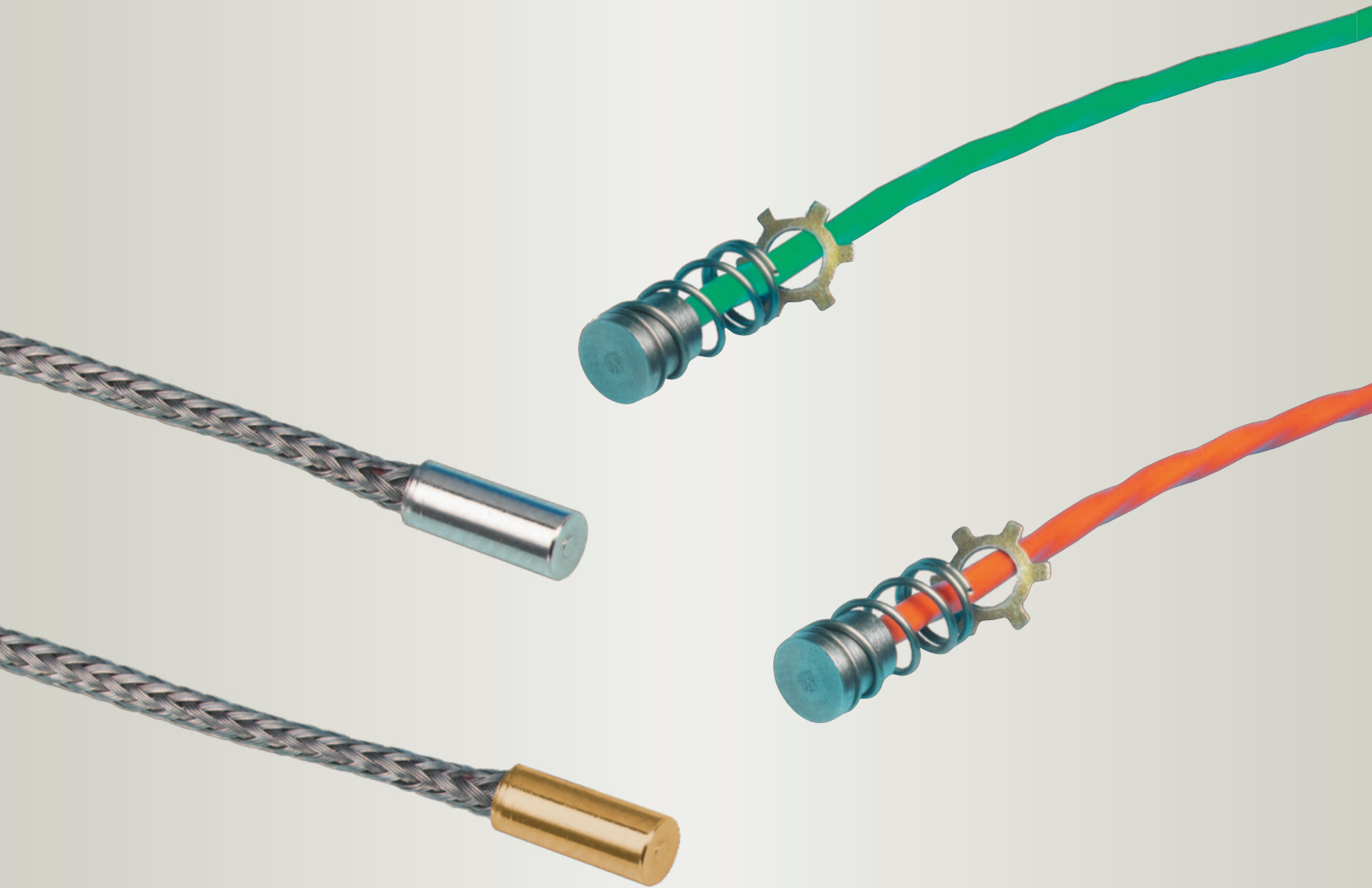# Bearing (Embedded) Thermocouples (Type 6) and Pt100 Sensors (Type 66)

A range of fast response miniature embedment thermocouples and high accuracy Pt100 sensors designed for surface temperature measurements in general industrial applications, such as in bearing shoe monitoring, to give a reliable indication of bearing wear and oil film breakdown through continuous monitoring of temperature

Type 6 Bearing (Embedded) Thermocouples

Bearing (Embedded) Tip Sensitive Thermocouples

A range of fast response, miniature embedment thermocouples designed for surface temperature measurements in general industrial applications, such as in bearing shoe applications, to give a reliable indication of bearing wear and oil film breakdown through the continuous monitoring of temperature. These tip sensitive thermocouples have an operating temperature range of -25°C to +250°C and can be supplied with a pressure tested oil seal barrier to prevent leakage. Standard assemblies are easy to install in drilled holes for general temperature sensing applications whereas the spring loaded 'top hat' style assemblies are inserted into a milled hole with a retaining clip to compress the spring and retain the sensor against the surface being monitored.

- **Fast response and cost-effective solution to bearing temperature monitoring**
- **Standard (Cap) or 'Top Hat' style tips**
- **Pressure tested (minimum 5bar/75psi for at least one hour) Oil Seal Barrier (feedthrough) available**
- **Stainless Steel and Phosphor Bronze tip materials**
- **Sensors and Oil Seals are rated for use up to 250°C**
- **Colour coded to IEC584.3 or ANSI MC96.1**

6T style illustrated with Phosphor Bronze Tip

6T style with oil seal barrier illustrated

6TH 'Top Hat' style illustrated

SECTION 1

Thermocouple Type		Temperature Range*	
		(continuous)	(short term)
K	Nickel Chromium vs Nickel Aluminium	0 to +1100°C	-180 to +1350°C
T	Copper vs Constantan	-185 to +300°C	-250 to +400°C
J	Iron vs Constantan	+20 to +700°C	-180 to +750°C
N	Nicrosil vs Nisil	0 to +1100°C	-270 to +1300°C
E	Nickel Chromium vs Constantan	0 to +800°C	-40 to +900°C

Construction of Type 6 Thermocouples limits the temperature range to -25°C to +250°C.

SECTION 2

Tip Styles, Standard Lengths and Materials

Standard Sizes

Tip O.D.	Tip I.D.	Standard (Cap) Style Tip		Top Hat Style Tip	
		Tip Material and Length		**Tip Material and Length**	
		Stainless Steel SS	Phosphor Bronze PB	Stainless Steel SS	Phosphor Bronze PB
1.5mm	1.09mm	8.0mm	–	–	–
2.0mm	1.66mm	8.0mm	–	–	–
3.0mm	2.6mm	8.0mm	–	–	–
3.2mm (1/8")	2.71mm	8.0mm	9.0mm	–	–
4.0mm	3.6mm	10.0mm	10.0mm	–	–
6.0mm	5.4mm	8.0mm	–	6.0mm	–
6.35mm (1/4")	5.4mm	8.0mm	8.0mm	6.0mm	–

Phosphor Bronze offers superior thermal conductivity when compared to Stainless Steel, thereby improving response times to temperature changes.

SECTION 3

Oil Seal Barrier - Diameters

Standard Sizes

Oil Seal Diameter (d2)	Internal Diameter
3.2mm (1/8")	2.7mm
4.76mm (3/16")	3.33mm
5.5mm	4.5mm
6.0mm	4.0mm
6.4mm (1/4")	4.93mm

SECTION 4

Extension Cables

	Diagram	Specification	Pairs	OD	Code	Diagram	Specification	Pairs	OD
B53/ SSB		**PFA Twisted Pair with Stainless Steel Braid** One pair of 7/0.15mm conductors PFA insulated. Pair twisted with overall stainless steel braid.	1	2.0mm	**BM 0702/ SSB**		**PFA 2-pair alternative for duplex sensors with Stainless Steel Braid** Multipairs of 7/0.2mm dia conductors PFA insulated. Pairs twisted and bunched and screened with Mylar® aluminium tape with a drainwire. PFA sheathed with overall stainless steel braid.	2	5.0mm

Accessories for use with Top Hat style sensors

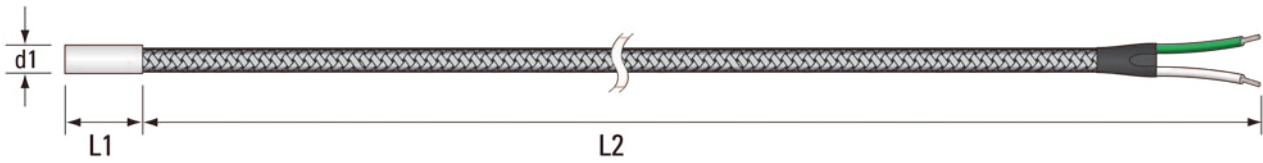**X1065** - Retaining Clip (locking washer)

0.25mm (0.010")

X1062 - Spring (6mm compressed length)

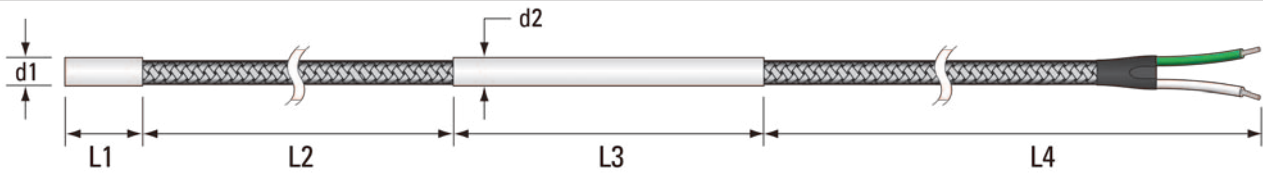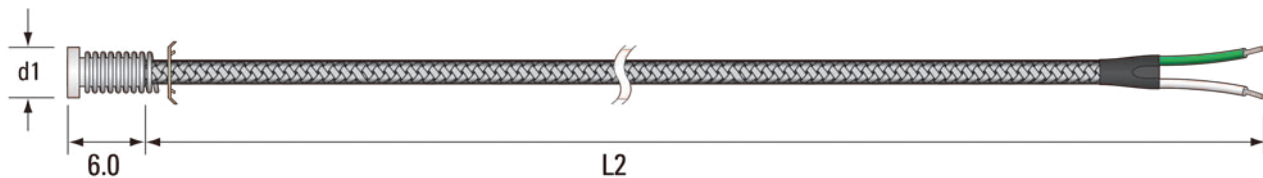# Bearing (Embedded) Thermocouples Type 6

Standard (Cap) Style Tip (without Oil Seal Barrier)

Order Code - Example

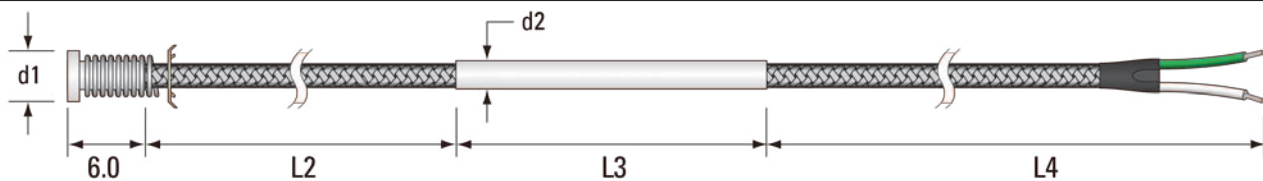| Style No.	Thermocouple Type (see section 1)	Simplex or Duplex (enter 1 or 2)	Tip Diameter (see section 2)	Tip Material (see section 2)	Tip Length (see section 2)	Cable Length in mm (L2)	Extension Cable (see section 4)	Colour Code
6T -	K -	1 -	3.2 -	SS -	8.0 -	1500 -	B53/SSB -	IEC

Standard (Cap) Style Tip with Oil Seal Barrier

Order Code - Example

Style No.	Thermocouple Type (see section 1)	Simplex or Duplex (enter 1 or 2)	Tip Diameter (see section 2)	Tip Material (see section 2)	Tip Length (see section 2)	Cable Length in mm (L2)	Extension Cable (see section 4)	Optional Oil Seal Barrier Dimensions (d2 x L3 in mm) (see section 3)	Additional Cable Length in mm (L4)	Colour Code
6T -	K -	1 -	3.2 -	SS -	8.0 -	1500 -	B53/SSB -	OSB 5.5 x 60 -	1500 -	IEC

Top Hat Style Tip (without Oil Seal Barrier)
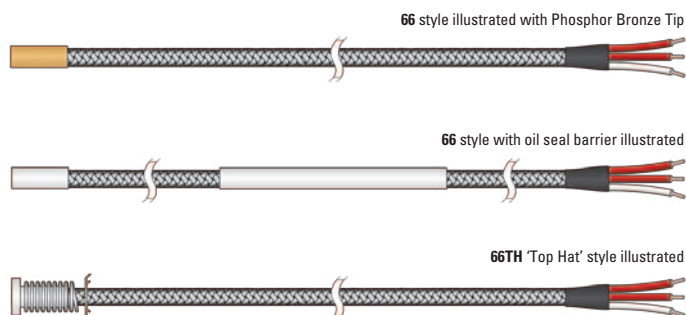

Order Code - Example

Style No.	Thermocouple Type (see section 1)	Simplex or Duplex (enter 1 or 2)	Tip Diameter (see section 2)	Tip Material (see section 2)	Cable Length in mm (L2)	Extension Cable (see section 4)	Colour Code
6TH -	K -	1 -	6.35 -	SS -	1500 -	B53/SSB -	IEC

Top Hat Style Tip with Oil Seal Barrier

Order Code - Example

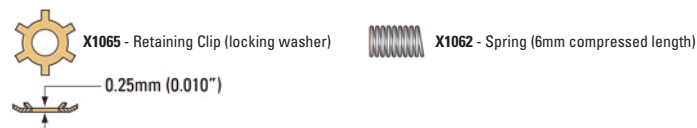| Style No.	Thermocouple Type (see section 1)	Simplex or Duplex (enter 1 or 2)	Tip Diameter (see section 2)	Tip Material (see section 2)	Cable Length in mm (L2)	Extension Cable (see section 4)	Optional Oil Seal Barrier Dimensions (d2 x L3 in mm) (see section 3)	Additional Cable Length in mm (L4)	Colour Code
6TH -	K -	2 -	6.0 -	SS -	1500 -	BM0702/SSB -	OSB 5.5 x 60 -	1500 -	IEC

Type 66 Bearing (Embedded) Pt100 Sensors

Bearing (Embedded) Tip Sensitive Pt100 Sensors

A range of high accuracy, miniature Pt100 embedment sensors designed for surface temperature measurements in general industrial applications, such as in bearing shoe applications, to give a reliable indication of bearing wear and oil film breakdown through the continuous monitoring of temperature. These tip sensitive resistance thermometers have an operating temperature range of -25°C to +250°C and can be supplied with a pressure tested oil seal barrier to prevent leakage. Standard assemblies are easy to install in drilled holes for general temperature sensing applications, whereas the spring loaded 'top hat' style assemblies, are inserted into a milled hole with a retaining clip to compress the spring and retain the sensor against the surface being monitored.

- **High accuracy and stability maintained throughout operating life**
- **Standard (Cap) or 'Top Hat' style tips**
- **Pressure tested (minimum 5bar/75psi for at least one hour) Oil Seal Barrier (feedthrough) available**
- **Stainless Steel and Phosphor Bronze tip materials**
- **Sensors and Oil Seals are rated for use up to 250°C**

66 style illustrated with Phosphor Bronze Tip

66 style with oil seal barrier illustrated

66TH 'Top Hat' style illustrated

Accessories for use with Top Hat style sensors

X1065 - Retaining Clip (locking washer)   **X1062** - Spring (6mm compressed length)

0.25mm (0.010")
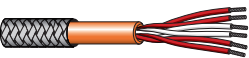
SECTION 1

Wiring Configuration		Tip Diameter				
		3.0mm	3.2mm (1/8")	4.0mm	6.0mm	6.4mm (1/4")
1 (Simplex)	3 wire	✔	✔	✔	✔	✔
	4 wire	✔	✔	✔	✔	✔
2 (Duplex)	3 wire	✔	✔	✔	✔	✔
	4 wire				✔	✔

SECTION 3 — Standard Sizes

Oil Seal Barrier - Diameters	
Oil Seal Diameter (d2)	**Internal Diameter**
3.2mm (1/8")	2.7mm
4.76mm (3/16")	3.33mm
5.5mm	4.5mm
6.0mm	4.0mm
6.4mm (1/4")	4.93mm

SECTION 2 — Standard Sizes

Tip Styles, Standard Lengths and Materials

Tip Diameters		Standard (Cap) Style Tip	Top Hat Style Tip

d1 | d1 — L1 | d1 — 6.0

Tip O.D.	Tip I.D.	Tip Material and Length		Tip Material and Length	
		Stainless Steel **SS**	Phosphor Bronze **PB**	Stainless Steel **SS**	Phosphor Bronze **PB**
3.0mm	2.6mm	8.0mm	–	–	–
3.2mm (1/8")	2.71mm	8.0mm	9.0mm	–	–
4.0mm	3.6mm	10.0mm	10.0mm	–	–
6.0mm	5.4mm	8.0mm	–	6.0mm	–
6.35mm (1/4")	5.4mm	8.0mm	8.0mm	6.0mm	–

Phosphor Bronze offers superior thermal conductivity when compared to Stainless Steel, thereby improving response times to temperature changes.

SECTION 4 — Extension Cables

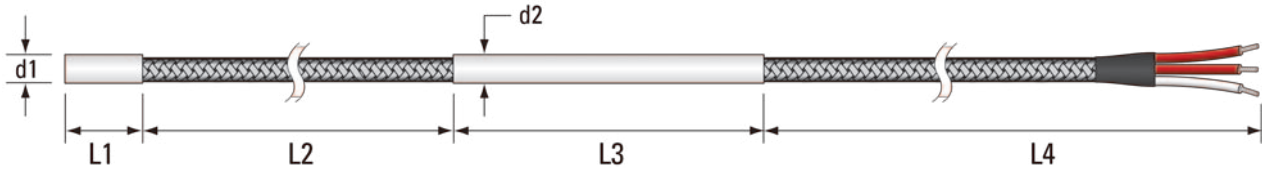| Code	Diagram	Specification	Cores	OD	Code	Diagram	Specification	Cores	OD
RT32/SSB		PFA with Steel Braid — 3 cores of 7/0.1mm stranded copper conductors. Cores PFA insulated. Cores bunched together. Stainless steel wire braid overall.	3	1.8mm	RT37/SSB		PFA with Steel Braid — 3 cores of 7/0.2mm stranded copper conductors. Cores PFA insulated. Cores bunched together. Stainless steel wire braid overall.	3	2.1mm
RT42/SSB		PFA with Steel Braid — 4 cores of 7/0.1mm stranded copper conductors. Cores PFA insulated. Cores bunched together. Stainless steel wire braid overall.	4	1.7mm	RT68/SSB		PFA with Steel Braid — 6 cores of 19/0.05mm stranded copper conductors. Cores PFA insulated. Cores twisted with PFA sheath and stainless steel wire braid overall.	6	2.8mm
RT62/SSB		PFA with Steel Braid — 6 cores of 7/0.1mm stranded copper conductors. Cores PFA insulated. Cores bunched together. Stainless steel wire braid overall.	6	2.2mm	RT32/SSB/TEF		PFA / Steel Braid / PFA Overall — 3 cores of 7/0.2mm stranded copper conductors. Cores PFA insulated. Cores bunched together with stainless steel wire braid and PFA overall.	3	2.2mm
RT82/SSB		PFA / Steel Braid / PFA Overall — 8 cores 7/0.1mm stranded copper conductors. Cores PFA insulated. Cores bunched together, PTFE wrapped with stainless steel wire braid and PFA overall.	8	3.8mm	RT42/SSB/TEF		PFA / Steel Braid / PFA Overall — 4 cores of 7/0.2mm stranded copper conductors. Cores PFA insulated. Cores bunched together with stainless steel wire braid and PFA overall.	4	2.4mm
RT35/SSB		PFA with Steel Braid — 3 cores of 7/0.15mm stranded copper conductors. Cores PFA insulated. Cores bunched together. Stainless steel wire braid overall.	3	2.1mm	RT62/SSB/TEF		PFA / Steel Braid / PFA Overall — 6 cores of 7/0.2mm stranded copper conductors. Cores PFA insulated. Cores bunched together with stainless steel wire braid and PFA overall.	6	3.1mm

Bearing (Embedded) Pt100 Sensors Type 66

Standard (Cap) Style Tip (without Oil Seal Barrier)
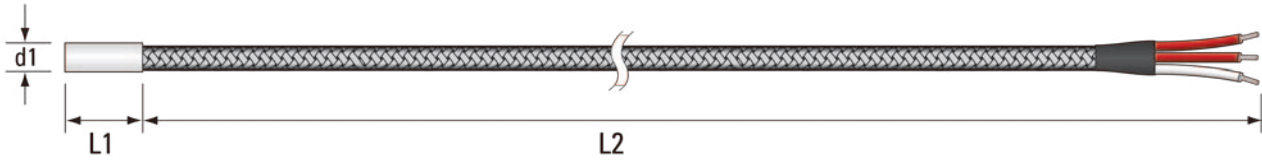
Order Code - Example

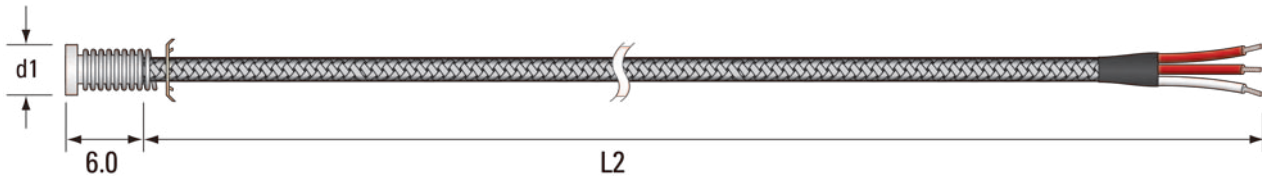| Style No.	Simplex or Duplex (see section 1)	Tip Diameter (see section 2)	No. of Wires	Tip Material (see section 2)	Tip Length (see section 2)	Element Standard (Class A or B)	Cable Length in mm (L2)	Extension Cable (see section 4)
66	1	3.2	3	PB	8.0	B	1500	RT35/SSB

Standard (Cap) Style Tip with Oil Seal Barrier

Order Code - Example

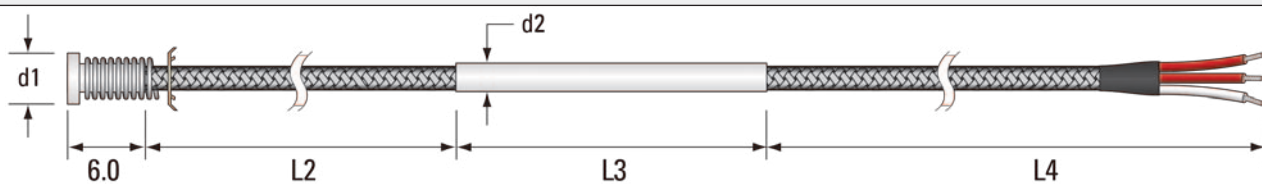| Style No.	Simplex or Duplex (see section 1)	Tip Diameter (see section 2)	No. of Wires	Tip Material (see section 2)	Tip Length (see section 2)	Element Standard (Class A or B)	Cable Length in mm (L2)	Extension Cable (see section 4)	Optional Oil Seal Barrier Dimensions (d2 x L3 in mm) (see section 3)	Additional Cable Length in mm (L4)
66	1	3.2	3	SS	8.0	A	1500	RT35/SSB	OSB 5.5 x 60	1500

Top Hat Style Tip (without Oil Seal Barrier)

Order Code - Example

Style No.	Simplex or Duplex (see section 1)	Tip Diameter (see section 2)	No. of Wires	Tip Material (see section 2)	Element Standard (Class A or B)	Cable Length in mm (L2)	Extension Cable (see section 4)
66TH	1	6.0	3	SS	B	1500	RT35/SSB

Top Hat Style Tip with Oil Seal Barrier

Order Code - Example

Style No.	Simplex or Duplex (see section 1)	Tip Diameter (see section 2)	No. of Wires	Tip Material (see section 2)	Element Standard (Class A or B)	Cable Length in mm (L2)	Extension Cable (see section 4)	Optional Oil Seal Barrier Dimensions (d2 x L3 in mm) (see section 3)	Additional Cable Length in mm (L4)
66TH	1	6.4	3	SS	B	1500	RT35/SSB	OSB 5.5 x 60	1500

TC Ltd for Temperature Sensing, Measurement and Control