# GritCup® and SpiraSnail®

## Superior Performance Washing and Dewatering

## Product Profile

Conventional screw classifiers attempt to wash and dewater grit within one unit process. They rely on a differential in settling velocity between the volatile solids and the grit particles to achieve separation. In most cases this results in various amounts of organic content being retained in the output grit and fine grit being lost in the effluent, which recycles back to the plant. By segregating the washing and dewatering into separate unit processes, the GritCup® and SpiraSnail® are optimized to perform a single objective. The combined system delivers high performance in retaining more than 90% of all grit 106 micron and larger. Ideally suited for plants below 10 mgd peak, the GritCup® processes 200 gpm and the SpiraSnail® has 0.75 $yd^3$/hr conveying capacity. Output grit contains less than 20% volatile solids content and greater than 60% total solids at design flow.

## Applications

- Grit washing/dewatering for new, expanding, and upgrading WWTPs
- Replacement for worn out or ineffective grit washing / dewatering systems

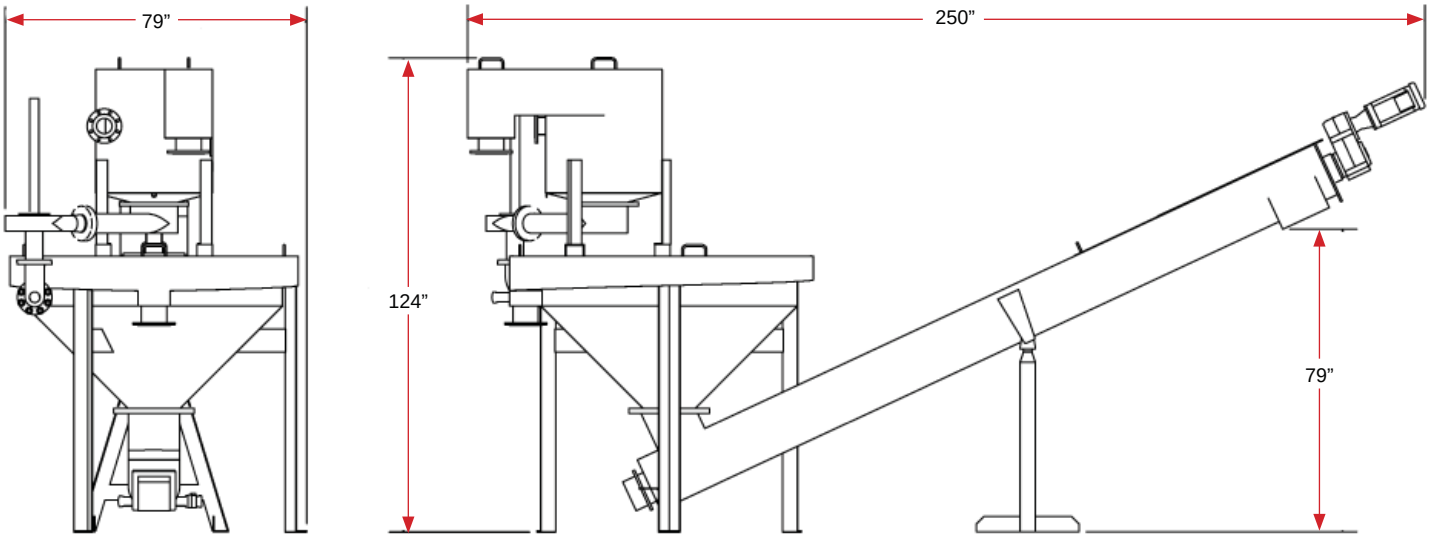
## How it Works

Concentrated grit slurry from the grit collection process enters the GritCup® tangentially at a controlled rate and velocity establishing a free vortex flow regime. Grit is forced to the outside perimeter or held in suspension until it falls by gravity into the boundary layer which sweeps the grit, but not volatile solids, to the center for collection. Excess water and separated organic materials flow out of the unit to downstream processes for additional processing.

A Reg-U-Flo® vortex valve regulates the volume of washed grit slurry exiting the GritCup® and introduces it tangentially into the SpiraSnail® clarifier. This tangential entry forces the grit to the outside of the clarifier cone. From there it settles into the SpiraSnail® conveyor trough. The slowly rotating screw conveys the captured grit and dewaters it as it moves towards the discharge chute and into the grit receptacle ready for landfilling. Clarified water passes over the perimeter weir before being sent back to the plant for further treatment.

## Advantages

- Guaranteed 90 - 95% capture of all grit 106 micron and larger with less than 20% volatile solids and greater than 60% total solids in output grit at design flow
- Captures 75% of grit 75 - 106 micron
- No washwater requirements
- Either intermittent or continuous operation
- Fully enclosed design reduces odors
- Improved maintenance accessibility
- Stainless steel construction and heavy duty design ensures long product life
- Large internal clearances minimize the potential for obstruction
- Hydro provides an entire system guarantee when paired with a Hydro headworks grit removal system



## Optimized Grit Washing

The free vortex washing GritCup® unit uses accelerated gravity to create a separation zone in which volatile solids are removed from the heavier grit. Grit is retained while the volatile solids are stripped away and exit with the degritted effluent. The system has no washwater requirements and requires virtually no operator inputs or in-field adjustments.

## Innovative Clarifier Design

With its unique component design the clarifier on the SpiraSnail® optimizes the settling tank characteristics. Built on the same hydraulic principles found in the Eutek HeadCell® grit removal system, the clarifier uses a conical shape to deliver the surface area required to remove fine grit particles. Boundary layer forces assist in achieving optimal grit settling characteristics.

## Efficient Dewatering Design

Most classifiers and grit washers are incapable of retaining fine grit particles due to the use of an undersized clarifier tank or rapidly turning screw. The SpiraSnail® has been designed to address these weaknesses. The innovative clarifier design provides increased surface area while the shallow incline and slow screw speed delivers 90 - 95% capture of 106 micron and larger grit particles - Guaranteed.

## Motor and Drive

The classifier can be coupled with an optional explosion proof motor for use in classified environments. A variable frequency drive in the control panel provides flexibility and allows adjusting screw speed to match site specific conditions.

## Screw and Bearing

The SpiraSnail® uses a shafted screw design with an external lower bearing. Unlike classifiers with shaftless screws there is no need for liners or steel wear bars that often have to be cut out to be replaced, requiring a complete disassembly of the unit. Instead, the SpiraSnail® is equipped with a long lasting 4 bolt lower bearing that can be accessed and serviced from the outside of the trough saving both money and downtime.



