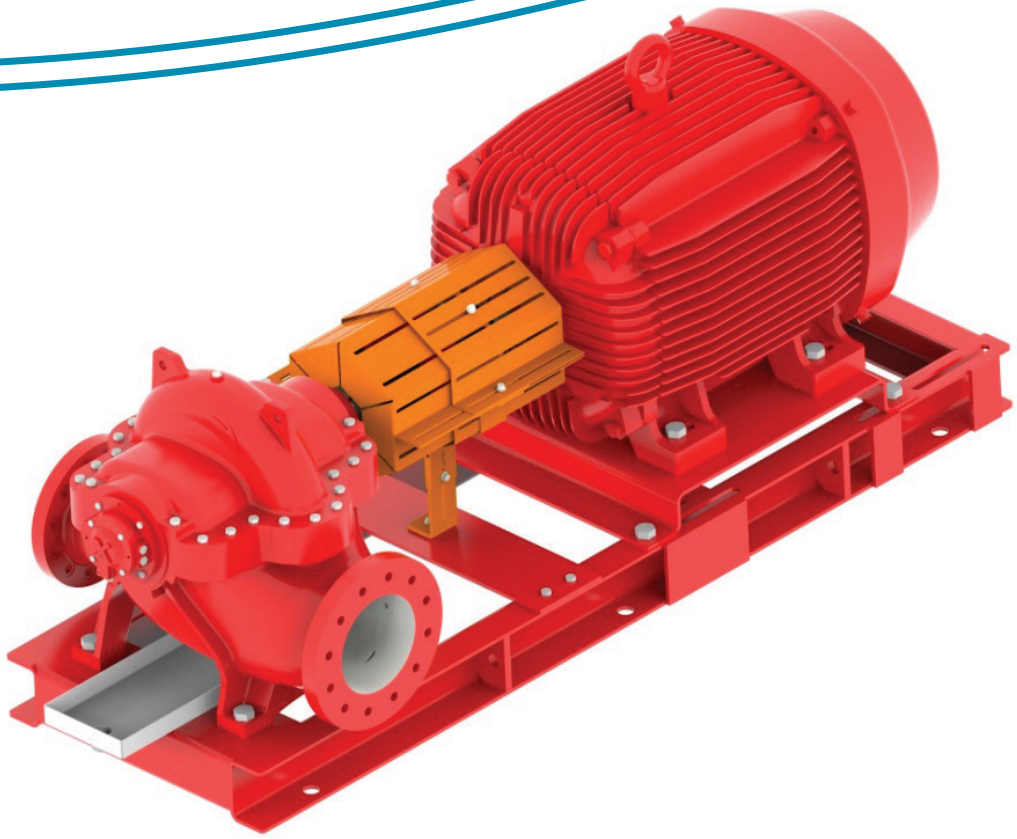
xylem
Let's Solve Water



Series e-HSC

Double Suction Centrifugal Pumps

50 HZ -TECHNICAL BROCHURE

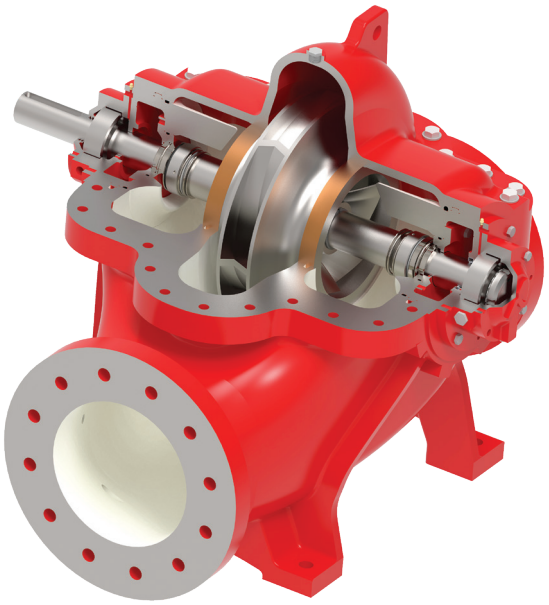
Bell & Gossett
a xylem brand

B-331

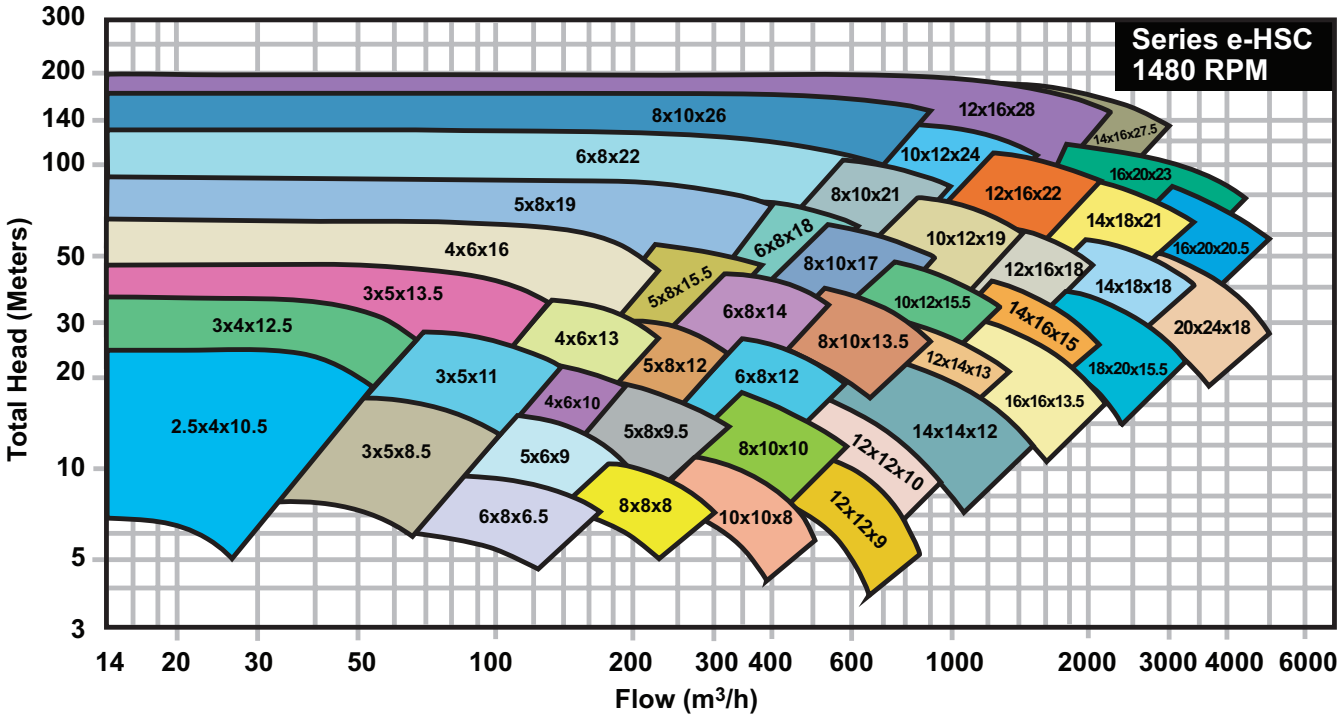
Designed and manufactured by the global leader in hydronic pump technology, the new Series e-HSC double suction pump provides engineers, contractors, and building owners a more powerful, serviceable, and efficient solution for a wide range of critical HVAC applications.

Features & benefits

- **Longer running life:** thanks to a shorter shaft that reduces vibrations, this pump can run up to 3x as long (100,000 hours within the preferred operating range) before the bearings need to be changed.
- **More powerful:** with a flow rate of up to 26,600 gpm the new e-HSC can easily handle large capacity systems and higher head.
- **Ease of serviceability:** to save time and reduce downtime, the mechanical seal and bearings can be easily accessed without opening the upper casing. And with the standard spacer coupling, both can be changed easily.
- **Suitable for any installation:** the design of the seal chamber and mechanical seals works with any incoming pressure and eliminates the need for an external flushing solution.
- **Peace of mind:** backed by Xylem's responsive, knowledgeable distribution network, this pump offers the reliable service and rugged engineering you expect from the world's leading water technology company.
- **More efficient:** each model has been optimized to balance efficiency and suction head requirements, and the completeness of the range means that there is a pump for every flow requirement within 10% of BEP.

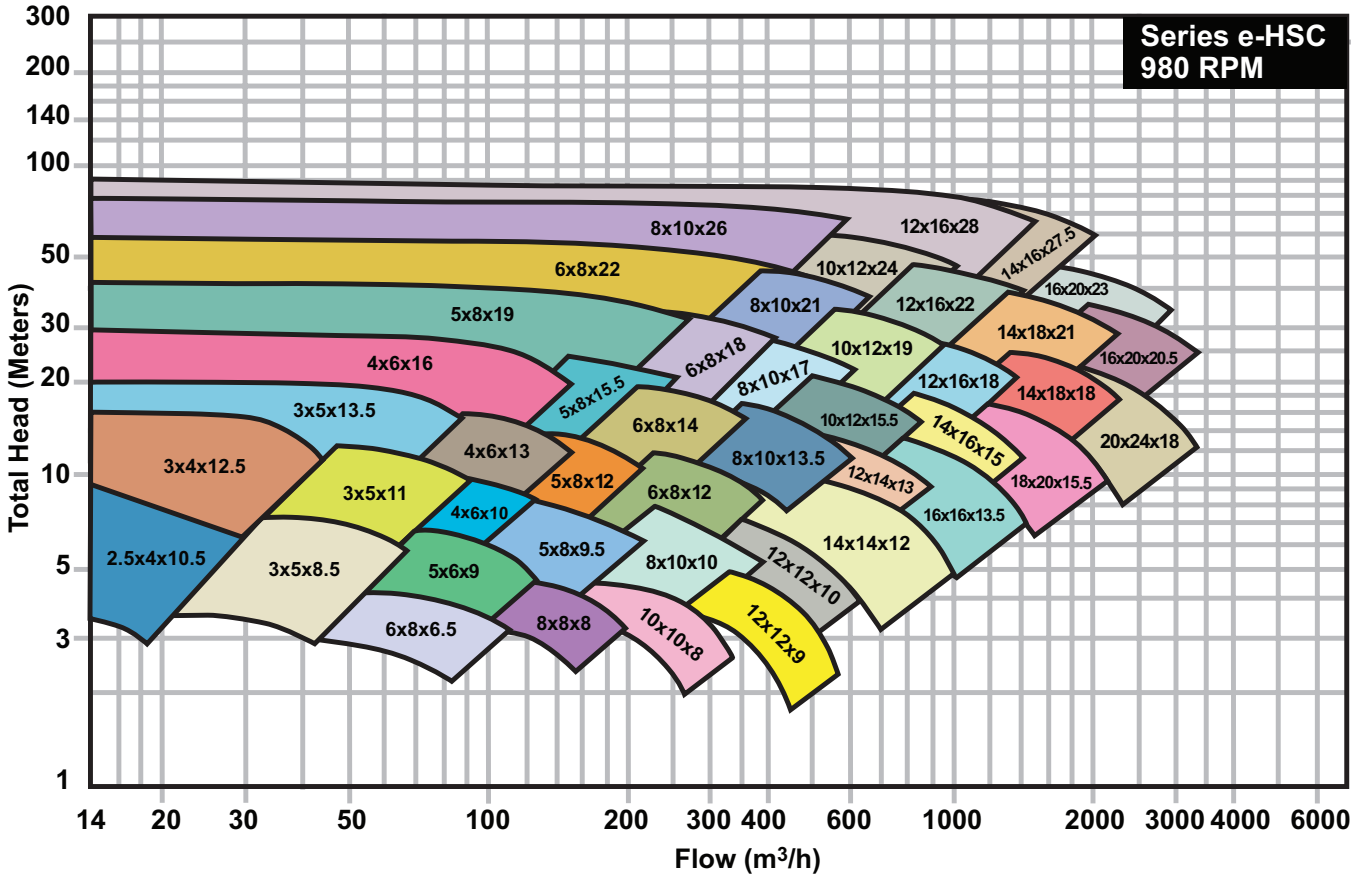


50 Cycle Performance Range - 4 Pole



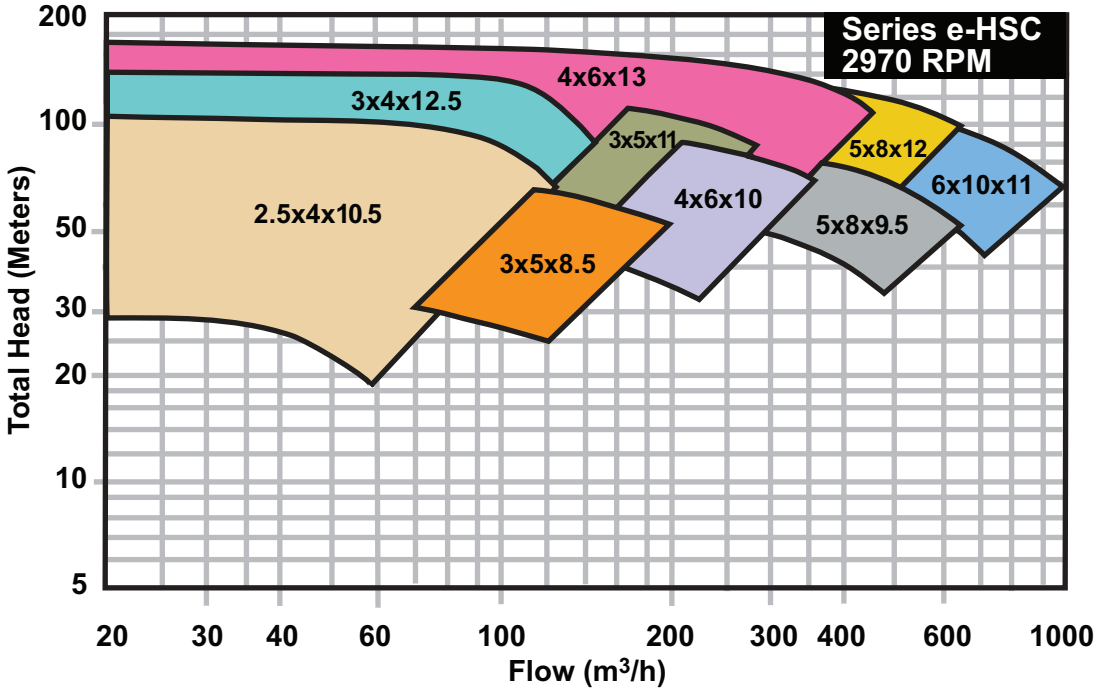
Each of these pumps has two distinct impeller designs - i.e. the 5x8x12 model is also available as 5x8x11. See individual curves for details.

50 Cycle Performance Range - 6 Pole



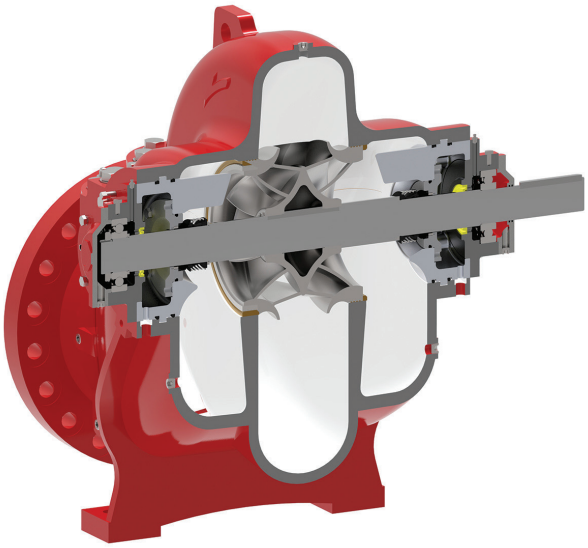
Each of these pumps has two distinct impeller designs - i.e. the 5x8x12 model is also available as 5x8x11. See individual curves for details.

50 Cycle Performance Range - 2 Pole



Each of these pumps has two distinct impeller designs - i.e. the 5x8x12 model is also available as 5x8x11. See individual curves for details.

Series e-HSC Pump Standard Materials of Construction



Mechanical Seals Mounted on Shaft

PART NAME	MATERIAL
Casing Assembly	Cast or Ductile Iron (ASTM A48 NO.35/ ASTM A536 65-45-12)
Casing Gasket (Suction)	Fiber (non-asbestos)
Casing Gasket (Discharge)	Fiber (non-asbestos)
Shaft	Stainless Steel 420
Bearing Housings	Cast Iron (ASTM A48 NO.35)
Bearings	Steel
Stuffing Boxes	Cast Iron (ASTM A48 NO.35)
Lip Seals	Rubber (NBR)
Mechanical Seals	Carbon, SiC, EPDM
Bolts	Steel
Pipe Plugs	Steel
Key, Impeller	Steel
Key, Coupling	Steel
"O" Rings	Rubber (FKM)
Casing Wear Rings*	Bronze (lead free)
Impeller Wear Rings*	Stainless Steel 304 (CF8)
Bearing Glands	Cast Iron (ASTM A48 NO.35)
Tapered Pins	Steel
Impeller	Stainless Steel 304 (CF8)
Retaining Ring (Impeller)	Stainless Steel 304 (CF8)
Shoulder Rings	Steel

*Denotes optional part with a standard material configuration

Mechanical Seals

MR1 Metric Metal Pusher Seal

- Balanced high pressure execution
- 175 to 580 psi (12-40 bar)[1]
- -4°F to 250°F (-20 to 121°C) temperature range

MR2 Metric Rubber Bellow Seal

- Standard option unbalanced execution
- Up to 175 psi (12 bar)[1]
- -4°F to 250°F (-20 to 121°C) temperature range

MR1/MR2 Material Configurations

1. Carbon/Silicon Carbide/EPDM[2,3]
2. Silicon Carbide/Silicon Carbide/EPDM[4]
3. Carbon/Silicon Carbide/FKM[4]
4. Silicon Carbide/Silicon Carbide/FKM[4]

Notes:
[1]Denotes mechanical seal pressure
[2]Standard material configuration for MR2 seal type
[3]Standard material configuration for MR1 seal type
[4]Low lead time optional material configuration



MR2 Metric Rubber Bellow Seal Cross-section

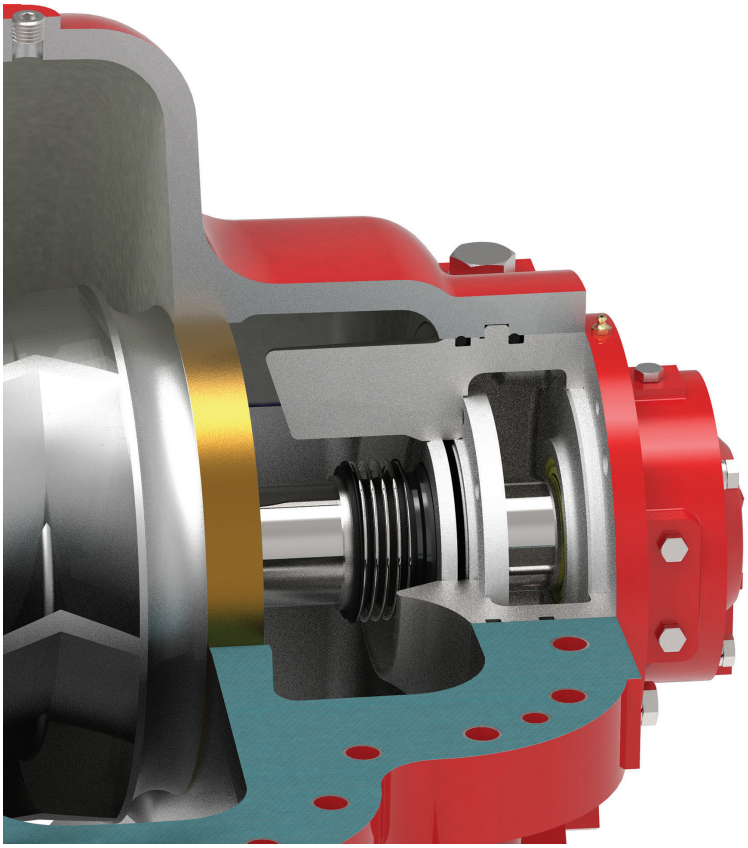
Internally Self-Flushing Seal

The e-HSC pump features internally self-flushing mechanical seals. This design, an industry standard, ensures maximum seal life lubrication, heat dissipation and debris removal – all without vulnerable, external flush lines and filter kits that can clog and result in seal failure. With the Bell & Gossett internally self-flushing seal design, as much as 25% of the total pump flow continuously flushes the seal faces compared to the few gpm a conventional stuffing box mounted mechanical seal receives. This design keeps seals cooler and cleaner – resulting in longer mechanical seal life.

Optional Materials of Construction

The e-HSC pump has the flexibility to meet a variety of needs.

COMPONENT	OPTIONAL MATERIAL CONFIGURATIONS		
Shaft	Duplex 2205		
Impeller	Stainless Steel 316	Bronze	
Impeller Wear Ring	Stainless Steel 316	Bronze	
Casing Wear Ring	Stainless Steel 420[1]	Stainless Steel Duplex	Nitronic 60[1]



e-HSC Pump Technical Overview

Case Operating Pressures
- Cast Iron:175 psi (12 bar)
- Ductile Iron: 400 psi and 450 psi (28 and 31 bar)[2]

Fluid Temperature Range
- Standard Offering: -4 to 250°F (-20 to 121°C)
- Optional Offering: -4 to 300°F (-20 to 149°C)

Flange Specifications
- ASME/ANSI B16.1, 125/250#
- DIN 16/25/40, EN 1092[3]

[1]Optional material with long lead times
[2]Limited offering
[3]Optional drilling specification

Motor Specifications & Drives

Standard Motor Offerings
- IE3 Efficiency
- IP55 protection degree and IPX5 as electro-pump
- Max 3-phase ambient temperature: 104°F (40°C)
- Totally Enclosed Fan Cooled (TEFC) enclosure
- Class F insulation
- Voltages: 3 x 380 V
- Poles: 2, 4 and 6

Optional Offerings
- Open Drip Proof (ODP) enclosure
- PTC/RTD Sensors
- Inverter Ready

Technologic® IPC Drive Options
- 1.5/125 & 150/600 hp ranges
- Temperature rating: 14°F to 113°F (-10°C to 45°C)
- Built-in BACnet, Modbus RTU, N2 Metasys FLN
- Standard mains disconnect
- 2 analog inputs, 1 analog ouput
- 4 digital inputs, 2 digital outputs
- Optional bypass for UL TYPE 1, and TYPE 1,12, 3R and 4X enclosures

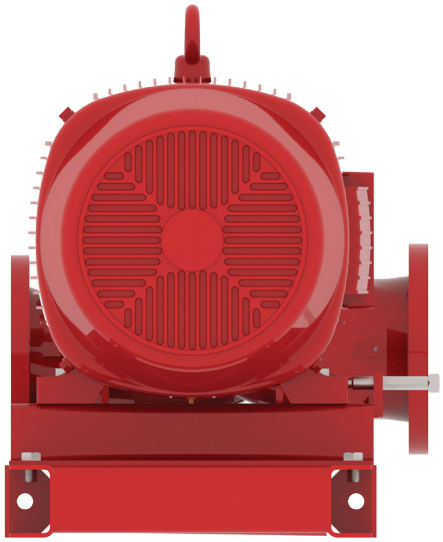
Couplings

COUPLING TYPE	STANDARD	OPTIONAL		
Non-Spacer	Curved Jaw	Falk Steelflex®	Falk Gear Type	Duraflex®
Spacer	Flexible Disc[1]	Falk Steelflex®	Falk Gear Type	Duraflex®

[1]Only standard for HV motors

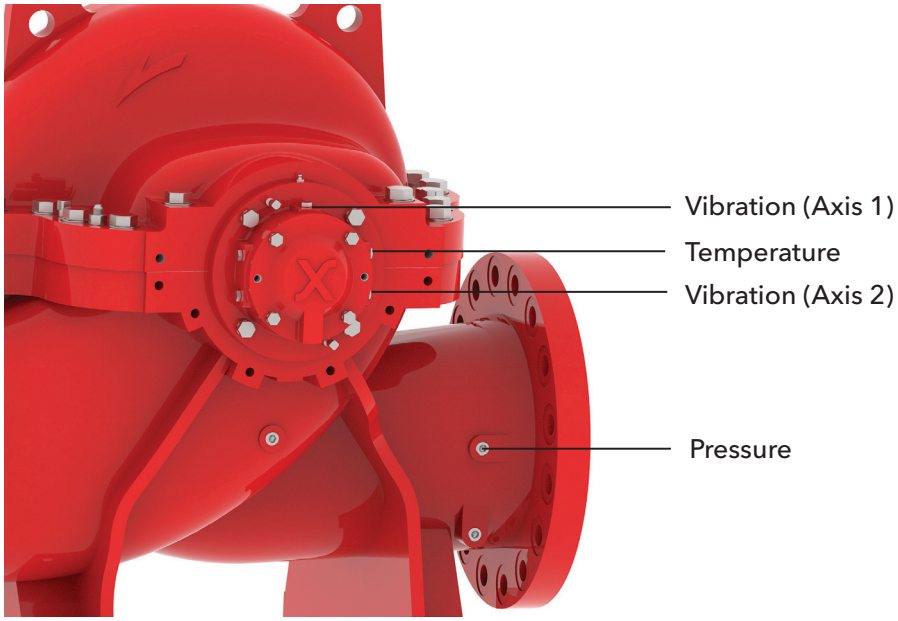
Baseframe & Coupling Guard

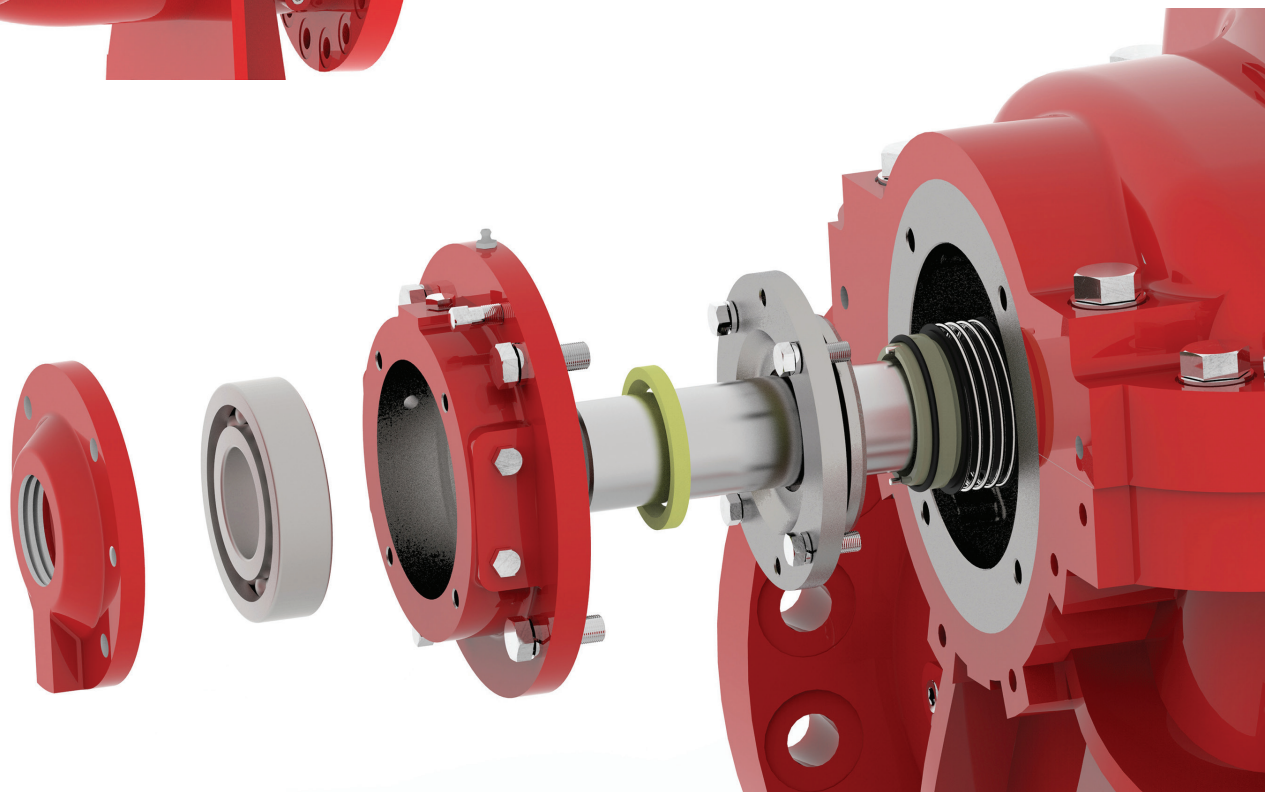
ITEM	FEATURES
Baseframe	Grouted Formed steel frame Alignment Jacking screws
Coupling Guard	ANSI/OSHA Compliant
Drip Pan (Optional)	Galvanized steel



Optimal Standard Features

- Designed for ease of maintenance with product information, maintenance kits, and servicing videos readily available.
- Short shaft design ensures less deflection and longer bearing life.
- Easy to commission with a free extra year of warranty upon pump registration.
- Vibration, temperature and pressure ports standard for easy monitoring.
- Side accessible bearings and seals for single technician service.





Bell & Gossett Engineering Specification for Series e-HSC Base Mounted Double-Suction Pumps

A. Manufacturer:

1. Contractor shall furnish and install new double suction horizontal split case pumps for chilled water and hot water heating systems as indicated on the drawings. Pumps shall be as manufactured by Bell & Gossett under base bid. Equivalent units as manufactured by others may be submitted as deduct alternates. Pumps shall meet types, sizes, capacities, and characteristics as scheduled on the Equipment Schedule drawings.

B. Double Suction, Horizontal Split Case Pump (Base Mounted):

1. The pumps shall be long coupled, base mounted, single stage, double suction, horizontally split case design, in cast iron stainless fitted construction specifically designed for quiet operation. Suitable standard operations at 250°F/120°C (and 175 psig/16 bar working pressure or optional operations at up to 300°F/150°C and 400 or 450 psig/25 bar or 31 bar working pressures. Above 400 psig/25 bar casing material is defaulted to ductile iron. Working pressures shall not be de-rated at temperatures up to 250°F/120°C. The pump internals shall be capable of being serviced without disturbing piping connections or electrical motor connections, and the pump's internal seals and bearings shall be serviceable without disturbing the upper casing half when maximum working pressure is less than or equal to 175 psig/16 bar.
2. A bearing housing shall supply support for a pair of heavy-duty regreaseable ball bearings. An inboard single row bearing shall absorb thermal expansive forces while an outboard single row bearing shall be clamped in place to absorb both radial and thrust loads and keep the rotating element in proper axial alignment. Bearings shall be replaceable without disturbing the system piping, the upper casing half, and shall be regreaseable without removal of the bearings from the bearing housing. Ratio of length to diameter of the shaft design shall be no greater than 14 to minimize shaft deflection and maximize bearing and seal lives.
3. The pump shaft shall be a solid heat treated 420 stainless steel shaft.
4. Pump shall be equipped with a pair of internally self flushing mechanical seal assemblies in direct contact with the pump shaft. Seal assemblies shall be unbalanced elastomeric seals having a stainless steel spring, and be of a carbon face rotating against a stationary silicon carbide face with an EPDM elastomeric bellow. Mechanical seals shall be replaceable without disturbing the upper casing half and system piping when suction pressure less than or equal to 175 psi (12 bar).
5. Impeller shall be of the enclosed double suction type made of 304 SS, both hydraulically and dynamically balanced to grade G6.3, keyed to the shaft and fixed in the axial position by retaining ring.
6. A flexible spacer type coupling, capable of absorbing torsional vibration, shall be employed between the pump and motor. On variable speed applications the coupler sleeve shall not be constructed of a nylon material to maximize performance life.
7. An OSHA and ANSI rated coupling guard shall shield the coupling during operation. Coupler guard shall be dual rated ANSI B11.19, OSHA 1910.219 and CE compliant coupling guard and contain viewing windows for inspection of the coupling. No more than 0.25 inches (6mm) of either rotating assembly shall be visible beyond the coupling guard. Coupling guard shall have an adjustable mount to the baseplate. Coupling guard shall be provided with viewing slots for visibility of rotating coupling components during pump operation.
8. Pump volute shall be of a class 35 cast iron (rated for 175 psig/16 bar maximum working pressure) or class 65-45-12 ductile iron (rated for 400 or 450 psig/25 bar or 31 bar maximum working pressure) axially-split design with flanges (175 psig/16 bar casing drilled with 125# ANSI / PN 16 companion flanges or optional 400 and 450 psig/25 bar and 31 bar casing working pressures are drilled with 250# ANSI / PN25 or PN40 flanges) and mounting feet integral cast into the bottom half of the casing. Suction and discharge flanges shall be on a common centerline in both the horizontal and vertical planes, and the volute shall include: priming port, gauge ports on bosses near nozzles, and vent and drain ports. The upper half casing shall be capable of being removed without disturbing piping connections or electrical motor connections. Bearings housings should include ports for measurement of temperature and vibration (in two axes). Bearing temperature measurement shall be measured at outer raceway of the bearing.
9. The pump seal flushing shall be internal within the pump casing.
10. Motors shall meet scheduled horsepower/kW, speed, voltage, and enclosure design. Pump and motors shall be factory aligned, and shall be realigned after installation by the manufacturer's representative. Motors shall be non-overloading at any point on the pump curve within POR and shall meet NEMA/IEC specifications and conform to the standards outlined in EPACT 92.
11. Base plate shall be of structural steel or fabricated steel channel configuration fully enclosed at sides and ends, with securely welded cross members and fully open grouting area (for field grouting). The minimum base plate stiffness shall conform to ANSI/HI 1.3.8-2013 for Horizontal Baseplate Design standards. Base plate shall be fitted with dog-point jacking screws for horizontal adjustment only parallel and perpendicular to pump/motor shafts.
12. Pump rotation shall be right-hand or left-hand with respect to the discharge flange as viewed from the pump's outboard/non-drive end.
13. The pump(s) selected shall conform to ANSI/HI 9.6.3.1-2017 standards for Preferred Operating Region (POR) unless otherwise approved by the engineer. The pump NPSH shall conform to the ANSI/HI 9.6.1-2017 standards for Rotodynamic Pumps - Guideline for NPSH Margin.
14. The pump(s) vibration limits shall conform to Hydraulic Institute ANSI/HI 9.6.4-2016 standard for Rotodynamic Pumps for Vibration Measurements and Allowable Values, for recommended acceptable unfiltered field vibration limits for pumps with rolling contact bearings.
15. Pump manufacturer shall be ISO-9001 certified.
16. Each pump shall be factory hydrostatically tested to 1.5 times maximum working pressure for 10 minutes per Hydraulic Institute standards and name-plated before shipment. It shall then be thoroughly cleaned and painted with at least one coat of high grade paint prior to shipment.

C. Accessories:

1. Where noted on schedule pumps shall be provided with internal bronze casing wear rings, special shaft materials, special impeller materials or impeller wear rings, or non-spacer couplings.
2. Where noted on schedule either unbalanced seals of Silicon carbide/silicon carbide/EPDM, Carbon/Tungsten carbide/EPDM, Carbon/Ceramic/EPDM, Carbon/silicon carbide/FKM, Silicon carbide/silicon carbide/FKM
3. Where noted on schedule pumping equipment may require one or all of the following tests: Certified Lab tests (unwitnessed or witnessed), NPSHR, or temperature testing.
4. Where noted on schedule pumping equipment may require non-grouted, drip pan, solid top, or drip rim base plates.
5. Where noted on schedule pump may require special coating (internal or external).
6. Where noted on schedule impeller or rotating element may require balancing to G2.5 (impeller) or G1.0 (rotating element).

Series e-HSC pumps are manufactured by Bell & Gossett, a Xylem, Inc. brand.

xylem
Let's Solve Water

Xylem Inc.
8200 N. Austin Avenue
Morton Grove, Illinois 60053
Phone: (847) 966-3700
Fax: (847) 965-8379
www.xylem.com/bellgossett

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