



# **CHOPPER PUMPS**

## **PRODUCT CATALOG**



**The Solids Handling Specialists**



# Reliability

## Over 50 Years of Tradition



*The late founder, Jim Vaughan (standing), and his son Larry (sitting), working together in the early days.*

For over 50 years, Vaughan has been the market leader in manufacturing chopper pumps, solving today's toughest solids-pumping problems. This family driven tradition all started with Jim Vaughan's dream of a better, more reliable means of pumping manure.

Today's third and fourth generation of the Vaughan family continue the tradition of quality, dependability and service.

## Performance Guaranteed

With almost 25,000 units in service, the Vaughan® Chopper Pump has not only proven its value in problem solving, but also established itself as the reliable alternative to conventional pumping. Over the years, product reliability has also allowed Vaughan to **GUARANTEE** the performance of all chopper pumps. This guarantee is your assurance of clog-free solids-handling performance, not just another materials-and-workmanship warranty.

Vaughan celebrates its 50th year and beyond by introducing larger sizes, new configurations, and advances in efficiency, maintainability and performance with the "E" series *flushless* seal design.

We invite you to study the features in this catalog and compare. Then, we believe you will agree that the Vaughan Chopper Pump is "*A Cut Above the Rest*".



# Chopper Pumps

## Wet Well



### Vertical Wet Well

- Vaughan's most popular sump pump.
- Reliable mechanical seal/oil bath design.
- Eliminates suction piping.
- Keeps motor and wiring out of the pit.



### Recirculating

- Allows Wet Well and Submersible Pumps to be used for mixing and pumpout.
- Ideal for mixing of floating or settled solids.



## Submersible



### Electric Submersible

- Popular for sewage lift stations.
- Retrofits to most guide rail systems.
- Ideal for deep sumps.
- Available with rail system or portable.



- Traditional sub-design
- Upgraded lower seal is standard

## Self-Priming



### Self-Priming

- Direct or belt drive.
- Adjustable back pull-out design.

## Dry Well



### Horizontal

- Various sealing systems available.
- Direct or belt drive.
- Adjustable back pull-out design.



### Pedestal

- Used primarily in dry well applications where floor space is limited.
- Various sealing systems available.
- Adjustable back pull-out design.



### Hydraulic Submersible

- Portable pump for tank cleaning
- Lighter weight than other submersibles.
- Ideal for mobile equipment.



### Cantilever

- Eliminates submerged seals and bearings.
- Best for severe abrasive service.



## The Concept - 50 Years in The Making

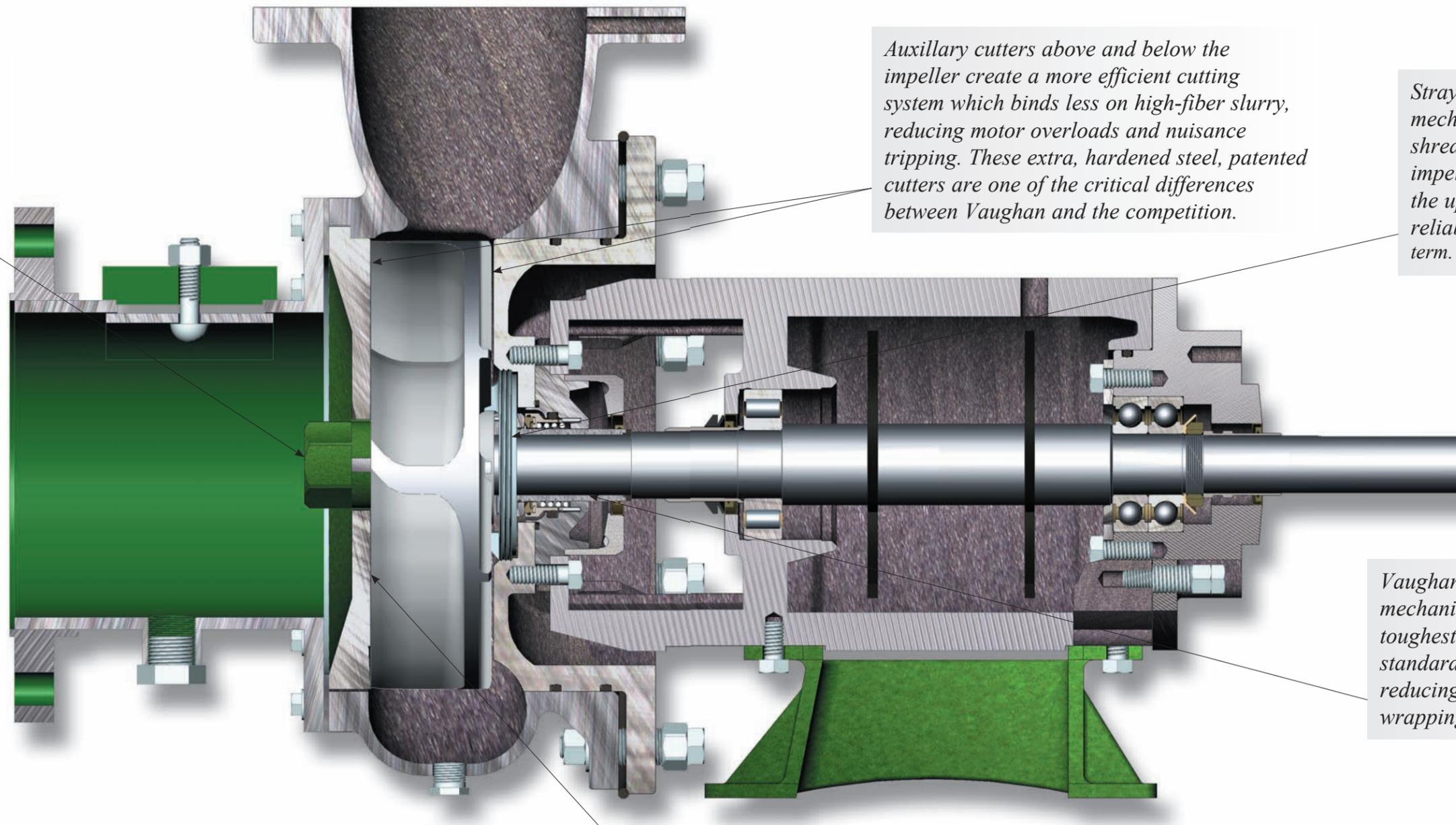
Vaughan Chopper Pumps incorporate increases in efficiency, with improved reliability handling tough stringy solids. Some models also include a new back-pullout casing design, allowing external adjustment of clearances and ease of maintenance.

Vaughan Chopper Pumps are not to be confused with other types or brands of chopper pumps, cutter pumps, grinder pumps or comminutors. Some of the unique patented features specific to Vaughan Chopper Pumps which make the product so dependable are:

*The cutter nut (patented) cuts stringy materials that tend to wrap at the pump inlet.*

*Auxillary cutters above and below the impeller create a more efficient cutting system which binds less on high-fiber slurry, reducing motor overloads and nuisance tripping. These extra, hardened steel, patented cutters are one of the critical differences between Vaughan and the competition.*

*Stray solids trapped in the mechanical seal area are shredded and removed by the impeller vanes turning against the upper cutter, providing reliable service over the long term.*

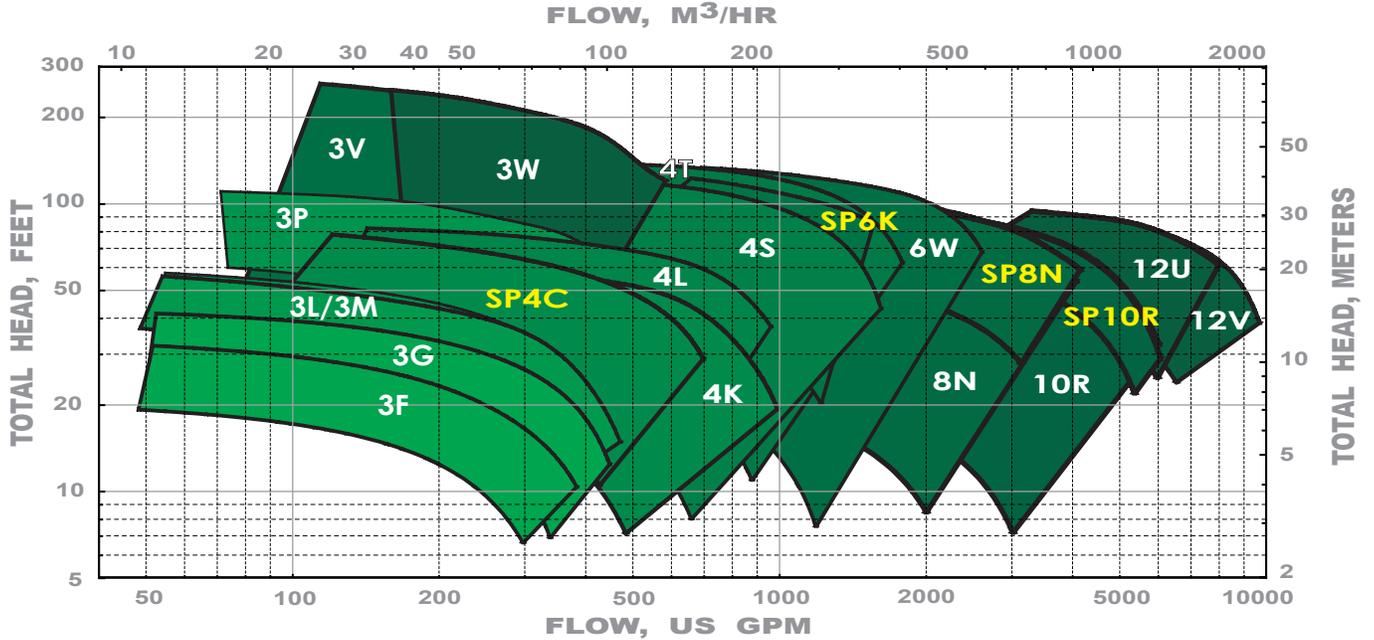


*Vaughan's unique cartridge style mechanical seal handles the toughest slurries, outperforming standard single-spring seals by reducing problems associated with wrapping or abrasion.*

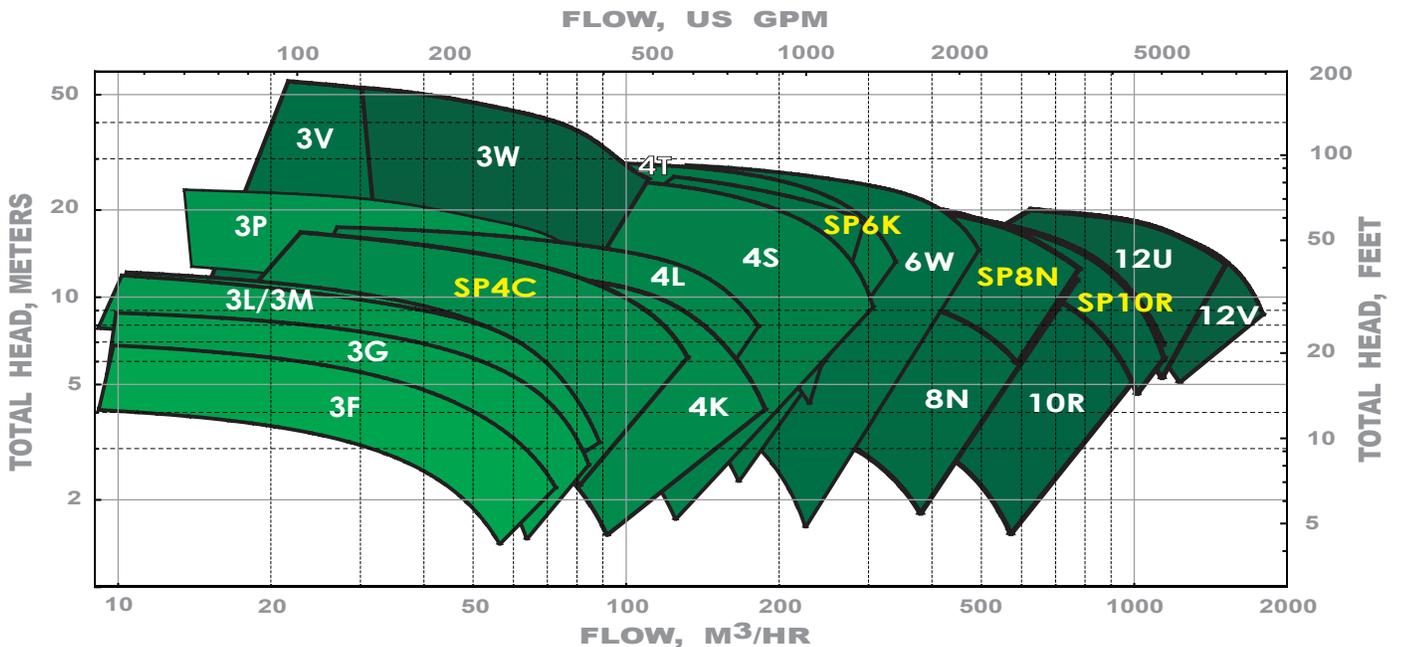
*Solids are chopped by the cupped and sharpened impeller blades turning across the cutter bar, creating a smooth "slicing" effect. The conditioned slurry is easily pumped through the pump and piping system without plugging.*



## Performance Map - 60 Hz



## Performance Map - 50 Hz

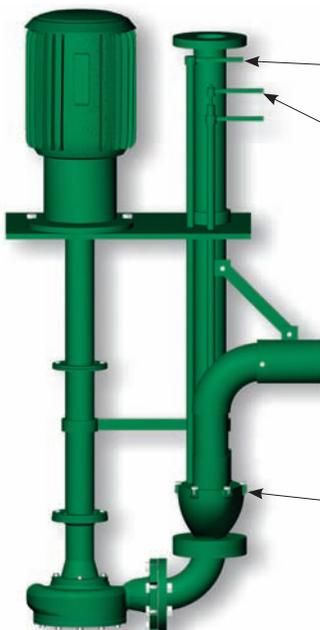


# Specialty Pumps

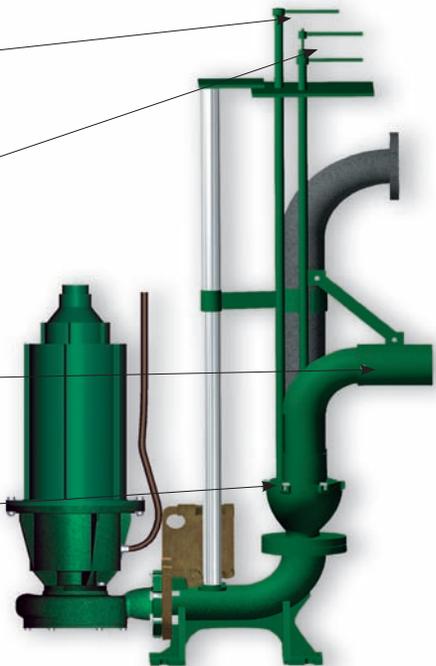
## Recirculator Chopper Pumps

- *Easy above-deck access to valve and nozzle operators*
- *Manual or fully automated operation available*
- *Recirculation feature also available with Horizontal and Self-priming configurations*

### Vertical Recirculator



### Submersible Recirculator



**VALVE OPERATOR**  
*Allows ease of valve control*

**NOZZLE OPERATOR**  
*Adjusts nozzle direction horizontally and vertically*

**MIXING NOZZLE**  
*Hydraulically mixes all solids*

**DUCTILE IRON VALVE**  
*Allows recirculation or discharge*

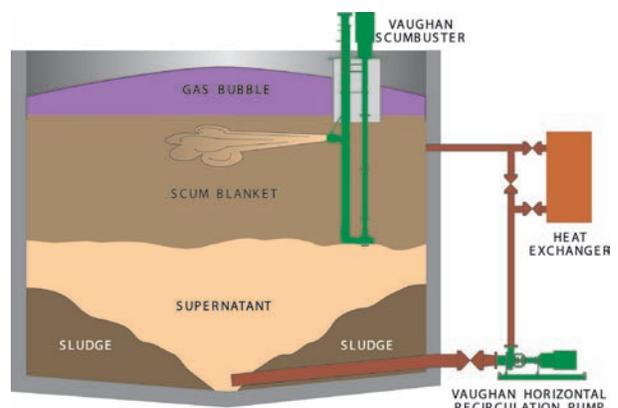
*Recirculation Feature also available with Horizontal and Self-priming Configurations*

## Scumbuster

The Vaughan Scumbuster® virtually eliminates the effects of a scum blanket and prevents it from reforming by homogenizing and conditioning through a recirculation nozzle.

This type of mixing allows digesters to regain their design capacity, extends the time between cleanouts and generates more methane gas.

The Vaughan Scumbuster operating with the Vaughan chopper pump on digester recirculation has proven successful not only to eliminate heat exchanger clogging, but also to replace other failed digester mixing systems.

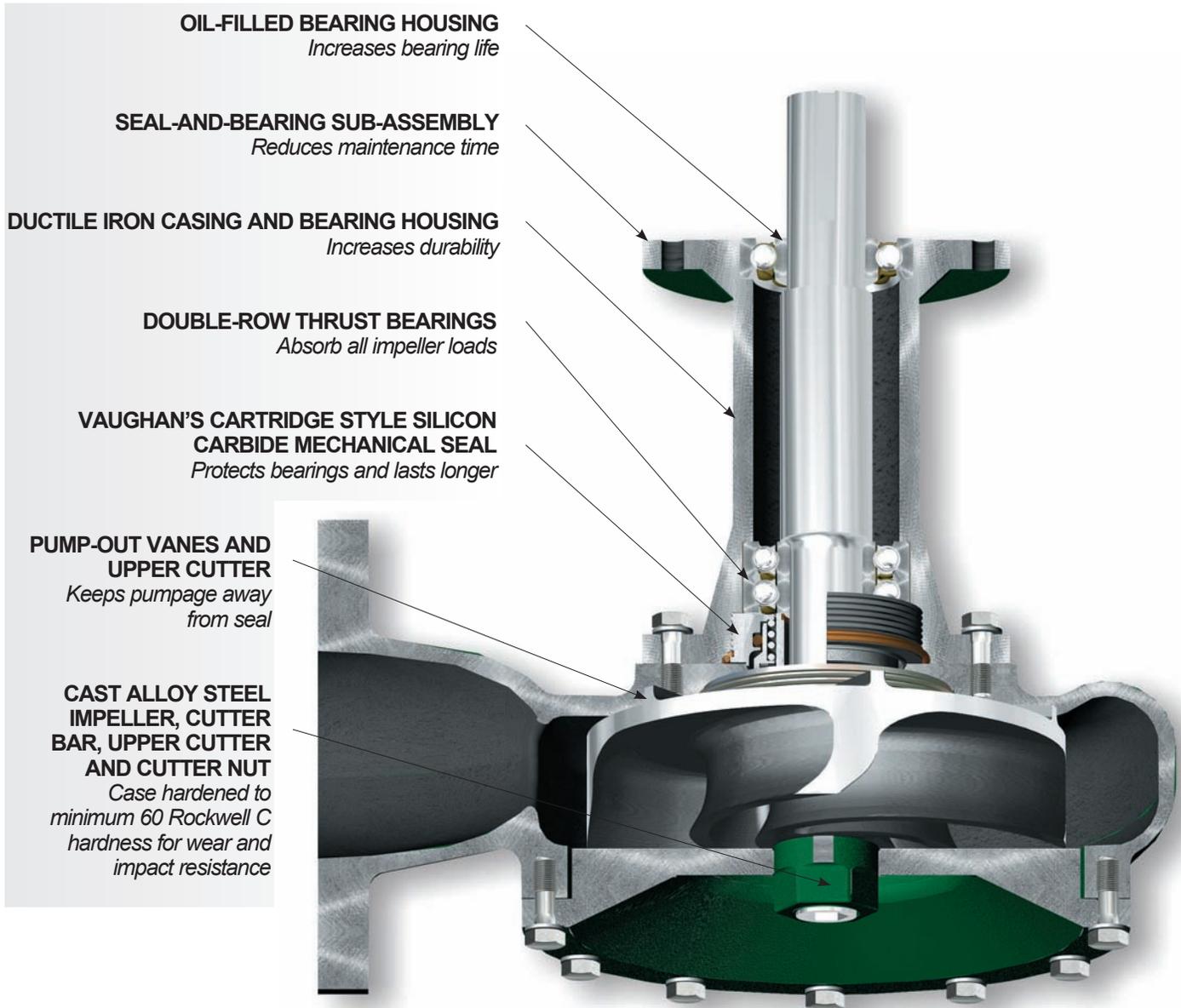




# Wet Wells

## Vertical Wet Well

- Oil lubricated bearings eliminate water or grease lubricated sleeve bearings
- Capable of running dry



# Cantilever

- *Eliminates submerged seals and bearings*
- *Best for severe abrasive or corrosive service*
- *Available up to 5' in length depending on speed*

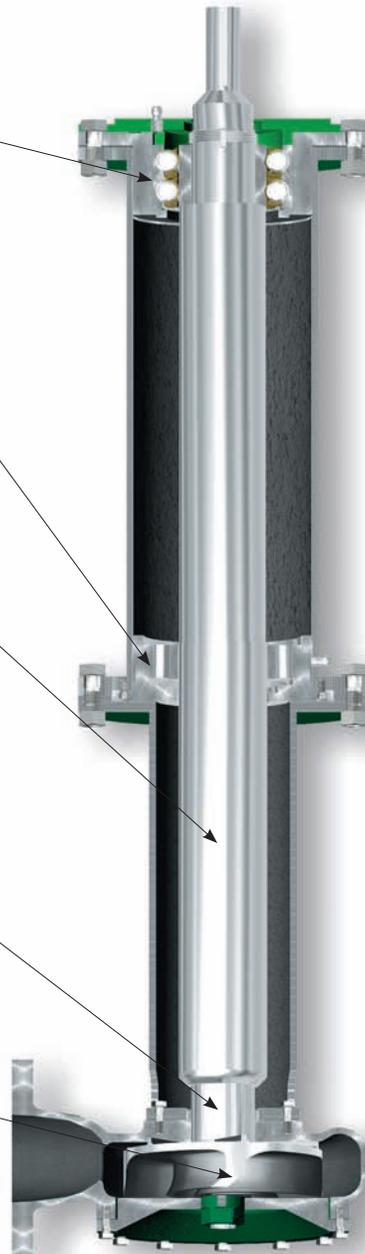


**HEAVY DUTY ROLLER AND BALL BEARINGS**  
*Absorb all loads dependably*

**LARGE 4" SHAFT**  
*Handles chopping and pumping with minimal shaft deflection*

**NO SUBMERGED SEAL OR BEARINGS**  
*Reduces contamination*

**CAST ALLOY STEEL IMPELLER, CUTTER BAR AND CUTTER NUT**  
*Case hardened to minimum 60 Rockwell C hardness for wear and impact resistance*



## Electric Submersible “S” Series

- Available with rail system or portable
- Adaptable to most guide rail systems



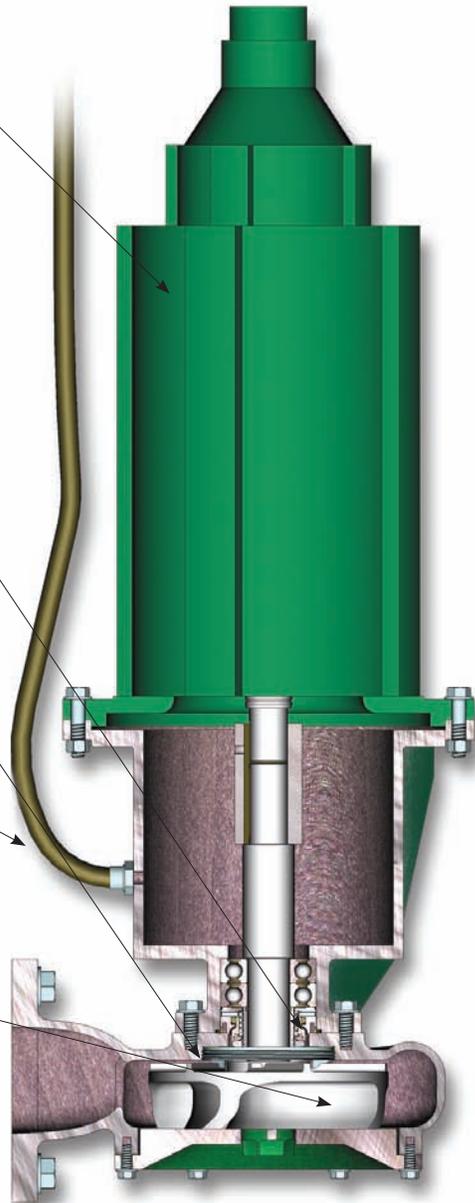
**EXPLOSION PROOF MOTOR**  
*UL Listed Explosion Proof or non-Explosion Proof, with moisture sensor and tandem mechanical seals. Also available in Continuous In-Air or Close-Loop Cooled*

**TANDEM MECHANICAL SEALS**  
*Includes lower silicon carbide mechanical seal for maximum motor protection*

**PUMP OUT VANES AND UPPER CUTTER**  
*Keeps pumpage away from the seal*

**OIL LEVEL MONITOR**  
*System constantly monitors oil level in the bearing housing*

**CAST ALLOY STEEL IMPELLER, CUTTER BAR, UPPER CUTTER AND CUTTER NUT**  
*Case hardened to minimum 60 Rockwell C hardness for wear and impact resistance*



# Electric Submersible “E” Series

- *Traditional submersible design*
- *Upgraded lower seal is standard*
- *Hydraulic version also available*



**EXPLOSION PROOF MOTOR**  
*UL Listed Explosion Proof or non-Explosion Proof, with moisture sensor and tandem mechanical seals. Also available in Continuous In-Air or Close-Loop Cooled*

**TANDEM MECHANICAL SEALS**  
*Includes lower silicon carbide mechanical seal for maximum motor protection*

**PUMP OUT VANES AND UPPER CUTTER**  
*Keeps pumpage away from the seal*

**DUCTILE IRON BACK PULL-OUT CASING**  
*Provides adjustable impeller-to-cutter bar clearance extending parts life*

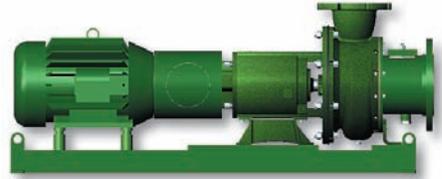
**CAST ALLOY STEEL IMPELLER, CUTTER BAR, UPPER CUTTER AND CUTTER NUT**  
*Case hardened to minimum 60 Rockwell C hardness for wear and impact resistance*





# Horizontal

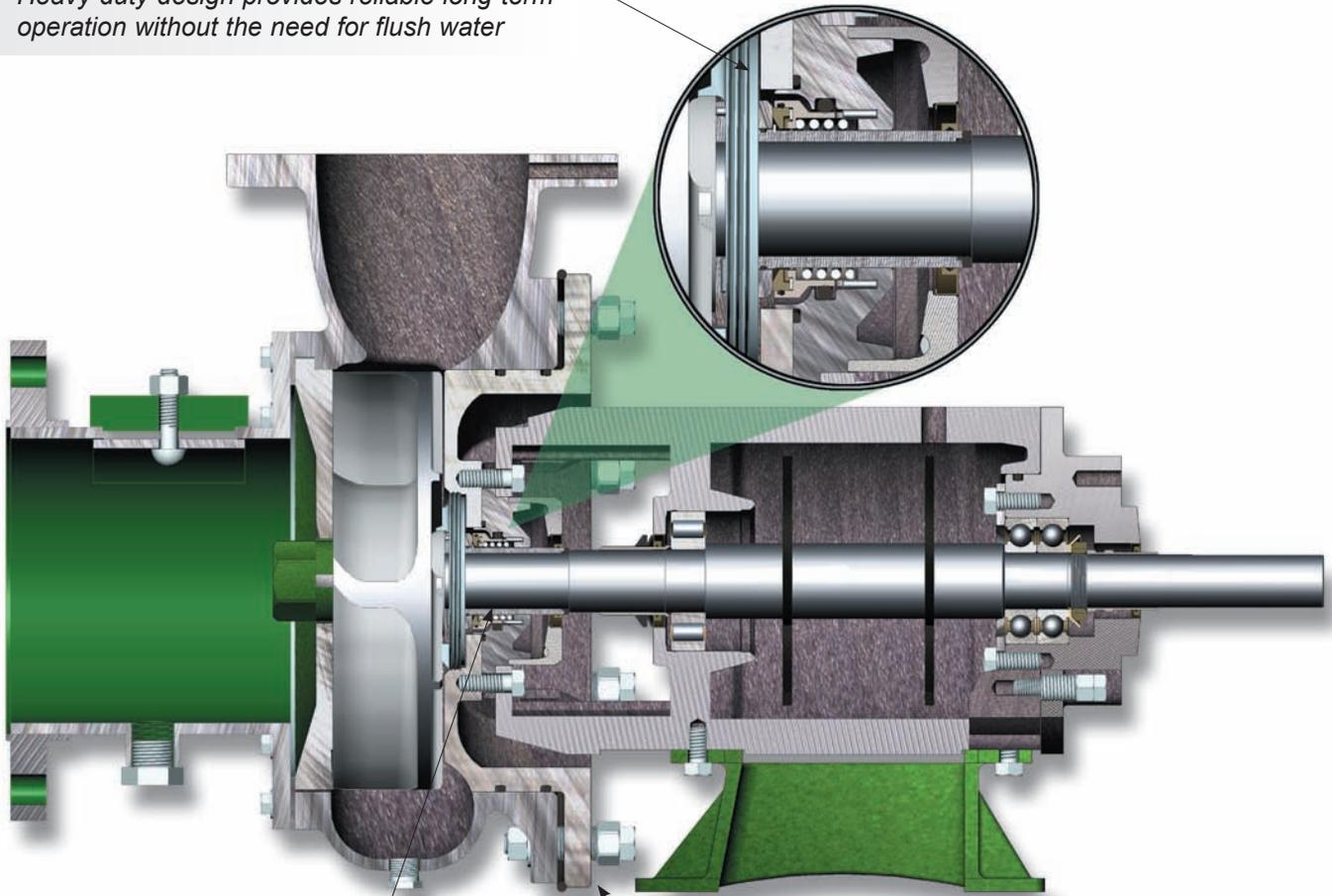
## E-Series "Flushless"



- Flushless design eliminates the need for flush water
- Heavy duty cartridge mechanical seal assures dependability
- Heavy duty combined bearing frame design
- Externally adjustable cutter clearances
- Flushed seals available per request

### FLUSHLESS VAUGHAN CARTRIDGE MECHANICAL SEAL

Heavy duty design provides reliable long-term operation without the need for flush water



### ELIMINATES STUFFING BOX

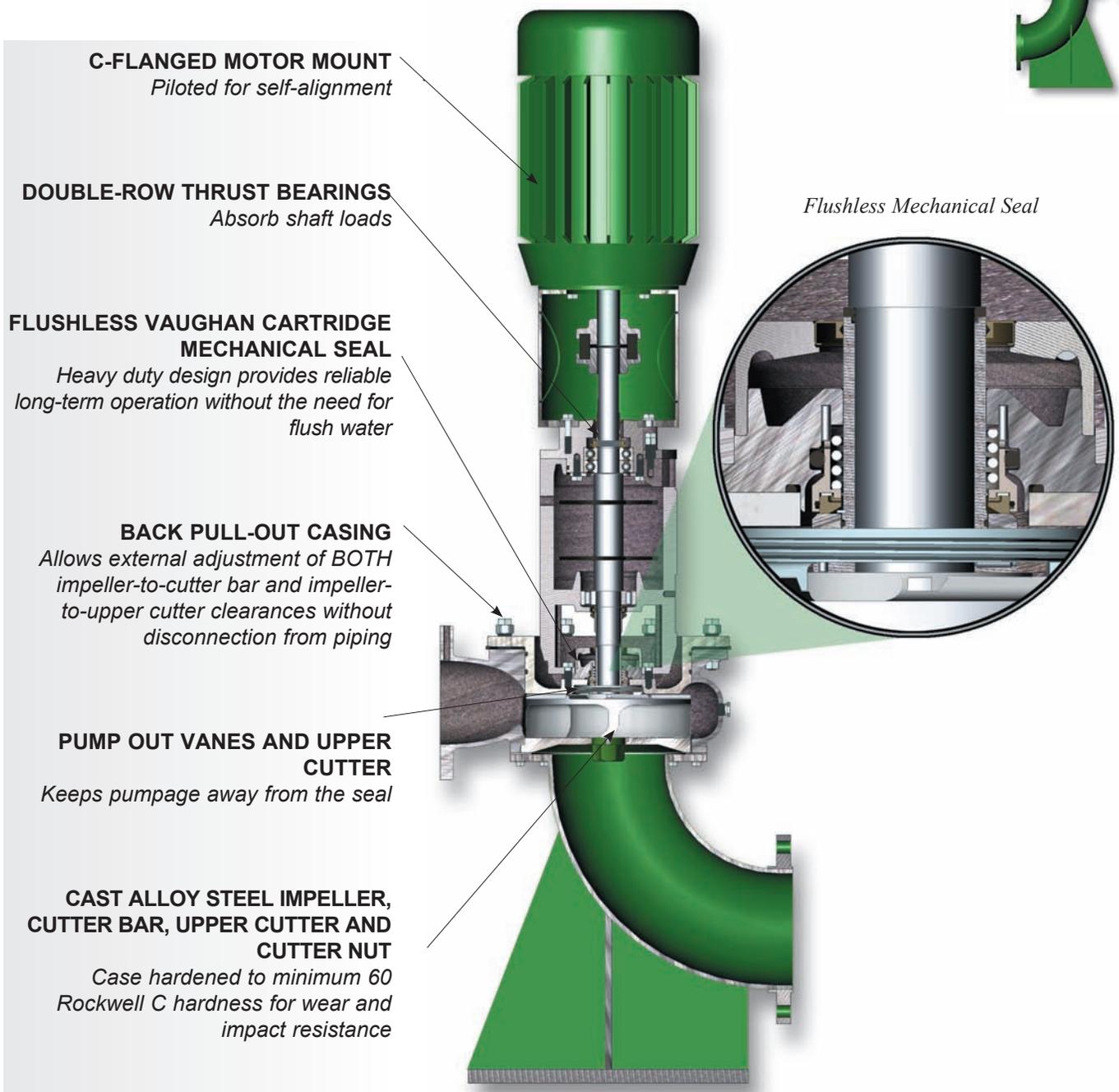
No stuffing box means less chance of solids collecting in seal area

### ADJUSTABLE BACK PULL-OUT CASING

Allows external adjustment of BOTH impeller-to-cutter bar and impeller-to-upper cutter clearances without disconnection from piping

## E-Series “Flushless”

- *Flushless design eliminates the need for flush water*
- *Heavy duty cartridge mechanical seal assures dependability*
- *Externally adjustable cutter clearances*
- *Flushed seals available per request*

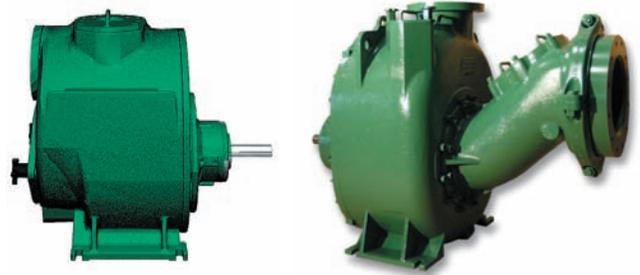




# Self Primer

## Features

- *Self-priming up to 25'*
- *Heavy duty cartridge seal design assures dependability*
- *4" - 10" discharge available*
- *Available in direct or belt drive*
- *100 - 5000+ GPM*



**HEAT TREATED  
ALLOY STEEL  
CHOPPER IMPELLER, CUTTER  
BAR AND UPPER CUTTER**  
*Handles all incoming solids without  
clogging*

**DUCTILE IRON HOUSING, CASING  
AND BEARING HOUSING**  
*Increases durability*

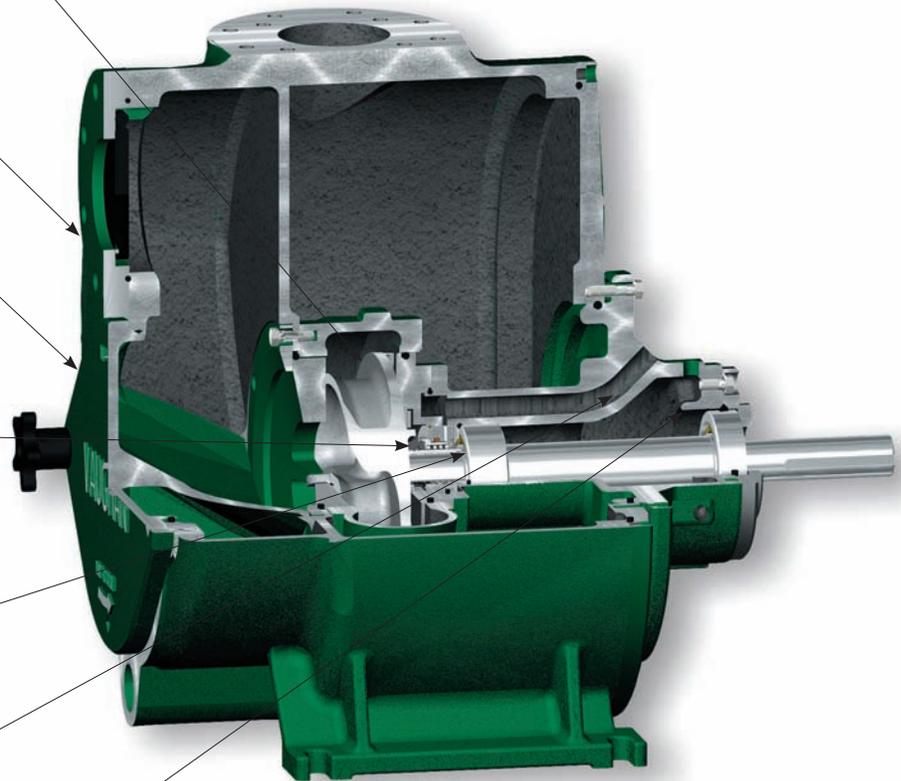
**OVERSIZED CLEANOUT**  
*Allows easy access*

**VAUGHAN'S CARTRIDGE STYLE  
MECHANICAL SEAL**  
*Isolates pumpage from bearings and  
motor*

**THRUST BEARINGS**  
*Absorb all loads*

**OIL LUBRICATION**  
*Keeps bearings and seal cool and  
running smooth*

**ADJUSTABLE CASING AND  
ROTATING ASSEMBLY**  
*For ease of maintenance*



# Industrial Applications

## Paper and Wood Products

Broke Pits  
Carbonized Bark  
Chip Conveyors  
Clarifier Scum  
Coal Pile Runoff  
Conveyor Gallery Sumps  
Drainage Sumps  
Fly Ash  
Knot and Bark Handling  
Log Soaking Vats  
Lime Sludge Transfer  
Underflow to Dewatering  
Woodyard Sumps



## Food Processing

Blood  
Carrots  
Chickens  
Corn Husks  
Ears, Hair, Hooves, Horns  
Fat  
Feathers  
Fish  
Fleshings  
Hide Pieces  
Potatoes  
Turkeys  
Tomatoes



## Automotive / Steel

Boiler Blowdown  
Chrome Plating Slurries  
Coke Breeze  
Coke Tar Decanter Sludge  
Glass and Plastic  
Iron Ore Pellets  
Metal, Machine Chips  
Mill Scale  
Oil Washdown  
Paint Overspray Sludge  
Roll Grinder Coolant (Swarf)



## Chemical / Petrochemical

API Separators  
Coke Slurries  
Detergent Cakes  
Latex Skins  
Lead Oxide Slurries  
Oil Waste  
Plastics  
Pumice Hand Cleaner  
Refinery Mud  
Storm Drains  
Sulfur Froth



## Mining / Sand & Gravel

Acid Mine Water  
Coal and Sand Washing  
Concrete Batch Plant Sumps  
Sand and Gravel Silt Ponds  
Truck Washdown Sumps



## Contractor Services

Hazardous Waste Cleanup  
Lagoon Cleaning  
Recycled Solvents  
Sludge Dewatering  
Storage Tank Cleanout

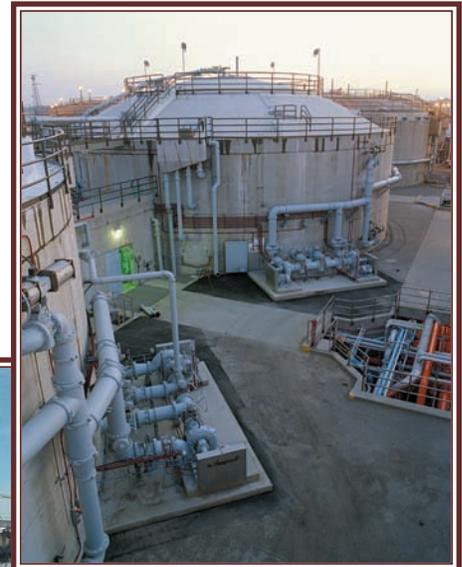
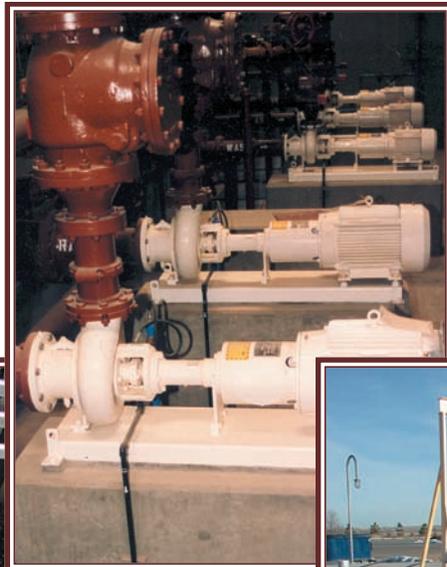


## Wastewater Applications

- 1 **RAW SEWAGE** - Lift stations, CSO facilities, headworks, prisons, hospitals, restaurants.
- 2 **SCREENINGS / SEPTAGE** - Raw concentrated solids including rags, plastics and hair.
- 3 **CLARIFIER SCUM PITS** - Primary or Secondary scum without plugging or air binding.
- 4 **SLUDGE TRANSFER** - Eliminates “roping” and clogging in clarifier underflow to thickeners.
- 5 **RAS / WAS** - Continuously conditions Return and Waste Activated Sludges.
- 6 **THICKENED SLUDGE / DIGESTED SLUDGE TRANSFER** - Handles high sludge consistencies.
- 7 **DIGESTER MIXING** -  system conditions and mixes in a dual-zone rotational flow pattern.
- 8 **DIGESTER RECIRCULATION** - Eliminates heat exchanger clogging while conditioning sludge.
- 9 **F.O.G - (Fats, Oils, and Greases)** - Uses organic waste to enhance methane production

*Sludge Transfer*

*Digester Mixing*

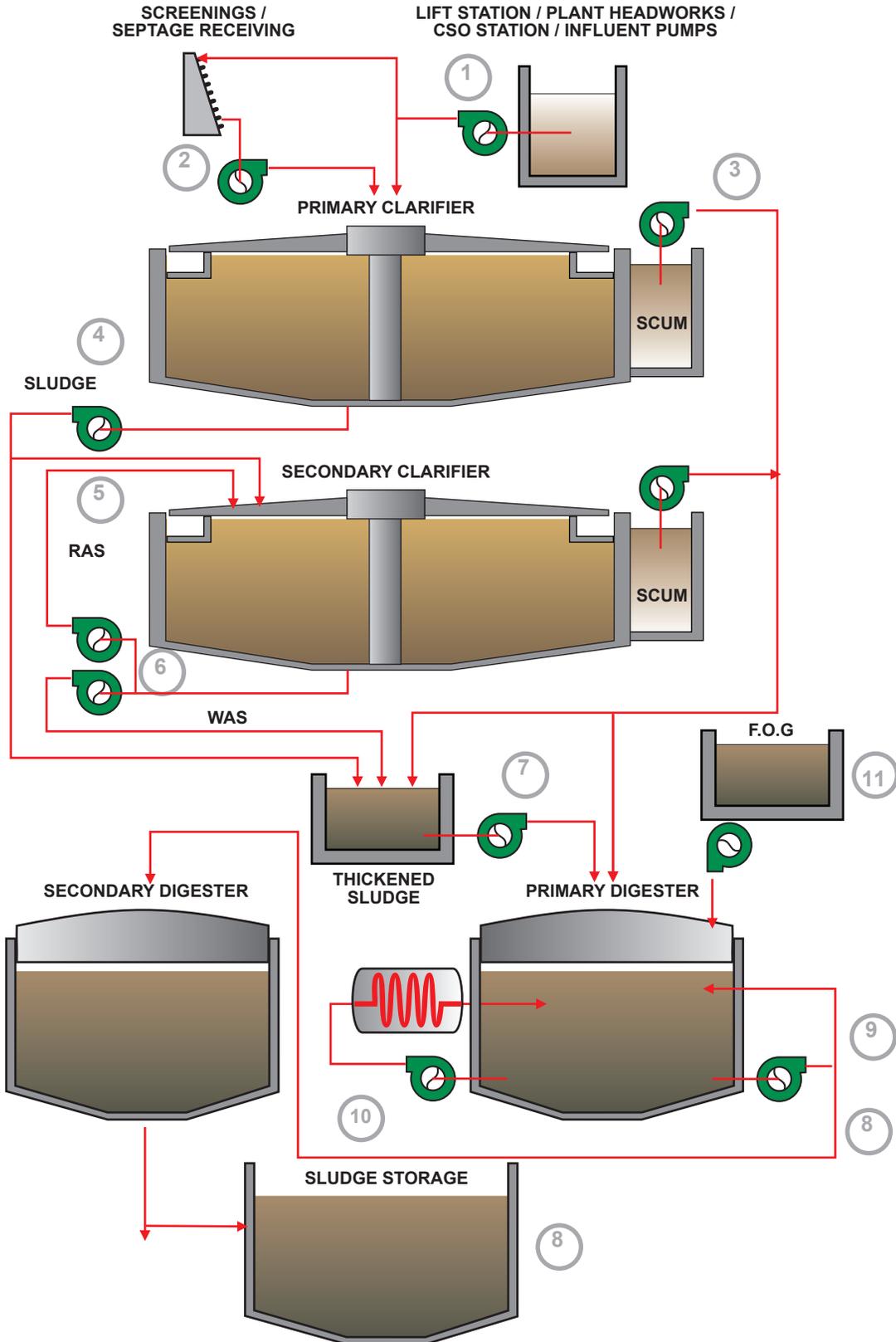


*CSO screenings*

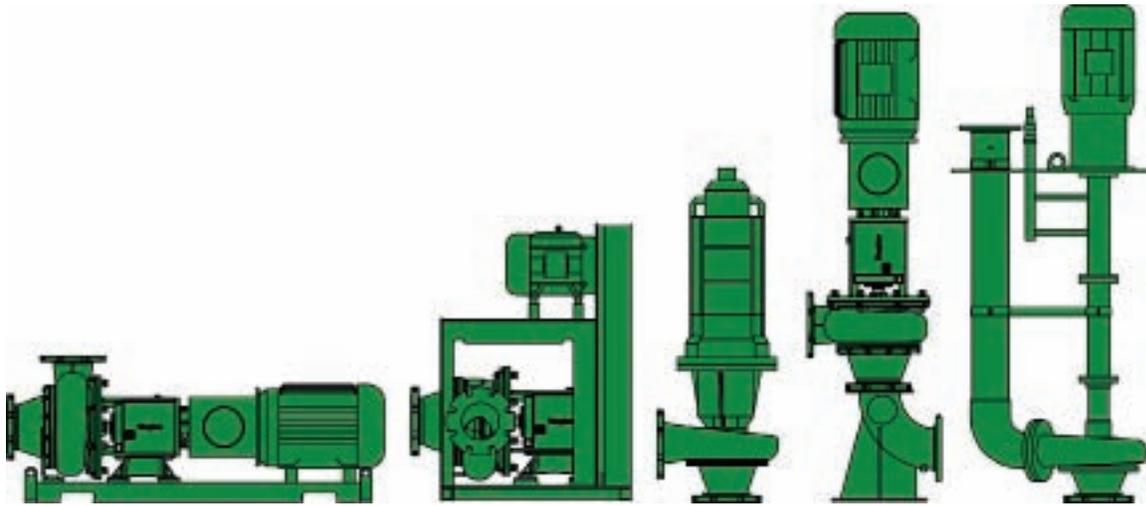


*Primary Clarifier Scum*

# Typical Municipal Flow Diagram



# TRITON *Screw Centrifugal Pumps*

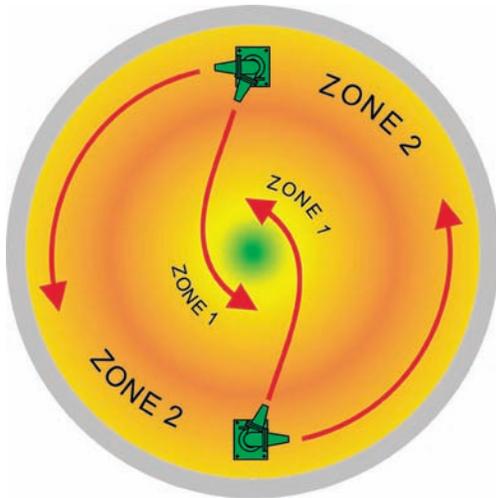


## Features & Benefits:

- *High Efficiency - energy savings*
- *Low Shear - gentle pumping action*
- *Low NPSH - minimizes suction requirements*
- *Back-Pullout Casing - for ease of maintenance*
- *Mechanical Seal or Packing - allows full flexibility*
- *Upper Cutter - protects mechanical seal*
- *Replaceable Liner - reduces maintenance*
- *Optional Materials - for corrosion and abrasion resistance*
- *Proven severe duty mechanical seals - most dependable sealing system available*



*For details regarding Vaughan Triton Centrifugal Pumps see Vaughan Literature Form V393.*



### Rotamix Systems Offer:

- *Process mixing for wastewater and industrial applications including Anaerobic Digesters, Storage Tanks, Etc.*
- *Vaughan Chopper Pump to enhance volatile solids destruction while ensuring reliable operation of the system.*
- *Dual rotational mixing to provide even distribution of solids throughout the tank.*

*For details regarding the Rotamix System, see Vaughan Literature Form V361*

## F.O.G. (Fats, Oils & Grease) Systems By Rotamix Enhanced Digestion Systems

### Custom Rotamix F.O.G. Systems:

- *Process blending of organic materials with municipal sludge to enhance the reduction of solids.*
- *Use organics from fats, oils, and greases as well as food waste to create energy.*
- *Reduce organic waste in landfills by establishing local contracts with restaurants and public recycling programs.*

*For details regarding the Rotamix F.O.G. System, see Vaughan Literature Form 445*





**VAUGHAN® Chopper Pumps**

Wet Wells, Dry Wells, Submersibles, Self-Primers, Recirculators

**TRITON® Screw Centrifugal Pumps**

Wet Wells, Dry Wells, Submersibles

**ROTAMIX® Process Mixing System**

Tank and Digester Mixing

**Also Available**

Floating Pumps, Lagoon Pumpers, Mixers, Auger Choppers, Vortex Choppers,  
Produce Disposal Choppers.

**Authorized Representatives Worldwide**

**Vaughan Co., Inc.**

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U.S. PATENTS: No. 5,460,483; No. 5,460,482; No. 5,456,580; No. 5,256,032; No. 5,076,757; No. 7,125,221 B2; No. 7,025,492 B2

FOREIGN PATENTS: No. 94/7561; No. 1,274,886; No. 910.127; No. 698,327; No. 1,040,006; No. 178,507; No. 539,722; No. 1,531,025; No. 1,193,483; No. 1,193,484; No. 1,193,485; No. 1,193,486; No. 498,063; No. P26 18 559; No. 512,380; No. 1,172,906; No. 963,918; No. 1,290,981; No. 687476; No. 276224; No. 75,941; No. 3480.

OTHER U.S. AND FOREIGN PATENTS PENDING.

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