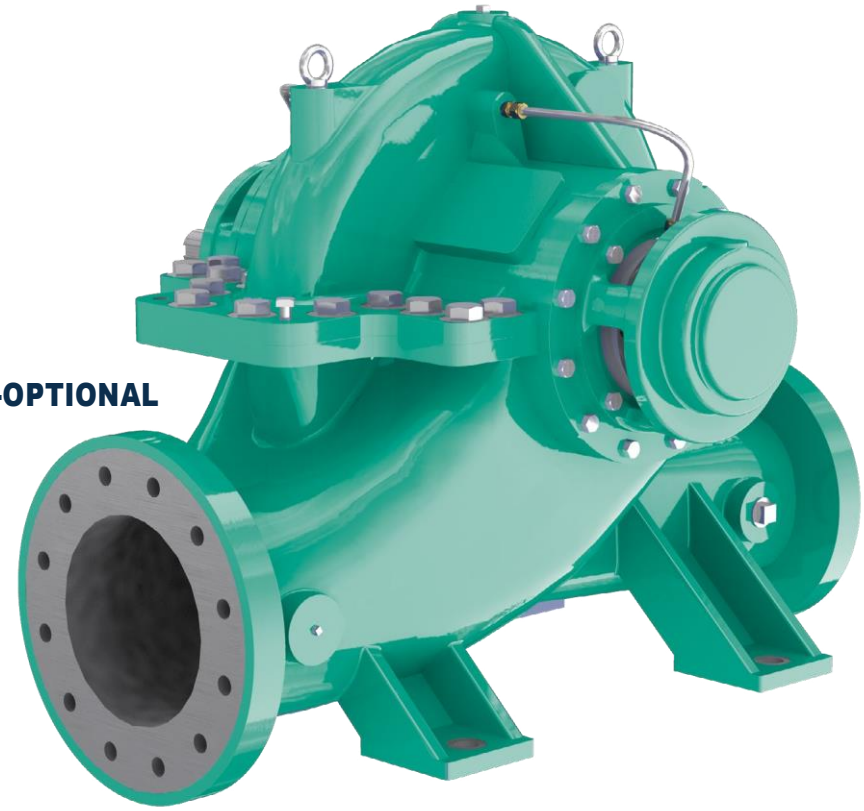
# CAST WATER ZT-84 PUMP



**FLOW RATES TO 15,000 GPM**

**HEADS TO 600 FEET TDH**

**CASE WORK PRESSURES TO 400 PSI**

**CAST IRON CASING-STD-DUCTILE IRON-OPTIONAL**

**STAINLESS STEEL IMPELLER**

**MECHANICAL SEALS**

**GREASE LUBRICATED BEARINGS**

**SINGLE AND DOUBLE VOLUTE**

**SIZED TO 16” DISCHARGE**

### WEAR RINGS

Casing wear rings are standard and replaceable on all pumps. Impeller wear rings are optional.

### MECHANICAL STRENGTH

Provided with ribs and connection bosses to ensure mechanical strength during hydrostatic test and normal operation.

### IMPELLER

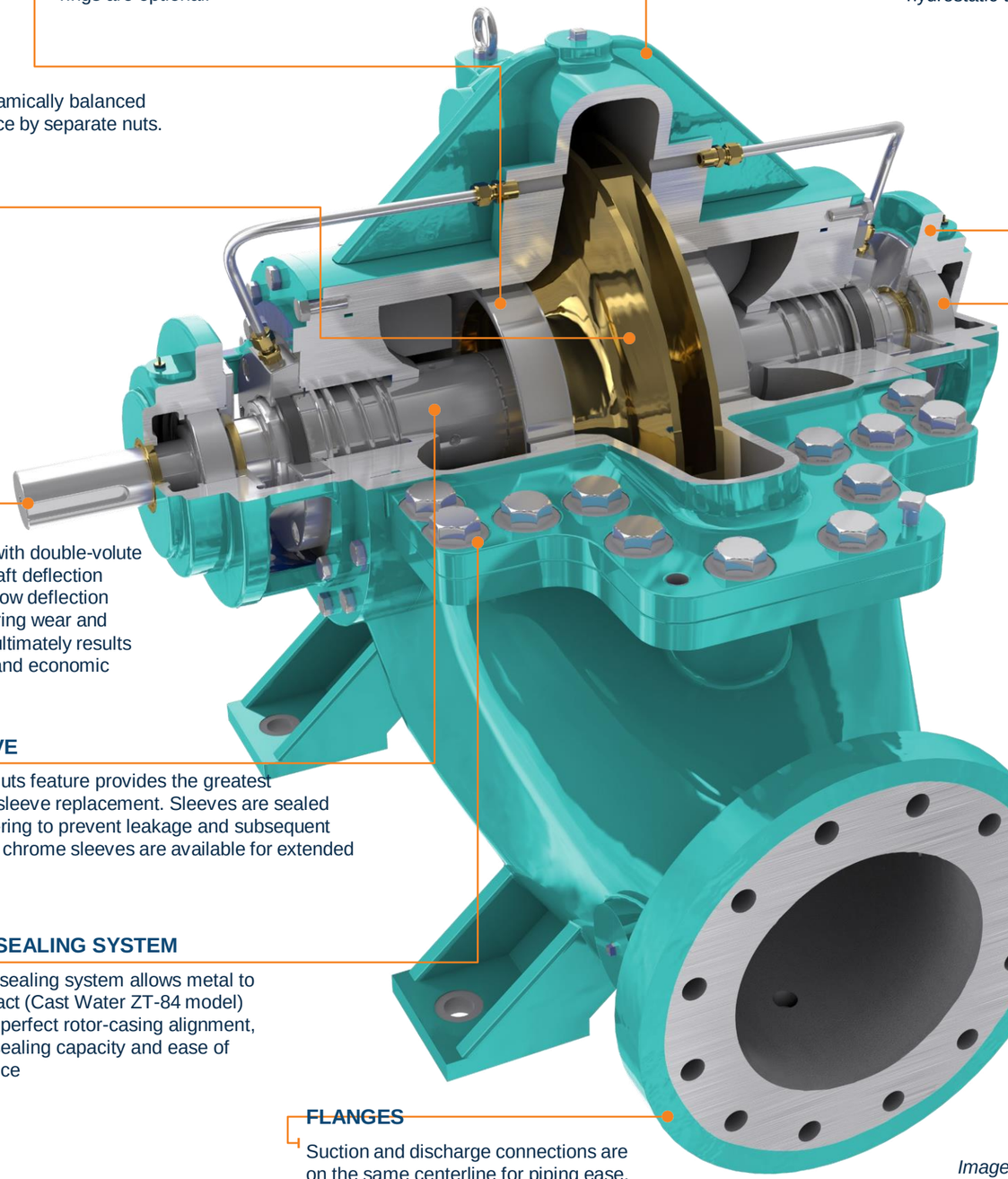
Double suction, dynamically balanced impellers held in place by separate nuts.

### BEARING HOUSING

360° bearing housing arrangement to ensure mechanical stability and low vibration levels. Design allows to use the house for packing (as standard) or mechanical seal (optional).

### BEARINGS

Interchangeability line and thrust bearings (rated up to 100,000 hours bearing life). Grease lubricated as standard, oil lubrication is optional.



### SHAFT

A rigid shaft combined with double-volute casing results in low shaft deflection at all operating points. Low deflection reduces packing wear, ring wear and bearing loading, which ultimately results in sustained efficiency and economic operation.

### SHAFT SLEEVE

Separate shaft nuts feature provides the greatest simplification of sleeve replacement. Sleeves are sealed to shaft by an O-ring to prevent leakage and subsequent erosion. 11-13% chrome sleeves are available for extended life on packing.

### CASING SEALING SYSTEM

Innovative sealing system allows metal to metal contact (Cast Water ZT-84 model) ensuring a perfect rotor-casing alignment, improved sealing capacity and ease of mainteinance

### FLANGES

Suction and discharge connections are on the same centerline for piping ease.

*Images for general arrangement use only, not certified for construction.*



## CHARACTERISTICS AND DESIGN FEATURES

- Hydraulic Institute (HI) design - BB1 & BB3 type.
- Horizontal, between bearings, axially split centrifugal pump.
- Single or multi-stage depending on model.
- High efficiency, foot mounted design.
- Axially split case, single-volute or double-volute (depending on model), minimizes thrust loads and allows operation over a wide range of capacities.
- Flanged connections.
- Side-side nozzle configuration.
- Double suction, enclosed impellers provide hydraulic balance eliminating axial thrust..
- Clockwise or counterclockwise rotation.
- Stuffing box allows mechanical seal option.
- Horizontal mounting arrangements available.
- Cast iron as standard material (other materials on request).

## APPLICATIONS

For pumping of pure, raw and wastewater, as well as seawater:

- Municipal water systems
- Cooling towers
- Circulating water
- Raw water transfer
- High and low water lift
- Water pipelines
- Dewatering
- Irrigation
- Desalination
- Marine services
- Cargo loading and unloading
- Fire protection

## FOREWORD

The Cast Water ZT-84 pumps are horizontally mounted axially split case, single stage, single or double cast volute, double suction centrifugal pumps. They are designed for continuous duty, with a combination of mechanical, metallurgical and installation features for applications in water.

## DESIGN FEATURES

### Casing

The Cast Water ZT-84 casing is horizontally split, with the upper and lower halves bolted and dowelled to provide perfect alignment. The upper half casing can be removed for inspection of the complete rotating assembly. Flanged suction and discharge connections are located in the lower-half casing, allowing maintenance without disturbing piping or drive alignment.

### Impeller and Wear Rings

Impellers are enclosed, double-suction type, cast in one piece and balanced to minimize vibration and thrust loads and to ensure longer bearing life. They are keyed to shaft and locked in position by wear resistant shaft sleeves and threaded locknuts. All impellers are dynamically balanced with shaft and sleeves for vibration-free operation. Impeller wear rings are optional and case wear rings are standard. *Wear rings optionals.

### Bearing Housing

The Cast Water ZT-84 series utilizes a deep groove axial thrust bearing and a deep groove radial bearing or a radial bearing to positively control all axial and radial loads while insuring the ease of maintenance.



### Shaft

The high strength steel shaft provides maximum strength with minimum shaft deflection, ensuring maximum reliability. A rigid shaft combined with double volute-casing results in low shaft deflection at all operating points. Low deflection reduces packing wear, ring wear and bearing loading, which ultimately results in sustained efficiency and economic operation. Sleeves are sealed to shaft by an “O” ring to prevent leakage and subsequent erosion. Stainless steel sleeves are Standard. Sleeves are available for extended shaft life on packing

### Pump Seal

The Cast Water ZT-84 pump uses mechanical seal as standard and packing seal as optional.

Mechanical seal is single type (Type 1), single spring, with rotary face made of carbon graphite and stationary seat of ceramic, oriented with the pump’s rotation.

The Cast Water ZT-84 pump does not use mechanical cartridge seal.

### Rotation

Clockwise rotation is available to allow flexibility of installation.

**Pump Nameplate:** Each Cast Water ZT-84 Series pump is provided with a stainless steel Name plate attached to the pump casing.

**Series:** Describes the type of pump product. In this case the "ZT-84" is the horizontal split case single stage design.

**Model:** Is the model number that describes the product within the Series. In this case the model number is: ZT-84. "6" describes the suction size in inches, "4" describes the discharge size in inches and "8" describes the maximum impeller diameter for this model.

**GPM:** Is the "Gallons per Minute" rating for this pump at its specified FT-HD requirement.

**FT-HD:** Is the specified discharge head in feet required for the pump.

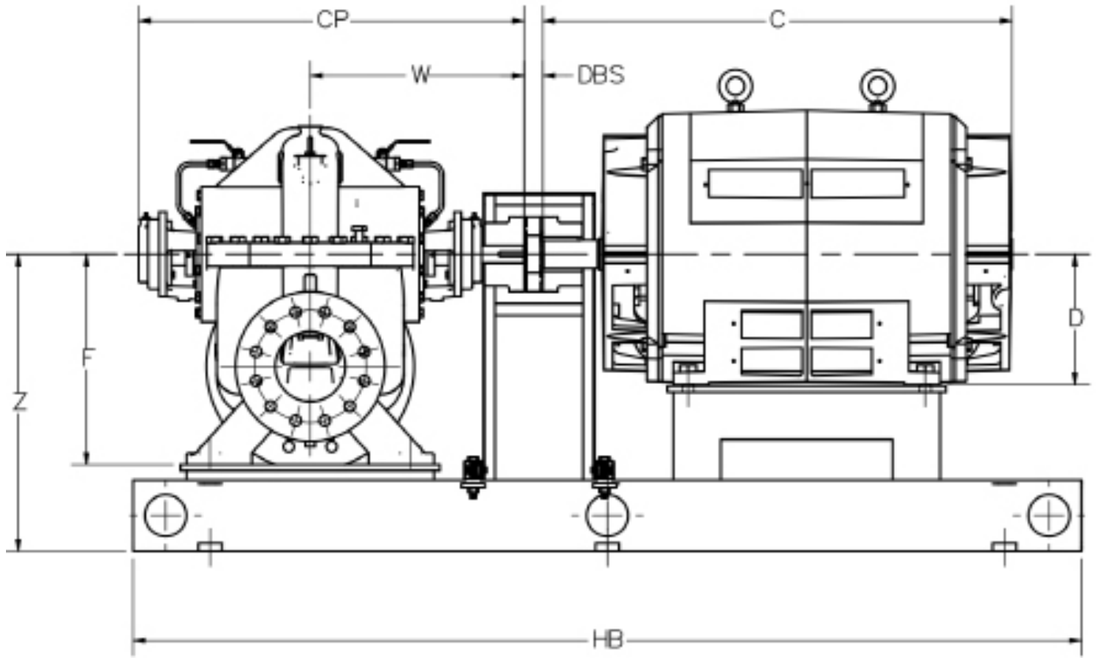
**Suction:** is the suction flange size in inches.

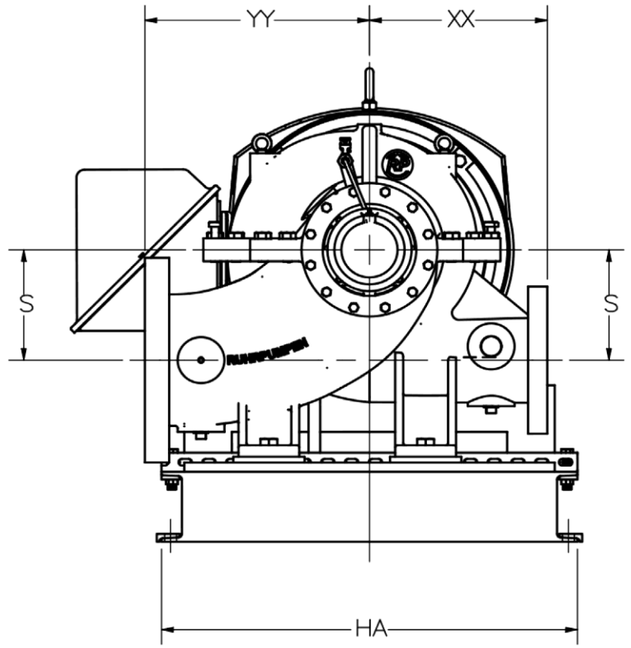
**Discharge:** Is the discharge flange size in inches.

**RPM:** Is the motor (or driver) speed in rotations per minute.

**MAX WORK PRESS:** Is the maximum case working pressure for the pump model as ordered.

**SERIEL NUMBER:** Is the recorded description specific to this actual model of pump.




**Only clockwise.*

## 1800 RPM

| Pump | | | SUC | DIS | XX | YY | S | F | W | CP |
|---|---|---|---|---|---|---|---|---|---|---|
| SIZE | SERIES | SHAFT | IN | IN | IN | IN | IN | IN | IN | IN |
| 5X4X10 F | 50 | 1 | 5 | 4 | 11.417 | 13.386 | 6.299 | 11.811 | 14.606 | 25.945 |
| 6X4X8 F | 50 | 1 | 6 | 4 | 9.449 | 12.205 | 5.512 | 11.417 | 14.606 | 25.945 |
| 6X4X10 F | 50 | 1 | 6 | 4 | 11.417 | 13.386 | 6.299 | 11.811 | 14.606 | 25.945 |
| 6X4X12 F | 50 | 1 | 6 | 4 | 12.598 | 14.567 | 7.480 | 12.992 | 14.606 | 25.945 |
| 6X4X14 F | 50 | 1 | 6 | 4 | 12.992 | 14.961 | 8.268 | 12.992 | 14.606 | 25.945 |
| 8X6X13 A | 50 | 2 | 8 | 6 | 14.567 | 16.535 | 8.268 | 15.157 | 15.984 | 28.701 |
| 8X6X15 A | 50 | 2 | 8 | 6 | 15.748 | 17.717 | 9.843 | 15.157 | 15.984 | 28.701 |
| 10X8X13 A | 50 | 2 | 10 | 8 | 14.961 | 17.717 | 8.661 | 15.748 | 15.984 | 28.701 |
| 6X4X16 F | 60 | 3 | 6 | 4 | 14.567 | 16.535 | 9.449 | 15.945 | 16.535 | 29.528 |
| 6X5X10 A | 60 | 3 | 6 | 5 | 15.748 | 17.717 | 6.890 | 12.992 | 16.535 | 29.528 |
| 6X5X10 F | 60 | 3 | 6 | 5 | 15.748 | 17.717 | 6.890 | 12.992 | 16.535 | 29.528 |
| 6X5X12 A | 60 | 3 | 6 | 5 | 13.386 | 15.354 | 7.874 | 12.992 | 16.535 | 29.528 |
| 6X5X12 F | 60 | 3 | 6 | 5 | 13.386 | 15.354 | 7.874 | 12.992 | 16.535 | 29.528 |
| 6X5X14 F | 60 | 3 | 6 | 5 | 13.386 | 15.354 | 8.661 | 14.961 | 16.535 | 29.528 |
| 8X5X8 F | 60 | 3 | 8 | 5 | 10.236 | 14.173 | 6.299 | 13.583 | 16.535 | 29.528 |
| 8X5X10F | 60 | 3 | 8 | 5 | 11.811 | 14.567 | 7.087 | 13.583 | 16.535 | 29.528 |
| 8X5X12 A | 60 | 3 | 8 | 5 | 13.386 | 15.354 | 7.874 | 14.567 | 16.535 | 29.528 |
| 8X5X12F | 60 | 3 | 8 | 5 | 13.386 | 15.354 | 7.874 | 14.567 | 16.535 | 29.528 |
| 8X5X14 F | 60 | 3 | 8 | 5 | 14.961 | 16.929 | 9.055 | 15.748 | 16.535 | 29.528 |
| 8X6X8 F | 60 | 3 | 8 | 6 | 11.024 | 14.961 | 7.087 | 13.780 | 16.535 | 29.528 |
| 8X6X10F | 60 | 4 | 8 | 6 | 12.598 | 16.535 | 7.874 | 15.748 | 18.031 | 32.520 |
| 8X6X12 F | 60 | 4 | 8 | 6 | 14.173 | 16.929 | 8.268 | 16.535 | 18.031 | 32.520 |
| 8X6X14 F | 60 | 4 | 8 | 6 | 15.748 | 17.717 | 9.055 | 15.748 | 18.031 | 32.520 |
| 10X6X12 F | 60 | 4 | 10 | 6 | 14.567 | 17.323 | 8.661 | 17.717 | 18.031 | 32.520 |
| 10X6X14 F | 60 | 4 | 10 | 6 | 14.961 | 18.898 | 9.449 | 17.717 | 18.031 | 32.520 |
| 10X8X10 F | 60 | 4 | 10 | 8 | 13.386 | 17.717 | 8.268 | 17.717 | 18.031 | 32.520 |
| 10X8X16 A | 60 | 4 | 10 | 8 | 17.717 | 19.685 | 10.236 | 18.898 | 18.031 | 32.520 |
| 12X8X13 A | 60 | 4 | 12 | 8 | 15.748 | 19.685 | 9.843 | 18.898 | 18.031 | 32.520 |
| 12X10X13 A | 70 | 5 | 12 | 10 | 17.323 | 22.441 | 11.024 | 20.472 | 20.551 | 36.969 |
| 12X10X16 A | 70 | 5 | 12 | 10 | 18.898 | 22.441 | 11.024 | 19.685 | 20.551 | 36.969 |
| 14X10X16 A | 80 | 6 | 14 | 10 | 19.685 | 23.622 | 12.205 | 21.654 | 24.882 | 44.606 |
| 14X10X16 F | 80 | 6 | 14 | 10 | 19.685 | 23.622 | 12.205 | 21.654 | 24.882 | 44.606 |
| 14X12X14 A | 80 | 6 | 14 | 12 | 18.898 | 24.409 | 12.205 | 21.654 | 24.882 | 44.606 |
| 16X12X17 A | 100 | 7 | 16 | 12 | 21.654 | 27.559 | 13.780 | 24.016 | 26.339 | 47.283 |
| 16X12X17 F | 100 | 7 | 16 | 12 | 21.654 | 27.559 | 13.780 | 24.016 | 26.339 | 47.283 |

| PUMP | DBS | C | D | HB | HA | Z |
|---|---|---|---|---|---|---|
| SIZE | IN | IN | IN | IN | IN | IN |
| 5X4X10 F | 0.25 | 20 | 5.25 | 50 | 30 | 25 |
| 6X4X8 F | 0.25 | 20 | 5.25 | 50 | 30 | 25 |
| 6X4X10 F | 0.25 | 25 | 6.25 | 60 | 30 | 25 |
| 6X4X12 F | 0.25 | 28 | 7 | 60 | 30 | 25 |
| 6X4X14 F | 0.25 | 30 | 8 | 60 | 30 | 25 |
| 8X6X13 A | 0.25 | 32.5 | 9 | 70 | 35 | 25 |
| 8X6X15 A | 0.25 | 42 | 11 | 80 | 35 | 25 |
| 10X8X13 A | 0.25 | 37 | 10 | 70 | 35 | 25 |
| 6X4X16 F | 0.25 | 32.5 | 9 | 70 | 35 | 25 |
| 6X5X10 A | 0.25 | 25 | 6.25 | 60 | 35 | 25 |
| 6X5X10 F | 0.25 | 28 | 7 | 60 | 35 | 25 |
| 6X5X12 A | 0.25 | 30 | 8 | 60 | 35 | 25 |
| 6X5X12 F | 0.25 | 30 | 8 | 60 | 35 | 25 |
| 6X5X14 F | 0.25 | 32.5 | 9 | 70 | 35 | 25 |
| 8X5X8 F | 0.25 | 25 | 6.25 | 60 | 35 | 25 |
| 8X5X10F | 0.25 | 28 | 7 | 60 | 35 | 25 |
| 8X5X12 A | 0.25 | 30 | 8 | 70 | 35 | 25 |
| 8X5X12F | 0.25 | 30 | 8 | 70 | 35 | 25 |
| 8X5X14 F | 0.25 | 32.5 | 9 | 70 | 35 | 25 |
| 8X6X8 F | 0.25 | 25 | 6.25 | 60 | 35 | 25 |
| 8X6X10F | 0.25 | 30 | 8 | 70 | 40 | 30 |
| 8X6X12 F | 0.25 | 32.5 | 9 | 70 | 40 | 30 |
| 8X6X14 F | 0.25 | 37 | 10 | 70 | 40 | 30 |
| 10X6X12 F | 0.25 | 37 | 10 | 70 | 40 | 30 |
| 10X6X14 F | 0.25 | 42 | 11 | 80 | 40 | 30 |
| 10X8X10 F | 0.25 | 30 | 8 | 70 | 40 | 30 |
| 10X8X16 A | 0.25 | 55 | 12.5 | 90 | 40 | 30 |
| 12X8X13 A | 0.25 | 42 | 11 | 80 | 40 | 30 |
| 12X10X13 A | 0.25 | 42 | 11 | 80 | 45 | 30 |
| 12X10X16 A | 0.25 | 53 | 11 | 90 | 45 | 30 |
| 14X10X16 A | 0.25 | 58 | 11 | 110 | 55 | 35 |
| 14X10X16 F | 0.25 | 53 | 11 | 100 | 55 | 35 |
| 14X12X14 A | 0.25 | 55 | 12.5 | 100 | 55 | 35 |
| 16X12X17 A | 0.25 | 60 | 11 | 110 | 55 | 40 |
| 16X12X17 F | 0.25 | 60 | 11 | 110 | 55 | 40 |

## CASE WORKING PRESSURES

Cast Water ZT-84 Horizontal Split Case offering is available in 3 standard construction designs. High rise HVAC applications with high suction pressures should be reviewed and documented prior to replacement or new installation. In higher working pressure envionments, ductile iron fitted pumps may be more appropriate. Refer to factory for inlet pressure in excess of 250 PSI for guidance.

Table Number 1: Pump Construction Working Pressure: 1800 RPM-Max Temp 150 -degree F

| DESCRIPTION | 125 LB. WORKING PRESSURE | 250 LB WORKING PRESSURE | 300 LB. WORKING PRESSURE |
|---|---|---|---|
| Design Type | A | B | C |
| Casing | Cast Iron | Cast Iron | Ductile Iron |
| Mechanical Seal | Type 1 | Type 1 | Type 1 B |
| Seal Seat | Ceramic | Tugnsten Carbide | Ceramic |
| Flanges | Flat Face | Flat Face | Raised Face |
| Impeller | Stainless Steel | Stainless Steel | Stainless Steel |
| Shaft Sleeves | Stainless Steel | Stainless Steel | Stainless Steel |
| Shaft | Steel | Steel | Steel |
| Hydrostatic Test | 175 PSI | 350 PSI | 400 PSI |
| Bearings | Grease Type | Grease Type | Grease Type |

Table Number 2: High Rise HVAC Applications- Recommended Pump Design Type Guidelines

| APPLICATION | PUMP LO-CATED | BUILDING HEIGHT TO BASEMENT LEVEL | SUCTION INLET PRES-SURE (AP-PROX) | PUMP DIFF PRESSURE (APPROX) | TOTAL PSI (APPROX) | DESIGN TYPE (TA-BLE 1) |
|---|---|---|---|---|---|---|
| Condenser/ Chilled Water | Basement | 0-75 Feet | 0-75 PSI | 0-50 PSI | 125 PSI | A |
| Condenser/ Chilled Water | Basement | 176-400 Feet | 51-175 PSI | 51-70 PSI | 245 PSI | B |
| Condenser/ Chilled Water | Basement | 176-600 Feet | 176-260 PSI | 71-100 PSI | 360 PSI | C |
| Condenser/ Chilled Water | Basement | 600-900 Feet | 261-890 PSI | 101- 125 PSI | 515 PSI | STEEL-RTF |

Note 1: Review inlet (suction) pressure to the pump with inlet valve fully closed (static head) and record. All valves fully open and pump operating, record suction and discharge pressure (dynamic). Provide this information at time of order entry.



# Advanced pumping technology that moves our world

The outcome of many years of experience in the design and manufacture of centrifugal pumps, the WDM ZW pumps are single- or multi-stage, single or double volute, axially split case centrifugal pumps.

The Cast Water ZT-84 pump is designed and built according to the Hydraulic Institute (HI) standard (BB1 & BB3 types). Depending on mechanical features and material selection, it can pump various fluids providing maximum reliability in general industry applications, power generation plants, municipal water systems, mining operations, fire protection and many other industries. *For API build, check the Cast Water ZT-84 pump range.*

### High reliability

These pumps are engineered for continuous, heavy-duty pumping with several combinations of metallurgical, mechanical and installation features to fit any specific needs.

### Flexible design

To minimize footprint and simplify installation, all our Cast Water ZT-84 pumps
can be mounted in horizontal or vertical arrangements, according to customer requirements.

### Easy-maintenance design

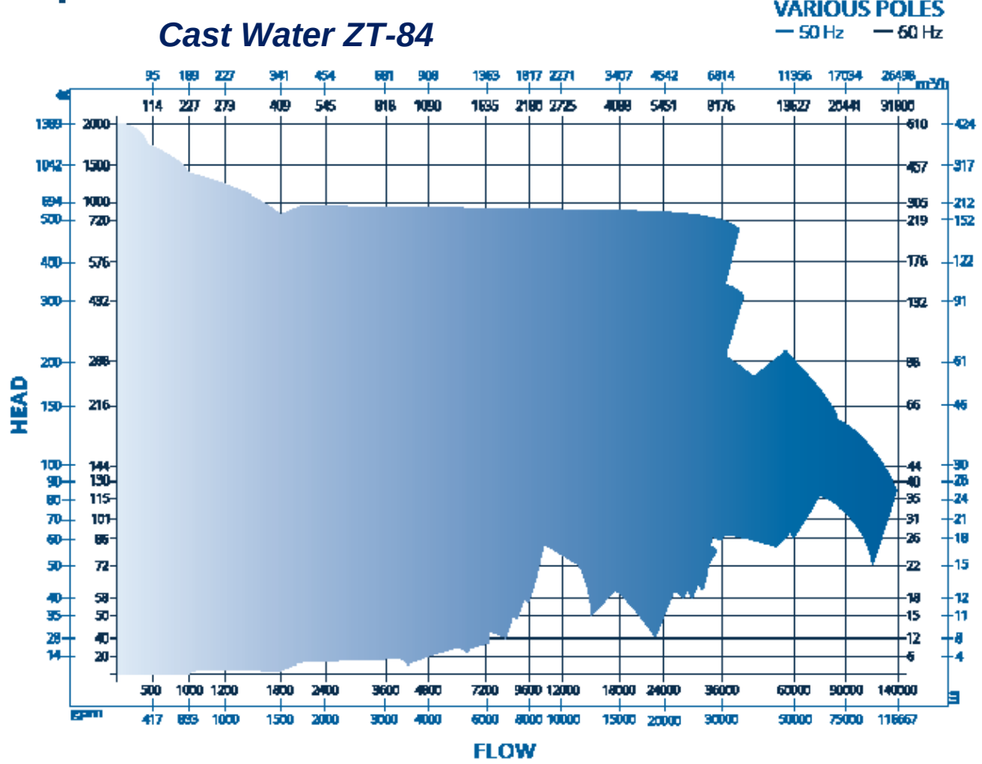
The axially split casing allows for the upper half to be removed for inspection and maintenance of the complete rotating assembly without disturbing piping or drive alignment.

***Our complete range of Horizontal Cast Water ZT-84 Pumps and our expertise in pump engineering, allows GTI to bring a solution to every customer.***

| MODEL | STAGES | VOLUTE | IMPELLER | CAPACITY | HEAD |
|---|---|---|---|---|---|
| **Cast Water ZT-84** | Single | Single and double volute | Double suction, enclosed impeller | up to 40,000 gpm<br>up to 9,000 m³/h | up to 1,115 ft<br>up to 340 m |

## Pump Performance Chart

***Cast Water ZT-84***




**Only displayed models are available (page 8 and 9).*
**If model/size required not available (page 8 and 9) please contact sales agent.*



# NOTES: