

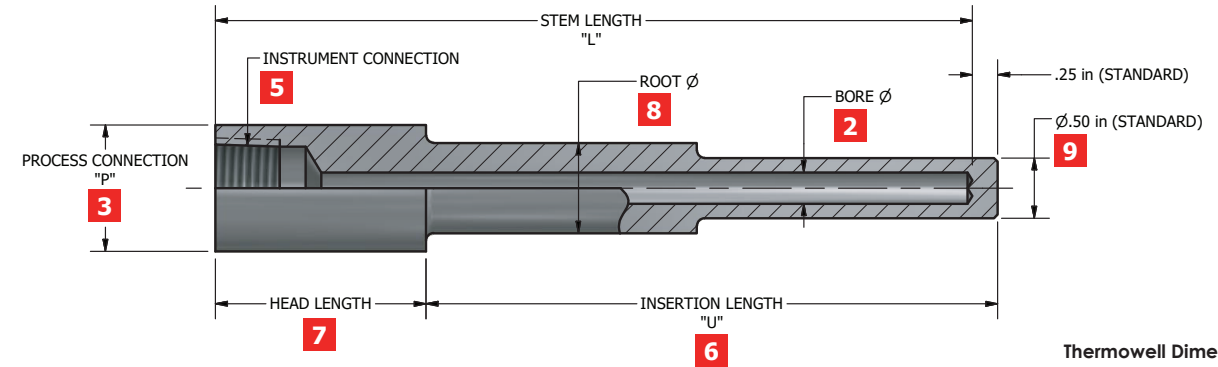
# TW21 SOCKET-WELD STEPPED THERMOWELL



As a pioneer and global leader in manufacturing thermowells, we ensure the highest quality and precision in every piece we manufacture. Whether they are custom-made for highly specialized measurements or they are standard configuration, each and every thermowell is built to meet or exceed accepted standards.

Our socket-weld thermowells are designed and manufactured 100% in house, and are made to accept standard and custom made thermometers, thermocouples, bulbs and RTD's.

Our socket-weld thermowells are also available in a wide variety of process pipe sizes and configurations.



Please note: Various configurations may not be available. Mac-Weld will notify you if you have selected a incompatible part combination.

Thermowell Dimensions

Process Connection	3000# Root Dia.	6000# Root Dia.	Tip Diameter
3/4" (1.050" dia.)	0.750" (19.1 mm)	0.609" (15.5 mm)	0.500" (12.7 mm)
1" (1.315" dia.)	0.875" (22.2 mm)	0.750" (19.1 mm)	0.500" (12.7 mm)
1-1/4" (1.66" dia.)	1.250" (31.8 mm)	1.000" (25.4 mm)	0.500" (12.7 mm)
1-1/2" (1.9" dia.)	1.500" (38.1 mm)	1.250" (31.8 mm)	0.500" (12.7 mm)



1 Thermowell Stem Style	
Code	Description
TW21	Stepped Stem
TW22	Straight Stem
TW23	Tapered Stem

2 Bore Size	
Code	Description
A	0.26
B	0.385
C	0.515
D	0.203
E	0.375
F	0.39
G	0.343
K	0.703
L	0.188
M	0.406
N	0.28
O	0.302
P	0.315
R	0.276
V	0.354

3 Process Connection	
Code	Description
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BI	1" OD
BJ	2" OD
BK	2-1/4" OD
BL	2-3/8" OD
BM	2-1/2" OD

Custom sizes, connections and materials may not be listed, contact Mac-Weld today to find out more.

4 Material	
Code	Description
L2	316/316L
H2	304/304L
H3	304H
K1	310
K2	310H
K3	310S
L3	316H
J1	317
J3	317L
M1	321
M2	321/H
M3	RA330
N1	347
N2	347/H
N3	410
N4	446
N5	HR160
O1	90/10 Copper/Nickle
O2	70/30 Copper/Nickle
S3	904L
S4	AL-6XN
S2	Alloy 20
S1	Alloy 200
R1	Alloy 400
P1	Alloy 600
P3	Alloy 601
P2	Alloy 625
Q2	Alloy 800
Q3	Alloy 800H
Q4	Alloy 800HT

4 Material (Continued)	
Code	Description
Q1	Alloy 825
U2	Alloy B2
U3	Alloy B3
U4	Alloy C-22
U1	Alloy C-276
R2	Alloy K500
U5	Alloy X
C1	Aluminum 6061
A1	Brass
E4	Carbon Steel 1018
E3	Carbon Steel 12L14
E1	Carbon Steel ASTM A105
G1	Chrome-M-Moly F22
F1	Chrome-Moly-F11
F6	Chrome-Moly-F5
F7	Chrome-Moly-F9
F8	Chrome-Moly-F91
Y2	CPVC
F2	Duplex F51/2205
E2	LF2
B1	Naval Brass
Y1	PVC
F4	Stainless F44/254 SMO
F3	Super Duplex F53/2507
F5	Super Duplex F55
W1	Teflon
T1	Tit Gr2
T2	Tit Gr5
T3	Tit Gr7
Z1	Zirc 702

5 Instrument Connection	
Code	Description
AA	1/2" NPT
AB	3/4" NPT
AC	1" NPT
AD	1-1/4" NPT
AE	1-1/2" NPT
BN	1/4" NPSM
AF	1/2" NPSM
AS	1/2" NPT TO CSA
AZ	1/2" ANPT
AR	1/4" NPT
AT	1/8" NPT
AG	1/2" BSPP
AH	3/4" BSPP
AI	1/2" BSPT
AJ	3/4" BSPT
AK	M14 x 1.5
AL	M18 x 1.5
AM	M20 x 1.5
AN	M24 x 1.5
AO	M27 x 2.0
AP	1/4" - 20 UNF
AQ	3/8" - 24 UNF
AU	1/2" - 20 UNF
AV	5/8" - 18 UNF
AW	3/4" - 16 UNF
AX	7/8" - 14 UNF
AY	1" - 14 UNF
BO	3/8" NPT
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BH	1/2" Pipe (0.840" Dia)

6 Insertion Length	
Code	Description
xxxx	Imperial: 6.500" = 06500 Metric: 165.1 mm = 01651
*U length =>100,000" or 10,000.0mm see sales person for custom part number	

7 Head Length	
Code	Description
xxxx	Imperial: 1.75" = 01750 Metric: 44.5 mm = 00445

8 Root Diameter	
Code	Description
xxxx	Imperial: 0.875" = 0875 Metric: 22.2 mm = 0222

9 Tip Diameter	
Code	Description
xxxx	Imperial: 0.500" = 0500 Metric: 12.7 mm = 0127

10 Measurement	
Code	Description
I	Imperial
M	Metric



- Brass Plug & Chain
- Stainless Plug & Chain
- Teflon Coating
- Stellite Overlay
- Kynar Coating
- Dye Penetrant Test
- Dye Penetrant Cap
- Dye Penetrant Root (Optional)
- Internal Hydrostatic Testing
- External Hydrostatic Testing
- Material Test Report (MTR)
- Nace MR0175
- PMI
- Tantalum Sheath (Flanged Only)
- Velocity Calculation per PTC 19.3 TW-2010
- X-Ray
- O2 Cleaning
- Post Weld Heat Treatment
- UT bore concentricity
- UT phased array
- CofC (Certificate of compliance)
- COO (certificate of origin)
- Traceability Index
- ITP (Inspection Test Plan)
- Stamping
- SS tags
- Visual dimensional report
- Electro polish
- Pickle and Passivation

North America's Leading Instrumentation Hardware Manufacturer



1324 Lougar Ave Sarnia, ON N7S 5N7  
1-877-MAC-WELD (622-9353)  
sales@mac-weld.com  
www.mac-weld.com

The promise of precision, every time.

- Thermowells
- Orifice Plates
- Bleed & Flush Rings
- Level Chambers
- Valves
- Specialty Products



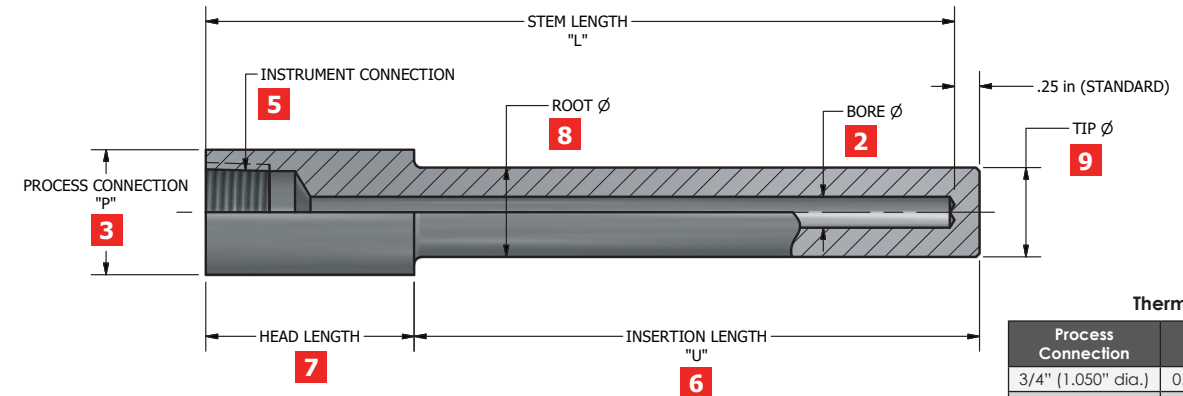
# TW22 SOCKET-WELD STRAIGHT THERMOWELL



As a pioneer and global leader in manufacturing thermowells, we ensure the highest quality and precision in every piece we manufacture. Whether they are custom-made for highly specialized measurements or they are standard configuration, each and every thermowell is built to meet or exceed accepted standards.

Our socket-weld thermowells are designed and manufactured 100% in house, and are made to accept standard and custom made thermometers, thermocouples, bulbs and RTD's.

Our socket-weld thermowells are also available in a wide variety of process pipe sizes and configurations.



Process Connection	3000# Root Dia.	6000# Root Dia.
3/4" (1.050" dia.)	0.750" (19.1 mm)	0.609" (15.5 mm)
1" (1.315" dia.)	0.875" (22.2 mm)	0.750" (19.1 mm)
1-1/4" (1.66" dia.)	1.250" (31.8 mm)	1.000" (25.4 mm)
1-1/2" (1.9" dia.)	1.500" (38.1 mm)	1.250" (31.8 mm)

Please note: Various configurations may not be available. Mac-Weld will notify you if you have selected a incompatible part combination.



1 Thermowell Stem Style	
Code	Description
TW21	Stepped Stem
TW22	Straight Stem
TW23	Tapered Stem

2 Bore Size	
Code	Description
A	0.26
B	0.385
C	0.515
D	0.203
E	0.375
F	0.39
G	0.343
K	0.703
L	0.188
M	0.406
N	0.28
O	0.302
P	0.315
R	0.276
V	0.354

3 Process Connection	
Code	Description
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BI	1" OD
BJ	2" OD
BK	2-1/4" OD
BL	2-3/8" OD
BM	2-1/2" OD

Custom sizes, connections and materials may not be listed, contact Mac-Weld today to find out more.

4 Material	
Code	Description
L2	316/316L
H2	304/304L
H3	304H
K1	310
K2	310H
K3	310S
L3	316H
J1	317
J3	317L
M1	321
M2	321/H
M3	RA330
N1	347
N2	347/H
N3	410
N4	446
N5	HR160
O1	90/10 Copper/Nickle
O2	70/30 Copper/Nickle
S3	904L
S4	AL-6XN
S2	Alloy 20
S1	Alloy 200
R1	Alloy 400
P1	Alloy 600
P3	Alloy 601
P2	Alloy 625
Q2	Alloy 800
Q3	Alloy 800H
Q4	Alloy 800HT

4 Material (Continued)	
Code	Description
Q1	Alloy 825
U2	Alloy B2
U3	Alloy B3
U4	Alloy C-22
U1	Alloy C-276
R2	Alloy K500
U5	Alloy X
C1	Aluminum 6061
A1	Brass
E4	Carbon Steel 1018
E3	Carbon Steel 12L14
E1	Carbon Steel ASTM A105
G1	Chrome-M-Moly F22
F1	Chrome-Moly-F11
F6	Chrome-Moly-F5
F7	Chrome-Moly-F9
F8	Chrome-Moly-F91
Y2	CPVC
F2	Duplex F51/2205
E2	LF2
B1	Naval Brass
Y1	PVC
F4	Stainless F44/254 SMO
F3	Super Duplex F53/2507
F5	Super Duplex F55
W1	Teflon
T1	Tit Gr2
T2	Tit Gr5
T3	Tit Gr7
Z1	Zirc 702

5 Instrument Connection	
Code	Description
AA	1/2" NPT
AB	3/4" NPT
AC	1" NPT
AD	1-1/4" NPT
AE	1-1/2" NPT
BN	1/4" NPSM
AF	1/2" NPSM
AS	1/2" NPT TO CSA
AZ	1/2" ANPT
AR	1/4" NPT
AT	1/8" NPT
AG	1/2" BSPP
AH	3/4" BSPP
AI	1/2" BSPT
AJ	3/4" BSPT
AK	M14 x 1.5
AL	M18 x 1.5
AM	M20 x 1.5
AN	M24 x 1.5
AO	M27 x 2.0
AP	1/4" - 20 UNF
AQ	3/8" - 24 UNF
AU	1/2" - 20 UNF
AV	5/8" - 18 UNF
AW	3/4" - 16 UNF
AX	7/8" - 14 UNF
AY	1" - 14 UNF
BO	3/8" NPT
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BH	1/2" Pipe (0.840" Dia)

6 Insertion Length	
Code	Description
xxxx	Imperial: 6.500" = 06500 Metric: 165.1 mm = 01651
*U length =>100.000" or 10,000.0mm see sales person for custom part number	

7 Head Length	
Code	Description
xxxx	Imperial: 1.75" = 01750 Metric: 44.5 mm = 00445

8 Root Diameter	
Code	Description
xxxx	Imperial: 0.875" = 0875 Metric: 22.2 mm = 0222

9 Tip Diameter	
Code	Description
xxxx	Imperial: 0.500" = 0500 Metric: 12.7 mm = 0127

10 Measurement	
Code	Description
I	Imperial
M	Metric



- Brass Plug & Chain
- Stainless Plug & Chain
- Teflon Coating
- Stellite Overlay
- Kynar Coating
- Dye Penetrant Test
- Dye Penetrant Cap
- Dye Penetrant Root (Optional)
- Internal Hydrostatic Testing
- External Hydrostatic Testing
- Material Test Report (MTR)
- Nace MR0175
- PMI
- Tantalum Sheath (Flanged Only)
- Velocity Calculation per PTC 19.3 TW-2010
- X-Ray
- O2 Cleaning
- Post Weld Heat Treatment
- UT bore concentricity
- UT phased array
- CofC (Certificate of compliance)
- COO (certificate of origin)
- Traceability Index
- ITP (Inspection Test Plan)
- Stamping
- SS tags
- Visual dimensional report
- Electro polish
- Pickle and Passivation

North America's Leading Instrumentation Hardware Manufacturer



1324 Lougar Ave Sarnia, ON N7S 5N7  
1-877-MAC-WELD (622-9353)  
sales@mac-weld.com  
www.mac-weld.com

The promise of precision, every time.

- Thermowells
- Orifice Plates
- Bleed & Flush Rings
- Level Chambers
- Valves
- Specialty Products



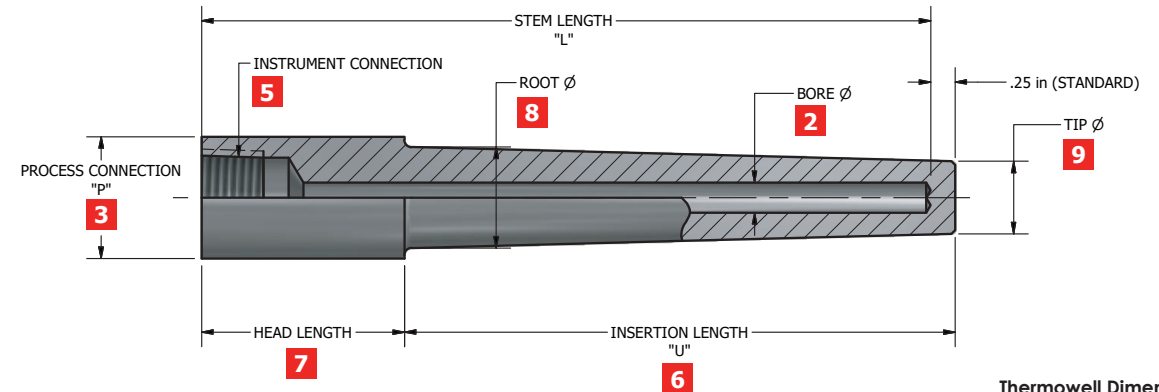
# TW23 SOCKET-WELD TAPERED THERMOWELL



As a pioneer and global leader in manufacturing thermowells, we ensure the highest quality and precision in every piece we manufacture. Whether they are custom-made for highly specialized measurements or they are standard configuration, each and every thermowell is built to meet or exceed accepted standards.

Our socket-weld thermowells are designed and manufactured 100% in house, and are made to accept standard and custom made thermometers, thermocouples, bulbs and RTD's.

Our socket-weld thermowells are also available in a wide variety of process pipe sizes and configurations.



Please note: Various configurations may not be available. Mac-Weld will notify you if you have selected a incompatible part combination.

Thermowell Dimensions

Process Connection	3000# Root Dia.	3000# TIP Dia.	6000# Root Dia.	6000# TIP Dia.
3/4" (1.050" dia.)	0.750" (19.1 mm)	0.625" (15.9 mm)	0.609" (15.5 mm)	0.500 (12.7mm)
1" (1.315" dia.)	0.875" (22.2 mm)	0.625" (15.9 mm)	0.750" (19.1 mm)	0.625 (15.9mm)
1-1/4" (1.66" dia.)	1.250" (31.8 mm)	0.750" (19.1 mm)	1.000" (25.4 mm)	0.625 (15.9mm)
1-1/2" (1.9" dia.)	1.500" (38.1 mm)	0.875" (22.2 mm)	1.250" (31.8 mm)	0.750" (19.1 mm)



Code	Description
TW21	Stepped Stem
TW22	Straight Stem
TW23	Tapered Stem

Code	Description
A	0.26
B	0.385
C	0.515
D	0.203
E	0.375
F	0.39
G	0.343
K	0.703
L	0.188
M	0.406
N	0.28
O	0.302
P	0.315
R	0.276
V	0.354

Code	Description
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BI	1" OD
BJ	2" OD
BK	2-1/4" OD
BL	2-3/8" OD
BM	2-1/2" OD

Custom sizes, connections and materials may not be listed, contact Mac-Weld today to find out more.

Code	Description
L2	316/316L
H2	304/304L
H3	304H
K1	310
K2	310H
K3	310S
L3	316H
J1	317
J3	317L
M1	321
M2	321/H
M3	RA330
N1	347
N2	347/H
N3	410
N4	446
N5	HR160
O1	90/10 Copper/Nickle
O2	70/30 Copper/Nickle
S3	904L
S4	AL-6XN
S2	Alloy 20
S1	Alloy 200
R1	Alloy 400
P1	Alloy 600
P3	Alloy 601
P2	Alloy 625
Q2	Alloy 800
Q3	Alloy 800H
Q4	Alloy 800HT

Code	Description
Q1	Alloy 825
U2	Alloy B2
U3	Alloy B3
U4	Alloy C-22
U1	Alloy C-276
R2	Alloy K500
U5	Alloy X
C1	Aluminum 6061
A1	Brass
E4	Carbon Steel 1018
E3	Carbon Steel 12L14
E1	Carbon Steel ASTM A105
G1	Chrome-M-Moly F22
F1	Chrome-Moly-F11
F6	Chrome-Moly-F5
F7	Chrome-Moly-F9
F8	Chrome-Moly-F91
Y2	CPVC
F2	Duplex F51/2205
E2	LF2
B1	Naval Brass
Y1	PVC
F4	Stainless F44/254 SMO
F3	Super Duplex F53/2507
F5	Super Duplex F55
W1	Teflon
T1	Tit Gr2
T2	Tit Gr5
T3	Tit Gr7
Z1	Zirc 702

Code	Description
AA	1/2" NPT
AB	3/4" NPT
AC	1" NPT
AD	1-1/4" NPT
AE	1-1/2" NPT
BN	1/4" NPSM
AF	1/2" NPSM
AS	1/2" NPT TO CSA
AZ	1/2" ANPT
AR	1/4" NPT
AT	1/8" NPT
AG	1/2" BSPP
AH	3/4" BSPP
AI	1/2" BSPT
AJ	3/4" BSPT
AK	M14 x 1.5
AL	M18 x 1.5
AM	M20 x 1.5
AN	M24 x 1.5
AO	M27 x 2.0
AP	1/4" - 20 UNF
AQ	3/8" - 24 UNF
AU	1/2" - 20 UNF
AV	5/8" - 18 UNF
AW	3/4" - 16 UNF
AX	7/8" - 14 UNF
AY	1" - 14 UNF
BO	3/8" NPT
BA	3/4" Pipe (1.05" Dia)
BB	1" Pipe (1.315" Dia)
BC	1-1/4" OD
BD	1-1/2" OD
BE	1-3/4" OD
BF	1-1/4" Pipe (1.660" Dia)
BG	1-1/2" Pipe (1.900" Dia)
BH	1/2" Pipe (0.840" Dia)

Code	Description
xxxx	Imperial: 6.500" = 06500 Metric: 165.1 mm = 01651 *U length =>100.000" or 10,000.0mm see sales person for custom part number
xxxx	Imperial: 1.75" = 01750 Metric: 44.5 mm = 00445
xxxx	Imperial: 0.875" = 0875 Metric: 22.2 mm = 0222
xxxx	Imperial: 0.500" = 0500 Metric: 12.7 mm = 0127
I	Imperial
M	Metric

Notes:  
1. Taper last 16 inches of thermowell is standard.



- Brass Plug & Chain
- Stainless Plug & Chain
- Teflon Coating
- Stellite Overlay
- Kynar Coating
- Dye Penetrant Test
- Dye Penetrant Cap
- Dye Penetrant Root (Optional)
- Internal Hydrostatic Testing
- External Hydrostatic Testing
- Material Test Report (MTR)
- Nace MR0175
- PMI
- Tantalum Sheath (Flanged Only)
- Velocity Calculation per PTC 19.3 TW-2010
- X-Ray
- O2 Cleaning
- Post Weld Heat Treatment
- UT bore concentricity
- UT phased array
- CofC (Certificate of compliance)
- COO (certificate of origin)
- Traceability Index
- ITP (Inspection Test Plan)
- Stamping
- SS tags
- Visual dimensional report
- Electro polish
- Pickle and Passivation

North America's Leading Instrumentation Hardware Manufacturer



1324 Lougar Ave Sarnia, ON N7S 5N7  
1-877-MAC-WELD (622-9353)  
sales@mac-weld.com  
www.mac-weld.com

The promise of precision, every time.

- Thermowells
- Orifice Plates
- Bleed & Flush Rings
- Level Chambers
- Valves
- Specialty Products

