

Jones+Attwood JetAir™

The New Advanced Grit Removal System



A new circular, vortex grit trap that introduces air floatation to enhance the in-tank classification of the mineral solids.

Patents applied for

Jones+Attwood JetAir™

Introduction

The circular chamber, vortex flow and tangential entry grit traps are now an established method of grit removal from waste water. They form an integral part of the headworks to the waste water treatment plant.

Pista SA of Switzerland introduced the original circular grit trap in 1960. Jones + Attwood were given a world wide selling agreement by Pista SA for the life of the patent. Jones + Attwood have installed thousands of grit traps throughout the world and lead the field with grit removal technologies.

The new JetAir™ grit removal system is the third generation of 'grit traps'. Each in its own right has expanded the boundaries of efficiency for performance and reliability.

Now, the functions of the mechanism have been analysed further and this new development allows the two most fundamental features to be enhanced separately and therefore achieve a maximum result for both.

All grit traps currently available include a means of achieving the rotary motion around the chamber, thus inducing the vortex that encourages solids to migrate to the centre of the chamber for collection. The impeller or propeller is so shaped and sized (and in some cases adjustable) to perform

classification of the solids. Combining these two important functions inevitably results in compromises being made and one or both features will have their effectiveness reduced.

The JetAir system provides an impeller that is designed to create the rotary motion only. The correct flow pattern is therefore achievable with this new fixed geometry impeller. Classification of the grit is achieved by the continuous aeration that surrounds the periphery of the impeller.

Low pressure air is delivered to the impeller which expels it in a controlled way from its periphery. The rotation of the impeller drags the air and increases its flow path. This results in the annulus between the edge of the impeller and the grit hopper wall being filled with small air bubbles. The solids that will normally find their way to the hopper with the grit particles are now rejected by the floatation provided by the bubbles. The unwanted solids, rags, paper and other light materials are floated upwards where the surface currents move these solids out of the trap.

This innovation provides the ideal vortex inducing flow pattern, whilst every solid particle that will enter the 'trapped zone' will pass through the selective air curtain. Therefore the two main features of a grit trap, circular flow and

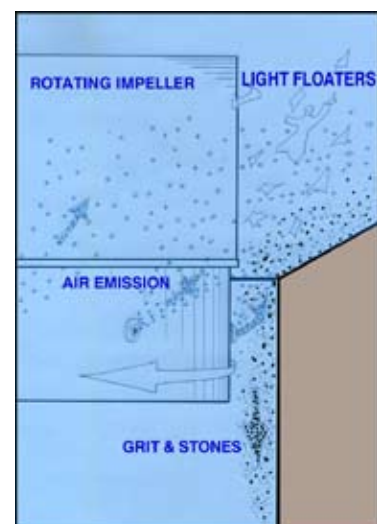
classification, are satisfactorily provided.

The continuous aeration of the incoming flow at this location in the headworks is beneficial to the treatment process.

The illustration shows the importance of providing a controlled aperture for the passage of grit and stones to the collection hopper. The whole of the aperture (annulus) is filled with air bubbles.

There are no fixed supports or pipes to interfere with the passage of the heavy solids.

The vanes of the impeller are now independent of the classification and serve the purpose only of generating the vortex flow.



Pumping of the grit/water mixture can be performed by air-lift pump or motorised grit pumps.

Eimco Water Technologies manufacture and supply the full range of grit separation and grit processing equipment.



Civil construction and installation.



The effects of the continuous aeration can be clearly seen on the tank surface.



The completed JetAir installation.

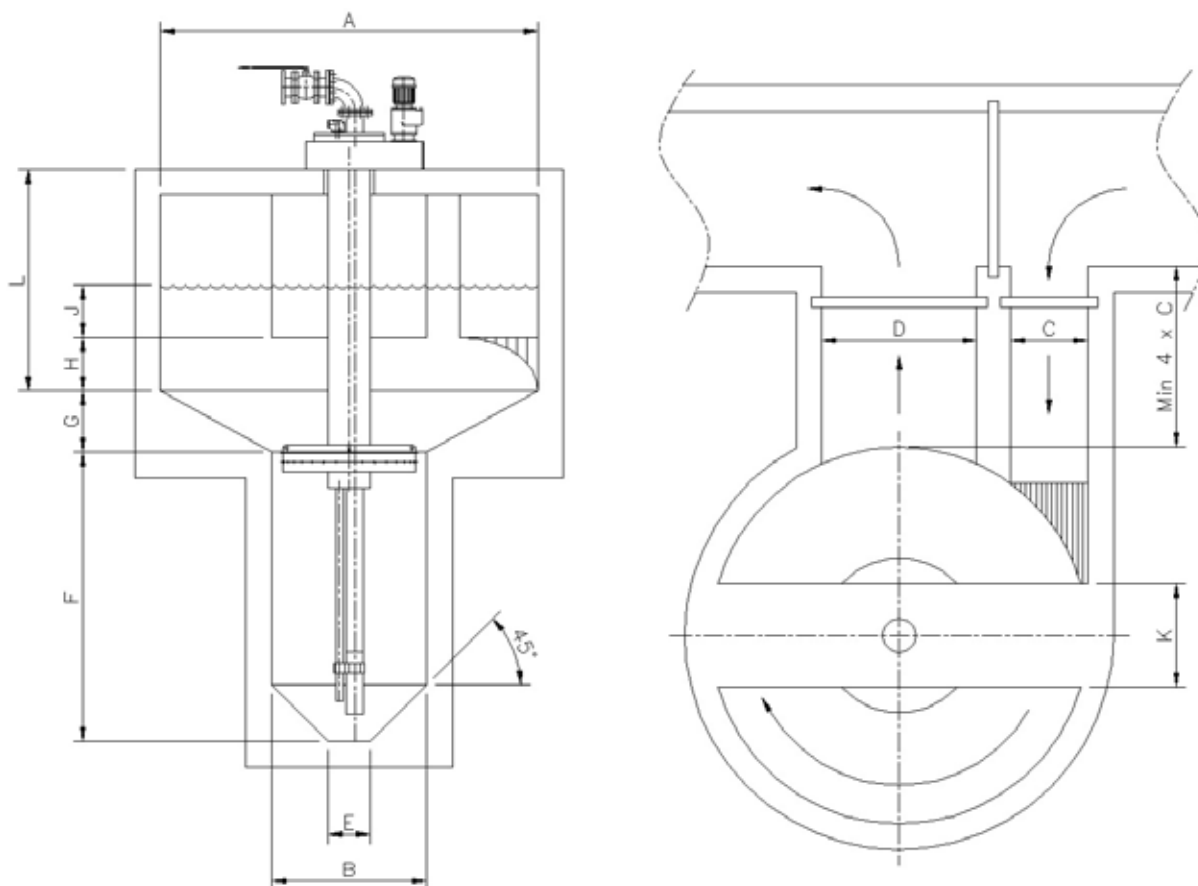


The small additional blower is designed for quiet operation.



The new JetAir Grit Trap will be supplied with the conventional methods of grit transfer.

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JetAir Grit Trap dimensions in metres

M/c Size	Flow L/sec	A	B	C	D	E	F	G	H	J	K	L
Metre												
50	50	1.83	1.00	0.305	0.61	0.30	1.40	0.30	0.30	0.30	0.80	1.10
100	110	2.13	1.00	0.380	0.76	0.30	1.40	0.30	0.30	0.35	0.80	1.10
200	180	2.43	1.00	0.450	0.90	0.30	1.35	0.40	0.30	0.40	0.80	1.15
300	310	3.05	1.00	0.610	1.20	0.30	1.55	0.45	0.30	0.48	0.80	1.35
550	530	3.65	1.50	0.750	1.50	0.40	1.70	0.60	0.51	0.58	0.80	1.45
900	880	4.87	1.50	1.00	2.00	0.40	2.20	1.00	0.51	0.77	0.80	1.85
1300	1320	5.48	1.50	1.10	2.20	0.40	2.20	1.00	0.61	0.87	0.80	1.85
1750	1750	5.80	1.50	1.20	2.40	0.40	2.50	1.30	0.75	0.90	0.80	1.95
2000	2200	7.00	1.50	1.35	2.70	0.40	2.05	1.59	0.50	1.13	0.80	2.10
3000	3000	7.31	1.50	1.675	3.35	0.40	2.09	1.67	0.95	1.13	0.80	2.70