

# **AURORA<sup>®</sup>** 430B SERIES TWO STAGE SPLIT CASE PUMPS

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# AURORA® 430B SERIES

## Two Stage Split Case Pumps

Capacities to 400 G.P.M.  
Heads to 1,000 Feet  
Temperatures to 300°F  
Power Series No. 2 and 3A

### Modern Design.

High discharge pressures often require the use of multistage pumping units, which impose additional demands on the pump design. Various pressures and forces generated within a multistage unit must balance, making shaft and bearing design more critical than in single stage units. Aurora Pump has been designing and building multistage pumping units for over 90 years. The 430B Series reflects the latest in modern design for this important product.

### Standard Features

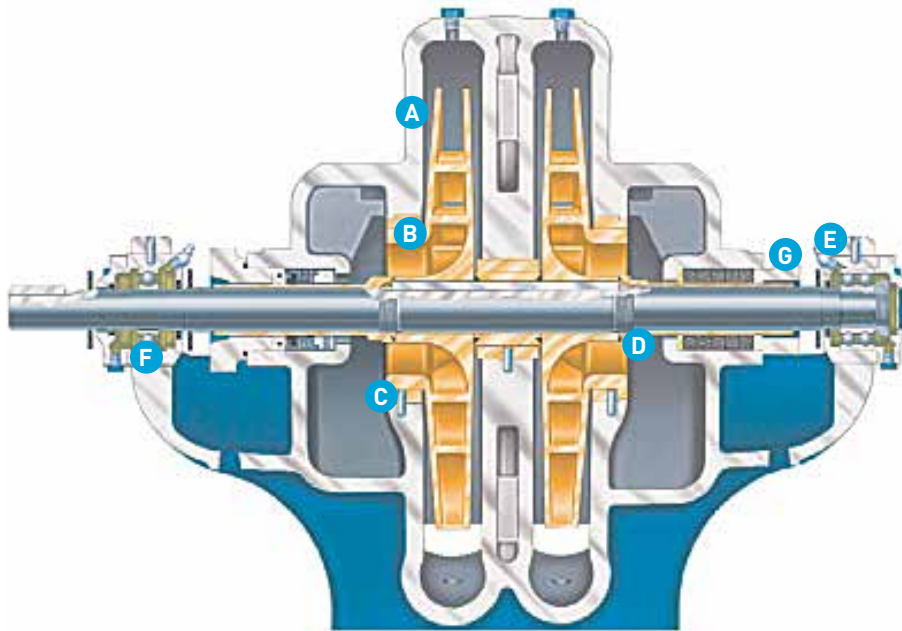
- Bronze fitted pump construction
- Bronze shaft sleeves, O-ring sealed
- Dynamically balanced impellers
- Bronze case wearing rings
- Stainless steel impeller key
- Regreasable ball bearings
- Single row ball bearing (inboard)
- Double row ball bearing (Power Series 2 – outboard)
- Duplex back-to-back ball bearings (Power Series 3A – outboard)
- Single mechanical seals
- Maximum case working pressure
- Power Series 2 – 250 psi
- Power Series 3A – 450 psi
- Carbon steel shaft
- Lifting lugs
- Hydrostatic test
- Cast integral bearing arms

- Water slingers (neoprene)
- Grease seals
- Flanges per ANSI B16.1: class 125 suction, class 250 discharge
- Mechanical seal flush line
- Right-hand rotation

### Optional Features

- All iron or iron impeller pump construction
- Hardened 440C stainless steel shaft sleeves (packing only)
- 316 SST shaft sleeves (mechanical seal)
- Oil lubricated bearings
- Mechanical seals: single unbalanced, high-temp.
- Cartridge type mechanical seals
- Stainless steel or Monel® shaft
- External bypass to stuffing boxes
- Steel drip rim or fabricated bases
- Left-hand rotation
- Certified performance test
- Packing with lantern ring
- 250# ANSI B16.1 suction and discharge flanges
- Water cooled bearing cartridge caps
- Metallic/Plastic hi-temp packing
- Stuffing box bushings

# Pump Features



## A. Diagonal Split Casing

is suited for many applications. Important among these uses is Boiler Feed Service, as well as hot or volatile liquid applications requiring low NPSH characteristics. The 45° diagonally split case feature allows both suction and discharge to be in the bottom half of the casing but above the centerline of the pump. This feature makes the casing self-venting. Because they are self-venting they will not vapor lock. Large suction areas give ideal NPSH characteristics. All of the advantages of the horizontally split case pumps are retained in that the entire rotating element can be removed without disturbing the piping.

## B. Dynamically Balanced Impellers

are keyed to shaft and secured by adjustable shaft sleeves. Design provides highest efficiency and performance.

## C. Case Wearing Rings

and throttle bushings prevent wear on the pump casing and are easily and inexpensively replaced.

## D. Bronze Shaft Sleeve

prevents shaft wear, is slip fit over the shaft and keylocked.

## E. Grease Lubrication

purges old grease from bearings. Oil lubrication is optional.

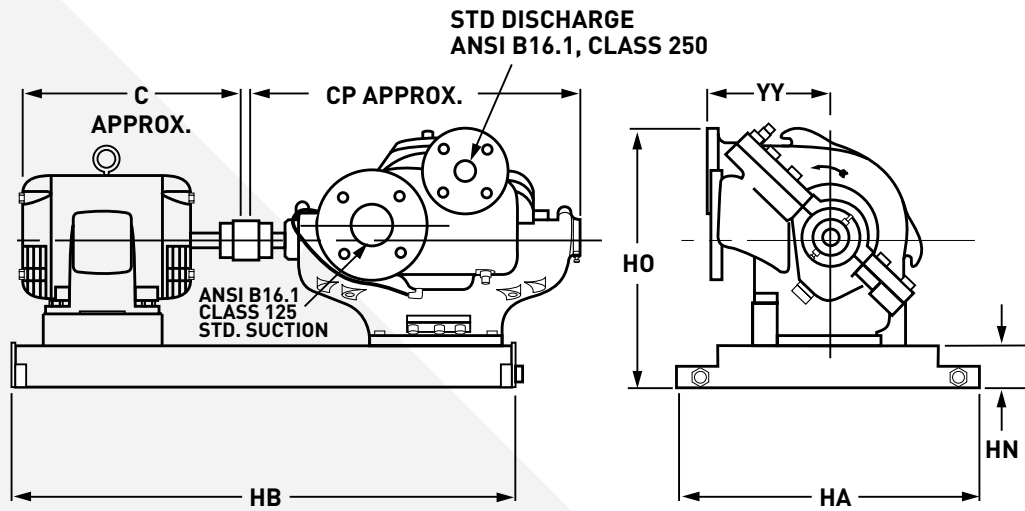
## F. Bearings

selected for 50,000 hour minimum life at maximum load. Average bearing life is 5 x minimum. Double row thrust ball bearing is standard on Power Series 2 models. Duplex back-to-back ball bearings are on Power Series 3A models. Short bearing span holds shaft deflection to .002" at face of stuffing box at maximum load. Outboard thrust bearing is locked to shaft with lock nut. Integral bearing arms eliminate bearing misalignment and simplify servicing.

## G. Interchangeable Stuffing Box

for mechanical seals or packing. Packing is optional. Standard mechanical seals have carbon against ceramic face. Long life is assured with 303 stainless steel metal parts and Buna-N Elastomer.

# Dimension Details



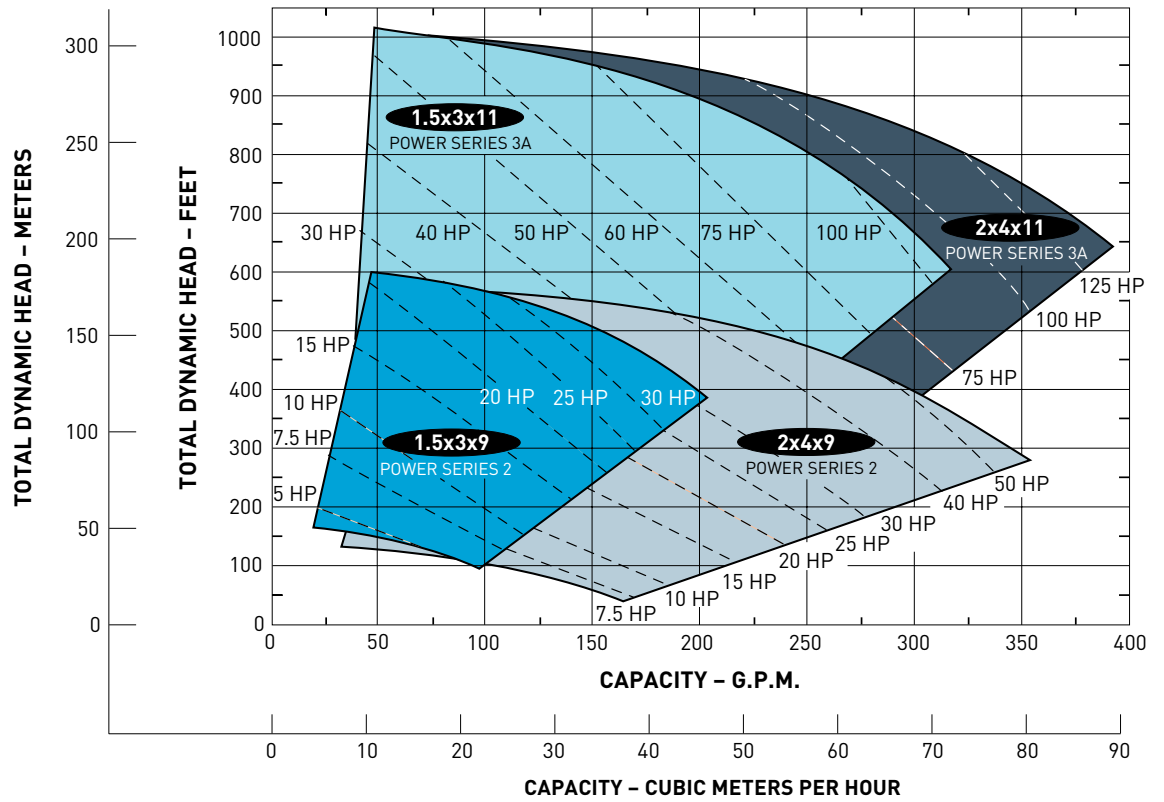
Base	3	5	6	8	9	11	Motor Frame	143 T	145 T	182 T	184 T	213 T	215 T	254 T	256 T	284 TS	284 T	286 TS	286 T	324 TS	324 T	326 TS	364 TS	365 TS	404 TS	405 TS
Weight	49	59	68	96	109	164	HP 3500	1-1/2	2-3	5	7-1/2	10	15	20	25	30	-	40	-	50	-	60	75	100	125	150
HA	15	17-1/2	17-1/4	20-1/2	20-1/2	26-3/4	HP 1750	1	1-1/2-2	3	5	7-1/2	10	15	20	25										
HB	33-1/2	36-1/2	42-1/2	42-1/2	48-1/2	46-1/2	Motor Weight	40	45	72	80	130	145	220	240	330	370	370	370	475	475	525	710	775	975	1030
HN	3	3	3	3	3	4	C	12	13	13	14	16	18	21	23	22	24	24	25	25	26	26	27	28	30	31

Pump Size			Pump				Base																					
Disch.	Suct.	Bore	Weight	YY	CP	HO																						
1-1/2	3	9	300	9	26-1/4	19-3/4	3	3	3	3	5	6	8	8	8	9	9	9	11	11	11	11	11	11	11	11	11	11
2	4	9	310	9	26-1/4	19-3/4	3	3	3	3	5	6	8	8	8	9	9	9	11	11	11	11	11	11	11	11	11	11
1-1/2	3	11		11	34	25	-	-	6	6	6	6	9	9	9	9	9	-	12	12	12	12	12	12	15	16	16	
2	4	11		11	34	25	-	-	6	6	6	6	9	9	9	9	9	-	12	12	12	12	12	12	15	16	16	

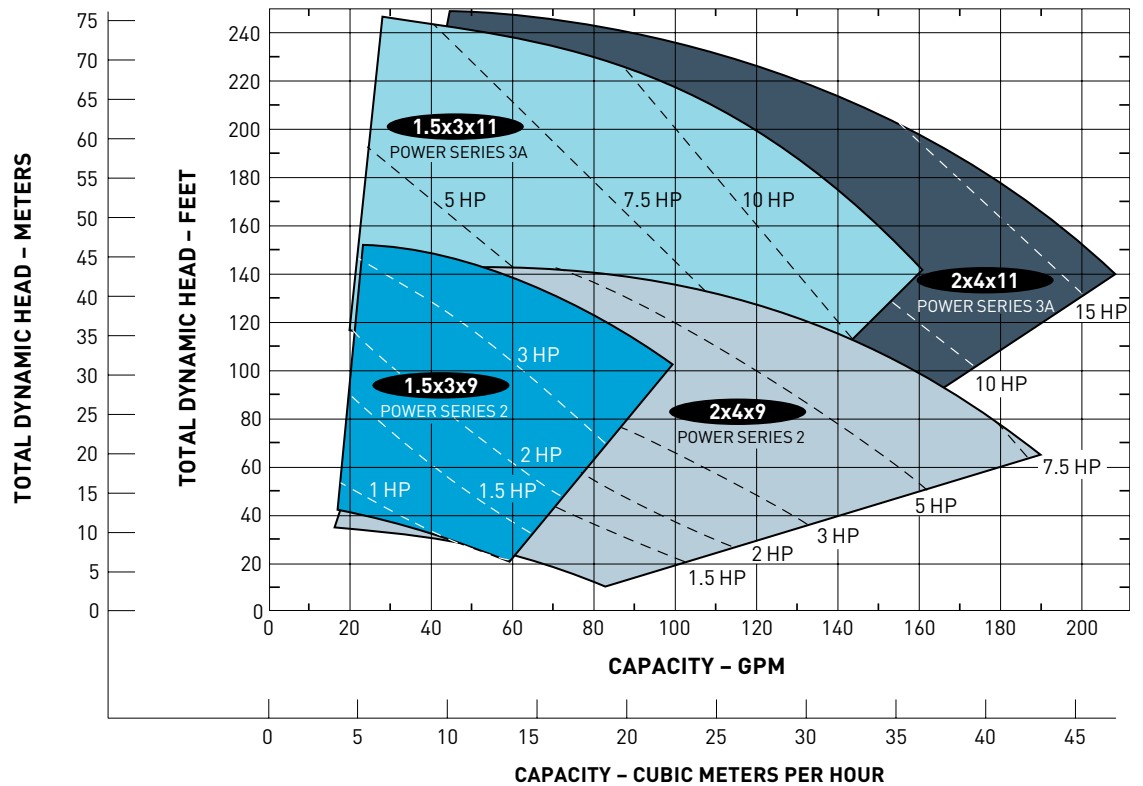
- Notes:
- Dimensions and weights are approximate.
  - Complete dimensions are available.
  - Not for construction purposes unless certified for approval.
  - Frame sizes shown are for open drip-proof motors only.
  - Add pump, base and motor weight for unit weight total.
  - Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
  - Aurora® Pump reserves the right to make revisions to its products and their specifications, and to this brochure and related information without notice.
  - Individual performance curve must be used for final selection. For selection not shown on range charts, refer to factory.

# Performance Data

3500 RPM



1750 RPM



# Engineering Specifications

## Model 431B Base Mounted

Furnish and install as shown on the plans \_\_\_\_\_ Right hand (Left hand) Aurora® Model 431B type 45° Diagonal Split-Case, Opposed Suction, Two-Stage centrifugal pump, Size \_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ of bronze fitted (all iron) construction.

The pump shall be capable of delivering at design conditions a capacity of \_\_\_\_\_ GPM when operating against a Total Dynamic Head of \_\_\_\_\_ feet, with a temperature of \_\_\_\_\_ °F, specific gravity \_\_\_\_\_. Pump shall have minimum guaranteed efficiency at design capacity of \_\_\_\_\_%. Pump must also be capable of delivering a maximum of \_\_\_\_\_ GPM when operating against a head of \_\_\_\_\_ feet, and at this condition shall have a minimum efficiency of \_\_\_\_\_%. Minimum shut-off head acceptable will be \_\_\_\_\_ feet. Pump shall operate at a maximum speed of \_\_\_\_\_ RPM. A unit operating at a lesser rotative speed will be considered, but in no event will a pump operating at more than the maximum speed specified be acceptable. The pump casing shall be with rear piping design and will be constructed of C.I. having a minimum tensile strength of 30,000 psi and shall be of sufficient thickness to withstand stresses and strains at full operating pressures.

Casings shall be subject to a hydrostatic pressure test at 150% of the specified duty point. Bearing housing supports, suction and discharge flanges shall be integrally cast with the lower half of the casing. Removal of the upper half of the casing must allow the rotating element to be removed without disconnecting the suction and discharge flanges. The upper casing is to be dowel aligned to the lower casing. Both halves of the casing must be self-venting to prevent vapor lock. Drain openings must be provided in the bearing arms for removal of lubricating liquid. Impellers shall be of the enclosed, opposed suction type and shall be of vacuum cast bronze ( \_\_\_\_\_ ). Impellers shall be dynamically balanced and securely fastened to the shaft by key and screw locked shaft sleeves. The vanes shall be designed to reduce noise. The pump shaft shall be made of high grade SAE 1045 Steel or equal, accurately machined to give a true running rotating element. The minimum diameter acceptable will be \_\_\_\_\_". The shaft shall be protected from wear by bronze ( \_\_\_\_\_ ) sleeves which are key locked and threaded so that the sleeves tighten with rotation of the shaft. EPR-O-rings must be provided between the impeller hub and the shaft sleeves to prevent pumped liquid from corroding the shaft.

# Engineering Specifications

## Model 431B Base Mounted (Continued)

Pump shall be equipped with easily renewable bronze ( \_\_\_\_\_ ) casing rings so designed that hydraulic pressure will seat them against a shoulder in the pump case around the full periphery of the wearing ring. The wear rings will be locked in place by doweling to prevent rotation. The rotating element shall be mounted in heavy-duty grease lubricated ball bearings and equipped with bronze water slingers for packed pumps on side next to pump glands (neoprene slingers on mechanical seal pumps). Bearing housings shall be so designed to flush lubricant through and provide continuous cleaning of bearing surfaces and maximum protection against overheating. The bearing housings are to be of C.I. and shall be furnished with a set of regreaseable (Optional oil lubricated on Model 431B) bearings for both radial and thrust loads. The bearings shall have an average life of 250,000 hours and shall be mounted in machined, moisture and dust-proof housings. The housings are to have register fits and then be bolted to the pump casing to ensure permanent alignment. Stuffing boxes

(packing) (mechanical seal) shall be placed on both sides of the pump centerline to seal the pump shaft. All standard mechanical seal pumps will have flushline from 2nd to 1st stage stuffing boxes. All packed pumps having a suction lift shall have a 1st stage lantern ring connected to the pressure side of the pump by a bypass line to the parting flange of the pump. The stuffing boxes shall be equipped with heavy, cast, glands. Pump and motor shall be mounted on a common heavy base plate of (steel drip rim) (formed steel) (structural steel). Pump and motor must be checked for alignment after the pump base has been installed and grouted in place, in accordance with the standards of the Hydraulic Institute. There shall be no strain transmitted to the pumps. The diagonal split case pumps shall be flexible coupled to a standard horizontal NEMA, \_\_\_\_\_ hp, \_\_\_\_\_ phase, \_\_\_\_\_ hertz, \_\_\_\_\_ volts, \_\_\_\_\_ RPM (drip-proof) (totally enclosed) (hazardous location) motor.

## Limitations

3500 RPM, 150 HP	
Maximum Temperatures	
Standard Mechanical Seals	230° F
High Temp. Mechanical Seals with Flushing at Seal Faces and Water Cooled Bearings	300° F
Packing with Hardened Stainless Steel Shaft Sleeves	225° F
Maximum case working pressure	(all or any part can be suction pressure)*
Power Series 2	250 psi
Power Series 3A	450 psi
Hydrostatic test pressure	675 psi (MAX)

## Materials of Construction

Description	Material of Construction
Casing Halves	Cast Iron ASTM A48
Packing Rings	Alternating Rings of Babbitt Foil and Arimid Fiber
Case Wearing Rings	Bronze ASTM B62
Sleeves	Bronze High Lead Tin
Impellers	Bronze ASTM B584
Key	Stainless Steel AISI 416
Shaft	Steel AISI C1045

\* Packing – Suction lift requires lantern ring. Above 100 psi suction pressure requires hardened stainless steel shaft sleeves.

\* Seals – Above 100 psi suction pressure requires balanced seal.



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