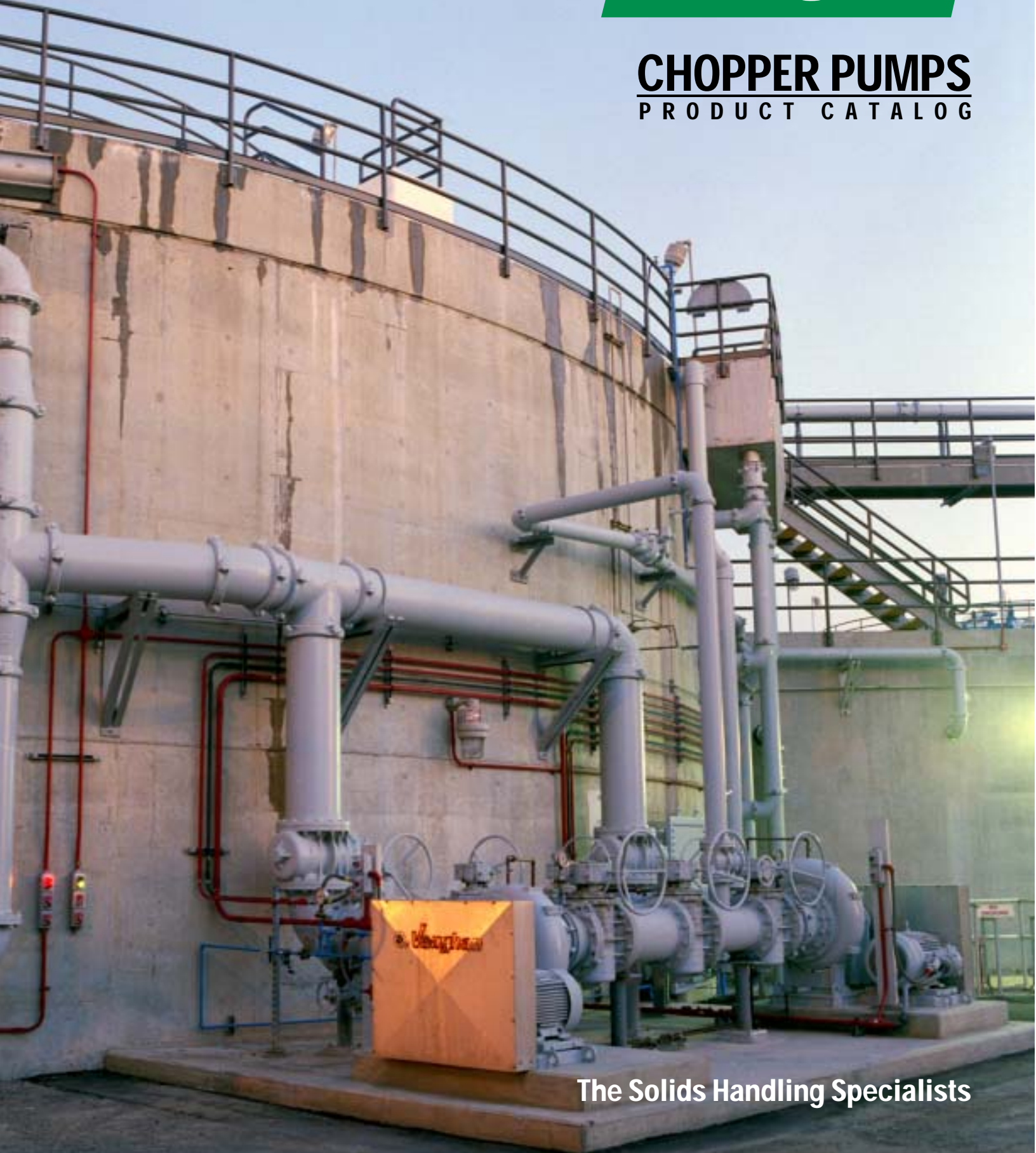




# **CHOPPER PUMPS**

PRODUCT CATALOG



The Solids Handling Specialists



# Reliability

## Over 40 Years of Tradition



*The late founder, Jim Vaughan (standing), and present Chairman of the Board, Larry Vaughan (sitting), working together in the early days.*

For over 40 years, Vaughan<sup>d</sup> 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 ... without all the corporate bureaucracy.

## Performance Guaranteed

With almost 20,000 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 the new millennium by introducing larger sizes, new configurations, and advances in efficiency, maintainability and performance with the "E" series and the new "F" series *flushless* seal design.

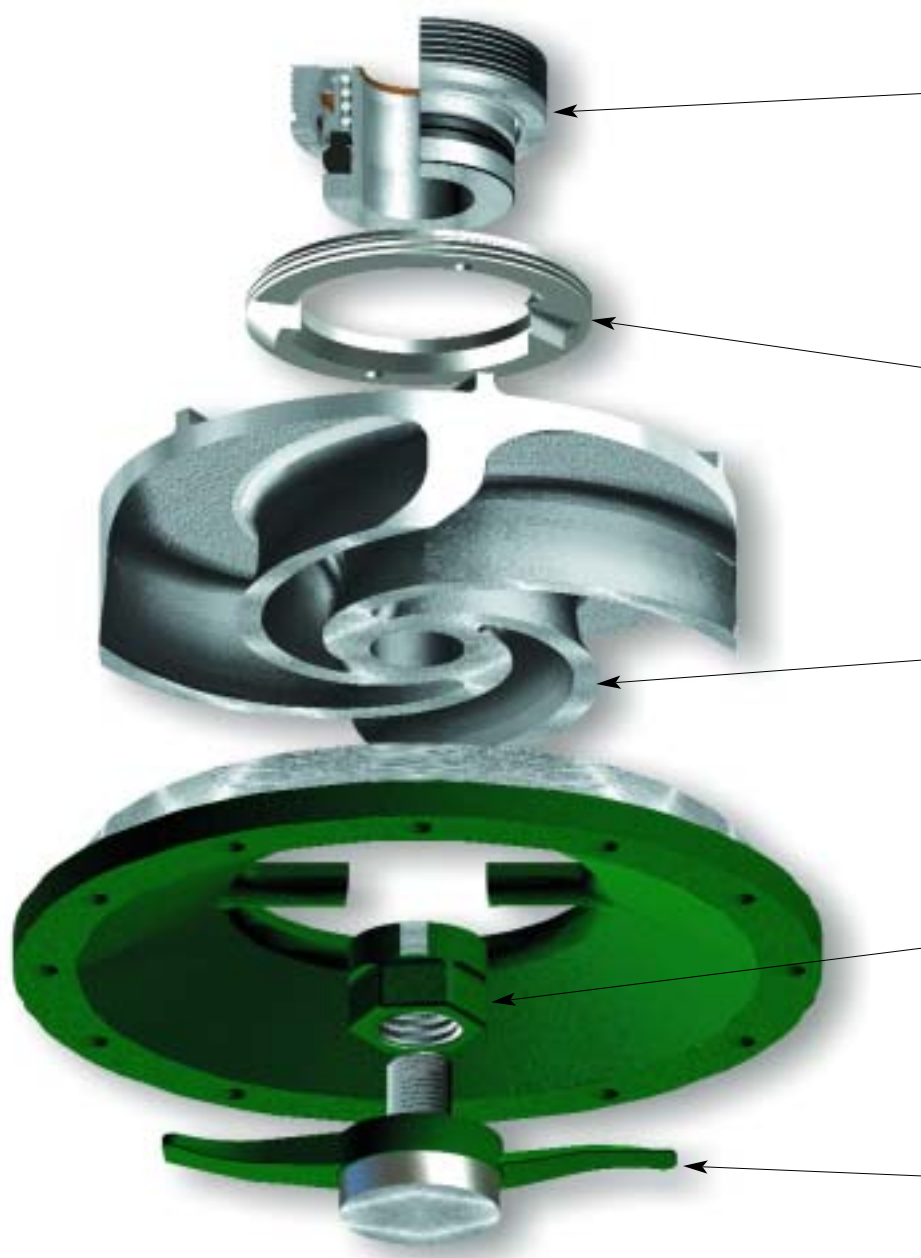
We invite you to study the features in this catalog and compare. Then, we believe you will agree that the Vaughan Chopper Pump is "*A Cut Above the Rest*".



# The Concept

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:



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

*Stray solids trapped in the mechanical seal area are shredded and removed by the impeller vanes turning against the upper cutter.*

*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.*

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

*An optional disintegrator tool agitates and breaks up large solids to prevent suction blockage. The tool is removable for stringy solids.*

## 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.



### Cantilever

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

## Submersible



### Electric Submersible

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



### Hydraulic Submersible

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

## 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.

## Specialty



### Recirculating

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

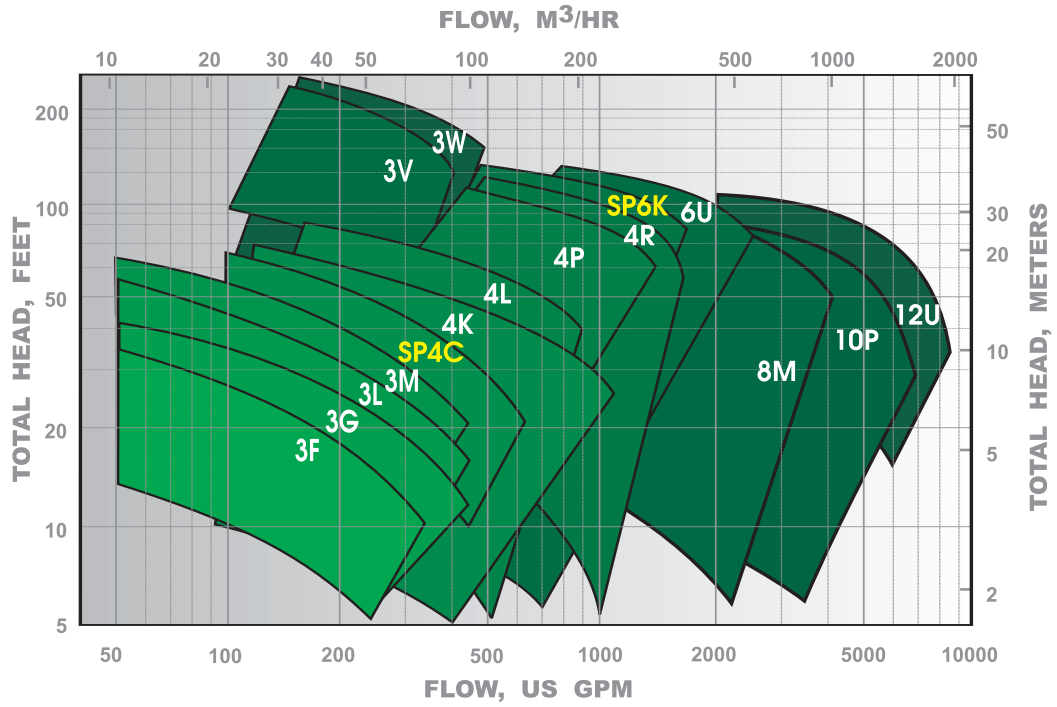


### Self-Priming

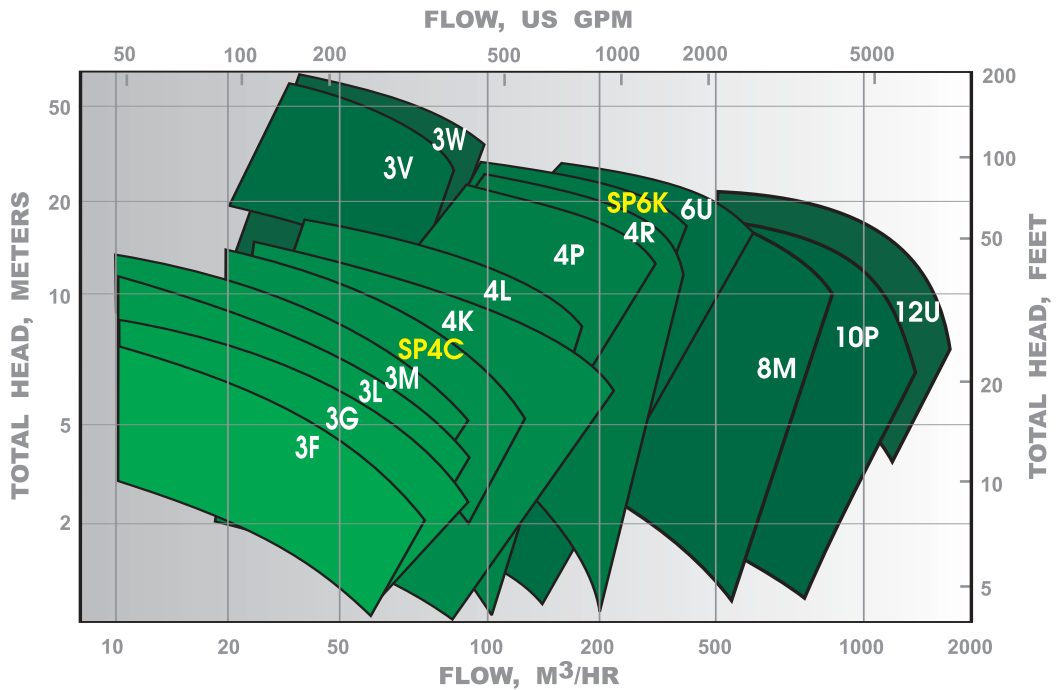
- Direct or belt drive.
- Adjustable back pull-out design.



# Performance Map - 60 Hz

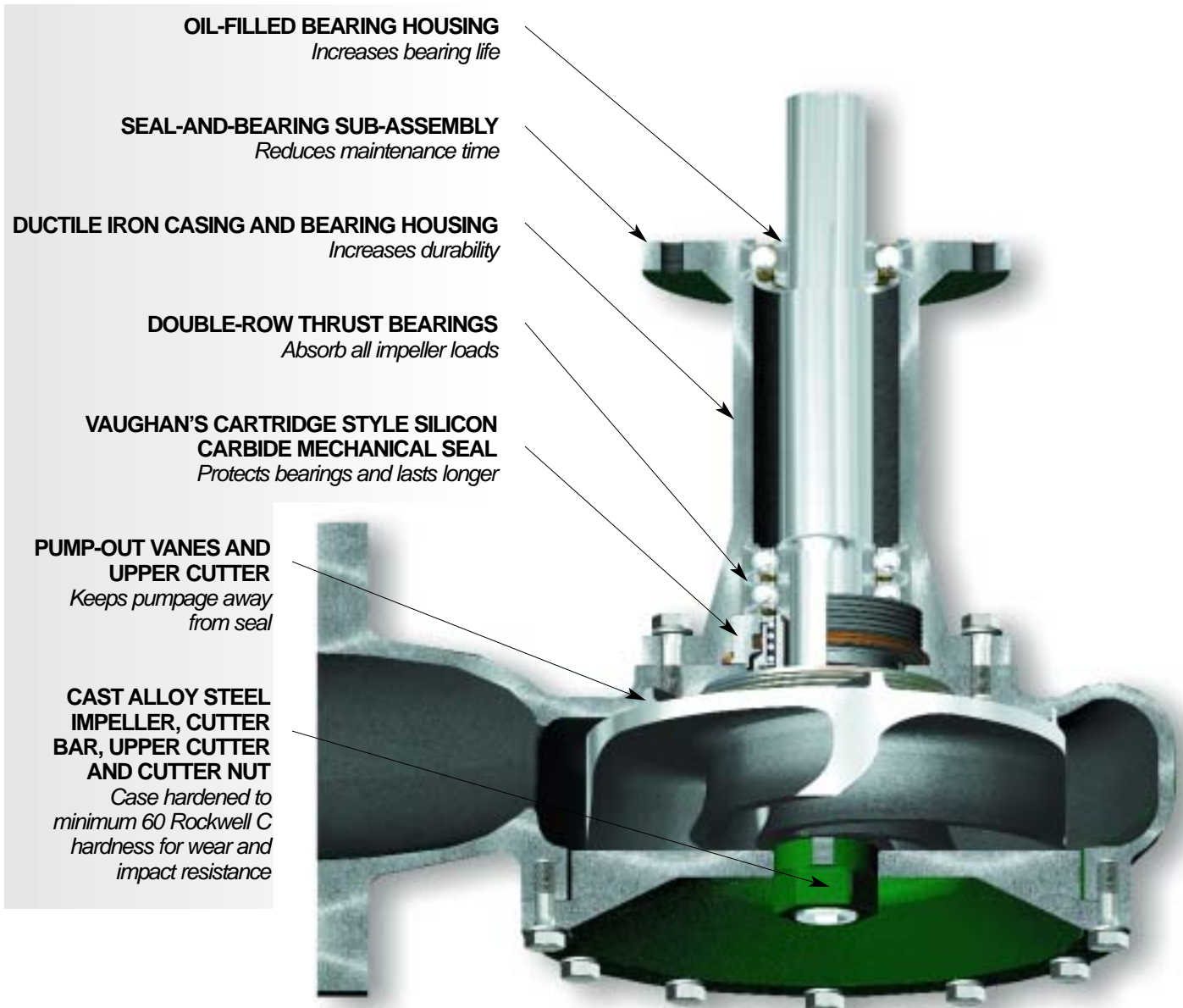


# Performance Map - 50 Hz



## 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*

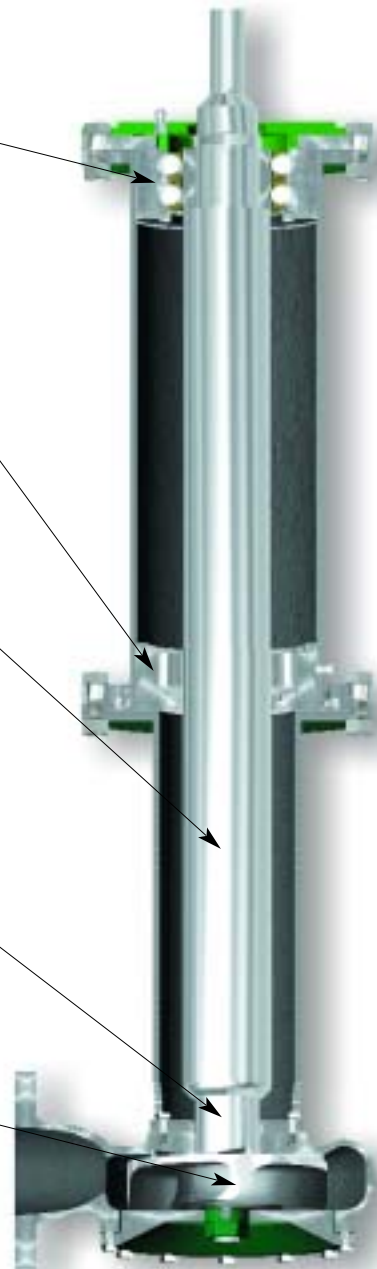


**HEAVY DUTY ROLLER AND BALL BEARINGS**  
*Absorb all loads dependably*

**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*





# Submersibles

## Electric Submersible

- 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*

**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*





# Hydraulic Submersible

- *High quality vane or piston hydraulic motors*
- *Portable, lightweight and versatile*



**VANE OR PISTON HYDRAULIC MOTOR**  
*Provides high reliability and efficiency*

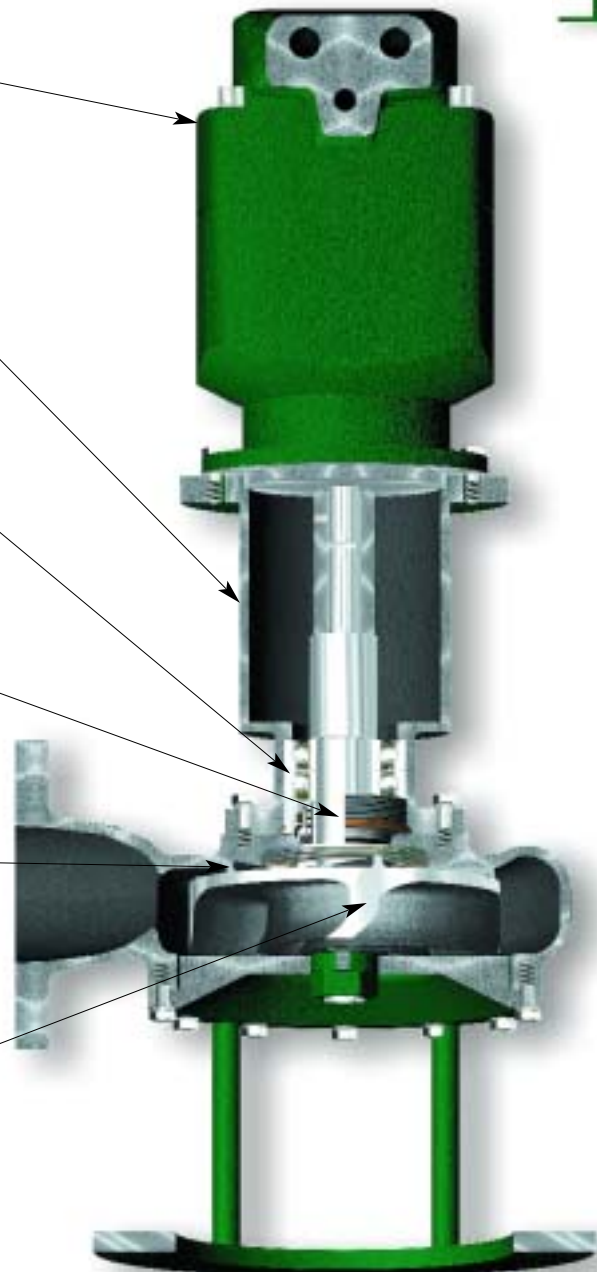
**OIL LUBRICATION**  
*Isolates motor from pumpage*

**DOUBLE ROW THRUST BEARINGS**  
*Absorb all loads*

**CARTRIDGE SILICON CARBIDE  
MECHANICAL SEAL**  
*Protects bearings from contamination*

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

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





# Horizontals

## E-Series

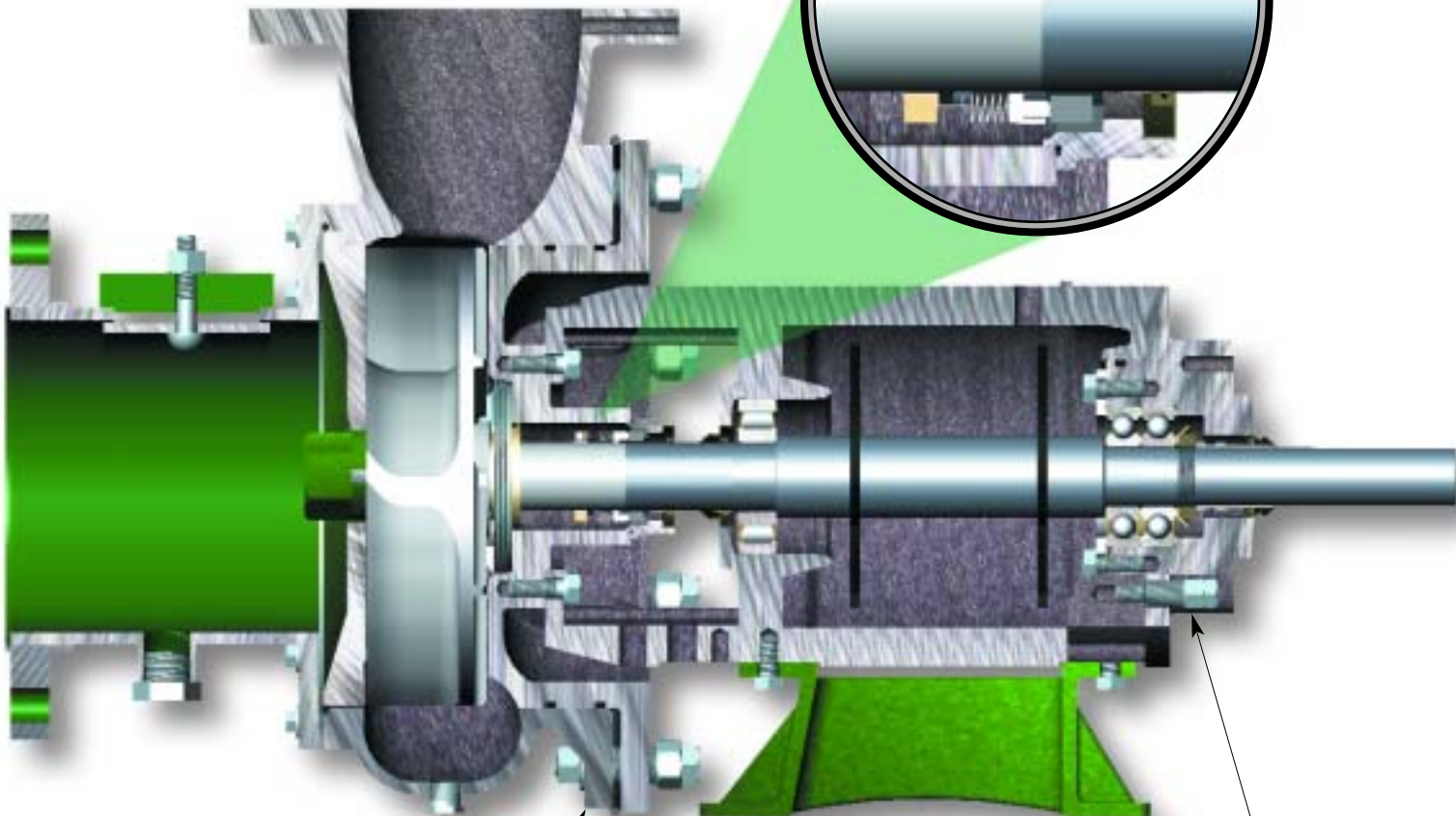
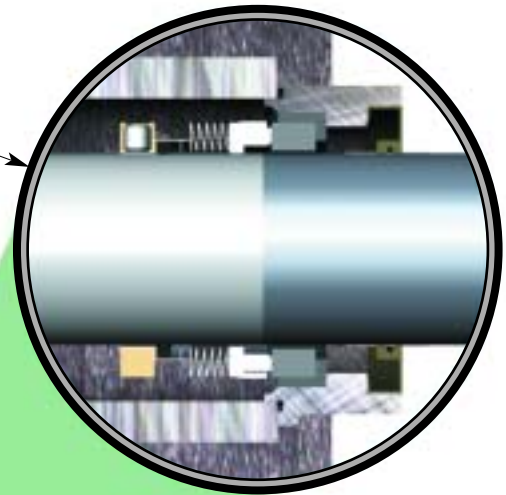
- *Interchangeable flushed packing or mechanical seal*
- *Heavy duty CBF (combined bearing frame) design*
- *Externally adjustable cutter clearances*



*Mechanical Seal  
or Packing*

### **INTERCHANGEABLE FLUSHED PACKING OR MECHANICAL SEAL**

*Low maintenance operation*



### **ADJUSTABLE BACK PULL-OUT CASING**

*Allows external adjustment of impeller-to-cutter bar clearance without disconnection from piping*

### **ADJUSTABLE DRIVE END**

*Allows external adjustment of impeller-to-upper cutter clearance*

# F-Series “Flushless”

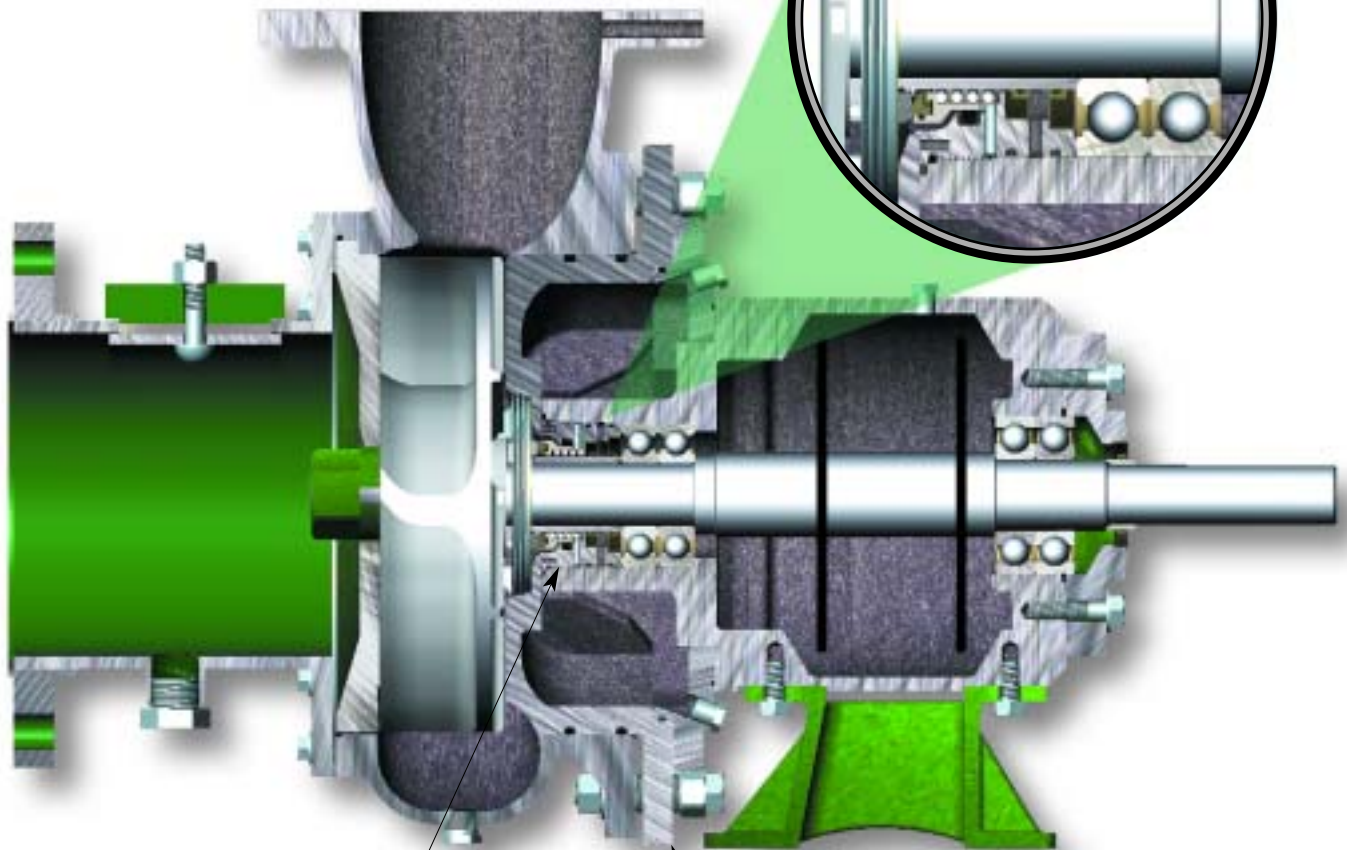
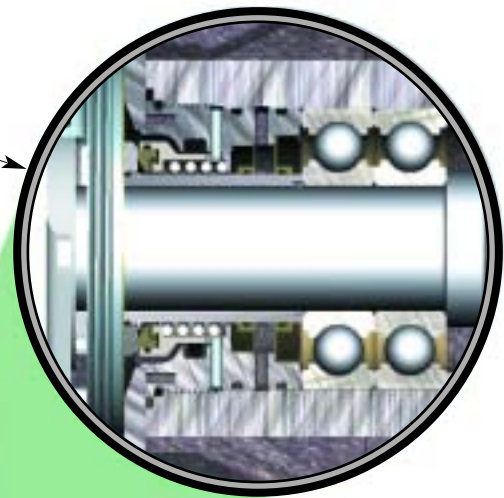
- *Flushless design eliminates the need for flush water*
- *2-Year Mechanical Seal Warranty assures dependability*
- *Externally adjustable cutter clearances*



*Flushless Mechanical Seal*

## **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, while increasing shaft and bearing life by minimizing shaft overhang*

## **ADJUSTABLE BACK PULL-OUT CASING**

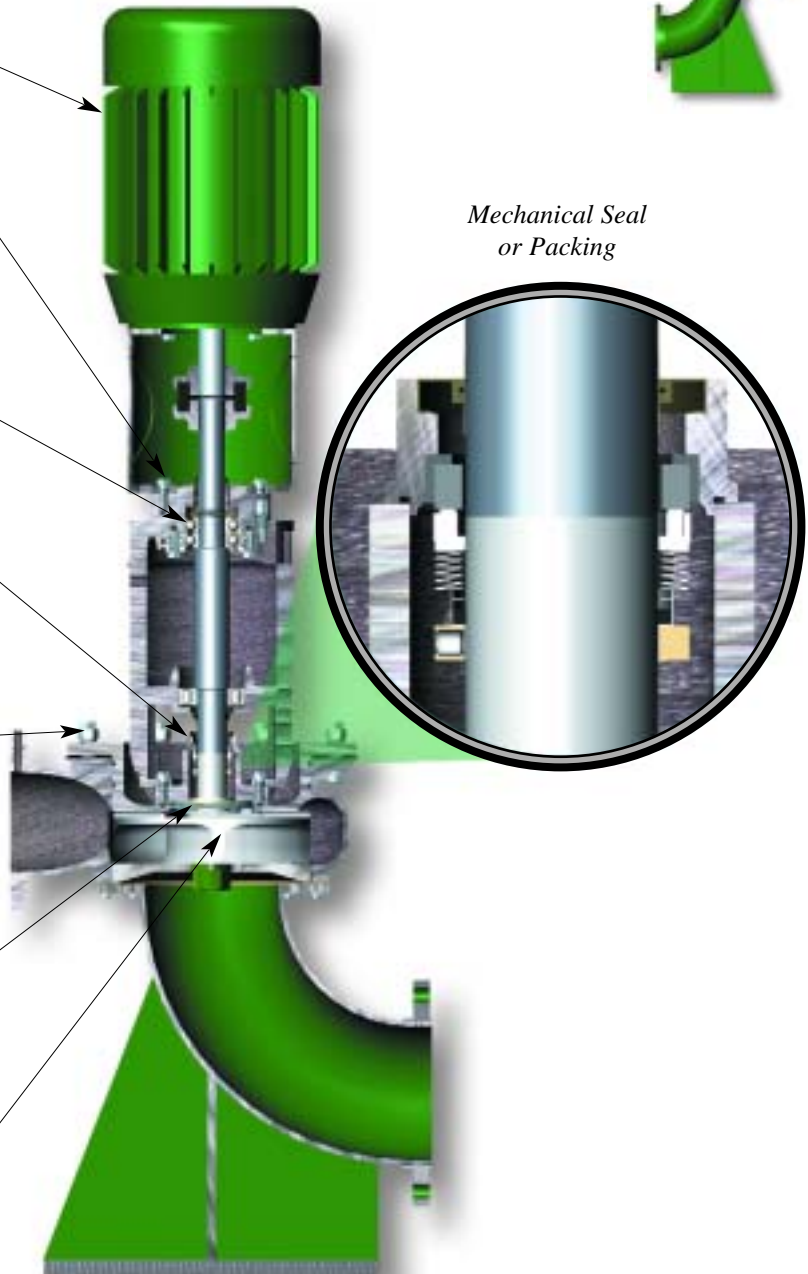
*Allows external adjustment of BOTH impeller-to-cutter bar and impeller-to-upper cutter clearances without disconnection from piping*

## E-Series

- *Interchangeable flushed packing or mechanical seal*
- *Externally adjustable cutter clearances*



- C-FLANGED MOTOR MOUNT**  
*Piloted for self-alignment*
- ADJUSTABLE DRIVE END**  
*Allows external adjustment of impeller-to-upper cutter clearance*
- DOUBLE-ROW THRUST BEARINGS**  
*Absorb shaft loads*
- MECHANICAL SEAL OR PACKING**  
*Isolates pumpage from bearings and motor*
- BACK PULL-OUT CASING**  
*Allows external adjustment of impeller-to-cutter bar clearance without disconnection from piping*
- PUMP OUT VANES AND UPPER CUTTER**  
*Keeps pumpage away from the seal*
- CAST ALLOY STEEL IMPELLER, CUTTER BAR, UPPER CUTTER AND CUTTER NUT**  
*Case hardened to minimum 60 Rockwell C hardness for wear and impact resistance*



# F-Series

- *Flushless design eliminates the need for flush water*
- *Externally adjustable cutter clearances*



**C-FLANGED MOTOR MOUNT**  
*Piloted for self-alignment*

**DOUBLE-ROW THRUST BEARINGS**  
*Absorb shaft loads*

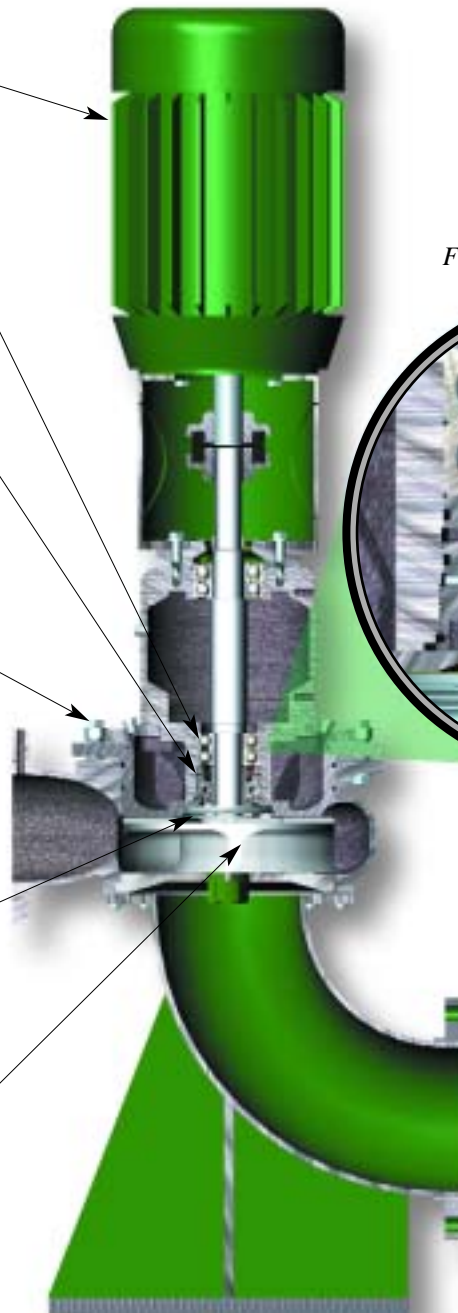
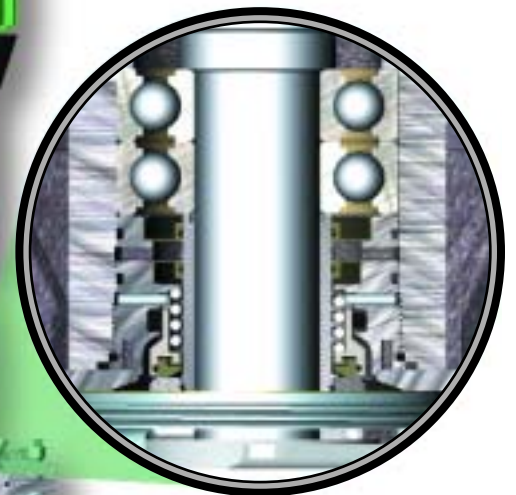
**FLUSHLESS VAUGHAN CARTRIDGE MECHANICAL SEAL**  
*Heavy duty design provides reliable long-term operation without the need for flush water*

**BACK PULL-OUT CASING**  
*Allows external adjustment of BOTH impeller-to-cutter bar and impeller-to-upper cutter clearances without disconnection from piping*

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

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

*Flushless Mechanical Seal*

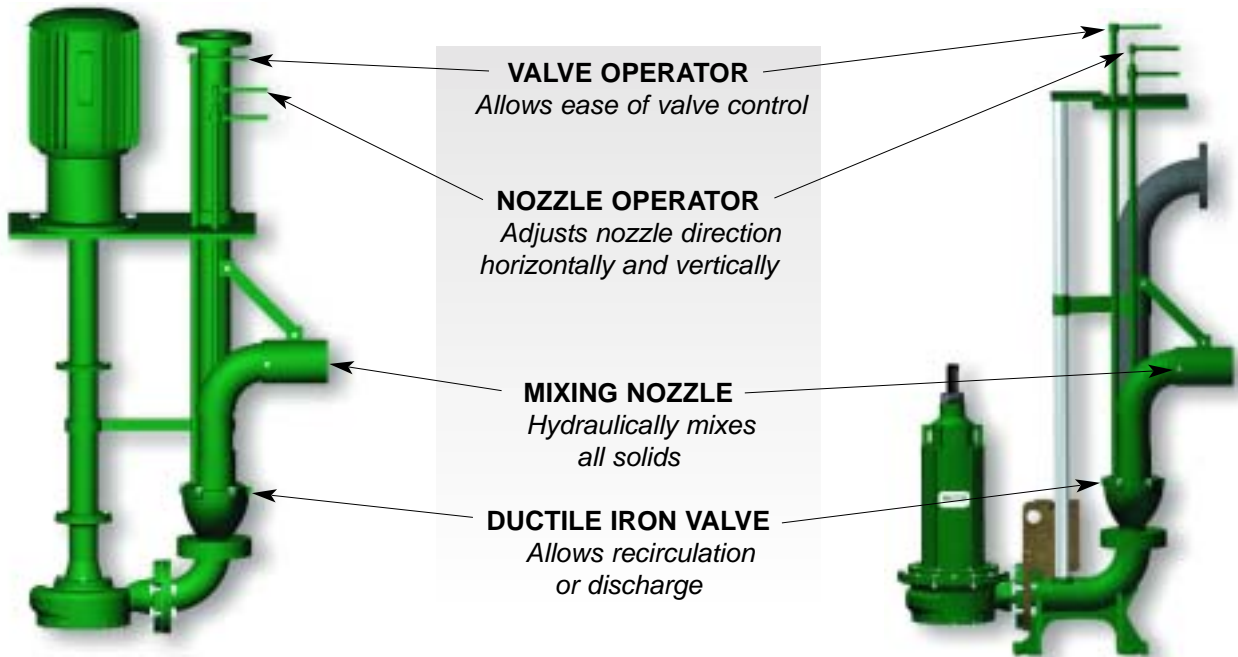


## Recirculator Chopper Pumps

- Easy above-deck access to valve and nozzle operators
- Manual or fully automated operation available

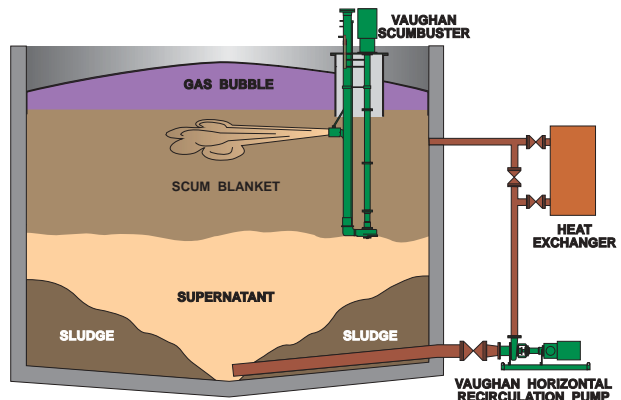
### Vertical Recirculator

### Submersible Recirculator



## Scumbuster

The Vaughan Scumbuster<sup>®</sup> 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.



# Self-Primer

- *Self-priming up to 25'*
- *Available in direct or belt drive*



**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*

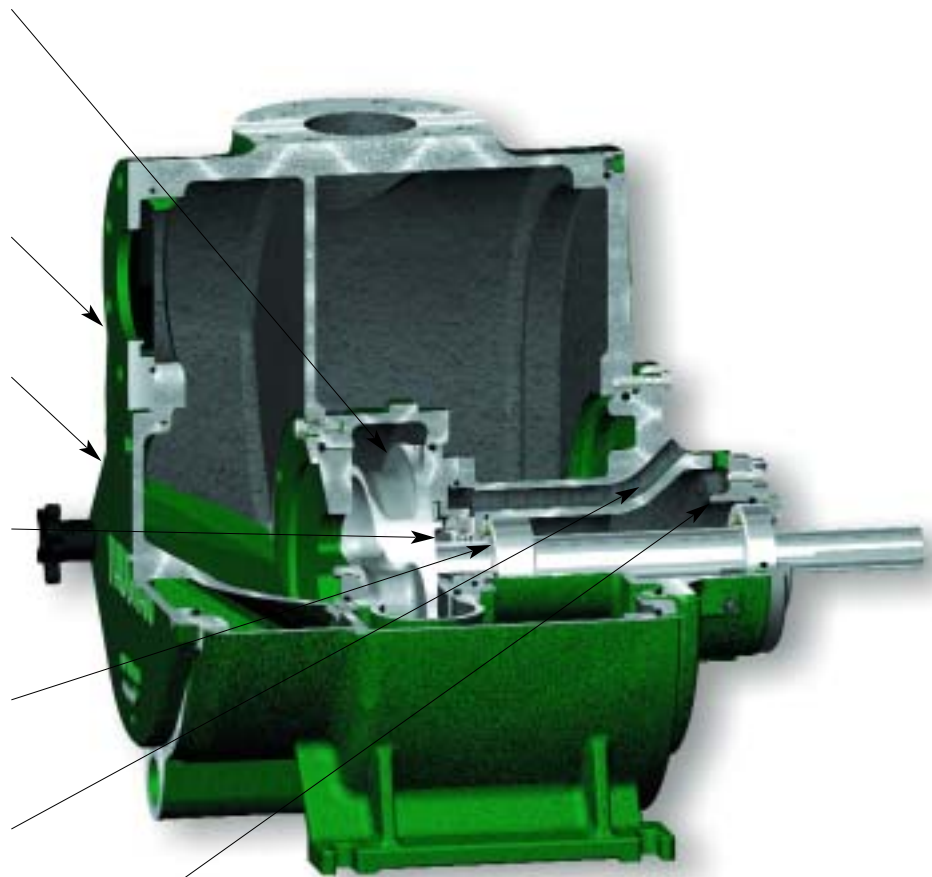
**OVERSIZED CLEANOUT**  
*Allows easy access*

**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*

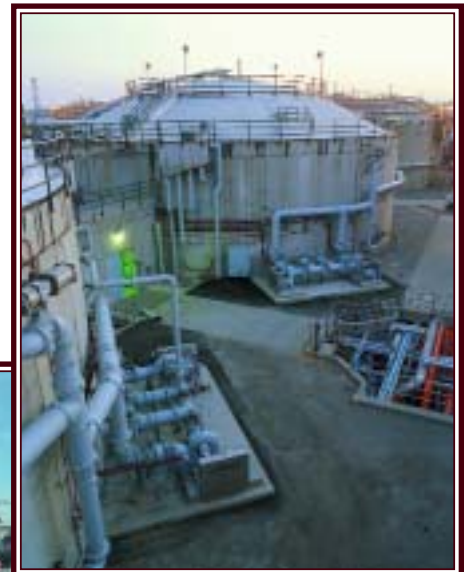


## Wastewater Applications

- 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** - Rotamix system conditions and mixes in a dual-zone rotational flow pattern.
- 8 **DIGESTER RECIRCULATION** - Eliminates heat exchanger clogging while conditioning sludge.

*Sludge Transfer*

*Digester Mixing*



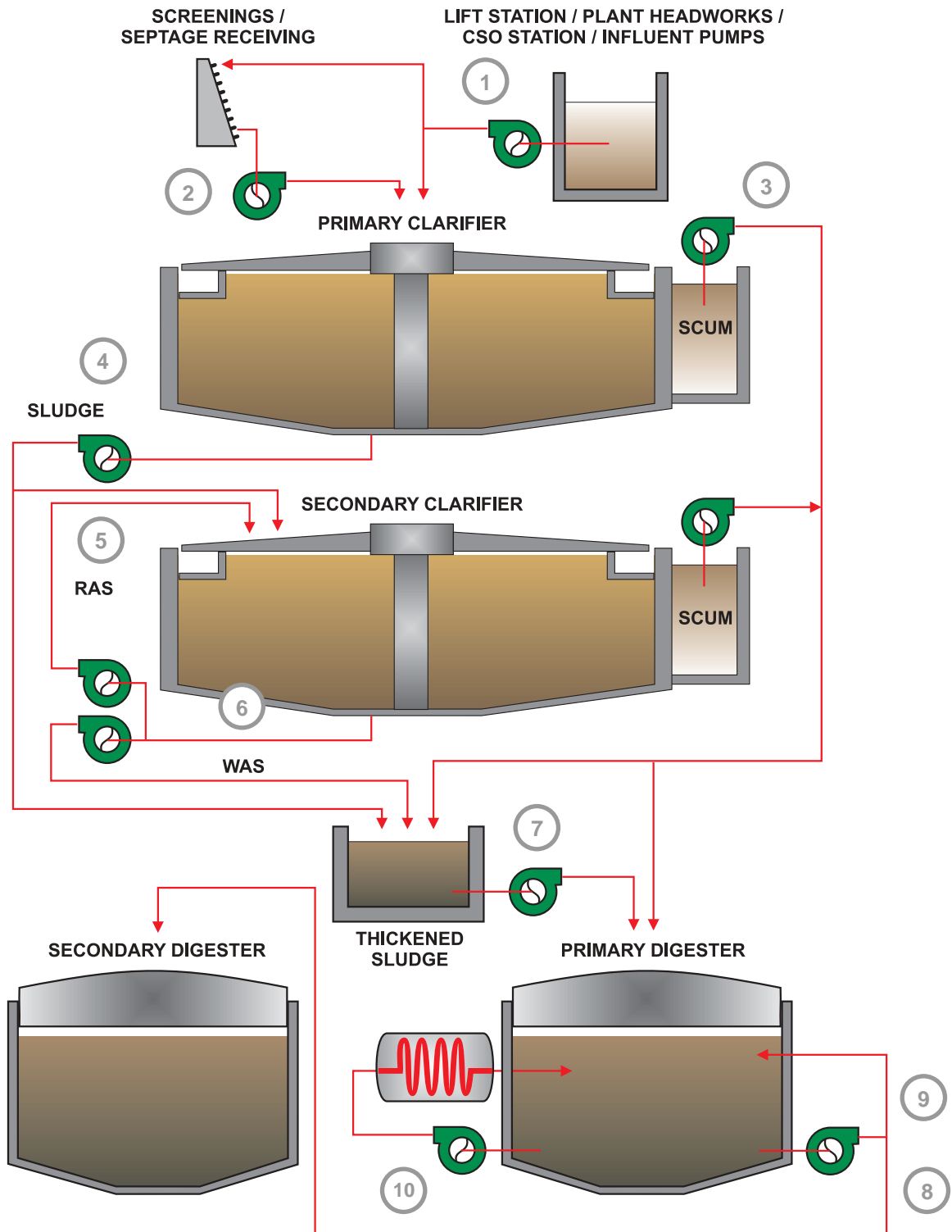
*CSO screenings*



*Primary Clarifier Scum*



# Typical Municipal Flow Diagram



## 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



# Just a few last words .....

Jim Beerbower in 1988  
(note the long black hair!)



*"The Vaughan Chopper Pump is the most reliable, continuous operating pump that we have in the plant. What makes this even more remarkable is that it is also pumping the worse solids slurry in the plant."*

- Jim Beerbower, Plant Manager  
Rohm and Haas Company, Elma, WA

*"Since switching to Vaughan Chopper Pumps in our CSO basin, our pumping problems are a thing of the past."*

- Mirza M. Rabbaig, P.E., Program Manager, CSO Group  
City of Detroit, Michigan





**VAUGHAN<sup>fi</sup> Chopper Pumps**

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

**TRITON<sup>fi</sup> Screw Centrifugal Pumps**

Wet Wells, Dry Wells, Submersibles

**ROTAMIX<sup>fi</sup> Process Mixing System**

Tank and Digester Mixing

***Also Available***

Floating Pumps, Lagoon Pumpers, Mixers, Auger Choppers, Vortex Choppers, Veggie Choppers.

***Authorized Representatives Worldwide***

**Vaughan Co., Inc.**

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Montesano, WA USA 98563

**PHONE: 1-360-249-4042, FAX: 1-360-249-6155**

**TOLL FREE INFO (U.S. only): 1-888-249-CHOP (2467)**

**INTERNET: [www.chopperpumps.com](http://www.chopperpumps.com)**

**U.S. E-MAIL: [info@chopperpumps.com](mailto:info@chopperpumps.com), INTL E-MAIL: [intl@chopperpumps.com](mailto:intl@chopperpumps.com)**

U.S. PATENTS: No. 5,460,483; No. 5,460,482; No. 5,456,580; No. 5,256,032; No. 5,076,757; No. 4,840,384; No. 4,842,479; No. 3,155,046; No. 3,973,866; No. 3,774,323.

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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<sup>1</sup> Vaughan Co., Inc., 2002.

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