

Thermowell Assemblies General Information A17 Series

Thermowell Assemblies use female NPT threads for accepting male NPT pipe fittings. Because of normal tolerance and torque variations during assembly, variations as much as 5/8 inch element lengths can be encountered. When ordering replacement parts, care should be taken to allow for normal variations in length. When ordering complete assemblies, Nanmac will make the necessary adjustments to compensate for these variations in lengths.

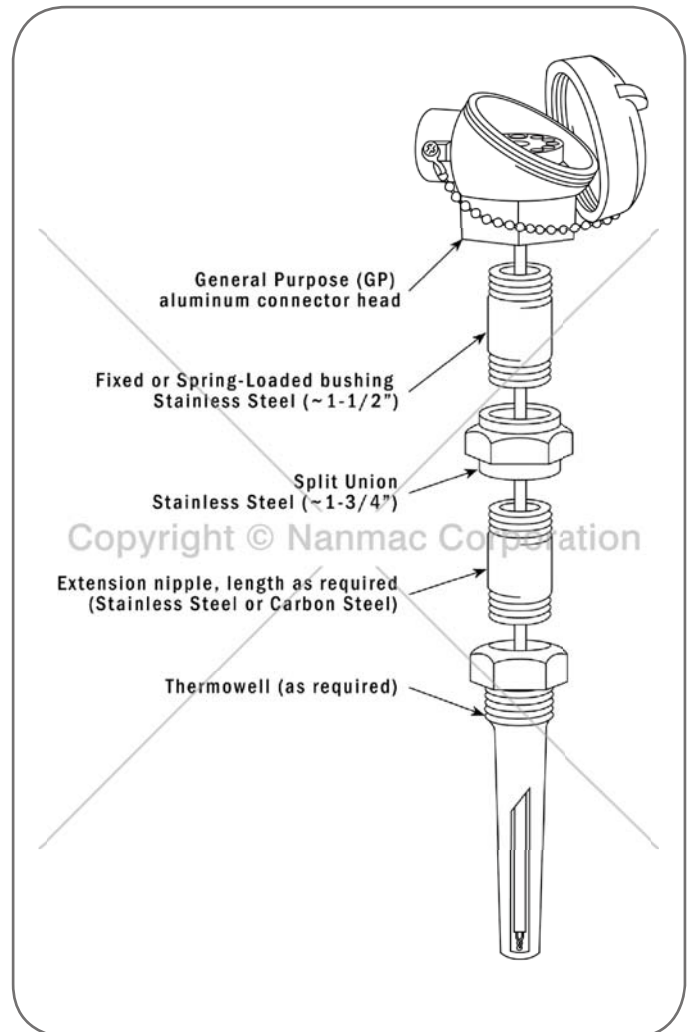
Since all metal thermowells have a female NPT connection thread and all connection heads also have a female NPT thread; a nipple with male NPT threads on both ends is required to attach the connection head to the thermowell. A secondary purpose of the nipple is to physically remove the connection head from a hot thermowell to a safe distance so that an operator can safely open the connection head and make necessary replacements or repairs.

The steel union is used to connect two nipples together. This combination allows easy removal of the head and element from the well.

The outlet port of the connection head in the Nanmac standard connection head contains a 1/2 inch NPT female thread. This is used to connect to your conduit pipe containing the extension leads. Nipples and unions should also be used here to facilitate connecting and disconnecting the conduit pipe - they can also be used to add extensions to your conduit pipe where required.

Material:

Thermowells consist of drilled bar stock. Standard well materials include brass (ASTM B-16), carbon steel (C-1018), and stainless steel (A.I.S.I B-16). Wells are also available in special grades of stainless steel, chrome-molybdenum alloys, silicon bronze, Hastelloy B and C, nickel, titanium, inconel, and monel. The particular choice is usually determined by the corrosive conditions under which the thermowell must operate-commensurate with the maximum service pressure and temperature.



Corrosive Service Guide to Materials

Corrodent	Temperature °F	Conc. %	Recommended Material	Corrodent	Temperature °F	Conc. %	Recommended Material
Acetic Acid	212	All	Monel	Hydrogen Chloride, Dry	500	-	SS 304
Acetic Anhydride	300	-	Nickel	Hydrocyanic Acid	212	All	SS 304
Acetone	212	All	SS 304	Hydrofluoric Acid	212	60%	Monel
Acetylene	400	-	SS 304	Hydrogen Fluoride, Dry	175	-	Steel
Alcohols	212	All	SS 304	Hydrofluogilicic Acid	212	40%	Monel
Alum. (Potassium or Sodium)	300	All	Hastelloy C	Hydrogen Peroxide	125	10-100%	SS 304
Aluminum Chloride	212	All	Hastelloy B	Kerosene	300	All	Steel
Aluminum Sulfate	212	All	SS 316	Lacquers & Thinners	300	All	SS 304
Ammonia, Dry	212	All	SS 304, 316	Lactic Acid	300	All	SS 316
Ammonia Hydroxide (Ammonia, Aqua)	212	All	SS 304, 316	Lime	212	All	SS 316
Ammonia Chloride	-	-	-	Linseed Oil	75	-	Steel
Ammonia Nitrate	300	50%	Monel	Magnesium Chloride	212	50%	Nickel
Ammonia Nitrate	300	All	SS 304	Magnesium Hydroxide (or Oxide)	75	All	SS 304
Ammonia Sulfate	212	All	SS 316	Magnesium Sulfate	212	40%	SS 304
Amyl Acetate	300	All	SS 304	Mercuric Chloride	75	10%	Hastelloy C
Aniline	75	-	Monel	Mercury	700	100%	Steel
Asphalt	250	-	SS 304	Methylene Chloride	212	All	SS 304
Atmosphere (Industrial and Marine)	-	-	SS 304	Methyl Chloride, Dry	75	-	Steel
Barium Compound	See Calcium	-	-	Milk, fresh or sour	180	-	SS 304
Beer	70	-	SS 304	Molasses	See Glucose	-	-
Benzene (Benzol)	212	-	Steel	Natural Gas	70	-	SS 304
Benzoic Acid	212	All	SS 316	Nitric Acid	75	All	SS 316
Bleaching Powder	70	15%	Monel	Nitric Acid	300	All	SS 316
Borax	212	All	Brass	Oleic Acid	See Fatty Acids	All	-
Bordeaux Mixture	200	-	SS 304	Oxalic Acid	212	All	Monel
Boric Acid	400	All	SS 316	Oxygen	75	All	Steel
Bromine	125	Dry	Monel	Photographic	100	-	SS 304
Butane	400	All	Steel	Bleaching	-	-	-
Butyl Alcohol	See Alcohols	-	-	Palmitic Acid	See Fatty Acids	-	-
Butyric Acid	212	-	Hastelloy C	-	-	All	-
Calcium Bisulphite	75	All	Hastelloy C	Phosphoric Acid	212	All	SS 316
Calcium Chloride	212	All	Hastelloy C	Phenol	212	-	SS 316
Calcium Hydroxide	300	20%	Hastelloy C	Potassium Compounds	See Sodium Compound	-	-
Calcium Hypochlorite Powder	See Bleaching	-	-	Propane	300	100%	SS 316
Carbolic Acid	See Phenol	-	-	Rosin	700	-	Monel
Carbon Dioxide, Dry	800	All	Brass	Sea Water	75	All	SS 304
Carbonated Water	212	All	SS 304	Soap & Detergent	212	20%	SS 316
Carbonated Beverages	212	-	SS 304	Sodium Bicarbonate	212	-	-
Carbon Disulfide	200	-	SS 304	Sodium Bisulphite	212	20%	SS 304
Carbon Tetrachloride	125	All	Monel	Sodium Bisulphate	212	20%	SS 304
Chlorine, Dry	100	-	Monel	Sodium Carbinatate	212	40%	SS 316
Chlorine, Moist	100	All	Monel	Sodium Chloride	300	30%	Monel
Chloracetic Acid	212	All	Monel	Sodium Chromate	212	All	SS 316
Chloroform, Dry	212	-	Monel	Salt or Brine	See Sodium Chloride	-	-
Chromic Acid	300	All	Hastelloy C	-	-	-	-
Cider	300	All	SS 304	Sodium Cyanide	212	All	SS 304
Citric Acid	212	All	Hastelloy C	Sodium Hydroxide	212	30%	SS 316
Copper (10) Chloride	212	All	Hastelloy C	Sodium Hypochlorite	75	10%	Hastelloy C
Copper (10) Nitrate	300	All	SS 316	Sodium Nitrate	212	40%	SS 304
Copper (10) Sulfate	300	All	SS 316	Sodium Nitrite	75	20%	SS 316
Copper Plating Solution (Cyanide)	180	All	SS 304	Sodium Phosphate	212	10%	Steel
-	-	-	-	Sodium Silicate	212	10%	Steel
Copper Plating Solution (Acid)	75	-	SS 304	Sodium Sulfide	212	30%	SS 316
-	-	-	-	Sodium Sulfite	212	10%	SS 316
Corn Oil	200	-	SS 304	Sodium Sulfate	212	30%	SS 304
Creosote	200	All	SS 304	Sodium Thiosulfate	212	All	SS 304
Crude Oil	300	-	Monel	Steam	-	-	SS 304
Ethyl Acetate	See Lacquer	-	-	Stearic Acid	See Fatty Acids	-	-
-	Thinner	-	-	-	-	-	-
Ethyl Chloride, Dry	500	-	Steel	Sugar Solutions	See Glucose	-	-
Ethanol	See Alcohols	-	-	Sulfur	500	-	SS 304
Ethylene Glycol (Uninhibited)	212	All	SS 316	Sulfur Chloride	75	Dry	SS 316
-	-	-	-	Sulfur Dioxide	500	Dry	SS 316
Ethylene Oxide	75	-	Steel	Sulfur Trioxide	500	Dry	SS 316
Fatty Acids	500	All	SS 316	Sulfuric Acid	212	10%	SS 316
Ferric Chloride	75	All	Hastelloy C	Sulfuric Acid	212	10-90%	Hastelloy B
Ferric Sulfate	300	All	SS 304	Sulfuric Acid	212	90-100%	SS 316
Formaldehyde	212	40%	SS 316	Sulfuric Acid, Fuming	175	-	Hastelloy C
Formic Acid	300	All	SS 316	Sulfurous Acid	75	20%	SS 316
Freon	300	-	Steel	Titanium Tetrachloride	75	All	SS 316
Fluorine, Anhydrous	100	-	SS 304	Tannic Acid	75	40%	Hastelloy B
Furfural	450	-	SS 316	Toluene	75	-	Steel
Gasoline	300	-	Steel	Trichloroacetic Acid	75	All	Hastelloy B
Glucose	300	-	SS 304	Trichlorethylene	300	Dry	Monel
Glue ph 6-8	300	All	SS 304	Turpentine	75	-	SS 316
Glycerine	212	All	Brass	Varnish	150	-	Steel
Hydrobromic Acid	212	All	Hastelloy C	Zinc Chloride	212	All	Hastelloy B
Hydrochloric Acid, (37-38%)	225	All	Hastelloy B	Zinc Sulfate	212	All	SS 316