



# PRESSURE SEWER

**BARNES<sup>®</sup>**  
BY CRANE PUMPS & SYSTEMS

# WHAT IS PRESSURE SEWER?

Traditionally, municipalities have used Gravity Sewer Systems to transport sanitary waste. As the name suggests, Gravity Sewer Systems use a network of sloping pipes which allow the forces of gravity to push fluid through the system to a sewer main.

## **WHAT THIS MEANS:**

- The sewer main must be installed deeper than the lateral lines coming from each source connected to it.
- Large diameter pipes must be used to prevent blockages from any solids that may be introduced to the waste stream.

## **HOW GRAVITY SEWER SYSTEMS FUNCTION AND ARE BUILT IMPOSE SIGNIFICANT CHALLENGES:**

- Extensive digging of trenches is both costly and has a negative environmental impact, particularly in areas with high ground water and hilly, rocky, or flat terrain.
- Lift stations required to transport fluid through the sewer main to a collection or treatment plant are costly to build and maintain.

## **WHEN LOOKING TO OVERCOME THESE CHALLENGES, PRESSURE SEWER SYSTEMS PROVIDE AN ATTRACTIVE ALTERNATIVE:**

Pressure sewer systems are sanitary sewer systems which utilize a network of grinder pumps to transport wastewater through small diameter pipes directly to a collection and treatment system. A grinder pump is a submersible pump designed to reduce wastewater particulate to a slurry using a grinding mechanism. Pressure sewer systems can reduce installation costs, increase system flexibility and reduce the overall environmental impact of the system, all of which benefits contractors and end-users. They can be used as a complete turnkey solution or can be easily integrated into an existing collection system with other technologies.





# BENEFITS



## REDUCED INSTALLATION COSTS

### HOW?

- Reduced costs due to smaller piping requirements
- Deferred Costs – Rather than installing a costly lift station in advance of new construction, contractors can simply install the low pressure sewer pipe up front, deferring the cost of the grinder pump station until the sale of the home

### WHERE?

- Replacing Septic Systems
- New Construction / Development



## INCREASE SYSTEM FLEXIBILITY

### HOW?

- Pressure Sewer Systems can travel long distances and operate in all terrain types, providing the perfect solution for all unique site challenges that builders face with traditional gravity systems
- Directional boring and small pipe diameter greatly reduce impact of construction around existing infrastructure

### WHERE?

- High Ground Water
- Lakeside or Ocean Front
- Surmounting Barriers (Roads, Streams)
- Hilly, Flat and Rocky terrain



## ENVIRONMENTAL PROTECTION

### HOW?

- Closed system eliminates risk of system leaking and contaminating groundwater, streams, lakes, and oceans

### WHERE?

- High Ground Water
- Lakeside or Ocean Front



# BARNES® PRESSURE SEWER SYSTEM DESIGN

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As a value-added service, our dedicated Pressure Sewer Specialists are at your service to provide all the design support you require, free of charge. Whether you are planning for a new construction or replacing an old system, our team can provide you with analysis to make you confident in your investment!

Using KY-Pipe, a third-party pipe network analysis software, we will provide you with a complete hydraulic analysis of your system.

Crane Pumps & Systems utilizes the Rational Method for system design, as recommended by the EPA. This method calculates the average system flow or design flow by using a baseline formula and the average daily flow per connection.

The report we provide you will include color coded pipe layouts, system design, design specifications, design consultation, budgetary estimates, and product drawings and specifications.

Pressure sewer specialist design recommendations can help minimize upfront infrastructure costs by as much as 60% compared to gravity systems.

# BARNES® PRESSURE SEWER PRODUCTS

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Razor Grinder Pump is the heart of Barnes' pressure sewer systems



Barnes Upgrade Core provides a drop-in replacement to upgrade competitor's grinder pump stations



Blade grinder pump is a robust solution for higher horsepower applications



EcoTRAN basin package designed for superior installation, serviceability and aesthetics



Fiberglass Basin Packages allow flexibility to customize the features of your station



## **CUTTING EDGE DESIGN FOR A NEW-AGE WASTESTREAM**

Razor Grinder pumps are the ideal 2 HP pump for residential and light commercial solids handling applications, thoughtfully designed with innovative axial cutting technology to efficiently reduce solids like flushable wipes, diapers, and other non-biodegradable items commonly found in the modern waste stream. Our Razor hydraulics make this the ideal pump for your pressure sewer needs.



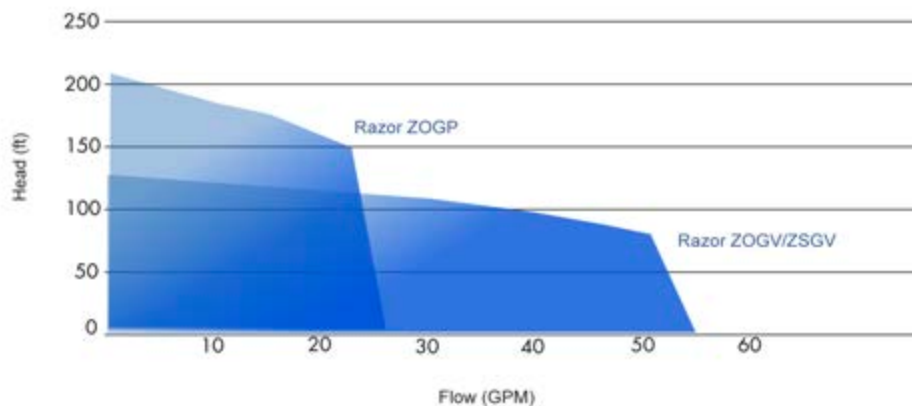
ZOGP Two-Stage Grinder

- 1 Plug-n-play cord simplifies service
- 2 Oil-Filled Motor for optimal motor cooling and maximum bearing life
- 3 Stainless steel hardware provides resistance against corrosion to extend pump life
- 4 Simplified hardware requires only one standard tool for service
- 5 Axial Cutter design greatly reduces clogging issues due to troublesome objects
- 6 Available in multiple discharge configurations for simple installation and replacement
- 7 Heavy duty, oil-lubricated bearings extend pump life
- 8 Oversized stainless steel lifting bail and lighter weight allows for easy installation by hand or hoist
- 9 Two stage impeller design ideal for pressure sewer applications (single stage model is also available)

## FEATURES

- Patented Axial Cutter
- Light Weight
- Dual Voltage Motor
- Retrofit Applications
- Float and Pressure Switch protection
- Convenient Maintenance
- Non-Overloading
- Designed for Pressure Sewer
- Serviceability
- Three Year Warranty
- Tank Mixing
- Explosion Proof models available

## RAZOR PERFORMANCE RANGE ZOGP - ZOGV/ZSGV





# UPGRADE CORE



## UPGRADE TO PERFORMANCE WITH RAZOR GRINDER PUMPS

The Barnes Upgrade Cores allow operators and service providers to upgrade competitor's grinder pump stations with a Barnes Razor grinder pump through a quick and easy drop in replacement.



## FIXED DISCHARGE UPGRADE CORE

The Barnes Fixed Discharge Upgrade Core uses the Barnes Razor ZOGP Grinder Pump and provides a drop-in ready package that fits directly into E/One 200, 2000 and Extreme D-Series stations.



## FREESTANDING/ UNIVERSAL UPGRADE CORE

The Barnes Universal Upgrade Core uses the Barnes Razor ZOGP Grinder pump and is designed to fit into a variety of grinder pump stations with a versatile 1.25" NPT discharge connection.



### FEATURES:

1. Three Year Warranty
2. Drop-in discharge connection easily fits into fixed discharge, flex hose or hard piped connection
3. Patented axial cutter limits jamming and clogging
4. Cast iron flap style check valve with anti-siphon
5. Grinder pump is powder coated cast iron with all stainless hardware, providing resistance to corrosion
6. 2 HP Centrifugal pump design empties basin in half the time with greater life than progressive cavity design
7. Independent level control and pump allow for easy removal and inspection of either item
8. Quick-connect fittings simplify electrical connection
9. ESPS sealed pressure switch controls pump with no exposed electrical components. Float controls also available
10. Axial cutting mechanism acts as a propeller in the basin creating a mixing effect which prevents solids from settling, resulting in a cleaner station

### WHY USE A BARNES UPGRADE CORE IN YOUR SYSTEM?

- Reliability you can count on
- Reduces operational and maintenance costs
- Higher discharge pressure and increased flows improve force main scouring
- Reduced pump weight for easier installation
- Increased pump life
- Basin mixing capabilities eliminate odor problems and solids settling
- Third party NSF 46 rating ensures market leading grinding capabilities
- Fully recessed vortex impeller provides greater resistance to wear and abrasives compared to progressive cavity grinder pumps



Plug and play cords available for both E/One 2000 Series and E/One Extreme models

\* E/One® is a registered trademark of Environment One Corporation and is not affiliated with Barnes Pumps.



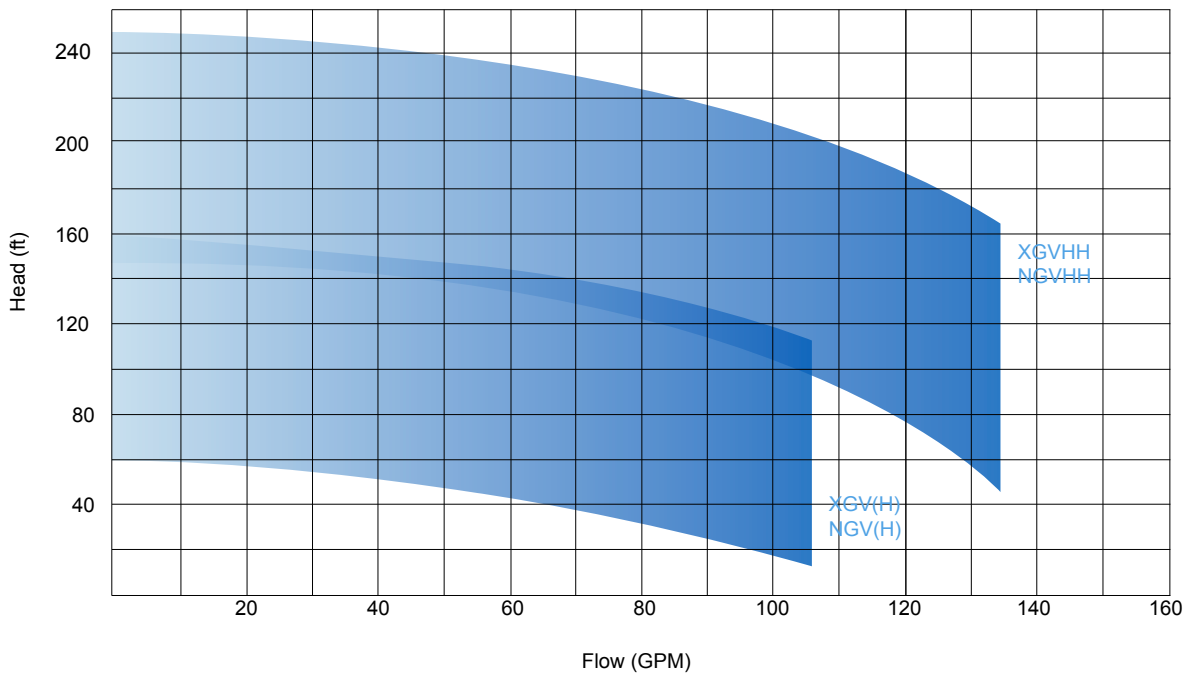
## **PROVEN TECHNOLOGY TRANSFORMED FOR NEW APPLICATIONS**

Utilizing our non-clog and SITHE motor platform, the Blade grinder offers improved hydraulics for low flow, high head applications where a residential grinder is not sufficient.



- 1 Plug-n-play cord simplifies pump installation with its quick disconnect capability
- 2 Oil-Filled Motor for optimal motor cooling and maximum bearing life
- 3 Stainless steel hardware provides resistance against corrosion to extend pump life
- 4 Moisture detection probe alerts pending seal issues before water can enter the motor
- 5 Vortex impeller design greatly reduces clogging issues due to troublesome objects
- 6 Exclusive Slicerator™ slices with the full torque of the motor acting on a small area to provide the ultimate solution in solids reduction
- 7 Available in vertical or horizontal discharge for simple installation and replacement (18 frame only)
- 8 Double mechanical seals provide maximum motor protection
- 9 Heavy duty, oil-lubricated bearings extend pump life
- 10 Large lifting Bail allows for easy installation
- 11 Optional explosion proof design gives an added peace of mind for pump operation and safety; Class I Division 1 Groups C & D motors

## BLADE PERFORMANCE RANGE



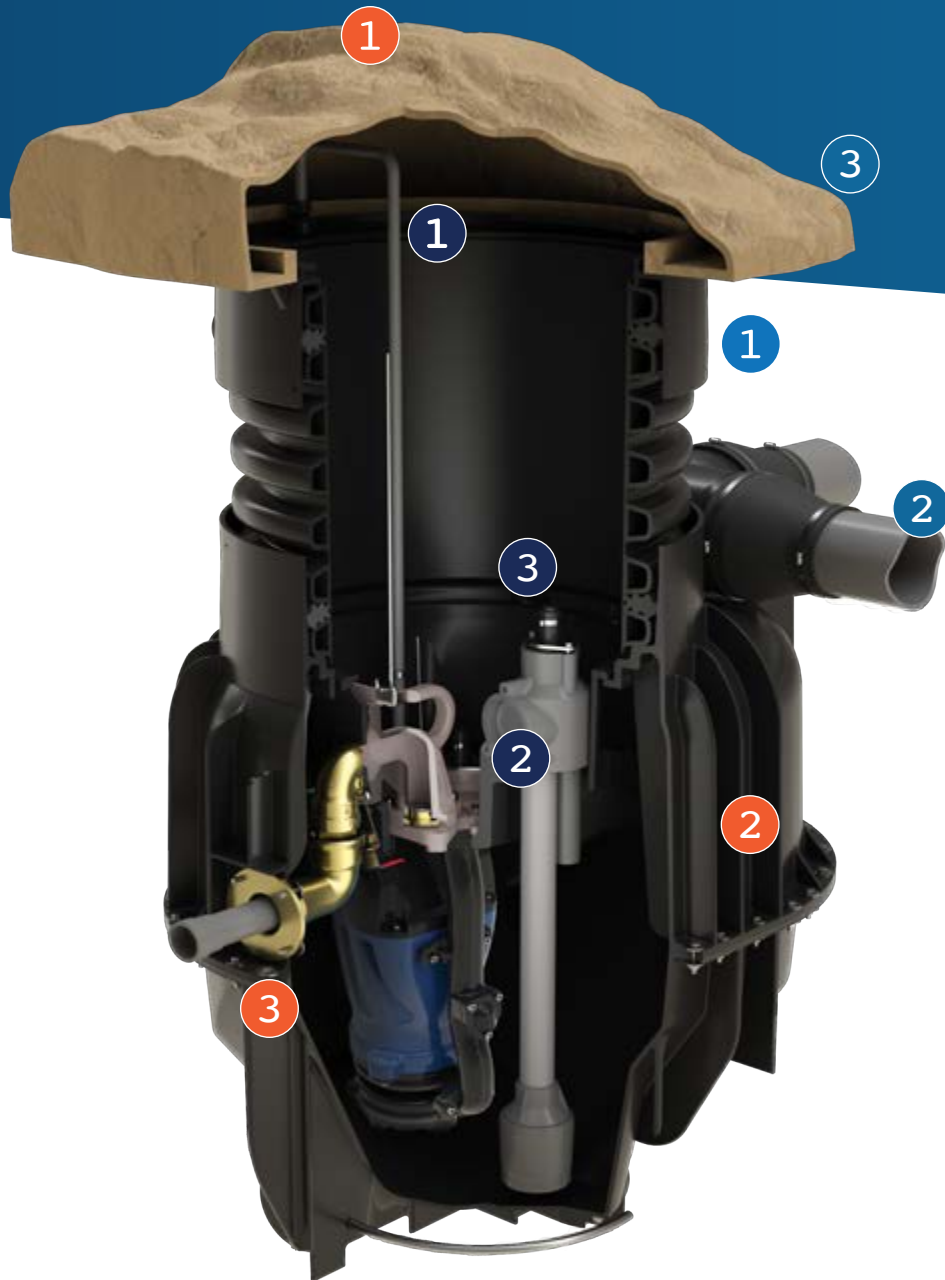


# ECOTRAN



## INSTALLATION FLEXIBILITY WITH BARNES ECOTRAN SYSTEM

The Barnes EcoTRAN Pressure Sewer System preserves groundwater ecology by collecting and grinding residential sewage in an underground basin and transmitting the waste under pressure to a waste treatment plant.



## INSTALLATION

- 1 Field Adjustable Riser Pipe for easy installation
- 2 Three inlet port positions provided for piping flexibility
- 3 Installed using directional boring, allowing for faster installation and limited landscape disruption

## AESTHETICS

- 1 Rock shape cover for less disruption of landscape
- 2 Durable Polyethylene Basin for extended life
- 3 Technology requires smaller pipe diameter allowing for lower environmental interference

## SERVICE

- 1 Discharge valve is accessible from top of pod removing the need for basin entry
- 2 Pump and Level Controls can be removed independently, and both feature a plug-and-play cord to simplify service
- 3 Basin engineered to perfectly fit pump for easy installation and removal

# FIBERGLASS BASIN



## CUSTOMIZABLE SOLUTION WITH FIBERGLASS BASIN PACKAGES

The Barnes fiberglass basins provide residential grinder packages with the variability to select the perfect equipment suitable for each unique installation.





## CAPACITY

- 1 Simplex and Duplex configurations allow for increased capacity when required
- 2 Basins ranging from 24" - 60" diameter and 48" - 144" depth to provide adequate storage space depending on the application or local regulations

## EQUIPMENT

- 1 Packages are compatible with both the single stage and dual stage Razor grinders, allowing for optimized performance selection
- 2 Multiple level control solutions, including automatic floats and the ESPS pressure switch

## INSTALLATION

- 1 Inlet piping and cord grips are shipped loose for field location and installation in accordance with the site-specific requirements
- 2 Selection of basin cover material and design to accommodate security requirements or aesthetic desire



# PUMPS & SYSTEMS

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