

Gaseous Nitrogen Thermal Conditioning Units



Dynavac Gaseous Nitrogen Thermal Conditioning Units are operating in aerospace facilities around the globe providing exacting control of thermal vacuum test environments.

Using a closed loop, forced convection method, our suite of standard units enables much flexibility in executing a variety of test profiles over a wide operating range. Whether it's a cold plate or complete thermal vacuum test facility, Dynavac TCUs provides the thermal performance needed to prepare flight hardware for launch.

System Highlights

- Controllable from -180C to 150C using a centrifugal blower and electric resistance heater to control the temperature of the gas stream
- Heat exchanger option for facilities with low-pressure delivery of liquid nitrogen
- Enables exceptional thermal control and uniformity of test hardware
- Adjustable blower speeds to reduce LN₂ consumption during steady state operation
- TCU-100-HP provides highly efficient operation for hardware with smaller extrusion and supply lines
- Onboard PLC-based control system enables setpoint control of test parameters and profiles
- Low maintenance, energy efficient operation
- Thermal hardware design and manufacturing services

The flawless performance you expect

From the most respected name in thermal vacuum systems: Dynavac





Specifications

Performance Specifications

	TCU-100	TCU-100-HP	TCU-400	TCU-500	TCU-1000	TCU-1500
Flow Rate	100 cfm	100 cfm	400 cfm	500 cfm	1,000 cfm	1,500 cfm
Differential Pressure (inches- H ₂ O)	40	220	40	80	80	80
Mass Flow (lbm/hr)	2,000	2,000	7,200	9,000	18,000	27,000
Refrigeration Capacity (kW@ -150)	14	14	30	50	80	130
Heater (kW)	12	4.5	21	45	60	90
Motor Size (hp)	3	6.5	5	15	25	40
Operating Pressure (psig)	5-80	5-80	5-80	5-80	5-80	5-80
Power Requirements	480V, 40A, 3ph, 60Hz	480V, 50A, 3ph, 60Hz	480V, 60A, 3ph, 60Hz	480V, 150A, 3ph, 60Hz	480V, 250A, 3ph, 60Hz	480V, 250A, 3ph, 60Hz
Size (in)	W: 30 H: 60 L: 48	W: 30 H: 60 L: 60	W: 30 H: 84 L: 82	W:42 H: 84 L: 88	W:42 H: 84 L: 88	W:42 H: 84 L: 88
Weight (lbs)	1500	2300	2000	2750	2750	2750

All Dynavac TCU Products have an operating range of -180 to 150C. The TCU-100-HP is also equipped with an auxiliary LN₂ zone for operation at -196C.

Utility Requirements

	TCU-100	TCU-100-HP	TCU-400	TCU-500	TCU-1000	TCU-1500
Cooling Water	1.5 gpm nominal	Built-in Chiller	2.0 gpm nominal	2.0 gpm nominal	2.0 gpm nominal	2.0 gpm nominal
Compressed Air	80-100 psi @ 3 cfm	80-100 psi @ 3 cfm	80-100 psi @ 3 cfm	80-100 psi @ 3 cfm	80-100 psi @ 3 cfm	80-100 psi @ 3 cfm
GN ₂	80-100 psi @ 5 cfm	80-100 psi @ 5 cfm	80-100 psi @ 5 cfm	80-100 psi @ 5 cfm	80-100 psi @ 5 cfm	80-100 psi @ 5 cfm
LN ₂ - Low Pressure - Heat Exchanger	≤25 psi	≤25 psi	≤25 psi	≤25 psi	≤25 psi	≤25 psi
LN ₂ - High Pressure - Direct Injection	>90 psi	>90 psi	>90 psi	>90 psi	>90 psi	>90 psi