Gas Actuated
Thermometers

Gas Actuated Thermometers Operating & Installation

Gas actuated thermometers fall within “Class IV, gas-filled with absorbent” definition. They use a thermal system filled with gas and an adsorbent (such as activated granular carbon) in the bulb. This technology allows for a significantly reduced bulb size. WIKA gas actuated thermometers offer extremely high accuracy, low ambient error, and extreme over-range capability. With the same small bulb diameter throughout the offered ranges, the WIKA thermometer can be installed in most existing piping and tank applications.

WIKA gas actuated thermometers provide the solution to mercury-free requirements in food processing, refrigeration, or other mercury-sensitive environments. A variety of case types, sizes and materials provides a custom made instrument for each application in ranges between -320° Fahrenheit and +1200° Fahrenheit or equivalent Celsius. Dual reading scales (F & C) are standard.

WIKA gas actuated dial thermometers are available as direct reading or remote reading with stainless steel bulbs and armored capillary. WIKA extends a one-year warranty against defects in material and workmanship on standard gas actuated dial thermometers.

Installation Guidelines: While WIKA gas actuated dial thermometers are highly accurate and rugged instruments, there are some guidelines that should be followed in their application and installation. Consideration must be given to the measured medium. Is it corrosive, abrasive, turbulent, or under pressure? Can the sensing bulb be placed to give an accurate indication of the temperature?

The sensing bulb should be placed in a non-turbulent area of piping or ducting and as close the center of the flow as possible. In tanks, it should be placed in an area of the tank that will provide a good average of the temperature of the fluid contained. The bulb should be protected from corrosive or abrasive media and excessively high pressures. The usual method of protection is the use of a thermowell.

When a remote reading thermometer is installed, consideration must be given to the location of the bulb, the dial indicator, and the routing of the capillary. The capillary must be located where it will not be damaged by workers or equipment used in future maintenance. Remember that the capillary CANNOT be cut to facilitate installation or relocation.

For Installation and Use of WIKA Filled System Dial Thermometers
General: Before installing a thermometer, consideration should be given to temperature, humidity, vibration, shock and other climatic and ambient conditions of the service application. Bulbs may be installed in thermowells or directly into the medium for temperature measurement. The filled system of the thermometer is a sealed unit and must remain sealed. The connecting tubing of remote units should be kept coiled to avoid sharp bends or kinks. Connecting tubing must not be cut. Thermometers can be rendered inaccurate during shipment despite care taken in packaging. To insure conformance to the accuracy to which the thermometer was manufactured, it should be checked before use.

Installation Procedure: The bulb should be located in the process at the point that will provide the temperature indication that is most representative of the process temperature. Circulation of the medium around the bulb is necessary for optimum response time and accuracy. For Direct Reading thermometers, use wrench flats when provided to install the thermometer. For Remote Reading thermometers – do not twist, kink, strain or cut the connecting tube. After the case has been mounted, uncoil and stretch out the connecting tubing, placing the bulb at its intended location. After installing the bulb, fasten the connecting tubing to a wall or other support to prevent damage. Position the connecting tubing to avoid extreme temperature. Since the connecting tubing length cannot be altered, any excess should be coiled on a 3" minimum radius and supported near the case.

Gas actuated thermometers have the following options and accessories:
Flush Mounting Ring: Adapts the phenolic case for flush panel mounting.
Windows: Optional acrylic or shatterproof glass available.

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Gas Actuated
Thermal Systems

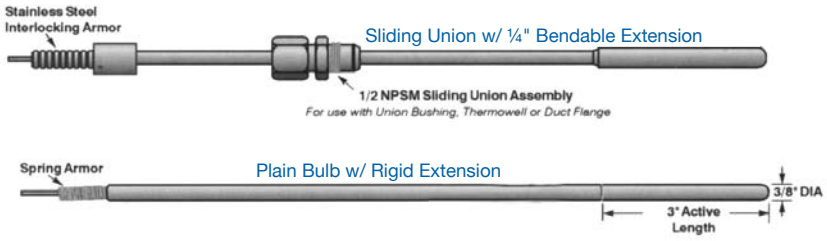
The WIKA Gas Actuated dial thermometer systems are available in several bulb and material configurations. The application should be the determining factor in deciding both the type and material of the thermal system. For use in corrosive or otherwise more demanding installations, WIKA offers a 316 stainless steel bulb and capillary. The stainless steel system is protected with stainless steel spring armor or an optional stainless steel interlocking armor. **It should be noted that the unions on these systems DO NOT provide a pressure seal.** For pressure seals, always use in conjunction with a thermowell.

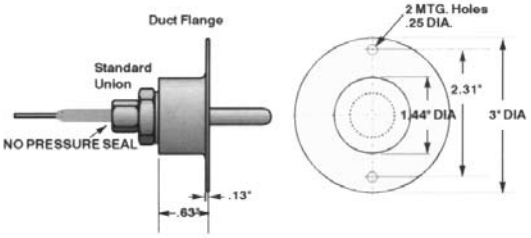
For installations requiring a pressure seal between the process and the atmosphere, a thermowell should be used. The bendable extension with a sliding union allows for variable insertion depths to place properly the active portion of the sensing bulb in the process for maximum accuracy. Aluminum duct flanges are available for threading union fitted bulbs into duct work to provide temperature indication of ducted air or gases.

Thermal Systems

Code No.	Bulb Type	Bulb Material	Capillary Material	Capillary Protection
0	Just-Rite®	316 stainless steel	N/A	N/A
1	Plain	316 stainless steel	316 stainless steel	Stainless steel spring armor**
8	½" NPSM Sliding Union	316 stainless steel	316 stainless steel	Stainless steel spring armor**

**Stainless steel interlocking Armor is available and must be used on systems longer than 40 feet.





Bulbs available on WIKA gas actuated dial thermometers have 3/8" diameters to allow for installation in most existing piping and tanks. As the bulb is the temperature sensing element of the system, it must be placed where the most accurate temperature reading can be obtained. In piping, this is usually the center of the flow in an area of least turbulence. In tanks, this is an area that will represent a good average of the fluid temperature - usually close to the center of the tank. Available materials, lengths, and insertion depths for standard bulbs are listed in the accompanying chart.

Bulbs (All bulbs with threaded connections are ½" NPT)

Code No	Bulb Type	Bulb Material	Bulb Length	Extension Length	Insertion - "U" Thermowell Standard	Dimension Thermowell Lag Extension
1	Plain w/extension	316 SS	3"	12"	2½"- 10½"	-
4	Just-Rite	316 SS	4"*	_	2½"	-
6	Just-Rite	316 SS	6"*	_	4½"	2½"
9	Just-Rite	316 SS	9"*	_	7½"	4½"
X	Just-Rite	316 SS	12"	_	10½"	6½"
7	Sliding Union	316 SS	3"	12"	2½" - 10½"	2½" - 7½"
8	Sliding Union	316 SS	3"	18"	2½" - 16½"	2½" - 13½"

*3" active length

Gas Actuated Thermometers

Type TI.R45, TI.R60

- **Remote Reading**
- **Linear Scale**
- **High Temperature Capability**

WIKA gas actuated remote reading dial thermometers are manufactured in three wall-mounted case styles: the cast aluminum back flange case with a 4½" dial size, the phenolic/GRP turret case (also with a 4½" dial size) and the stainless steel back flange case available in 4½" and 6" dial sizes. All may be specified with back or lower connected capillaries.

Standard Features

- **Accuracy:** ±1% of full range span
- **Over Range:** 50% of span above top of range or 1300°F, which ever is lower
- **Cases:** Drawn stainless steel, aluminum and Phenolic/GRP; for stem, surface or panel mount
- **Sizes:** 4½", 6"
- **Mounting Connections:** Lower or back on remote reading thermometers; adjustable angle on Just Rite
- **Bulb:** ⅜" dia. x 3" active length standard in stainless steel; plain, sliding union
- **Capillary:** 316 stainless steel with stainless steel spring armor, or 316 stainless steel with stainless steel interlocking armor. 99' maximum
- **Dials:** White coated aluminum with black marking
- **Pointer:** Adjustable, balanced, aluminum with matte black finish
- **Ambient Error:** 0.25% at midscale of span per 25° F change in ambient temperature
- **Case Styles:** Wall mount-manufactured in 3 wall-mounted case styles: cast aluminum back flange case with 4½" dial size, the phenolic/GRP turret case with 4½" dial size, and stainless steel back flange case in 4½" and 6" dial sizes; may be specified with back or lower-connected capillaries.

  Adjustable angle-flangeless, stainless steel case with bayonet bezel and 360° rotation. Stainless steel bulb can be rotated 180° to either side of the vertical axis of the stem to allow mounting from the top, bottom, or either side of an installation. Union fitted bulb can be threaded directly into a process connection or into a thermowell or duct flange.

Fahrenheit (outer scale)			Celcius (inner scale)		
Range:	Figure Interval	Subdivision	Range	Figure Interval	Subdivision
-320/100	50	5	-200/40	20	2
-120/120	20	2	-80/50	10	1
0/120	10	1	-20/50	5	1
0/160	20	2	-20/70	10	1
-40/180	20	2	-40/80	10	1
20/240	20	2	-10/115	10	1
0/300	25	5	-20/150	20	2
50/400	50	5	0/200	50	2
50/550	50	5	0/300	50	5
50/750	50	5	0/400	50	5
400/1200	100	10	200/650	50	5

(Case Styles cont.)
Just-Rite's standard bulb/stem thermal system is available in 4", 6" and 9" lengths; only 3" of the tip is active. Panel Mount WIKA gas actuated remote reading dial thermometers accommodate most panel mounting requirements. Stainless steel "U" clamp cases are available in 4½" and 6". Aluminum front flange cases offer 4½" and 6" dial sizes. A stainless steel semi-flush front flange case is available in 4½" and 6" dial sizes. All panel mount thermometers are back connected. Turret phenolic case is available in 4½". Just-Rite is available in 4½" and 6".

Datasheets: TI.R45, TI.R60

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Ordering Gas Actuated Thermometers

To order a WIKA Gas Actuated Thermometer, specify a complete part number from the following tables. Any special feature not shown must be specified in detail in addition to the model number.

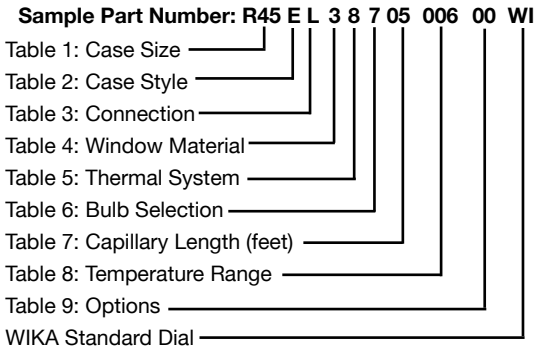


Table 1 - Case Size

Code	Description
R45	4½" Case
R60	6" Case

Table 2 - Case Type & Material

Code	Description	Material	Dial Size
K	Back Flange, bayonet ring	SS	4½", 6"
B	Back Flange, bayonet ring	Aluminum	4½", 6"
E	Turret, threaded ring	Phenolic	4½"
F	Front Flange, hinged ring	Aluminum	4½", 6"
S	Semi-flush Front Flange, bayonet ring	SS	4½", 6"
U	U-Clamp, bayonet ring	SS	4½", 6"
*V	Just-Rite, adjustable angle	SS	4½", 6"

*Capillary is not available. Fixed stem length only as specified in Table 6.

Table 3 - Connection

Code	Description	Case Size	Case Type
B	Back Connection	4½", 6"	ALL
L	Lower Connection	4½", 6"	4½" (K, B, E); 6" (K only)
*A	Adjustable Angle	4½", 6"	V only

*Capillary is not available. Fixed stem length only as specified in Table 6.

Table 4 - Window

Code	Description	Case Size	Case Type
3	Acrylic	4½"	ALL
4	Glass	4½", 6"	ALL
5	Shatterproof glass	4½"	E, K, S, U, V

Table 5 - Thermal System

Code	Bulb Type	Bulb Material	Capillary Material	Capillary Protection	w/5' Capillary
0	Adjustable angle ½" NPT	316SS	N/A	**N/A	
1	Plain	316SS	316SS	Spring armor*	
8	Sliding union ½" NPSM	316SS	316SS	Spring armor*	

* For systems up to 40 Ft.; Spiral Interlock required on all systems over 40 Ft. (see "SI" options, Table 9) **Capillary is not available; fixed stem length only as indicated in Table 6.

Table 6 - Bulb Selection

Code	Description		
ADJUSTABLE ANGLE OAL Thermowell Immersion			
4	3/8" Dia. x 3" Length (active), total 4"	4¼"	U = 2½"
6	3/8" Dia. x 3" Length (active), total 6"	6¼"	U = 4½"
9	3/8" Dia. x 3" Length (active), total 9"	9¼"	U = 7½"
X	3/8" Dia. x 3" Length (active), total 12"	12¼"	U = 10½"
PLAIN BULB - REMOTE			
1	3/8" Dia. x 3" Length (active) + 12" rigid extension		
SLIDING UNION (1/2" NPSM) BULB W/ BENDABLE EXTENSION (split fitting)		Union	Thermowell Immersion
7	3/8" Dia. x 3" Length (active) w/ 12" bendable extension	3 to 12"	U = 2½" to 10½"
8	3/8" Dia. x 3" Length (active) w/ 18" bendable extension	3 to 18"	U = 2½" to 16½"

Note: Thermowell Note: Gas actuated thermometers use standard process type 3/8" bore thermowells, if required. Order separately.

Special Table 5 & 6 Note:
The only possible thermal system/bulb combinations are as follows:
Plain Bulb: (11)
Adjustable Angle: (04), (06), (09), (0X)
Sliding Union: (87), (88)

Table 7 - Capillary Length

Code	Description
05	5 feet
10	10 feet
20	20 feet
30	30 feet
40	40 feet
*50	*50 feet
*80	*80 feet
XX	Adjustable angle case

* Requires "SI" option, see Table 9

Note:
Capillary can be configured to any whole foot, 99' and below; I.E., 08 = 8' capillary

Table 8 -Temperature Range

Code	Dual Scale F & C	
*001[1)]	*-320/100°F	-200/40°C
002	-120/120°F	-80/50°C
003	0/120°F	-20/50°C
004	0/160°F	-20/70°C
005	-40/180°F	-40/80°C
006	20/240°F	-10/115°C
007	0/300°F	-20/150°C
008	50/550°F	0/300°C
009	50/750°F	0/400°C
**010[1)]	**400/1200°F	200/650°C
011	50/400°F	0/200°C

* Requires "LT" option, See Table 9
** Requires "HT" option, See Table 9

[1)] Consult factory for NIST certification fees

Note:
Ranges marked with an asterisk in Table 8 reference same coding in Table 9 and require additional cost as indicated.

Table 9 - Options & Accessories

Code	Description	Case Size	Case Type
00	No Accessories	ALL	ALL
FR	Flush Mounting Ring	4½"	E
*LT	Low Temperature (Cryogenic -320 F)	ALL	ALL
**HT	High Temperature (1200 F)	ALL	ALL
SI	316 SS Interlocking armor	ALL	ALL (Must be on systems over 40 Ft.)

* Requires "LT" option, See Table 9
** Requires "HT" option, See Table 9

Table 10 - Dial Logo

Code	Description
WI	WIKA
BL	Blank

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Gas Actuated Thermometers Temperature Switch Gauge Operating & Installation

Operation: WIKA's TI.TSG60 Temperature Switch Gauge is a patented technology that offers the best accuracy and least ambient error in remote temperature technology. Our direct drive edge-welded Bourdon tube offers a linear 180° dial arc while maintaining positive operation of micro switches with a 1½% accuracy full scale with better than ½% repeatability. Most important is the extremely low ambient error due to the NiSpan Bourdon tube and carbon-filled molecular sieve gas actuated patented technology. The cam adjustable switches offer little resistance to the powerful direct drive system offering consistent switch action with low repeatability error.

Our dual system SCADA version offers dual independent outputs with a failsafe redundant system. Total independence offers accuracy of remote electronics plus the reliability of the local mechanical dial readout all within one unit. The SCADA system comes fully calibrated and requires no field calibration.

Switching: Up to four filled adjustable switches are available with standard ratings of 10 AMP @ 125/250 VAC, non-inductive; 5 AMP @ 120 VAC , inductive; ½ AMP @ 125 VDC, non-inductive; ¼ AMP @ 250 VDC, non-inductive. The differential is 3% of the range. Switches are fully adjustable within the full range of the instrument. Switches can be set within 2° C of each other.

Mounting/Installation: The TI.TSG60 Temperature Switch Gauge is ideal for general industrial installations. Switches can be adjusted from the front of the unit without having to shut down or remove the instrument from the process.

Adjustment of the Set Points: The TI.TSG60 has up to four fully adjustable set points adjustable from the front of the unit. The set point indicators are easily adjusted and then locked in place with the following procedure:

1. Unscrew and remove the front bezel and lens counter-clockwise, as it is shipped from the factory hand tightened.
2. Using a small straight screwdriver, loosen the Set Point indicator and, using two fingers, position the indicator to the desired Set Point, and re-tighten the Set Point indicator.
3. Replace the bezel and lens and, using a strap wrench, rotate the bezel and lens clockwise 3⁄8" beyond hand tight to fully engage the waterproof gasket. Do not over tighten.

Max. Hand Setting: The TI.TSG60 is available with a maximum registering hand that will indicate the highest temperature the unit records by staying at that point. To re-set the max, hand turn the knob counter-clockwise until it rests against the pointer.

Temperature Switch Gauge

Type TI.TSG60

- **Temperature Switch Gauge**
- **Extremely Accurate**
- **Switch Rating up to 10 Amps**

WIKA's TI.TSG60 offers users an unprecedented combination of industrial strength performance with unmatched precision. This 6" gas actuated thermometer is accurate to within 1½% of scale and can tolerate up to 50% over range temperatures. Sealed inside the rugged stainless steel case are up to four single pole, double throw 10 amp switches for enabling a variety of switching actions. The thermal system is stainless steel, and filled with inert nitrogen making the TI.TSG60 ideal for steel and paper mills, refineries, petrochemical, and food and pharmaceutical plants.

Standard Features

- **Case and Bezel:** 304 Sstainless steel, 6.25" diameter
- **Case Style:** Bottom connected back flange
- **Process Connection:** 3/8" x 3" 316 stainless steel bulb with 12" or 18" bendable extension, and ½" NPT one-time compression fitting
- **Window:** Lexan®
- **Range:** 11 standard ranges available. See "How to Order" on next page
- **Over Range:** 50% up to 500°F, except 10% on 0 -120°C and 0 - 250°F
- **Capillary:** Stainless steel with stainless steel interlocking armor; up to 99'
- **Switch Rating:** 10 amp @ 125/250 VAC, non-inductive; 5 amp @ 120 VAC, inductive; ½ amp @ 125 VDC, non-inductive; ¼ amp @ 250 VDC, non-inductive

Datasheet: TI.TSG60

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Ordering Gas Temperature Switch Gauge

Sample Part Number: TSG60 08 3 A3 X7 25 SG WI

- Table 1: Basic Type
- Table 2: Range
- Table 3: Switches
- Table 4: Switch Indictor Options
- Table 5: Thermal System
- Table 6: Capillary Length
- Table 7: Options
- Table 8: Logo

Table 1 - Type

Code	Description
TI.TSG6O	6" back flange temperature switch gauge with Conxall Connector Harness 5" wire length

Table 2 - Range

Code	Description	Code	Description
01 (1)	-450/50°F	07	0/1000°FC
02 (1)	-320/200°F	08	-20/120°
03	0/250°F	09	-20/160°C
04	-50/350°F	10	-20/180°C
05	50/550°F	11	-20/200°C
06	50/750°F		

(1) Setup charge per lot, refer to price list

Table 3 - Switches

Code	Description
1	One adjustable switch (amphenol connector)
2	Two adjustable switches (amphenol connector)
3	Three adjustable switches (amphenol connector)
4	Four adjustable switches (amphenol connector)

Table 4 - Standard Switch Indicator Options

Code	Description
A1	Center switch indicator (1 switch)
A2	Right & left switch indicators (2 switches)
A3 (2)	Right, left & center switch indicators (3 switches)
A3 (2)	Right, left, right, left switch indicator (4 switches)

(2) For adjacent switches, right and left side indicators will allow for closest proximity of switch settings.

ABBREVIATIONS
N/C - there is no charge for this option

Table 5 - Thermal System

Code	Description
X7	3/8"x3" bulb w/12" bendable extension, ½" NPT one-time adjustable compression fitting
X8	3/8"x3" bulb w/18" bendable extension, ½" NPT one-time adjustable compression fitting

Table 6 - Capillary Length

Code	Description
XX	Capillary length in feet

Table 7 - Options

Code	Description
SG	Safety glass
EX	Explosion proof

Table 8 - Logo

Code	Description
EH WI	WIKA
EH BL	Blank

Vapor Actuated
Thermometers

Vapor Actuated Thermometers
Type TI.V20/TI.V25, TI.V35/TI.V45

- **Remote Reading**
- **Highly Accurate**
- **Refrigeration Applications**

WIKA's vapor actuated thermometers are highly accurate and provide remote reading. They are available in U-clamp, front flange or back flange case configurations. WIKA's vapor actuated thermometers are well suited for refrigeration, solar heating, and water treatment applications.

Standard Features

- **Case:** Stainless steel
- **Accuracy:** ±1 scale division
- **Movement:** Heavy duty brass, rotary type
- **Ring:** Snap-in O-ring
- **Window:** Glass or polycarbonate
- **Pointer:** Aluminum, adjustable, black finish
- **Dial:** Aluminum, white background, black graduations
- **Bourdon Tube:** Phosphor bronze, soldered to socket and tip
- **Process Connection:** Plain, union or thermowell
- **Bulb:** Copper or stainless steel
- **Capillary:** Copper- plain or with braid armor; stainless steel- plain; stainless steel or with stainless steel interlocking armor

Datasheets: TI.V20, TI.V25
TI.V35, TI.V45

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Ordering Vapor Actuated Thermometers

Sample Model No: V25 UB3 1690 05 06 WI

Table 1:
Table 2-4:
Table 5-8:
Table 9:
Table 10:
WIKA Standard Dial:

Table 1 - Case Size

Code	Description
V20	2"
V25	2½"
V35	3½"
V45	4½"

Table 2 - Case Style

Code	Case Type	Material	Case Size	Case Conn.
F	Front flange	SS	2", 2.5"	B
U	U-clamp	SS	2", 2.5"	B
Q	U-clamp	SS	3.5"	B
B	Back flange	SS	3.5", 4.5"	B, L
R	Front flange, semi flush	SS	3.5", 4.5"	B

Table 3 - Case Connection

Code	Description Case	Size	Case Type
B	Back connection	All	All
L	Lower connection	3.5", 4.5"	B

Table 4 - Case Front Window

Code	Description	Case Size	Case Type
3	Lexan snap-in lens	All	All
4	Glass lens w/ SS ring	2", 2½"	F, U
5	Glass lens w/ chrome plated brass ring	3½"	All
7	Glass lens w/ rubber ring	4½"	B, R
8	Glass lens w/ crimped SS ring, water proof	2", 2½"	U
9	Lexan threaded lens	2", 2½"	F, U, Q

ABBREVIATIONS
N/C - there is no charge for this option

Table 5 - Thermal Systems

Code	Bulb Type	Bulb Mat'l	Capillary Mat'l	Cap Protection
1	Plain	Copper	Copper	None
2	Plain	Copper	Copper	Cu. Braid
3	Plain	316 SS	316 SS	None
4	Union	Copper	Copper	None
5	Union	Copper	Copper	Cu. Braid
8	Union	316 SS	316 SS	Interlock Armor
9	Union	316 SS	316 SS	None

Note: Available combinations for Thermal System (Table 5) and Bulb Selection (Table 6):
Plain: 12, 13, 14, 15, 16, 22, 23, 24, 25, 26, 32, 33, 34, 35, 36

Union: 41, 42, 43, 44, 45, 51, 52, 53, 54, 55, 81, 82, 83, 84, 85, 91, 92, 93, 94, 95

Also must consider Capillary Length (Table 9).

Table 6 - Bulb Selection (Use with codes 1, 2, & 3 Plain Bulb)

Table 6 - Bulb Selection

	Thermal System		
	No. 1 thru 3 above - Plain bulb for non-threaded process connection		
Code	Diameter	Length	Max. Sys. Length
2	3/8"	3.4"	25 Feet
3	3/8"	4.9"	50 Feet
4	3/8"	7.9"	99 Feet
5	3/8"	9.4"	99 Feet
6	3/8"	2.5"	5 Feet

Table 6 - Bulb Selection (Use with codes 4, 5, 8 & 9 Union Bulb)

Thermal System			
No. 4 through 9 above - Bulb with union for threaded process connection			
Code	Diameter	Length	Max. Sys. Length
1	7/16"	2.5"	10 Feet
2	7/16"	3.4"	25 Feet
3 (1)	7/16"	5.4	50 Feet
4	7/16"	7.4"	99 Feet
5	7/16"	9.4"	99 Feet

(1) Required for lagging extension thermowell, see Table 7

Table 7 - Process Connection Fitting

Code	Description
1	Union ½" NPT
2	Union ¾" NPT
3	Thermowell ½" NPT
4	Thermowell ¾" NPT
5	Thermowell ½" NPT with 2" lag extension (2)
6	Thermowell ¾" NPT with 2" lag extension (2)
7	Aluminum air duct flange (union only)
9	Plain bulb (always select with "plain bulb" - table 5; codes 1, 2, 3)

(2) Can only be used with No. 3 bulb

Table 8 - Process Connection Fitting

Code	Description
1	Brass
2	304 SS
3	316 SS
5	Aluminum (air duct flange only)
0	None (plain bulb only) (always select with "plain bulb" - table 5; codes 1, 2, 3)

Table 9 - Capillary Length

Code	Description
05	five feet
10	ten feet
15	fifteen feet
20	twenty feet
30	thirty feet
50	fifty feet
80	eighty feet

Note:
Capillary can be configured to any whole foot, 99' and below. I.E. - 08 = 8' capillary

Table 10 - Range

Code	Description
01	-40/60 F&C
02	-40/110 F&C
03	-20/100 F&C
04	0/150 F&C
05	0/180 F&C
06	20/220 F&C
07	40/240 F&C
08	30/300 F&C
09	100/350 F&C

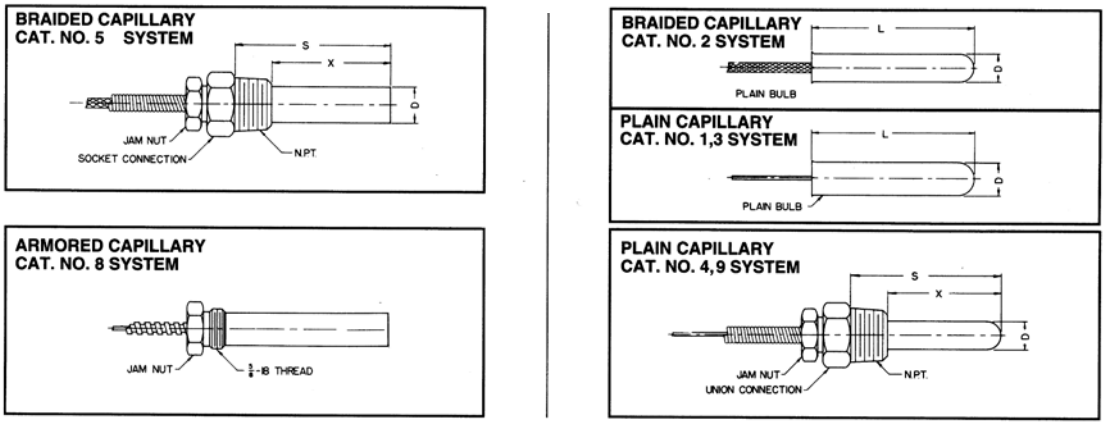
Table 11 - Logo

Code	Description
WI	WIKA
BL	Blank

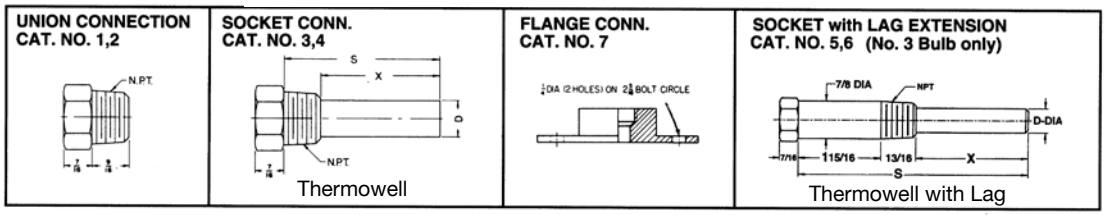
ABBREVIATIONS
N/C - there is no charge for this option

For pricing info, call 1-888-WIKA-USA or visit www.wika.com

Reference for Table 5: Thermal Systems



Reference for Table 7: Process Connection Fittings



BULB DIMENSIONS

BULB NO. (CODE VI)	PLAIN CONNECTION		UNION CONNECTION			SOCKET CONNECTION			FLANGE CONNECTION	
	L	D	X	S	D	X	S	D	X	D
1	N/A	N/A	1 13/16	2 3/8	7/16	1 15/16	2 1/2	9/16	2 3/16	7/16
2	3 7/16	3/8	2 5/8	3 3/8	7/16	2 5/8	3 3/8	9/16	3	7/16
3	4 7/8	3/8	4 5/8	5 3/8	7/16	4 5/8	5 3/8	9/16	5	7/16
4	7 7/8	3/8	6 5/8	7 3/8	7/16	6 5/8	7 3/8	9/16	7	7/16
5	9 7/16	3/8	8 5/8	9 3/8	7/16	8 5/8	9 3/8	9/16	9	7/16
6	2 1/2	3/8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: "X" For Flange Connection is the Insertion Length from Tip of Bulb to Face of Flange. (Not Pictured)

Operation

WIKA vapor actuated thermometers use an actuating liquid in the sensing bulb. When the bulb's temperature is increased, the liquid vaporizes, producing pressure which actuates the Bourdon tube and movement in the indicating gauge. The pointer indicates the temperature sensed at the bulb. The vapor pressure-to-temperature reading is non-linear. The scale graduations are further apart at the upper end of the gauge's range. Therefore, it is important to specify ranges in which the operating temperatures fall in the upper half of the scale. This provides a higher degree of accuracy and readability.

Non-Linear Dials

In the dials shown, note the scales are non-linear. In the dial in the upper left corner, the distance from -40°F to -20°F is less than from -20°F to 0°; this is critical in specifying WIKA's vapor actuated thermometers. These thermometers have a limited range which offers easy-to-read, precise indication. Please note, these dials represent only a few of our standard temperature ranges.