

Andy Henson

Synthetic wires: Experience,
Strength and Hope



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Why synthetic?

- 1/8 weight, increased equipment loads
- Near neutral bouyancy (0.98 kg/dm^3)
- Low maintenance
- Safer (handling, backlash)
- Non-iron sampling
- Cost and availability



Why not?

- Larger sheaves (bend radius)
- Vulnerability to damage
- Spooling problems
- Terminations (resin potted)
- Low load operations

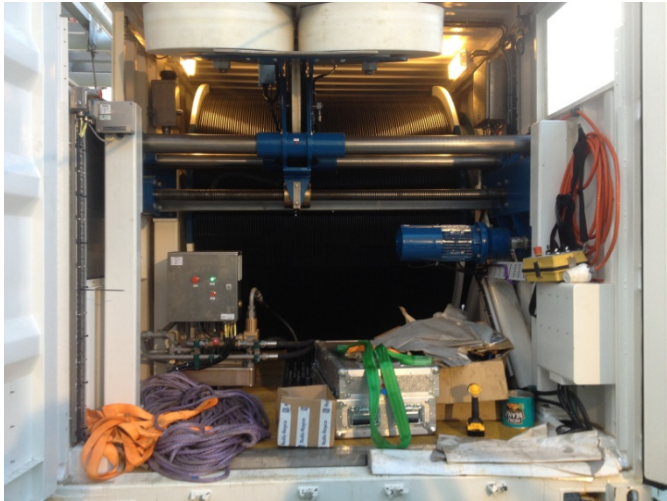


Holdings

- Cortland 24mm plasma cousin trechnic coring RRS Discovery
- Cortland 28mm plasma coring RRS James Cook
- Cortland 16mm MFCTD
- Nexans 18mm MFCTD



Rolls Royce electro direct pull containerised winch with Cortland Vectran braided rope.



Containerised direct pull winch.

Top centre shows the spooling with the drum recessed into the container.

The electric drive units are located in a separate section at the rear of the container

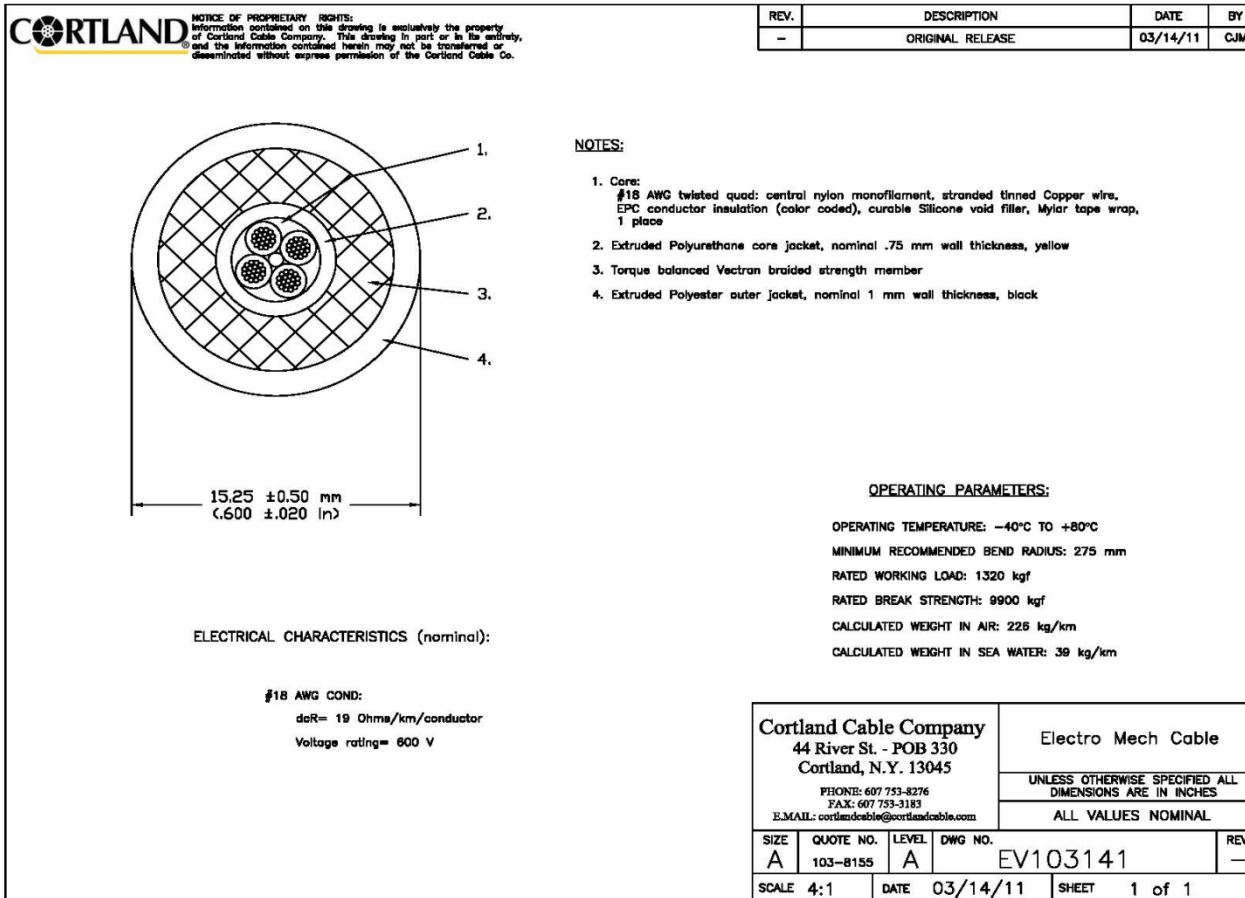


Right hand side view showing the 4 electric motors located inside the drum driving the slew ring.



Rope specification

Cortland rope specification:



Cortland specification:

Length = 10000m

4 off Cu Conductor, 18AWG,
Voltage rating = 600V

Outer diameter = 15.25mm

Bend radius = 275mm

Weight in air = 225kg/km

Weight in water = 30kg/km

Breaking strength = 9900kgf

Safe working load = 1320kgf

Operating temp =
-40degC/+80degC



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Lebus electro-hydraulic direct pull containerised winch with NEXANS 18.5mm Aramid rope.



Portable control console with 50m cable with plug both ends for installation inside ships laboratories as required..

20 foot containerised winch located on RRS Discovery hanger top.



Portable clean CTD block.
Sheave made of Nylotron.



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Aramid armoured CTD instrument cable.

Length = 8000m

4 off Cu Conductor, 0.82mm², 7x0.39mm,
3.3kV

Outer diameter = 18.5mm

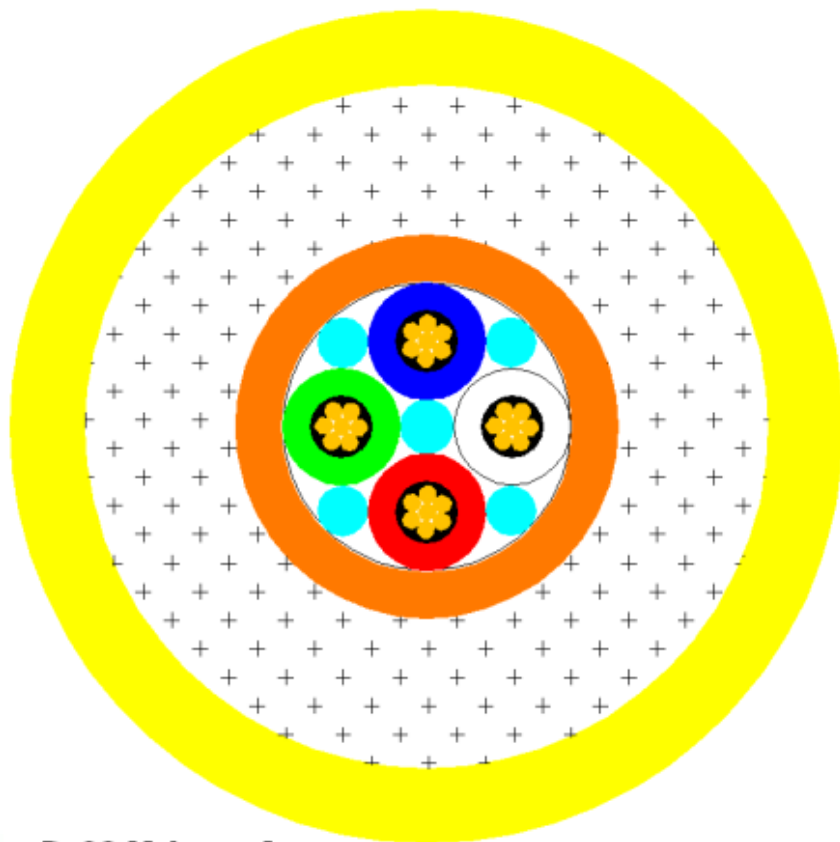
Bend diameter = 750mm

Weight in air = 310kg/km

Weight in water = 40kg/km

Breaking strength = 130kN

Safe working load = 22kN



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- Plastic sheath prevents salt crystals forming in Kevlar
- Prevents friction on powered rollers
- Direct pull winch

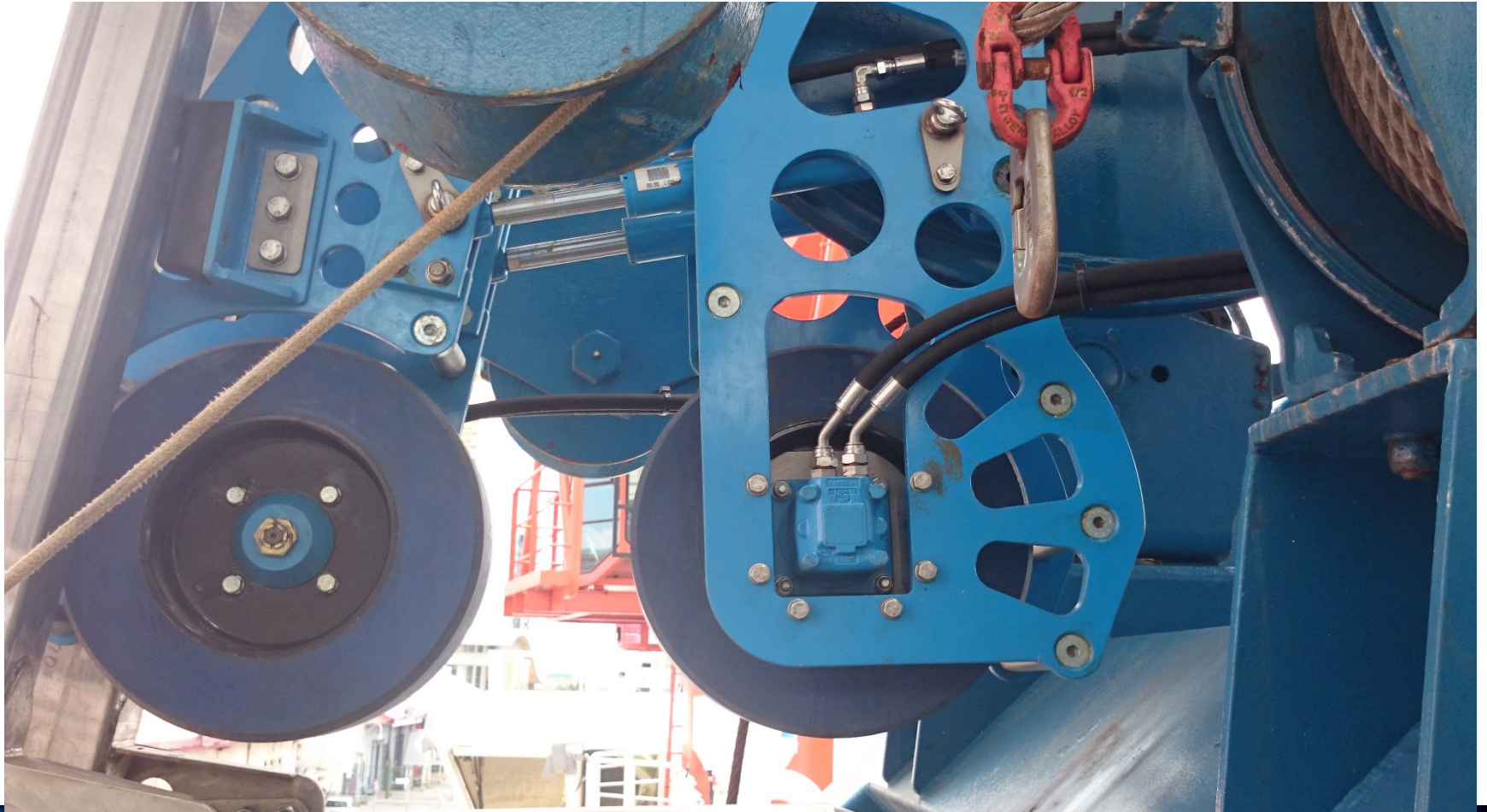


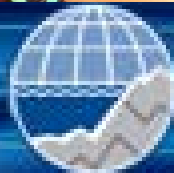
Coring ropes

- Less system load
- Floats in freefall
- Slack in sheaves/modified outhaulers
- Rope diameter changes while scrolling



Outhaulers





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Scrolling



Vision

- 2 winches per ship
- Same synthetic wire on both
- Money not tied up in wires



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