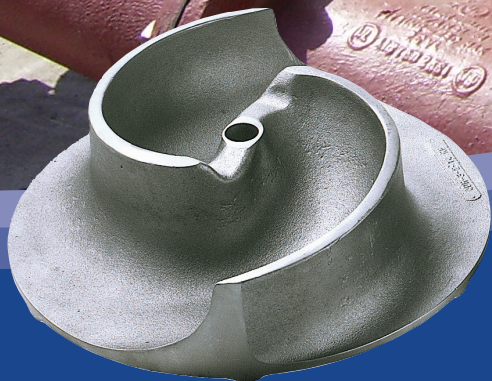


CORNELL PUMP COMPANY

# DELTA IMPELLER™





# DELTA IMPELLER™

---



Model 8NNDH cutaway showing Delta™ impeller

## ABOUT THE DELTA IMPELLER

Cornell offers a wide range of impellers for solids handling applications. One of our most prominent impellers over the last 20 years has been the Delta™ Impeller.

The Cornell Delta™ is a robust impeller for wastewater applications and is designed for the reliable pumping of liquids with solids, rags, stringy materials, and difficult-to-handle wastewater.

The impeller creates two vortices to weave and pass solids through the pump. Solids are washed smoothly over the rounded vane edges, down the slope of the impeller, and into the pump discharge. The absence of sharp corners and edges prevents hair pinning and hang-up of stringy materials. The comminuting action of the impeller vanes breaks up larger solids.

# DELTA IMPELLER™ FEATURES

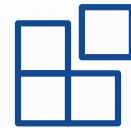
## HANDLES DIFFICULT TO PUMP LIQUIDS



Reliably handles stringy material, rags, wet straw, and other challenging to pump Slurries and Sludges that other pumps can not handle



Handles light Slurries and Sludges with abrasive particles



Interchangeable with Enclosed Impeller solids handling pumps



Heavy duty construction



Available in 3" through 10" Discharge sizes



No wear rings required



No axial clearance adjustments are necessary



A variety of Mounting Configurations



Available in 2 or 3 vane Semi-open design



Efficiency to 65%



TDH to 500'



Operating speeds to 1800 RPM and higher



# DELTA IMPELLER™

## INTERCHANGEABILITY CHART

Enclosed Impeller	Delta™ impeller
4NNTL	4NLDL
4NNT	4NNDH
4x4x14T	4NHM**
6NNT	6NNDH*
6NHTA	6NHDH
6NHHTH	6NHM
8NNT	8NNDH**
10NNT	10NNDH**
10NHTA	10NHM**

\* Impeller change

\*\* impeller and suction cover change

## MATERIALS OF CONSTRUCTION:

### FOR IMPELLERS:

ASTM A48, Class 30 Cast Iron is the standard construction material

For Cornell DELTA™ Pumps. Other metallurgy, at more than 650 BHN, is available to meet abrasive pumping needs. Corrosion resistant materials are also available.

### FOR PUMPS:

Ductile or cast iron pump casings

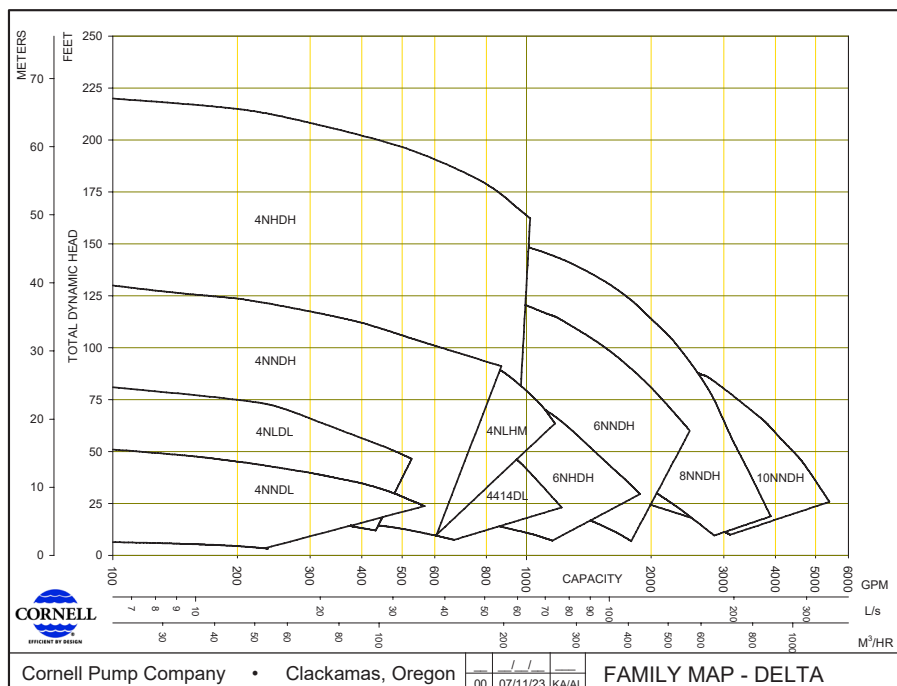
Some models available in CD4MCu

Ductile, cast iron, or CD4MCu impellers

Stressproof or heat treated steel shafts (stainless on CD4MCu)

SAE 1144 stressproof steel

420HT wear rings\* shaft sleeve available



### Cornell DELTA™ Pump Sizes:

3" x 3", 4" x 4", 6" x 6", 8" x 8", 10" x 10"

### Cornell DELTA™ Capacities:

50 GPM to 5,000 GPM / 11.35m<sup>3</sup>/h to 1135.6235 m<sup>3</sup>/h

### Cornell DELTA™ Heads:

10 Feet to 500 Feet / 3.04m to 152.4m

ASTM A48, Class 30 Cast Iron is the standard construction material for Cornell DELTA™ Pumps. Other metallurgy, up to 500 BHN, is available to meet abrasive pumping needs. Corrosion resistant materials are also available.

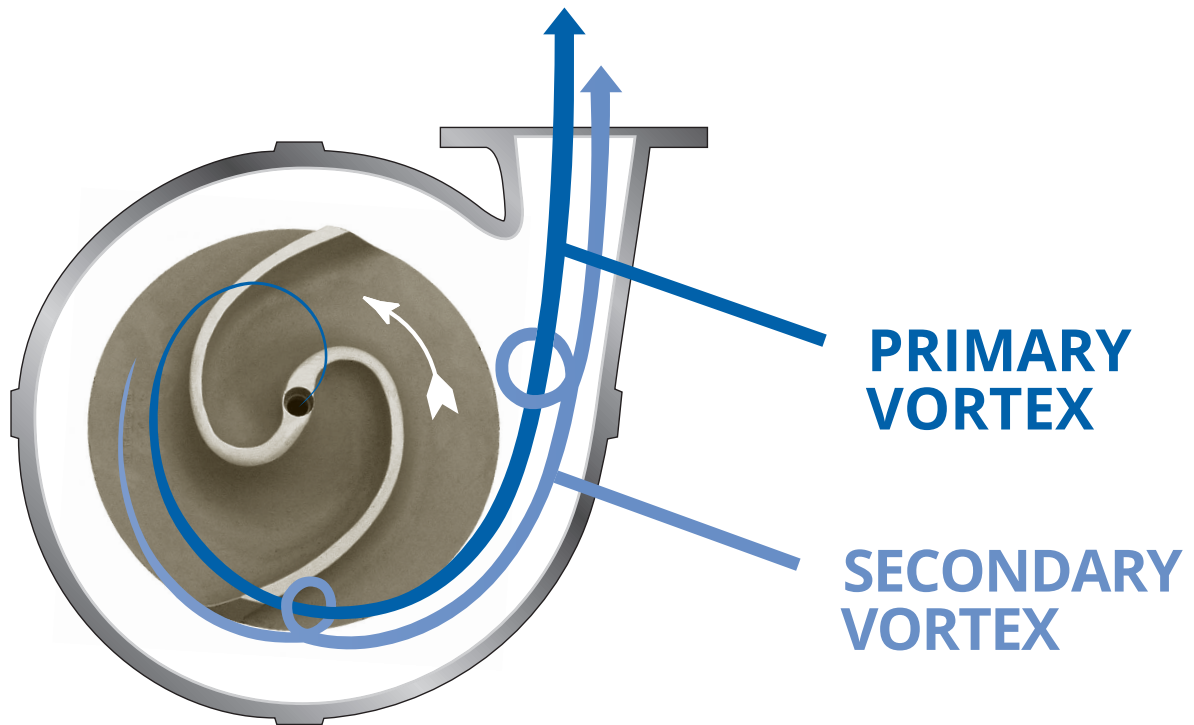
## MODELS

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

### DELTA™ Impeller Pumps have

steeper Head-Capacity performance curves compared to other forms of "Non-Clog" pumps. These pumps can provide reserve pressure to open check valves to get pumps on line.





## DOUBLE VORTEX PUMPING ACTION

One of the advantages of the Delta impeller is its double vortex action, pushing more solids into the waste stream and allowing the impeller to break up larger clumps of materials than a standard enclosed impeller is capable of doing.

Cornell has deployed thousands of Delta impellers, and experience has shown that Cornell DELTA™ Pumps will pass rags that plug comparable-sized recessed impellers and other types of solids handling pumps. Cornell DELTA™ Pumps can often provide significant energy savings and lower operating costs because of their higher efficiencies than typically recessed impeller pumps.

Cornell DELTA™ Pumps do not require wear rings or axial clearance adjustments. They are adding to their appeal with lower maintenance and material costs.



# CORNELL IMPELLERS

## OTHER IMPELLER OPTIONS

Cornell makes various other solid handling impellers with different characteristics regarding solids passing capability and efficiency. While the Delta is great in many applications, if you had instances outside the parameters of this impeller system, we should have one or more other impellers suitable to the application.

### 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 30" discharge sizes
- Flows to 40,000 GPM and heads to 450'



### 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



### 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



### WASTE WARRIOR CUTTER SEVERE CLOGGING

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® SAVES YOU FROM FLUSHING AWAY MONEY!

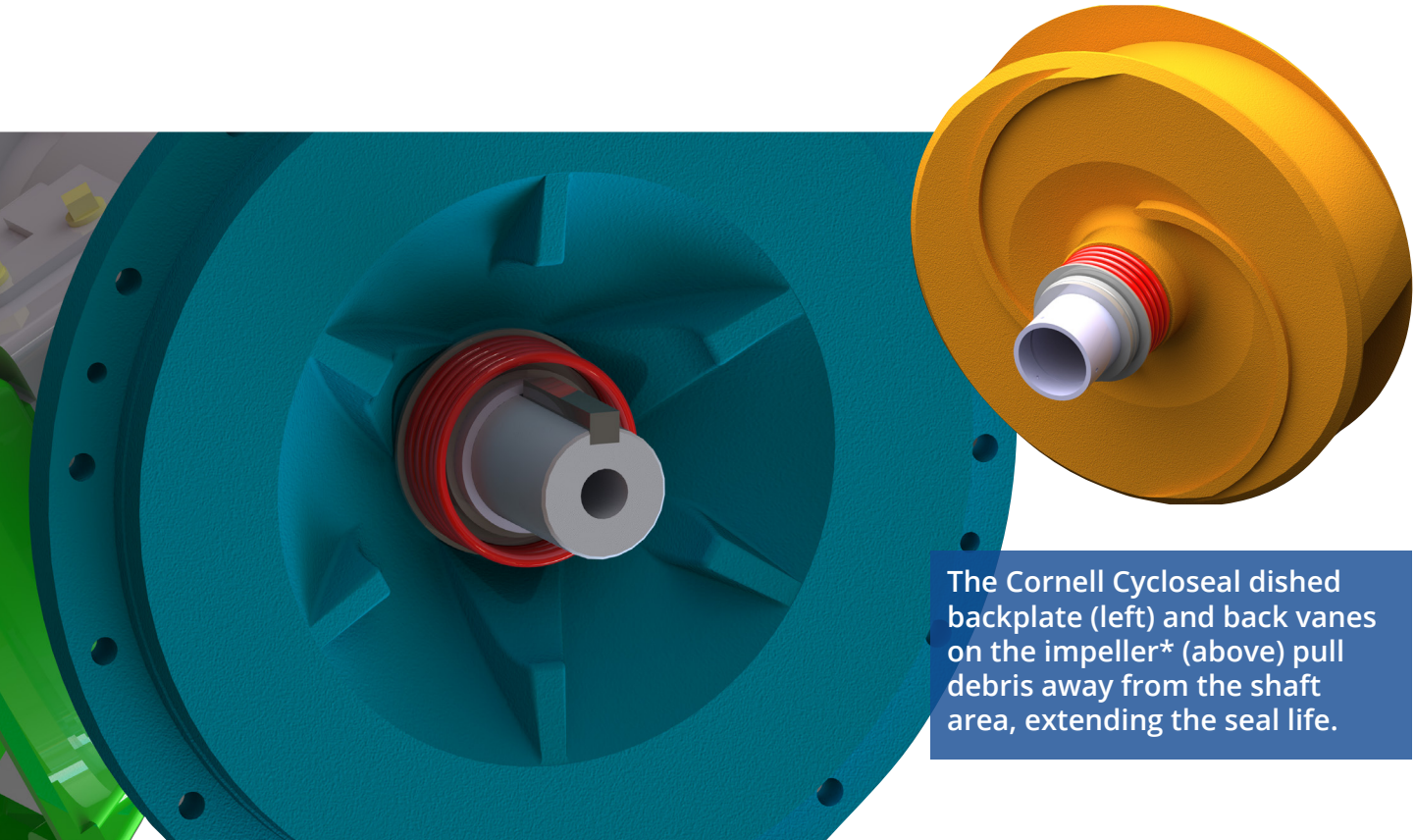
Each pump requiring flush water can incur costs of \$10,000 or more. For instance, a typical 6" pump uses 3 gallons per minute, which may not seem like much. Still, it adds up to over 1.57 million gallons (5,950 m3) annually. Larger pumps, such as 8" and 16" to 24" pumps, consume even more water, with 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	<b>\$10,512</b>
\$0.02	3	4,320	1,576,800	<b>\$31,536</b>
\$0.02	5	7,200	2,628,000	<b>\$52,560</b>
\$0.02	8	11,520	4,204,800	<b>\$84,096</b>

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.



The Cornell Cycloseal dished backplate (left) and back vanes on the impeller\* (above) pull debris away from the shaft area, extending the seal life.



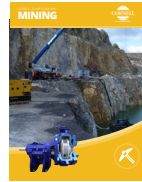
AGRICULTURE



FOOD PROCESS



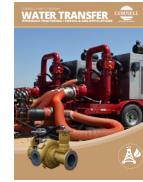
INDUSTRIAL



MINING



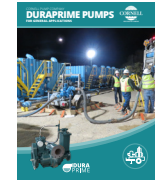
MUNICIPAL



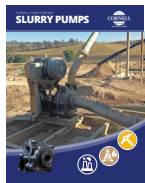
WATER TRANSFER



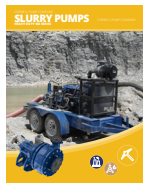
REFRIGERATION



CONSTRUCTION



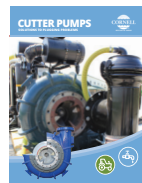
SLURRY



SLURRY SM



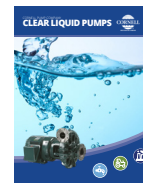
MANURE



CUTTERS



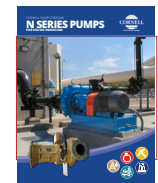
SELF PRIMING



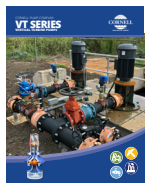
CLEAR LIQUIDS



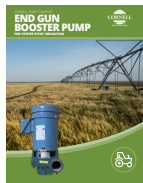
MX SERIES



N SERIES



CYCLONE™



EDGE™



HYDRAULIC SUBS



IMMERSIBLE



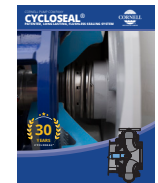
CD4MCU



RUN-DRY™



PRIMING SYSTEMS



CYCLOSEAL®

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

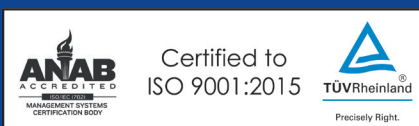
Cornell pumps and products are the subject of one or more of the following U.S. and foreign patents:

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

24 - EV - BR - 1401

**CORNELLPUMP.COM**  
©2024 CORNELL PUMP COMPANY

AUTHORIZED CORNELL PUMP DISTRIBUTOR



Cornell Pump Company  
Clackamas, Oregon, USA  
P: +1 (503) 653-0330  
F: +1 (503) 653-0338