Badotherm thermowell model TW2x1 is a bar stock, solid machined type thermowell with a threaded process connection. The construction is available with straight, stepped, or tapered stem. The standard material is AISI 316(L) and optionally various exotic materials are available. Thermowells are designed to protect the temperature bulb from corrosive effect, extreme pressure, or other process conditions. It also allows replacing the temperature instrument without disturbing the process.

STANDARD EXECUTION

TYPE	THERMOWELL	BORE SIZE	LENGTH	PROCESS CONNECTION
bar stock	AISI 316(L)	6.5 mm	customer specific	threaded

PROCESS CONNECTIONS

size (F)	thread		gasket surface
1/2"	BSP	male	ISO 1179-4
1/2"	NPT	male	
3/4”	BSP	male	ISO 1179-4
3/4”	NPT	male	
1”	BSP	male	ISO 1179-4
1”	NPT	male	
M20x1.5	METRIC	male	ISO 9974-3
M27x2.0	METRIC	male	ISO 9974-3
M32x2.0	METRIC	male	ISO 9974-3

INSTRUMENT CONNECTIONS, CONSTRUCTION, AND BORE SIZE

size (F1)	thread	
1/2”	NPT	female
1/2”	BSP	female
M20x1.5	METRIC	female

construction
straight (TW211)
stepped (TW221)
tapered (TW231)

bore size (d)	
6.2	10.0
6.5	10.5
7.0	11.0
8.0	12.0
8.5	12.5
9.0	

All dimensions in mm

WETTED PART MATERIALS AND THREADS

stem material
AISI 316(L)
AISI 321
Inconel 625
Inconel 825
Duplex 2205
Super Duplex 2507
Monel 400
Hastelloy C-276
Titanium Gr. 2

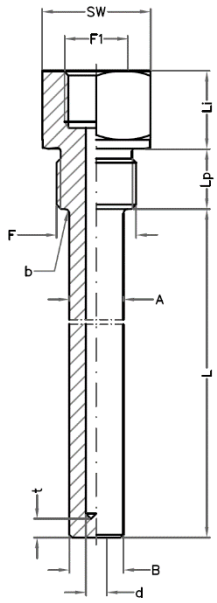
threads	norms
NPT	ANSI B1.20.1
BSP	ISO 228
METRIC	ISO 965

OPTIONS

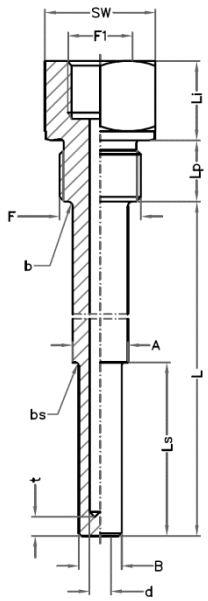
- inside or outside pressure test
- stainless steel plug & chain
- tantaline treatment
- thermowells > 610 mm
- wake frequency calculation per ASME PTC 19.3 TW-2010

DRAWING AND DIMENSIONS STANDARD EXECUTION

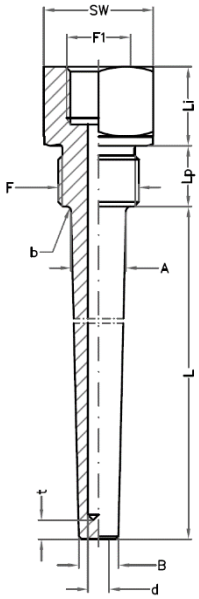
STRAIGHT (TW211)



STEPPED (TW221)



TAPERED (TW231)



B1.20.1

F	F1	A	B	min / max	b	bs[1]	d	L	Li	Lp	Ls[1]	SW	t
1/2"NPT	1/2"NPT	17.8	12.6	12.6 / 17.8	1	1	6.5	various	26	20	various	22	8
3/4"NPT	1/2"NPT	23.1	12.6	12.6 / 23.1	3	3	6.5	various	26	20	various	27	8
1"NPT	1/2"NPT	29.0	12.6	12.6 / 29.0	3	3	6.5	various	26	25	various	36	8

All dimensions in mm
Dimensions based on standard execution d=6.5
For restrictions see table dimensional limits
[1] only applicable for stepped executions

ISO 228 – WITH ISO 1179-4 GASKET SURFACE

F	F1	A	B	min / max	b	bs[1]	d	L	Li	Lp	Ls[1]	SW	t
1/2"BSP	1/2"BSP	17.8	12.6	12.6 / 17.8	1	1	6.5	various	26	25	various	22	8
3/4"BSP	1/2"BSP	23.1	12.6	12.6 / 23.1	3	3	6.5	various	26	25	various	27	8
1"BSP	1/2"BSP	29.0	12.6	12.6 / 29.0	3	3	6.5	various	26	25	various	36	8

All dimensions in mm
Dimensions based on standard execution d=6.5
For restrictions see table dimensional limits
[1] only applicable for stepped executions

ISO 1179-4 – WITH ISO 9974-3 GASKET SURFACE

F	F1	A	B	min / max	b	bs[1]	d	L	Li	Lp	Ls[1]	SW	t
M20x1.5	M20x1.5	17.8	12.6	12.6 / 17.8	1	1	6.5	various	26	25	various	22	8
M27x2.0	M20x1.5	23.1	12.6	12.6 / 23.1	3	3	6.5	various	26	25	various	27	8
M32x2.0	M20x1.5	29.0	12.6	12.6 / 29.0	3	3	6.5	various	26	25	various	36	8

All dimensions in mm
Dimensions based on standard execution d=6.5
For restrictions see table dimensional limits
[1] only applicable for stepped executions

DIMENSIONAL LIMITS FOR STRAIGHT, TAPERED, AND STEPPED THERMOWELLS

STRAIGHT AND TAPERED

description	symbol	minimum	maximum
unsupported length	L	63.5	610
bore diameter	d	6.1	21
tip diameter	B	12.6	46.5
taper ratio	B/A	0.6	1
bore ratio	d/B	0.2	0.7
aspect ratio	L/B	2	
minimum wall thickness	(B-d)/2	3	

STEPPED

description	symbol	minimum	maximum
unsupported length	L	127	610
bore diameter	D	6.1	6.7
tip diameter	B	12.7 and 22.2	
step diameter[1]	B/A	0.5	0.8
step diameter[2]	B/A	0.6	0.9
length ratio	Ls/L	0	0.6
minimum wall thickness	(B-d)/2	3	

All dimensions in mm

For tapered executions L > 240 mm; there will be a tapered section (max length of 240 mm) and a straight section (L – 240 mm)

[1] Step diameter ratio, for B=12.7

[2] Step diameter ratio, for B=22.23

BADOTHERM®

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