

GEORGIA THERMAL PRODUCTS

**model GTC**



# buyers guide

vacuum tray dryer

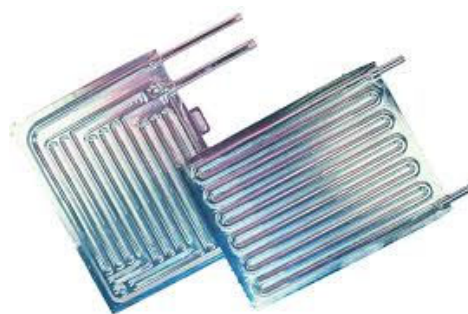
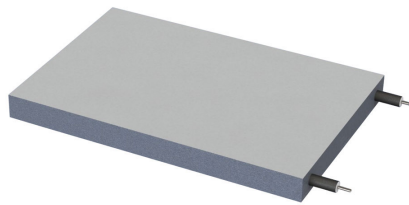


## model GTC

Popular amongst customers drying slurries or degassing pliable solids in liquid state. The system utilizes a platen or shelf to deliver heat into product that lies directly flat on top or is contained in trays or pans.

Shelves can be oil, water or electrically heated and cooled if required. Some popular combinations of heating and cooling include:

- **Electrically Heated with Factory Cooling.** single set-point individually controlled shelves, cooling can be event or PID controlled. Uses a factory supplied cooling medium.
- **Electrically Heated with Oil Cooling.** single set-point individually controlled shelves, cooling is event or PID controlled. Used with our self contained oil cooling system which requires a factory supplied cooling medium.
- **Oil Heated & Cooled.** Utilizing our cascade control loop system all shelves are heated and cooled based on several feedback loops and not individually controlled. This is excellent for tray drying large quantities of slurry or wet cake. This uses our self contained heat/cool oil system and requires a factory supplied cooling medium.



# **SECTION 1**

## **Chassis Configuration**

## VESSEL & SHELF CONFIGURATION

MODEL	INTERIOR VESSEL H x W x D (IN) VOLUME	SHELF DIM W x D (IN) SQ-FT	OIL HEATED	ELECTRICALLY HEATED	MAX NO. SHELVELS electric / oil
<b>2GTC</b>	12.0 X 12.0 X 20.0 2-ft <sup>3</sup> ; 56-Liter	11.5 x 18.0 1.4-ft <sup>2</sup>	no	yes	2/0
<b>4GTC</b>	18.0 X 18.0 X 24.0 4-ft <sup>3</sup> ; 113-Liter	17.5 x 22.5 2.7-ft <sup>2</sup>	yes	yes	4 / 6
<b>10GTC</b>	24.0 X 24.0 X 30.0 10-ft <sup>3</sup> 283-Liter	23.5 x 29.5 4.8-ft <sup>2</sup>	yes	yes	6 / 9
<b>27GTC</b>	36.0 X 36.0 X 36.0 27-ft <sup>3</sup> ; 764-Liter	35.5 x 35.5 8.5-ft <sup>2</sup>	yes	no	9 / 12
<b>64GTC</b>	48.0 X 48.0 X 48.0 64-ft <sup>3</sup> ; 1812-Liter	47.0 x 46.0 14.6-ft <sup>2</sup>	yes	no	12-oil only
<b>80GTC</b>	60.0 X 48.0 X 48.0 80-ft <sup>3</sup> ; 2265-Liter	47.0 x 46.0 14.6-ft <sup>2</sup>	yes	no	12-oil only

## SHELF THERMAL SYSTEM

The Model GTC thermal system consist of either an oil fired or electrically heated shelves or platens. Standard configurations for each thermal system come in several operating ranges.

<b>Configuration</b>	<b>Specifications</b>	<b>Operating Temp Range</b>	<b>Cost Factor</b>
<b>Electrically Heated</b>	Using our milled groove heater technology, these rebuildable 6061 Aluminum deliver heat quickly and evenly across its surface area. All electrical fields and connections are hermetically sealed from the vacuum environment.	100 to 600° F (38 to 315° C)	<b>standard</b>
<b>Electrically Heated &amp; Fluid Cooled</b>	Our milled groove Aluminum platens with an embedded copper cooling coil. All fluid connections are made outside of the vacuum environment. This feature requires a factory cooling source.	100 to 392° F (38 to 200° C)	<b>\$</b>
<b>Oil Heated</b>	Laser welded 316L stainless single embossed plate style heat exchangers with our onboard electrically heated oil pumping system	100 to 257° F (38 to 125° C)	<b>\$\$</b>
<b>Oil Heated &amp; Cooled</b>	Used in conjunction with our oil pumping system an additional brazed plate heat exchanger and 3-way valve rapidly cool process temperatures	100 to 257° F (38 to 125° C)	<b>\$\$\$</b>
<b>Factory provided Heat Source</b>	If your factory uses a temperature regulated high temperature fluid, we can offer a fully passive system that allows you to use your source to heat the process.	100 to 257° F (38 to 125° C)	<b>-\$</b>

## VESSEL MATERIAL GRADES

Our Vacuum Vessel is constructed of a minimum .250-in (6-mm) stainless steel. Material options are available which include the following:

Vessels are reinforced using our proprietary gusseting technique which allows maximum sustainability under high vacuum and

<b>GRADE</b>	<b>Application</b>	<b>Cost Factor</b>
<b>304L</b>	General applications not involving corrosives or incompatible materials with 304 stainless	<b>standard</b>
<b>316L</b>	Processes involving corrosives . Typically used in pharmaceutical and medical	<b>\$</b>
<b>Ni-Alloy</b>	Nickel Alloys can be used for process specific applications involving elevated temperatures and corrosives	<b>\$\$\$</b>

temperature. In addition vessels are helium leak checked ensuring that the system is sound and contaminate free as possible.



## INTERIOR FINISHES

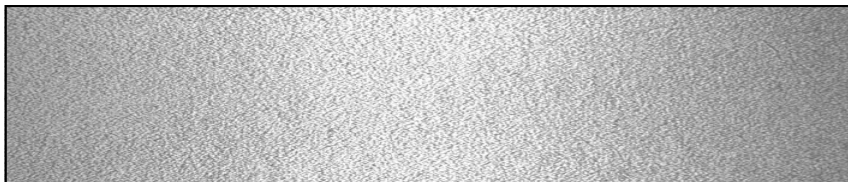
Interior finishes are selected based on typically your clean ability requirements. While most applications can use our 220 DA or bead blasted finishes some require a higher level of surface treatment. All welds are mechanically or chemically treated to remove stain and impurities. Our plate finishing surface selections are as follows:

<b>FINISH</b>	<b>Application</b>	<b>Cost Factor</b>
<b>220 DA</b>	This is a 220-grit orbital sanded finish. It is dull in color and is reasonably easy to clean. This is done as a standard on smaller vessels	<b>standard</b>
<b>Bead Blast</b>	This is a typical rough bead or sand blasted finish. Used as a standard for larger vessels not requiring any special surface treatment	<b>standard</b>
<b>#4</b>	A brush finish removing most all surface imperfections while offering a grained look . 29 to 40Ra	<b>\$\$</b>
<b>#8</b>	Mirror like finish used primarily in ultra clean room and pharmaceutical process requiring a 4 to 10Ra finish. Not available on Ni-Alloys or chambers >10-cuft	<b>\$\$\$</b>



### **220 DA**

*finish dull grey with some sanding swirls and minor imperfections*



### **Bead Blast**

*finish dull grey with a rough texture and minor imperfections*



### **#4**

*Silver grey with a smooth grain finish*



### **#8**

*Mirror like qualities*

## OPERATING SEAL MATERIAL

Unlike other vacuum ovens we do not use strange odd shaped or flat gaskets to make a vacuum seal. We use a readily available off the shelf O-ring cord stock that is affixed into our laser cut welded grooves. No adhesives or caulk are necessary. Our vulcanized one-piece constructed O-rings offer reliable and repeatable seals in materials suitable for your application.



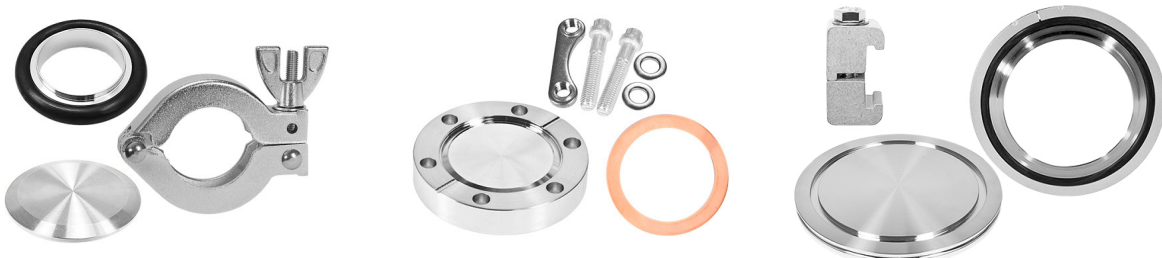
O-Ring Material	Specifications	Cost Factor
<b>High-Temperature Silicone</b>	Color: Orange or Grey Temp Range: up to 600° F (315° C) Chemical Resistance: Fair Sealing Difficulty: Easy	<b>standard</b>
<b>EPDM</b>	Color: Black Temp Range: up to 250° F (120° C) Chemical Resistance: Good Sealing Difficulty: Easy	<b>standard</b>
<b>Buna N</b>	Color: Black Temp Range: up to 250° F (120° C) Chemical Resistance: Good Sealing Difficulty: Fair	<b>\$</b>
<b>Viton</b>	Color: Black Temp Range: up to 400° F (200° C) Chemical Resistance: Excellent Sealing Difficulty: Fair to Difficult	<b>\$\$</b>
<b>Silicone Encapsulated FEP</b>	Color: Orange Temp Range: up to 450° F (232° C) Chemical Resistance: Excellent Sealing Difficulty: Difficult	<b>\$\$\$</b>
<b>Kalrez</b>	Color: White or Black Temp Range: up to 600° F (315° C) Chemical Resistance: Superior Sealing Difficulty: Easy	<b>\$\$\$\$</b>

## OPERATING PRESSURES

GTP has several operating pressure ranges depending on your processing requirements. From the standard range down to 1-Torr to ultra vacuum pressures exceeding  $10^{-8}$  Torr. All systems are Helium leak checked and conditioned for a minimum leak back integrity of no greater than  $5.00 \times 10^{-5}$  Torr/sec as measured by our NIST Traceable Leybold Phoenix L300i leak Detector.





Configuration	Specifications	Cost Factor
<b>Low Vacuum</b>	Continuous Operating Range: <ul style="list-style-type: none"> <li>• 760 to 1-Torr</li> <li>• 1013 to 1.3-mbar</li> <li>• NW / Ultra Torr Hardware</li> </ul>	<b>standard</b>
<b>Medium Vacuum</b>	Continuous Operating Range: <ul style="list-style-type: none"> <li>• 760 Torr to 1-mTorr</li> <li>• 1013 to .001 mbar</li> <li>• NW / Ultra Torr Hardware</li> </ul>	<b>\$</b>
<b>High Vacuum</b>	Continuous Operating Range: <ul style="list-style-type: none"> <li>• <math>&lt; 1.0e-6</math> Torr</li> <li>• ConFlat / ISO Hardware</li> </ul>	<b>\$\$</b>
<b>Ultra High Vacuum</b>	Continuous Operating Range: <ul style="list-style-type: none"> <li>• <math>&lt; 5.0e-8</math> Torr</li> <li>• ConFlat/ ISO Hardware</li> </ul>	<b>\$\$\$</b>



## PANS AND TRAYS

Available in several configurations our shelving is custom made per your requirements.

<b>Configuration</b>	<b>Specifications</b>
<p data-bbox="386 632 480 667"><b>Pans</b></p> 	<p data-bbox="683 646 1292 751">Constructed of 300 Series Stainless Steel Coved corners for easy cleaning NSF listed</p> <p data-bbox="683 804 914 831">Available sizes:</p> <ul data-bbox="683 842 1224 1031" style="list-style-type: none"><li>• 21.00-in x 12.50-in x 2.50-in Deep</li><li>• 12.50-in x 10.25-in x 2.50-in Deep</li><li>• 7.00-in x 6.500-in x 2.50-in Deep</li><li>• 12.75-in x 7.00-in x 2.50-in Deep</li><li>• 10.25-in x 6.50-in x 2.50-in Deep</li></ul>
<p data-bbox="378 1276 483 1312"><b>Trays</b></p> 	<p data-bbox="683 1270 1292 1375">Constructed of 300 Series Stainless Steel Formed lip for easy removal from oven Rounded corners and edges</p> <p data-bbox="683 1428 914 1455">Available sizes:</p> <ul data-bbox="683 1465 997 1696" style="list-style-type: none"><li>• 11.00-in x 11.00-in</li><li>• 17.00-in x 17.00-in</li><li>• 17.00-in x 23.00-in</li><li>• 23.00-in x 23.00-in</li><li>• 29.00-in x 29.00-in</li><li>• 17.00-in x 35.00-in</li></ul>

# **SECTION 2**

## **Exterior Configuration**

## EXTERIOR STYLE



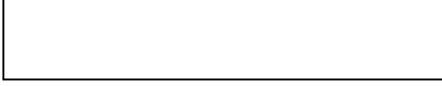

The exterior style should be selected based on the environment or location of the vacuum oven unit in your facility. Configurations include specialty locations, like clean rooms, as well as economical ones like a simple high strength finished steel table. All control enclosures carry a minimum rating of NEMA 12/13.

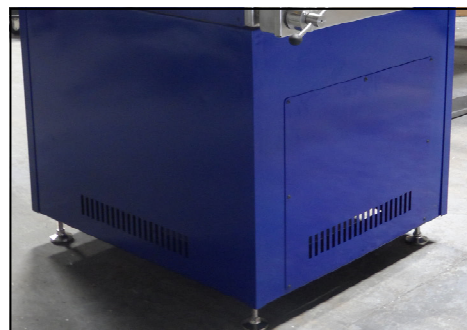
Type	Description	Cost Factor
<b>Table Top</b>	Offered on our 2GTS and A chassis units. The built in base frame with leveling mounts sits on a an existing bench or table in your facility.	<b>standard</b>
<b>Fully Enclosed</b>	Our standard steel frame fully enclosed with hinged / removable access panels on all sides.	<b>standard</b>
<b>Open Frame</b>	Fished steel frame open on all sides with lower shelf for ancillary equipment mounting.	<b>(-\$)</b>
<b>Floor Mount</b>	Used for extra large walk-in chambers, these structural pallets not only offer anchoring or leveling options but also maintain reasonable operating heights by locating its ancillary equipment in the rear compartment.	<b>\$</b>
<b>Clean Room</b>	Clean room trim-outs are available on all size models. A structural Aluminum flange is created around the perimeter of the Oven chassis.	<b>\$\$</b>
<b>Isolator Mount</b>	Used in conjunction with pharmaceutical product isolators. Specialized constructions with adaptive mating flanges.	<b>\$\$</b>



## EXTERIOR FINISHES

The exterior is constructed of either a powder coated carbon steel or #4 stainless steel shell attached to a robust structural support frame. Enclosed frames have bolt-on covers which allow easy access to user replaceable parts and ancillary equipment such as pumps, traps and heat exchangers.

Color	Sample	Cost Factor
ANSI-70 Grey		standard
RAL 5005 Blue		\$
RAL 9003 White		\$
#4 Stainless		\$\$



## MOUNTING TYPE

Mounting configurations are available in several different types depending on your logistical or set-up requirements. All hardware is mounted to a universal pad, except the anchor pad, in the event future changes are required.

Mounting Type	Sample	Cost Factor
Leveling Mount	 <p>High Capacity Leveling mount with mounting hole for additional anchoring.</p>	standard
Caster	 <p>Non-marring high strength, swivel casters.</p>	standard
Caster / Leveling Mount Combo	 <p>Combination caster and leveling mount provide both logistics and set-up in one unit.</p>	\$
Anchor Pads	 <p>For anchoring in place without the need for leveling.</p>	\$\$
Seismic Restraints	 <p>Typically required in seismic zones. These units are high strength and fully approved.</p>	\$\$\$

# **SECTION 3**

## **Control Configuration**

## CONTROL TYPE

GTP features the best in industrial process control. We utilize technologies like cascade temperature control, profile programmability, operator security, data trending and a self diagnostic system status.

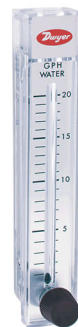
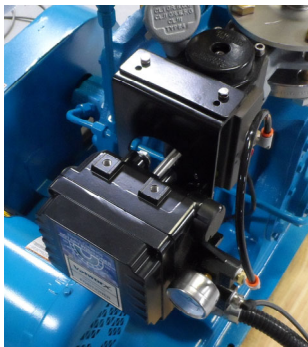


Configuration	Specifications	Cost Factor
<p><b>Basic</b></p> <p>Use for general single set-point applications with 1 or 2 shelves</p>	<p>Programmable Ramp &amp; Soak Controller with the following features:</p> <ul style="list-style-type: none"> <li>• 4.3" Color touchscreen</li> <li>• 40 (50)-step Profiles</li> <li>• Built-in FM approved over-temperature control</li> </ul>	<p><b>standard</b></p>
<p><b>Intermediate</b></p> <p>Use for multiple shelves, extended atmosphere control, and fluid heating</p>	<p>PLC-based Programmable Controller with the following features:</p> <ul style="list-style-type: none"> <li>• 5.7" color HMI interface</li> <li>• Unlimited (20)-step Profiles</li> <li>• Built-in FM approved over-temperature control</li> <li>• Graphical trending</li> </ul>	<p><b>\$</b></p>
<p><b>Advanced</b></p> <p>Use for multiple shelves, extended atmosphere control, fluid heating and condenser systems</p>	<p>Programmable Ramp &amp; Soak Controller with the following features:</p> <ul style="list-style-type: none"> <li>• 7.5" Color touchscreen</li> <li>• Unlimited (20)-step Profiles</li> <li>• Built-in FM approved over-temperature control-PLC based</li> <li>• Graphical trending &amp; data logging</li> </ul>	<p><b>\$\$</b></p>

## EXTENDED ATMOSPHERIC CONTROL

GTP offers the widest range of configurations for atmospheric control on the market. Meeting the needs of atmospheric control is one of the most important aspects of your process .

Configuration	Specifications	Cost Factor
<b>Backfill with ambient atmosphere</b>	Using a bellows seated isolation valve when opened allows the chamber to equalize pressure using the surrounding atmosphere	<b>standard</b>
<b>Backfill with inert gas</b>	Using a bellows seated isolation valve when opened allows the chamber to equalize pressure using a factory supply of inert gas	<b>\$</b>
<b>Exhaust chamber to atmosphere</b>	Use this valve in conjunction with a sweep valve to lower O2 content or remove volatiles .	<b>\$</b>
<b>Sweep to Vacuum Pump</b>	This feature is also used in conjunction with a sweep valve to better promote the removal of contaminants using the vacuum pump	<b>\$</b>
<b>Sweep Manual Rotameter</b>	Manual rotameters offer a simple manual flow control over a pressurized backfill gas or an ambient atmosphere vent	<b>\$</b>
<b>Sweep Electronic Rotameter</b>	This rotameter can be programmed to offer multiple flow rates that can be triggered during a profile	<b>\$\$</b>
<b>Vacuum Throttle</b>	Vacuum inlet throttle valves are used when establishing flowrates used in processes that require vacuum pump condensing.	<b>\$\$\$</b>



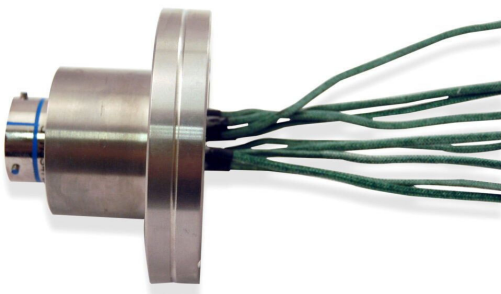
## **INSTRUMENTATION FEEDTHROUGHS**

Used in conjunction with our validation and accessory ports these process feed-throughs can be used to expand your processing capabilities.

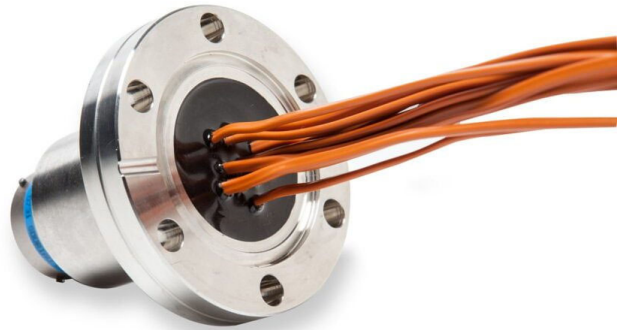
Available in a variety of flanges. These feedthroughs can be configured for liquids, electrical signal or power, and popular temperature sensor types

Details for types and sizes are typically configured at time of order

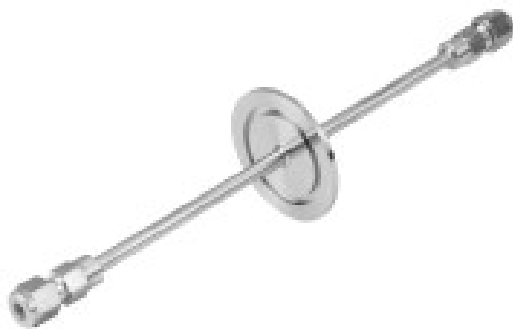
**ELECTRICAL  
SIGNAL**



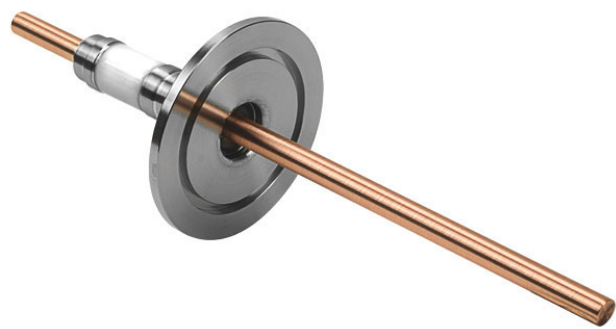
**TEMPERATURE SENSOR**



**LIQUIDS**



**ELECTRICAL  
POWER**



## DATA LOGGING & TRENDING

We recognize the need for process validation. That is why we offer the ability to integrate trend and data logging into our systems.

Configuration	Specifications	Cost Factor
<b>Integrated Graphical Trending</b>	<ul style="list-style-type: none"> <li>Utilizes existing control system touchscreen</li> <li>Ethernet ready ; MODBUS protocol</li> <li>Up to 4 channels of trending</li> <li>Used to monitor critical process values</li> <li>Non-exportable data</li> </ul>	<b>standard</b>
<b>Integrated Trend &amp; Data Logging</b>	<ul style="list-style-type: none"> <li>Utilizes existing control system touchscreen</li> <li>Ethernet ready; MODBUS protocol</li> <li>Up to 4 channels of trending &amp; data</li> <li>USB and Network exportable data</li> </ul>	<b>\$</b>
<b>Stand Alone Trend &amp; Data Logger</b>	<ul style="list-style-type: none"> <li>4.3" color touch screen</li> <li>Ethernet ready; MODBUS protocol</li> <li>Up to 16 channels of trending &amp; data</li> <li>USB and Network exportable data</li> <li>Encrypted Data; 21 CFR part 11 ready</li> </ul>	<b>\$\$</b>



# **SECTION 4**

## **Vacuum Pumping**

## ROUGHING PUMP TYPE

We can provide and fully integrate several styles of vacuum roughing pumps into your system based on your processing requirements. Integration includes, plumbing, all necessary hardware and electrical devices to properly connect and control your pumping needs.

Pump Type	Specifications	Cost Factor
<b>No Pump Connection Only</b>	When using your own in-house vacuum system we can simply provide a NW vacuum port connection with a controlled isolation valve.	<b>standard</b>
<b>Rotary Vane</b>	Pumping Speed: up to 12.3 cfm (410 lpm) Ultimate Pressure: 2.0 x 10 <sup>-3</sup> Torr Oil Filled Process type pump GTP Standard: Agilent DS-402	<b>\$</b>
<b>Dry Scroll</b>	Pumping Speed: up to 18.2 cfm (500 lpm) Ultimate Pressure: 1.0 x 10 <sup>-2</sup> Torr Dry Pump for clean applications GTP Standard: Agilent Triscroll 300	<b>\$ - \$\$</b>
<b>Rotary Piston</b>	Pumping Speed: up to 33 cfm (934 lpm) Ultimate Pressure: 1.0 x 10 <sup>-2</sup> Torr Oil Filled Process type pump GTP Standard: Kinney Tuthill KD-30	<b>\$\$</b>
<b>Rotary Screw</b>	Pumping Speed: up to 76 cfm (2152 lpm) Ultimate Pressure: 7.5 x 10 <sup>-3</sup> Torr Dry heavy duty pump GTP Standard: Busch Cobra NC0100B	<b>\$\$\$</b>

**AGILENT  
DS-402**



**AGILENT  
TRISCROLL  
300 / 600**

**TUTHILL  
KD-30**



**BUSCH  
COBRA NC0100B**

## FORELINE TRAPS

Different applications require different vacuum Foreline trapping capabilities. We have installed and integrated everything from simple filters to complex automated condensers.



Trap Type	Specifications	Cost Factor
<p><b>Filter Element</b></p>	<p>GTP utilizes the Mass Vac POSI-TRAP for filter element Foreline trapping. Element types include:</p> <ul style="list-style-type: none"> <li>• Metal Gauze - its large surface area is good for removing condensable particles and oil vapors</li> <li>• Poly-Pro Micron Filters - traps high volumes of particulates</li> <li>• Absorption Media - includes charcoal, zeolite, and soda-sorb of which can neutralize acidic vapors, remove organic vapors and trap water</li> </ul>	<p>\$</p>
<p><b>Water Cooled Condensate Trap</b></p>	<p>Water-cooled traps protect roughing pumps and other downstream components from condensable process gasses and their byproducts. Depending on the application, house water, refrigerated water or glycol can be used to achieve the required temperature to cause by-products to pass from gas to solid phase. This is recommended for small amounts of condensable(s)</p>	<p>\$\$</p>
<p><b>Automated Condensate Recovery System</b></p>	<p>System is constructed to remove condensable(s) from the gas stream using a ultra low temp fluid tube and shell heat exchanger. Condensable(s) are collected in an accumulator until full then transfers to a collector tank where it is stored at ambient temperature and pressure. Once the cycle is completed the collector tank can then be pumped to a waste storage container.</p>	<p>\$\$\$</p>

# **SECTION 5**

## **Model Specifications**

# model GTC

## PHYSICAL SPECIFICATIONS

Model	2GTC	4GTC	10GTC	27GTC	64GTC	80GTC
<b>Specification</b>						
<b>Interior Size Cubic Feet (liters)</b>	1.6 (45.3)	4.5 (127)	8 (226)	27 (764)	64 (1812)	80 (2265)
<b>Interior Width (mm)</b>	12.0 (304)	18 (457)	24 (609)	36 (914)	48 (1219)	48 (1219)
<b>Interior Height (mm)</b>	12.0 (304)	18 (457)	24 (609)	36 (914)	48 (1219)	60 (1524)
<b>Interior Depth (mm)</b>	20 (508)	24 (609)	30 (762)	36 (914)	48 (1219)	48 (1219)
<b>Shelf Width (mm)</b>	11.5 (292)	17.5 (444)	23.5 (597)	35.5 (901)	47.5 (1206)	47.5 (1206)
<b>Shelf Depth (mm)</b>	18 (457)	22.5 (571)	29.5 (749)	35.5 (901)	47.5 (1206)	47.5 (1206)
<b>Shelf Square ft.</b>	1.4	2.7	4.8	8.5	14.6	14.6
<b>MAX no. Oil Heated Shelves</b>	0	6	9	9	12	16
<b>MAX no. Electrically Heated Shelves</b>	2	4	6	0	0	0
<b>Exterior Width (mm)</b>	24 (609)	48 (1219)	48 (1219)	62 (1574)	72 (1828)	72 (1828)
<b>Exterior Height (mm)</b>	24 (609)	64 (1625)	64 (1625)	82 (2082)	90 (2286)	84 (2133)
<b>Exterior Depth (mm)</b>	30 (762)	42 (1066)	42 (1066)	56 (1422)	60 (1524)	60 (1524)
<b>Exterior dimensions includes fully enclosed base except the 2GTC which is a table top</b>						

## LAYOUT OPTIONS

- Reversible Hinges
- Viewing Ports
- Standalone Approved Over-temp Controller



## PROCESS & UTILITY SPECIFICATIONS

Specification \ Model	2GTC	4GTC	10GTC	27GTC	64GTC	80GTC
<b>Standard Interior Material</b>	304L stainless	304L stainless	304L stainless	304L stainless	304L stainless	304L stainless
<b>Temperature Range Oil</b>	30 to 125° C	30 to 125° C	30 to 125° C	30 to 125° C	30 to 125° C	30 to 125° C
<b>Temperature Range Electric</b>	38 to 315° C	38 to 315° C	38 to 315° C	38 to 315° C	38 to 315° C	38 to 315° C
<b>Heating Rate (under vacuum)</b>	100° C <10-min	100° C <20-min	100° C <20-min	100° C <35-min	100° C <45-min	100° C <60-min
<b>Control Temp Stability @ 100° C</b>	±0.3°C	±0.5°C	±0.5°C	±0.4°C	±0.3°C	±0.3°C
<b>Temperature Uniformity @ 100° C</b>	±3.5°C	±3.5°C	±3.5°C	±4.0°C	±5.0°C	±5.5°C
<b>Pressure Capability ( low range)</b>	760 to <1-Torr	760 to <1-Torr	760 to <1-Torr	760 to <1-Torr	760 to <1-Torr	760 to <1-Torr
<b>Electrical Requirements based on max number of shelves:</b>						
<b>Power Supply 120V</b>	1-kW 9A	•	•	•	•	•
<b>Power Supply 208/240V 1ø</b>	1-kW 5A	4.5-kW 21A	•	•	•	•
<b>Power Supply 208/240V 3ø</b>	•	4.5-kW 12A	9-kW 25A	12-kW 34A	•	•
<b>Power Supply 480V 3ø</b>	•	4.5-kW 6A	9-kW 12A	12-kW 16A	18-kW 22A	24-kW 28A
<b>Does not include amp loads for vacuum pumps or other ancillary equipment</b>						
<b>Utility Requirements:</b>						
<b>Compressed Air</b>	70-psi	70-psi	70-psi	70-psi	70-psi	70-psi
<b>Cooling Water (if required)</b>		20-psi 2-gpm	20-psi 3-gpm	30-psi 4-gpm	30-psi 6-gpm	30-psi 6-gpm

**Discuss your application further**

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