

J+A Crossflow[™] Grit Removal

An Improved Design by the Grit Removal Experts

Key features & benefits

- Standardized equipment for tanks up to 16.0m diameter
- Wide selection of grit handling methods available
- Flexibility of automatic and hand controls

How we create value

- Heavy gauge materials for extra strength and increased unit life
- Advanced chamber profile design improves crossflow distribution
- Full, automatic lubrication minimizes maintenance
- Site test and analysis ensure improved designs



J+A Crossflow™ Grit Removal



A reciprocating Rake Classifier operating in conjunction with a J+A Crossflow™ grit trap.

How it Works

The J+A Crossflow™ grit separator is used at raw sewage inlets, and should be positioned downstream from sewage screens. These screens require medium to fine spaces. Where two stage screening is applied, the Crossflow unit can be installed after the medium spaced screen, thus protecting the fine screening mechanism from abrasive detritus.

The collection tank is a wide, shallow, square proportioned channel. The inlet channel is near parallel to the inlet side of the tank, and has a series of vertical baffles to assist the distribution of flow entering the collection tank. The J+A chamber design enhances flow equalization across the chamber.

Flow is in a single direction across the tank to the outlet side. The outlet is a sharp edged weir, which has a drowned discharge during higher flow rates. The normal form of hydraulic control is a standing wave flume. This doubles as the means of flow measurement. The characteristics of the flume are ideal to control the critical crossflow velocities within the trap. The flume has to be positioned downstream of the Crossflow chamber.

This design forms a recessed, circular sump. This has a diameter equivalent to the length of the square sides of the tank. The level floor of this sump is the bed upon which the grit and other similar solids will settle. This accumulation of solids is collected and transported by a slowly rotating scraper mechanism supported on the bridge spanning the tank.

The collected solids are delivered to a hopper on the periphery of the tank. From here the grit is separated and dewatered by a classifier. Various grit classification methods are available, and are selected by preference, site limitations and, in some instances, the effectiveness of the primary screening.

Operation is most efficient when velocity is maintained at a specific value over the whole range of flow. At this velocity, grits of the specified size and specific gravity will be collected. Sizing, positioning and hydraulic control are of the utmost importance.

Grit Classification

Grit classification separates, as far as possible, any other solids present with the grit at the point of collection. It is also the means by which the grit is dewatered, thus providing a suitable product for disposal.

Ovivo have developed a number of grit classifying methods, all of which can be applied to the Crossflow grit removal system. Sewage and sewer systems vary to such an extent that design flexibility is essential. The options provided allow for: variations in screening, the height and depth of the installation, and the point of dewatered grit collection.

Reciprocating Rake

A heavily constructed, inclined, reciprocating mechanism conveys the grit from the collection sump. The reciprocating action combines with the inclined plane transports and dewateres the grit to a fixed position.

Inclined Screw

Pumps will be used to transfer the collected solids and water from the collection sump to the independent and freely positioned screw classifier.

The heavily constructed, inclined screw conveyor discharges the dewatered grit. Water and the other solids are separated by the weir systems that form part of the equipment.

The screw system is preferable when there is a large level differential between the incoming sewer and the point of discharge, and when pumping is employed.

Bache Classifier

The Bache Classifier system has been introduced to cope with grit removal systems that work in conjunction with medium to coarse screens. In these circumstances, other forms of classification have difficulty in producing a clean and acceptable grit for disposal.

If pumped transfer from the collection sump is necessary, the Bache Classifier unit can then be sited in the location most convenient for solids collection.

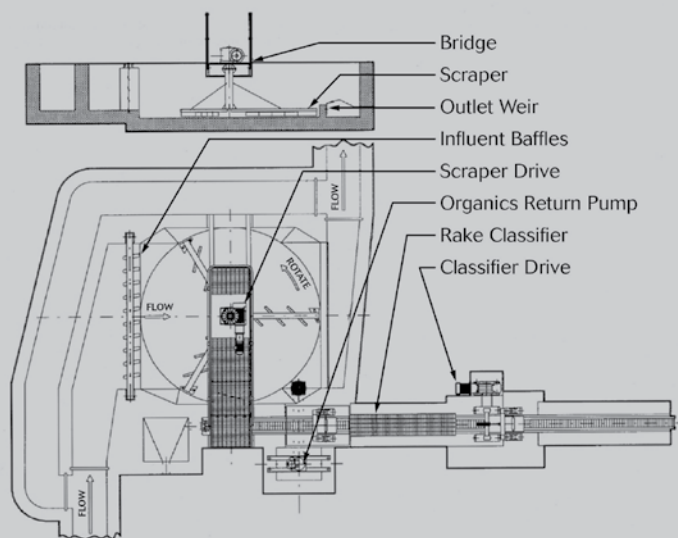
Grit Pumps

A specialized grit pump is available from Ovivo. It has a range of duties, all designed to satisfy the majority of grit pumping requirements associated with grit and grit/solids in raw sewage. The pump is a recessed, vortex flow type impeller with a full 100mm diameter solids free-way. Automatic priming is available on this pump, enabling it to be installed above the water level and at bridge or platform level, where servicing and maintenance is easily carried out.



An installation of two 12.0m diameter J+A Crossflow™ grit removal units.

Typical Arrangement



Capacity

Crossflow™ Diameter	Maximum Capacity	Crossflow™ Diameter	Maximum Capacity
2.50m	100 l/sec	7.50m	1070 l/sec
3.00m	170 l/sec	8.00m	1210 l/sec
3.50m	230 l/sec	8.50m	1370 l/sec
4.00m	300 l/sec	9.00m	1530 l/sec
4.50m	380 l/sec	9.50m	1710 l/sec
5.00m	470 l/sec	10.00m	1890 l/sec
5.50m	570 l/sec	10.50m	2090 l/sec
6.00m	680 l/sec	11.00m	2290 l/sec
6.50m	800 l/sec	11.50m	2500 l/sec
7.00m	930 l/sec	12.00m	2730 l/sec

Capacities are based on grit particles of 0.2mm dia. and of 2.65 specific gravity

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