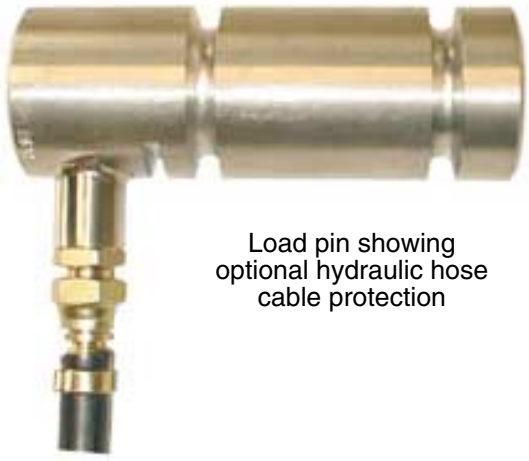
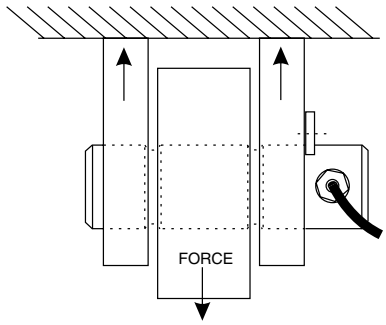
Load Measuring Pins

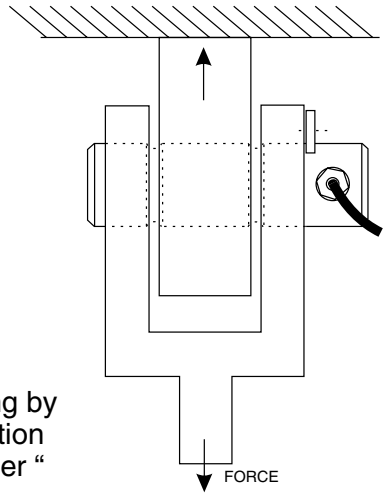


Load pin showing optional hydraulic hose cable protection

Use of load pins

Load pins are constructed from cylindrical steel with strain bridges installed in a small bore in the centre of the pin. Two grooves are machined in the cylinder above the strain bridge locations. Any force between the centre part (the piece between the grooves) of the cylinder and the outer parts will produce an output from these strain bridges. Usually either the load pin ends or the load pin centre part will be held in a fixed position. The force to be measured is then placed on the non fixed part.





Since the strain bridge output is at a maximum in one axis only the load pin needs to be prevented from rotating by being locked into position via one or more “keeper “ plates.

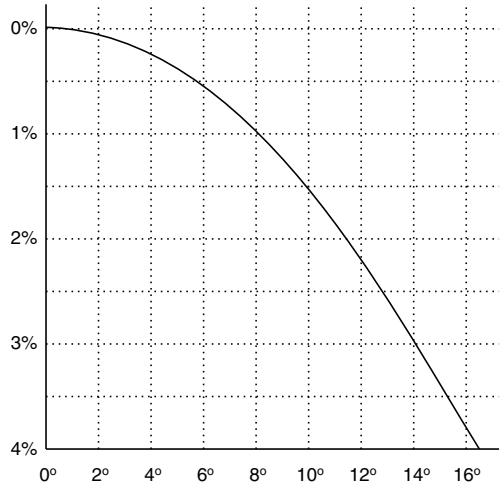
Load pins are typically used in rope, chain and brake anchors, sheaves, shackles, bearing blocks & pivots. A typical application for a load cell would be an overload limiter on cranes, hoists etc. Standard load pin sizes are available but in most applications the pin will need to fit into an existing structure and load pins are therefore commonly custom made.

Installation

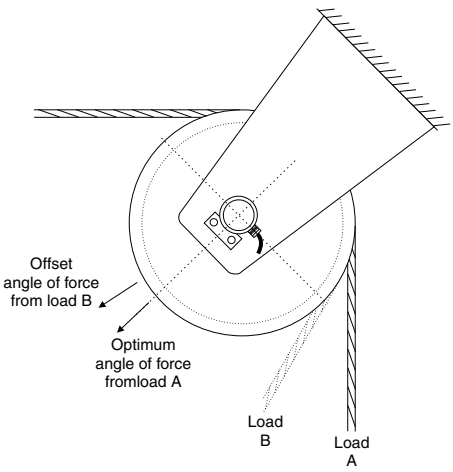
The load pin sealed and welded construction and special cabling ensure that the load pin is waterproof (IP67). The cable should be protected from accidental damage during installation and use. Extra protection for the standard polyurethane sheathed cable can be provided by enclosing the cable in a hydraulic hose. A choice of axial or radial cable entry can be chosen (see overleaf) to suit installation requirements. Special high strength stainless steel is used in the pin construction.

The pin measures the shear force between the outer and inner sections, any bending forces should be minimised by ensuring that the support structure is rigid.

When a load is applied directly to the pin as shown in the diagrams in the left column it is important that the pin is secured via the keeper plate(s) so that the pin is oriented in the correct axis for maximum output. If the force is off the optimum axis a drop in output will result as shown in the graph below.



For example; a sheave system is calibrated with the pin installed for maximum output when load A is applied. A change to the wrap angle (load B) will cause change to the angle of the resultant force and a fall off in output.



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SPECIFICATIONS

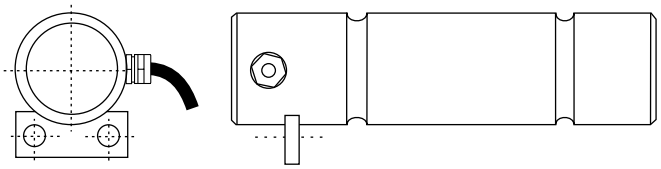
Specifications are typical only, final specifications will depend on design

Typical Specifications

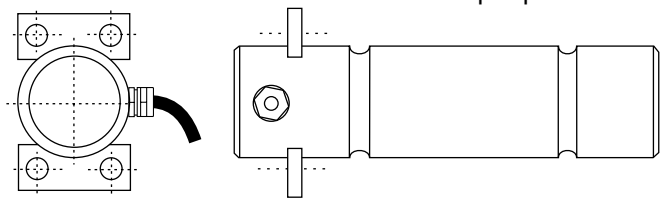
Capacity:	Designs from 100kg to 1000+ tonne available	Thermal drift:	Zero 0.02% of rated load per°C Span 0.02% of rated load per°C
Proof load:	Normally 150% of rated load	Non linearity:	Typically 1% of rated load
Breaking load:	>300% of rated load	Non repeatablity:	±0.04% of rated load in optimum loading conditions
Bridge resistance:	350 Ohms	Environmental:	IP67
Temperature range:	-20°C to 70°C	Signal cable:	3 metres of polyurethane sheathed 4 core with foil screen and drain wire

Cable entry and keeper plate options

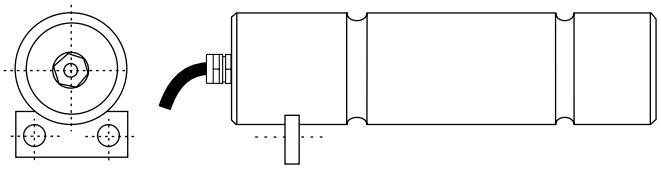
Radial cable - single keeper plate



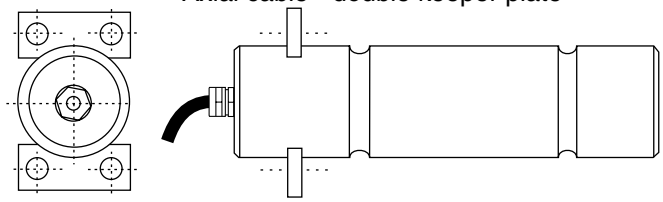
Radial cable - double keeper plate



Axial cable - single keeper plate



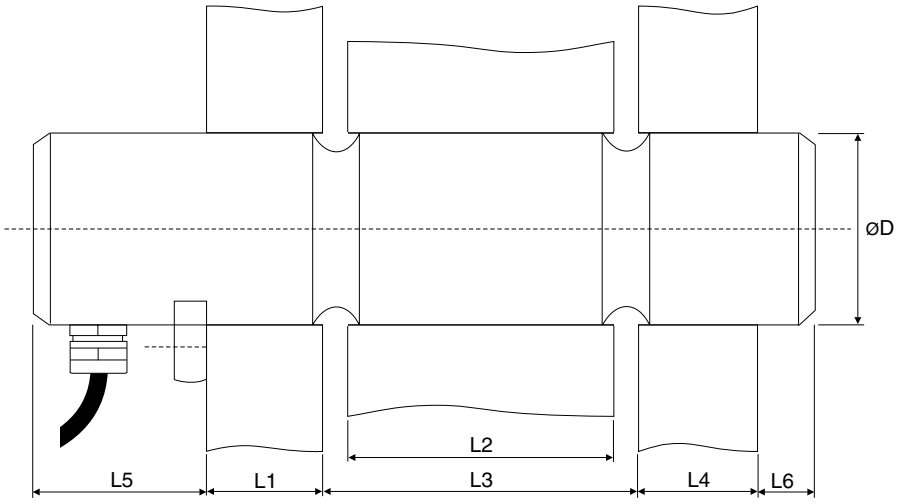
Axial cable - double keeper plate



Load pin dimensions

In most cases the load pin must match as closely as possible an existing pin or must comply with particular installation constraints. Complete the table below showing requirements for your application. Fax, post, email or phone with these table details to obtain a proposed design for approval.

Some standard size load pins are available, contact supplier with details of your application for further information.



Complete the table below										
L1	**L2**	**L3**	**L4**	**L5**	**L6**	**øD**	**Axial or radial cable entry**	**Cable Length**	**Single or double keeper plates**	**Rating (tonnes)**
Any special requirements:										

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