



CORNELL PUMP COMPANY

# AGRICULTURE

IRRIGATION AND MANURE PUMPS

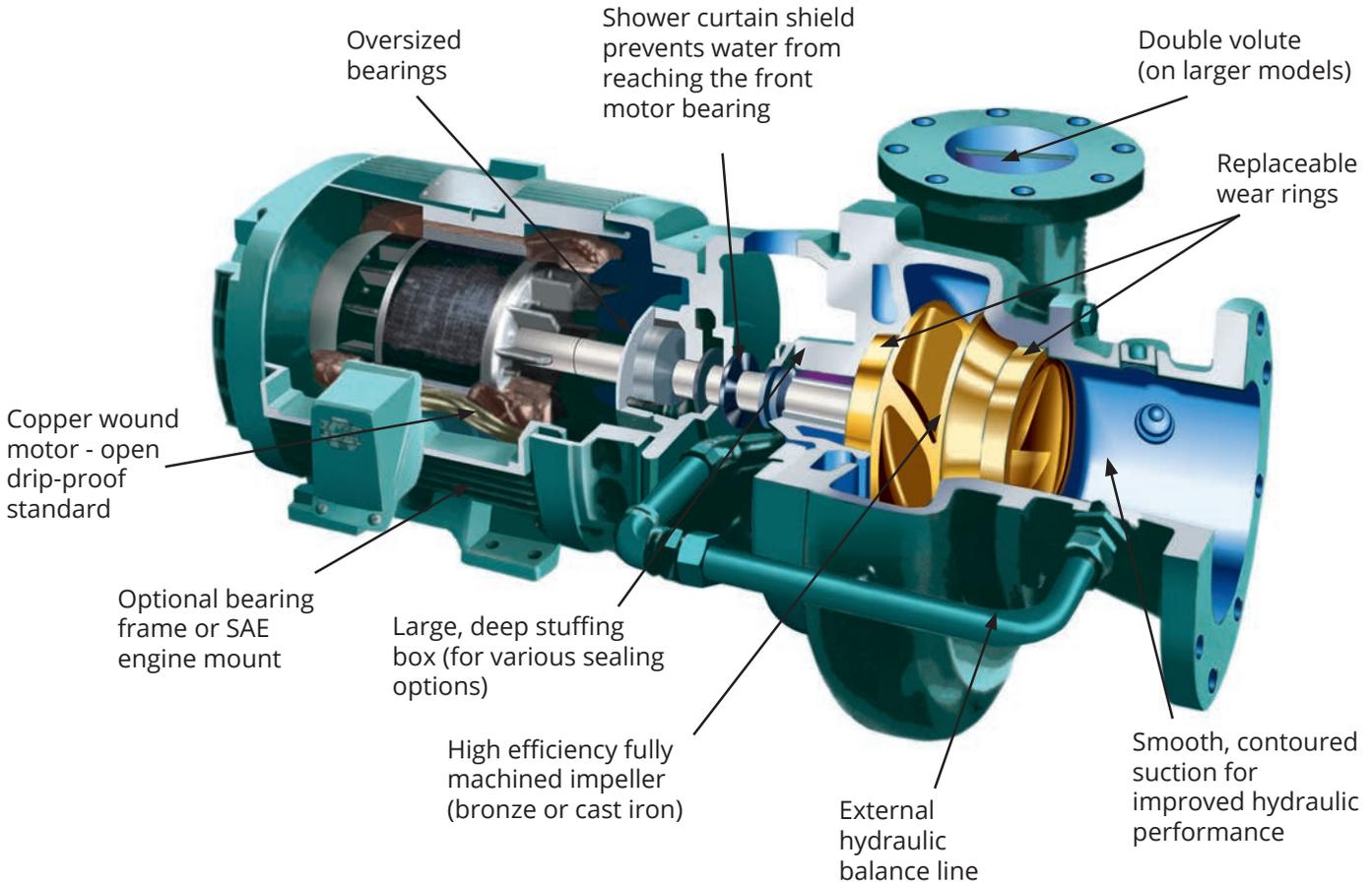


EFFICIENT BY DESIGN



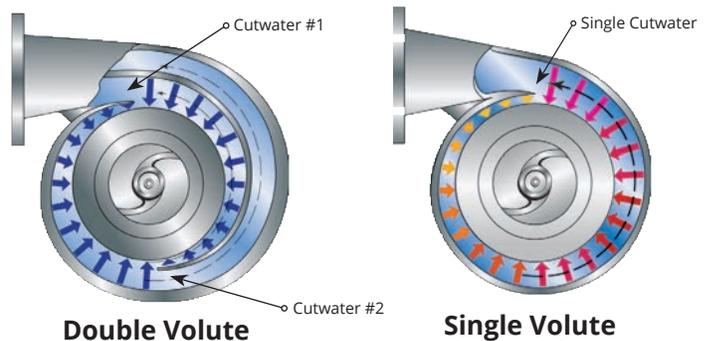


# IRRIGATION PUMPS



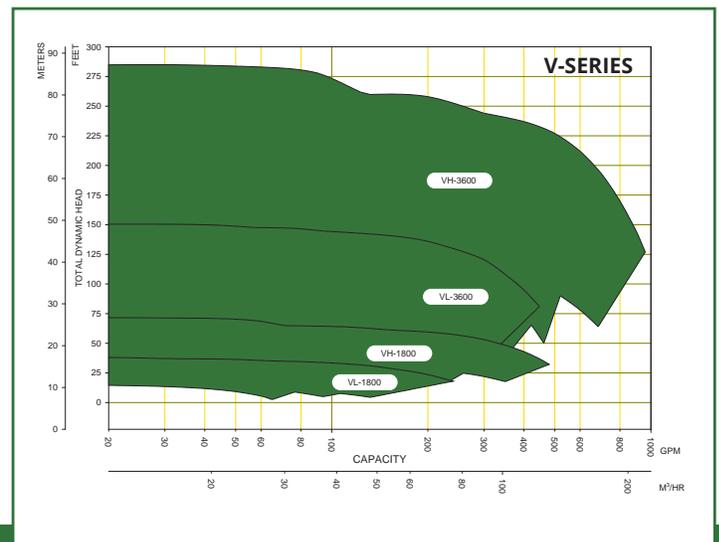
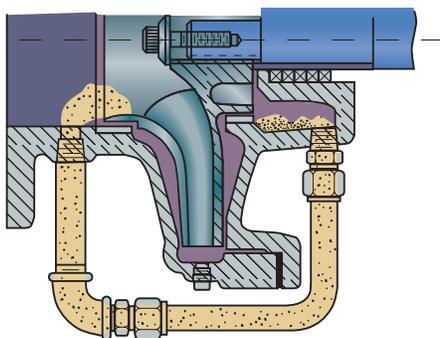
## DOUBLE VOLUTE

Cornell introduced the double volute as an industry first more than 30 years ago. The double volute system effectively balances forces within the pump to reduce radial load, shaft deflection and fatigue. This eliminates shaft breakage and extends the service life of packing and mechanical seals, wear rings and bearings while maintaining high hydraulic efficiency.



## EXTERNAL HYDRAULIC BALANCE LINE

Cornell's external hydraulic balance line equalizes pressure between the impeller hub area and the pump suction to reduce axial loading acting on the impeller, shaft and bearings. The balance line also assists in moving sand and silt from the stuffing box to the low pressure area at the pump suction, reducing wear of the wetted parts.



## ENERGY EFFICIENCY

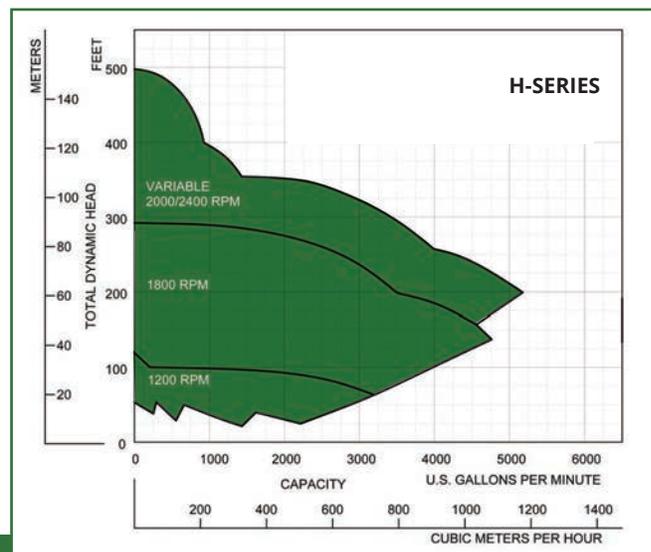
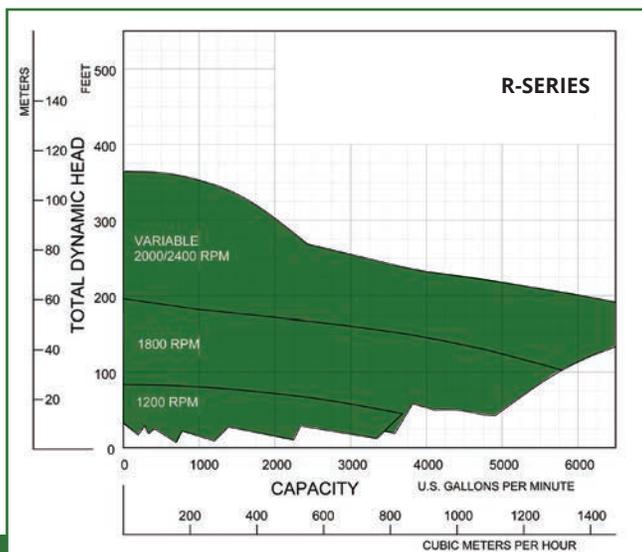
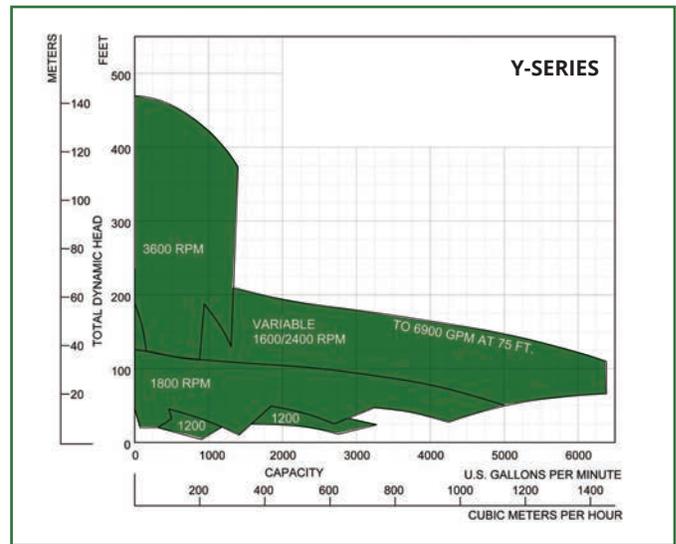
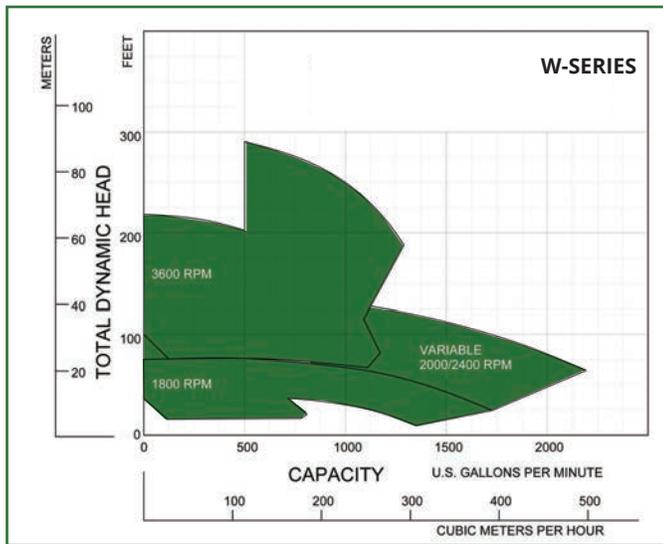
Cornell Pumps are designed to deliver best in class efficiency. Depending on operating hours, fuelant, and horsepower required, you can save \$3,000 per year (or more) in energy costs. Cornell manufactures more than 35 IRRIGATION pump models that meet or exceed optimum efficiency standards for centrifugal pumps.

## MATERIALS OF CONSTRUCTION

All Cornell irrigation pumps are constructed with top quality materials. Cornell irrigation pumps are cast iron, bronze fitted or all iron construction. Optional materials are available for abrasive or caustic applications. Standard features include balanced impellers, heavy-duty shafts, replaceable shaft sleeves, and replaceable wear rings.

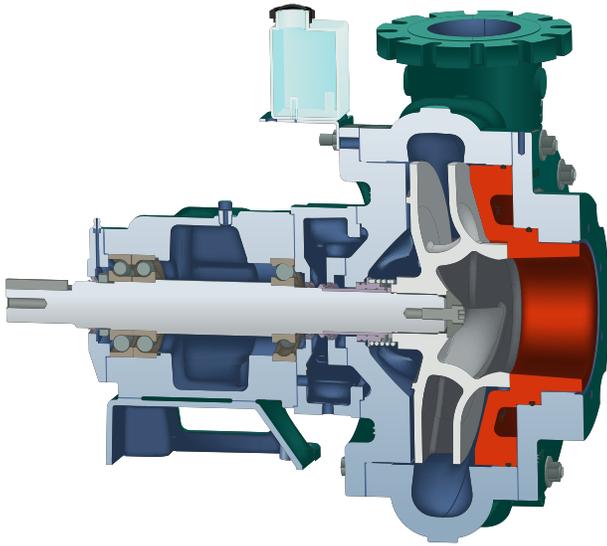
## SELECT HIGH-EFFICIENCY PUMP MODELS

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





# LEGACY MANURE PUMPS



## IMPELLER OPTIONS

Cornell offers three unique impeller designs for liquid waste slurry applications. The DELTA style impeller is excellent for handling straw, twine and heavy sludge where there is a low to medium head requirement. Cornell's two and three port enclosed impellers are designed to handle large solids with high efficiency and high head requirements. The three or four bladed, semi-open impeller has a cutting action which allows it to handle the worst slurries at high heads.



*Ask about the Cornell Cutter Pump for hard-to-pump solids.*

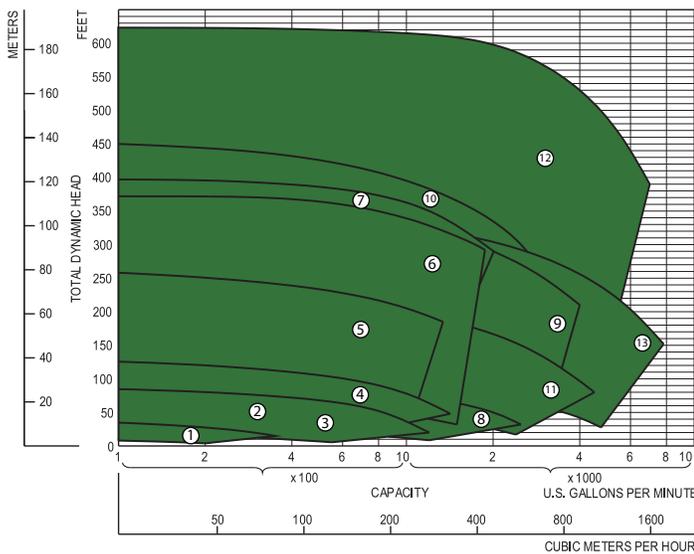
Cornell offers over 60 models of heavy-duty solids handling pumps for the toughest slurry applications. Three unique impeller designs (Enclosed, Semi-Open & Delta), ensure a fit for most applications.

## MATERIALS OF CONSTRUCTION

Cornell Manure Slurry pumps are all iron construction with hard face mechanical seals for extended seal life. Optional materials are available for abrasive applications.

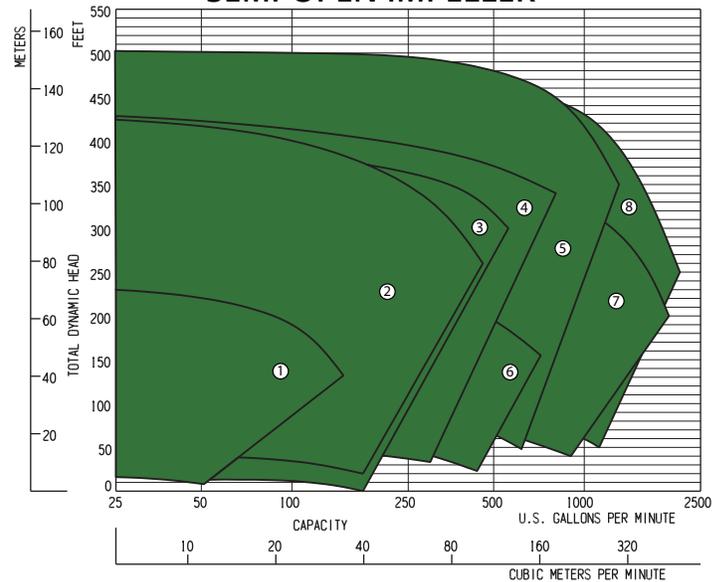


### ENCLOSED IMPELLER



- 1) 3NLT 2) 3NNTL 3) 4NNTL 4) 4NNT 5) 4414T 6) 4NHTB 7) 4514T
- 8) 6NNT 9) 6NHTB 10) 6NHTB19 11) 8NNT 12) 8NHG19 13) 10NNT

### SEMI-OPEN IMPELLER



- 1) 1.25YL 2) 2.5HM 3) 2.5YM 4) 3HM 5) 3517M 6) 3WM 7) 4HM
- 8) 4614M

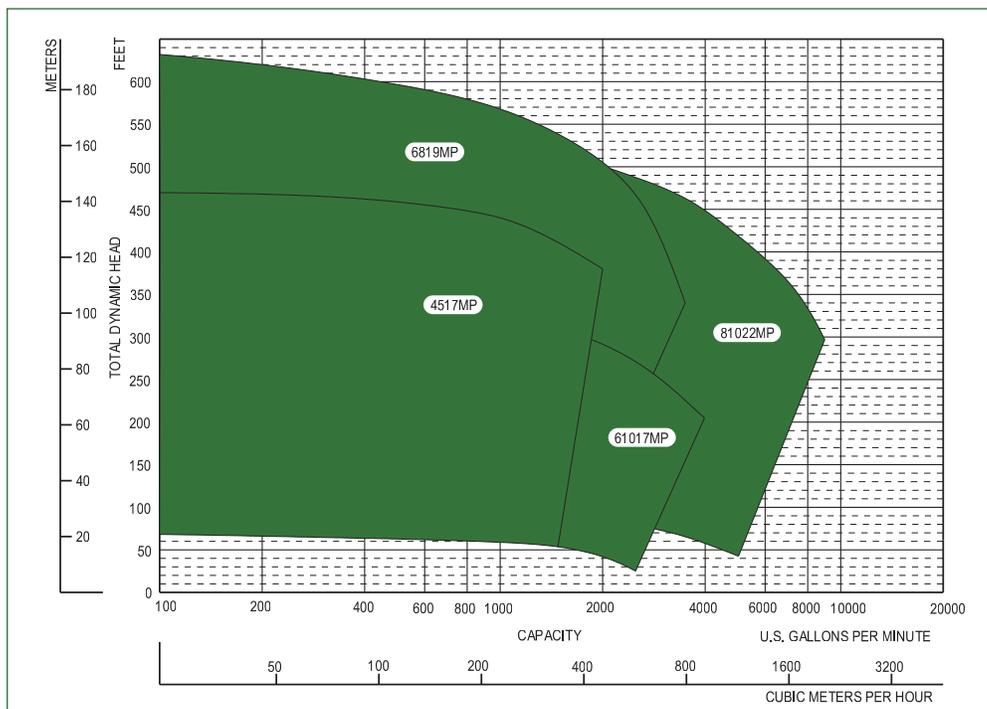
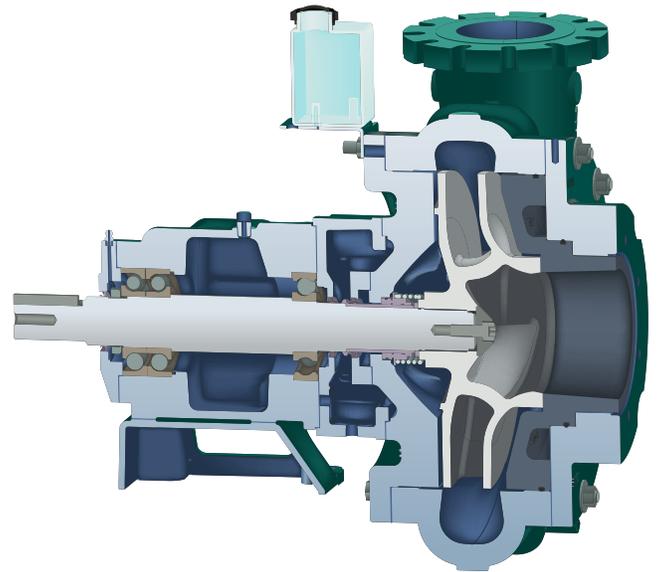
# MP SERIES MANURE PUMPS

## MP SERIES PUMPS ARE DESIGNED FOR COARSE ABRASIVES

Cornell Pump Company's MP Mining Pump Series combines 65 years of innovative pump manufacturing and design, with our highly-regarded patented Cycloseal® technology. Offering high operating pressures, the MP pumps are specifically designed for coarse abrasive slurry applications such as sand, gravel, coal, manure, and mine dewatering.

### SPECIFICATIONS

- Flows to 9,000 GPM
- Heads to 625' (270 PSI)
- Discharge Sizes: 4", 6", and 8"
- High chrome white iron or HT ductile iron pump ends
- Front, adjustable wear plate
- Replaceable hard suction wear plate
- Hardness > 650 BHN available
- Thick cross sections for abrasive wear
- Cycloseal, hard-faced single seal
- Enclosed Impeller



### BENEFITS

- Longer wear life compared to standard solids handling pumps
- Solid handling capabilities
- Works in tough environments
- Cornell's patented Cycloseal®, Run-Dry™, and Redi-prime® options are available

### APPLICATIONS

- Manure slurry
- Mine dewatering
- Coal production
- Sand pumping
- Gravel transport
- Aggregate
- Tailings
- Oil sands





# CUTTER BLADES FOR MANURE

## SINGLE TOOTH WEAR PLATE

Useful with very high hay, water foilage and other stringy material content. Tooth holds the material without plugging eye of impeller. Sweeping motion of the cutter blade cuts up the material to pass through the pump.



## USED ON MANURE BOATS AND FOR STATIONARY LAGOON PUMPING

The trusted source for reliable and dependable pumps to the manure pump industry, Cornell has been a leader in transferring, removing, and pumping for injection for more than 30 years. The cutter allows us to:

- Break up clogs and rough cut
- Work from a boat or stationary location
- Works well with a priming system
- Reduce maintenance, labor, and downtime costs

In creating the cutter option to deal with wastewater ragging and fouling, an important concern was to keep efficiency as high as possible. Three designs worked well—the blade cutter, auger cutter, and single tooth wear plate design. With a range of cutter solutions, users can choose the Cornell cutter which will best suit their needs. Both provide Cornell's renowned quality and reliability. Here are the features, benefits, and differences of them both.

### CUTTER ADVANTAGES:

- Minimal Increase To Cost Of Operations
- Labor Savings By Reducing Clean Out Events
- Two-Year Warranty
- Improve Efficiency By Reducing Down-Time



## BLADE CUTTER

Consists of a rotating and stationary cutter, utilizing a standard impeller.

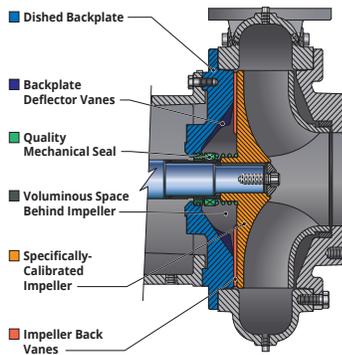
- Minimal energy consumption (4% or less) for solution
- Designed to break up clogs/ragging
- Hardened cutter material
- Adjustable clearances
- Minimal flow restrictions
- Does not change external pump dimensions
- Retrofittable

## WASTE WARRIOR AUGER CUTTER

The more aggressive solution, featuring scythe-like edges from the impeller eye, sweeping all the area where the suction pipe meets the volute.

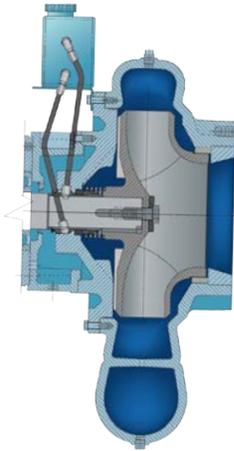
- Handles most aggressive and troublesome clogs and ragging
- Limited energy consumption (~ 8%) for solution
- Hardened cutter material
- Insignificant flow restrictions
- Does not change external pump dimensions
- Retrofittable

# AVAILABLE OPTIONS



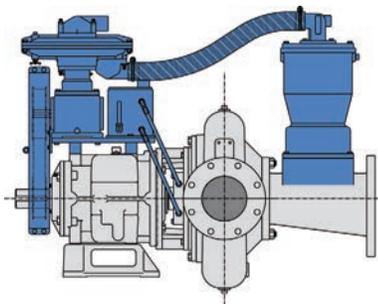
## CYCLOSEAL®

Ideally suited for water and waste water applications, Cornell's patented Cycloseal (U.S. Patent # 5,489,187) is a self-contained single mechanical seal with a dished backplate. This configuration requires no external flushing and eliminates the need for a water flush line. The Cycloseal uses stationary deflector vanes cast into the pump backplate in conjunction with contoured impeller back vanes and a dished backplate to create pressure gradients that moves solids and entrained vapor away from the seal faces. The service life of a Cycloseal mechanical seal can be as much as 10 times longer than a typical mechanical seal.



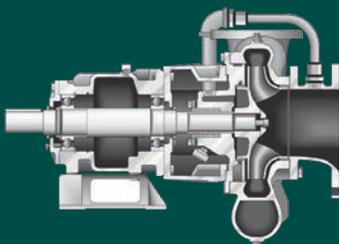
## RUN-DRY™

For applications where there is the possibility of the pump operating in a dry condition, Cornell's Run-Dry system is the answer. Cornell's Run-Dry system consists of an auxiliary gland and oil reservoir that keeps the seal faces lubricated and prevents dry running of the seal faces during priming, re-priming, or standby operation. The Run-Dry gland is connected to a lubricant reservoir via inlet and outlet lines such that shaft rotation provides continuous circulation and cooling of the lubricant and seal faces. With the Run-Dry system your pump can run dry for hours without damaging the mechanical seal.

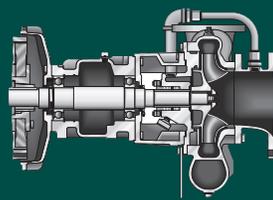


## REDI-PRIME®

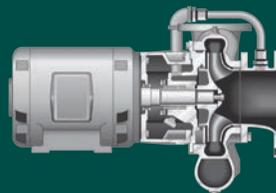
Cornell Redi-Prime pumps are designed with oversized suctions to provide more flow, reduced friction losses, and higher suction lift. The priming system was designed with the environment in mind. By using a positive sealing float box and a diaphragm vacuum pump, there is no water carry-over to contaminate the environment. With suction lifts of up to 28 feet, heads to 800 feet and flow rates exceeding 20,000 GPM, most Cornell pumps can be readily fitted with the Redi-Prime system.



**F**  
Frame Mount



**EM**  
Engine Mount



**CC**  
Close-Coupled



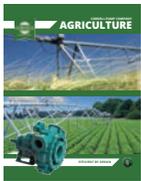
**VM/VC/VF**  
Close Coupled  
Coupled  
Frame Mount

## MOUNTING CONFIGURATIONS

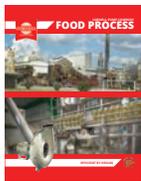
Cornell irrigation pumps are available in a variety of mounting configurations, including horizontal and vertical close-coupled pumps, vertical and horizontal frame-mounted pumps, and pumps with an SAE bell housing mounting directly to an engine.



# MARKET AND PRODUCT LINE



AGRICULTURAL



FOOD PROCESS



INDUSTRIAL



MINE DEWATERING



MUNICIPAL



REFRIGERATION



OIL & GAS



CYCLOSEAL®



CHOPPER



CUTTER



EDGE™



HYDRAULIC SUBS



HYDRO TURBINE



IMMERSIBLE



MANURE



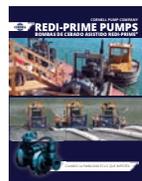
MP SERIES



MX SERIES



MX MINING



REDI-PRIME®



SELF PRIMING



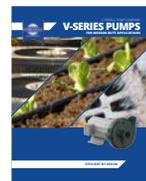
SLURRY



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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