

CORNELL PUMP COMPANY

MINING



PUMPS FOR THE MINING INDUSTRY

WHAT SETS CORNELL MINING PUMPS APART

Cornell Pump has been producing robust, high-efficiency pumps since 1946, and our innovative pumps have provided unmatched value.

A WIDE VARIETY OF SIZES AND CONFIGURATIONS

Cornell Pump offers models of various sizes ranging from 2" to 30". Each model has different configuration options, such as frame and engine mount options, and additional features like Run-Dry™ and Redi-Prime® are also available.

OUTSTANDING EFFICIENCIES

We utilize our expertise and know-how to create proven designs with exceptionally high efficiencies that surpass most pumps available in the market. In fact, our mining series boasts up to 85% efficiency.

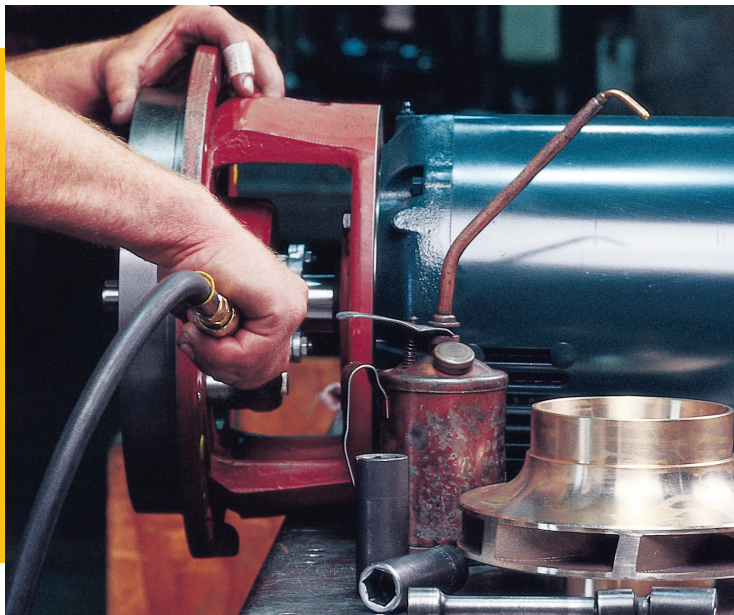
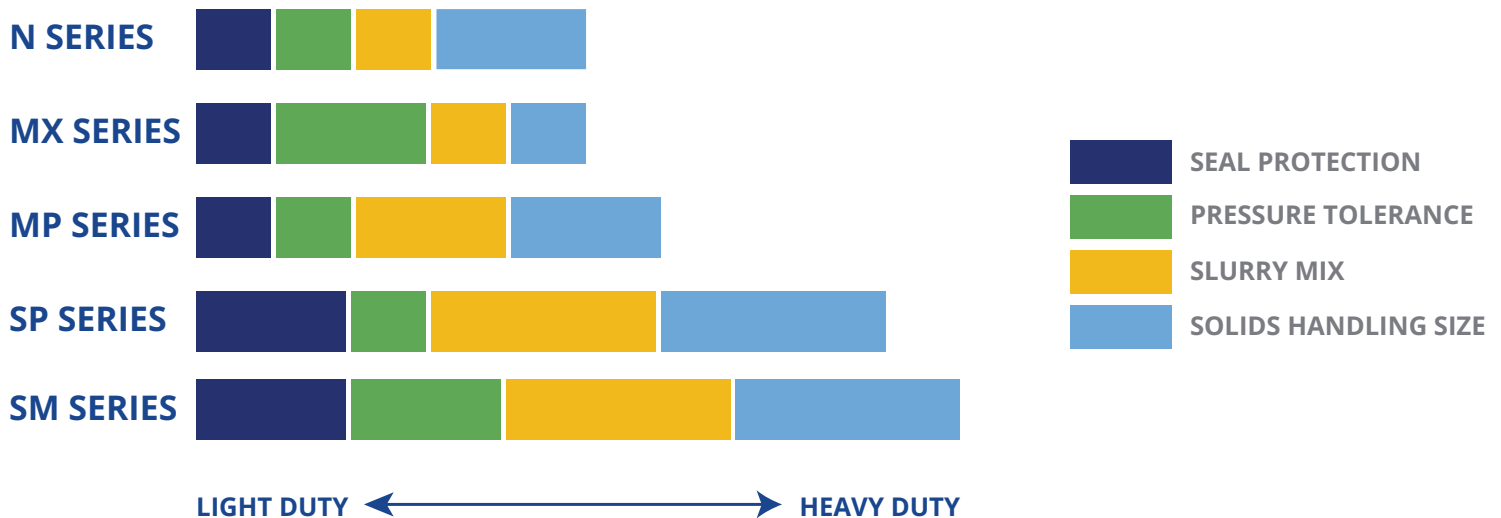
CYCLOSEAL

A new sealing system prevents pump leaks on mining sites without requiring flush water, avoiding contamination.

ROBUST CONSTRUCTION

Cornell pumps are made with solid and durable materials carefully chosen for each pump's specific purpose. Thicker shafts, heavier casting walls, and fully-machined impellers are among the features that make Cornell pumps more rugged and long-lasting than other pumps.

COMPARE THE RUGGEDNESS OF CORNELL SERIES PUMPS



QUALITY ASSURANCE

Cornell Pump proudly maintains its ISO 9001:2015 certification that validates Cornell complies with all necessary processes to meet customer requirements.

The elements associated with ISO 9001:2015 certification include such areas as contract review, design and development, production, purchasing, quality control, and service.



Proudly designed and manufactured in Oregon, United States of America.

PUMPS FOR THE MINING INDUSTRY



SP SLURRY PUMP GOING STRONG AFTER YEARS IN SERVICE

In May 2012, an Australian sand quarry installed a Cornell 6SP rubber-lined slurry pump. It has been operating flawlessly and has never leaked. The pump processes approximately 50 tons of material per hour, fed as a slurry and separated in a cyclone separator to extract sand. The operation runs five days a week, about nine hours daily, and the slurry contains 30% solids.

The Cornell 6SP rubber-lined slurry pump has operated flawlessly in the sand quarry for over nine years. The pump runs 9 hours daily, five days a week, and handles a slurry of around 30% solids. Since its installation, the pump has been started and stopped 5,800 times without any issues. While the impeller and liner wear parts have been replaced, the Cycloseal sealing seal system has never required replacement and has not leaked.

For more information about this and other application stories, visit cornellpump.com



N-SERIES SOLIDS HANDLING PUMPS

Discharge sizes up to 24", flows up to 38,000 GPM, and solids up to 10.2".

IMPELLER CHOICES: choose from the Delta style impeller for heavy sludge, two and three-port enclosed impellers for large solids, and three or four-bladed, semi-open impeller with cutting action for the worst slurries/solids.

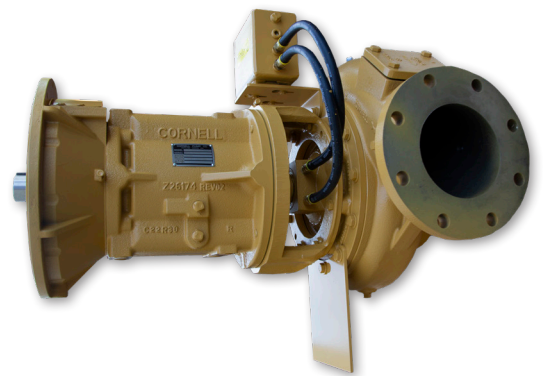
PERFORMANCE	
DISCHARGE SIZE RANGE	3" - 24" / 7.62 cm - 60.96 cm
MAX SOLIDS HANDLING	10.2" / 25.9 cm
MAX FLOW	38,000 GPM / 8,630.73 m ³ /h
MAX HEAD	500' / 152.4'

MATERIALS OF CONSTRUCTION

- Ductile or cast iron pump casings
- Some models available in CD4MCu
- Ductile, cast iron, or CD4MCu impellers
- Stressproof or heat treated steel shafts (stainless on CD4MCu)
- Heat-treated wear rings and shaft sleeve available

FEATURES CONTINUED

- Cycloseal® grit removal system
- High-efficiency design
- Run-Dry Option
- Redi-Prime Option
- Excellent NPSHr
- Ruggedness and durability
- Two-year warranty
- Minimum 3 inch solids handling



PUMPS FOR THE MINING INDUSTRY



HIGH HEAD PUMPS

Cornell's MX high head mining pump series provide heads up to 825', long service life, and industry-leading efficiency.

PERFORMANCE

DISCHARGE SIZE RANGE	2" - 8" / 5.08 cm - 20.32 cm
MAX SOLIDS HANDLING	2.38" / 6.04 cm
MAX FLOW	8,000 GPM / 1,816.99 m3/h
MAX HEAD	825' / 251.46 m

MATERIALS OF CONSTRUCTION

- Ductile iron casings
- 17-4PH stainless steel shafts
- CA6NM impellers
- Optional hardened wear ring and shaft sleeves.

FEATURES

- Cycloseal® grit removal system
- High-efficiency design
- Run-Dry Option
- Redi-Prime Option
- High operating pressures
- Two-year warranty



ABRASIVE MINE DEWATERING

MP Series pumps are unlined slurry pumps designed for coarse abrasives and solids up to 3". The MP series offers exceptional wear resistance for reduced maintenance and long life in harsh environments.

ADJUSTABLE WEAR PLATE: to maintain lost efficiency while in service.

PERFORMANCE

DISCHARGE SIZE RANGE	2" - 8" / 5.08 cm - 20.32 cm
MAX SOLIDS HANDLING	3" / 7.62 cm
MAX FLOW	9,000 GPM
MAX HEAD	625' / 190.5 m

MATERIALS OF CONSTRUCTION

- High chrome white iron construction
- 17-4PH stainless steel shafts
- Hardness rating > 650BHN

FEATURES

- Cycloseal® grit removal system
- High-efficiency design
- Run-Dry Option
- Redi-Prime Option
- Heavy-duty construction for aggressive applications
- Replaceable wear plates
- Two-year warranty



PUMPS FOR THE MINING INDUSTRY



SM SERIES HEAVY DUTY SLURRY PUMPS

The SM Series of pumps from Cornell is designed to handle a wide range of slurry applications and are especially effective for series pumping. These pumps are robust and durable with their unlined high chrome white iron wet ends. They are equipped with Cycloguard® and Cycloseal® innovations that extend their seal life and keep solids away from the seal area for reduced wear. The pumps are designed to operate at a maximum working pressure of 600 PSI.

PERFORMANCE

DISCHARGE SIZE RANGE	2" - 10" / 5.08 cm - 25.4 cm
MAX SOLIDS HANDLING	4" / 10.16 cm
MAX FLOW	12,000 GPM / 2,725.49 m3/h
MAX HEAD	330' / 100.58 m

MATERIALS OF CONSTRUCTION

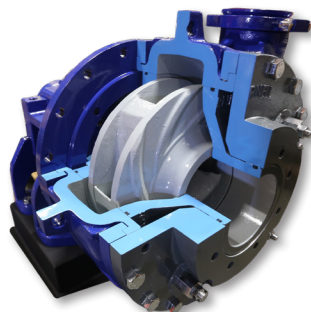
- Chrome Iron Impeller, volute, volute casing, wear palte, backplate, and expeller
- 4140 Steel Shaft
- 420 Stainless Shaft Sleeve
- Ductile Iron suction cover

FEATURES

- Back pullout design to simplify maintenance
- 600 PSI rated pressure
- CycloGuard™ to reduce inlet recirculation
- Infinitely variable volute and discharge position
- Axially adjustable suction wear plate = no frame adjustment needed or realignment of belts/piping
- Available in any pipe flange standard
- Standard CycloSeal® – no flush water required

FEATURES CONTINUED

- Other shaft seal arrangements available
- Grease or oil lubricated bearing frame
- High-capacity bearings available
- Ideal for series/multistage pumping applications
- Handles high solids concentrations



PUMPS FOR SLURRY APPLICATIONS

SP-SERIES PUMPS pass up to 4.1" solids. Rubber or metal lined, handles pH from 1 to 14 depending on configuration. Capable of pumping slurries that are up to 40% solids by volume.

PERFORMANCE

DISCHARGE SIZE RANGE	2" - 12" / 5.08 cm - 30.48cm
MAX SOLIDS HANDLING	4.1" / 10.41 cm
MAX FLOW	18,000 GPM / 4,088.24 m3/h
MAX HEAD	290' / 88.39 m

MATERIALS OF CONSTRUCTION

- Chrome iron impellers
- Ductile iron volute casings
- Volute lining either chrome iron or rubber
- 4140 steel shafts
- Ductile iron bearing housing and cast iron bearing frames

FEATURES

- Cycloseal® grit removal system
- Enclosed impeller for higher efficiency
- Run-Dry Option
- Redi-Prime Option
- Superior abrasive and corrosive wear life
- No seal flush, vent line or lubrication required
- Various materials of construction
- Ruggedness and durability
- Two-year warranty



CORNELL FEATURES & PUMP PRIMERS



CD4MCu OPTIONS

CD4MCu is duplex stainless steel that uses a two-phase metallurgy process, different from the single-phase metallurgy process found in common stainless steel grades like 316. This process combines the corrosion resistance of 300-series stainless steel with the strength and hardness of 400-series stainless steel. This results in stainless steel with equivalent or superior corrosion resistance to 316 SS but with twice the yield strength. CD4MCu allows pumps to be used in more abrasive applications with enhanced resistance to corrosive cracking and pitting. Cornell has made CD4MCu castings available in-store for 39 of its most popular pump models, which reduces production time. We can now build a CD4MCu pump in about one to two weeks.

FEATURES



CD4MCu BENEFITS

- Corrosion and pitting resistance
- Higher strength than standard grades of stainless steel
- Improved ductility and weldability
- Better resistance to embrittlement

CORNELL PUMP BENEFITS

- Fully automated priming and self-priming, dry-run pumps
- Handles air/liquid mixtures with ease
- Patented Cycloseal®, Redi-Prime®, and Run-Dry™ options
- Cornell Competitive Advantage: Patented Engineering Features

STX/STL/STH SERIES PUMPS

The STX/STL/STH Series of self-priming pumps are known for their high efficiency and durability. With patented-Cycloseal® backplate technology, they provide robust and energy-efficient pumping, with a maximum head of up to 253' and efficiencies of up to 68%. They can handle solids generated in mine dewatering, making them popular for trash-pumping applications.



PUMP PRIMERS

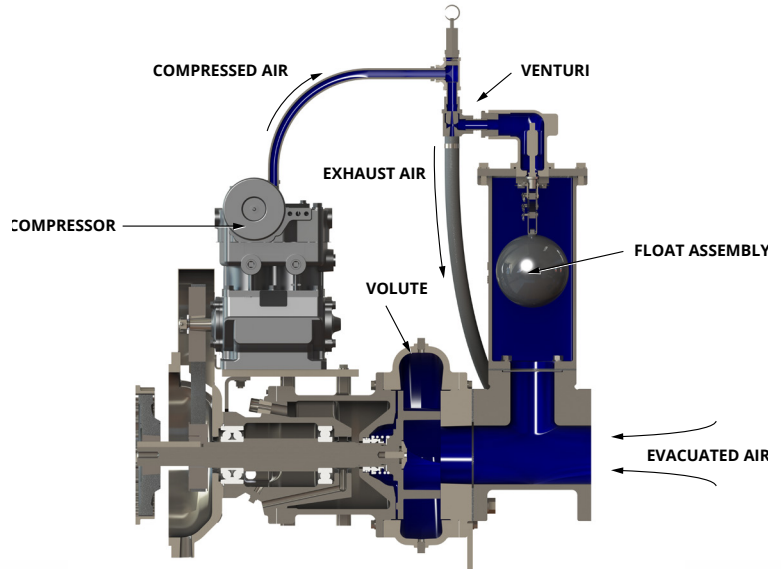
VENTURI PRIME SYSTEM

The Cornell Venturi Prime system relies on a compressor driven by the pump shaft and lubricated by engine oil to blow air through the venturi and evacuate it from the suction line and pump casing. The venturi prime is economical and compatible with any Cornell Pump where Redi-Prime® is an option.

The Venturi Prime system is slower to prime than Redi-Prime, has superior performance in freezing temperatures, and can be tailored to the application. The Venturi Prime air compressor requires an external source for coolant and lubrication supplies, usually from the engine. Cornell's Venturi Prime system provides an excellent solution where cost is key, but quality is essential.

VENTURI PRIME BENEFITS

- Fully automatic priming and repriming
- Primes with reasonable speed
- Does not impede solids handling of the pump
- Can operate unattended
- Patented Cycloseal® and Run-Dry™ options
- No change in suction lift capacity and flow rates
- Available with manual valve for operation in colder climates



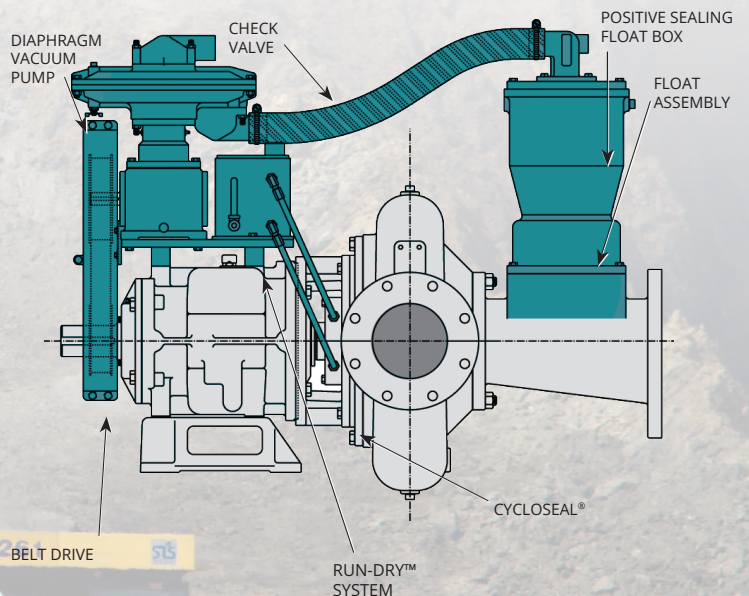
REDI-PRIME® SYSTEM

Cornell's Redi-Prime® pumps are designed and engineered for the most rugged and demanding industries - construction, industrial, rental, and municipal. With over 70 years of proven experience and reliability, Cornell Pump Company has established the highest industry standard for premium quality and rugged performance. An industry-leading two-year warranty backs our pumps.

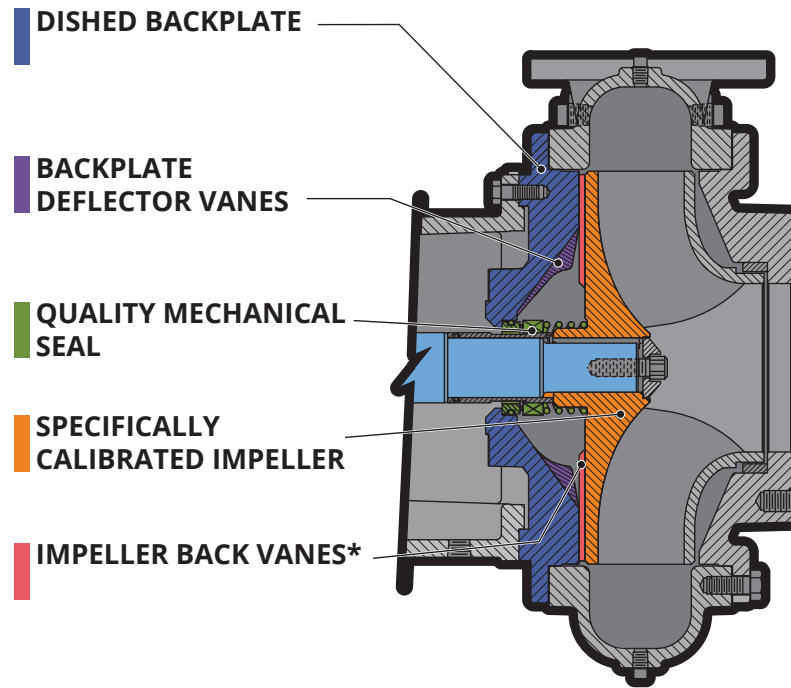
The Redi-Prime system uses a positive-sealing float box and a diaphragm vacuum pump to provide fully automatic priming and re-priming of the pump. There is no water carry-over to contaminate the environment, and Redi-Prime is compatible with most Cornell pump models.

REDI-PRIME® BENEFITS

- Fully automatic priming and repriming
- Handles air/liquid mixtures with ease
- Rapidly primes and re-priming completely unattended
- Environmentally safe priming system designed to prevent product leakage
- Patented Cycloseal® and Run-Dry™ options
- Does not impede solids handling of pump
- No change in suction lift capacity and flow rates
- Check valve eliminates any liquid carry over



CYCLOSEAL®



CYCLOSEAL® — THE SEALING SYSTEM INTEGRAL TO CORNELL PUMPS

Cornell's manure pumps come equipped with the patented Cycloseal sealing system, which leverages cyclonic action to extract solids and abrasive substances from the seal area while simultaneously purging air and gas pockets. This groundbreaking technology extends the lifespan of the seal and eliminates the requirement for venting or flushing water.

No Flush Water or Packing: Cycloseal technology eradicates the need for packing or flushing water with its backplate and wide vanes, leading to cost savings, less service time, and no messy drips.

Extended Seal Life: Cornell's Cycloseal is highly durable in harsh conditions such as manure slurry, starch recovery, clear water, food processing, and self-priming applications, with the potential to triple the expected seal lifespan.

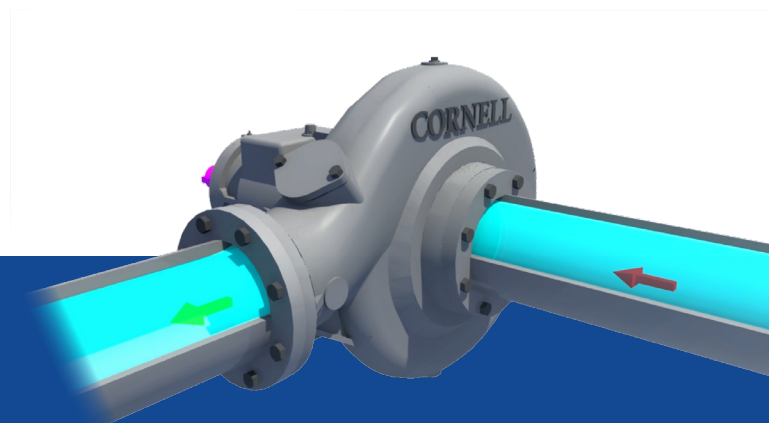
Run-Dry™ Option: Cornell's Cycloseal system-equipped pumps have an optional Run-Dry feature that lubricates the seal faces even without liquid in the pump casing. The Run-Dry feature is indispensable in scenarios where the pump must operate dry for an extended duration or may lose prime unexpectedly without being turned off.

System Savings: Cycloseal system eliminates the need for external water flush, filters, grease cups, or piping typically found in pumps with packing or mechanical seals.

Better for Abrasive Applications: Cycloseal is more durable than packing and regular mechanical seals that come into contact with grit and other substances, as it prevents solids from entering the seal area, resulting in less seal wear.

Greater Reliability: With positive seating, end users can easily detect when the Cycloseal is correctly installed, leading to longer service intervals due to its increased ability to withstand grit.

Maintenance Savings: A more durable seal results in less pump downtime and lower maintenance expenses throughout the pump's lifespan.



**Watch the Cycloseal® video
online to see it in action:**

<http://www.cornellpump.com/support/videos.html>

FLUID RESERVOIR

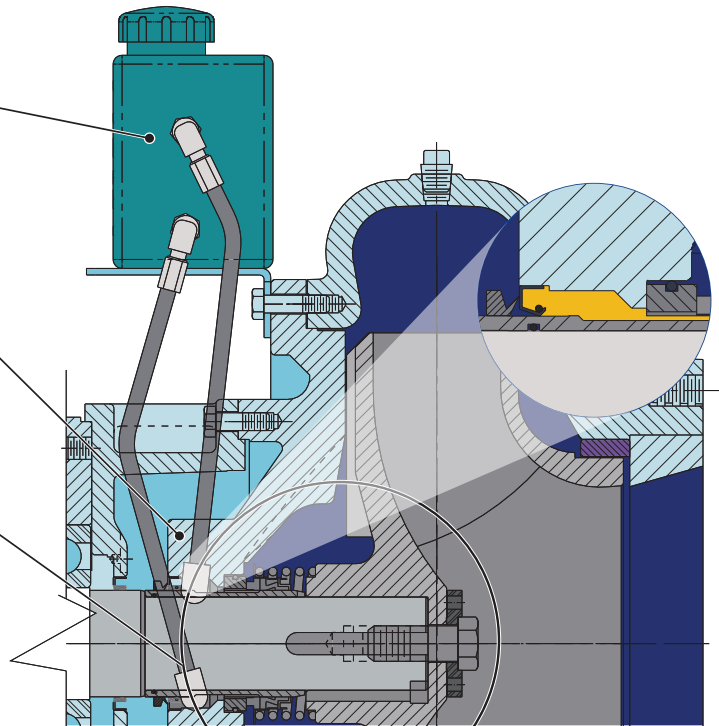
The heart of Cornell's Run-Dry™ system is the ability to deliver lubrication/cooling to the seal during periods of no flow operation. Natural circulation of the fluid in the reservoir removes heat from the seal faces to keep them in pristine condition.

RUN-DRY™ GLAND

With Cornell's Run-Dry system, seal face cooling is effected by providing for heat exchange/lubrication in the area immediately adjacent to the seal faces. This small cavity is created by adding a gland which is connected to the reservoir to complete the lubrication/cooling circuit.

CYCLOSEAL®

Cornell's Run-Dry is an addition to the same Cycloseal system that protects our pumps during normal operating conditions. Truly a system, this combination of backplate deflector vanes, impeller backvanes and a quality type I or II mechanical seal, can also run dry, when equipped with the Run-Dry system.



PROTECTS MECHANICAL SEALS FROM DAMAGE CAUSED BY OPERATING WITHOUT PUMPING FLUID—RUNNING DRY.

Cornell's innovative Run Dry™ system offers a solution for continuous lubrication of mechanical seals. This system features a gland on the backside of the mechanical seal that allows a lubricant to circulate, providing cooling and lubrication to the mechanical seal's hardened faces. The benefit of this technology is prolonged seal life, irrespective of the operating conditions, ranging from maximum flow to no flow. It truly enables running dry without any adverse impact on the seal's performance – hence the name Run-Dry™.

FEATURES:

- ✓ Seal protection
- ✓ Seal cooling
- ✓ Easily-checked lubricant reservoir
- ✓ Ease in servicing and maintaining pumps
- ✓ Peace of mind if pump runs dry

Dry running can damage, even destroy, and seals in seconds—counteract the wear and leaks with Cornell Run-Dry™.

Dry operation could result from:

- Priming activities
- Blockage in suction piping
- Deliberate operation of the pump in dry conditions
- Accidental loss of prime while pumping

APPLICATIONS



AGRICULTURE



FOOD PROCESSING (FOOD GRADE LUBRICANT AVAILABLE)



INDUSTRIAL



MINING



OIL & GAS



MUNICIPAL



RENTAL



Any application where there is probability, either planned or unplanned, that the pump could operate in dry condition

CORNELL DIESEL PACKAGE



CORNELL PUMP DIESEL PACKAGE

Introducing the New Cornell Diesel Package—crafted by the manufacturer to be cost-effective, readily available, and perfectly tuned to the pump. This DOT-approved trailer package offers a range of Control Panel and Engine options tailored to your fleet's needs. It features the renowned RPM2 pump monitoring ecosystem, including Cornell Co-Pilot and Pulse, which allow you to track equipment, detect when it's not in optimal condition, and even start/ stop it remotely. Plus, it comes with warranty claim protection for added peace of mind.

KEY FEATURES FOR PACKAGE

- Built with a Cornell 6612T pump
 - Min Flow 400 GPM
 - Max Flow 3000 GPM
 - Suction and Discharge 6" Ductile, 416 Stainless, CA6NM, and cast iron components
 - 82% Efficient at BEP
- 74 HP Engine
 - Three options are available: Fiat, Deutz, or Isuzu
- Cornell Efficiency and Quality
- 6K axle
- 95 Gallon Fuel Capacity
- Designed With Rental Customers' Input
- Control panel options: Murphy Controls Inc.
- DOT Trailer Package
- Fast Delivery
- Competitive Price
- Redi Prime and Run Dry standard
- Cycloseal® sealing system—3X longer seal life
- Co-Pilot and Pulse pump monitoring systems

AVAILABLE NOW FOR EMERGENCY BYPASS, CONSTRUCTION DEWATERING, AND OTHER RENTAL APPLICATIONS.



Connect via Cell Network



5 Sensor Inputs



Remote Control



CORNELL Co·Pilot™

THE POWER OF IOT

Cornell Co-Pilot is a monitoring system that connects to your pump to track temperature, vibration, and location. Co-Pilot can also be powered with a wired connection for continuous monitoring and control system integration. Our Internet of Things (IoT) platform reflects our dedication to cutting-edge design and meeting customer needs.

USE THE CO-PILOT TO:

- Plan maintenance
- Check operation
- Reduce manual inspections
- Track pump location
- Demonstrate run conditions to customers on warranty claims
- Improve run time through the maintenance program

MONITORING AT YOUR FINGER TIPS

Easily monitor your pump's performance with desktop and mobile apps available for iOS and Android. Receive alerts for out-of-condition operations and view the last GPS location of the pump, all in one convenient platform.

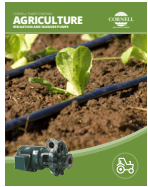
CORNELL CO-PILOT ALLOWS YOU TO:

- Monitor pumps using the cloud and IOT
- Monitor temperature, vibration, and GPS location
- Additionally monitor pressure, flow, start/stop operations, and more*
- Track data over time via web-based and mobile apps
- Receive real-time pump data for performance and health monitoring
- Receive alerts for preset running conditions

*Requires external sensors; contact Cornell for details.

PART OF RPM² ASSET
MANAGEMENT SYSTEM





AGRICULTURE



FOOD PROCESS



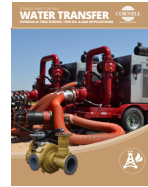
INDUSTRIAL



MINING



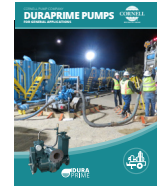
MUNICIPAL



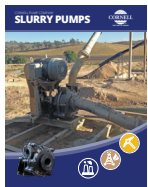
WATER
TRANSFER



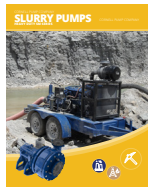
REFRIGERATION



CONSTRUCTION



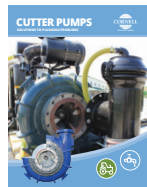
SLURRY



SLURRY SM



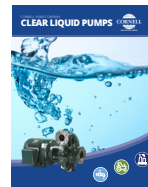
MANURE



CUTTERS



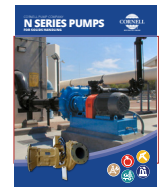
SELF PRIMING



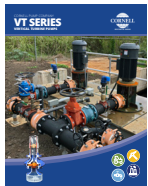
CLEAR LIQUIDS



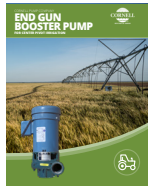
MX SERIES



N SERIES



CYCLONE™



EDGE™



HYDRAULIC
SUBS



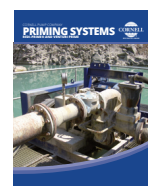
IMMERSIBLE



CD4MCU



RUN-DRY™



PRIMING
SYSTEMS



CYCLOSEAL®

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:

6,074,554; 6,036,434; 6,079,958; 6,309,169; 6,104,949.

24 - MI - BR - 001