

# NAPIER REID

## Vortex Grit Chamber



Designed to quickly separate grit and inorganic solids from wastewater with minimum energy requirement.



## Process

Grit removal from wastewater is very important to reduce operational problems of the wastewater treatment plants and to reduce maintenance of the mechanical equipment installed in it. Grit and other solids can increase wear of the mechanical equipment, cause pipe blockages, can settle and reduce the effective volume of the treatment basins. Napier Reid **Vortex Grit Chambers (NR-VGC)** are designed to separate grit from organics and raw sewage water.



**Wafra  
WWTP  
Kuwait**

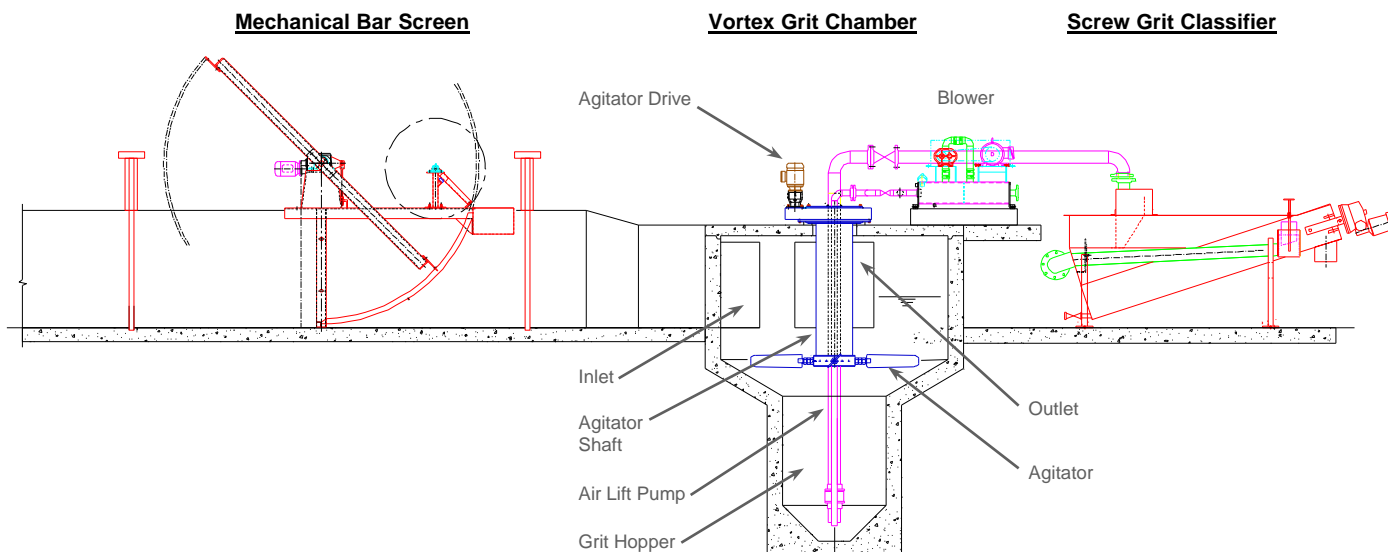
MESH SIZE	GRIT REMOVAL	
50	95% or greater	<ul style="list-style-type: none"> <li>▪ Constant rotational velocity is maintained inside the VGC chamber by the agitator providing consistent grit removal efficiency over wide daily flow.</li> <li>▪ VGC designed to promote solids migration to the centre and finally to the grit collection chamber, while lighter material are floated upwards.</li> </ul>
70	85% or greater	
100	70% or greater	

Screened wastewater enters the NR-VGC tangentially and creates a vortex current. As the NR-VGC is designed to handle variable flow, a specially designed agitator rotates and maintains a constant rotational velocity inside the VGC chamber. Under the influence of centrifugal force and gravity, grit and other solids quickly collect to the centre of the grit chamber, enter the grit hopper and settle down along the sloping floor. Air lift pump or grit handling pumps deliver the collected grit and solids to grit classifier for subsequent separation. The grit free wastewater along with the organics overflow from the vortex chamber for further treatment.

Napier Reid Vortex Grit Chambers are designed taking into consideration various operational and design parameters, some of them are as under:

- **Inlet velocity to the VGC**
- **Outlet velocity from the VGC**
- **Straight length to width ratio of inlet and outlet channel**
- **Hydraulic loading rate**
- **Detention time in the chamber**
- **Size of grit to be removed**
- **Settling velocity of the grit of various sizes**
- **Hydraulics inside the vortex chamber to ensure there is no short circuiting**
- **The flow pattern to ensure that there is minimum turbulence in the vortex chamber**

# Typical Grit Removal System Installation



Model VGC Series	40	100	150	250	350	500	750	1200
Max Flow m <sup>3</sup> /day	4000	10,000	15,000	26,500	35,000	45,000	75,000	120,000
Grit Chamber diameter (m)	1.9	2.2	2.5	3.0	3.4	3.7	5.0	6.0
Agitator (hp)	0.5	0.5	0.75	1.0	1.0	1.5	2.0	2.5

## About Napier - Reid

Over 60 years of excellence in water & wastewater treatment

Napier-Reid is located in the greater Toronto area in the Province of Ontario, Canada. We supply engineering services and process equipment for water and wastewater treatment.

We have the technology, resources and experience to design, manufacture and implement innovative water and wastewater treatment solutions worldwide. We have completed over 3000 projects since our inception in 1950. This stands as a testament of our ongoing commitment of providing the highest quality service, products and after sales support in the industry. Our capabilities include engineering, manufacturing, installation and field support. We have in-house personnel for complete mechanical, electrical and instrumentation process and control system design. As a manufacturer, our designs focus on cost-effective solutions, simplicity of installation and ease of maintenance.

Napier-Reid has developed an excellent team with many years of experience. We have a well-deserved reputation for innovation, service and integrity. A significant portion of Napier-Reid's revenue comes from export to regions such as the Caribbean, Central America, South America, Middle East, Eastern Europe, Africa, and Asia. Some of these projects are financed by Canadian government or International financing institutes. As a Canadian manufacturer, we are eligible for Canadian governmental funding and EDC export credit. We have the capability to handle a large range of projects, from engineering, equipment supply, installation, start-up, to turnkey projects. Let Napier-Reid be your solution for water and wastewater purification.



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