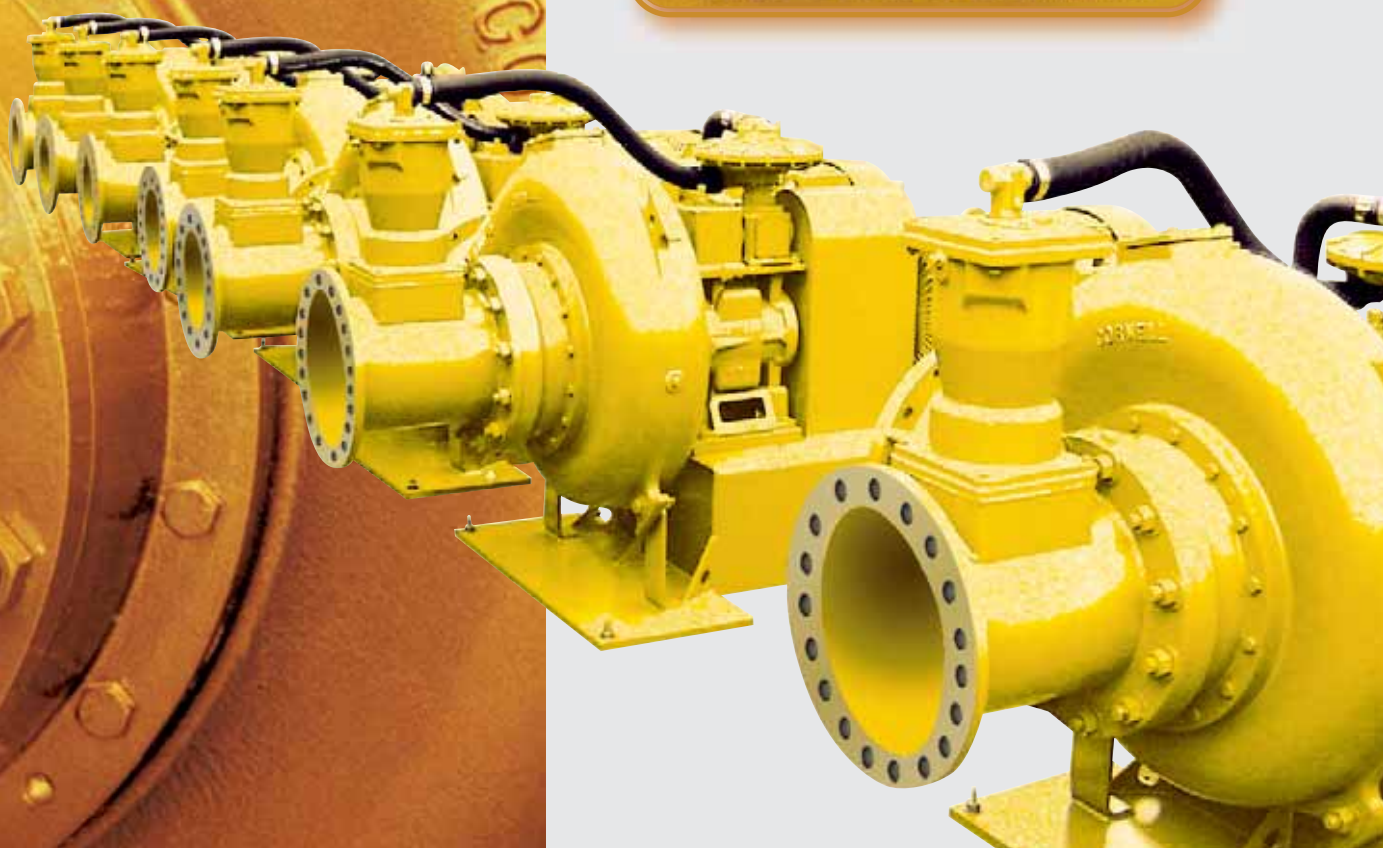
# CORNELL PUMP COMPANY

## Mining Pumps

CORNELL®

*The Gold Standard*

## SETTING THE STANDARD

Cornell's Redi-Prime® pumps are designed and engineered for the most rugged and demanding industries; construction, industrial, rental and municipal.
With over 50 years of proven experience and reliability Cornell Pump Company has established the highest industry standards for premium quality and rugged performance.

Our pumps are backed by an industry-leading two-year warranty.

Cornell Pump Company is setting the standard for the construction pumping industry. Flow characteristics that were 'good enough' before are no longer acceptable. Cornell's innovative engineering and forward thinking have made our pumps capable of producing up to 400 percent more flow than the construction industry standards.

Cornell's hydraulic efficiencies reach well into the 80 percent range, significantly more than competitive products. In the new millennium there is a need for more efficient pumps. It will no longer be acceptable to settle for a pump operating at 50% - 60% efficiency. Cornell Pump Company has made these pumps obsolete.

Cornell's priming system was specifically designed with the environment in mind. By using a positive sealing float box and a diaphragm vacuum pump, there is absolutely no water carry-over to contaminate the environment. Cornell pumps are designed for the new millennium.

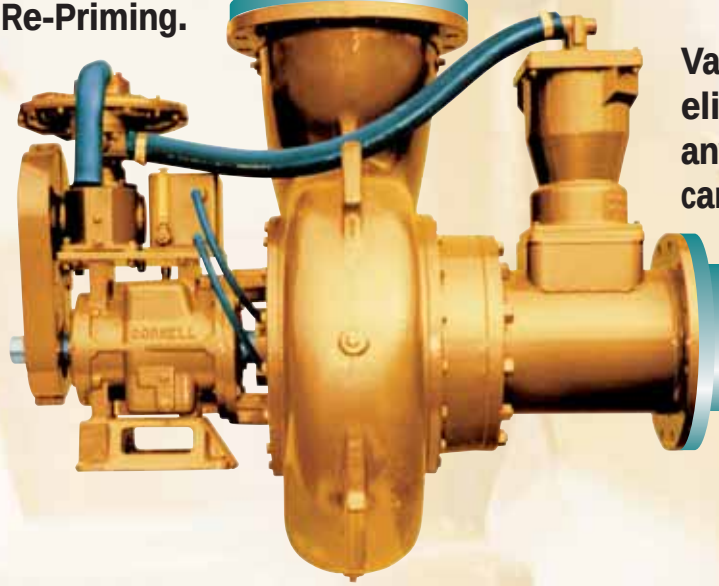

## BENEFITS

- **Fully automatic self-priming, dry-prime pump.**
- **Handles air/liquid mixtures with ease.**
- **Rapidly primes and re-primes completely unattended.**
- **Environmentally safe priming system designed to prevent product leakage.**
- **Patented Cycloseal® and Run-Dry™ options.**
- **Handles large sized solids.**
- **High suction lift capability up to 28 feet.**
- **Premium hydraulic efficiency for reduced energy consumption.**


# REDI-PRIME® PUMPS
## FOR PIT DEWATERING

**Automatic Priming and Re-Priming.**

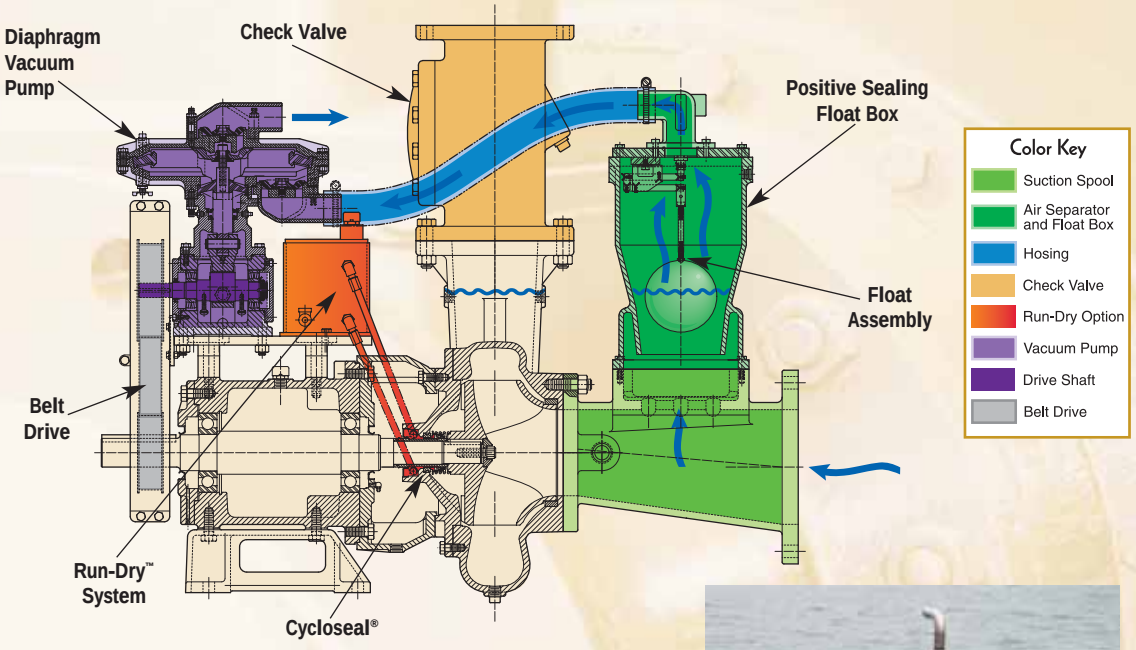
**Heads of up to 470 feet are possible.**



**Valve eliminates any liquid carry over.**

**Suction Lifts of 28 feet are achievable.**

## REDI-PRIME® COMPONENTS



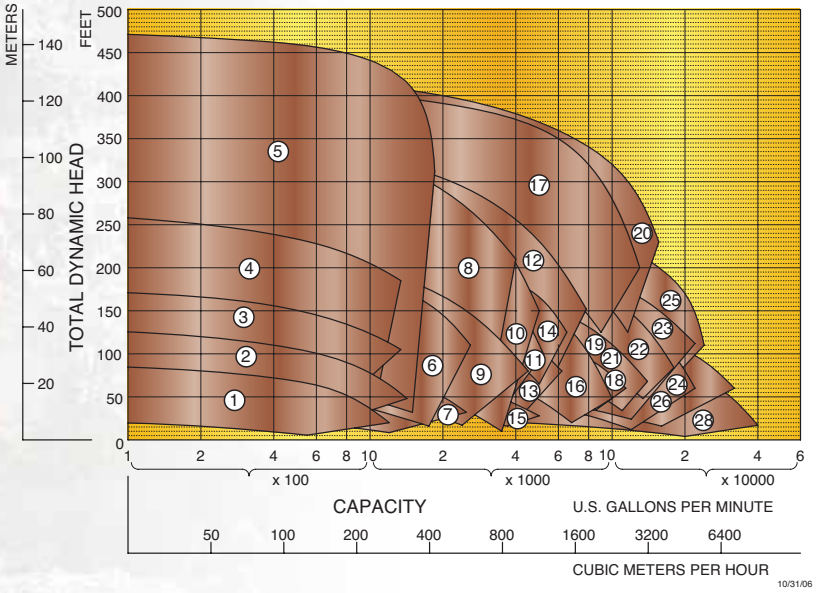

# REDI-PRIME® PUMPS

## EFFICIENCY

In addition to a dependable pump system, today's systems must also be efficient and economical. As energy costs rise, conservation and efficiency of operation become critical issues for customers as they strive to minimize expenses associated with energy consumption. Cornell pumps maintain superb hydraulic operating efficiencies.

The bottom line – Cornell pumps cost less to operate.

### Solids Handling, Enclosed Impeller, Redi-Prime® Curves




**Redi-Prime® Model**

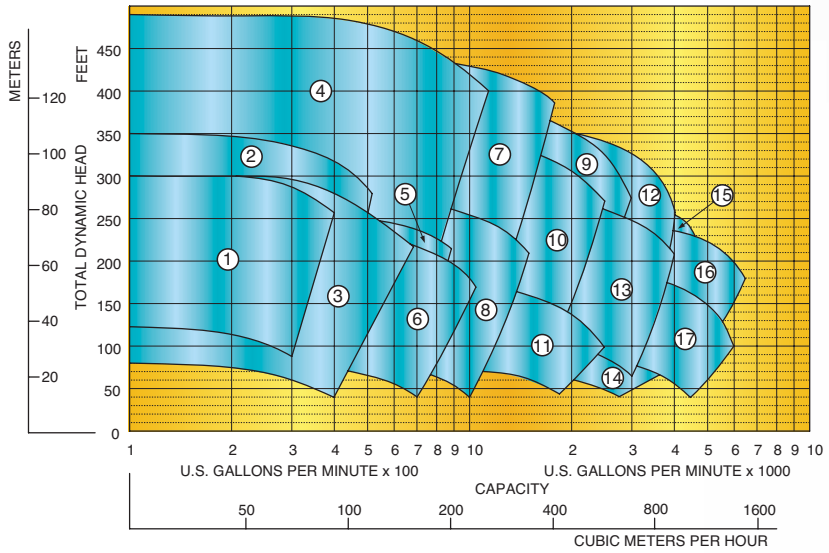
1. 4NNTL
2. 4NNT
3. 4NHTA
4. 4414T
5. 4NHTB
6. 6NHTA
7. 6NNT
8. 6NHTB
9. 8NNT
10. 8NHTA
11. 8NHTH
12. 10NNT
13. 10NHTB
14. 10NHTA
15. 12NHTL
16. 12NNF
17. 12NHG28
18. 14NHG
19. 14NHGH
20. 14NHG28
21. 16NHGH
22. 16NHG22
23. 18NHG
24. 18NHFL
25. 18NHF34
26. 20NHFL
27. 24NNG
28. 30NNT

### Pump Options: Solids Handling Redi-Prime® Pumps

| Model | Disch. Size | Max. Cap. | Max. Solids | Max. Head | Max. Suction Lift | RPM |
|---|---|---|---|---|---|---|
| 4NNTL | 4" | 1,450 gpm | 3" | 175' | 25' | 2,500 |
| 4NNT | 4" | 1,400 gpm | 3" | 150' | 25' | 2,000 |
| 4NHTA | 4" | 1,400 gpm | 3" | 225' | 25' | 2,100 |
| 4414T | 4" | 1,400 gpm | 3" | 350' | 25' | 2,000 |
| 4NHTB | 4" | 1,600 gpm | 3" | 425' | 25' | 2,000 |
| 6NHTA | 6" | 2,700 gpm | 3" | 280' | 25' | 2,000 |
| 6NNT | 6" | 2,550 gpm | 3" | 150' | 25' | 2,100 |
| 6NHTB | 6" | 4,250 gpm | 3.38" | 350' | 25' | 1,800 |
| 8NNT | 8" | 4,500 gpm | 3.38" | 255' | 25' | 1,900 |
| 8NHTA | 8" | 5,000 gpm | 3.38" | 350' | 25' | 1,800 |
| 8NHTH | 8" | 6,250 gpm | 4" | 255' | 25' | 1,200 |
| 10NNT | 10" | 6,300 gpm | 4" | 340' | 25' | 1,800 |
| 10NHTB | 10" | 8,000 gpm | 4.75" | 195' | 25' | 1,200 |
| 10NHTA | 10" | 6,400 gpm | 4.25" | 245' | 25' | 1,200 |
| 12NHTL | 12" | 5,200 gpm | 4.25" | 140' | 25' | 1,500 |
| 12NNF | 12" | 8,500 gpm | 3" | 195' | 25' | 1,800 |
| 12NHG28 | 12" | 12,000 gpm | 3.2" | 410' | 25' | 1,200 |
| 14NHG | 14" | 12,000 gpm | 4" | 210' | 25' | 1,500 |
| 14NHGH | 14" | 13,500 gpm | 4.25" | 145' | 25' | 1,200 |
| 14NHG28 | 14" | 15,000 gpm | 4.25" | 430' | 25' | 1,200 |
| 16NHGH | 16" | 13,500 gpm | 4.25" | 175' | 25' | 1,200 |
| 16NHG22 | 16" | 16,500 gpm | 4.5" | 265' | 25' | 1,200 |
| 18NHG | 18" | 22,000 gpm | 5" | 220' | 25' | 900 |
| 18NHFL | 18" | 26,000 gpm | 5" | 190' | 25' | 890 |
| 18NHF34 | 18" | 22,000 gpm | 4.5" | 320' | 25' | 900 |
| 20NHFL | 20" | 18,000 gpm | 5" | 116' | 25' | 720 |
| 24NNG | 24" | 32,000 gpm | 5.25" | 135' | 25' | 750 |
| 30NNT | 30" | 38,000 gpm | 10.2" | 110' | 25' | 585 |

# FOR PIT DEWATERING

## Clear Liquid Redi-Prime® Curves

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**Redi-Prime® Model**

1. 2.5RB
2. 2.5H
3. 2.5YH
4. 3HC/HA
5. 3RB
6. 3YL/YH
7. 4HC
8. 4RB
9. 5HH
10. 5RB
11. 5YBH
12. 6HH
13. 6RB
14. 6YB
15. 8H
16. 10RB
17. 10YB

## Pump Options: Clear Liquid Redi-Prime® Pumps

| Model | Disch. Size | Max. Cap. | Max. Solids | Max. Head | Max. Suction Lift | RPM |
|---|---|---|---|---|---|---|
| 2.5RB | 2.5" | 400 gpm | .38" | 300' | 25' | 2,200 |
| 2.5H | 2.5" | 500 gpm | .41" | 360' | 25' | 2,200 |
| 2.5YH | 2.5" | 750 gpm | .41" | 310' | 28' | 3,000 |
| 3HC/HA | 3" | 1,050 gpm | .5" | 490' | 28' | 2,400 |
| 3RB | 3" | 800 gpm | .5" | 280' | 28' | 2,200 |
| 3YL/YH | 3" | 1,100 gpm | .5" | 245' | 28' | 2,700 |
| 4HC | 4" | 1,650 gpm | .62" | 470' | 28' | 2,150 |
| 4RB | 4" | 1,550 gpm | .84" | 270' | 25' | 2,200 |
| 5HH | 5" | 2,900 gpm | .75" | 375' | 25' | 2,000 |
| 5RB | 5" | 2,350 gpm | 1" | 360' | 25' | 2,400 |
| 5YBH | 5" | 2,500 gpm | .75" | 200' | 25' | 2,400 |
| 6HH | 6" | 4,000 gpm | 1.22" | 365' | 25' | 2,000 |
| 6RB | 6" | 4,250 gpm | 1.31" | 300' | 28' | 2,200 |
| 6YB | 6" | 4,100 gpm | .75" | 235' | 25' | 2,400 |
| 8H | 8" | 5,400 gpm | 1.25" | 305' | 25' | 2,000 |
| 10RB | 10" | 7,000 gpm | 1.25" | 300' | 25' | 2,200 |
| 10YB | 10" | 6,500 gpm | 1.38" | 200' | 25' | 2,300 |

## VERSATILITY

Cornell offers the widest range of pump sizes and capacities in the industry. No matter what your requirements are, Cornell can provide you with a package that will fit your needs — Clear Liquid pumps up to 10", Solids Handling pumps up to 30" and Slurry pumps up to 4".

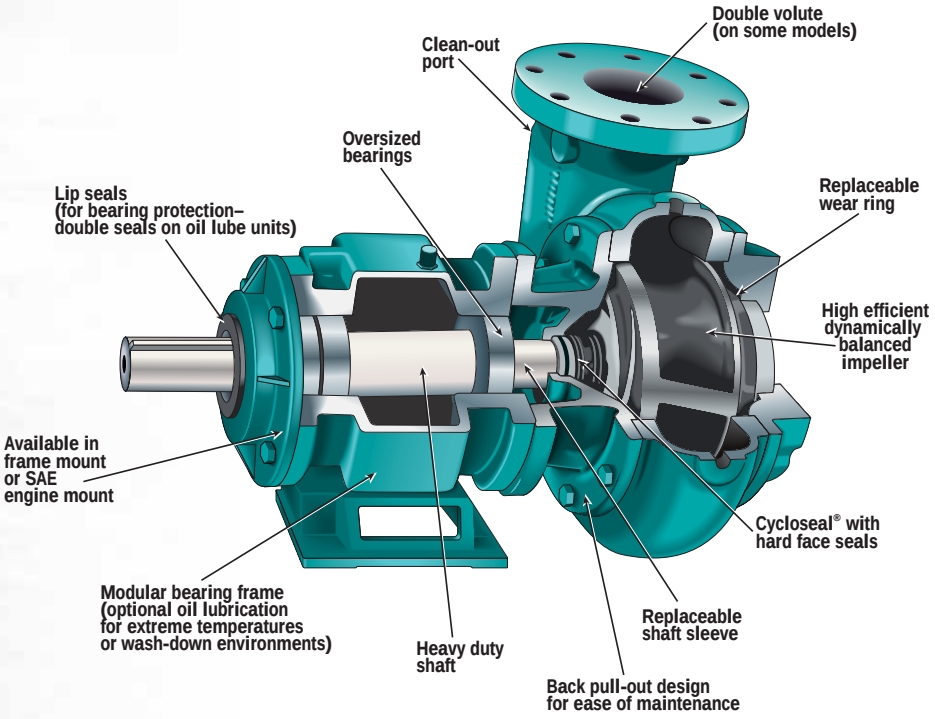
## Non Clog Pumps

Cornell's two- and three-port enclosed impellers are designed to handle large solids and maintain exceptional hydraulic efficiencies. Cornell's Delta™ style impeller is specifically designed for handling stringy materials and heavy sludge for low- to medium-head applications. The three- or four-vane, semi-open impeller generates a cutting action designed to handle concentrated slurries for high head applications.

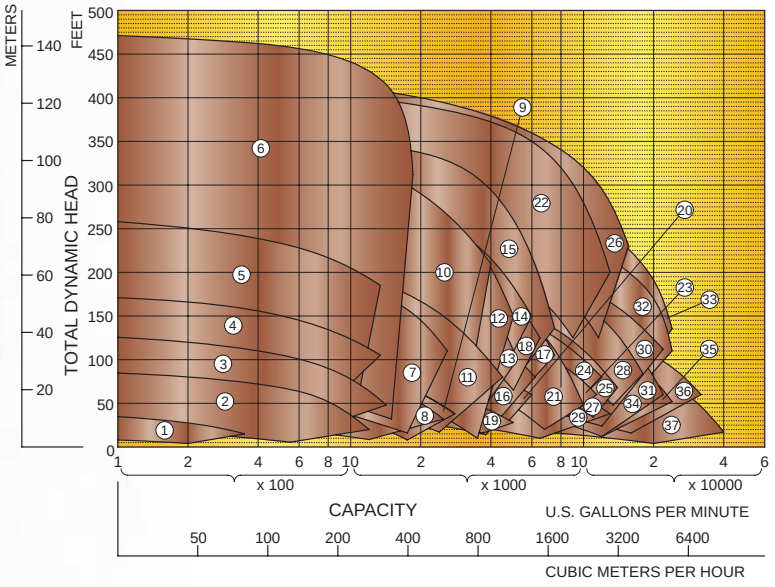
## SOLIDS HANDLING PUMPS

Cornell's Solids Handling pumps are used for waste water, sludge, stringy material, de-watering, abrasive transfer, canneries, construction, dredging, lumber mills, slush ice, reclamation plants and foundry or mill slag.

Available with Delta™, Semi-open, Enclosed, or Chopper impellers, Cornell pumps are offered in various discharge sizes ranging from 3 to 30 inches, with heads to 470 feet TDH, and flow rates of up to 38,000 GPM.




## Solids Handling Pumps, Enclosed Impeller Curves



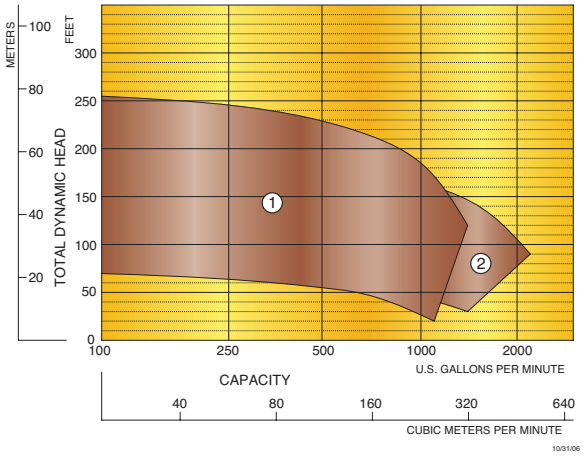

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 3NLT | 8. | 6NNT | 15. | 8NHGA | 22. | 12NHG28 | 28. | 16NHG22 | 33. | 18NHG34 |
| 2. | 4NNTL | 9. | 6NHT/TH | 16. | 10NHTB | 23. | 14NHG | 29. | 16NHG32 | 34. | 20NHFL |
| 3. | 4NNT | 10. | 6NHTB | 17. | 10NHTBH | 24. | 14NHGA | 30. | 18NHG | 35. | 20NHF |
| 4. | 4NHTA | 11. | 8NNT | 18. | 10NHTA | 25. | 14NHGH | 31. | 18NHFL | 36. | 24NNG |
| 5. | 4414T | 12. | 8NHTA | 19. | 12NHTL | 26. | 14NHG28 | 32. | 18NHF34 | 37. | 30NNT |
| 6. | 4NHTB | 13. | 8NHTH | 20. | 12NHTM | 27. | 16NHGH | | | | |
| 7. | 6NHTA | 14. | 8NHTR | 21. | 12NNF | | | | | | |

# TRANSFER

## Chopper Pumps

The Cornell Chopper pump is ideally suited for chopping solids. It is constructed of ASTM A536, grade 65-45-12 ductile iron and uses our patented Cycloseal® design (patent #5489187). The cutter bar is of T1 tool steel, heat treated to a minimum 60 Rockwell C hardness. The impeller is of AISI 8630 cast steel, heat treated to a minimum 60 Rockwell C hardness. The shaft is AISI 4142 and the shaft sleeve is 416 stainless steel. Back-to-back angular contact ball thrust bearings and single ball radial bearings make for smooth operation. The Chopper pump is fitted with a John Crane type 2 tungsten carbide mechanical seal. TDH ranges from 30-200 with flows ranging from 0-1500 GPM. An optional oil lubrication system with reservoir is available.

### Chopper Curves



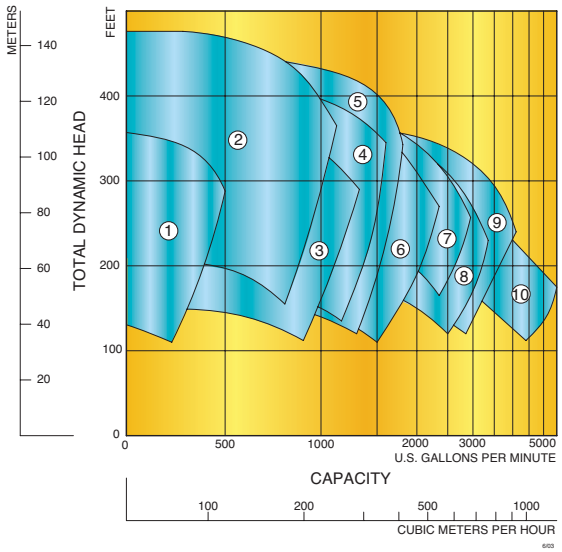

1. 4NC
2. 6NC

## SUBMERSIBLES

Cornell uses the same high efficiency pump-ends for our submersibles that have been proven time and again in standard municipal applications. Coupled with the highest quality motors, Cornell's submersible product line provides the best possible value.

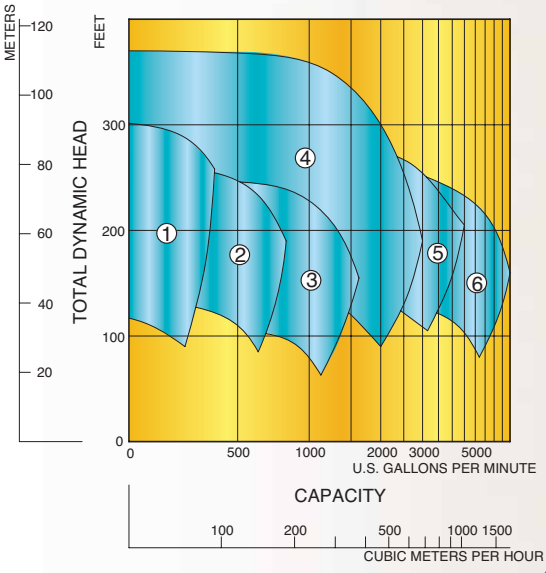
## HIGH HEAD WATER PUMPS

### Clear Liquid Pumps
### H Series Curves, Various RPM




1. 2.5H
2. 3HA/HC
3. 4HS
4. 4HH
5. 4HC
6. 5H
7. 5HH
8. 6H
9. 6HH
10. 8H

### Clear Liquid Pumps
### R Series Curves, Various RPM




1. 2.5RB
2. 3RB
3. 4RB
4. 5RB
5. 6RB
6. 10RB

# LIGHT SLURRY

## COMMITMENT TO EXCELLENCE

Cornell Pump Company proudly maintains its ISO 9001:2000 certification which validates that Cornell is in compliance with all necessary processes to meet customer requirements.

The elements associated with ISO 9001:2000 certification include such areas as contract review, design and development, production, purchasing, quality control and service.

## Delta™ Style Pumps

Cornell's Delta™ impeller vanes extend continuously across the pump's suction entrance and their trailing edges reduce low pressure areas. Two distinct vortices are created which pass solids through the impeller. The absence of sharp impeller edges prevents "hair pinning" or hang-up of stringy materials. Larger solids are effectively broken up by the comminuting action of the impeller vanes. Many of our enclosed impeller type pumps can be retrofitted with Delta™ style impellers.

**DELTA™**

**Pump Sizes:**
3" x 3", 4" x 4", 6" x 6", 8" x 8", and 10" x 10"

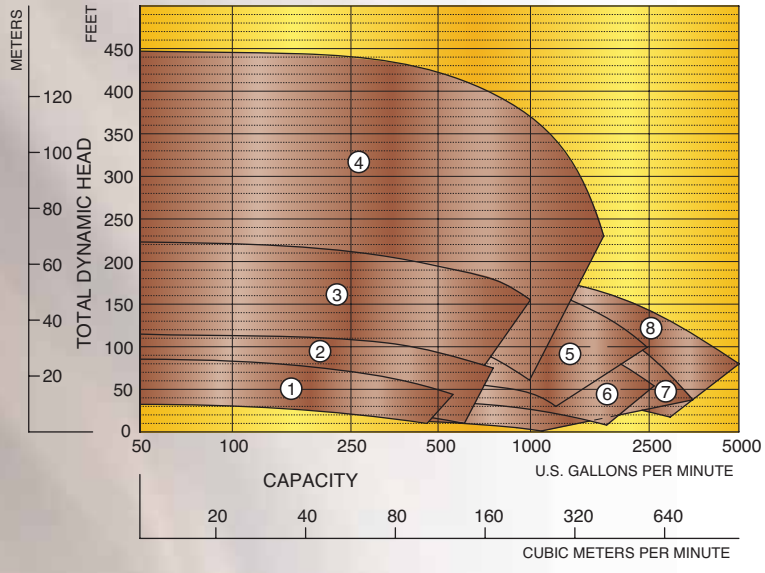
**Capacities:**
50 GPM to 5,000 GPM

**Heads:**
10 Feet to 450 Feet

## Pump Options: Delta™ Impeller Pumps

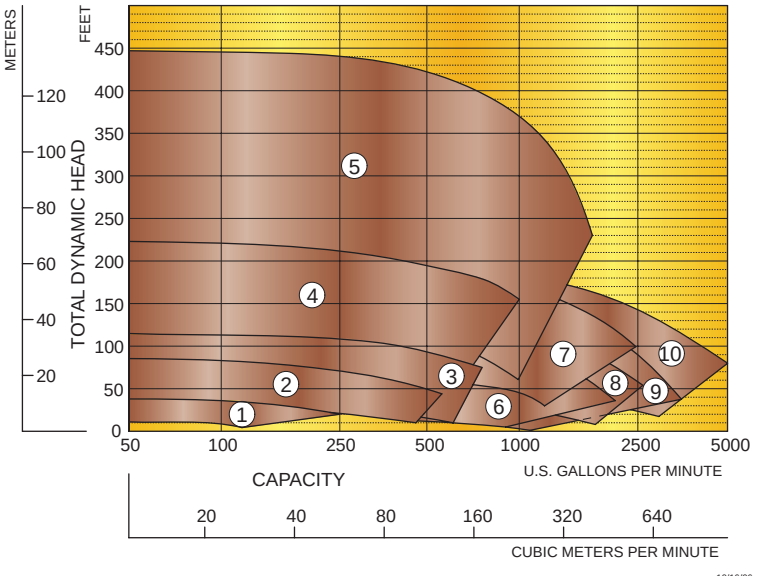
| Disch. Model | Max. Size | Max. Cap. | Max. Solids | Max. Head | Max. Suction Lift | RPM |
|---|---|---|---|---|---|---|
| 4NLDL | 4" | 525 gpm | 3" | 85' | 25' | 2,000 |
| 4NNDH | 4" | 750 gpm | 3" | 115' | 25' | 1,800 |
| 4NHDH | 4" | 1,050 gpm | 3" | 225' | 25' | 1,800 |
| 4NHM | 4" | 1,500 gpm | 2.5" | 380' | 25' | 2,200 |
| 6NHM | 6" | 2,500 gpm | 3" | 320' | 25' | 2,200 |
| 6NNDH | 6" | 2,400 gpm | 3" | 140' | 25' | 2,200 |
| 8NNDH | 8" | 1,625 gpm | 3.38" | 50' | 25' | 1,200 |
| 10NNDH | 10" | 5,000 gpm | 3.5" | 190' | 25' | 1,500 |

## Redi-Prime® Pumps, Delta™ Impeller Curves




1. 4NLDL
2. 4NNDH
3. 4NHDH
4. 4NHM
5. 6NHM
6. 6NNDH
7. 8NNDH
8. 10NNDH

## Solids Handling Pumps, Delta™ Impeller Curves




1. 3NLA
2. 4NLDL
3. 4NNDH
4. 4NHDH
5. 4NHM
6. 6NHDH
7. 6NHM
8. 6NNDH
9. 8NNDH
10. 10NNDH

# EFFICIENCY, SAFETY, LONGEVITY

## 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 60 clear liquid and non-clog pumps*** that meet or exceed optimum efficiency standards for centrifugal pumps.

**Select High Efficiency Pump Models:**

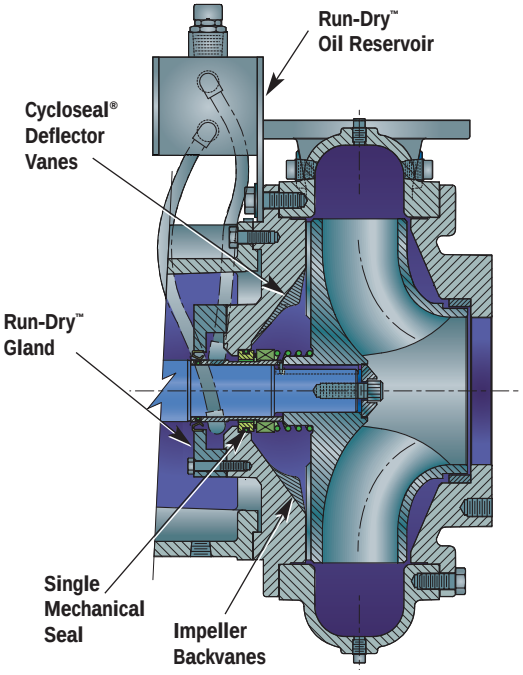
**8H – *88% efficient***
**6RB – *89% efficient***
**5RB – *86% efficient***
**4RB – *85% efficient***

## Quality Materials

Cornell's industrial process and wastewater pumps are constructed entirely of iron. Standard features include: dual-plane and dynamically balanced impellers, heavy-duty shafts with replaceable shaft sleeves, and replaceable wear ring(s). Other materials of construction are available as an option for abrasive or caustic applications.


## CYCLOSEAL® & RUN-DRY™

Cornell's patented Cycloseal® design, with its unique deflector vanes, works with the impeller back vanes to create a cyclo-action. This action removes solids and abrasive materials from the seal area while purging air and gas pockets, extending seal life and eliminating any need for venting or water flushing.




### Cycloseal® Benefits

**Extended Seal Life:** Cornell's Cycloseal® design has proven itself in the toughest applications from manure slurry to starch recovery to sewer bypass and mining applications – in some cases more than tripling the normally expected mechanical seal life.

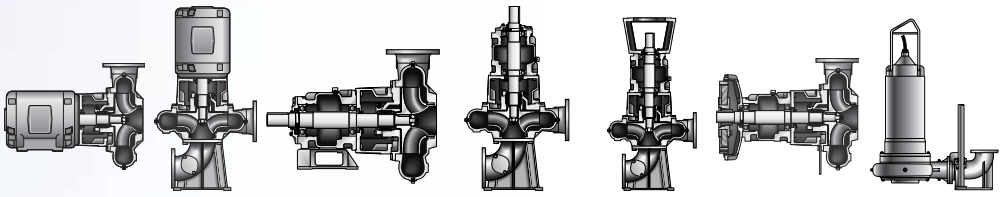

### Run-Dry™ Capability

Cornell's Run-Dry™ system consists of an auxiliary gland which provides containment for an application-specific lubricant present at the inside diameter of the mechanical seal faces. This lubricant prevents dry running of the seal faces while priming, re-priming, and on standby. The Run-Dry™ gland is connected to a lubricant reservoir via inlet and outlet lines which are oriented tangentially to the pump shaft so that shaft rotation provides circulation and subsequent cooling of the lubricant.

# Available Options

## Mounting Configurations

Cornell's Modular Frame design allows for easy adaptability. Choose a pump, then pick the mounting configuration best suited to your application. Right hand and left hand rotation along with tangential or centerline discharges are available for most pumps.



**CC** Horizontal Close-Coupled

**VM** Vertical Close-Coupled

**F** Horizontal Frame Mounted

**VF** Vertical Frame Mounted

**VC** Vertical Coupled

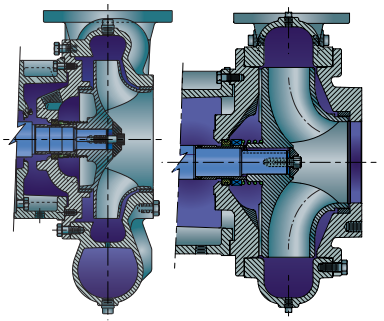
**EM** Engine Mounted (SAE Size)

**SUB** Submersible (available on select models)

## Cycloseal®

Cornell's Cycloseal® (U.S. Patent #5,489,187) lasts many times longer than a typical mechanical seal. This saves on the installed cost of a seal water system and its on-going maintenance not to mention the savings of thousands of gallons of seal water over the life of the pump. No seal flush, no vent line and no lubrication are required for this seal. The Cycloseal® design is available in all waste handling pumps and many clear liquid pumps.

CYCLOSEAL®

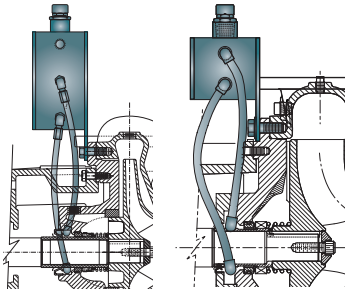


Clear Liquid — Non-Clog

## Run-Dry™ Option

A great feature for protecting your mechanical seal. Allows your pump to run dry without the use of expensive water systems and without mechanical seal damage.

RUNDRY™



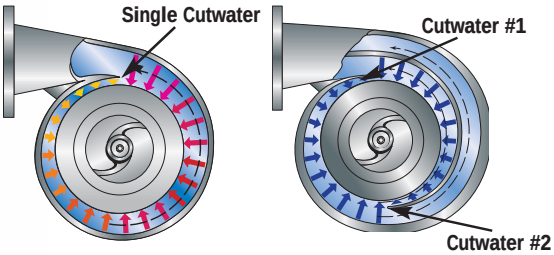
Clear Liquid — Non-Clog

## Material Options

Cast iron, Ductile Iron, Heat-Treated Ductile Iron, Bronze, Navy Bronze, various Stainless Steel grades including Duplex and Super Duplex Stainless Steel, and other materials are available to meet your application needs.

## Double Volute Design

The Double Volute system enables Cornell single-stage, end-suction centrifugal pumps to easily perform big volume and high pressure jobs. On single volute pumps, the increasing pressure acts against the impeller area and creates unbalanced radial forces. By contrast, the Double Volute system effectively balances these forces around the impeller to reduce shaft flexure and fatigue for longer seal life, bearing life and shaft life.




SINGLE VOLUTE — DOUBLE VOLUTE

# Putting Ideas to the Test

## Test Lab

Cornell's test lab is the proving ground for all of our pumps where our goal is to engineer and manufacture the best performing, most efficient pumps on the market. Test Lab technicians, under the supervision of Registered Professional Engineers, perform research and development as well as conduct certified performance, NPSH, and vibration testing.

The focal point of the test lab is an 80,000 gallon open loop testing system with calibrated flow meters from 2.5" through 20" in size. In our closed loop testing system, with flow meters up to 36" diameter, we can test pumps up to 60,000 gallons per minute.

The test lab is also equipped with an 800 HP VFD and multiple transformers to test motors with voltages ranging anywhere from 120 to 4160 volts. For motor sizes above 800 HP we use a portable generator.