

HTP THERMOCOUPLE FOR CLAUS REACTION FURNACE AND SULFUR BURNING PROCESSES

TS HTP

FEATURES

- Worldwide standard of accuracy and reliability
- Maintenance free
- Dual thermowells protect the thermocouple elements from shock and shifting refractory
- Safe, triple sealed. Block valve optional
- Accuracy is continuously verified
- Integral refractory dryout thermocouple reads accurately to 1°F (0.6°C). (Optional)
- Also for use in process incinerators, POX units, and coal gasifiers

APPLICATION

The Type HTP Thermocouple is specifically designed to measure high temperatures under the extremely severe conditions of a Claus Thermal Reactor, such as high temperature, thermal shock, shifting refractory and vibration. The atmospheres to be measured may contain hydrogen, sulfur, sulfur oxides, chlorides and acid gases. Operating temperatures may exceed 3100°F (1700°C) and under varying pressure.

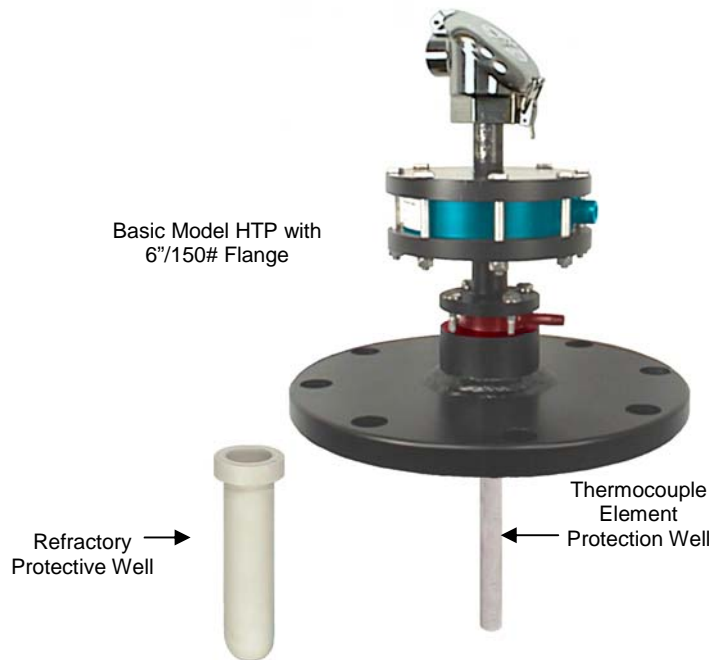
HTP's are furnished complete with the Model HRW Refractory Well and Model HNP Nozzle Insulating Kit. These components protect against shifting refractory and sulfur build-up in the mounting nozzle.

To facilitate installation, accessory items are available to drill refractory, provide effective purge controls and to provide safe and easy installation in non-vertical mounting positions.

The most common application is to protect the refractory in Claus thermal reactors and sulfur burners in sulfur acid plants. Other applications include hydrogen burner systems, water gas generators, coal gasifiers and various kinds of POX units.

Non-metallic materials exposed to the reaction are blends of Alumina, Zirconia, MgO.

Basic Model HTP with
6"/150# Flange



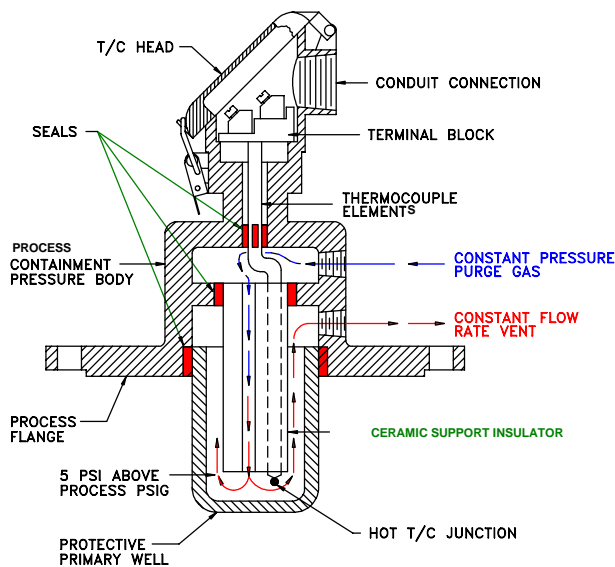
SPECIFICATIONS

Thermocouple Types:	B, R, & T (others available)
Body/Flange Material:	A-106B & A-105 Carbon Steel
Trim, Bolting, and Seats:	Stainless Steel
Protective Well:	Blended alumina ceramic (See Document 00-HRW01)
Certification:	CL I Div 1 Group B,C,D - Encl 4X
Standard Connections:	ANSI Flange 4" and 6" 150" and 300" Class Other sizes, types, ratings available
Purge Gas:	Nitrogen recommended
Working Pressure:	150 PSIG (10 Bar) at vessel skin temperature of 500°F (260°C)
Working Temperature:	0 - 3100°F (1700°C)
Required Auxiliary Equipment:	Model HNP Nozzle insulation kit Model HRW Refractory Well
Recommended:	Model HFS Purge Panel Model H6G Refractory Drill Kit
Optional:	<ul style="list-style-type: none"> • Nozzle block valve for emergency shut-in • 316L SS body, flange, and head housing • Thermocouple extension lead wire • Refractory diamond drills and casting mandrels • Model HMB mounting bars for "non-vertical" installations • Field training, consultation and assistance



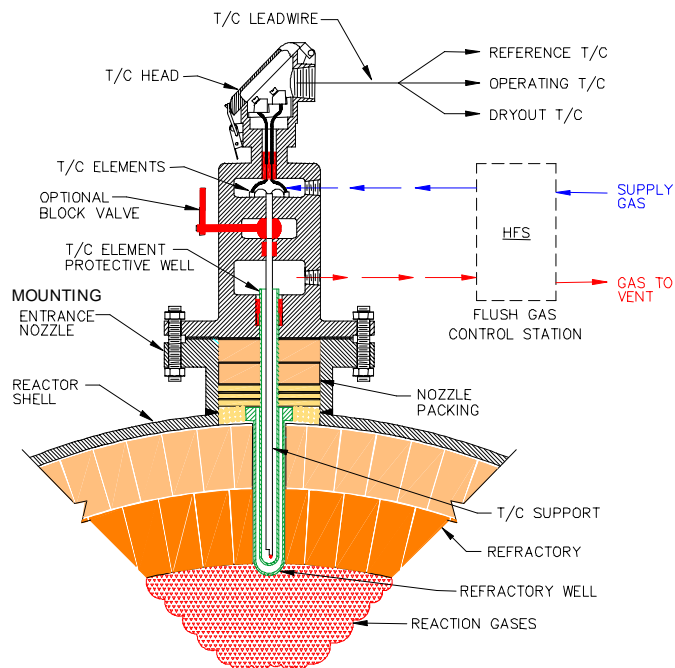
DELTA CONTROLS
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OPERATING SCHEMATIC OF THE HTP



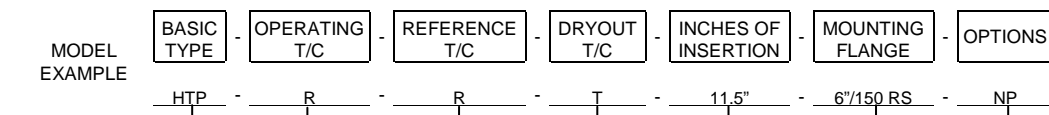
Clean flush gas flows through the Model HTP and scavenges hydrogen, sulfur compounds, and corrosive gases that have penetrated or permeated the protective well. The flush gas flows into the upper chamber, down an annulus, over the hot junction, back up the protective well, and out through the vent connection. The flush gas must be clean and dry. The normal method of operation is to maintain a positive pressure inside the HTP. This pressure should be 3 to 5 PSI (28 kPa) above the maximum operating pressure of the reactor. This pressure is set by adjusting the control on the flush gas control station. The flow rate through the unit is set at 0.4 to 0.5 SCFH (190cc/m). This rate is controlled by the flush gas control station and does not significantly cool the T/C element.

HTP INSTALLED IN A CLAUS REACTOR



SCHEMATIC REPRESENTATION
- Shown with block valve -

MODEL NUMBERING SYSTEM



M/N	DESCRIPTION
HTP	BASIC SENSOR

SPECIFY INCHES LENGTH

M/N	DESCRIPTION	°F (1)	°C
T ⁽²⁾	COPPER vs. CONSTANTAN (DRYOUT ONLY)	660	320
R	PLATINUM vs. PLATINUM +13% RHODIUM	2700	1480
B	PLATINUM. +6%RH vs. PLATINUM. +30%RH.	3050	1675

M/N	MOUNTING FLANGE
AA	NONE
NP	NOZZLE PURGE CONNECTION 1/8" FNPT
NIS	NIST ACCURACY CERTIFICATION
XPG	CL1, DIV 1, GRPS BCD; HOSEPROOF
XPB	SAME, EXCEPT 300 S.S. HEAD; NACE
BV	BLOCKVALVE FOR REDUNDANT SAFETY SHUTOFF, FIRESAFE TYPE
ZZ	CUSTOM ADAPTATIONS & MODS

M/N	MOUNTING FLANGE
6"150RS	ANSI 6 INCH 150# RAISED FACE STEEL
ZZ	OTHER STYLES, TYPES & SIZES

NOTES:

- Temperature shown is the maximum recommended for continuous service
- Accuracy of type "T" dryout T/C: ±0.9°F(0.5°C) or better at 212°F(100°C); limited to 660°F (320°C) in nitrogen

AUXILIARY EQUIPMENT

M/N	DESCRIPTION - SEE SEPARATE DETAILED DATA SHEETS
HFS	Flush gas control station, zinc, stainless steel trim or all stainless steel
H6G	Diamond bits and guides to drill hole through refractory
HRM	Mandrel for casting a hole thru refractory
HRW	Refractory protective well
HNP	Reactor nozzle insulation packing kit
HMB	Horizontal Mounting Bars



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