

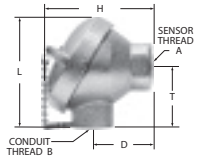
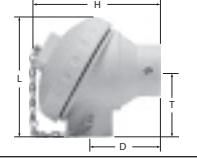
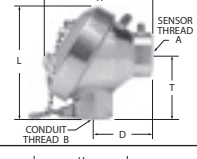
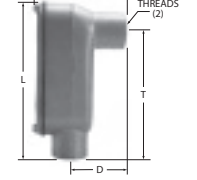
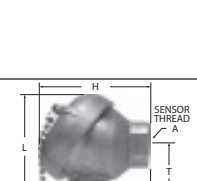
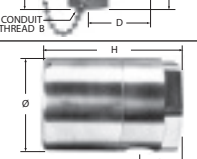
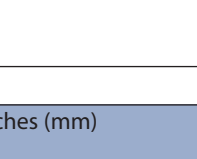


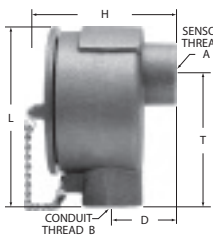
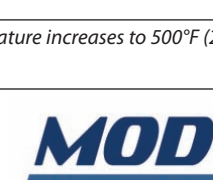
▶ SECTION 4: ACCESSORIES

- A wide selection of fittings and accessories adapt sensors to any installation
- Adjustable fittings with cut-to-length probes provide off-the-shelf versatility
- Choose from a variety of materials to meet your critical environment requirements

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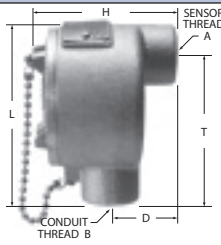
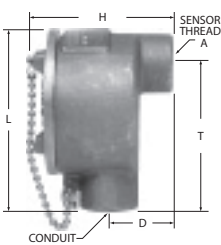
Connection Heads

Dimensions in inches (mm)	Body/gasket material	IP/NEMA Rating	Max Temp.	Pipe thread codes	Temptran™ models	Approx. weight	Model
CH103 3.5 (89) H 3.5 (89) L 1.9 (48) D 1.9 (48) T 	Nickel-plated cast iron with SS chain/silicone gasket	IP55 Type 3 and 4	316°C (600°F)	P1, P2, P3, P4	All models except isolated	2.0 lbs. (0.9 kg.)	CH103
CH366 3.0 (76) H 3.7 (94) L 1.37 (35) D 1.9 (48) T 	White polypropylene (FDA approved)/neoprene gasket	IP55 Type 3 and 4	110°C (230°F)	P3 only	All models except isolated	0.2 lbs. (0.1 kg.)	CH366
CH359 3.5 (89) H 3.5 (89) L 2.0 (51) D 1.75 (44) T 	Aluminum/silicone gasket	IP55 Type 3 and 4	316°C (600°F)	P1, P2, P3, P4	All models except isolated	0.8 lbs. (0.4 kg.)	CH359
CH301 2.33 (59.2) H 4.25 (108) L 1.25 (31.8) D 3.60 (91.4) T 	Aluminum/neoprene gasket	IP55 Type 3 and 4	115°C (240°F)	CH301: P3 only	Miniature TT110 and TT111 models	0.5 lbs. (0.2 kg.)	CH301
CH302 2.60 (66.0) H 5.20 (132) L 1.50 (38.1) D 4.25 (108) T 				CH302: P2 only			CH302
CH360 3.5 (89) H 3.5 (89) L 2.0 (51) D 1.75 (44) T 	316 SS with silicone gasket	IP56 Type 3, 4 and 4x	316°C (600°F)	P1, P2, P3, P4	All models except isolated	1.8 lbs. (0.8 kg.)	CH360
CH335/CH339 2.5 (64) Ø 3.5 (89) H 0.95 (20) D 	300 series SS with Buna N O-ring	IP56 Type 3, 4 and 4x	121°C (250°F)	P3 only	All models except isolated	2.6 lbs. (1.2 kg.)	CH335
	300 series SS with Buna N O-ring and chain	IP56 Type 3, 4 and 4x	121°C (250°F)	P3 only	All models except isolated	2.6 lbs. (1.2 kg.)	CH339

Dimensions in inches (mm)	Body/gasket material	Hazardous location rating	IP/NEMA Rating	Max Temp.	Approx. weight	Model
Explosionproof/flameproof heads FM/CSA approved						
CH104: 4.60 (116.8) L 3.50 (88.9) H 1.63 (41.4) D 3.35 (85.1) T 	Copper-free aluminum/Buna-N O-ring	Division 1; Division 2 Class I, Groups B, C, D; Class II, Groups E, F, G; Class I, Zone 1, AEx d IIC; Zone 1, EX d IIC; T6 (Ta = 40°C), T2 (Ta = 260°C)	IP65 Type 3 and 4	121°C* (250°F)	1.5 lbs. (0.7 kg.)	CH104
	CH106: 4.20 (106.7) L 3.50 (88.9) H 1.35 (34.3) D 3.22 (81.8) T 		Stainless steel/Buna-N O-ring	IP66 Type 3, 4, and 4X	121°C* (250°F)	2.4 lbs. (1.1 kg.)

*Maximum temperature increases to 500°F (260°C) if O-ring is removed. Environmental rating drops to Type 3, IP54.

Specifications subject to change

Dimensions in inches (mm)	Body/gasket material	Hazardous location rating	IP/NEMA Rating	Max Temp.	Approx. weight	Model		
Explosionproof heads FM/CSA approved								
CH405/CH407/ CH342/CH343/ CH330/CH328: 4.60 (116.8) L 3.60 (91.4) H 1.63 (41.4) D 3.70 (96.0) T 	Copper-free aluminum	Division 1; Class I, Groups A, B, C, D;	IP54 Type 3	260°C (500°F)	1.4 lbs. (0.6 kg.)	CH405		
	Copper-free aluminum/ Buna-N O-ring	Class II, Groups E, F, G; Class III (FM approved only)	IP65 Type 3 and 4	121°C (250°F)		CH407		
	Copper-free aluminum, gray epoxy coat, no chain/ Buna-N O-ring	Division 1; Class I, Groups B, C, D; Class II, Groups E, F, G;	IP66 Type 3, 4 and 4X			CH342		
	Copper-free aluminum, gray epoxy coat, with chain/ Buna-N O-ring					CH343		
	Note: The following models have lower cost but no FM/CSA approval or label.							
	Aluminum/ Buna-N O-ring	Division 1; Class I, Groups B, C, D; Class II, Groups E, F, G; Class III	IP65 Type 3 and 4	121°C (250°F)		1.4 lbs. (0.6 kg.)	CH330	
Aluminum with FDA approved white epoxy coat, no chain/Buna-N O-ring	IP66 Type 3, 4 and 4X		CH328					
Flameproof heads CENELEC/ATEX approved Ex II 2G EEx d IIC								
CH357/CH358: 4.49 (114) L 3.60 (91.4) H 1.63 (41.4) D 3.78 (96.0) T CH356: 4.20 (106.7) L 3.50 (88.9) H 1.35 (34.3) D 3.22 (81.8) T 	Copper-free aluminum/ Buna-N O-ring	Zone 1, Group IIC	IP65	40°C (104°F)	1.4 lbs. (0.6 kg.)	CH357		
	Copper-free aluminum, epoxy coated/Buna-N O-ring	Zone 1, Group IIC				IP66	CH358	
	Stainless steel/Buna-N O-ring			121°C (250°F)	2.4 lbs. (1.1 kg.)		CH356	

Replacement terminal boards

Model	4-position board	6-position board	8-position board
CH103		AC102708	AC101926
CH104	AC1048	AC1039	AC101122
CH106	AC1048	AC1039	AC101122
CH301	AC101377T4	AC101377T6	
CH302	AC101377T4	AC101377T6	
CH328	AC1048	AC1039	AC101122
CH330	AC1048	AC1039	AC101122
CH331	*	AC100427	
CH335	*	AC100427	AC101926
CH339	*	AC100427	AC101926
CH342	AC1048	AC1039	AC101122
CH343	AC1048	AC1039	AC101122
CH356	AC1048	AC1039	AC101122
CH357	AC1048	AC1039	AC101122
CH358	AC1048	AC1039	AC101122
CH359	*	AC100427	AC101926
CH360	*	AC100427	AC101926
CH405	AC1048	AC1039	AC101122
CH407	AC1048	AC1039	AC101122

* 6 position terminal block AC100427 used

Notes:

- View photos of terminal boards under accessories at www.minco.com/sensors_config/
- All Tempran™ transmitter models may be used with connection heads on these pages.
 - AC103133 dual miniature Tempran™ mounting kit fits CH104, CH106, and CH356. CH106 and CH356 also require AC103625 modification.
 - AC103528 dual miniature Tempran™ mounting kit fits CH342, CH343, CH405, CH407, CH328, CH330, CH357, and CH358.
- See Section 5 for more information.

Specification and order options

CH104	Model number from table		
P2	Pipe thread code:	Thread A	Thread B
	P1 =	³ / ₄ - 14	¹ / ₂ - 14
	P2 =	³ / ₄ - 14	³ / ₄ - 14
	P3 =	¹ / ₂ - 14	¹ / ₂ - 14
T	Connection type:		
	T = Terminal board for wires AWG 14 or smaller W = Wire nuts for wires AWG 14 to 22		
4	Number of terminal posts or wire nuts:		
	0, 6 or 8 (see terminal board table at right for model options)		
	T0: transmitter mounting hardware W0: empty enclosure		
CH104P2T4 = Sample part number			

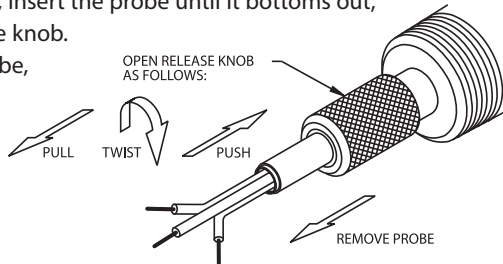
Specifications subject to change

Spring-loaded Holders

Exclusive Minco user-friendly design!

Minco's spring-loaded holders provide a quick and simple installation and removal of probe sensors — pull out and twist the knob, insert the probe until it bottoms out, and release the knob.

To remove probe, pull out and twist the knob.



Spring pressure holds the probe tip in contact with the measuring surface for faster response and more reliable measurements. Many models feature a rubber O-ring that doesn't crimp the probe but prevents oil leakage to 50 psi (3.4 bar) at up to 260°C. High temperature models are usable to 450°C. Nylon versions provide electrical insulation.

Specify and order products at:

www.minco.com/sensors_config

Fluoroelastomer O-ring seal: 50 psi pressure rated fluid seal									
	Body material	Temperature range	Thread "CH"	Process thread	Hex size	Adder "A" (Total length)	Probe Ø inch (mm)	Model	
	300 series stainless steel	-40 to 260°C (-40 to 500°F)	3/4 - 14 NPT	1/2 - 14 NPT	1 1/8" (29 mm)	3.6" (91 mm)	0.188 (4.8)	FG114-1	
							0.215 (5.5)	FG110-1	
							0.250 (6.4)	FG113-1	
	316 stainless steel	-40 to 260°C (-40 to 500°F)	3/4 - 14 NPT	1/2 - 14 NPT	1 1/8" (29 mm)	3.6" (91 mm)	0.188 (4.8)	FG914	
							0.215 (5.5)	FG912	
							0.250 (6.4)	FG911	
	Nylon	-40 to 120°C (-40 to 248°F)	3/4 - 14 NPT	1/2 - 14 NPT	1" (25 mm) wrench flats	3.6" (91 mm)	0.188 (4.8)	FG314	
							0.215 (5.5)	FG310	
							0.250 (6.4)	FG313	
	300 series stainless steel	-40 to 260°C (-40 to 500°F)	1/2 - 14 NPT	1/2 - 14 NPT	7/8" (22 mm)	2.6" (66 mm)	0.125 (3.2)	FG216N	
							0.188 (4.8)	FG214N	
							0.215 (5.5)	FG210N	
							0.250 (6.4)	FG213N	
							0.236 (6.0)	FG215N	
	300 series stainless steel	-40 to 260°C (-40 to 500°F)	None	1/8 - 27 NPT	5/8" (16 mm)	2.8" (71 mm)	0.125 (3.2)	FG116	
							3.6" (91 mm)	0.188 (4.8)	FG112
								0.215 (5.5)	FG111
								0.250 (6.4)	FG117
	300 series stainless steel	-40 to 260°C (-40 to 500°F)	None	1/4 - 18 NPT	5/8" (16 mm)	1.9" (48 mm)	0.188 (4.8)	FG101072	
							0.215 (5.5)	FG101078	
							0.250 (6.4)	FG101080	

High temperature: No pressure rating or fluid seal								
	Body material	Temperature range	Thread "CH"	Process thread	Hex size	Adder "A" (Total length)	Probe Ø inch (mm)	Model
 (Set screw installation)	300 series stainless steel	-40 to 450°C (-40 to 842°F)	1/2 - 14 NPT	1/2 - 14 NPT	7/8" (22 mm)	2.3" (58 mm)	0.188 (4.8)	FG801
							0.215 (5.5)	FG802
							0.250 (6.4)	FG810

Specifications subject to change



Fluid Immersion Fittings

Overview



Install probes directly into fluid streams and pressure vessels. Simply position the fitting on the probe and tighten the sealing nut.

Be sure to check the pressure ratings of probes intended for direct immersion.

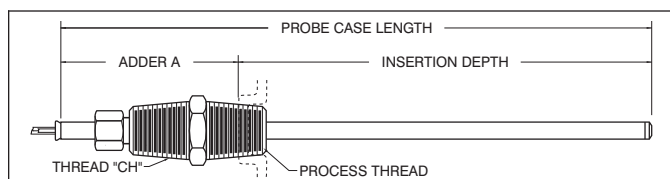
Fluid seal fittings are best for moderate temperatures and pressures. Pressure fittings, constructed of stainless steel, can withstand corrosive media and greater extremes of pressure and temperature.

Fluid seal fittings to 260°C (500°F)						
	Body material	Thread "CH"	Process thread	Adder "A" (Total length)	Probe Ø inch (mm)	Model
	Brass	None	1/8 - 27 NPT	1.2" min. (31 mm)	0.188 (4.8)	FG143
		None	1/4 - 18 NPT			FG140
		None	1/8 - 27 NPT		0.215 (5.5)	FG126
		None	1/4 - 18 NPT			FG120
		None	1/8 - 27 NPT		0.250 (6.4)	FG151
		None	1/4 - 18 NPT			FG130
	Stainless steel	1/2 - 14 NPT	1/2 - 14 NPT	2.4" (61mm)	0.188 (4.8)	FG142
					0.215 (5.5)	FG122
					0.250 (6.4)	FG132

Note: Fluid seal fittings are rated to 200 psi (17 bar) when using the repositionable silicone rubber O-ring. They are rated to 500 psi (34 bar) when using the non-repositionable compression ring. These fittings come with both the O-ring and the compression ring.

Pressure fittings to 871°C (1600°F)						
	Body material	Thread "CH"	Process thread	Adder "A" (Total length)	Probe Ø inch (mm)	Model
	316 stainless steel	None	1/8 - 27 NPT	1.5" min. (39 mm)	0.188 (4.8)	FG141T3P2
		None	1/4 - 18 NPT			FG141T3P4
		None	1/2 - 14 NPT			FG141T3P8
		None	1/8 - 27 NPT		0.250 (6.4)	FG141T4P2
		None	1/4 - 18 NPT			FG141T4P4
		None	1/2 - 14 NPT			FG141T4P8
	316 stainless steel	1/2 - 14 NPT	1/2 - 14 NPT	2.4" (61mm)	0.125 (3.2)	FG145T2
					0.188 (4.8)	FG145T3
					0.250 (6.4)	FG145T4

Note: Pressure fittings are rated to 1500 psi (103 bar) at 25°C/77°F, reducing to 500 psi (34 bar) at 630°C/1166°F. The probe cannot be repositioned after installation.



To determine the ideal probe length add the insertion depth to the adder A for the fitting you will use.

Specifications subject to change

Economy and HVAC Thermowells

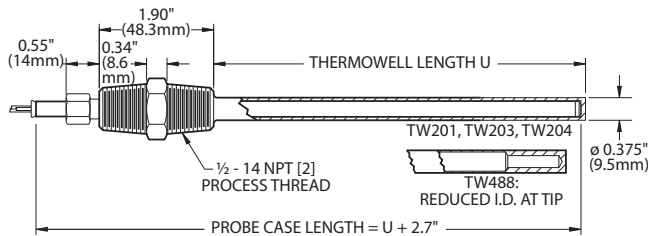


Overview

Thermowells protect probes from pressure, flow, and corrosion. The models on this page have integral fittings for probe and connection head mounting.

Immerse the thermowell at least 2.5" (65 mm) for accurate readings. The well should extend beyond the center of the fluid stream without touching the opposite wall. Installation in an elbow or tee may be necessary for sufficient immersion in small pipes.

For fastest time response, Minco can furnish thermowells with heat sink compound in the tip. This eliminates the air gap between the probe and inside wall of the well and can reduce time constant by as much as 50%. Order AC101750.



Economy thermowell specifications

Models: TW204 / TW201 / TW203

Probes: use with tip-sensitive probes on pages 3-2 to 3-3

Body material: 300 series stainless steel, nickel-plated brass sealing nut with brass compression ring

Temperature limit: 260°C (500°F)

Pressure rating: 1000 psi (69.9) bar

Hex size: 7/8" (22 mm)

Standard U dimension: 0.1" increments to 48"

Probe diameter	Thread "CH"	Process Thread	Model
0.188" (4.8 mm)			TW204
0.215" (5.5 mm)	1/2-14 NPT	1/2-14 NPT	TW201
0.250" (6.4 mm)			TW203

HVAC thermowell specifications

Model: TW488

Probes: use with HVAC probes on page 9-19

Body material: 316 stainless steel, nickel-plated brass sealing nut with silicone rubber O-ring

Temperature limit: 260°C (500°F)

Pressure rating: 1880 psi (129.7) bar

Hex size: 7/8" (22 mm)

Standard U dimension:

3.0, 6.0, 12.0, and 18.0". Other lengths are available.

Probe diameter	Thread "CH"	Process Thread	Model
0.250" (6.4 mm)			
Tip 0.188" (4.8 mm)	1/2-14 NPT	1/2-14 NPT	TW488

Specification and order options

TW203	Model number
U	
60	Thermowell length U: Specify in 0.1" increments (Ex: 60 = 6.0 inches)
TW203U60 = Sample part number	

Specifications subject to change

Reduced Tip and Tapered Thermowells



Reduced Tip Thermowell



Tapered Thermowell

Overview

Protect probes from pressure, flow, and corrosive fluids. Thermowells on this page are machined from solid bar stock. Specify reduced tip style for fast response, tapered style for maximum rigidity in high flow conditions.

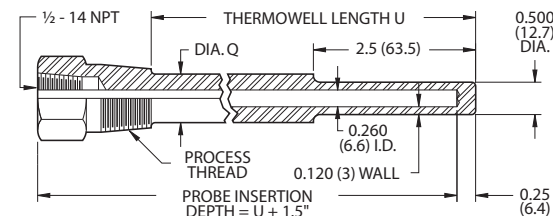
Immerse the thermowell at least 2.5" (65 mm) for accurate readings. The well should extend beyond the center of the fluid stream without touching the opposite wall. Installation in an elbow or tee may be necessary for sufficient immersion in small pipes.

Spring-loaded probe installation is recommended, using either spring-loaded holders or bayonet-mount probes. 0.250" diameter probes provide the best fit.

For fastest time response, Minco can furnish thermowells with heat sink compound in the tip. This eliminates the air gap between the probe and inside wall of the well and can reduce time constant by as much as 50%. Order AC101750.

Contact Access: Minco Sales and Support for other thermowell styles and materials.

Reduced tip thermowell specifications



DIMENSIONS ARE IN INCHES (MM)

Temperature limit:

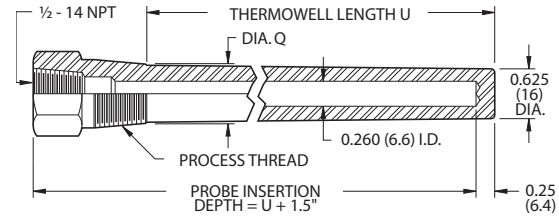
Stainless steel: 900°C (1650°F).

Monel: 538°C (1000°F).

Standard U dimensions: 2.5, 4.5, 6.0, 7.5, 8.0, 10.5, 13.5, 16.5, and 22.5". Other dimensions available.

Body material	Process thread (NPT)		
	1/2 - 14	3/4 - 14	1 - 11 1/2
304 stainless steel	TW239	TW228	TW238
316 stainless steel	TW222	TW248	TW234
Monel	TW1204	TW447	TW1231
Diameter Q	0.625" (16 mm)	0.750" (19 mm)	0.875" (22 mm)
Hex size	1.125" (29 mm)		1.375" (35 mm)

Tapered thermowell specifications



Temperature limit:

Stainless steel: 900°C (1650°F).

Standard U dimensions: 2.5, 4.5, 6.0, 7.5, 8.0, 10.5, 13.5, 16.5, and 22.5". Other dimensions available.

Body material	Process thread (NPT)	
	3/4 - 14	1 - 11 1/2
304 stainless steel	TW477	TW252
316 stainless steel	TW1218	TW1237
Diameter Q	0.875" (22 mm)	1.06" (27 mm)
Hex size	1.125" (29 mm)	1.375" (35 mm)

Pressure ratings

Body material	Temperature		
	21°C (70°F)	538°C (1000°F)	650°C (1200°F)
304 stainless steel	7000 psi 483 bar	4500 psi 310 bar	1650 psi 114 bar
316 stainless steel	7000 psi 483 bar	5100 psi 352 bar	2500 psi 172 bar
Monel	6500 psi 448 bar	1500 psi 103 bar	

Specification and order options

TW222	Model number from table
U	
45	Thermowell length U: Specify in 0.1" increments (Ex: 45 = 4.5 inches)
TW222U45 = Sample part number	

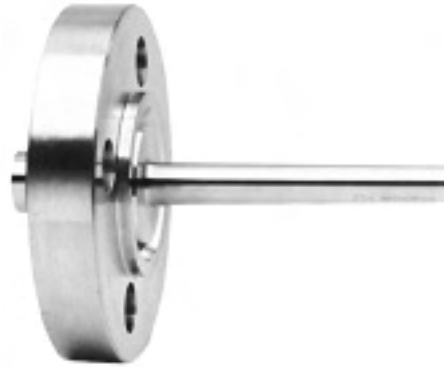
Specifications subject to change

Flanged Thermowells

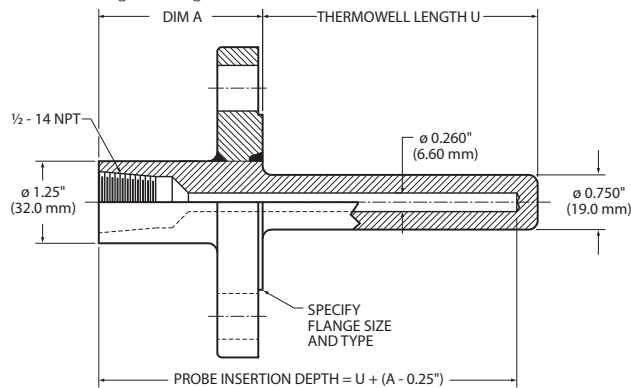
Overview

Flanged thermowells are available in three standard flange sizes: 1.0", 1.5", and 2.0" per ANSI B16.5. Specify U dimension and pressure rating.

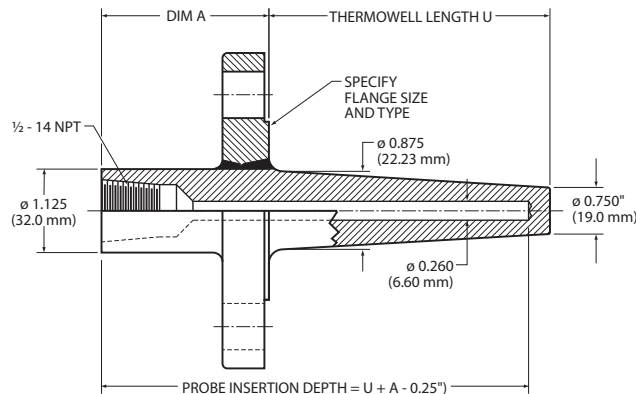
Immerse the thermowell at least 2.5" (65 mm) for accurate readings. The well should extend beyond the center of the fluid stream without touching the opposite wall. Installation in an elbow or tee may be necessary for sufficient immersion in small pipes.



TW1219 Flanged Straight Thermowell



TW1220 Flanged Tapered Thermowell



Specifications - Models TW1219 / TW1220

Body material: 316 stainless steel.

Temperature limit: 607°C (1125°F).

Pressure rating: Specify flange pressure rating.
(1 bar = 14.5 psi).

Pressure rating	Dimension A
150, 300, 400, 600 psi	2.25" (64mm)
900, 1500, 2500 psi	3.25" (83mm)

Thread: ½-14 NPT internal thread

Probe diameter: 0.250" (6.4 mm)

Standard U dimensions: 2.5, 4.5, 6.0, 7.5, 8.0, 10.5, 13.5, 16.5, and 22.5". Other dimensions available.

Specification and order options:



TW1219	Model number: TW1219 = Straight TW1220 = Tapered
U	
105	Thermowell length U: Specify in 0.1" increments (Ex: 105 = 10.5 inches)
S	
10	Flange size: 10 = 1.0" 15 = 1.5" 20 = 2.0"
F	
300	Pressure rating in pounds per square inch
RF	Flange type: RF = Raised face RTJ = Ring type joint
TW1219U105S10F300RF = Sample part number	

Specifications subject to change

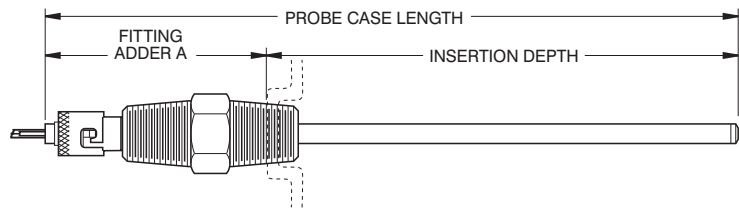
Bayonet Fittings, Extensions

Bayonet adapter style

Bayonet fittings are for spring-loaded installation of probes equipped with springs and lockcaps. Insert the probe, hook the lockcap over the pin on the fitting, and release.

Bayonet adapter style	Body material	Thread "CH"	Process thread	Hex size	Adder "A"	Probe diameter	Model
	303 stainless steel	None	1/8" - 27 NPT	None	1.2" min. (31 mm)	0.188" (4.8 mm)	FG180
	316 stainless steel	1/2" - 14 NPT	1/2" - 14 NPT	7/8" (22 mm)	2.4" (61 mm)	0.188" (4.8 mm)	FG144T3

Note: Temperature limit: 871°C (1600°F)



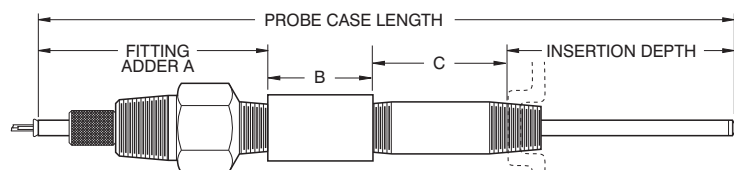
Extension nipples, couplings, unions

Extensions in assemblies serve to isolate connection heads from process connections in order to clear pipe insulation or limit heat conduction into the head. Choose from galvanized or stainless steel nipples, couplings, and unions.

Nipples are short lengths of pipe to extend connection heads away from processes. Couplings and unions have two 1/2" - 14 NPT female threads to join nipples to other fittings. Unions allow installation without rotating the connection head.

Style	Length	Galvanized steel to 260°C (500°F)	Stainless steel to 871°C (1600°F)
 Nipple	1.2" (34 mm)	FG563 Adder C: 0.2" (5mm)	FG537 Adder C: 0.2" (5mm)
	2.0" (51 mm)	FG556L20 Adder C: 1.0" (25mm)	FG579L20 Adder C: 1.0" (25mm)
	3.0" (76 mm)	FG556L30 Adder C: 2.0" (51mm)	FG579L30 Adder C: 2.0" (51mm)
	6.0" (152 mm)	FG556L60 Adder C: 5.0" (127mm)	FG579L60 Adder C: 5.0" (127mm)
 Coupling	Same as Adder B length	FG602 Adder B: 1.7" (43mm)	FG854 Adder B: 1.4" (36mm)
 Union	Same as Adder B length	FG709 (no fluid seal) Adder B: 1.9" (48 mm)	FG714 Adder B: 1.6" (41 mm)

Note: All threads are 1/2" - 14 NPT [2].



Specifications subject to change

ACCESSORIES

Metric Accessories

Overview

Metric fittings and thermowells help you design your equipment to meet global standards. Use these fittings to install Minco sensors in process lines, rotating machinery, and all types of industrial equipment.

Special threads and accessories are available. See Eurostyle Sensors Assemblies on page 2-22.


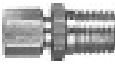


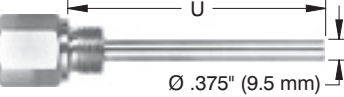
Fluid seal spring-loaded holders: Spring-loaded holders provide fast installation and simple adjustment or removal of probes. Minco's unique designs work with straight probes and provide sealing for the typical oil pressures found in rotating machines.

Fluid seal fittings: Fluid seal fittings are a low cost solution where a connection head is not required.

Bayonet adapters: Bayonet adapters work with Minco's spring-loaded bayonet fitted probes.

Adapter bushings: Adapter bushings allow fitting 1/2 - 14 NPT fittings into metric threaded process connections.

Thermowells: Thermowells provide high-pressure protection and allow probe replacement without opening the system.

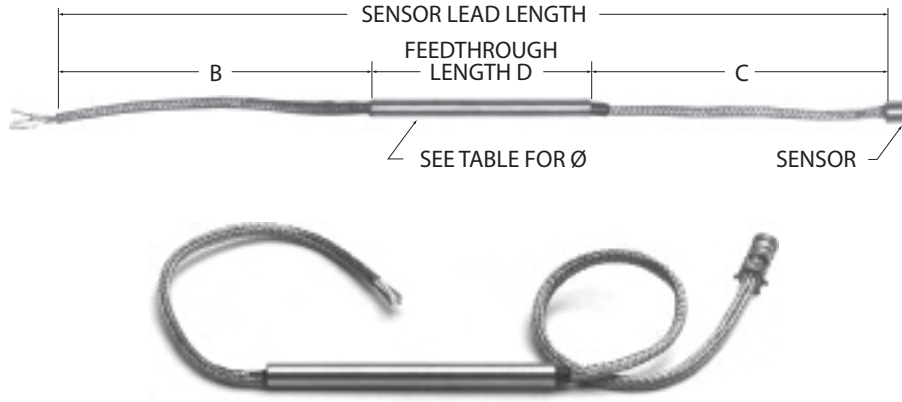
	Body material	Temp. limit	Pressure rating	Thread "CH"	Process thread	Hex size	Probe diameter	Model
 Fluid seal spring-loaded holder Probe length adder A: 3.6" (91 mm)	303 series stainless steel per DIN 1.4300, AISI 303	260°C (500°F)	3.4 bar (50 psi)	3/4 - 14 NPT	G 1/2 ISO 229/1 parallel	1 1/16" (27 mm)	0.188" (4.8 mm)	MFG812P477
							0.215" (5.5 mm)	MFG812P546
							0.250" (6.4 mm)	MFG812P635
 Fluid seal fitting Probe length adder A: 1.1" min. (28 mm)	Brass	260°C (500°F)	Silicone rubber O-ring: 17.2 bar (250 psi) Brass compression ring: 34.5 bar (500 psi)	None	R 1/4 ISO 7/1 tapered	3/16" (14 mm)	0.250" (6.4 mm)	MFG816
 Bayonet adapter Probe length adder A: 1.2" (31 mm)	303 series stainless steel per DIN 1.4300, AISI 303	871°C (1600°F)	No fluid seal	None	R 1/8 ISO 7/1 tapered	None	0.188" (4.8 mm)	MFG817
 Adapter bushing Probe length adder A: 1.2" (31 mm)	303 series stainless steel per DIN 1.4300, AISI 303	871°C (1600°F)	No fluid seal	1/2 - 14 NPT (Female)	G 1/2 ISO 229/1 parallel	1 1/16" (27 mm)	All	MFG811
 Thermowell Probe length = U + 30 mm + fitting adder A (U= 13 mm min./1200 mm max.)	303 series stainless steel per DIN 1.4300, AISI 303	871°C (1600°F)	190 bar (2755 psi) at 25°C, reducing to 34 bar (493 psi) at 600°C	1/2 - 14 NPT (Female)	G 1/2 ISO 229/1 parallel	1 1/16" (27 mm)	0.250" (6.4 mm)	MTW1208

Thermowell specification and order options

MTW1208	Model number
U	
100	Thermowell length U: Specify in millimeters Minimum: 13 mm Maximum: 1200 mm
MTW1208U100 = Sample part number	

Specifications subject to change

Feedthroughs



ACCESSORIES

Overview

Feedthroughs provide an oil-tight-seal where a cable exits a machine housing. The stainless steel tube is epoxy filled and each wire is sealed to the individual conductor. This prevents wicking of oil inside the wires as well as leakage around the wire insulation. The pressure rating to 25 psi (1.7 bar) is suitable for most oil and coolant pump systems.

Feedthroughs can be ordered as an accessory to any sensor in this guide. When ordering feedthroughs with case style B bearing sensors, the spring and retaining ring are automatically included. Fluid seal fittings allow easy installation of feedthroughs into standard NPT threaded machine housings. See page 4-4, 4-5 or 4-10 (metric) for fluid seal fittings, or page 4-12 for transitions through housings.

Specifications

Material: Stainless steel with epoxy potting.

Temperature limit: 149°C (300°F).

Pressure limit: 25 psi (1.7 bar).

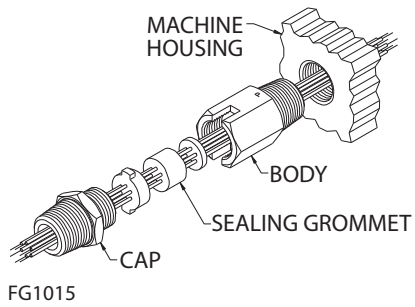
Sheath Ø	Max. Cable Ø	Model
0.188" (4.8 mm)	0.12" (3.0 mm)	AC958
0.215" (5.5 mm)	0.14" (3.6 mm)	AC717
0.250" (6.4 mm)	0.17" (4.3 mm)	AC718
0.375" (9.5 mm)	0.26" (6.6 mm)	AC961

Specification and order options

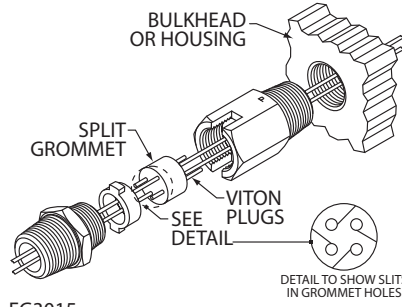
AC717	Model number from table
B6	Lead length B or C in inches (specify one): B = Lead end C = Sensor end
D250	Feedthrough length D in 0.01" increments: Min. length: 1.6" (40.6 mm) (Ex: 250 = 2.50")
AC717B6D250 = Sample part number	

Specifications subject to change

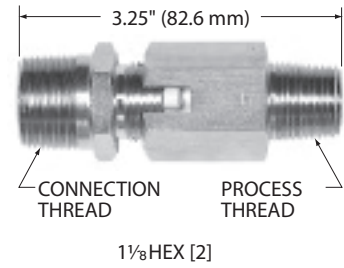
Leadwire and Cable Seal



FG1015



FG3015



Overview

The FG1015 and FG3015 seal RTD or thermocouple leadwires where they exit oil-filled bearing housings of rotating equipment.

Both versions include a grommet that provides the seal and allows adjustment of the wire or cable position. With the FG1015 the wire or cable ends must be threaded through the grommet holes. The FG3015 features a split grommet so it can be fitted over the wire or cable where access to the wire ends isn't practical.

Order the 6-hole version to seal around PTFE-insulated wires. Order the 2-, 3-, or 4-hole version to allow multiple feedthroughs or cables to exit to a single connection head.

Specifications

Material: Stainless steel.

Temperature: -40 to 150°C (-40 to 320°F).

Pressure: 50 psi (3.4 bar) at 20°C.

Notes:

- Viton plugs are provided for unused holes on 6 hole and split grommets.
- Insulated leadwires must be used; do not use bare stranded leadwires. Wires must be oil sealed on sensor end.

Grommet table

Number of holes	FG3015 split grommet	FG1015	Grommet hole Ø	Cable/tube Ø range
1		•	0.130" (3.30 mm)	0.100" to 0.130" (2.54 to 3.30 mm)
		•	0.160" (4.06 mm)	0.130" to 0.160" (3.30 to 4.06 mm)
		•	0.220" (5.59 mm)	0.190" to 0.220" (4.83 to 5.59 mm)
2		•	0.130" (3.30 mm)	0.100" to 0.130" (2.54 to 3.30 mm)
		•	0.160" (4.06 mm)	0.130" to 0.160" (3.30 to 4.06 mm)
		•	0.190" (4.83 mm)	0.160" to 0.190" (4.06 to 4.83 mm)
	•	•	0.220" (5.59 mm)	0.190" to 0.220" (4.83 to 5.59 mm)
3		•	0.130" (3.30 mm)	0.100" to 0.130" (2.54 to 3.30 mm)
		•	0.160" (4.06 mm)	0.130" to 0.160" (3.30 to 4.06 mm)
	•	•	0.190" (4.83 mm)	0.160" to 0.190" (4.06 to 4.83 mm)
4	•	•	0.100" (2.54 mm)	0.080" to 0.100" (2.03 to 2.54 mm)
	•	•	0.130" (3.30 mm)	0.100" to 0.130" (2.54 to 3.30 mm)
	•	•	0.160" (4.06 mm)	0.130" to 0.160" (3.30 to 4.06 mm)
6	•	•	0.050" (1.27 mm)	0.035" to 0.050" (0.76 to 1.27 mm)

Replacement grommet/washer kits

For replacement grommet/washer kits order model AC1015 or AC3015 (split grommet). Specify the number of holes and hole diameter required from the table above.

Pipe thread table

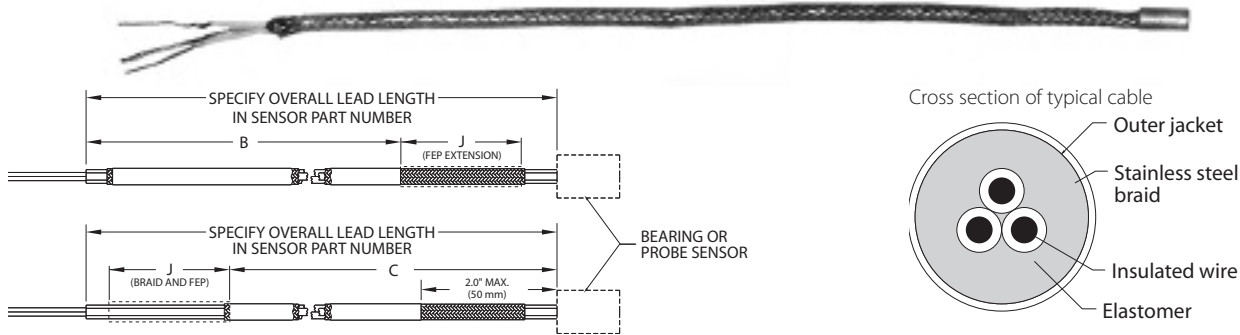
Connection thread	Process thread	Pipe thread code
1/2 - 14 NPT	3/4 - 14 NPT	P1
3/4 - 14 NPT	3/4 - 14 NPT	P2
1/2 - 14 NPT	1/2 - 14 NPT	P3
3/4 - 14 NPT	1/2 - 14 NPT	P4

Specification and order options

FG1015	Model number: FG1015: Cable seal FG3015: Cable seal with split grommet
P2	Pipe thread code from table
SS	Fitting material: SS = Stainless steel
2	Number of holes from grommet table
V	Grommet material: V = Viton
220	Hole diameter in 0.001" increments from grommet table (Ex: 220 = 0.220")
FG1015P2SS2V220 = Sample part number	

Specifications subject to change

Sealed Elastomer Rubber-filled Cable



Overview

Model AC100324 is a sensor cable with elastomer fill between the wires, stainless steel braid, and outer jacket. This fill can extend along the entire length of the cable, or a specified portion. Seal the outside of the cable with an FG1015 or FG3015 leadwire and cable seal fitting. See page 4-12 for more information.

While the AC100324 provides a good seal, a minuscule amount of oil may escape inside the individual wires.

Specifications

Temperature range: -50° C to 125°C (-58°F to 257°F).

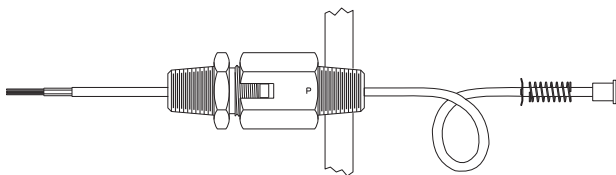
Tolerance on lead length: +1/-0" (+25/-0mm) for lead lengths 24" or less; +5/-0% for lead length greater than 24".

B length: Cable is filled starting at leadwire end of cable. Tubing ends at B length; stainless steel braid extends to case.

C length: Cable is filled starting 2" from case. If J length is specified, stainless steel braid extends to lead end.

J length: Unfilled FEP extension length.

Using the AC100324 with FG1015/FG3015 oil seal fittings



When selecting the FG1015 or FG3015 for use with silicone filled cable use the grommet hole size from the tables.

Lead size AWG	Number of leads	Grommet hole Ø
20	2	0.160
24	2	0.130
24	3 and 4	0.160
24	6	0.190
26 - 28	2, 3, 4, and 6	0.130
30	2, 3, and 4	0.100
30	6	0.130

Number of sensing elements	Case style	Grommet hole ø	
		2	3
1	A	.130	.160
	B	.130	.160
	C	.130	.130
	D	.100	.100
2	A	.160	.190
	B	.130	.130
	C	.100	.130

Learn more about FG1015 or FG3015 leadwire and cable seal fittings on page 4-12.

Specification and order options

AC100324	Model number
B24	Elastomer filled length B or C in inches (if not specified, entire length will be filled) B = Lead end C = Sensor end (Max fill length = 144")
To order standard filled cable, stop here. To order an optional jacket extension add:	
J	Jacket extension
AC100324B24J = Sample part number	

Note: The sensor model number dictates all specifications other than the elastomer filled length B or C and optional extension J. You must specify sensor model including SS braid covering over the leadwires when ordering. Some sensor models do not include the option for SS braid lead covering; contact Minco for assistance with these sensors.

Specifications subject to change

Extension Wire

Overview

Use extension wire and cable to connect sensor leadwires to remote instrumentation. Unless informed otherwise, wire and cable will be supplied in continuous lengths. Ends are not stripped.



Wire for RTDs

Choose single conductor copper wire or cable.

Description	Temperature Limit	Color	Model number for AWG	
			22	26
Single conductor wire, stranded PTFE insulation	260°C (500°F)	White	WS122W	WS126W
		Red	WS122R	WS126R
		Blue	WS122B	WS126B
		Yellow	WS122Y	WS126Y
Single conductor wire, stranded, mica/glass insulation	550°C (1022°F)	White	WS222W	
		Red tracer	WS222R	
3 conductor cable, PTFE insulation, stainless steel braid over all	260°C (500°F)	Red/White/White	WS322S	WS326S
6 conductor cable, PTFE insulation, stainless steel braid over all	260°C (500°F)	Red/White/White/Blue/Yellow/Yellow		WS426S
3 conductor cable, PTFE insulation, copper shield and PTFE jacket over all	260°C (500°F)	Red/White/White	WS522T	

Specification and order options

WS122R	Model number from table
10	Length in feet
WS122R10	← Sample P/N

Single Pair Thermocouple Cable

All thermocouple wire meets standard limits of error per ANSI MC96.1-1982.

Description	Temperature Limit	Model number for AWG	
		20	24
Single pair thermocouple cable, glass braid insulation	482°C (900°F)	WT120G	WT124G
Single pair thermocouple cable, PTFE insulation	260°C (500°F)	WT120T	WT124T
Single pair thermocouple cable, glass braid insulation with stainless steel braid over all	482°C (900°F)	WT120S	WT124S

Specification and order options

WT120S	Model number from table
J	Junction type: E, J, K, or T
25	Length in feet
WT120SJ25	← Sample P/N

Specifications subject to change