

## PIL SUBSEA CALIPER

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### PRODUCT INFORMATION

The PIL Subsea Caliper tool was conceived and engineered to provide the industry with a simple and robust, single-body caliper tool solution optimised for use on subsea pipelines and in-field flowlines.

The multi-channel caliper pig is specially designed to operate in and survive pressures of up to 400bar (600bar special), allowing it to be used in pipelines at extreme sea water depths and to be left in the pipeline during hydrotest if required. Despite this very harsh environment, the caliper measurement system is able to achieve a high measurement accuracy and a very low probability of failure. This performance is achieved using a caliper sensor arrangement unique to PIL, where the caliper sensors are located inside of the pressure vessel (which also houses the electronics and batteries), protecting them from the sea water and the very high pressures.

### KEY FEATURES

Standard features include:

- Multi-channel caliper with 400 bar operating capability in sizes from 6" to 32"
- Simple robust design with sensors protected from sea water effects
- Capable of operating in pipelines in ultra-deep waters and surviving hydrotest pressures
- Single body tools suitable for launching from multi-pig subsea PLRs
- Back-loading capability
- Zero current drain in standby mode, allowing pre-loading of the tools for launching weeks or even months later
- Auto start using a pull pin method

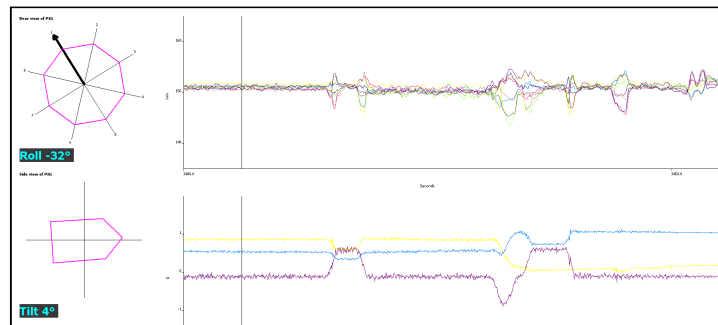
PIL are also able to offer options for special requirements including;

- Extra high pressure capability of 600 bar operation on some sizes of tool
- Customise Pig body length to match valve port spacing on subsea launchers
- Extra long life battery packs on some tool sizes.
- Multi-body pig designs for traversing subsea Wye's
- Pig body with suspension wheels for multi-diameter lines



### DATA ANALYSIS

Following download of the data onto a PC or Laptop, the caliper field technician is able to view the data and provide a first pass initial assessment of the data to the client. The technician will then transfer the data to the PIL operations base in the UK using an internet file sharing website for assessment by a skilled analyst. Output from the analysis software is in the form of multi-channel plots which display radius, diameter or mean bore values. Top dead centre of the pipe and tilt angle of the pig are displayed as graphics. Accelerometer and gyro data can be used for the identification of girth welds and for the measurement of bend angle and direction.



### REPORTING

A preliminary report detailing the main features in the pipeline, including any anomalies, will be typically issued within 24 hrs and a final report will be issued within 7 days. The detailed final report provides a comprehensive overview of the pipeline in the form of a mean bore plot for the complete length of the pipeline inspected. The final report also provides detailed information on key dimensions of the defects and their exact location relative to the pipe number and their position in relation to the nearest girth weld. The following is an example of defect information from a typical report:

### TABLE OF ANOMALIES

Anomaly No	Type	Pipe Number	Weld Number	Odometer Distance	Bore Reduction (Dent + Ovality)		Dent Depth		Dent Length (m)	Dent Width (mm)
				(m)	(mm)	% of Nom OD	(mm)	% of Nom OD		
1	Dent	307443	4.5m from K0745-MO25	16192	75	6.1%	35	2.9%	2.8	930
			7.5m from K0745-MO26							
2	Dent	320397	8.6m from K0736-MO28	25213	65	5.3%	30	2.2%	2.1	465
			3.5m from K0736-MO29							
3	Dent	320279	3.7m from K0729-MO16	32268	64	5.2%	33	2.7%	2.4	930
			8.2m from K0729-MO17							
4	Dent	43962	2.5m from K0717-MO23	44165	72	5.9%	35	2.9%	2.2	930
			8.6m from K0717-MO24							

