



Calibration of Christenson break out unit



Prime Horizontal maintains a small fleet of break out units around the globe. These units are used as the primary tool for service and repair of our range of mud motors. In order for correct operation, these units must be calibrated on a yearly basis in order to meet our high QA standards. This is to ensure that the rotational forces the machine produces are correctly correlated to the hydraulic pressures seen on the machine's gauges.

The same is true of Horizontal Drilling Rigs. Often these machines are calibrated only once as they leave the factory. As the machine ages, in-efficiencies to the hydraulic system can creep into play, New parts are often added to the machine (within) which can effect the correlation between hydraulic pressure and the assumed force applied to the drill string.

At Prime Horizontal we have the experience and tooling to carry out the required yearly torque calibration on so much Drill Rigs as Break Out units.



Torque cell readout

The calibration procedure:

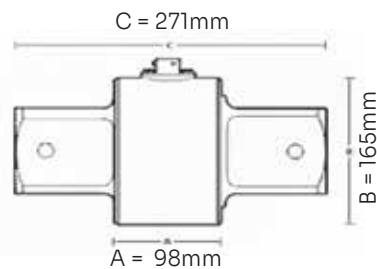
A Torque is applied at the lowest possible pressure the rigs hydraulics can supply.

The pressure is increased incrementally, each time the value of the load cell (mounted securely in the rigs vices) and the corresponding reading on the rigs gauge or integral electronic measurement system is noted.

The incremental process is continued until either the rig reaches its torque capacity or the vices are no longer able to hold the torque applied. Outside these limiting factors the calibration will stop when the torque applied reaches 85000 N.m. The the maximum capacity of the load cell is 100000 Nm and a safety factor of 15% of its maximum is allowed for.

The procedure is repeated for the opposite direction of torque. In this way a complete and accurate picture is built up of the correlation between what the rigs gauges are telling the operator and the forces the rig is actually applying.

Once the calibration is completed and all measurements have been recorded, the calibration process is said to be complete.



A certificate of calibration is then issued within 7 days of the calibration date.

All calibrations are traceable through UKAS to National and International standards.

Specifications

Weight	25 Kg
Operates between	10,000Nm - 100,000Nm
Temp Range Operating	-10°C to +50°C
Temp Range Storage	-20°C to +70°C
Thermal Effect On Span	< +/- 0.03%/°C
Thermal Effect On Zero	< +/- 0.01%/°C
Torsional Deflection	< 1°
Fatigue	> 10 exp 7 cycles
Maximum Torsion Capacity	150%
Connector	6 Way Mil Spec
Drive 1	3 1/2" Male Square
Drive 2	3 1/2" Male Square
Maximum measurable force	108,000 Nm
Measurement Uncertainty	+/- 2 %

Robust, heat treated, alloy steel torsion shaft.
 Designed to ignore non torsional forces.
 Operates in clockwise and anti-clockwise directions.
 Sensor Calibration up to 108,500 Nm (lb-ft) with a UKAS accredited calibration certificate.