

CORNELL PUMP LLC

MANURE PUMPS



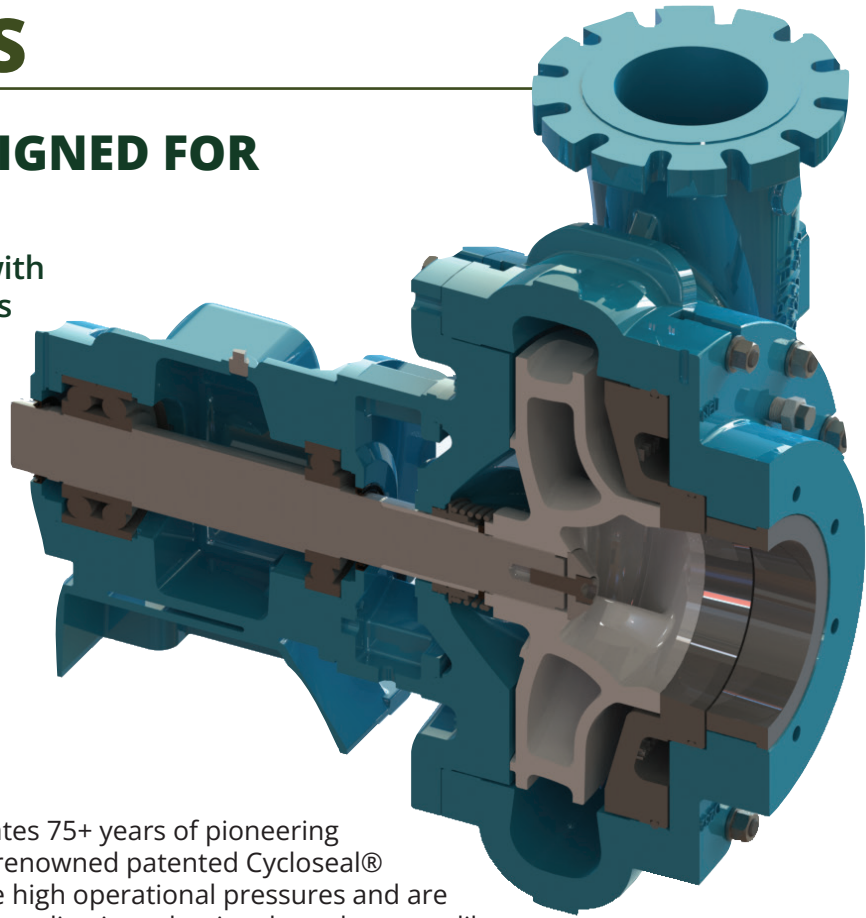
IMAGE COURTESY OF PUCK ENTERPRISES



MP SERIES PUMPS

MP SERIES PUMPS ARE DESIGNED FOR COARSE ABRASIVES

The MP Series excels in tough conditions with exceptional wear resistance, leading to less maintenance and prolonged lifespan.



MP SERIES	
DISCHARGE SIZE RANGE	3" - 8" / 7.62 cm - 20.32 cm
MAX SOLIDS HANDLING	UP TO 4" / 10.16 cm
MAX FLOW	9,000 GPM / 2044 m3/h
MAX HEAD	652' / 198.73 m
SEAL TYPE	MECHANICAL SEAL WITH CYCLOSEAL®
IMPELLER	ENCLOSED
CONFIGURATIONS	HORIZONTAL FRAME AND SAE MOUNT

The MP Pump Series from Cornell Pump LLC integrates 75+ years of pioneering pump manufacturing and design, coupled with the renowned patented Cycloseal® technology. These pumps are engineered to provide high operational pressures and are specifically tailored for use in rough, abrasive slurry applications that involve substances like sand, gravel, and manure.

- Run-Dry™ and Redi-Prime® compatible
- High-chrome white iron pump-end
- Thick cross-sections for abrasive wear and high operating pressures
- Front adjustable wear plate to regain lost efficiency while in service
- Replaceable shaft sleeves and wear plates at point of maximum wear
- Heavy duty construction for aggressive applications with 17-4PH Stainless shaft
- Hardness rating > 600 BHN provides better wear properties compared to standard cast or ductile iron
- Heavy duty bearing frame with double angular contact thrust bearing. Oil or grease lubricated

MATERIAL OPTIONS FOR SOLIDS HANDLING PUMPS

VARIOUS PROCESSES CAN BE MOST EFFECTIVELY ACCOMPLISHED WITH DIFFERENT METAL HARDNESSES. CORNELL IS PROUD TO PRODUCE OUR SOLIDS HANDLING PUMPS IN FOUR DIFFERENT HARDNESS LEVELS.

MATERIAL	STANDARD MATERIAL HARDNESS		HARDER	HARDEST
	Cast Iron	Ductile Iron	Heat Treated Ductile Iron	White Iron
TECHNICAL NAME(S)	ASTM A48, CL30	ASTM A536 100-70-03	ASTM A536 100-70-03 quench and temper	ASTM A532, CL III; Type A 25% CR level 1
CORNELL MATERIAL CODE	CI	CV	ZY	CAC
RELATIVE COST	\$	\$	\$\$	\$\$\$
HARDNESS	190-240 BHN	230-300 BHN	400-450 BHN	>600 BHN

Note: Wear resistance directly correlates to the hardness of the material.

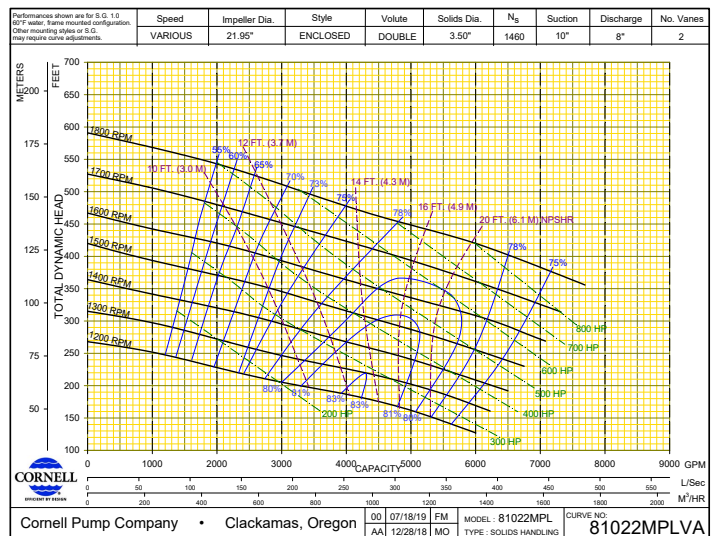
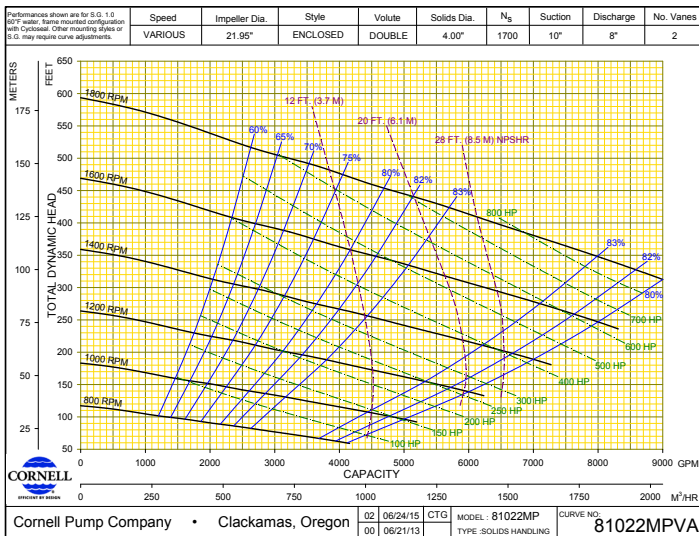
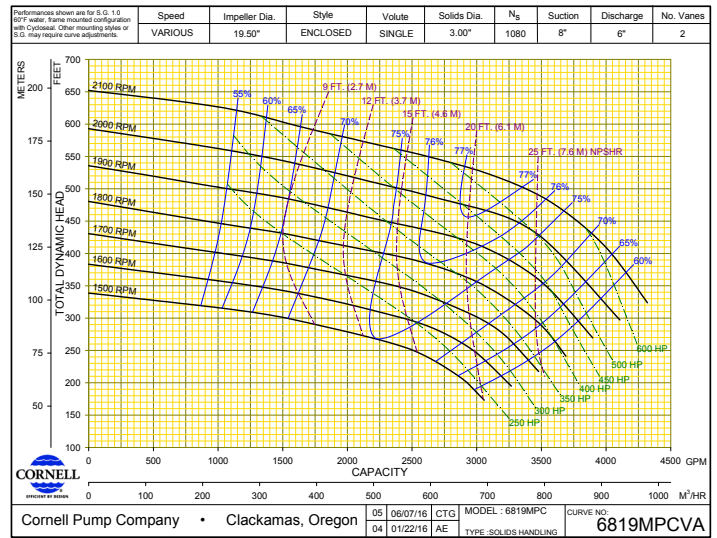
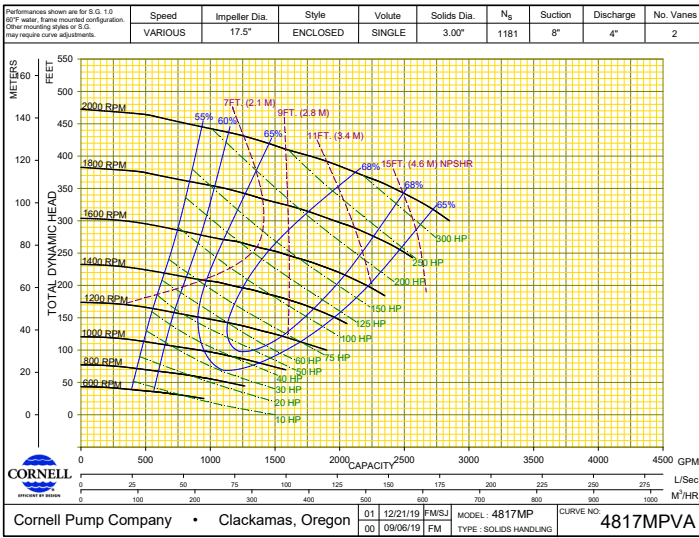
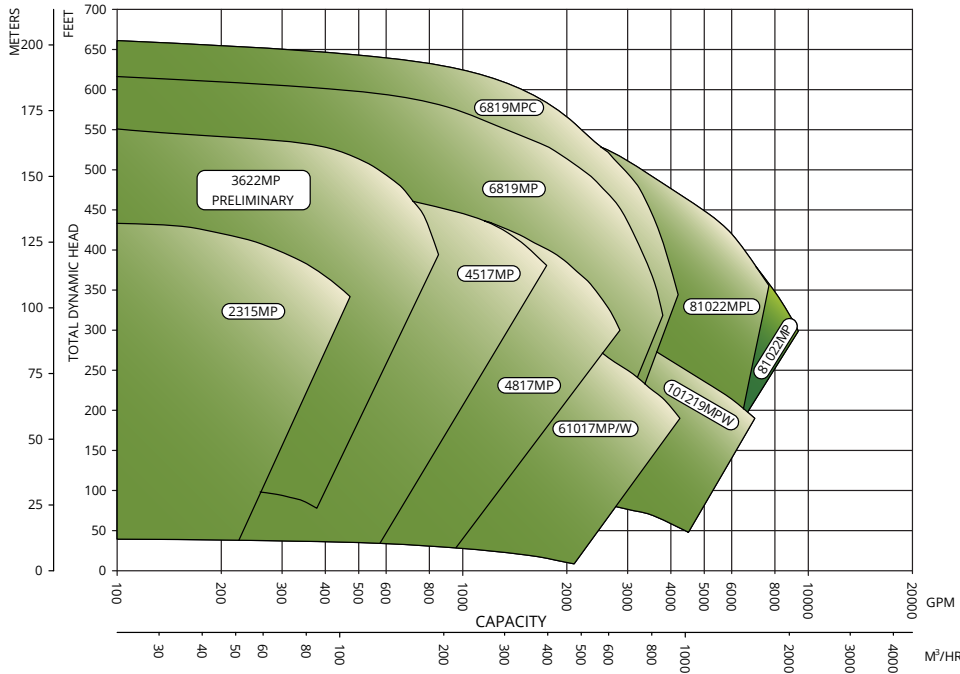
MP SERIES PUMPS

LONGER WEAR LIFE THAN STANDARD CORNELL SOLIDS HANDLING PUMPS

HANDLES SOLIDS UP TO 4"

WORKS IN TOUGH ENVIRONMENTS

CORNELL'S PATENTED CYCLOSEAL®, RUN-DRY®, AND REDI-PRIME® OPTIONS ARE AVAILABLE



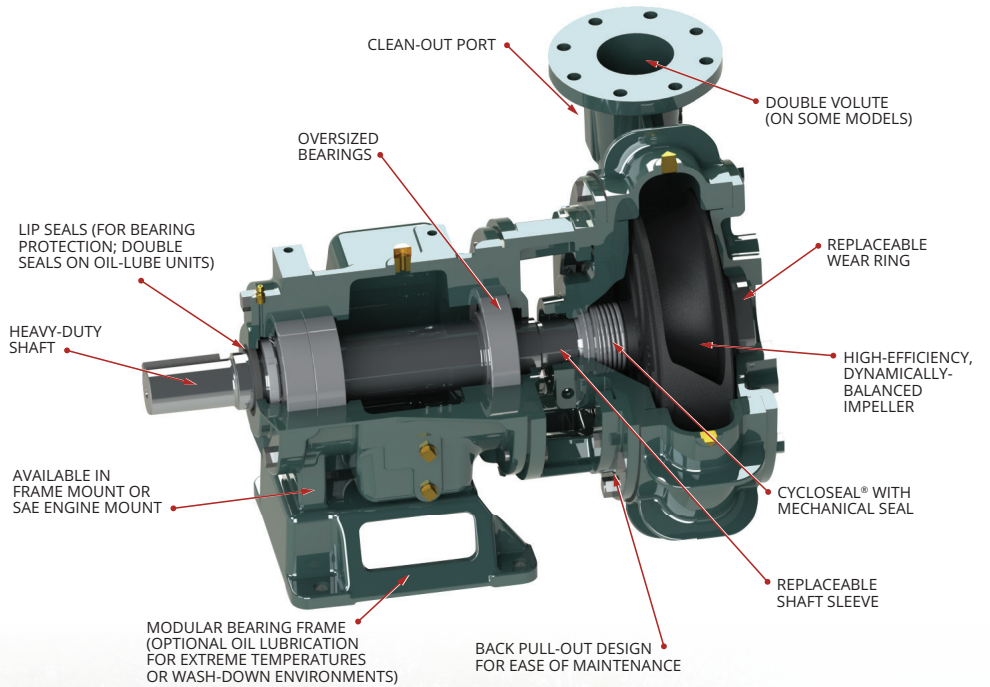
LEGACY MANURE PUMPS

MANURE SLURRY PUMPS FOR TRANSFER, INJECTION & IRRIGATION

Cornell offers over 60 models of heavy duty Solids Handling Pumps for the toughest slurry applications.

Cornell Manure Slurry pumps are fabricated from either iron or ductile iron, and feature hard-faced mechanical seals that significantly prolong their lifespan. Additionally, optional materials are available to cater to abrasive applications.

- Industry leading high hydraulic efficiency
- Cycloseal® design
- Rigid, heavy walled construction
- Back pullout design
- Large bearings and shaft
- Impeller backvanes reduce axial thrust
- Replaceable wear rings and shaft sleeves
- Dynamically balanced impeller
- Low maintenance, long life
- Low power costs
- No seal venting or flushing required
- Ease of maintenance
- Smooth operating
- Solids handling capability
- Run-Dry®, Redi-Prime®, and cutter blades available
- Versatile mounting configurations



LEGACY MANURE PUMPS

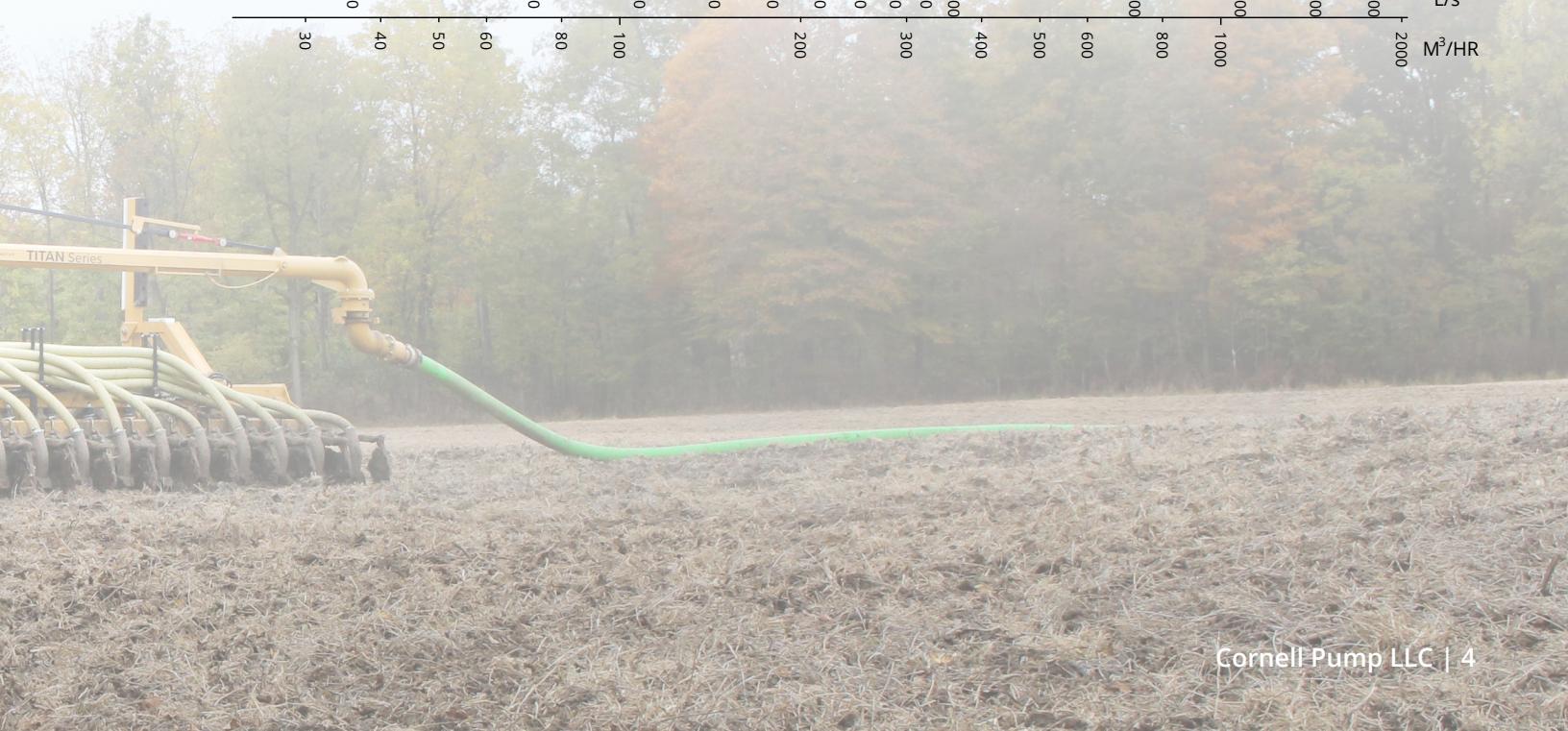
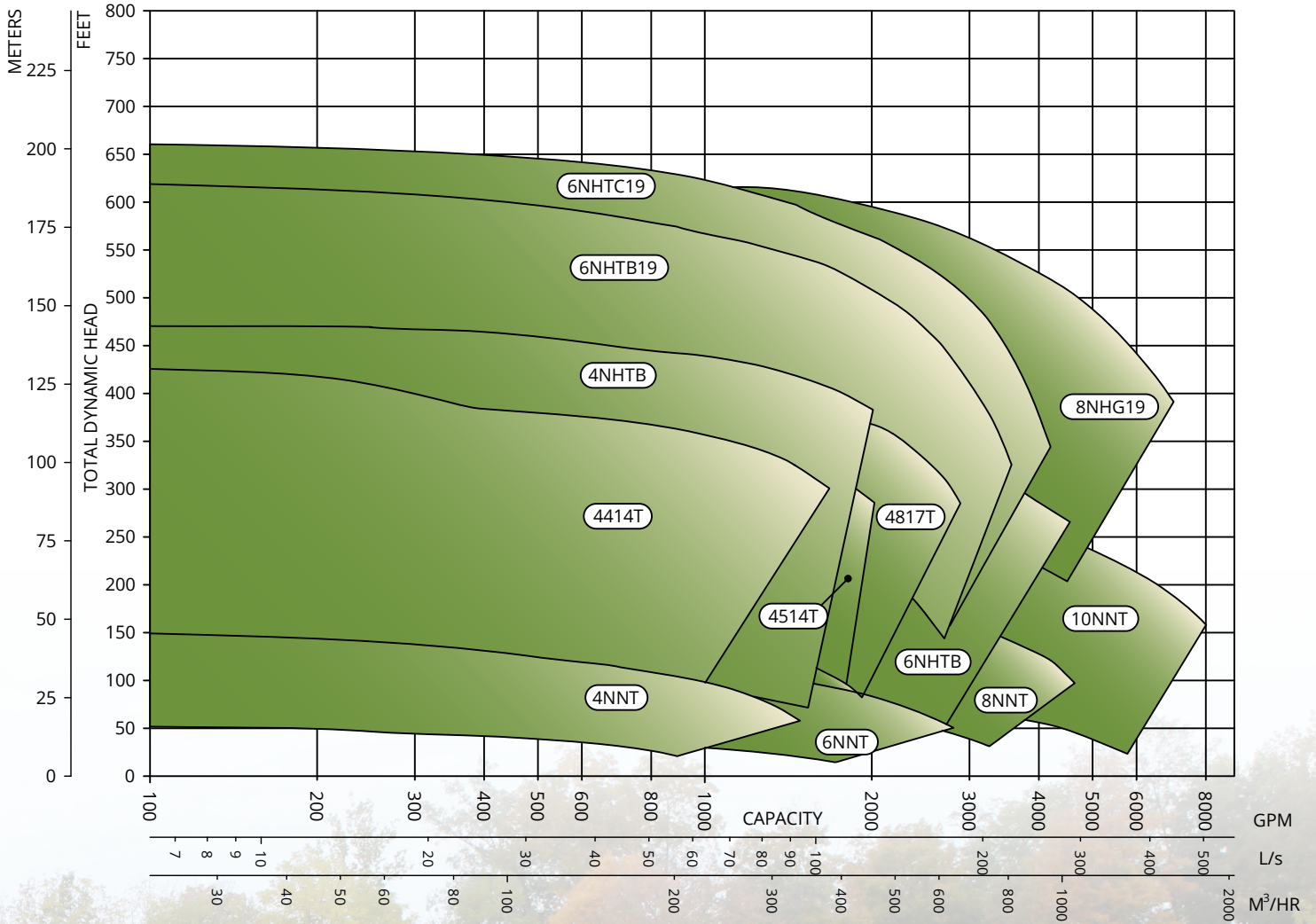
DISCHARGE SIZE RANGE	3" - 24" / 7.62 cm - 60.96 cm
MAX SOLIDS HANDLING	3" / 7.62 cm
MAX FLOW	36,000 GPM / 8176 m3/h
MAX HEAD	655' / 199 m
SEAL TYPE	MECHANICAL SEAL WITH CYCLOSEAL®
IMPELLER	ENCLOSED, SEMI-OPEN, OR DELTA
CONFIGURATIONS	VARIED

IMAGE COURTESY OF BAZOOKA FARMSTAR



LEGACY MANURE PUMPS

COMMON SOLIDS HANDLING PUMPS FOR MANURE APPLICATIONS



SOLIDS HANDLING IMPELLERS

ENCLOSED TWO, THREE, AND FOUR PORT

SPHERICAL SOLIDS

The pump efficiently handles large spherical solids while maintaining optimal head and efficiency.

- 2" or larger solids
- 3" to 10" discharge sizes
- Flows to 8,000 GPM and heads to 825'



THREE OR FOUR BLADED, SEMI-OPEN

SLURRY

The semi-open impeller's cutting action enables it to handle high head slurries more effectively.

- 1" or larger soft solids
- 2.5" to 10" discharge size

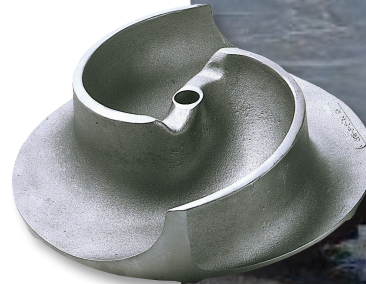


DELTA STYLE

STRAW AND STRINGY MATERIALS

Impeller vanes with trailing edges generate vortices that pass solids through the impeller without causing "hair pinning" or hang-ups of stringy materials, while larger solids are effectively broken down.

- For difficult solids
- 3" to 10" discharge size
- Flows to 5000 GPM and heads to 400'



BLADE CUTTER

CLOGGING MATERIALS

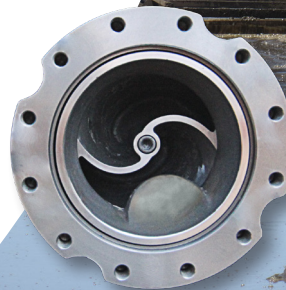
Clogs and stringy materials are effectively broken down before they reach the impeller, while maintaining high efficiencies, thanks to the rotating and stationary cutter blades situated at the suction end.

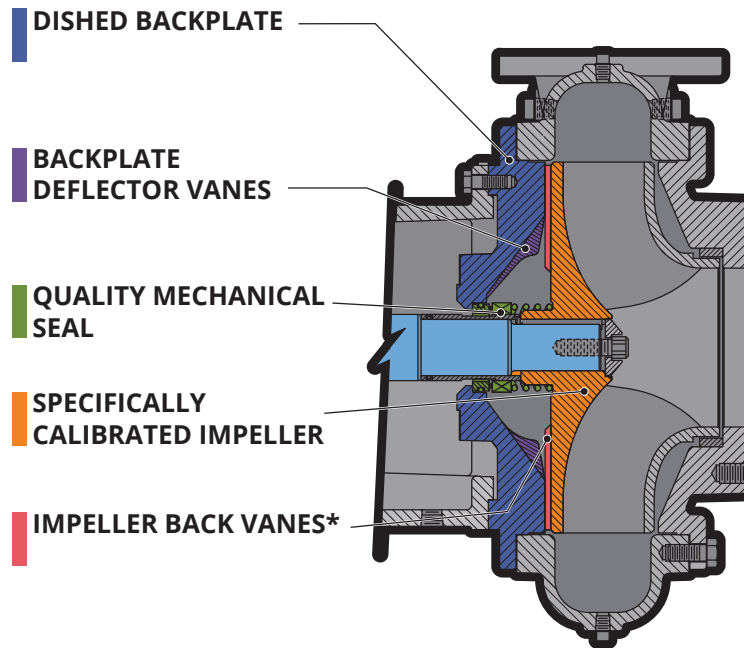
- Minimal energy consumption (4% or less)
- Hardened, adjustable cutter blades
- Minimize flow restrictions



The scythe-like edge at the juncture of the suction pipe and volute provides a robust solution for preventing clogs caused by stringy materials from accumulating in the impeller area.

- Limited energy consumption (around 8%)
- Hardened cutter blades
- Insignificant flow restrictions





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.

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.

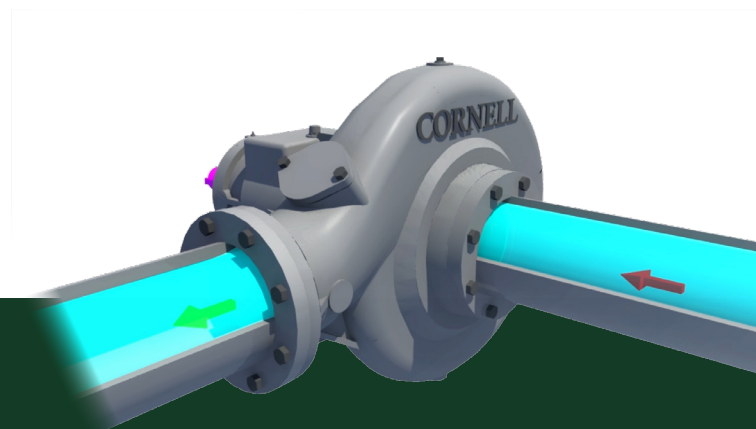
System Savings: Cycloseal system eliminates the need

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>

CYCLOSEAL®

CYCLOSEAL® SAVES YOU FROM FLUSHING AWAY MONEY!

Each pump requiring flush water can incur costs of \$10,000 or more. For instance, a typical 6" pump uses 3 gallons per minute, which may not seem like much. Still, it adds up to over 1.57 million gallons (5,950 m³) annually. Larger pumps, such as 8" and 16" to 24" pumps, consume even more water, with some using 8 million gallons (30,300 m³) or more per year. When you factor in multiple pumps per location and several locations per organization, the amount of water utilized just for seals is HUGE.

Cycloseal® provides an answer:

- REQUIRES NO FLUSH WATER.
- Uses inexpensive and easy-to-change type 1 or 2 mechanical seals.
- Saves \$10,000 or more in flush costs.
- More environmentally friendly alternative.
- Plus, Cornell Pumps are high-efficiency and can save your operation even more money.

COST OF A GALLON OF WATER	GALLONS PER MIN	GALLONS PER DAY	GALLONS PER YEAR	EXPENSE
\$0.02	1	1,440	525,600	\$10,512
\$0.02	3	4,320	1,576,800	\$31,536
\$0.02	5	7,200	2,628,000	\$52,560
\$0.02	8	11,520	4,204,800	\$84,096

The table illustrates the costs involved, with prices per gallon typically paid by a wastewater treatment plant for their water. In some locations, costs can be as high as \$0.22 per gallon, resulting in nearly \$35,000 in flush water for the same 6" pump.

CORNELL PULSE™



- CONNECTS VIA SHORT-RANGE WIRELESS
- PROVIDES A SNAPSHOT OF OPERATION
- RETROFITTABLE TO OLDER PUMPS OR OTHER EQUIPMENT

LEADING-EDGE REAL TIME SNAPSHOT

Cornell Pulse is a new method to measure pump temperature and vibration in real time. The device is a small wireless unit, less than 2" in circumference, which is mounted on the pump and takes readings when prompted by the user via a mobile app. The app can be used on phones and tablets and allows detection of common pump issues if the user keeps track of the

readings. Pulse is designed to withstand tough wash-down conditions and can last up to five years with daily measurements (more frequent measurements use battery power and reduce service life.)



DOWNLOAD THE PULSE APP

CORNELL CO-PILOT™



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

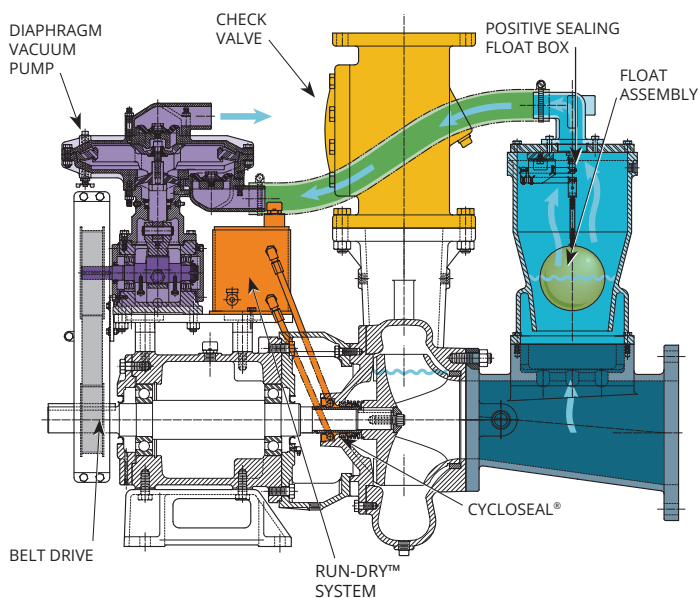
*Requires external sensors; contact Cornell for details.

PART OF RPM² ASSET
MANAGEMENT SYSTEM



REDI-PRIME & RUN-DRY

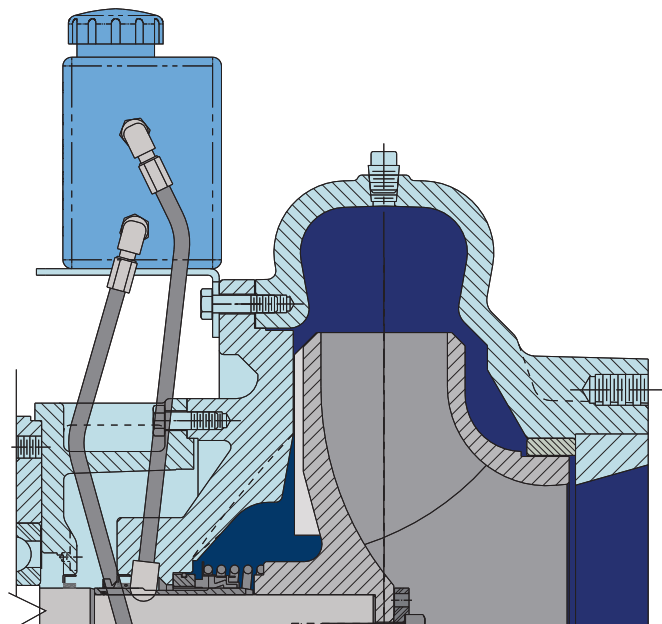
REDI-PRIME®



CORNELL REDI-PRIME PUMPS feature a patented, fully automated system for rapid priming or re-priming without constant monitoring. With oversized suctions, they deliver high flow, reduced friction losses, and enhanced suction lift, making them easily handle large solids and air/liquid mixtures. Redi-Prime also maintains premium hydraulic efficiency to reduce energy consumption. The priming system was designed with the environment in mind, utilizing a positive sealing float box and a diaphragm vacuum pump to prevent water carry-over and contamination. Most Cornell pumps can be easily fitted with the Redi-Prime system..

- Fully automatic priming and repriming
- Handles air/liquid mixtures with ease
- Rapidly primes and re-primed completely unattended
- Environmentally safe priming system designed to prevent product leakage
- Premium hydraulic efficiency for reduced energy consumption

RUN-DRY™



CORNELL'S RUN-DRY SYSTEM is a solution for applications where the pump might run dry. It includes an auxiliary gland and oil reservoir that lubricate the seal faces and prevent dry running during priming, re-priming, or standby operation. The system features continuous circulation and cooling of the lubricant and seal faces, and allows the pump to run dry for hours without damaging the mechanical seal.

- Run dry for hours without damaging the seal
- Cools and lubricates seal faces
- Ideal for applications that could operate in a dry condition
- Useable in conjunction with Cycloseal® and Redi-Prime®

61017MP with Run-Dry™

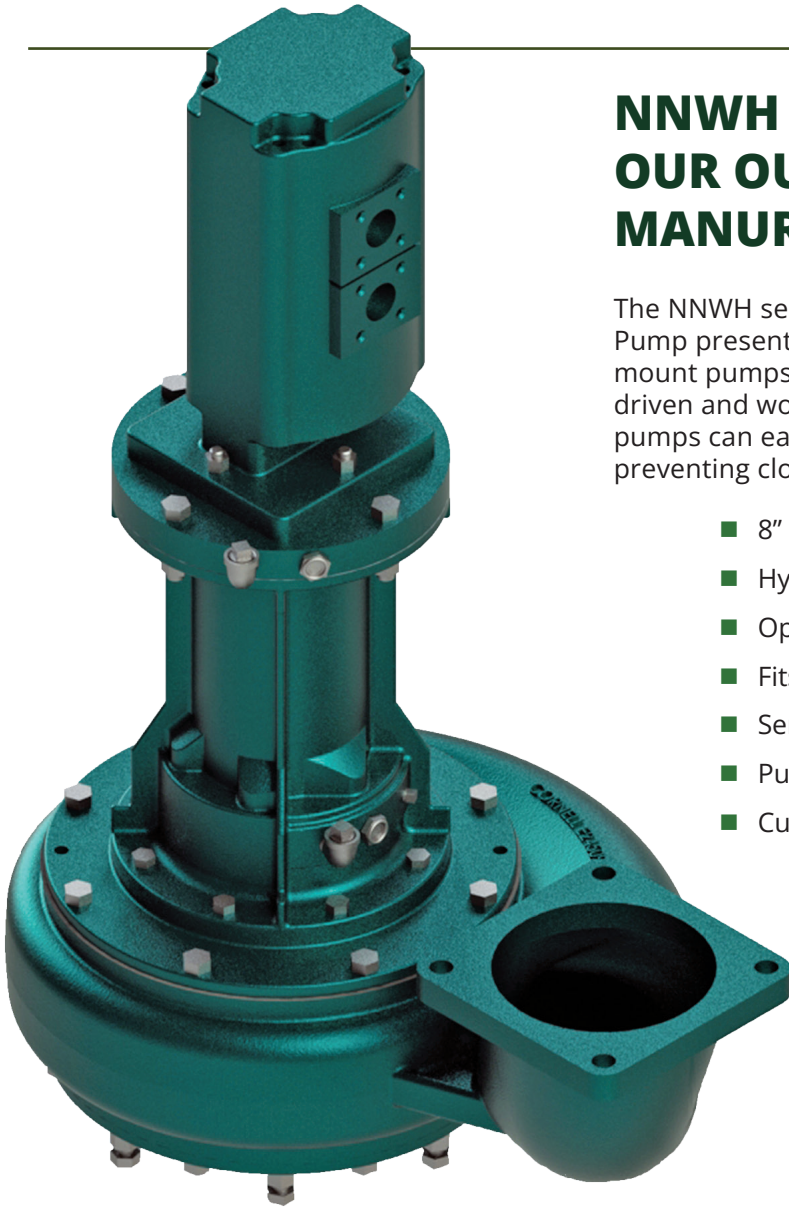


SLURRY PUMPS

NNWH PUMP SERIES ADDS TO OUR OUTSTANDING LINE OF MANURE SLURRY PUMPS

The NNWH series adds to our manure slurry pump line, Cornell Pump presents the 8NNWH and 10NNWH submersible frame mount pumps. These pumps are designed to be hydraulically-driven and work in lagoons or pits. With the cutter plate, the NNWH pumps can easily handle tight spaces and rip up stringy material, preventing clogging.

- 8" and 10" discharge sizes
- Hydraulically-driven
- Operated in lagoon or pit
- Fits in tight spaces
- Semi-open style impeller
- Pump resists plugging
- Cutter plate rips up stringy material



STX/H/L SELF-PRIMING PUMPS

Our STX/STL/STH Series self-priming pumps are renowned for having industry-leading efficiency. Along with our patented Cycloseal® back plate technology, these pumps are strong, long-lasting, and eco-friendly.

- Heavy-duty bearings with separate oil reserve
- Back-pull out design for ease of maintenance
- Self-cleaning adjustable wear plate
- Patented Cornell Cycloseal® sealing system
- Easily-replaceable suction check valve
- Shimless impellers
- Ductile iron construction





AGRICULTURE



FOOD PROCESS



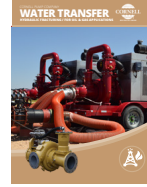
INDUSTRIAL



MINING



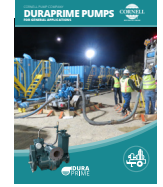
MUNICIPAL



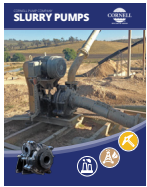
WATER
TRANSFER



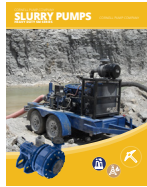
REFRIGERATION



CONSTRUCTION



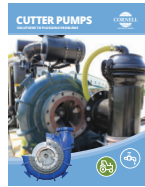
SLURRY



SLURRY SM



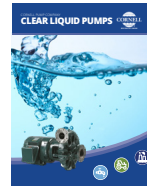
MANURE



CUTTERS



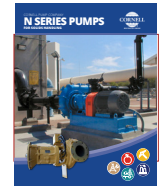
SELF PRIMING



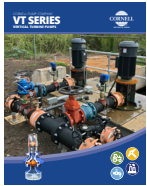
CLEAR LIQUIDS



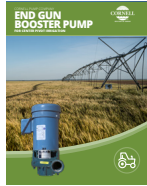
MX SERIES



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.

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