

# Line Tension Load Pin LT-LP

**New technology developed by and exclusive to DLM the Line Tension Load Pin is specifically designed to measure the line tension in a cable running over a sheave when mounted as the centre axle of the sheave.**

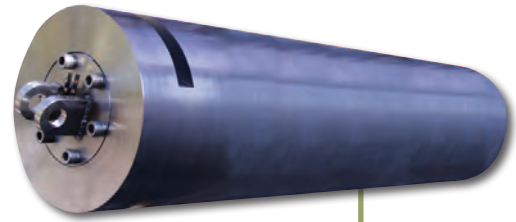
It uses DLM's intelligent 'Sirius' amplifier mounted internally in the pin to process signals from the gauges in order to determine both the resultant force and the wrap angle. The amplifier uses this to calculate the line tension and outputs this via a 4-20mA signal.

Normally a standard single direction Load Pin is required to be fitted so that the load is applied in one plane on the pin and will not produce accurate load readings if load is applied outside this plane, thus when fitting into a sheave they are only able to measure the resultant force and not the line tension. If the angle of wrap changes the resultant force on the pin will change and therefore would normally not give a true value for line tension.

However with the DLM Line Line Tension Load Pin the change in wrap angle and resultant load is sensed and used to calculate the line tension all within the Load Cell. Therefore giving a 4-20mA signal out relating to line tension.

The Line Tension Load Pin is currently designed to work with wrap angles varying from 40° to 130° see fig 3. However larger angle spans can be achieved depending on the design and size of the Load Pin.

The Load Pin must be placed in a fixed position and it is critical that the wrap angle only varies from one side of the sheave. The Load Pin requires a fixed datum point from which to measure and therefore requires a fixed cable entry onto the sheave from one side. It is not yet possible to have the wrap angle varying from both sides of the sheave. See fig 4 for a graphical representation.



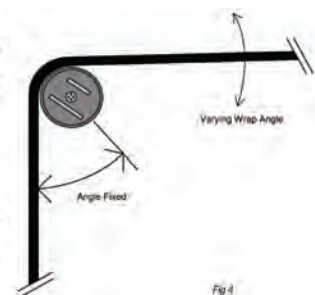
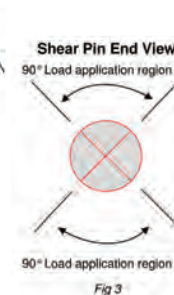
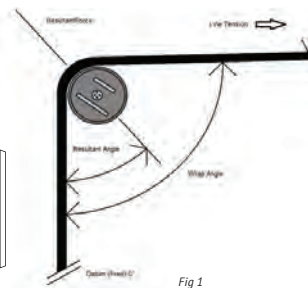
## Features:

- DLM proprietary design
- Accurate line tension measurement direct from Load Pin
- No requirement for additional sensors to determine wrap angles
- 90° operational range
- 4-20mA scaled output

## Applications:

- Launch and recovery systems (LARS)
- Sheave blocks
- Crane line tension monitoring

## Dimensional Data



## Specification

<b>Pin Material:</b>	17-4PH H1150 + 1150 stainless steel
<b>Accuracy:</b>	Better than 1% FRO across combined angles
<b>Load ratings:</b>	Up to 1500t and above
<b>Operating Temperature:</b>	-40 to +80 °C
<b>Internal Amplifier:</b>	DLM designed 'Sirius' 4-20mA 3 wire amplifier or RS485 MODBUS enabled with line tension technology.
<b>Input Voltage:</b>	12-30VDC for internal amplifier
<b>Protection:</b>	Subsea with piston and face O ring seals and subsea connector / IP67 with face O ring seals and cable gland signal entry.
<b>Connection options (client specific):</b>	Subsea connector / IP67 Cable gland and cable / Customer specified connector
<b>Certification:</b>	Calibration, proof load and test certificates to BS EN 10002/2 1992 traceable to a UKAS approved laboratory or the NPL. Material Certificates to 3.1.
<b>Pressure test:</b>	Up to 300Bar (subsea version only).
<b>Output Type:</b>	4-20mA scaled to SWL over load application range / RS485 MODBUS

*Note: Line Tension Technology can only work with certain size load pins. Contact DLM to discuss feasibility of load pin design.*