

Nexus | Chemical/Solvent Heater



MULTI-LOOP CHEMICAL HEATER

Engineered for your process - manage multiple chambers with one heater! Building off of the popular SHC product line, the Nexus incorporates the same safe indirect heating technology to heat multiple process loops. Using a single heat source, the Nexus improves chamber-temperature matching performance for advanced processing requirements.



FEATURES

Reduced complexity

One set of controls for up to four process chambers. Small space requirements.

Designed for performance

Allows for precise and stable temperature control for multiple chambers.

Low watt density design for lower surface temperatures.

Engineered for Safety

Heats chemicals and flammable solvents through indirect contact.

Patented purged housing for leak detection.

Advanced Cleanliness

O-ring free and crevice free design eliminates source for contamination.

All PFA wetted surfaces for acids and solvents.

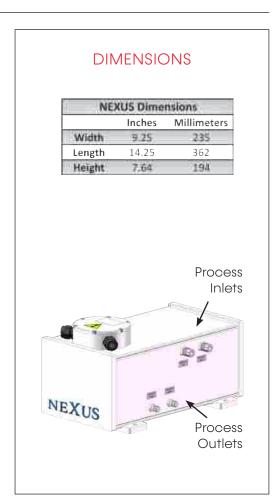
APPLICATIONS

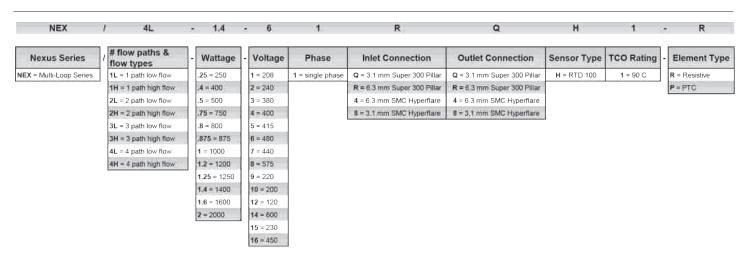
Semiconductor wafer cleaning



Nexus Multi-Loop Chemical/Solvent Heater

SPECIFICATIONS Wattages 500 kW to 1400 kW Voltages 120 volts to 480 volts, single phase Up to 80°C (176° F) Temperature Range Pressure Range Up to 275 kPa (40 PSI) Fluid Connections Inlets: Low Flow: 6.3mm (1/4") SP300 Nippon Pillar High Flow: 6.3mm (1/4") SMC Hyperflare Outlets: Low Flow: 3.1mm(1/8") SP300 Nippon Pillar High Flow: 3.1mm (1/8") SMC Hyperflare Safety Features RTD core sensors Bi-mettalic over-temp sensor





HCQ **Quartz Inline Chemical Heater**



ULTRA-PURE QUARTZ HEATING

The HCQ Quartz Inline Heater provides a minimal footprint, space-conscious design combined with ultra-pure, high-purity 100% quartz construction. The Isolated heating element virtually elimnates process contamination while multiple plumbing configurations ensure ease of operation.



Temperature: Up to 185°C (365° F)





Certification: ETL certified to UL499 compliant. CE compliant.

Up to 345 kPa (50 PSI)

Pressure:

Conforms to SFMLS2 standards

FEATURES

Outstanding Cleanliness:

No ionic or bacterial contamination with 100% high purity quartz construction.

Easy Maintenance with Minimal Downtime:

Plug-in heater element is easily replaced in minutes. Fluid connections remain intact, eliminating the need for system re-qualification.

Reliable:

Patented purge cooling system significantly extends heater element life versus conventional designs.

Low Cost of Ownership:

Heating element can be field replaced without disturbing the plumbing connections or affecting the integrity of the chemistry.

Secondary Containment:

PTFE housing acts as a maintenance-free secondary containment vessel to help protect the environment from chemical spills.

Excellent Responsiveness:

Halogen lamps provide instantaneous start-up & rapid response with excellent temperature stability under varying flow rates.

No O-Rings:

Eliminates process contamination associated with o-rings. Leak-free operation assured.

No Dead Zones:

Tangential flow pattern eliminates stagnant zones in the heater. The heater is self-draining & self-venting (upon proper installation).

Low Pressure Drop:

Minimal pressure drop for high-circulation applications.

APPLICATIONS

Semiconductor Wafer Cleaning



HCQ Quartz Inline Chemical Heater

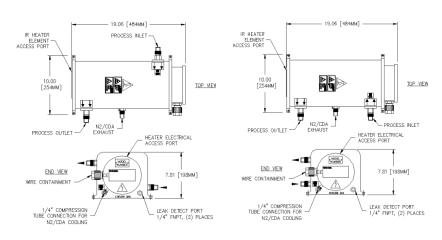
SPECIFICATIONS

Wattages	750 to 12,000 watts .
Voltages	200 volts to 480 volts, single phase or 3 phase. Consult factory for specific wattage/voltage combinations available.
Temperature Limit	Up to 185°C (365° F)
Pressure Rating	Up to 345 kPa (50 PSI).
Inlet/Outlet	19mm (3/4") MNPT flare quartz connections.
Purge Gas	Patented system using 3.5 SCFM (min) clean dry air (CDA) or nitrogen (N2) 6.35mm (1/4") O.D. tube connector.
Flow Rate	Up to 100 lpm.
MTTR	10 minutes (with adequate access).
MTBF	In excess of 20,000 hours.
Temperature Accuracy	1° C, depending on operating conditions.
Heating Element	IR halogen lamps.
Housing	100% PTFE with viton o-rings (non-wetted). Conforms to FM material standards.
Safety Features*	Heater housing over-temperature shutoff & alarm ("J" type thermocouple and redundant bi-metallic snap switch). Purge gas verification & interlock. *Requires controller interface.

MODEL NUMBER BREAKDOWN

HCQ Series | Wattage (kW) Voltage Configuration Phase 1 = Single Phase 001 = Standard 1.5 = 1.500208 3 = Three Phase 240 2 = 2,0002.25 = 2.500380 3 = 3,000400 415 4 = 4.000480 4.5 = 4,5005 = 5.000220 5.5 = 5.5006 = 6000 6.75 = 6,7507.5 = 7,5008 = 8,0008.3 = 8,300 9 = 9,00010 = 10,000 11.2 = 11.20012 = 12,000

DIMENSIONS







SUPERIOR INDIRECT HEATING

The SHB/SHC, a low wattage inline chemical/solvent heater, delivers superior indirect heating with temperature stability. Using multiple temperature sensors and self-limiting technology, this heater ensures safe operation during low or no-flow conditions.



FEATURES

Engineered for Safety

Optimized to safely heat chemicals and flammable solvents through indirect contact

Redundant temperature sensors ensure safe operation PTC (self-limiting) heating technology standard

Advanced Cleanliness

O-ring free and crevice free design eliminates source for contamination

SHB series: Electropolished 316SS for solvents

SHC series: PTFE & PFA wetted surfaces for acids

and solvents

Designed for performance

Allows for precise and stable temperature control Low watt density design for lower surface temperatures

APPLICATIONS

- Semiconductor Wafer Cleaning
- Etching

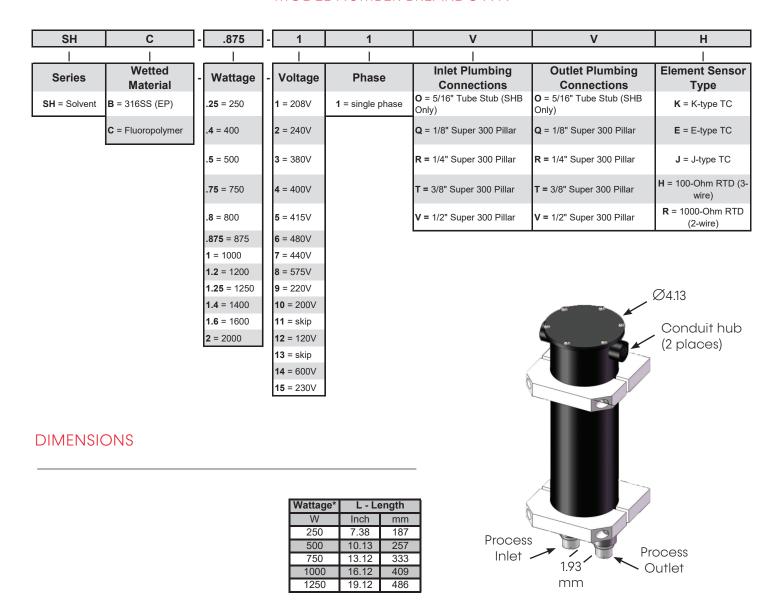
Inline Chemical Heating



SHB/SHC Chemical and Solvent Heater

SPECIFICATIONS

Wattages	250W to 2000W
Voltages	120 volts to 480 volts, single phase
Temperature Range	Up to 180°C (356° F).
Pressure	1379kPa (200 PSI) at 180°C (356° F)
Fluid Connections	3mm, 6mm, 9mm or 12mm. Custom connections available.





Frontier is designed for heating chemicals and solvents in hazardous operating environments. Suitable for heating a wide variety of flammable and non-flammable chemistries using electropolished stainless steel wetted materials for improved cleanliness. Offers outstanding performance over a wide range of flow and temperature requirements. Available up to 36kW, the Frontier is the most powerful inline solvent heater available.



FEATURES

Engineered for Safety

Heat source isolated from flammable chemistries
Certified to UL823 compliant and ATEX
Suitable for Class I, Div 2 and Zone 1 & 2 hazardous environments

Indirect Heating Design

Provides an evenly heated surface and reduces surface temperatures and hot spots

Improves chemical longevity and performance for temperature-sensitive chemicals

Advanced Cleanliness

Electropolished 316SS wetted surfaces and no o-rings in the flow path minimizes contamination of the process liquid

Crevice-free design reduces risk of contamination

Non-cast design maintains quality of electropolished surfaces

Designed for Performance

More available heating power than other inline solvent heaters (up to 36kW)

Lower mass for faster response time

Minimizes fluid pressure drop even at very high flow rates (>60 LPM)

- Semiconductor
- · Sterilization/Cleaning
- · Electroless Nickel Plating



Frontier Chemical and Solvent Heater

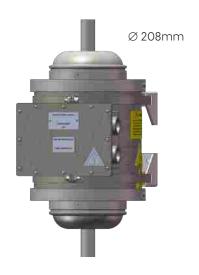
APPLICATIONS

- · Semiconductor
- · Medical Device Cleaning
- Electroless Nickle Plating

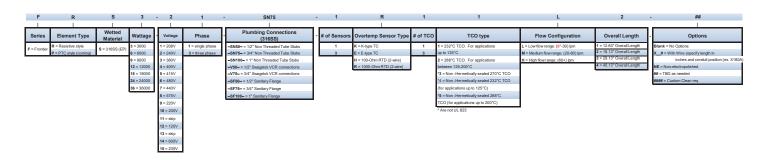
SPECIFICATIONS

Wattages	3 kW to 36 kW
Voltages	120 volts to 480 volts, Single phase or 3 phase
Temperature Range	Up to 180° C (356° F).
Pressure Range	689 kPa (100 PSI)
Fluid Connections	12mm, 19mm, or 25mm Custom connections available
Safety Features	Grounded construction Bimetallic TCO Insulated Housing

DIMENSIONS



Wattage	L - Length				
kW	Inch	mm			
3-6	12.63	321			
9-12	18.13	461			
18-24	29.13	740			
36	40.13	1019			



TIH | In-Line Chemical Heater



BEST IN CLASS CHEMICAL HEATER

The TIH offers unmatched performance and reliability with the ability to heat a variety of chemicals up to 210°C. This heater is suitable for either single pass or recirculating applications. Delivers best-in-class performance over a wide range of flow and temperature requirements. The TIH is the most durable and long-lasting inline chemical heater available!



FEATURES

Designed for Performance and Safety

High-temperature configuration available to heat chemicals up to 210°C

Multiple plumbing layouts available to better facilitate installation into a variety of tool configurations

Grounded electric heating elements

Redundant temperature sensors for safe operation Optional O-ring free construction minimizes contamination

Durable Constuction

Patented purge design removes chemical permeation to extend service life

All fluoropolymer-wetted surfaces withstand virtually any wet chemistries

Heavy-wall PTFE chamber and heater sheath for high temperature/pressure applications

- · Semiconductor wafer cleaning
- · Solar/Photovoltaio Wafer Cleaning
- Inline chemical heating



TIH In-line Chemical Heater

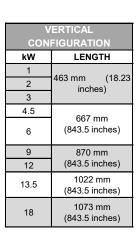
SPECIFICATIONS

Wattages	1kW to 18kW
Voltages	200 volts to 600 volts, single phase or 3 phase. 12kW & larger require 3 phase.
Temperature Range	Up to 210° C (410° F).
Pressure Range	689 kPa (99.93 PSI) at 25°C (77° F)
	296 kPa (42.93 PSI) at 180°C (356° F)
Fluid Connections	6 to 25mm flared
	12 to 25mm Super 300 Type Pillar®
	Other connections available, consult factory
Wetted Surfaces	PFA and PTFE fluoropolymer
	No wetted "O" rings
Dimensions	225mm (8.86 inch) x 508mm (20 inch) x 147mm (5.79 inch)
Element Purge	Small amount of clean dry air (CDA)
	or N2 gas flows between the grounded
	element & PTFE sheath. Removes
	chemical permeation and minimizes
	ionic contamination for longer life.

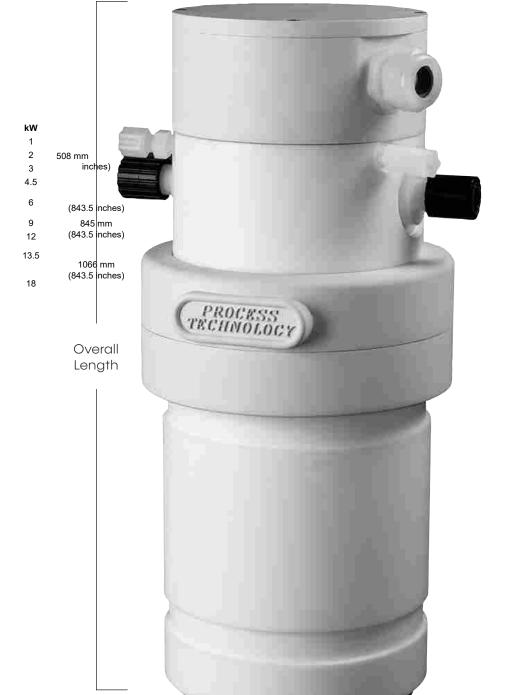
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I	I		Ī	1	1			· I	
TIH series	Wattage, kW	- Voltag	e Phase	Inlet and Outlet Connections	Drain Connection	Plumbing Configuration	Process sensor type	Overtemp sensor type	
	01 thru 18	1 = 208	1 or 3	A = 1/2 inch Flared	O (or 0) = No Drain	S = Straight (180° opposed inlet, outlet, center- bottom drain)	J = Type J thermocouple	E = Type E thermocouple	
		2 = 240\	′	B = 3/4 inch Flared	A = 1/2 inch Flared	outlet (center-bottom drain)	K = Type K thermocouple	K = Type K thermocouple	
		3 = 380\	′	C = 1 inch Flared	B = 3/4 inch Flared	L = Bottom side inlet, rotated 90° to left of outlet (center-bottom drain)	H = 100-Ohm RTD (2-wire)	H = 100-Ohm RTD (2-wire)	
		4 = 400\	′	S = 3/8 inch Flared	S = 3/8 inch Flared	E = Bottom side inlet, rotated 180° from outlet (center-bottom drain)	R = 1000-Ohm RTD (2-wire)	R = 1000-Ohm RTD (2-wire)	
		5 = 415\	′	T = 3/8 inch Super 300 Pillar	T = 3/8 inch Super 300 Pillar	A = Bottom side inlet, directly below outlet (center-bottom drain)	O = No process sensor		
		6 = 480\	′	U = 25mm union	V = 1/2 inch Super 300 Pillar	B = Bottom inlet center of bottom, (standard no drain, side bottom drain if required)		_	
		7 = 440	′	V = 1/2 inch Super 300 Pillar	W = 3/4 inch Super 300 Pillar	C = Straight (side-drain, below inlet)			
		8 = 575\	′	W = 3/4 inch Super 300 Pillar	Y = 1/4 inch Super 300 Pillar	D = Straight (side-drain, below outlet)			
		9 = 220	<i>,</i>	X = 1 inch Super 300 Pillar	Z = 1/4 inch Flared	H = Horizontal design (similar to B, but with drain on lower side, opposite outlet)			
		10 = 200	V	4 = 20mm union	4 = 20mm union	Other configurations = issue new plumbing deisgnation			
		14 = 600	V		•				
		15 = 230	V						
		16 = 450	V						



DIMENSIONS



HORIZONTAL CONFIGURATION						
kW	LENGTH					
1						
2	508 mm (20					
3	inches)					
4.5						
6	629 mm (843.5 inches)					
9	845 mm					
12	(843.5 inches)					
13.5	1066 mm					
18	(843.5 inches)					



191mm (7.5 in)

mm (18.23 inches)

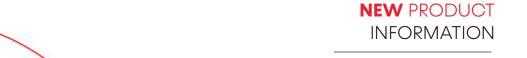
667 mm 843.5 inches)

870 mm 843.5 inches)

843.5 inches)

843.5 inches)







Lufran Chemical Series Heater

Featuring the fusion of two successful products, the Lufran Chemical Series offers the safe heating capabilities of Frontier (inline chemical heater) in a complete turn-key heating system. With stainless steel wetted materials this heater is suitable for either single pass or recirculating applications for heating a variety of chemicals. Offers outstanding performance over a wide range of flow and temperature requirements. A complete high wattage turn-key heating solution.



NFW!

FEATURES

Complete (turn-key) System

Only plumbing and main power required

Allows for fast and easy installation

Space saving design minimizes footprint requirements

Suitable for Chemical Heating

Indirect heating provides an evenly heated surface

Low watt density design reduces surface temperatures and hot spots

Improves chemical longevity and performance for temperature-sensitive chemicals

Designed for Performance

More available heating power than other inline chemical heaters

Lower mass faster response time

Minimizes fluid pressure drop even at very high flow rates (>60 LPM)

Crevice-free design eliminates dead-zones

PID Temperature Control

Provides precise and stable temperature for improved process consistency and yields

Minimizes temperature fluctuations with flow rate changes

- · Solar/Photovoltaic
- · Semiconductor

- Medical Device Cleaning
- Electroless Nickle Plating

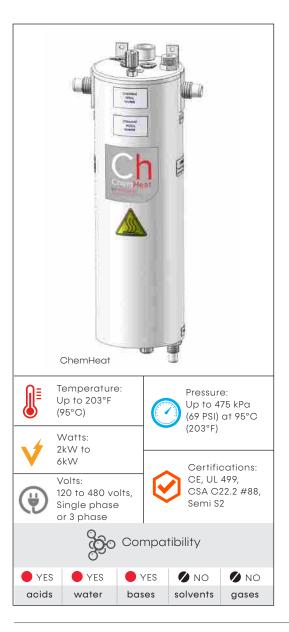


ChemHeat High-Purity | In-Line Chemical Heater



NEW - SMALL FOOTPRINT CHEMICAL HEATER

Best-in-class heating for wet-process chemistries. Designed to support advanced Ultra High-Purity (UHP) requirements. ChemHeat flow path utilizes all fluoropolymer wetted materials, an o-ringless sealing design, and the capability to detect any breach in the fluid path. Suitable for all non-flammable chemistries in either single pass or recirculating flow applications.



FEATURES

Innovative Design for Ultra-High-Purity (UHP)

Cleanroom assembled

Chemistry contained within PTFE tubing to eliminate environmental exposure

No wetted o-rings

Patented purge technology detects breaches in the fluid path, prevents chemical permeation and extends heater life (MTFB).

Modular & Configurable

Reduced tool design space requirements

Easily retrofits to existing tools

Customized inlet/outlet options available

Low Internal Volume

Fast heat-up

Reduced chemistry costs

Precise and stable temperature control

Safety & Reliability

Internal grounding clear of the fluid path

Lower surface temperatures

Extended life of heater due to patented purge protection

- Semiconductor
 Wet Processes
- Filtration

- · Sterilization/Cleaning
- · Surface Finishing



ChemHeat In-line High Purity Chemical Heater

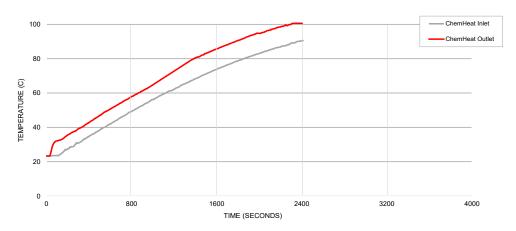
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Wattages	2kW to 6kW					
Voltages	120 volts to 480 volts, single phase or 3 phase					
Temperature Range	Up to 203°F (95°C).	Up to 203°F (95°C).				
Pressure	475 kPa (69 PSI) at 203°F (95°C) fo 324 kPa (47 PSI) at 203°F (95°C) fo	475 kPa (69 PSI) at 203°F (95°C) for 12.7mm (1/2 inch) FLARETEK® 475 kPa (69 PSI) at 203°F (95°C) for 19.05mm (3/4 inch) FLARETEK® 324 kPa (47 PSI) at 203°F (95°C) for 25.4mm (1 inch) inlet/outlet FLARETEK® 475 kPa (69 PSI) at 203°F (95°C) for All Super 300 TYPE PILLAR®				
Fluid Connections	Inlet/Outlet Types/Sizes	Drain				
	FLARETEK® 12.7mm (0.5 inch), 19.05mm (0.75 inch), or 25.4mm (1.0 inch)	9.5mm (0.375 inch), or 12.7mm (0.5 inch) flared, or Super 300 Type Pillar®				
	SUPER 300 TYPE PILLAR® (300 SP) 12.7mm (1/2 inch), 19.05mm (3/4 inch), or 25.4mm (1 inch)					
	Custom inlet/outlets also availab	le				
Wetted Surfaces	PFA and PTFE fluoropolymer No wetted "O" rings					
Dimensions	225mm (8.86 inch) x 508mm (20 i	nch) x 147mm (5.79 inch)				
Watt Density	≤ 9.5 /in ²					
Safety Features	Element temperature sensor Choice between Type E, J, K t or 1000-Ohm RTD (2, 3, or 4 wi Internal ground plane Patented purge protection and le	re)				



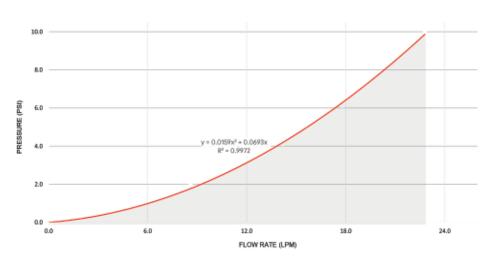
ChemHeat HEAT-UP TIME - 40 Liter Bath, 6KW (480V)

HEAT-UP CURVE



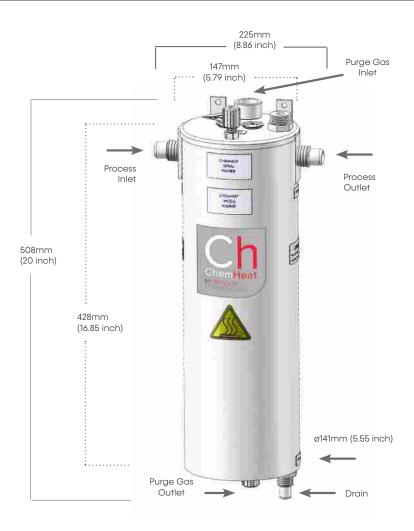
ChemHeat PRESSURE DROP 6kw - 3/4 I/O Fittings

PRESSURE DROP





DIMENSIONS



ChemHeat Model Number Description

СН	2	- 6	1	Α	Α	E	- 0	-
	_			,		_		
Series	Wattage	- Voltage	Phase	Inlet/Outlet Connection	Drain Connection	Element Sensor Type	Process Sensor Type	- Options
CH =ChemHeat Series	2 = 2000	1 = 208	1 = single phase	A = 1/2 inch Flared	A = 1/2 inch Flared	E = Type E thermocouple	O = No Sensor (standard)	Blank = No Option
	3 = 3000	2 = 240	3 = three phase	B = 3/4 inch Flared	V = 1/2 inch Super 300 Pillar	J = Type J thermocouple	E = Type E thermocouple*	X## = Longer wire length (inches)
	4 = 4000	3 = 380		C = 1 inch Flared	S = 3/8 inch Flared	K = Type K thermocouple	J = Type J thermocouple*	## = Custom design
	5 = 5000	4 = 400		V = 1/2 inch Super 300 Pillar	T = 3/8 inch Super 300 Pillar	H = 100-Ohm RTD (2- wire)	K = Type K thermocouple*	CB = PP bracket
	6 = 6000	5 = 415		W = 3/4 inch Super 300 Pillar		R = 1000-Ohm RTD (2- wire)	H = 100-Ohm RTD (2-wire)*	
		6 = 480		X = 1 inch Super 300 Pillar			R = 1000-Ohm RTD (2-wire)*	
		7 = 440			_		* add \$ for process sensor	
		9 = 220						
		10 = 200						
		12 = 120						
		15 = 230						
		16 = 460						