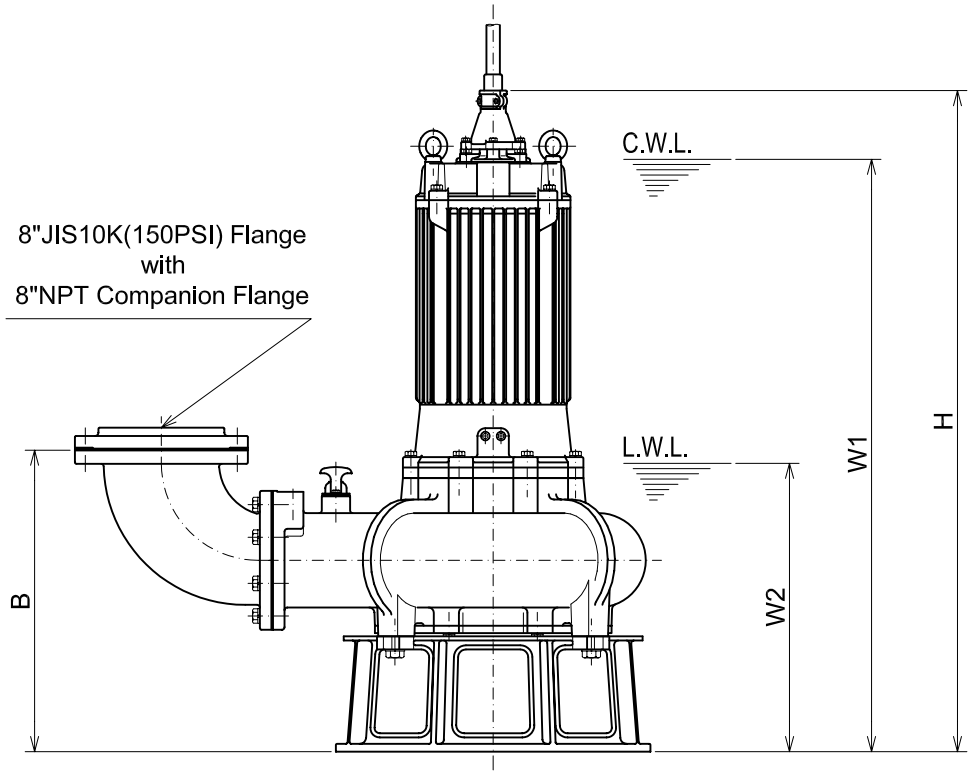
## GROUP PERFORMANCE RANGE



| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS |
|---|---|---|

## 200C615-CR -61




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

**DIMENSIONS:USCS(Inch)**

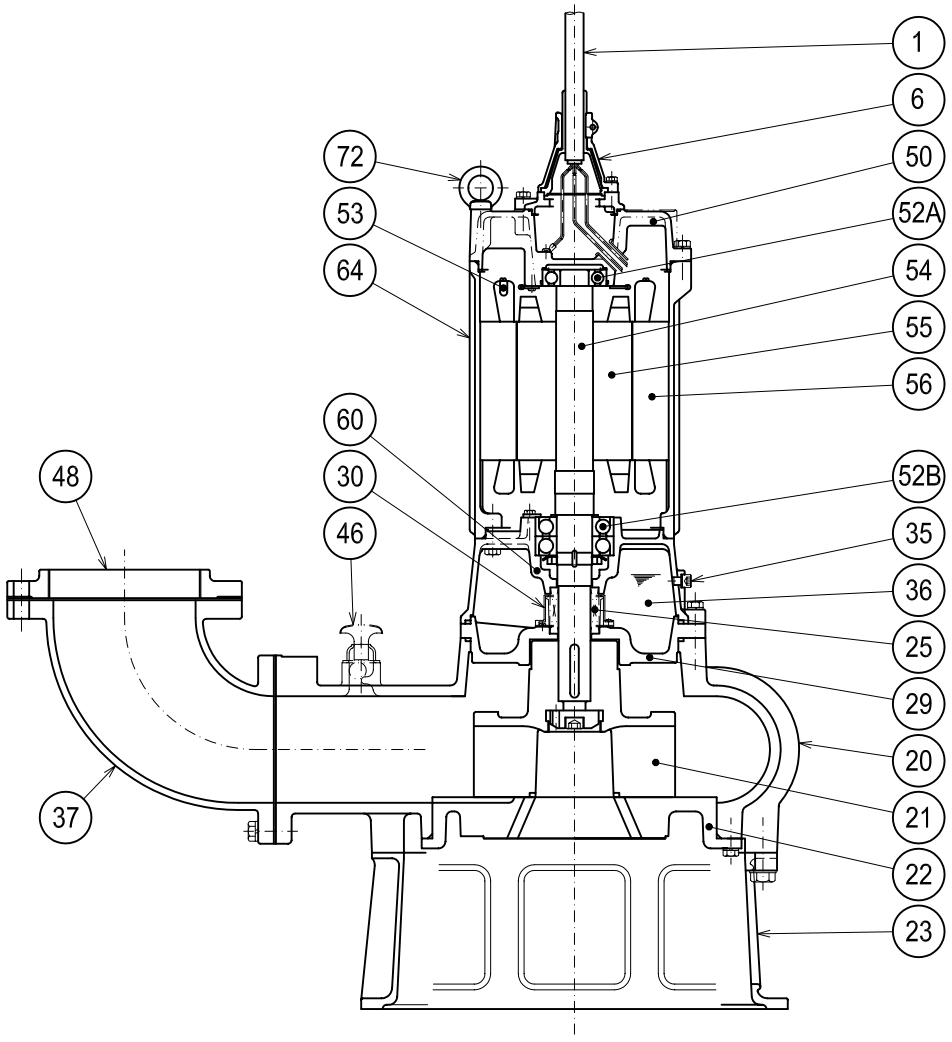
| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 200C615-CR -61 | 20 | 8" | 43 1/4 | 24 15/16 | 11 13/16 | 22 5/8 | 23 11/16 | 11 13/16 | 11 7/8 | 49 5/8 | 44 1/2 | 21 5/8 | 1210 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | |
| 200C615-CR -61 | 15 | 200 | 1098 | 633 | 300 | 575 | 602 | 300 | 302 | 1261 | 1130 | 550 | 550 |

| TSURUMI PUMP | C-SERIES<br>CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | SECTIONAL VIEW |
|---|---|---|

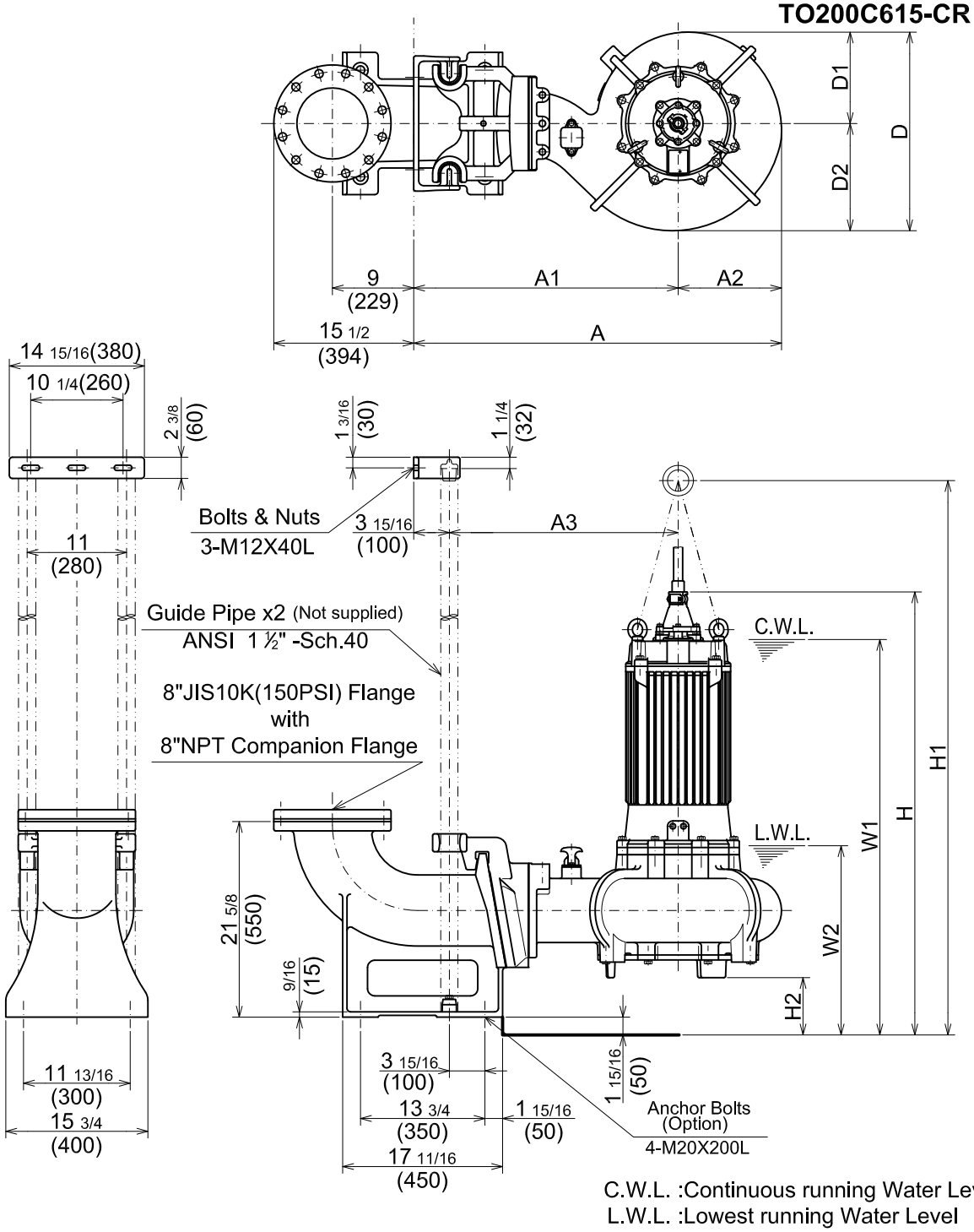
**200C615-CR -61**




| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | RELATED ASTM,AISI CODE | RELATED EN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG 6/4, 14/2-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A48M Class30B | EN 1561 GJL-200 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 Class Ⅲ TypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pump Stand | Malleable Cast Iron | A47 Grade 32510 | EN 1562 GJMB-350-10 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-45 | | | 1 |
| 29 | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | PBT Resin W/GF40 | | | 1 |
| 35 | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE 10W-20 | | | |
| 37 | Discharge Bend | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Steel (Cold Rolled ) | A109/A1008 | EN 10130 | 1 |
| 48 | Companion Flange | Cast Iron / NPT 8" | A48M Class30B | EN 1561 GJL-200 | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | AC-#6308ZZC3 | | | 1 |
| 52B | Lower Bearing | #6310ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Steel | A283 Grade D | EN 10025 S275 | 3 |

TSURUMI PUMP | C-SERIES CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## TO200C615-CR -61




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

**DIMENSIONS:USCS(Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TO200C615-CR -61 | 20 | 8" | 40 3/4 | 29 5/16 | 11 7/16 | 25 3/8 | 22 | 10 1/8 | 11 7/8 | 49 1/16 | 61 3/8 | 6 5/16 | 43 3/4 | 20 7/8 | 1150 |

**DIMENSIONS:METRIC(mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | |
| TO200C615-CR -61 | 15 | 200 | 1035 | 744 | 291 | 644 | 559 | 257 | 302 | 1246 | 1559 | 161 | 1110 | 530 | 520 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.

# TSURUMI PUMP

## C-SERIES
SEWAGE & WASTE WATER CUTTER PUMPS

## SPECIFICATIONS

## ■ FEATURES

1. Single & Multi-Vane, Cast Iron, impellers with Tungsten Carbide tip., and serrated, High Chrome Cast Iron, field replaceable/ adjustable cutter plate, reduces solids to impeller thrulett size, providing for highly efficient, and trouble free 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, equipped with an oil lifter, (2Hp. and above.), provides for the most durable seal design Available.

3. Highly efficient, continuous duty, air filled, copper wound motor with class F, B, E insulation minimizes the cost of operation.

4. Built in thermal, 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

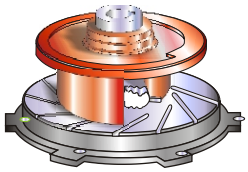
1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.

2. Food and poultry, waste processing.

3. Dairy and Hog waste handling.

4. Problem sump applications with unpredictable solids incursion.

IMPELLER



CUTTER PLATE


EQUIPPED

ACCREDITED BY THE DUTCH COUNCIL FOR CERTIFICATION REG No 24 ISO 9001

## ■ SPECIFICATIONS

| | |
|---|---|
| Discharge Size | 2 ~ 8" N.P.T. (50 ~ 200 mm) |
| Horsepower Range | 1 ~ 30 Hp. (.75 ~ 22 KW) |
| Performance Range Capacity | 39.6 ~ 1585.0 G.P.M. (.15 ~ 6.0 $m^3$/min) |
| Head | 4.9 Ft. ~ 230.0 Ft. (1.5 ~ 70.1 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/TC |
| Cutter Plate | High Chrome Cast Iron, (HCR) |
| Shaft | 420,403 Stainless Steel |
| Motor Frame | ASTM 48 Class 30 Cast Iron |
| Fasteners | 304 Stainless Steel |
| Mechanical Seal | Silicon Carbide |
| Elastomers | NBR (Nitril Buna Rubber) |
| Impeller Type | Semi-Open, Cutter Type |
| Solids Handling Capability | 0.79 ~ 3.62 (20 ~ 92 mm) |
| Bearings | Pre-lubricated, Double Shielded |
| Motor Nomenclature | |
| Type, Speed, Hz. | Air Filled, 3600/1800/1200 Rpm, 60 Hz. |
| Voltage, Phase | 115V. or 230V. (1 Phase) |
| | 208-230 or 440, 460 or 575V. (3 Phase) |
| Insulation | Class E, B, F |
| Accessories | Submersible Power Cable 32' (10 m) |

## ■ STANDARD

## ■ OPTIONS

Dry-Pit

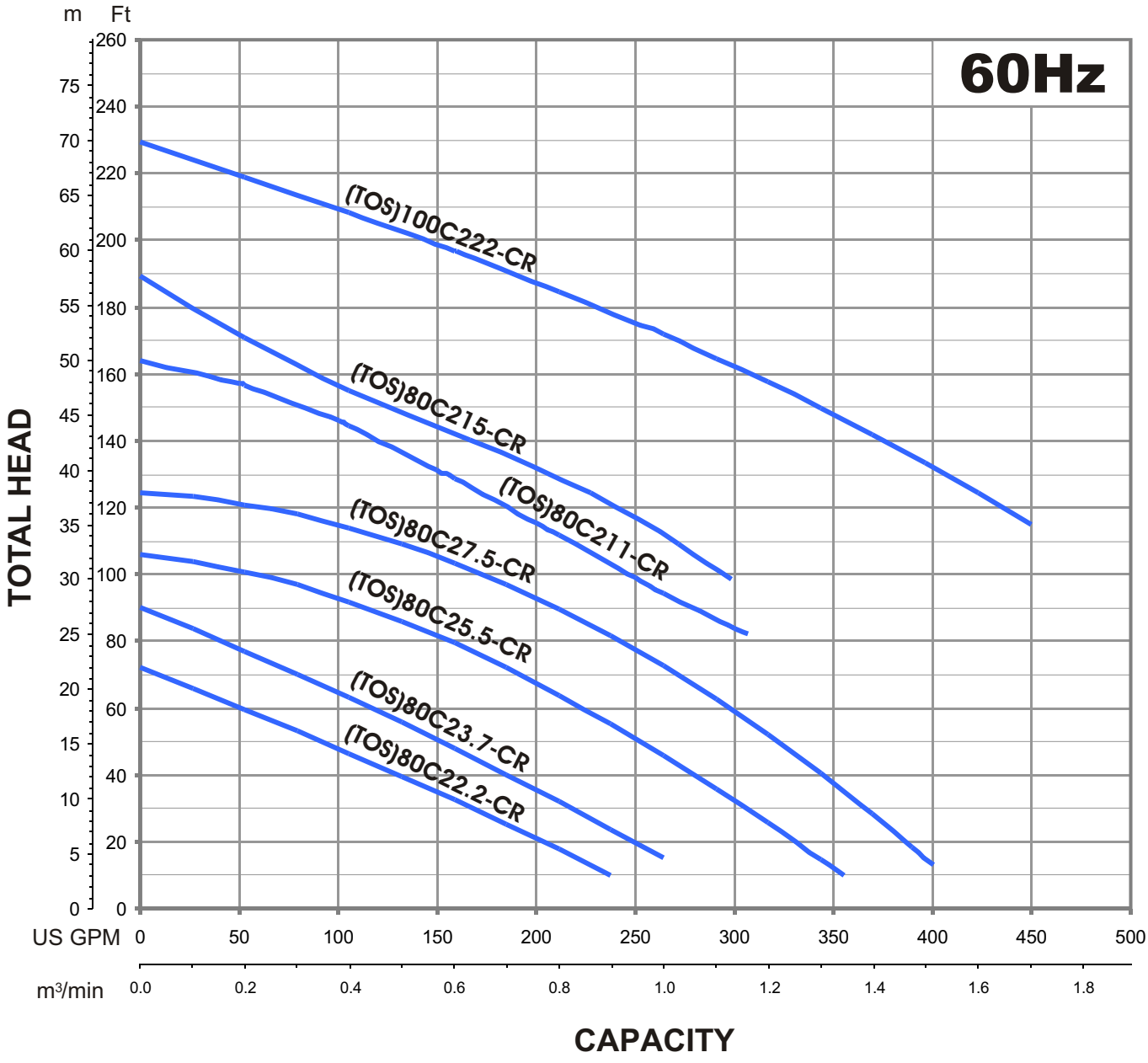
Nema 3R inverter available for 230 V.,1 Ph. operation (1~5 Hp.)

Length as Required

TOS Slide rail system

| TSURUMI PUMP | C - High Head series | PERFORMANCE RANGE |
|---|---|---|

## GROUP PERFORMANCE RANGE



# TSURUMI PUMP

## C - SERIES
### CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS

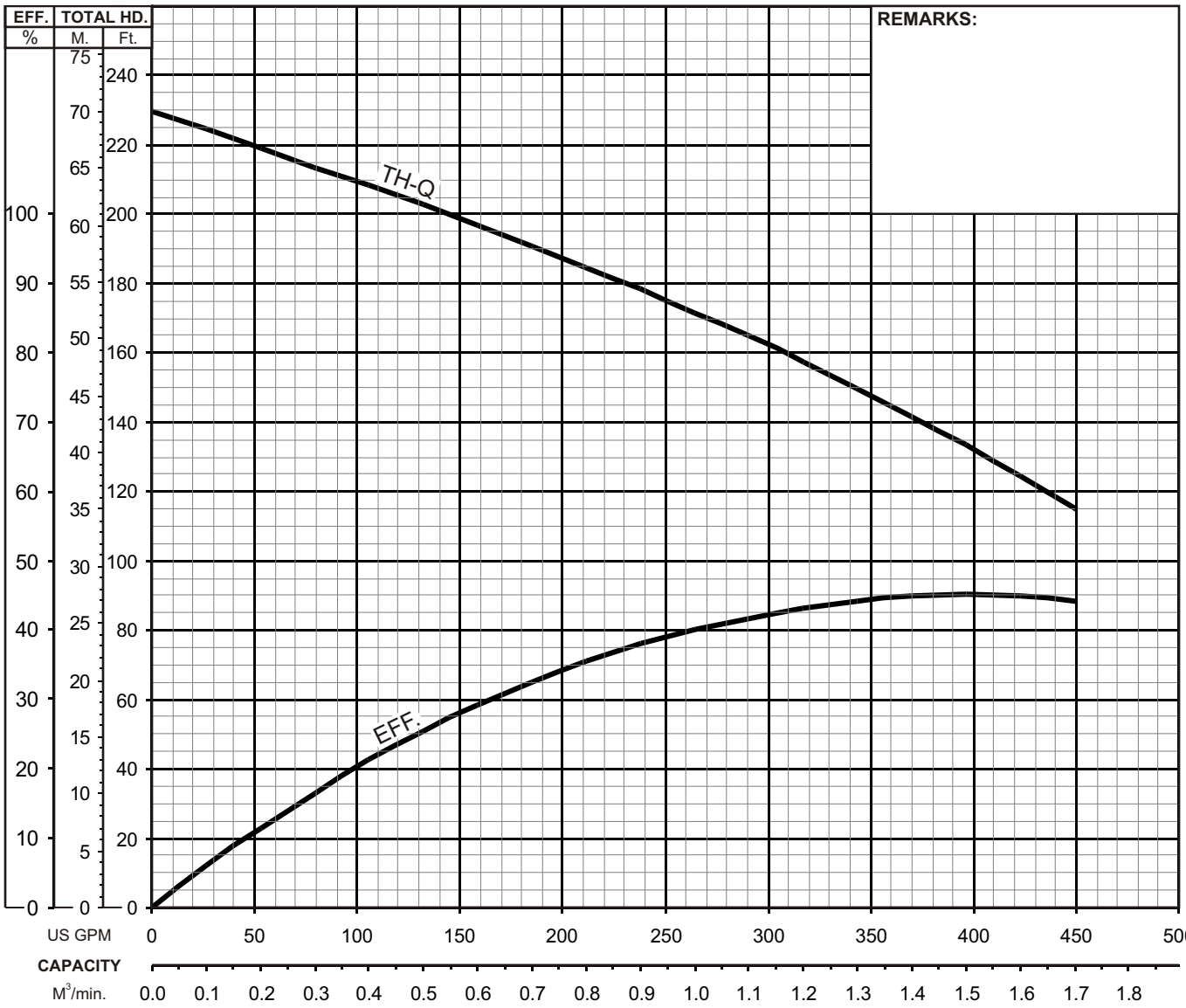
## PERFORMANCE CURVE

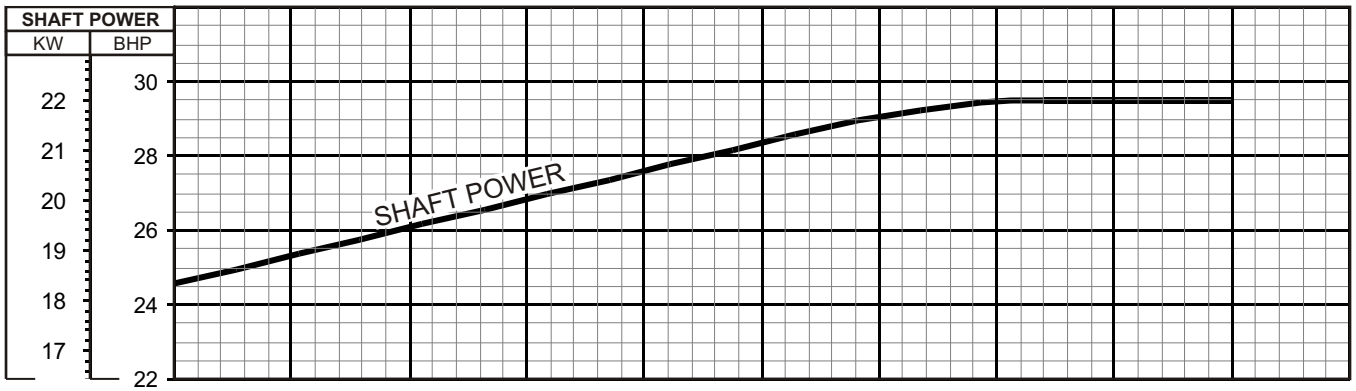
| MODEL | BORE | HP | KW | RPM | SOLIDS DIA | LIQUID | SG. | VISCOSITY | TEMP. |
|---|---|---|---|---|---|---|---|---|---|
| (TOS) 100C222-CR -61 | 4"/100mm | 30 | 22 | 3490 | 1.02"/26mm | Water | 1.0 | 1.123 cSt. | 60°F |

| PUMP TYPE | PHASE | VOLTAGE | AMPERAGE | HZ | STARTING METHOD | INS. CLASS |
|---|---|---|---|---|---|---|
| Cutter-Type - Sewage & Wastewater | 3 | 460 / 575 | 35 / 28 | 60 | Star-Delta | F |

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

REMARKS:

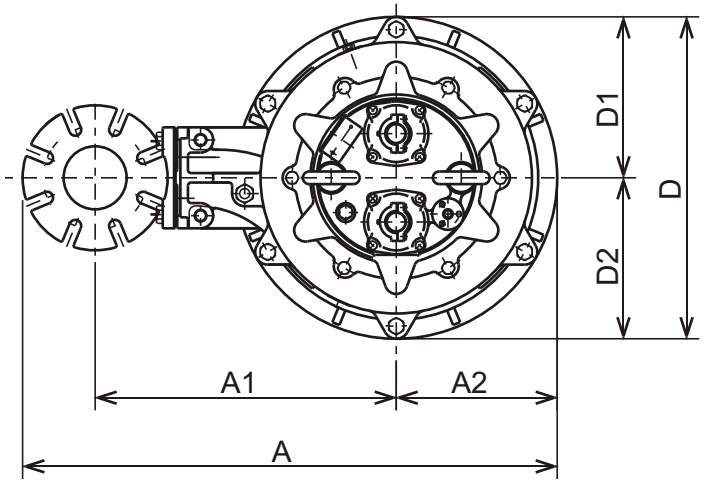


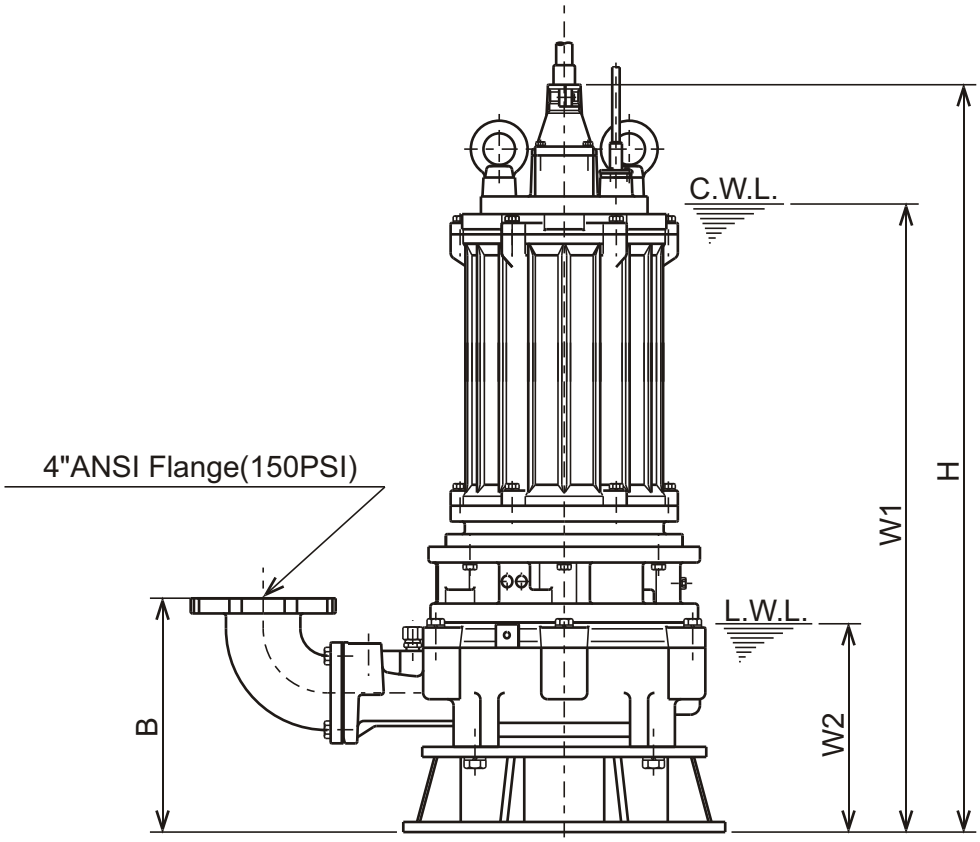



TSURUMI PUMP | C - SERIES CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS | DIMENSIONS

## 100C222-CR -61

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 | B | D | D1 | D2 | H | W1 | W2 | (lbs.) |
| 100C222-CR-61 | 30 | 4" | 33 3/4 | 19 3/16 | 10 1/16 | 14 5/8 | 20 1/16 | 10 1/16 | 10 1/16 | 46 5/8 | 39 3/16 | 13 | 915 |

*Excluding Cable.

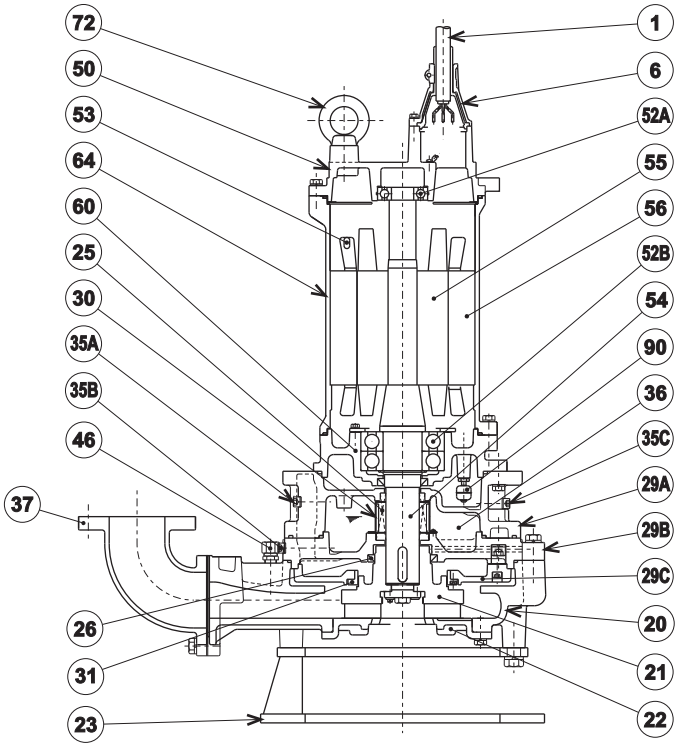
**DIMENSIONS:METRIC (mm)**

| Model | kW | NOM. | Pump & Motor | | | | | | | | C.W.L. | L.W.L. | *Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SIZE | A | A1 | A2 | B | D | D1 | D2 | H | W1 | W2 | (kg) |
| 100C222-CR-61 | 22 | 100 | 857 | 487 | 255 | 371 | 510 | 255 | 255 | 1184 | 995 | 330 | 415 |

# TSURUMI PUMP

## C - SERIES
### CUTTER - TYPE - SEWAGE & WASTEWATER PUMPS

## SECTIONAL VIEW



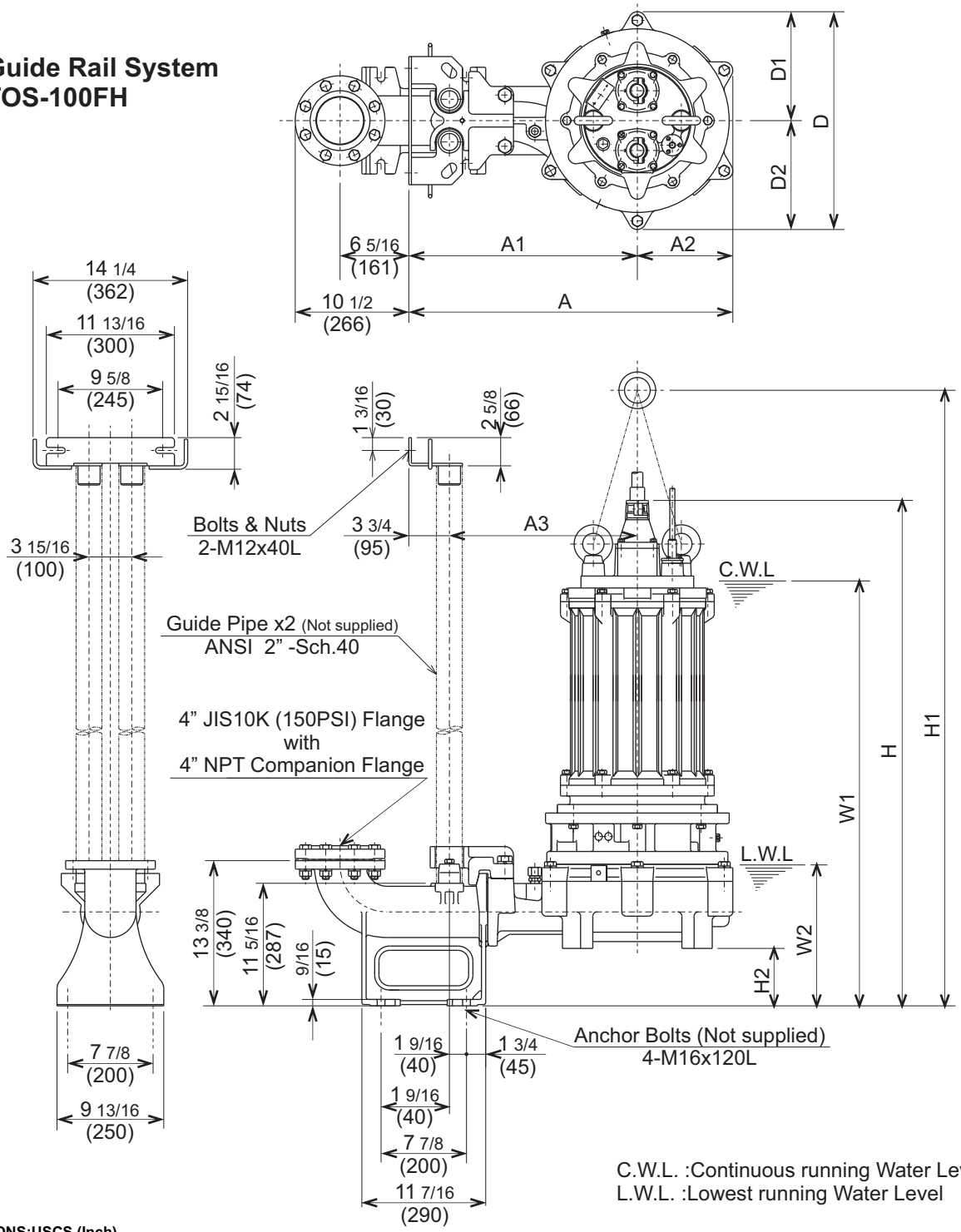

**100C222-CR-61**

| PART# | DESCRIPTION | MAIN MATERIAL / NOTE | ASTM, AISI CODE | RELATED DIN CODE | QTY |
|---|---|---|---|---|---|
| 1 | Power Cable | Chloroprene Sheath AWG6/4-32ft | | | 1 |
| | Power Cable | Chloroprene Sheath AWG6/3-32ft | | | 1 |
| | Control Cable | Chloroprene Sheath AWG16/4-32ft | | | 1 |
| 6 | Stuffing Box | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 2 |
| 20 | Pump Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 21 | Impeller | High Chrome Cast Iron W/Tungsten Carbide | A532 ClassⅢTypeA | DIN 1695 G-X260Cr27 | 1 |
| 22 | Suction Cover | High Chrome Cast Iron | A532 ClassⅢTypeA | DIN 1695 G-X260Cr27 | 1 |
| 23 | Pumpr Stand | Steel | A283 Grade D | EN 10025 S275 | 1 |
| 25 | Mechanical Seal | Silicon Carbide / H-60 | | | 1 |
| 26 | Oil Seal | NBR / TC10012513 | | | 1 |
| 29A | Casing Cover | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 29B | Oil Casing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 29C | Casing Plate | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 30 | Oil Lifter | Steel (Cold Rolled ) | A109/A1008 | EN 10130 | 1 |
| 31 | Wear Ring | Stainless Steel Casting | A743 CF-8M | GX5CrNiMo19-11-2 | 1 |
| 35A | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 2 |
| 35B | Oil Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 35C | Drain Plug | Stainless Steel | S 30400 | 1.4301 | 1 |
| 36 | Lubricant | Turbine Oil ISO VG32 or SAE10W-20 | | | 1 |
| 37 | Discharge Bend | Cast Iron / 4"ANSI Flange(150PSI) | A48M Class30B | EN 1561 GJL-200 | 1 |
| 46 | Air Release Valve | Stainless Steel | S 30400 | 1.4301 | 1 |
| 50 | Motor Bracket | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 52A | Upper Bearing | #6308ZZC3 | | | 1 |
| 52B | Lower Bearing | #6314ZZD2C3 | | | 1 |
| 53 | Motor Protector | | | | 3 |
| 54 | Shaft | Stainless Steel | S 42000 | 1.4028 | 1 |
| 55 | Rotor | | | | 1 |
| 56 | Stator | | | | 1 |
| 60 | Bearing Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 64 | Motor Housing | Cast Iron | A48M Class30B | EN 1561 GJL-200 | 1 |
| 72 | Lifting Lug Bolt | Stainless Steel | S 30400 | 1.4301 | 2 |
| 90 | Leak Sensor (Float) | | | | 1 |

**TSURUMI PUMP** | **C - SERIES** CUTTER-TYPE - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

## TOS100C222-CR-61

**Guide Rail System**
**TOS-100FH**




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

**DIMENSIONS:USCS (Inch)**

| Model | HP | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (lbs.) |
| TOS100C222-CR-61 | 30 | 4" | 29 7/8 | 21 1/16 | 8 13/16 | 17 5/16 | 20 1/16 | 10 1/16 | 10 1/16 | 46 5/8 | 56 3/4 | 5 5/16 | 39 3/16 | 13 | 840 |

**DIMENSIONS:METRIC (mm)**

| Model | kW | NOM. SIZE | Pump & Motor | | | | | | | | | | C.W.L. | L.W.L. | Wt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | A1 | A2 | A3 | D | D1 | D2 | H | H1 | H2 | W1 | W2 | (kg) |
| TOS100C222-CR-61 | 22 | 100 | 759 | 535 | 224 | 440 | 510 | 255 | 255 | 1184 | 1440 | 135 | 995 | 330 | 380 |

| TSURUMI PUMP | C - SERIES<br>SEWAGE & WASTEWATER PUMPS | SAMPLE<br>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 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. Pump unit(s) shall be designed so that cavitation will not occur at open discharge. 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, high chrome cast iron cutter plate. 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 or two-vane, semi-open, solids handling design equipped with tungsten carbide vane tip 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. Unit 2 Hp. and above 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. Units designed to exceed 42.6 PSI. at shut off head shall incorporate seal pressure relief ports.

## 4. MOTOR -

The pump motor(s) shall be _____Hp., _____ kW., _____V., 60 Hz., ___ 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 E, B, or 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) and above, 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 above), 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.