

CORNELL PUMP COMPANY



REFRIGERATION



EFFICIENT BY DESIGN



REFRIGERATION

**"SUPERIOR
VAPOR HANDLING
CHARACTERISTICS."**

For more than 50 years, Cornell Pump Company's innovative designs in containment system pumps have made us an industry leader. Our proven technologies in open drive pumps support thousands of successful installations in the field. We also embrace new technologies, offering our popular hermetic pumps for more than a decade. Whichever system you choose, you'll have Cornell Pump's commitment to quality backing you.

Cornell Pump's reputation for quality and reliability is celebrated worldwide. Our open drive pumps efficiency, U.S. manufacturing quality, outstanding durability, solids handling capabilities, low NPSHR, inexpensive operation, and ready availability contribute to their popularity.

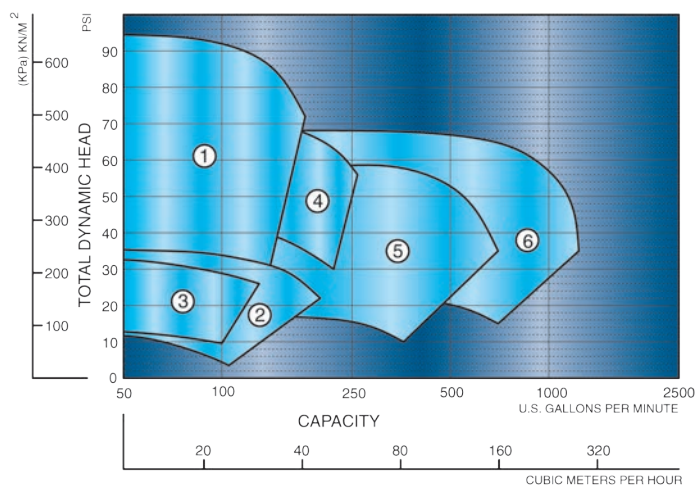
PROVEN PERFORMANCE

Cornell's liquid overfeed pumps have been used successfully in a variety of applications including cold storage, food processing, refrigeration, ice production and turbine inlet cooling. Cornell refrigerant pumps are commonly employed in liquid overfeed and transfer pump applications utilizing anhydrous ammonia, aqueous ammonia, and halocarbons such as R-22 and other approved refrigerants.

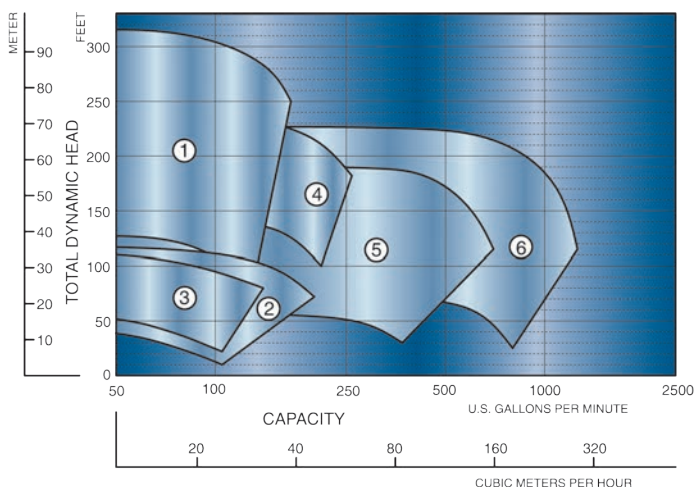
PRODUCT INTERCHANGEABILITY: CLOSE-COUPLED CB AND HERMETIC HT PUMPS ARE DIMENSIONALLY INTERCHANGEABLE WITH THEIR CORRESPONDING SISTER PUMPS AND WITH SOME COMPETITIVE HERMETIC PUMP LINES.

Cornell Standard Series	Cornell Hermetic series
1.5CBH-5-4	Dimensional interchangeability with 1.5HT-5-4
1.5CBH-7.5-4	Dimensional interchangeability with 1.5HT-7.5-4
2CB/CBS-3-4	Dimensional interchangeability with 2HT/HTS-3-4
2CB/CBS-5-4	Dimensional interchangeability with 2HT/HTS-5-4
2.5CBH-10-4	Dimensional interchangeability with 2.5HT-10-4
2.5CBH-15-4	Dimensional interchangeability with 2.5HT-15-4
3CB-10-6	Dimensional interchangeability with 3HT-10-6
3CB-15-6	Dimensional interchangeability with 3HT-15-6

CB SERIES - AMMONIA



CB SERIES - FLOUROCARBON



Ammonia or Fluorocarbon – 800-2200 RPM

1. 1.5CBH 2. 2CB 3. 2CBSR 4. 2.5CBH 5. 3CB 6. 4CB

Enhanced vapor handling and NPSHR characteristics are central to Cornell's latest liquid overfeed pump innovations. Cornell has incorporated these designs features into our liquid overfeed pumps while maintaining four pole or six pole operating speed for close-coupled units. Since the introduction of our innovative refrigerant series of high head, low speed pumps, Cornell is working with our customers to address the increasing requirement for ultra-reliability and superior performance characteristics.

CORNELL HAS YOU COVERED

The choice is yours: Cornell also offers hermetic style refrigeration pumps which have operating capabilities and dimensions similar to our standard CB pumps. The HT series is perfect for stable operating systems that have minimal vapor entrainment or cavitation issues. And with Cornell Arctic King HT Series pumps you still get the advantage of low operating speed, better NPSH, experience, and an industry leading warranty.

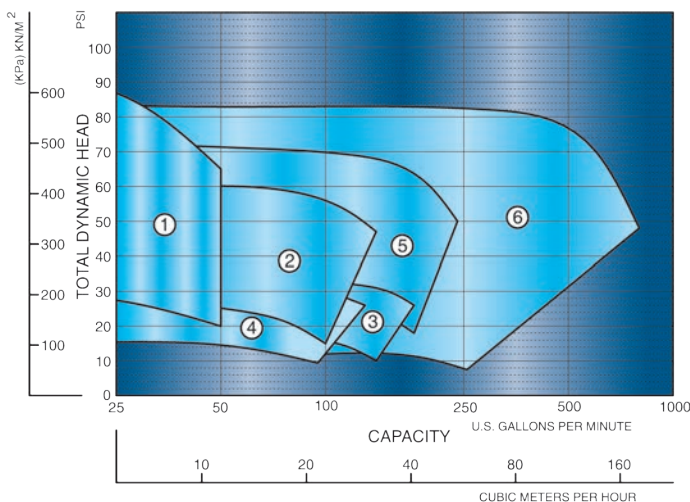
UNATTENDED MONITORING

The CB series sealing technology consists of an evolutionary double mechanical seal design with a pressurized barrier fluid reservoir, fluid level indicator and limit switch. This configuration allows for unattended monitoring of fluid level and a safety shut down feature. The HT series has an optional shut down feature when packaged with the Hansen Pump Guardian system. The Pump Guardian uses a pressure cutout if the pump starts cavitating. This feature prevents the bearings from running dry by shutting the pump down when cavitation is sensed.

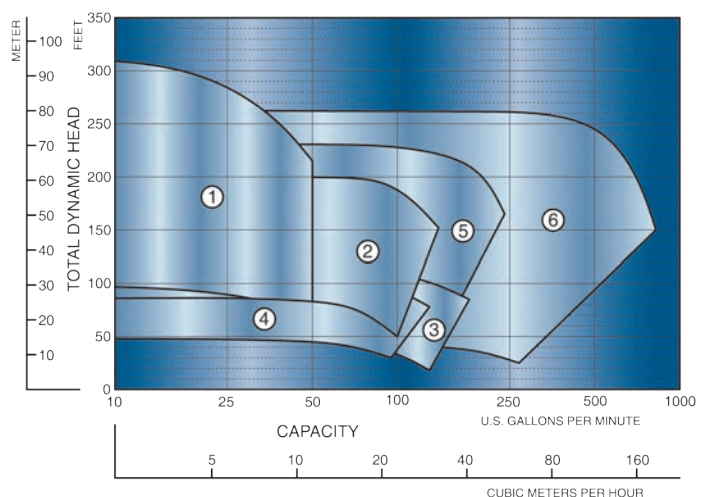
BEARING MONITOR FOR HERMETIC PUMPS

- Bearing condition is continually monitored while the pump is running
- The first (green) range indicates that the bearings are in normal operating condition
- The second (yellow) range indicates that the bearings have increased wear and should be replaced
- The third (red) range indicates that one or more bearings are failing and need immediate replacement to avoid permanent damage to the pump
- Incorrect rotation is indicated on start-up if the dial immediately goes up to the maximum

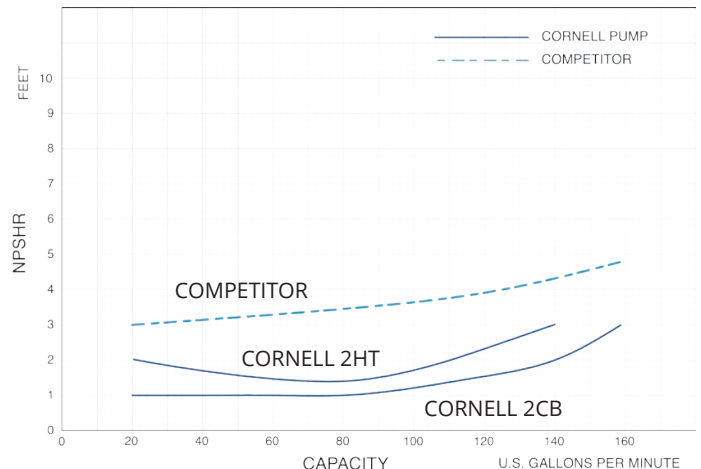
HT SERIES - AMMONIA



HT SERIES - FLOUROCARBON



COMPARISON CURVE AND CHART

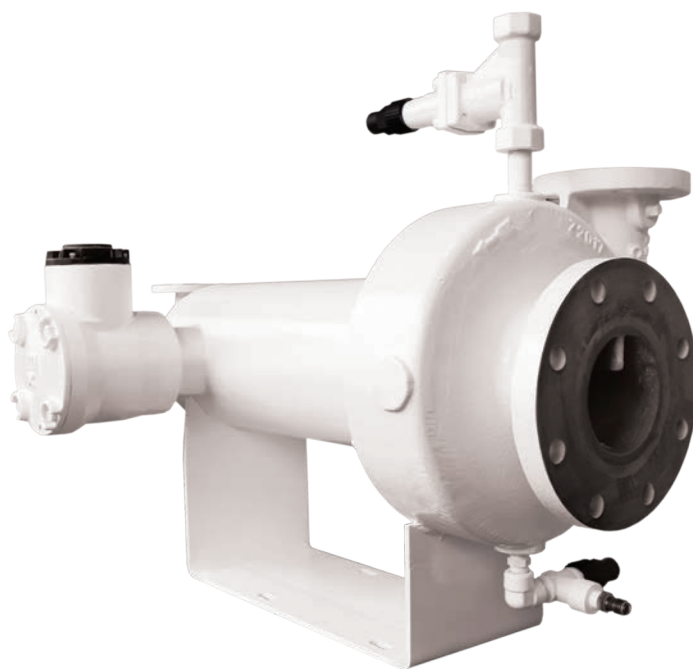


**CORNELL'S 2CB AND 2HT
HAVE SUPERIOR NPSHR**

Ammonia or Fluorocarbon – 1200 - 1800 RPM

1. 1.25HT 2. 1.5HT 3. 2HT 4. 2HTS 5. 2.5HT 6. 3HT

3 FEATURES & BENEFITS



PRODUCT INTERCHANGEABILITY

The HT and C models are dimensionally interchangeable with like models and sizes for performance.

CORNELL SEMI-HERMETIC REFRIGERANT PUMP SPECIFICATIONS

Semi-Hermetic, Close-coupled Refrigerant Pump:

- Class 150 Flanged suction and discharge
- 250 PSIG working pressure
- Constructed of ASTM A536
- 60-40-18 Ductile Iron
- Industry leading three year warranty
- Four pole (1800 / 1500 RPM) operating speed
- Six pole (1200 / 900 RPM) operating speed

Motor Specification:

- Totally enclosed, liquid cooled
- Class 150 1/2" flanged liquid coolant recirculation connection
- Varied voltages available
- Stainless Steel motor liner
- 200°C thermal protection
- Secondary containment
- Replaceable hydrodynamic motor bearings
- Suitable for VFD applications

Hermetic Technology

- Allows the pump to operate without the need for a mechanical shaft seal

NPSHR

- Exceptional NPSHR characteristics
- Characteristics are enhanced throughout the entire operating range due to the single stage impeller and 1800/1500 RPM lower operating speeds

Vapor Handling

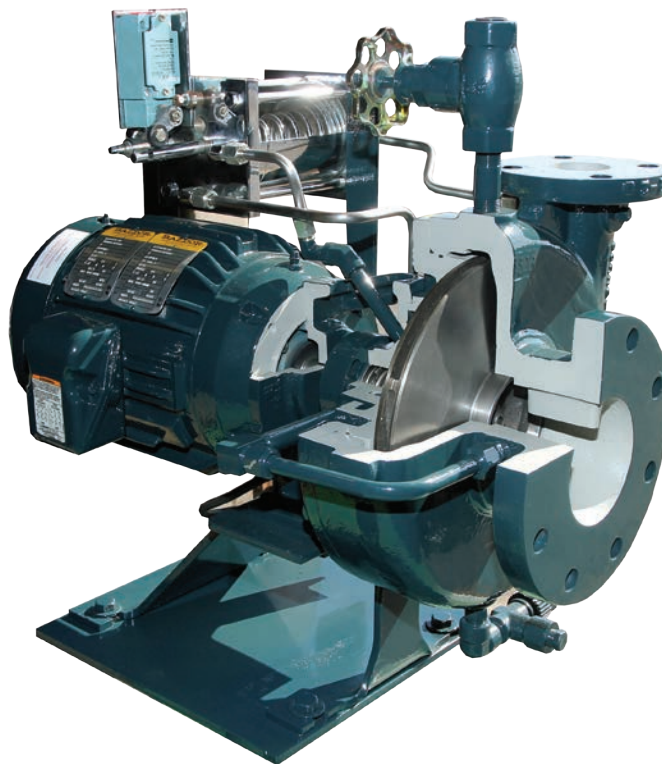
- Enhanced vapor handling abilities

Integrated Bearing Monitor allows for continuous monitoring while pump is operating — better information saves money and downtime.

IMPROVED NSPR at 1800 RPM VERSUS OTHER PUMPS OPERATING AT 3600 RPM

PRODUCT INTERCHANGEABILITY

CB Series are interchangeable with similar in operating performance.



REFRIGERANT EMISSION FREE™ SEALING TECHNOLOGY

- A reliable system consisting of two mechanical seals mounted back-to-back
- Inboard seal prevents escape of refrigerant from the pump casing
- Outboard seal acts as a fail-safe or backup, and provides containment of a system compatible barrier fluid
- Solids handling capability up to 3/8 inch
- Thousands of installations – many still running original Cornell equipment from the 1960's

NPSHR

- Exceptional NPSHR characteristics
- Characteristics are enhanced throughout the entire operating range due to the single stage impeller and the four and six pole operating speed

Vapor Entrainment

- Seals are oil lubricated, and do not rely on the presence of pumpage for lubrication or cooling
- The double mechanical sealing system allows the pump to continue to run until the system stabilizes and the pump re-primers itself – nuisance-tripping is avoided

CORNELL OPEN-DRIVE REFRIGERANT PUMP SPECIFICATIONS

Close-coupled Refrigerant Pump:

- Class 150 flanged suction and discharge
- 250 PSIG working pressure
- Constructed of ASTM A536 60-40-18 Ductile Iron
- Industry leading three year warranty
- Four pole (1800/1500RPM) operating speed
- Six pole (1200/900RPM) operating speed
- Optional mounting configurations available

Mechanical Seal:

- Double mechanical shaft seal with pressurized barrier fluid lubrication system
- Low oil limit switch
- Seal chamber heater to maintain proper barrier oil viscosity

Motor Specification:

- Totally enclosed, fan cooled, refrigerant atmosphere, hostile environment, premium efficiency motor
- Class "F" insulation
- Suitable for VFD applications

5 CLEAR LIQUID OVERFEED



COMMITMENT TO EXCELLENCE

Cornell Pump Company proudly maintains its ISO 9001:2008 certification which validates that Cornell is in compliance with all necessary processes to meet customer requirements.

The elements associated with ISO 9001:2008 certification include such areas as contract review, design and development, production, purchasing, quality control and service.



SELECT HIGH EFFICIENCY PUMP MODELS

8H - 88% EFFICIENT
6RB - 89% EFFICIENT
5RB - 86% EFFICIENT
4RB - 85% EFFICIENT

Cornell's refrigeration product group is not limited to liquid overfeed pump applications. Our clear liquid pumps are frequently used in cooling tower, chilled water, glycol, brine, condenser spray tree and many other HVAC applications. Cornell's clear liquid pumps are constructed entirely of iron or cast iron and fitted with bronze components. Many optional metalurgies are also available. Standard features include fully machined impellers, heavy duty shafts with replaceable shaft sleeves, and peripheral wear rings.

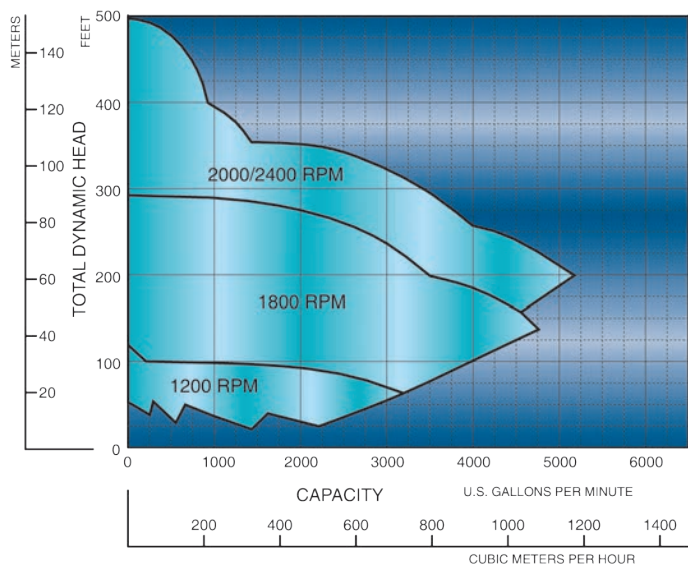
Transfer Pump Applications

Cornell's refrigerant pumps are available for use in transfer applications and have been successfully used for compressor oil, liquid transfer systems, and booster pump applications. Whether you require a liquid overfeed or transfer pump, Cornell's engineers and technical sales personnel can provide you with expert application assistance.

Glycol Pump Applications

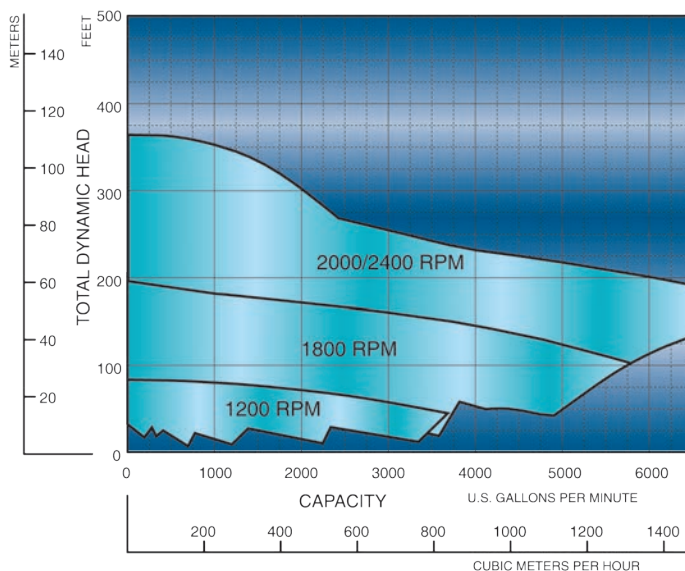
In many refrigeration applications, secondary coolants such as ethylene and propylene glycols and brines are used as heat transfer media. The glycol or brine is cooled by the primary refrigerant and used to transfer heat without changing state. Cornell's clear liquids handling pumps are commonly used to recirculate these secondary coolants. The clear liquid pumps are rugged, extremely efficient and designed specifically for a long life of service.

H-SERIES



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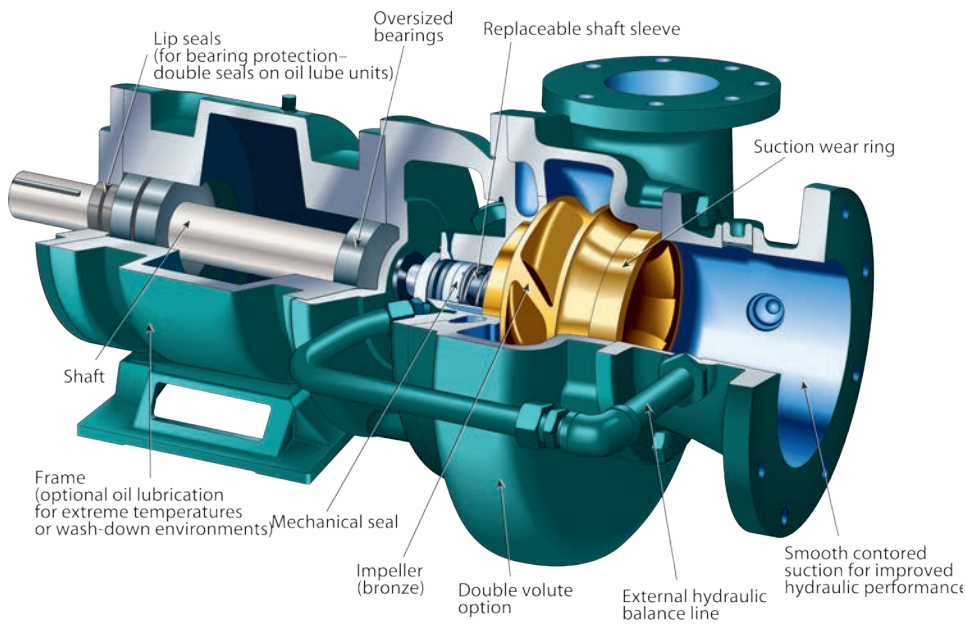
R-SERIES



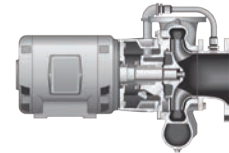
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ENERGY EFFICIENT PUMPS

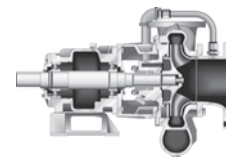
As energy costs rise, conservation and efficiency of operation become critical issues for end users striving to minimize expenses associated with energy consumption. Cornell pumps maintain superb hydraulic operating efficiencies and are coupled with energy efficient motors. The bottom line – Cornell pumps cost less to operate. Cornell Pumps are designed to deliver best in class efficiency. Depending on operating hours, fuelant, and horsepower required, you can save up to \$3,000 per year (or more) in energy costs. Cornell manufactures more than 60 clear liquid and non-clog pumps that meet or exceed optimum efficiency standards for centrifugal pumps.



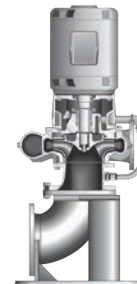
CC - Close coupled



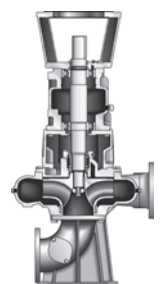
F- Frame mount



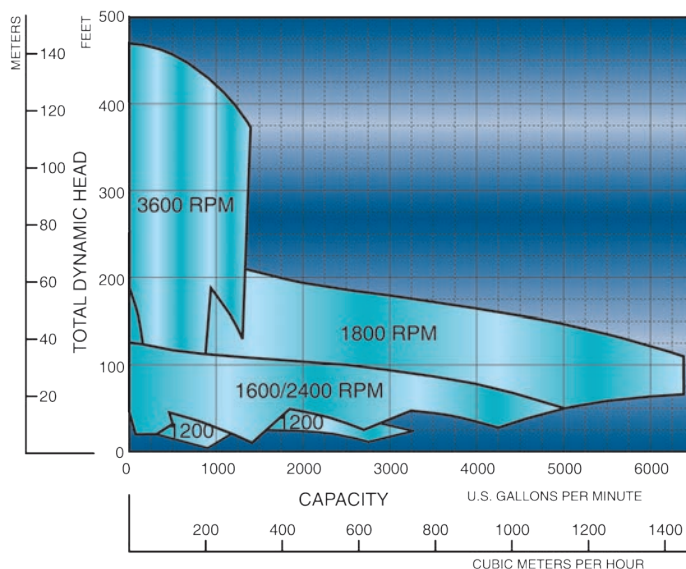
VM - Vertical Close Coupled



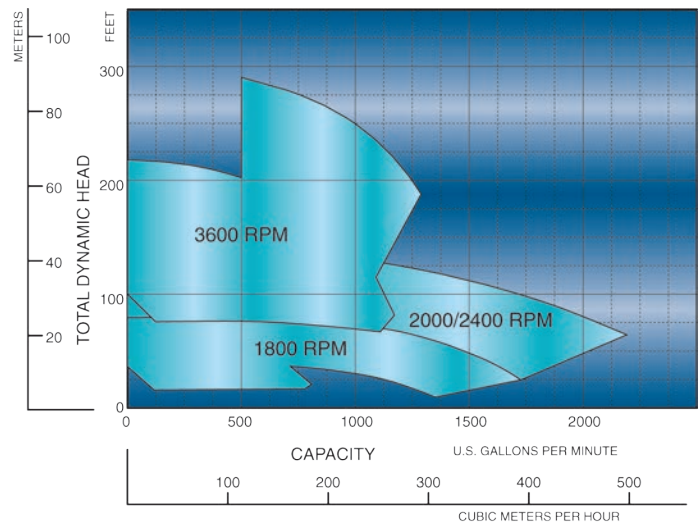
VC - Vertical Coupled



Y-SERIES



W-SERIES





MARKET AND PRODUCT LINE



AGRICULTURAL



FOOD PROCESS



INDUSTRIAL



MINE DEWATERING



MUNICIPAL



REFRIGERATION



OIL & GAS



CYCLOSEAL®



CHOPPER



CUTTER



EDGE™



HYDRAULIC SUBS



HYDRO TURBINE



IMMERSIBLE



MANURE



MP SERIES



MX SERIES



MX MINING



REDI-PRIME®



SELF PRIMING



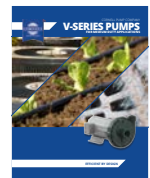
SLURRY



SUBMERSIBLE



WATER TRANSFER



V SERIES

CycloSeal® and Redi-Prime® are Registered Trademarks of Cornell Pump Company.

Cornell pumps and products are the subject of one or more of the following U.S. and foreign patents: 3,207,485; 3,282,226; 3,295,456; 3,301,191; 3,630,637; 3,663,117; 3,743,437; 4,335,886; 4,523,900; 5,489,187; 5,591,001; 6,074,554; 6,036,434; 6,079,958; 6,309,169; 2,320,742; 96/8140; 319,837; 918,534; 1,224,969; 2,232,735; 701,979 and are the subject of pending U.S. and foreign patent applications.

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