

TI-P693-17

EMM Issue 1

spirax

sarco

LP40

High Integrity, Self-monitoring

Low Level Alarm Probe

Description

The Spirax Sarco LP40 level probe is used with a Spirax Sarco LCS3050 level switch to provide a high integrity, self-monitoring low level alarm signal, usually in a steam boiler. It consists of a probe body with a removable cable socket, and a separate screw-on probe tip which is retained by a lock-nut and pin.

The probe has a level sensing tip (probe tip), and a comparator tip. The earth return path is via the body connection.

Under normal operating conditions the probe tip is partially immersed, and the resistance to earth is low. When the water level drops below the probe tip the resistance to earth becomes high, causing the controller to give a low level alarm signal.

The comparator tip compensates for any leakage to earth caused by scale, dirt, or internal moisture, ensuring a low water alarm signal even under adverse conditions.

Principal features:

- High integrity, self-monitoring low level alarm probe.
- Suitable for pressures up to 32 bar g at 239 °C.
- No maintenance required.
- Positively retained probe tip.

Caution:

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

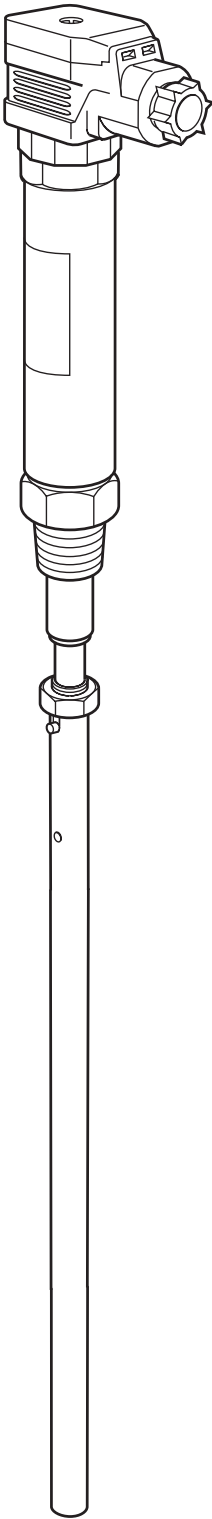
**Available tip lengths mm (inches)**  
500 (19.7), 1 000 (39.4) and 1 500 (59).

Pressure/temperature limits

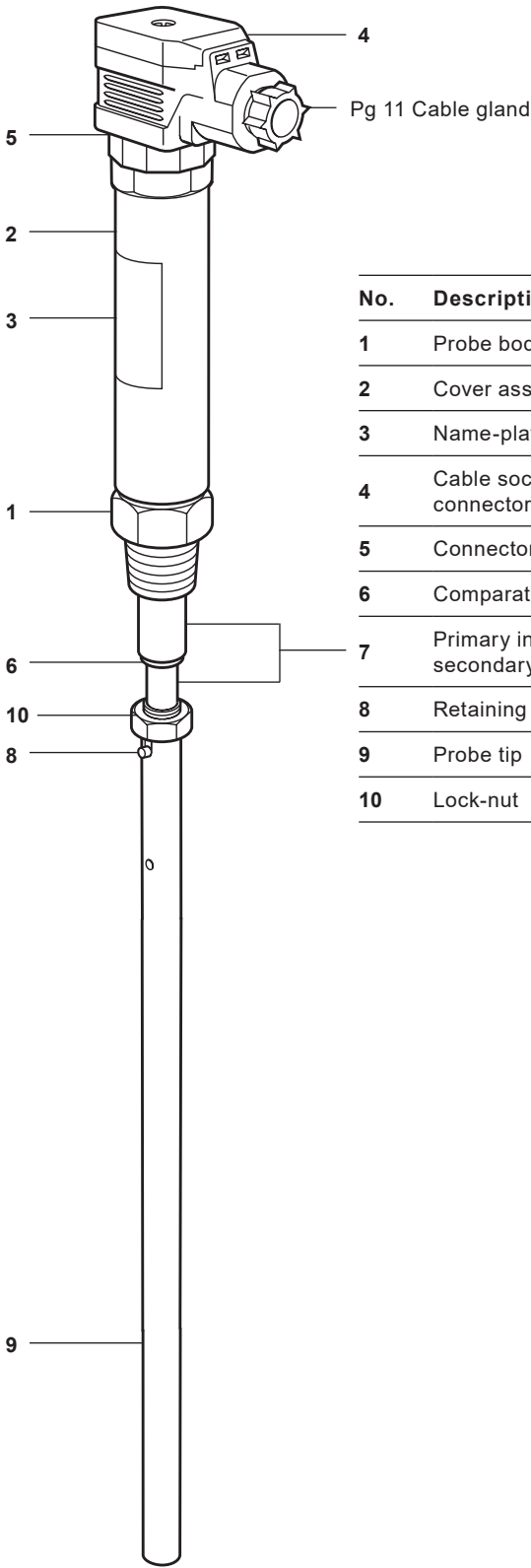
Nominal pressure rating	PN40	
Maximum boiler pressure	32 bar g	(464 psi g)
Maximum temperature	239 °C	(462 °F)
Maximum ambient temperature	70 °C	(158 °F)
Designed for a maximum cold hydraulic pressure test of:	60 bar g	(870 psi g)

Technical data

Maximum probe cable length	See level switch IMI
Minimum conductivity (when used with LCS3050)	10 µS/cm
Degree of protection	IP54

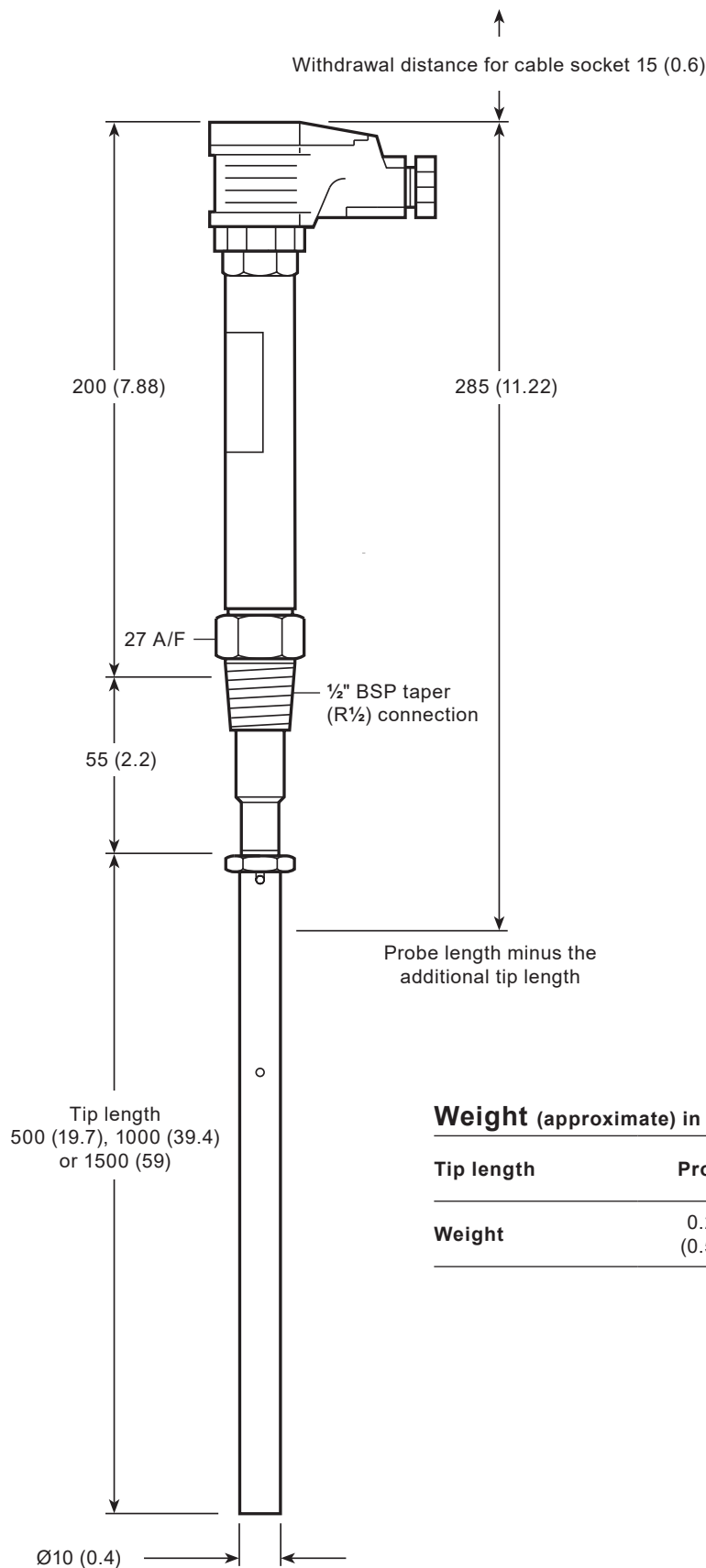


Materials



No.	Description	Material	
1	Probe body	Austenitic stainless steel	BS EN 10088-3(1.4306)
2	Cover assembly	Austenitic stainless steel	Type 316L
3	Name-plate	Polycarbonate	
4	Cable socket and probe connector	Polyamide, glass filled	
5	Connector gasket	Silicone elastomer	
6	Comparator tip	Austenitic stainless steel	Type 316L
7	Primary insulator and secondary insulator	PTFE	BS 6564 Grade UA Type 1
8	Retaining pin	Austenitic stainless steel	Type 302/304
9	Probe tip	Austenitic stainless steel	Type 316L
10	Lock-nut	Austenitic stainless steel	BS 6105 A4 80

Dimensions (approximate) in millimetres (inches)



Weight (approximate) in kg (lb)

Tip length	Probe	500 mm (19.7")	1 000 mm (39.4")	1 500 mm (59")
Weight	0.25 (0.55)	0.20 (0.43)	0.41 (0.90)	0.62 (1.36)

Boiler house  
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 provided with each unit.

Installation note:

The probe is designed to work with a Spirax Sarco LCS3050 controller. Two level probes and a limit switch are normally installed on each boiler for safety reasons. In many countries a first and second low alarm is used. The LP40 in conjunction with the LCS3050 is used to provide the second low alarm.

The first low alarm can be provided using the MIN alarm output of the level controller.

A protection tube is required for boiler shell or turbulent tank fitting.

Install the probe in a ½" BSP female connection.

**Note: Do not install the probe outdoors without additional weather protection.**

**Warning: It is essential that the probe tip of the LP40 low level alarm probe does not touch any part of the boiler. Standards require that the tip is at least 14 mm from the protection tube, and this must be checked when the probe is installed.**

The product is supplied with a spring clearance checking set. Refer to separate literature for details.

Spare sets are available - see below.

Maintenance note:

No special maintenance is required.

Boiler water level controls do, however, require periodic testing and inspection, which is described in separate literature.

How to specify

High integrity self-monitoring low level alarm probes shall be Spirax Sarco type LP40 with austenitic stainless steel bodies and probe tips, PTFE probe sleeving, and cable socket with Pg 11 cable gland. They must have a comparator tip to compensate for scaling, and a positively located probe tip. They must be used with an appropriate Spirax Sarco controller.

How to order

**Example:** 1 off Spirax Sarco LP40 high integrity, self-monitoring, low level alarm probe with 1 000 mm (39.4") tip.

Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

Available spares

LP40 tip retaining pins	Stock No. 4024780	Pack of 10
Spring clearance checking set	Stock No. 4024781	1 set (2 springs)

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state which product they are for.

**Example:** 1 off Spring clearance checking set for a Spirax Sarco LP40 high integrity, self-monitoring low level alarm probe.

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LP41

TI-P693-18

EMM Issue 1

High Integrity, Self-monitoring

High Water Level Alarm Probe

Description

The Spirax Sarco LP41 is used in conjunction with an LCS3051 level switch to provide a high integrity, self-monitoring alarm for detection of high water levels in steam boilers and other vessels.

The probe is normally installed direct in the boiler shell in a protection tube, but can be mounted in an external chamber if regulations permit.

The LP41 is supplied in three nominal tip lengths, and is cut to the exact length required prior to installation.

In normal operation, the tip is above the water level, and has a high resistance path to earth. If the water level rises to touch the probe tip, the resistance to earth drops, causing the alarm relays in the controller to be de-energised and the alarm to sound.

The LP41 is designed so that its tip and wiring connection integrity is monitored by the controller, causing an alarm signal in the event of a fault occurring.

The LP41 can also be used as a simple (non self-monitoring) high or low level probe with an LC1350 level switch.

A DIN 43650 cable socket with Pg 11 cable gland is supplied with the unit.

Caution:

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

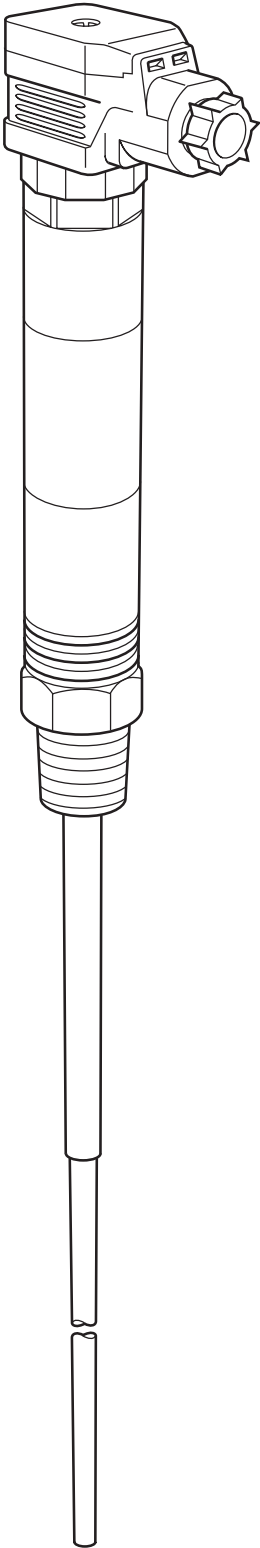
Available tip lengths mm (inches)  
500 (19.7"), 1000 (39.4") and 1500 (59").

Limiting conditions

Nominal pressure rating	PN40	
Maximum boiler pressure	32 bar g	(464 psi g)
Maximum temperature	239 °C	(462 °F)
Maximum ambient temperature	70 °C	(158 °F)

Technical data

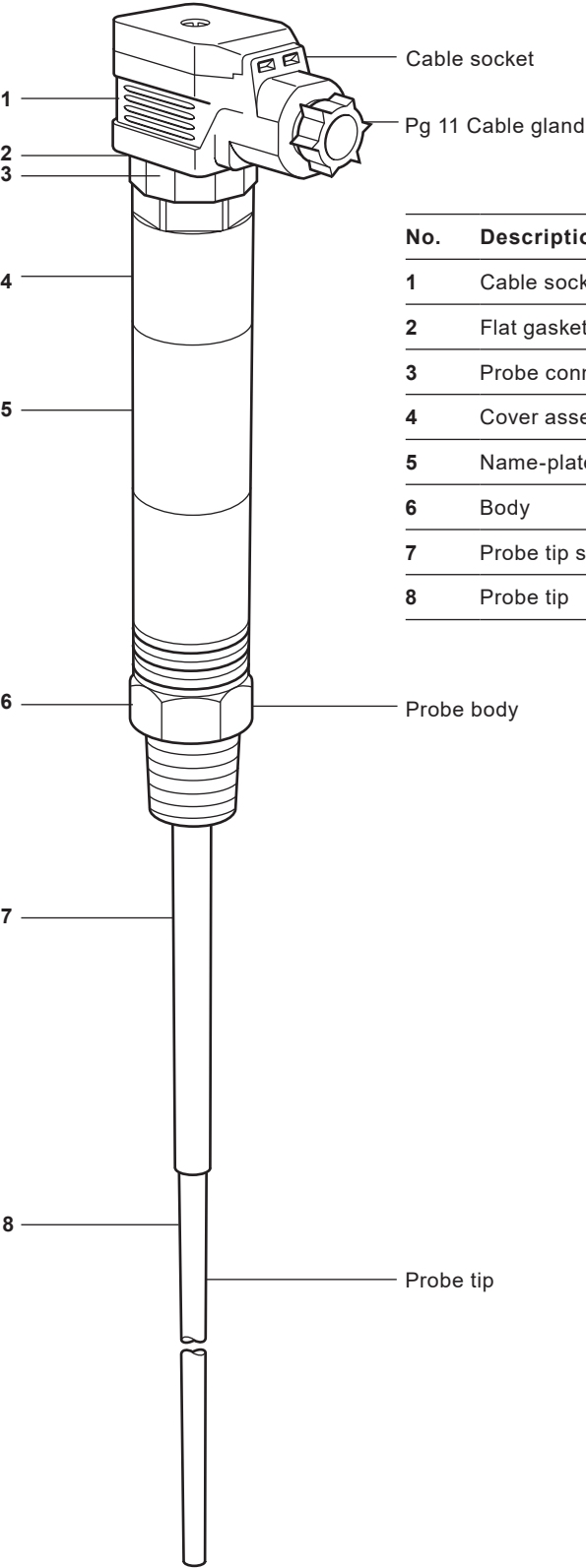
Maximum probe cable length	See level switch/controller IMI	
Minimum conductivity	LCS1350	0.5 µS/cm
	LCS3051	10 µS/cm
Degree of protection	IP54	



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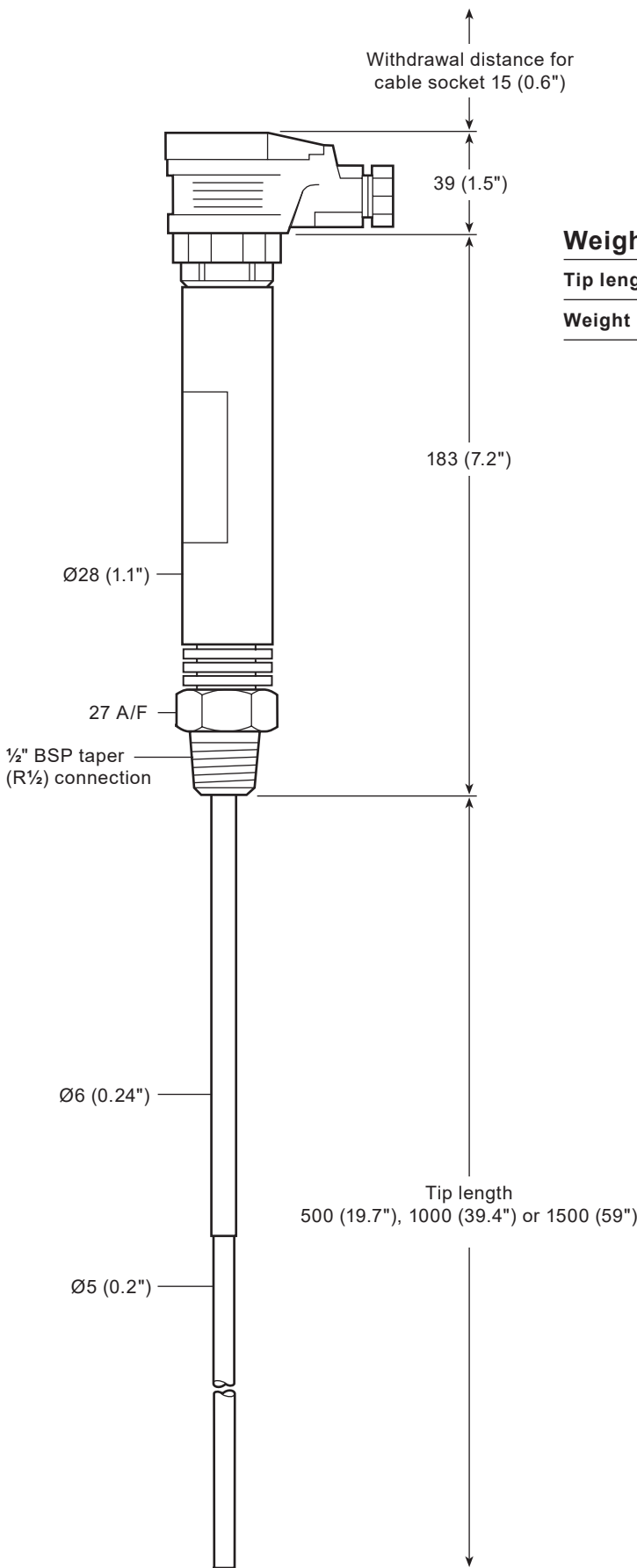
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Materials



No.	Description	Material	
1	Cable socket	Polyamide, glass filled	
2	Flat gasket	Silicone rubber	
3	Probe connector	Polyamide, glass filled	
4	Cover assembly	Austenitic stainless steel	
5	Name-plate	Polycarbonate	
6	Body	Austenitic stainless steel	BS EN 10088-3 (1.4306)
7	Probe tip sleeving	PTFE	
8	Probe tip	Austenitic stainless steel	ASTM A276 316L

Dimensions (approximate) in millimetres (inches)



Weights (approximate) in kg (lb)

Tip length	500 mm	1000 mm	1500 mm
Weight	0.61 (1.34)	0.75 (1.64)	0.88 (1.94)

Boiler house

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 provided with each unit.

Installation note:

The LP41 tip is cut to length and de-burred prior to installation. The LP41 has been designed to work with a Spirax Sarco LCS3051 level switch or LCS1350 level switch.

A protection tube is required for boiler shell or turbulent tank fitting.

Install the probe in a ½" BSP parallel female connection using PTFE tape.

**Note: Do not install the probe outdoors without additional weather protection.**

Maintenance note:

No special maintenance is required.

Boiler water level controls do, however, require periodic testing and inspection, which is described in separate literature.

Spare parts

There are no available spare parts for this unit.

How to specify

High integrity high level alarm probes shall be Spirax Sarco self-monitoring type LP41 with an austenitic stainless steel body and probe tip, PTFE probe sleeving, and DIN 43650 cable socket with Pg 11 cable gland. They shall be cut to length on installation and be used with an appropriate Spirax Sarco controller.

How to order

**Example:** 1 off Spirax Sarco LP41 high integrity, self-monitoring, high water level alarm probe with 1 000 mm (39.4") tip.