

# Grit King® for Small Plants

Precast System Optimized for Plants up to 2.4 MGD Peak



## Advanced grit management priced for smaller plants unwilling to sacrifice performance.

Hydro International now offers small wastewater treatment plants an accessible option to provide 85-95% removal of all grit entering the plant for peak flows up to 2.4 Mgal/d (105 L/s) with 106 micron ( $\mu\text{m}$ ) performance, or peak flows up to 5 Mgal/d (220 L/s) with 212  $\mu\text{m}$  performance.

Advanced Grit Management® systems, have often been a luxury item for small plants – until now. Based on proven real-world performance in grit removal over more than 30 years, the Grit King® hydrodynamic vortex separation system is now available as a precast system designed specifically for small plants.

The precast tank is simply placed on an appropriate base and a grout cone is formed in the bottom. The internal components, made of synthetic materials and stainless steel, are installed with inlet and outlet connections sealed to the concrete chamber; a dry pit grit pump, Decanter grit dewatering box, and control panel complete this Advanced Grit Management® system.

### Benefits

- Economical to install, own, and operate
- A complete Advanced Grit Management® system including collection and dewatering
- No moving parts in the separator, the grit pump is the only mechanical component
- Compact design with minimal headloss

### Applications

- New small municipal and industrial wastewater treatment plants
- Small treatment plant retrofits and upgrades
- Sediment removal pre-treatment for potable water

### How it Works

The Grit King® is an advanced hydrodynamic separator that augments gravitational forces to effectively separate grit from water with no moving internal components. Flow is introduced into the Grit King® via a tangentially positioned inlet causing a rotational flow path around the dip plate. The flow spirals down the wall of the chamber as solids settle out by gravitational forces and forces created by the rotating flow. The grit collects in the grit sump at the bottom of the unit as the center cone directs flow away from the base, up and around the center shaft into the inside of the dip plate and out the effluent pipe.

The upward flow rotates at a slower velocity than the outer downward flow. The resulting “shear” zone scrubs out the finer particles. The concentrated grit underflow is pumped to a grit dewatering dumpster.



*Decanter Dewatering System Delivers Dry Grit Output*



*Installed Grit King® System [right] and Pump Tank (supplied by others) [left]*

## Grit King® for Smaller Plants Configurations

The synthetic internal components and stainless steel support frame are supplied with a precast concrete tank. The precast concrete structure is simply placed on an appropriate base, a grout cone is formed in the bottom, components are installed and sealed connections are made to the influent and effluent piping.

The precast Grit King® is typically supplied with a dry pit grit pump, controls and a Decanter non-mechanical dewatering bin. Optional equipment includes a precast concrete tank for the pump, tank covers, and alternate pump and dewatering options.

## Grit King® for Smaller Plants Performance

The Grit King® PC can be designed for 95% removal of all grit 106, 150, or 212 µm and larger. Most Advanced Grit Management systems are designed for 95% removal of 106 µm and larger.

## Capacity

Unit Size	4'	6'	8'	10'
<i>Design Cut Point</i>	<i>Peak Flow, Mgal/d</i>			
106 µm	≤ 0.29	≤ 0.71	≤ 1.33	≤ 2.19
150 µm	≤ 0.41	≤ 1.49	≤ 1.88	≤ 3.07
212 µm	≤ 0.61	≤ 1.57	≤ 2.81	≤ 4.58

Size	1.2 m	1.8 m	2.4 m	3.1 m
<i>Design Cut Point</i>	<i>Peak Flow, L/s</i>			
106 µm	≤ 8.8	≤ 30.0	≤ 60.9	≤ 106.9
150 µm	≤ 15.8	≤ 43.8	≤ 89.8	≤ 156.9
212 µm	≤ 25.0	≤ 68.8	≤ 141.5	≤ 247.1

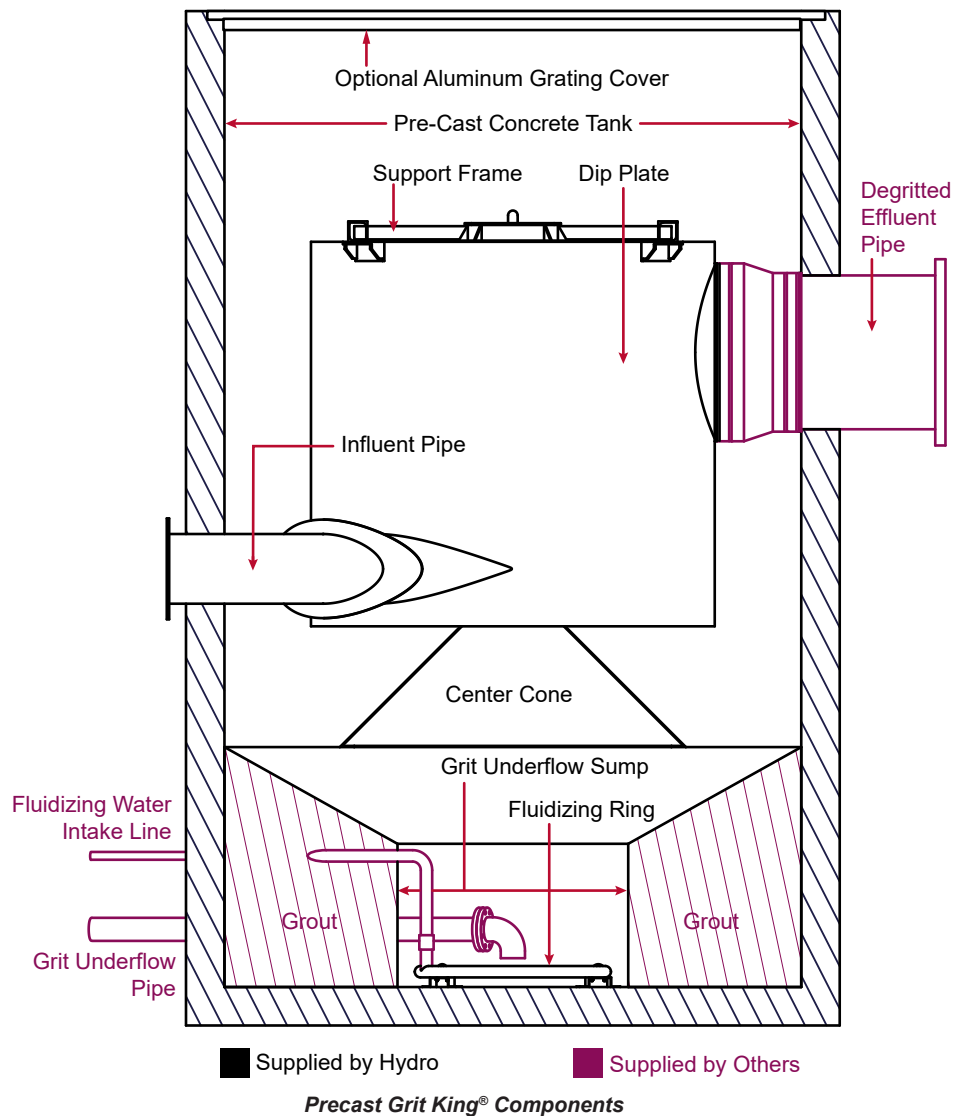


## Design Notes

- Complete Advanced Grit Management® system, including precast tank with internal grit separation components, pump, dewatering unit and controls
- Internal flow structuring components create a long flow path, aiding settlement and maximizing grit capture
- All-hydraulic design with no moving parts ensures long product life; the grit pump is the only mechanical component in the system

### Reduce costs with pre-built components

The Grit King® arrives on-site already configured in the tank, and just needs the grout poured for the grit sump. This allows you to rapidly get the system up and running with minimal installation time and costs.



## Learn more

To learn more about how the **Grit King®** in a precast system can cost-effectively improve your plant, visit [hydro-int.com](http://hydro-int.com), or contact us:

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