Anchor Boss

Suction anchor pump.

Operations manual.

October 2016. Rev: 2. Specifications are subject to change without notice.

VORTEX DREDGE SYSTEMS
www.vortexdredge.com

Anchor Boss Suction Anchor Pump

Benefits to the customer:

Reduce vessel time: very high water flow (up to 240m3/hr) can significantly reduce suction pile install and removal times. Known flow figures give the ability to estimate install time on lump sum jobs.
Performance of 15 bar water pressure differential at approximately 100m3/hr with 165l/min and 3500psi hydraulic input.

Structural safety: High flow suction and relief pressure valves to protect pile integrity. The ability to risk review by being able to monitor in real time actual pressure against a given maximum pressure not to be exceeded.

Data display: Sub sea real time water flow in both directions and pressure in both directions.

Data logging: Topside laptop real time data logging of pump rpm, water flow in both directions and pressure in both directions.

Measure and manage quality: Understand in real time the quality of your installation by measuring and displaying actual data to give the client a post install report on factors surrounding the pile install.

Much more data available in upcoming Mk:2 Anchor Boss

Suction Pump Performance and Installation Comparisons

	VORTEX Anchor Boss	AZ-10	AZ-20
Pump performance	Figures based on ACTUAL flow testing against Ultrasonic flow meter under pressure in test vessel at 334ft depth.	Pump data testing unknown	Pump data testing unknown
Pump performance continued Anchor Boss can be supplied with all motor and impeller combinations shown here to suit almost any host ROV or just one combination to suit a particular host ROV. Performance of 15 bar (217psi) water pressure differential at approximately 100m3/hr with 165l/min (43gpm) and 241bar (3500psi) hydraulic input. Call for details.	Anchor Boss configured to suit 180lpm (47gpm) hydraulic flow @ 250 bar Water flow = 240m3/hr @ 5.2 bar (75psi) Pressure = 10.7 bar (155psi) @ 50m3/hr Anchor Boss configured to suit 100lpm (26gpm) hydraulic flow @ 206 bar (3000psi) Water flow 180m3/hr @ 2.6 bar (38psi) Pressure 6 bar (87psi) @ 35 m3/hr Anchor Boss configured to suit 70lpm (15gpm) hydraulic flow @ 250 bar Water flow up to 150 m3/hr at 3bar (43psi)	70lpm (15gpm) hydraulic flow Water flow up to 80 m3/hr at 7.5 bar (108psi) Pressure up to 9 bar (130psi)	145lpm (38gpm) hydraulic flow Water flow up to 185 m3/hr at 5 bar (72psi) Pressure up to 9 bar (130psi) at 10 m3/hr
Pump assembly tested under pressure at over 300ft depth	YES	UNKNOWN	UNKNOWN
Real time pressure differential and water flow meter mounted subs sea standard kit	YES	NO	NO
Suction relief valve standard kit	YES	YES	YES
Pressure relief valve standard kit	YES	NO	NO
Data logging capabilities standard kit	YES	NO	NO
Run pump in air for extended periods during deck checks	YES	NO	NO

Specifications.

Operating Limits

The operating limit for the Vortex Anchor Boss is 3000 mtr plus.

The limitation being the ability to safely deploy and recover the ROV system with the Vortex Anchor Boss attached. Care must be taken whilst during launch and recovery operations to prevent damage to all components of the Anchor Boss and the ROV.

Vortex Anchor Boss Capacity.

Pump can be configured to suit host ROV supply from 50lpm / 150 bar to 180lpm / 250bar.

*Based on actual flow readings running pump at ambient depth of 10bar (340ftsw)

Performance: Anchor Boss configured to suit 100lpm (26gpm) hydraulic flow @ 206 bar (3000psi)
Water flow 180m3/hr @ 2.6 bar (38psi)
Pressure 6 bar (87psi) @ 35 m3/hr. (Variable by changing in hydraulic input).
Performance of 15 bar (217psi) water pressure differential at approximately 100m3/hr with 165l/min (43gpm) and 241bar (3500psi) hydraulic input. Call for details.

Electrical: RS232 connection going to ROV is an 8 pin Burton connector.
2 pins for power (Ground and +24 Volts DC)
3 pins for RS232 comms (Tx, Rx, and Ground)

Misc data: Connections: 3” ID hose

Weight in Air: Complete unit in frame = 125 kg approx. (275lb)

Materials of construction: Stainless Steel
Thermoset Epoxy Resin

Coupling compensator:	NO
Hydraulic motor overrun valve std:	YES
Hydraulic motor direction run valve std:	YES
Operating depths:	Unrestricted
Operate pump in air:	YES
Flotation provided in kit:	YES, if requested

Electrical: Anchor Boss cables

RPM Sensor to control can.
Seacon part #: MC-S062-0295
MCIL3F / MCDLSF on 10 feet of cable to MCIL3F / MCDLSF

Pin 1 Input voltage 5 to 20 VDC ----------Pin 1 BLACK
Pin 2 Common ----------Pin 2 WHITE
Pin 3 output voltage ----------Pin 3 GREEN

Cable connection from Anchor Boss control can to ROV

Burton 8 pin connector

Description	**RS232 Serial**
Pin 1 0V	BLACK
Pin 2	Not used
Pin 3 +24V	RED
Pin 4 Rx Pin 2	GREEN
Pin 5	Not used
Pin 6 GND Pin 5	BLUE
Pin 7	Not used
Pin 8	Not used

Hydraulics: **Hose Connectors for motor:**

3/4” Pressure	Hydraulic Hose -12	JIC male fitting
3/4” Return	Hydraulic Hose -12	JIC male fitting
3/8” Case Drain	Hydraulic Hose -6	JIC male fitting

Hose Connectors for slide cylinders:

1/4” A / suck	Hydraulic Hose -4	JIC male fitting
1/4” B / blow	Hydraulic Hose -4	JIC male fitting

Hydraulic requirements for water pump:

Minimum hydraulic pressure: 60bar (870 psi)

Max Hydraulic Pressure (Hyd motor): 350 bar (5076 psi)

Minimum hydraulic flow: 70 lpm (18.4 gpm)

Optimum hydraulic flow: 100 lpm (26 gpm)

Maximum hydraulic flow: 180 lpm (47.5 gpm)

Hydraulic requirements for slide cylinders:

Minimum hydraulic pressure: 105bar (1500 psi)

Max Hydraulic Pressure (Hyd motor): 220 bar (3200 psi)

Fill hydraulic motor and case drain cavity with clean oil before start up.

Pump can also be run in air for prolonged periods during deck checks

Hydraulics: Vortex Anchor Boss

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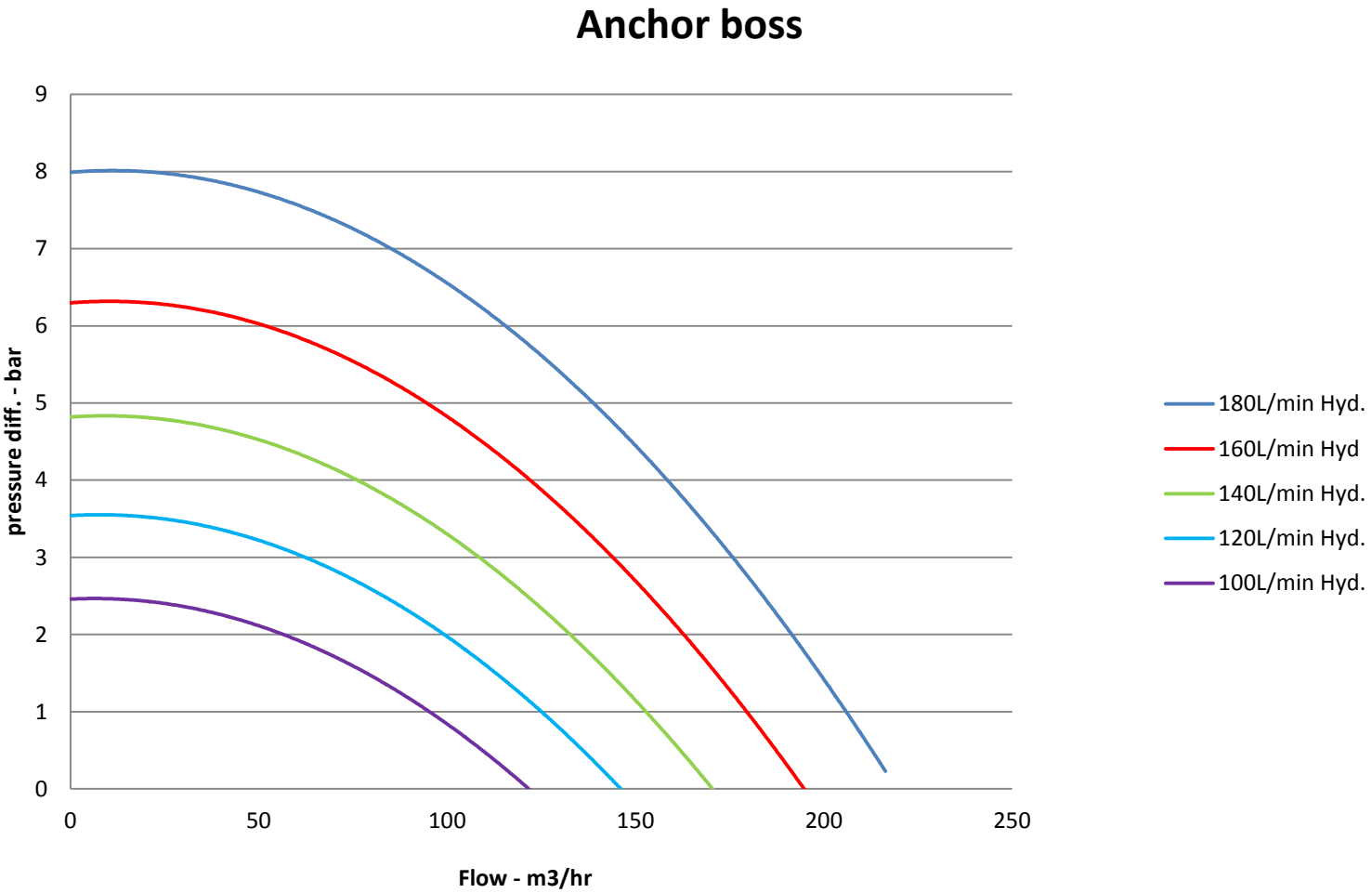
Specifications

Water pump flow chart

Pump graph data shown was gathered under real world conditions in pressure vessel blown down to 10bar (340ftsw) using 34cc hydraulic motor. Pump graphs can be changed to suit individual applications with graph performance optimized to each host ROV tooling supply using selection of hydraulic motors and pump impellers supplied with kit.



Pump Performance Graph

focussed on optimum water flow of 180m3/hr at 2.5bar using hydraulic input of 100lpm and 206bar.

VORTEX	ANCHOR BOSS		TECHNIP
		Power Abs 27.25 kW Motor Size 0 kW Pump Speed 3858 RPM Imp Diameter 160.0 mm	
Ref	VORTEX TECHNIP