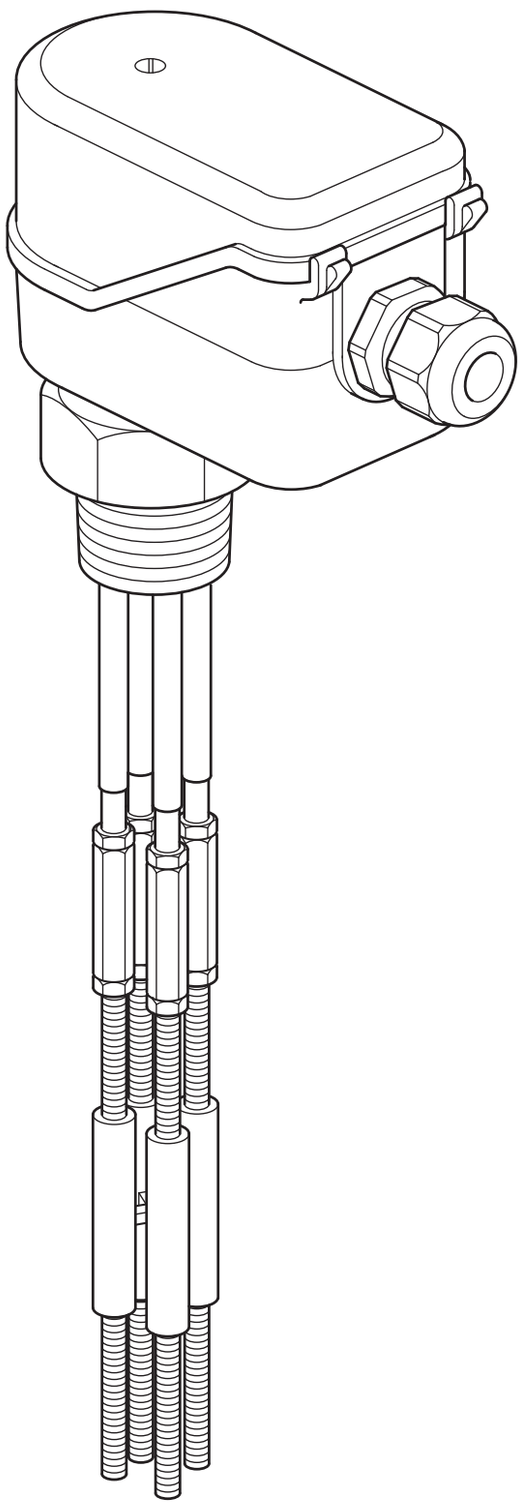
TI-P693-16
EMM Issue 1

LP11-4
Level Probe

Description

The Spirax Sarco LP11-4 level probe is used with the Spirax Sarco LCS1350 level controller to provide on/off level control and alarm functions in steam boilers, tanks or other vessels.
The four tip probe is particularly suitable where 3-lamp 'electric gauge glass' alarm/level indicators are fitted. The probe body is earthed through its screwed connection and the boiler or tank normally forms the earth return path. The probe may also be used in concrete or plastic tanks by using one of the tips as an earth return, or by providing a separate earth rod or plate. The LP11-4 probe has four detachable level sensing tips which are cut to length on installation to give the required switching levels. Note: Tips are ordered separately. When a tip is immersed in conductive liquid it completes an electrical circuit to earth. When the level drops below the tip, the resistance to earth becomes high, indicating to the controller that the tip is out of the liquid.



Caution:

The probe is not suitable for outside installation without additional environmental protection.

Available tip lengths mm (inches)

Tips are 1000 mm (39.4") long. Two sets of tips may be connected for a maximum probe length of 2095 mm (82.5")

Pressure/temperature limits

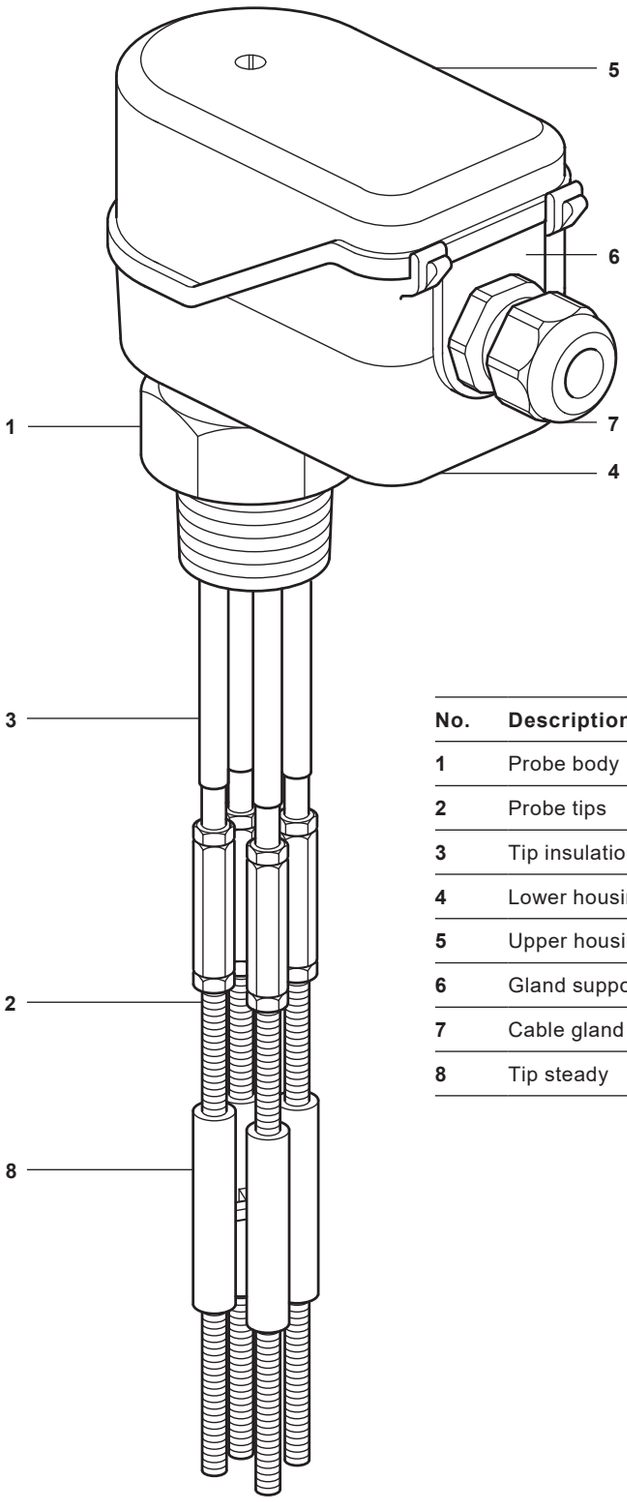
Nominal pressure rating			PN40
Maximum pressure	Standard	32 bar g	(464 psi g)
	UL certified	30 bar g	(435 psi g)
Maximum temperature	Standard	239 °C	(462 °F)
	UL certified	235 °C	(455 °F)
Ambient temperature	Maximum	70 °C	(158 °F)
	Minimum	-20 °C	(-4 °F)

Technical data

Maximum cable length (probe to controller)		See controller IMI
Maximum sensing depth	2 095 mm	(82.5")
Minimum sensing depth	75 mm	(3")
Degree of protection		IP54

Minimum conductivity (when used with an LCS1350 level controller)
0.5 µS/cm @ 25 °C (77 °F).

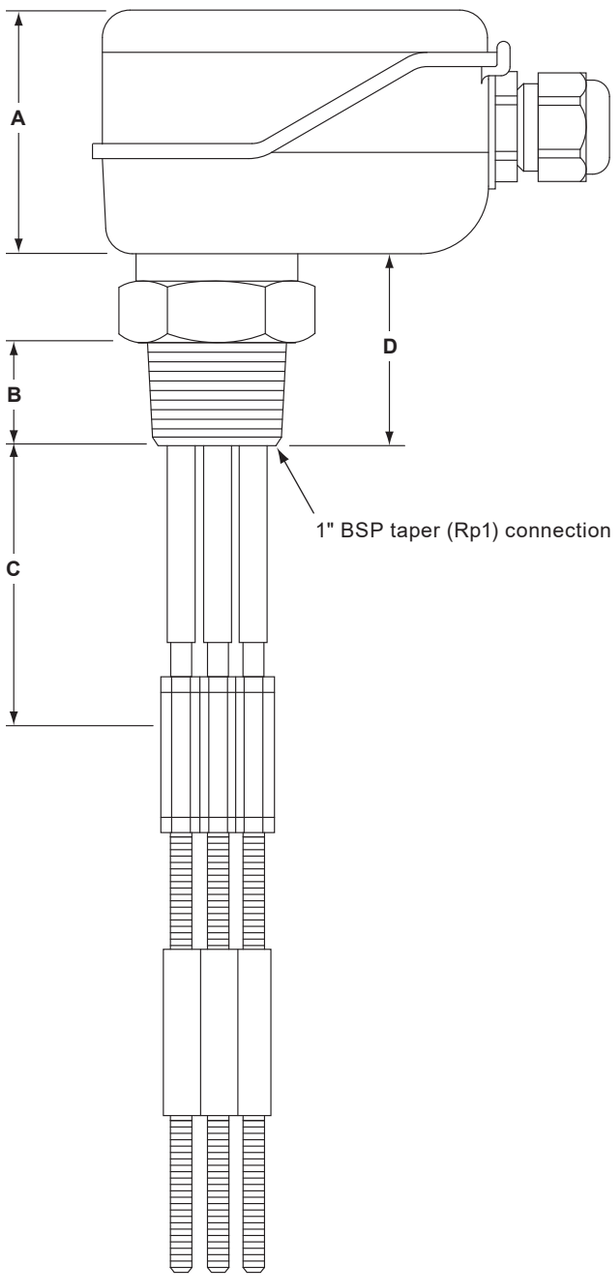
Materials



No.	Description	Material	
1	Probe body	Austenitic stainless steel	BS EN 10088-3 (1.4306)
2	Probe tips	Austenitic stainless steel	Type 316/316L
3	Tip insulation sleeving	PFA (Per Fluor Alkoxy)	
4	Lower housing	PPS (Polyphenyline sulphide)	
5	Upper housing	PPS (Polyphenyline sulphide)	
6	Gland support pad	Thermoplastic elastomer	
7	Cable gland	PA (Polyamide)	
8	Tip steady	PEEK (Polyaryletherketone)	Grade 450G

Dimensions/weight (approximate) in mm (in) and kg (lb)

A	B	C	D	Weight
60 (2.4)	25 (1.0)	75 (3.0)	50 (2.0)	1.15 (2.5)



Available spares

LP11-4 connector set (electrical)	Comprising: 6 flat crimp connectors and 2 ring crimps.
LP11-4 tip mounting kit	Comprising: 1 set of 4 tip connectors, 8 lock-nuts and 2 tip supports.

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Level controls

Safety information, installation and maintenance

This document does not contain sufficient information to install the product safely. See the Installation and Maintenance Instructions supplied with the unit for full details.

Warning: This product contains materials including plastics which can give off toxic fumes if exposed to excessive heat.

Installation note:

The LP11-4 is designed for installation in a BSP Rp1 (1" BSP tapered) threaded flange or cover.
Note: Always specify these thread for new installations.
A minimum 80 mm (3") nominal bore protection tube is recommended if installing the probe in a boiler, or in a tank which is subject to very turbulent conditions.
Additional environmental protection is needed for installation outdoors.

Wiring note:

Wiring is straightforward on the LP11-4, as crimp connectors are used. Extra connectors are available as a spares kit. Terminal posts are colour coded for easy identification.
The wiring loom may be disconnected and removed without disturbing the cable gland by lifting the gland carrier out of the lower housing.

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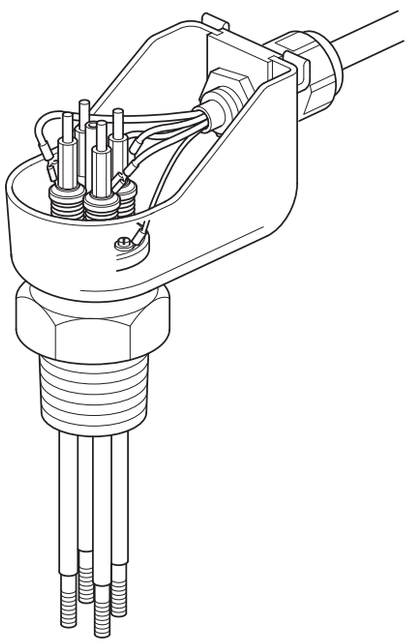
Maintenance note:

No special maintenance is required, though boiler water level controls do require periodic testing and inspection which is described in separate literature.



How to specify

Conductivity probe with austenitic stainless steel body and probe tips, PFA tip insulation, suitable for steam boiler operation up to 32 bar g @ 239 °C.

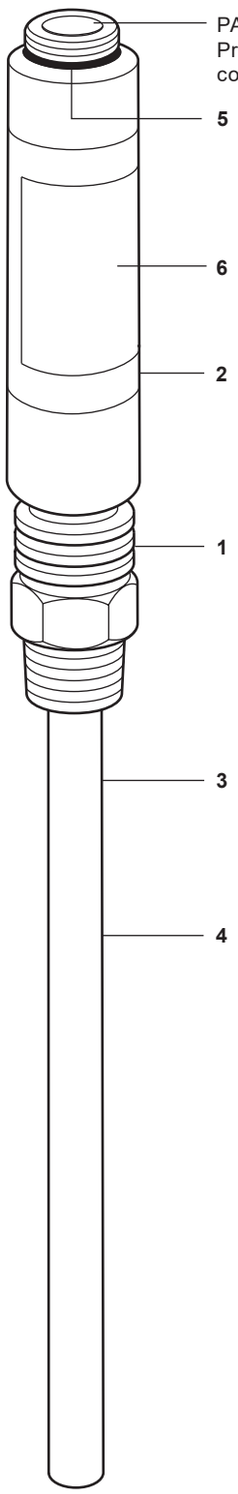
How to order

Example: 1 off Spirax Sarco LP11-4 probe (BSP) with 1000 mm tip assembly.

LP21
Capacitance Level Probe

Description

The Spirax Sarco LP21 is a capacitance probe designed for modulating level control in conductive liquids, in conjunction with a PA420 preamplifier, which is supplied separately. It can also be used for adjustable on/off control.
The LP21 may be used with one or more controllers or transmitters to provide level control, level alarms, and/or outputs to a building management system.
The probe is normally installed in a steam boiler or metal tank where it is earthed through the ½" BSP screwed connection, the boiler or tank forming the earth return path.
It may be used in a non-conductive tank (e.g. plastic or concrete) if an earth rod is provided.
The PA420 preamplifier (described in separate literature), is screwed to the top of the probe and hand tightened, enabling easy removal without the need to disturb the probe.



Caution:

The probe is not suitable for outside installation without additional environmental protection.

Available probe lengths (approximate) in mm

370, 470, 550, 600, 650, 750, 800, 900, 950, 1 050, 1 200, 1 350 or 1 500.
Note: Probe length includes the 25 mm 'dead' length at its tip.
The probe must not be cut to length.

Pressure/temperature limits

Nominal pressure rating		PN40
Maximum pressure		32 bar g
Maximum temperature		239 °C
Ambient temperature	Maximum	70 °C
	Minimum	5 °C
Designed for a maximum cold hydraulic test pressure of		60 bar g

Technical data

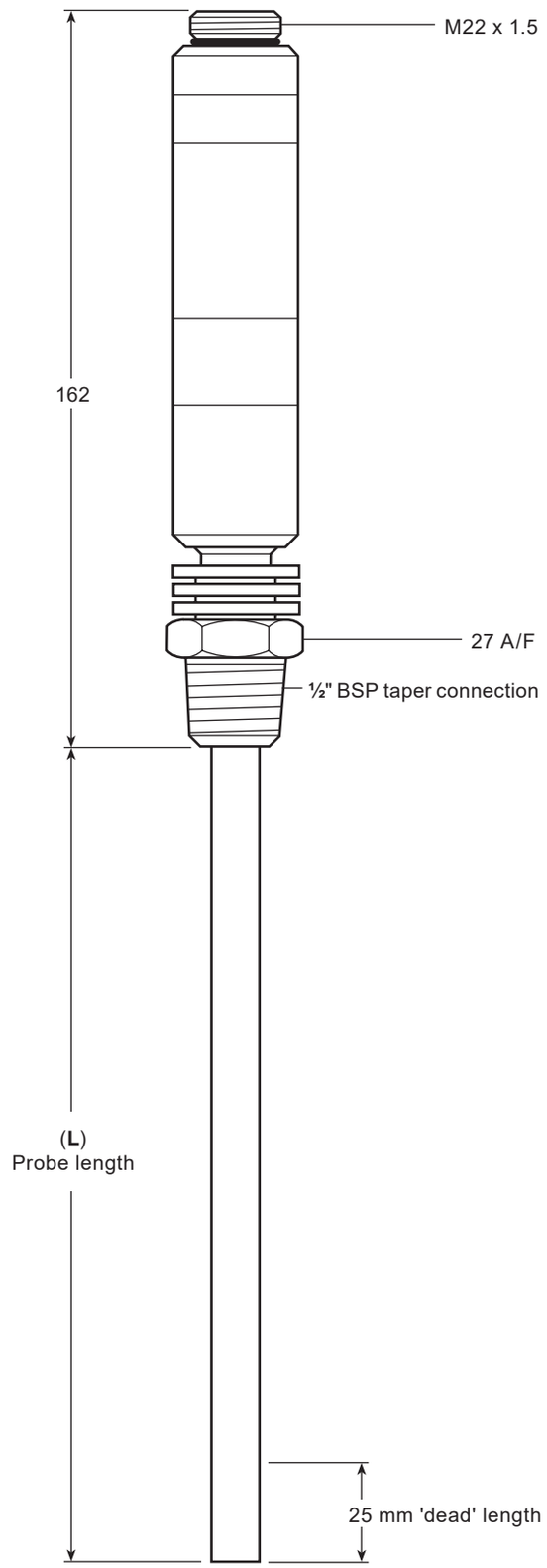
Sensing depth	Probe length minus 25 mm
Minimum conductivity	5 µS/cm or 5 ppm
Degree of protection	IP54

Materials

No.	Description	Material	
1	Probe body	Austenitic stainless steel	BS EN 10088-3 (1.4306)
2	Cover assembly	Austenitic stainless steel	Type 316L
3	Probe (sheathed)	Stainless steel tube	ASTM A269 Gr. 316L
4	Probe sheathing	PTFE	BS 6564 Grade UA Type 1
5	'O' ring	Nitrile rubber	
6	Name-plate	Polycarbonate	

Dimensions (approximate) in millimetres

L - Probe length	370	470	550	600	650	750	800	900	950	1 050	1 200	1 350	1 500



Weights (approximate) in kg

Probe length	370	470	550	600	650	750	800	900	950	1 050	1 200	1 350	1 500
Weight	0.57	0.60	0.62	0.67	0.72	0.74	0.75	0.77	0.80	0.82	0.93	0.96	1.00

Safety information, installation and maintenance

This document does not contain sufficient information to install the system safely. See the Installation and Maintenance Instructions supplied with the probe for full details.

Installation note:

Do not install the probe outdoors without additional weather protection.
The probe is installed in a ½" BSP female connection. If the probe is to be installed in a boiler shell or a turbulent tank, fit a protection tube. This should be as long as possible, and at least long enough to cope with expansion of the probe at higher operating temperatures. The Table below shows the maximum probe expansion possible 0 - 239 °C.

Probe length in mm	Maximum expansion in mm (inc. 'dead' length)
470	13
550	15
600	16
650	17
750	20
800	21
900	23
950	25
1 050	27
1 200	30
1 350	34
1 500	38

Do not cover the vent and drain holes on the body.

Maintenance note:

No special maintenance is required. Boiler water level controls and alarms do, however require periodic testing and inspection, which is described in separate literature.

How to specify

Capacitance level probes shall be Spirax Sarco type LP21 with stainless steel body, cover assembly and probe, and PTFE probe insulation. They shall be suitable for modulating and on/off level control and be fitted with a screwed connection for attaching a Spirax Sarco PA420 preamplifier.

How to order

Example: 1 off Spirax Sarco LP21 capacitance level probe with BSP connection. Probe length 470 mm.

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Level controls