

MODSTANDSFØLERE MED FLANGE TW40

Serie TR10-F

TR10F-14369107
PT100 3-tråd -50-500°C 250x9 DN25 form2F

- Måleområde fra -196 til 600°C
- Udskiftelig måleindsats
- Option: ATEX-klassificering
- Option: 4-20mA udgangssignal
- Sammenføjet dyklomme TW40 med flange



PRODUKTBESKRIVELSE

Serie TR10-F er optimal til temperaturmåling i beholdere og rørledninger med væske eller gasser. Standardflanger i henhold til DIN EN eller ASME er tilgængelige. Beskyttelsesrøret svejses og skrues ind i tilslutningshovedet. Beskyttelsesrør i rustfrit stål er egnede til normale kemiske forhold. Som ekstraudstyr anbefales en belægning mod kemisk aggressive medier eller en slidbestandig belægning mod slibende medier.

Den udskiftelige måleindsats kan fjernes, uden at man behøver at tage hele sensoren tages ud af processen, hvilket gør inspektion, overvågning og service let.

Et bredt udvalg af indsatslængder, flangestørrelser, beskyttelsesrør og sensorhoveder gør hver føler velegnet til enhver anvendelse.

Som option er det muligt at få føleren med en analog eller digital transmitter installeret.

Bestillingsnøgle:

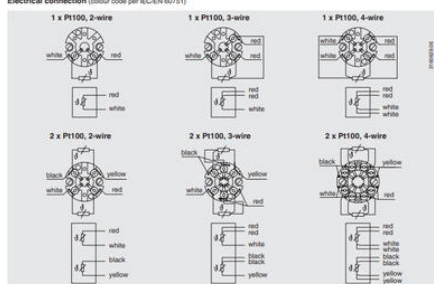
- Godkendelser?
- Anti-korrosionsbeskyttelse?
- Flere godkendelser / certifikater?
- Sensortype?
- Nøjagtighed?
- Måleområde?
- Model på huset?
- Kabelindgang + størrelse?
- Evt. transmitter?
- Tilslutnings halsrør?
- Halsrørslængde?
- Procesforbindelse?
- Indstikslængde?
- Diameter måleindsatsen?
- Materiale måleindsats?

SPECIFIKATIONER

Indstikslængde	250 mm
Inside diameter	7 mm
IP-klasse	IP65
Længde	340 mm
Material Sensor Body	Inococonel - 600

Materiale hus	Aluminium
Materiale medieberørte del	Rustfrit stål 316Ti
Neck length	0,065 m
Omgivelsestemperatur fra	-40 °C
Omgivelsestemperatur til	80 °C
Plug diameter	9 mm
Temperaturområde fra	-50 °C
Temperaturområde til	500 °C
Trykmodstand max	16 bar

Electrical connection (colour code per IEC-EN 60751)



Model	Material	Cable entry thread size	Ingress protection (max.) ¹⁾	Cap	Surface	Connection to neck tube
BS	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Flat cap with 2 screws	Blau, lacquiert ³⁾	M24 x 1.5, 1/2 NPT
BSZ	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Spherical hinged cover with cylinder head screw	Blau, lacquiert ³⁾	M24 x 1.5, 1/2 NPT
BSZ-H	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquiert ³⁾	M24 x 1.5
BSZ-H (2x cable outlet)	Aluminium	2 x M20 x 1.5 or 2 x 1/2 NPT ²⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquiert ³⁾	M24 x 1.5
BSZ-H / D8110 ⁴⁾	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with cylinder head screw	Blau, lacquiert ³⁾	M24 x 1.5, 1/2 NPT
BSS	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Spherical hinged cover with clamping lever	Blau, lacquiert ³⁾	M24 x 1.5, 1/2 NPT
BSS-H	Aluminium	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with clamping lever	Blau, lacquiert ³⁾	M24 x 1.5, 1/2 NPT
BVS	Stainless steel	M20 x 1.5 ²⁾	IP65	Precision-cast screw-on lid	Blau, elektrolytisch	M24 x 1.5
BSZ-K	Plastic	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BSZ-KK	Plastic	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection				
	Without	Ex I (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22
BS	x	x	-	-	-
BSZ	x	x	x	x	x
BSZ-H	x	x	x	x	x
BSZ-H (2x cable outlet)	x	x	-	-	-
BSZ-H / D8110 ⁴⁾	x	x	-	-	-
BSS	x	x	-	-	-
BSS-H	x	x	-	-	-
BVS	x	x	-	-	-
BSZ-K	x	x	-	-	-
BSZ-KK	x	x	-	-	-

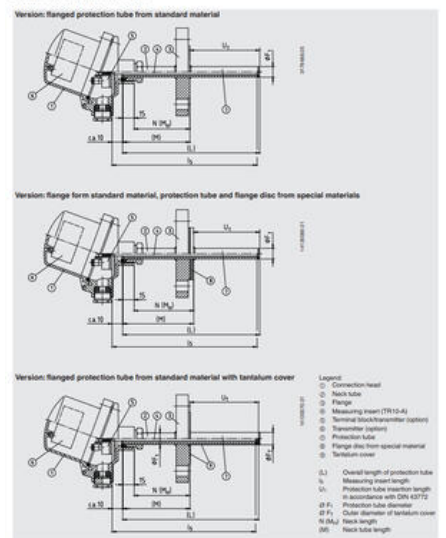
Cable entry



Cable entry	Cable entry thread size
Standard cable entry ¹⁾	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø 8 ... 12 mm) ¹⁾	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø 8 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Stainless steel cable gland (cable Ø 7 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Plain threaded	M20 x 1.5 or 1/2 NPT
2 x M20 x 1.5 ²⁾	2 x M20 x 1.5
Junction box M12 x 1 (4-pin) ³⁾	M20 x 1.5
Sealing plugs for transport	M20 x 1.5 or 1/2 NPT

Cable entry	Colour	Ingress protection (max.)	Min./max. ambient temperature	Ex I (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22
Standard cable entry ¹⁾	Black	IP65	-40 ... +80 °C	x	x	-	-
Plastic cable gland ¹⁾	Black or grey	IP65, IP68	-40 ... +80 °C	x	-	-	-
Plastic cable gland, Ex e ¹⁾	Light blue	IP65, IP68	20 ... +80 °C (standard) -40 ... +70 °C (optional)	x	x	x	-
Plastic cable gland, Ex e ¹⁾	Black	IP65, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (optional)	x	-	x	x
Nickel-plated brass cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	-	-	-
Nickel-plated brass cable gland, Ex e	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
Stainless steel cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
Stainless steel cable gland, Ex e	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
2 x M20 x 1.5 ²⁾	-	IP60	-	x	x	x	x
Plain threaded	-	IP60	-	x	x	x	x
Junction box M12 x 1 (4-pin) ³⁾	-	IP65	-40 ... +80 °C	x	x	-	-
Sealing plugs for transport	Transparent	-	-40 ... +80 °C	not applicable	transport protection	-	-

Components model TR10-F

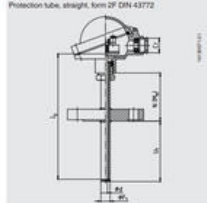


Protection tube

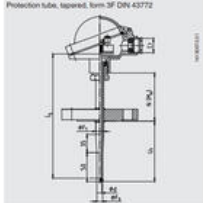
Protection tube designs

Protection tube in accordance with DIN 43772

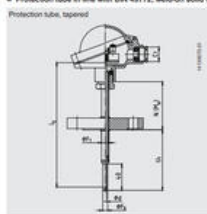
Protection tube, straight, form 2F DIN 43772



Protection tube, tapered, form 3F DIN 43772



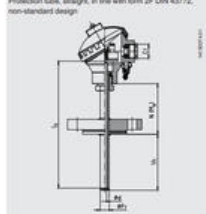
Protection tube in line with DIN 43772, weld-on solid tip



Legend:
 l₁ Insertion length
 l₂ Measuring insert length
 l₃ Neck length
 l₄ Thread cable entry
 l₅ Protection tube diameter
 Ø F₁ Diameter of protection tube tip
 Ø F₂ Outer diameter of tantalum cover
 l₆ Overall length of protection tube
 Ø S Measuring insert diameter

Protection tube in line with DIN 43772, wetted parts from special material, girder flange: stainless steel

Protection tube, straight, in line with form 2F DIN 43772, non-standard design

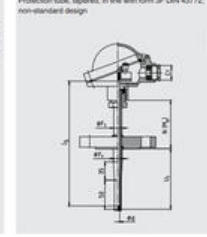


Protection tube in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube, straight, in line with form 2F DIN 43772, non-standard design



Protection tube, tapered, in line with form 3F DIN 43772, non-standard design



Legend:
 l₁ Insertion length
 l₂ Measuring insert length
 l₃ Neck length
 l₄ Thread cable entry
 l₅ Protection tube diameter
 Ø F₁ Diameter of protection tube tip
 Ø F₂ Outer diameter of tantalum cover
 l₆ Overall length of protection tube
 Ø S Measuring insert diameter

The pictures show examples of connection heads.

Protection tube designs in accordance with DIN 43772

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, form 2F DIN 43772	Stainless steel 1.4571	9 x 1 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)
		11 x 2 mm 12 x 2.5 mm 14 x 2.5 mm	8 mm with sleeve Ø 8 mm / 8 mm	
Tapered, form 3F DIN 43772	Stainless steel 1.4571	12 x 2.5 mm, tapered to 9 mm	8 mm	

Protection tube designs in line with DIN 43772, weld-on solid tip

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Tapered, weld-on solid tip, in line with DIN 43772, non-standard design	Stainless steel 1.4571	9 x 1 mm, tapered to 6 mm	3 mm	M24 x 1.5 (possible threaded connection, male nut)
		11 x 2 mm, tapered to 6 mm 12 x 2.5 mm, tapered to 6 mm	8 mm	

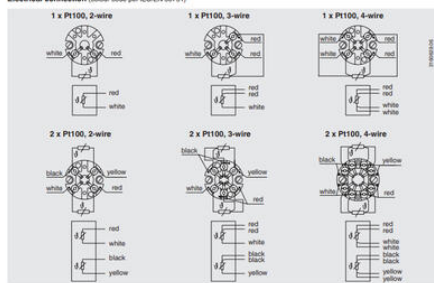
Protection tube designs in line with DIN 43772, wetted parts: special material, girder flange: stainless steel

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	2.4360 (MonelK00) stainless steel	13.7 x 2.2 mm	8 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (possible threaded connection, male nut)
	2.4610 (Hastelloy C276) stainless steel			
	2.4610 (Hastelloy C4) stainless steel 3.7000 (Titan Grade 2) stainless steel			

Protection tube designs in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x 0.4 mm	8 mm	M24 x 1.5 (possible threaded connection, male nut)
		15 x 3 mm, tantalum cover 10 x 0.4 mm	8 mm	
Tapered, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	12 x 2.5 mm, tantalum cover 13 x 0.4 mm	8 mm	

Electrical connection (colour code per IEC/EN 60751)



Model	Material	Cable entry thread size	Ingress protection (max.) ¹⁾	Cap	Surface	Connection to neck tube
BS	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Flat cap with 2 screws	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BSZ	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Spherical hinged cover with cylinder head screw	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BSZ-H	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BSZ-H (2x cable outlet)	Aluminum	2 x M20 x 1.5 or 2 x 1/2 NPT ²⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Blue, lacquered ³⁾	M24 x 1.5
BSZ-H / DB10 ⁴⁾	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with cylinder head screw	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BSS	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Spherical hinged cover with clamping lever	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BSS-H	Aluminum	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with clamping lever	Blue, lacquered ³⁾	M24 x 1.5, 1/2 NPT
BVS	Stainless steel	M20 x 1.5 ²⁾	IP65	Precision-cast screw-on cap	Blue, electroplated	M24 x 1.5
BSZ-K	Plastic	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BSZ-HK	Plastic	M20 x 1.5 or 1/2 NPT ²⁾	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection				
	Without	Ex (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22
BS	x	x	x	x	x
BSZ	x	x	x	x	x
BSZ-H	x	x	x	x	x
BSZ-H (2x cable outlet)	x	x	x	x	x
BSZ-H / DB10 ⁴⁾	x	x	-	-	-
BSS	x	x	-	-	-
BSS-H	x	x	-	-	-
BVS	x	x	-	-	-
BSZ-K	x	x	-	-	-
BSZ-HK	x	x	-	-	-

Cable entry

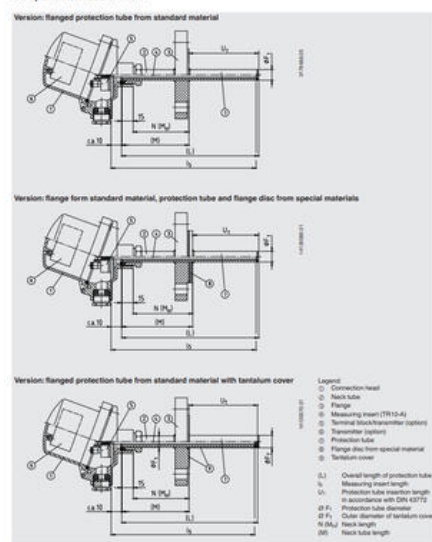


The pictures show examples of connection heads.

Cable entry	Cable entry thread size
Standard cable entry ¹⁾	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø 8 ... 10 mm) ¹⁾	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø 6 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Stainless steel cable gland (cable Ø 7 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Plain threaded	M20 x 1.5 or 1/2 NPT
2 x M20 x 1.5 ¹⁾	2 x M20 x 1.5
Junction box M12 x 1 (4-pin) ¹⁾	M20 x 1.5
Sealing plugs for transport	M20 x 1.5 or 1/2 NPT

Cable entry	Colour	Ingress protection (max.)	Min./max. ambient temperature	Explosion protection			
				without	Ex (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2
Standard cable entry ¹⁾	Black	IP65	-40 ... +80 °C	x	x	-	-
Plastic cable gland ¹⁾	Black or grey	IP65, IP68	-40 ... +80 °C	x	-	-	-
Plastic cable gland, Ex e ¹⁾	Light blue	IP65, IP68	-40 ... +80 °C (standard) -40 ... +70 °C (option)	x	x	x	-
Plastic cable gland, Ex e ¹⁾	Black	IP65, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (option)	x	-	x	x
Nickel-plated brass cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	-	-	-
Nickel-plated brass cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
Stainless steel cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
Stainless steel cable gland	Black	IP65, IP68	-50 °F / -40 ... +80 °C	x	x	x	x
Plain threaded	-	IP60	-	x	x	x ⁴⁾	x ⁴⁾
2 x M20 x 1.5 ¹⁾	-	IP65	-	x	x	x ⁴⁾	x ⁴⁾
Junction box M12 x 1 (4-pin) ¹⁾	-	IP65	-40 ... +80 °C	x	x ⁴⁾	x ⁴⁾	-
Sealing plugs for transport	Transparent	-	-40 ... +80 °C	not applicable	not applicable	transport protection	-

Components model TR10-F



Version: flanged protection tube from standard material with tantalum cover

Legend:
 1) Connection head
 2) Neck tube
 3) Flange
 4) Measuring insert (TR10-A)
 5) Terminal block/number (option)
 6) Transformer (option)
 7) Protection tube
 8) Flange disc from special material
 9) Tantalum cover

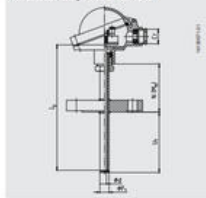
Legend:
 l₁ Overall length of protection tube
 l₂ Measuring insert length
 l₃ Protection tube insertion length in accordance with DIN 43772
 Ø F₁ Protection tube diameter
 Ø F₂ Outer diameter of tantalum cover
 Ø S₁ Neck length

Protection tube

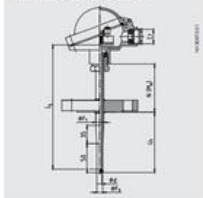
Protection tube designs

Protection tube in accordance with DIN 43772

Protection tube, straight, form 2F DIN 43772

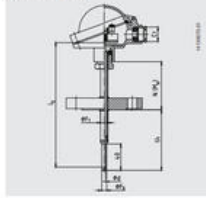


Protection tube, tapered, form 3F DIN 43772



Protection tube in line with DIN 43772, weld-on solid tip

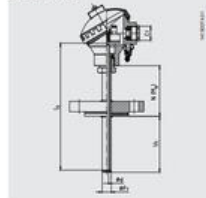
Protection tube, tapered



Legend
 l_1 Insertion length
 l_2 Measuring insert length
 l_3 Neck length
 l_4 Thread tube entry
 l_5 Protection tube diameter
 $\varnothing F_1$ Diameter of protection tube to
 $\varnothing F_2$ Outer diameter of tantalum cover
 $\varnothing F_3$ Overall length of protection tube
 $\varnothing F_4$ Measuring insert diameter

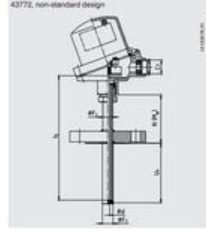
Protection tube in line with DIN 43772, wetted parts from special material, girder flange: stainless steel

Protection tube, straight, in line with form 2F DIN 43772, non-standard design

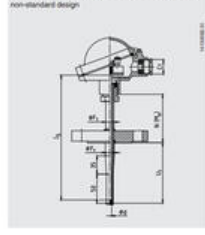


Protection tube in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube, straight, in line with form 2F DIN 43772, non-standard design



Protection tube, tapered, in line with form 3F DIN 43772, non-standard design



Legend
 l_1 Insertion length
 l_2 Measuring insert length
 l_3 Neck length
 l_4 Thread tube entry
 l_5 Protection tube diameter
 $\varnothing F_1$ Diameter of protection tube to
 $\varnothing F_2$ Outer diameter of tantalum cover
 $\varnothing F_3$ Overall length of protection tube
 $\varnothing F_4$ Measuring insert diameter

The pictures show examples of connection heads.

Protection tube designs in accordance with DIN 43772

Protection tube	Material	Protection tube \varnothing	Suitable for measuring insert \varnothing	Connection to head
Straight, form 2F DIN 43772	Stainless steel 1.4571	9 x 1 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)
		11 x 2 mm	8 mm	
		12 x 2.5 mm	8 mm with sleeve \varnothing 8 mm / 8 mm	
Tapered, form 3F DIN 43772	Stainless steel 1.4571	12 x 2.5 mm, tapered to 6 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)

Protection tube designs in line with DIN 43772, weld-on solid tip

Protection tube	Material	Protection tube \varnothing	Suitable for measuring insert \varnothing	Connection to head
Tapered, weld-on solid tip, in line with DIN 43772, non-standard design	Stainless steel 1.4571	9 x 1 mm, tapered to 6 mm 11 x 2 mm, tapered to 6 mm 12 x 2.5 mm, tapered to 6 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)

Protection tube designs in line with DIN 43772, wetted parts: special material, girder flange: stainless steel

Protection tube	Material	Protection tube \varnothing	Suitable for measuring insert \varnothing	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	2.4860 (MonelK00) / stainless steel 2.4819 (Hastelloy C276) / stainless steel 2.4610 (Hastelloy C4) / stainless steel 3.7000 (Titan Grade 2) / stainless steel	11 x 2 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)
		13.7 x 2.2 mm	8 mm	
		15 x 3 mm	8 mm with sleeve \varnothing 8 mm / 8 mm	

Protection tube designs in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube	Material	Protection tube \varnothing	Suitable for measuring insert \varnothing	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x 0.4 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)
		15 x 3 mm, tantalum cover 18 x 0.4 mm	8 mm with sleeve \varnothing 8 mm / 8 mm	
Tapered, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	12 x 2.5 mm, tantalum cover 13 x 0.4 mm	6 mm	M24 x 1.5 (possible threaded connection, male nut)