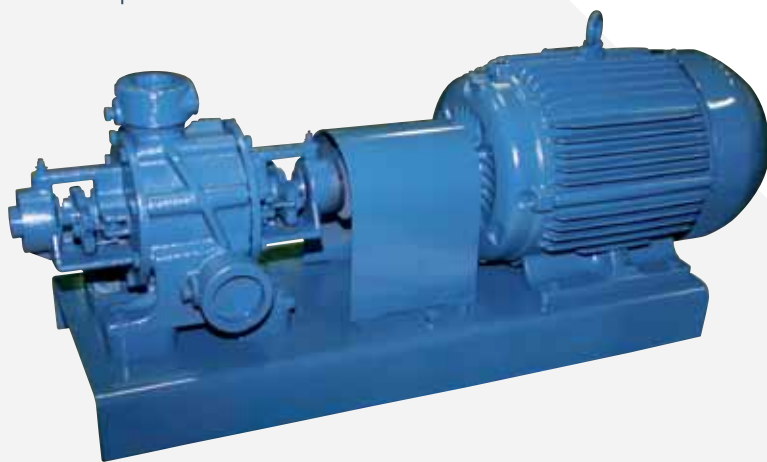


AURORA[®]
120B SERIES “APCO”
ONE AND TWO STAGE
TURBINE TYPE PUMPS

AURORA® 120B SERIES “APCO”

One and Two Stage Turbine Type Pumps

Capacities to 50 G.P.M.
Heads to 920 Ft.
Temperatures to 275°F



Applications

- Boiler Feed
- Condensate Return
- Cooling Systems
- High Pressure Spray
- Booster Systems
- Jockey Pumps
- Chlorine Injection
- Chemical Feed Systems
- Laundry and Dry Cleaning Systems
- Laser Cooling
- Electrostatic Discharge Machines
- TV Tube and CRT Manufacturing
- Car Washes

Field Proven Throughout the World.

Apco regenerative turbine pumps are ideal for handling high head low flow requirements, liquids entrained with gases and vapors (up to 20%) and constant flows.

You are assured of reliable pumping service because every Apco is tested to ensure consistent performance.

Apco pumps are designed for those special applications where high head and low flow are required by the system. Boiler feed systems, for example, require high pressure to get low flows of water into the pressurized steam boiler.

Conventional centrifugal pumps, in contrast, must operate close to shut off or operate at high speed to meet these high head/low flow requirements. These mis-applications can cause high vibration, mechanical damage, frequent maintenance and excessive energy use.

Apco pumps thrive in high head/low flow applications so you save on operating costs (less maintenance, downtime and energy costs).

Benefits

- Reliability
- Years of Field-Proven Service
- Reduce Energy Consumption
- Trouble-free Operation
- High Performance
- Save Space
- Versatility
- Complete Technical Support
- Low Flow/High Head Capabilities

Pump Performance

Increase System Reliability.

Apco pumps assure constant flow when you need it. The steep performance curve allows for minimal changes in the capacity even with large pressure variations.

The constant flow characteristics make the Apco ideal for cooling systems where it is vital that sufficient flow is maintained to dissipate heat despite changes in pressure.

Pressure variations occur for a number of reasons. The most common designed-in variations are caused by automatic pop-off valves and similar control devices.

With Apco pumps, you can always depend on the same capacity despite variations in head pressure and achieve increased system reliability.

The Apco pump line has the highest performance and broadest hydraulic coverage available. Apco pumps provide capacities over 50 GPM and can produce up to 920 feet Total Dynamic Head. Apco case working pressure is up to 400 psi.

With the Apco, you get greater performance to meet more applications in more demanding situations.

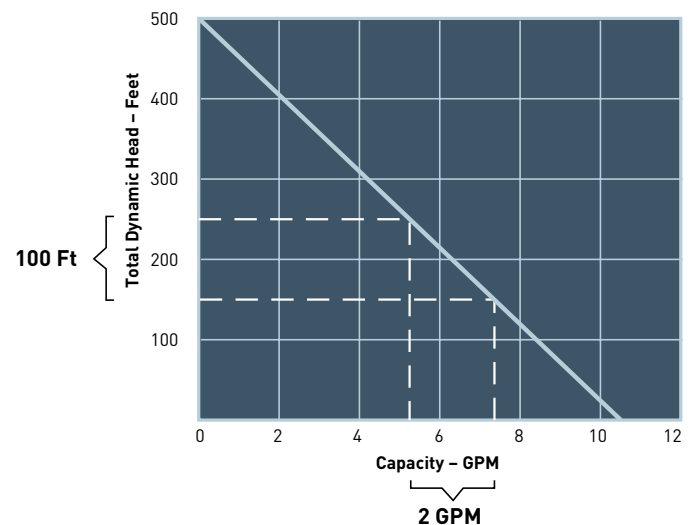
You save space with the compact Apco turbine pump. With the Apco, the bearing frame is integral to the pump.

To give you additional versatility, the Apco is available in all-iron construction.

You can match the right material for the medium being pumped to ensure long, efficient pump life.

Aurora® Pump provides complete technical application and installation support, complete warranty service, and ongoing engineering assistance for the life of the pump.

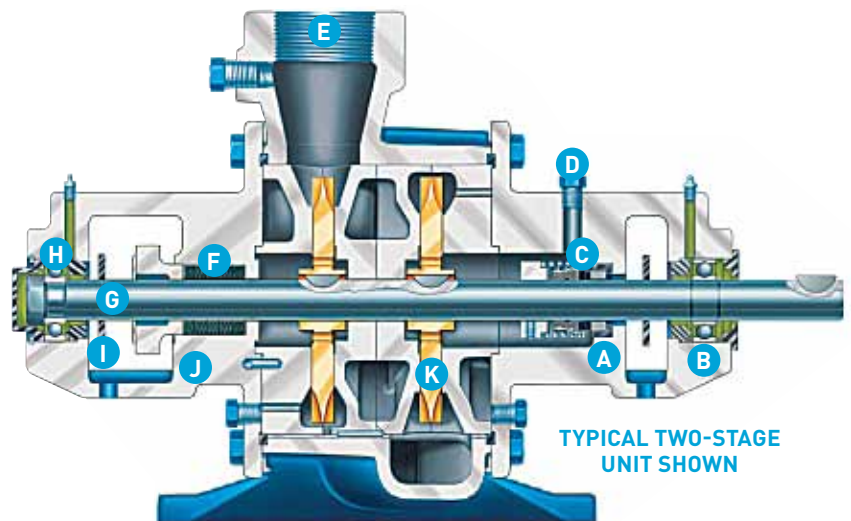
You can get Aurora pumps and parts through a worldwide network of experienced distributors and branch offices, all backed by the factory for fast delivery.



The curve above shows that with a 100 foot change in head, the capacity varies only 2 gallons per minute. You get a virtually constant flow over wide pressure variations to ensure reliable system operation.

Pump Features

- A.** Seal Cover
- B.** Short Bearing Span
- C.** Mechanical Seals
- D.** External Water Seal Connection
- E.** Top Vertical Discharge Is Self Venting
- F.** Packing
- G.** Large Stainless Steel Shaft for Minimum Deflections and Corrosion Resistance
- H.** Regreaseable Ball Bearings



- I.** Water Slinger
- J.** Packing Cover
- K.** Double Suction Impeller (Bronze)
Minimizes Axial Thrust

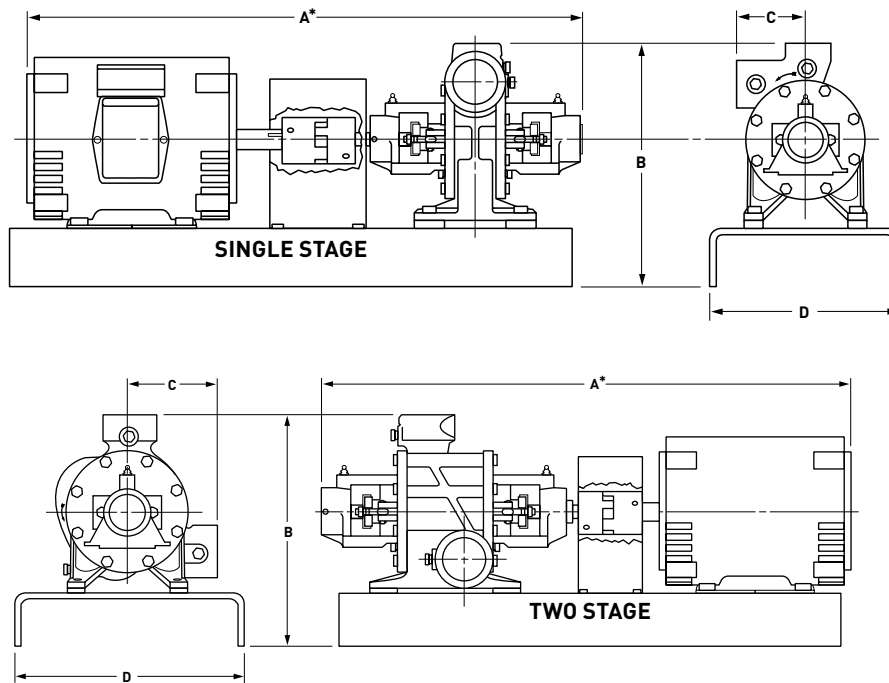
Standard

- Bronze fitted construction
- Hydraulically balanced bronze impeller
- Right- or left-hand rotation
- Regreaseable ball bearings
- Short bearing span
- 400# case working pressure
- Mechanical seals or graphite impregnated acrylic packing
- 416 hardened stainless steel shaft
- Floating impellers
- Removable channel rings
- VIP Test – Every pump is given a hydrostatic test at 1-1/2 times rated pressure along with a running test for head/capacity performance check.

Optional

- All iron
- 316 stainless steel or Monel™ shaft
- External sealing line to stuffing box
- Lantern ring
- Formed steel or drip-rim bases
- Bypass with manual shut-off valves
- Bypass with relief valve
- Self-priming features
- Certified performance test data can be supplied consisting of head, capacity and horsepower readings taken over the full operating range of the pump.

Dimension Details



Notes:

1. Dimensions and weights are approximate.
2. All dimensions are in inches and may vary $\pm 1/8"$.
3. Frame sizes and motor weight are for open drip proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Not for construction purposes unless certified.

* May vary with motor manufacturer.

Single Stage Pump

| Motor Frame | A | B | C | D |
|-------------|----------|--------|---|----|
| 56 | 26-11/16 | 12 | 4 | 9 |
| 143T | 24-11/16 | 12 | 4 | 9 |
| 145T | 25-11/16 | 12 | 4 | 9 |
| 182T | 26-13/16 | 12-1/2 | 4 | 10 |
| 184T | 27-13/16 | 12-1/2 | 4 | 10 |
| 213T | 29-15/16 | 13-5/8 | 4 | 12 |
| 215T | 31-15/16 | 13-5/8 | 4 | 12 |
| 254T | 35-3/16 | 15-5/8 | 4 | 13 |
| 256T | 37-3/16 | 15-5/8 | 4 | 13 |

Two Stage Pump

| Motor Frame | A | B | C | D |
|-------------|----------|--------|---|----|
| 143T | 26-11/16 | 12-1/8 | 5 | 10 |
| 145T | 27-11/16 | 12-1/8 | 5 | 10 |
| 182T | 28-13/16 | 12-7/8 | 5 | 12 |
| 184T | 29-13/16 | 12-7/8 | 5 | 12 |
| 213T | 31-15/16 | 13-5/8 | 5 | 12 |
| 215T | 33-15/16 | 13-5/8 | 5 | 12 |
| 254T | 37-3/16 | 15-5/8 | 5 | 13 |
| 256T | 39-3/16 | 15-5/8 | 5 | 13 |

| Pump Size | Maximum Differential Pressure psi | Maximum HP | |
|-----------|-----------------------------------|------------|----------|
| | | 3500 RPM | 1750 RPM |
| EX4 | 300 | 25 | 7-1/2 |
| EX4T | 400 | | |
| FX4 | 300 | | |
| FX4T | 400 | | |
| GX4 | 300 | | |
| GX4T | 325 | | |
| HX4 | 225 | | |
| HX4T | 300 | | |
| IX4 | 175 | | |
| IX4T | 190 | | |

| Motor Frame | Horsepower | | Motor Weight in Lbs. |
|-------------|------------|----------|----------------------|
| | 3500 RPM | 1750 RPM | |
| 56 | — | 1/2 | 50 |
| 56 | — | 3/4 | 50 |
| 143T | 1-1/2 | 1 | 30 |
| 145T | 2 | 1-1/2 | 35 |
| 145T | 3 | 2 | 35 |
| 182T | 5 | 3 | 45 |
| 184T | 7-1/2 | 5 | 50 |
| 213T | 10 | 7-1/2 | 120 |
| 215T | 15 | — | 144 |
| 254T | 20 | — | 217 |
| 256T | 25 | — | 246 |

Selection Charts

| Capacity GPM | 1750 RPM – Total Dynamic Head in Feet | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---------------------------------------|------------|------------|------------|------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|---------------|---------------|--------------|---------------|---------------|---------------|-----------|---------------|-----------|-----------|-----|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 100 | 115 | 130 | 145 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 350 | 400 | 450 | 500 |
| 2 | | | | | | | | | | | | | | EX4 3/4 | FX4 1-1/2 | FX4 1-1/2 | FX4 1-1/2 | GX4 2 | GX4 3 | GX4 3 | EX4T 1-1/2 | FX4T 3 | GX4T 5 | |
| 4 | | | | | | | | | | | | EX4 3/4 | FX4 1 | FX4 1-1/2 | GX4 2 | GX4 2 | GX4 2 | EX4T 1-1/2 | EX4T 1-1/2 | FX4T 2 | FX4T 3 | GX4T 5 | | |
| 6 | | | | | | | | | EX4 1/2 | FX4 1 | FX4 1 | FX4 1 | FX4 1 | GX4 1-1/2 | GX4 1-1/2 | EX4T 1 | FX4T 1-1/2 | FX4T 2 | GX4T 3 | GX4T 3 | GX4T 3 | | | |
| 8 | | | | | | | EX4 1/3 | EX4 1/2 | FX4 3/4 | FX4 3/4 | FX4 1 | GX4 1 | GX4 1-1/2 | GX4 1-1/2 | FX4T 1-1/2 | GX4T 2 | GX4T 2 | GX4T 3 | HX4T 3 | HX4T 3 | IX4T 5 | | | |
| 10 | | | EX4 1/3 | EX4 1/3 | FX4 1/2 | FX4 1/2 | FX4 1/2 | FX4 3/4 | GX4 1 | GX4 1 | GX4 1 | HX4 1-1/2 | IX4 2 | GX4T 1-1/2 | GX4T 2 | GX4T 3 | HX4T 3 | HX4T 3 | HX4T 3 | HX4T 3 | IX4T 5 | | | |
| 12 | EX4 1/3 | EX4 1/3 | FX4 1/3 | FX4 1/3 | FX4 1/2 | GX4 3/4 | GX4 3/4 | GX4 3/4 | GX4 3/4 | HX4 1-1/2 | HX4 1-1/2 | IX4 1-1/2 | IX4 2 | GX4T 2 | HX4T 3 | HX4T 3 | HX4T 3 | HX4T 3 | IX4T 5 | IX4T 5 | | | | |
| 14 | FX4 1/3 | FX4 1/3 | FX4 1/3 | GX4 1/2 | GX4 1/2 | GX4 1/2 | GX4 3/4 | GX4 3/4 | HX4 1 | HX4 1-1/2 | IX4 1-1/2 | IX4 1-1/2 | HX4T 2 | HX4T 2 | HX4T 3 | HX4T 3 | HX4T 3 | IX4T 3 | IX4T 5 | IX4T 5 | | | | |
| 16 | GX4 1/2 | GX4 1/2 | GX4 1/2 | GX4 1/2 | GX4 1/2 | GX4 3/4 | HX4 1 | HX4 1 | HX4 1 | IX4 1 | IX4 1-1/2 | IX4T 2 | HX4T 2 | HX4T 2 | HX4T 3 | IX4T 3 | IX4T 3 | IX4T 3 | | | | | | |
| 18 | GX4 1/2 | GX4 1/2 | HX4 3/4 | HX4 3/4 | HX4 3/4 | HX4 3/4 | HX4 1 | HX4 1 | IX4 1-1/2 | IX4 1-1/2 | IX4 1-1/2 | HX4T 2 | HX4T 2 | HX4T 2 | IX4T 3 | IX4T 3 | IX4T 3 | | | | | | | |
| 20 | HX4 1/2 | HX4 1/2 | HX4 3/4 | HX4 3/4 | HX4 3/4 | HX4 3/4 | HX4 1 | IX4 1-1/2 | IX4 1-1/2 | HX4T 2 | HX4T 2 | HX4T 2 | IX4T 3 | IX4T 3 | IX4T 3 | | | | | | | | | |
| 22 | HX4 1/2 | HX4 1/2 | HX4 3/4 | HX4 3/4 | HX4 3/4 | HX4 3/4 | IX4 1 | IX4 1-1/2 | HX4T 1-1/2 | HX4T 2 | IX4T 2 | IX4T 3 | IX4T 3 | | | | | | | | | | | |
| 24 | HX4 1/2 | HX4 3/4 | HX4 3/4 | HX4 3/4 | IX4 1 | IX4 1 | HX4T 1-1/2 | HX4T 1-1/2 | IX4T 2 | IX4T 2 | | | | | | | | | | | | | | |
| 26 | HX4 1/2 | HX4 3/4 | HX4 3/4 | HX4T 1 | HX4T 1 | HX4T 1-1/2 | IX4T 2 | | | | | | | | | | | | | | | | | |
| 28 | HX4 1/2 | HX4 3/4 | HX4T 1 | HX4T 1 | | | | | | | | | | | | | | | | | | | | |
| 30 | HX4T 1 | | | | | | | | | | | | | | | | | | | | | | | |

| Capacity GPM | 3500 RPM – Total Dynamic Head in Feet | | | | | | | | | | | | | | | | |
|-----------------|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 |
| 5 | | | | | | | | | | EX4 5 | EX4 7-1/2 | EX4 7-1/2 | EX4 7-1/2 | EX4 7-1/2 | EX4T 7-1/2 | EX4T 7-1/2 | EX4T 10 |
| 10 | | | | | | EX4 3 | EX4 5 | EX4 5 | EX4 5 | EX4 5 | FX4 7-1/2 | FX4 7-1/2 | FX4 10 | EX4T 7-1/2 | EX4T 7-1/2 | EX4T 7-1/2 | EX4T 7-1/2 |
| 15 | | EX4 2 | EX4 2 | EX4 3 | EX4 3 | EX4 3 | FX4 5 | FX4 5 | FX4 7-1/2 | FX4 7-1/2 | FX4T 10 | FX4T 10 | FX4T 10 | FX4T 10 | FX4T 10 | FX4T 10 | |
| 20 | | EX4 2 | FX4 3 | FX4 3 | FX4 3 | FX4 5 | FX4 5 | GX4 7-1/2 | GX4 7-1/2 | GX4 10 | GX4 10 | GX4 10 | GX4T 15 | GX4T 15 | GX4T 15 | | |
| 25 | FX4 3 | FX4 3 | FX4 3 | GX4 5 | GX4 5 | GX4 5 | GX4 7-1/2 | GX4 7-1/2 | GX4 7-1/2 | HX4 10 | GX4T 10 | GX4T 15 | GX4T 15 | GX4T 15 | | | |
| 30 | FX4 3 | GX4 3 | GX4 5 | GX4 5 | GX4 5 | GX4 5 | HX4 10 | HX4 10 | GX4T 10 | GX4T 10 | GX4T 10 | HX4T 15 | HX4T 15 | HX4T 15 | | | |
| 35 | GX4 3 | GX4 3 | GX4 3 | HX4 7-1/2 | HX4 7-1/2 | HX4 7-1/2 | IX4 10 | IX4 10 | HX4T 10 | HX4T 15 | HX4T 15 | HX4T 15 | HX4T 15 | | | | |
| 40 | HX4 5 | HX4 5 | HX4 5 | HX4 7-1/2 | HX4 7-1/2 | IX4 10 | IX4 10 | IX4 10 | HX4T 15 | HX4T 15 | HX4T 15 | | | | | | |
| 45 | HX4 5 | HX4 5 | HX4 5 | IX4 10 | IX4 10 | IX4 10 | | | | | | | | | | | |
| 50 | HX4 5 | IX4 7-1/2 | IX4 7-1/2 | IX4 7-1/2 | | | | | | | | | | | | | |
| 55 | IX4 7-1/2 | | | | | | | | | | | | | | | | |

Engineering Specifications

Design Details

| Area | Dimensions | 120 Series Pump Model | |
|---------------|---------------------------|-----------------------|-----------|
| | | EX4-IX4 | EX4T-IX4T |
| Stuffing Box | Packing rings per box | 7 | 8 |
| | Packing size (square) | 1/4" | 1/4" |
| Shaft | Outside diameter of shaft | .787 | .787 |
| Ball Bearings | Inboard radial | 204K | 204K |
| | Outboard thrust | 303K | 303K |

| Description | Material of Construction |
|----------------|----------------------------|
| Retainer | Nylon |
| Bearing Covers | Cast Iron — ASTM A48 |
| Casing | Cast Iron — ASTM A48 |
| Channel Rings | Cast Iron — ASTM A48 |
| Glands | Cast Iron — ASTM A48 |
| Impellers | Bronze — ASTM B62 |
| Packing | Graphited Teflon® Fiber |
| Shaft | Stainless Steel — AISI 416 |

Limitations

| Description | |
|--|---|
| Maximum Hydrostatic Test Pressure | 600 psi |
| Maximum Case Working Pressure | 400 psi |
| Maximum Suction Pressure | 175 psi |
| Maximum Recommended Packing Box Pressure | 100 psi |
| Maximum Recommended Mechanical Seal Chamber Pressure | 250 psi |
| Box or Seal Chamber Pressure Equals | |
| – Single Stage: | Suction Pressure Plus 60% Differential Pressure |
| – Two Stage: | First Stage Equals – Suction Pressure Plus 30% Differential, Second Stage Equals – Suction Pressure Plus 80% Differential |
| Maximum Temperatures | |
| *Packing | 275° F |
| Standard Mechanical Seal | 225° F |
| Hi-Temp Mechanical Seal | 275° F |
| *Packing | Suction Lift Requires Lantern Ring |

One and Two Stage Turbine Type Pumps

The contractor shall furnish (and install as shown on the plans) an Apco regenerative turbine type pump model _____ size _____ (Bronze Fitted) (All Iron). Each pump shall have a capacity of _____ GPM when operating at a total head of _____ feet at the specified temperature, viscosity, specific gravity and NPSH. The speed of the pump shall not exceed _____ RPM. The pump is to be furnished with (packing) (mechanical seals). The pump shall be of vertically split case design with removable bearing housings, and the channel rings shall be replaceable without replacing the bearing housings. The suction and discharge connections shall be cast integral with the casing. The discharge shall be in a vertical position and the pump shall be self-venting. The casing and bearing housings shall be cast of 30,000 pound tensile strength cast iron. The impeller(s) shall be located on the stainless steel shaft between grease lubricated ball bearings. The impeller shall be hydraulically self-centering and no external adjustment shall be necessary. Each pump shall be tested prior to shipment. The pump shall be mounted on a (steel) baseplate and flexibly coupled to a _____ HP _____ phase _____ Hertz _____ voltage _____ RPM, horizontal (drip-proof) (totally enclosed) (hazardous location) motor. The motor shall be sized to prevent overloading at the highest head condition listed in the specifications.



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