Ashtead TECHNOLOGY

VORTEX DREDGE SYSTEMS

Worlds most powerful 3, 4 and 6-inch dredges

www.vortexpdredge.com
### Venturi Performance

For maximum performance, choose a dredge to suit the Hydraulic Supply

**Water pump flow**

<table>
<thead>
<tr>
<th>Water pump flow</th>
<th>50 KPa</th>
<th>64 KPa</th>
<th>97 KPa</th>
<th>54 KPa</th>
<th>80 KPa plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>m3/hr</td>
<td>55 m3/hr</td>
<td>62 m3/hr</td>
<td>310 m3/hr</td>
<td>360 m3/hr</td>
<td></td>
</tr>
</tbody>
</table>

**Hydraulic Flow (Mn)**

- **Electric dredge 2 1/2 inch**: 6.4 amp running
- **Standard 4 inch**: 40 to 70 lpm
- **Tornado 4 inch**: 62 to 85 lpm
- **Standard 6 inch**: 100 lpm
- **Hurricane 6 inch**: 180 lpm

**Hydraulic Pressure**

- **Electric dredge 2 1/2 inch**: 620 VAC minimum
- **Standard 4 inch**: 200 bar
- **Tornado 4 inch**: 151 bar
- **Standard 6 inch**: 200 bar
- **Hurricane 6 inch**: 230 bar

**Removal Rates @ (Mn) flow**

- **Electric dredge 2 1/2 inch**: 6.8 t/hr
- **Standard 4 inch**: 40 to 50 t/hr
- **Tornado 4 inch**: 60 t/hr plus
- **Standard 6 inch**: 60 to 80 t/hr plus
- **Hurricane 6 inch**: 120 t/hr plus

- **Electric dredge 2 1/2 inch**: 4.5 m3/hr
- **Standard 4 inch**: 17 to 22 m3/hr
- **Tornado 4 inch**: 27 m3/hr plus
- **Standard 6 inch**: 30 m3/hr
- **Hurricane 6 inch**: 50 m3/hr

- **Electric dredge 2 1/2 inch**: 6% solids by volume
- **Standard 4 inch**: 10 to 12%
- **Tornado 4 inch**: 15% plus
- **Standard 6 inch**: 10 to 12%
- **Hurricane 6 inch**: TBA

- **Electric dredge 2 1/2 inch**: 2 mtr (est)
- **Standard 4 inch**: 15 mtr (est)
- **Tornado 4 inch**: 20 mtr (est)
- **Standard 6 inch**: 15 mtr (est)
- **Hurricane 6 inch**: TBA

**Inlet vacuum KPA**

**Vacuum KPA**

- **STORM 3 inch**: 64 KPa
- **HURRICANE 6 inch**: 97 KPa
- **TORNADO 4 inch**: 310 KPa
- **STANDARD 6 inch**: 54 KPa
- **STANDARD 4 inch**: 80 KPa

**Tested as prototype option available upon request**
Electric Dredge

- Power supply requirement:
  - 620 to 690 VAC, 60Hz, 4 to 6.5 amp running
- Depth limitations: None.
2 inch
2 ½ inch
3-inch
Dredge
4-inch Dredge ‘TORNADO’
Worlds most powerful suction
Vortex: The most powerful Venturi dredge on the market

TORNADO vs Competitor dredge

VORTEX Venturi is 38% more powerful than competitor and uses less energy input. Figures as of 21 July 2011 and subject to change without notice.
6-inch Skid mounted dredge
6 inch MODULAR dredge.
Standard model and HURRICANE for UHD-3
Dredge reversal valve
Dredge Jetter Kit
Anchor Boss
Suction pile installation.

Caisson insertion mode
- Upper connection hosed to suitable discharge point
- Middle connection hosed to stab and caisson
- Discharge to environment
- Suction from caisson via stab

Caisson extraction mode
- Discharge to caisson via stab
- Suction from environment

www.vortexdredge.com
A very basic test to look into a constant flow sea water heater. Initial testing suggests a doubling of water flow is possible with larger ROV.

Power consumption the equivalent of 80 to 100 lpm (21 to 26 gpm) at 200 bar (3000 psi) hydraulic input from ROV tooling supply.

4 lpm (1gpm) water flow.

Tank temperature was 5 to 6 degree Celsius (42 F).

Temperature of water flowing from 4mm diameter nozzle at 17 psi when submerged in water is:

1/2" from nozzle = 36 to 39 deg C (96 to 102 F)
1" from nozzle = 31 deg C (87 F)
1 1/2" from nozzle = 23 deg C (73 F)
Hydrate removal / sea water heating.

**Hydrate ice ‘melting’ tool simulation test.**

4 lpm water flow.
5 to 6 degree Celsius (42 F) ambient tank temp.
5300 ltr (1320 gallon) tank filled with fresh water and salt ice.
4mm pipe nozzle water outlet for heated water.
17 psi water pressure.
1 July 2015

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**Distance from water outlet to thermometer.**

**Distance from water outlet to thermometer IN the water.**

- 0.5 inch results = 36 to 39 degree Celsius (96 to 102 F)
- 1 inch results = 31 degree Celsius (87 F)
- 1 1/2 inch results = 23 degree Celsius (73 F)

**Distance from water outlet to thermometer OUT OF the water.**

- 0.5 inch results = 48 degree Celsius (118 F)
- 1 inch results = 48 degree Celsius (118 F)
- 1 1/2 inch results = 48 degree Celsius (118 F)
Multi Cutter
### Sample Cuts:

1. 3 inch pennant wire. 120 seconds to cut
2. 5000kg lifting sling. 1 second to cut
3. 40 x 40 x 3 aluminum. 2 seconds to cut
4. 1 ¼ inch crane wire. 30 seconds to cut
5. 1 inch, 2 wire 5000psi hydraulic hose. 7 seconds to cut
6. 2 inch scaffold tube. 5 seconds to cut
7. 7 inch drill casing 10mm thick. 3 minutes to cut 150mm deep.
8. 6 inch Mooring line. 4 seconds to cut
9. 3 inch SK75 Dyneema. 2 seconds to cut
10. 3 inch Mooring line. 2 seconds to cut
11. 4 inch dredge hose. 2 seconds to cut
12. 5 inch mooring chain. 4 minutes to cut.
Assembly Options:

- Cutter comes assembled as full grab cutter.
- Remove components as desired to operate as basic half blade cutter.
- Full grab cutter with grab arm mounts and mechanism installed. Weight = 30 kg in air (66lb)
- Basic half blade cutter with grab arm mounts and mechanism removed. Weight = 24 kg in air (52lb)

Operation:

- ROV flies into product – in this case 160mm diameter mooring line, closes clamp onto rope and feeds rope into blade with clamp arm.
- 160 mm diameter Mooring master mooring line.

Blade Options:

1. 400mm diameter metal cutting disc.
2. 400mm multi purpose serrated, tungsten edge.
3. 400mm diameter custom made fiber ROPE cutting blade.
Dyneema / Soft Line Cutter

[Images of various equipment and materials related to Dyneema/Soft Line Cutter]
Oil and gas sample tool.
Oil and gas sample tool.

For small electric ROV and WROV.
Bi-directional hydraulic water pump
Marine Rotary Hoe.

Drill cutting removal.
Seabed sample grab. For heavy sea deployments.
Marine growth sampler.
Riser Flusher Pump

Fig 1.

- Item 1.
- Item 2.
- Item 3.
- Item 4.

Graph showing Head (m) vs. Duty Curve on the left, and a pump system on the right.
Oil absorption tool.

Oil / water separator.
Hydrate removal brush. Rotary brush with water jets.
AUV and USV anchor rope cutter

- Tool concept shown with 20mm rope in jaws.
AUV and USV anchor rope cutter

VOXRTEX
Vortex custom tools:

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