

POLYCOLD SYSTEMS

HELIX TECHNOLOGY CORPORATION



CRYO**TIGER**[®]





System Description

The CRYOTIGER® cooling system is a compact, high performance device capable of continuously cooling and maintaining temperatures to as low as -203° Celsius (70 Kelvin) without the need to replace gas or liquid. The entire closed cycle system consists of a cold end, compact compressor, and two gas transfer lines.

Electricity is the only utility required for operation and this is only needed for the compressor -- the cold end delivers maximum cooling right where you need it with a minimal footprint. The CRYOTIGER® system has a temperature range of -203° to 20° Celsius (70-293 Kelvin).

Never Use Liquid Nitrogen for Cooling Again!



Compressor and Gas Lines

CRYOTIGER® systems utilize a compact yet robust compressor designed for years of continuous operation. Polycold Systems has taken this technology to the next level by using it with our patented gas blends and unique oil filtration to deliver unparalleled reliability in uninterrupted, economical, cryogenic cooling.

- Compact and portable; the compressor can be located up to 100 feet from the cold end (by using optional copper gas lines).
- Air cooled, quiet operation (56 dBA)
- Self-sealing gas couplings allow for quick and easy gas line hook-ups

Compressor

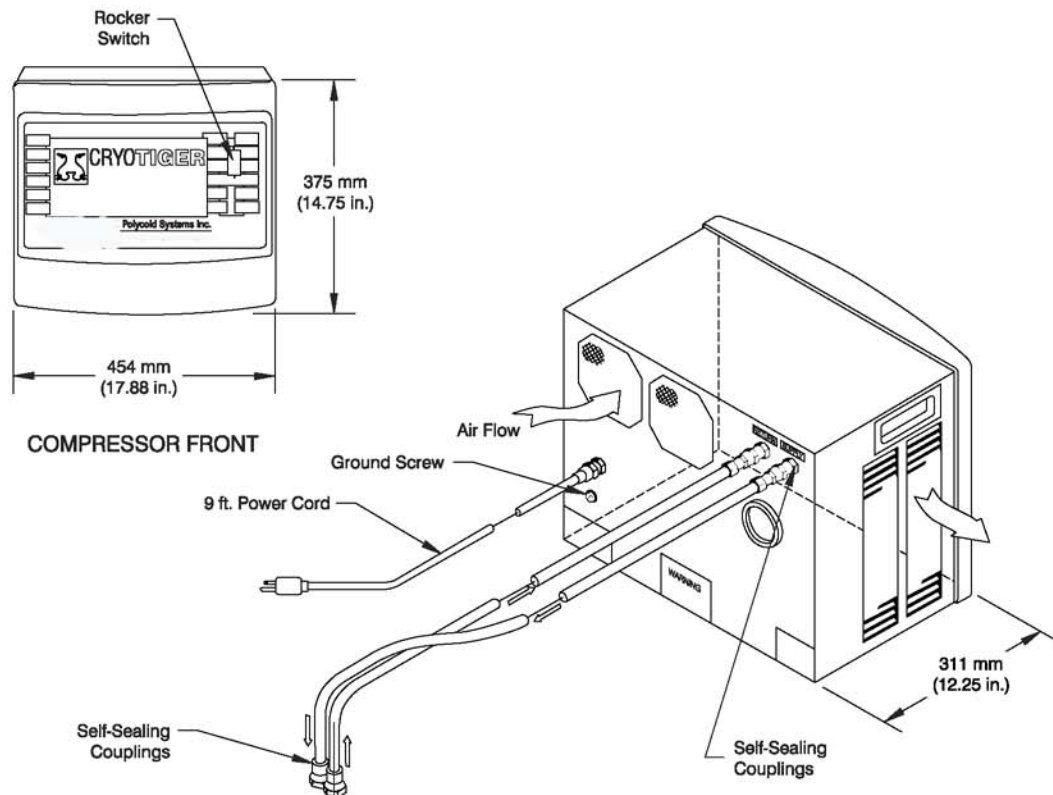
Weight is 32.2 kg (71 lbs.)
 All brazed joint construction for leak tight operation
 Base down orientation required (level to within 10 degrees)
 Power requirement is single phase, 50/60 Hz, 500 Watts nominal
 External switch allows you to select 100, 120, 220, 240 Volt operation
 CE, UL, cUL, SEMI F47, and SEMI S293A approved

Gas Lines

Braided Stainless Gas Lines
 Diameter = 12.9 mm (0.5 inch) nominal
 Lengths = 1.5, 3.1, 7.6, or 15.2 m (5, 10, 25, or 50 ft.)
 Bend radius = 76 mm (3 in.)
 System charge pressure at ambient is between 205-280 psig depending on the length of the gas line.

Accessories

Polycold provides a variety of accessories for your CRYOTIGER® compressor and gas lines, such as 90° and 180° adapters for gas lines and electrical line isolators. Please contact your local Polycold representative for more information.





Standard Cold End

Standard Cold End

CRYOTIGER® systems are available with several options for the user to select. The standard cold end is the most economical choice while also providing the widest range of performance capabilities. This cold end can also be used with all our gas blends, which each provide unique cooling capacities within specific temperature ranges.

High Performance Cold End

The high performance cold end is the perfect choice when more cooling power is required. Though slightly larger than the standard cold end, additional coils allow the unit to achieve greater cooling capacities within specific temperature ranges.



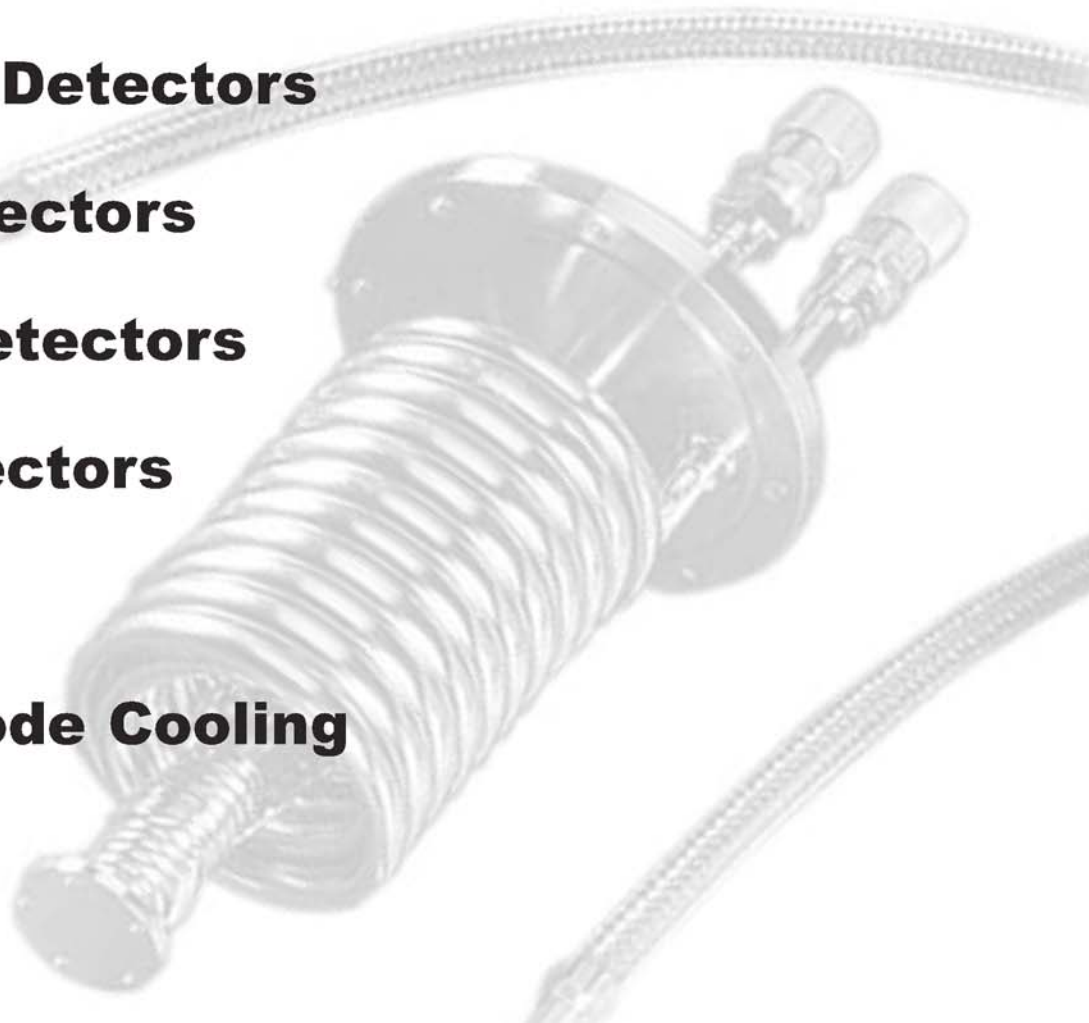
High Performance Cold End

Features common to both Cold Ends

- Available either nickel plated or mylar wrapped
- Rugged, all metal, non-magnetic design
- Maintenance free, no moving parts
- Can be used in any orientation and located remotely from the compressor
- Low vibration

Typical Cryotiger Cooling Applications

- **CCD and IR Detectors**
- **Gamma Detectors**
- **SEM EDX Detectors**
- **Raman Detectors**
- **FTIR**
- **IR Laser Diode Cooling**



General Specifications:

Weight = 1.4 kg (3.1 lbs.)
 Vacuum Insulation Requirement $\leq 10^{-4}$ torr
 Bakeable to 100°C
 Weight Supported at the Cold Tip ≤ 1.4 kg (3.0 lbs.)

Cooling Power/Temperatures:

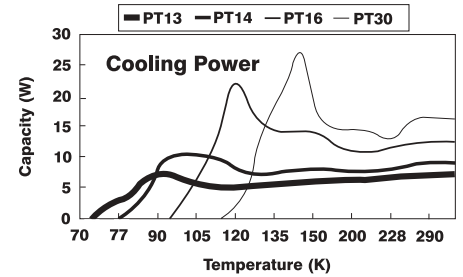
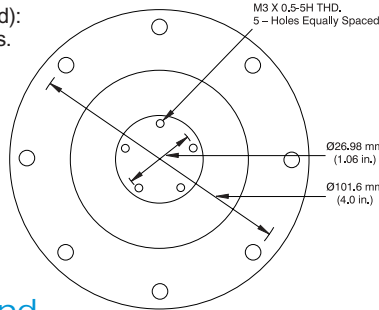
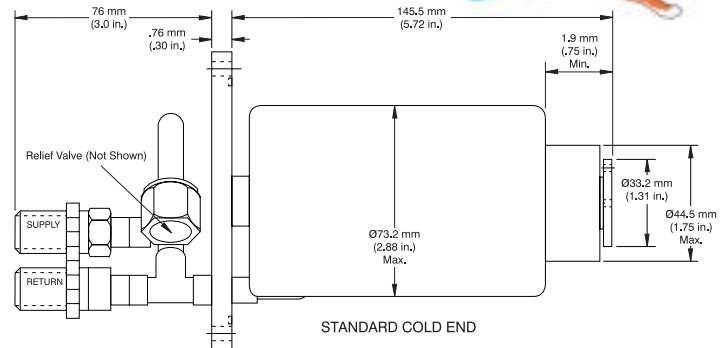
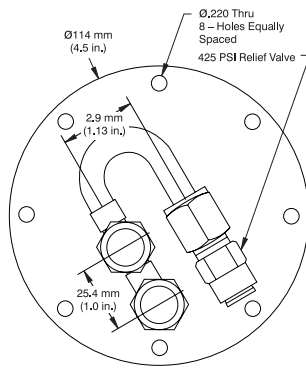
Cooldown Time of 30-45 Minutes to
 100 K (PT13/PT14)
 130 K (PT16/PT30)

Optimal Wattages/Temperatures of Each Gas Blend*:

- PT13=3 watts @ -196°C (77 K)
- PT14 = 10 watts @ -179°C (94K)
- PT16 = 22 watts @ -154°C (120 K)
- PT30 = 27 watts @ -128°C (145 K)

Temperature Stability (at 20°C with a steady load):
 +/- 0.5 Kelvin. Performance with 10' gas lines.

* 50Hz operation – derate by 17%



High Performance Cold End

General Specifications:

Weight = 1.8 kg (4.0 lbs.)
 Vacuum Insulation Requirement $\leq 10^{-4}$ torr
 Bakeable to 100°C
 Weight Supported at the Cold Tip ≤ 1.4 kg (3.0 lbs.)

Cooling Power/Temperatures:

Cooldown Times:
 50-75 minutes to 100 K (PT13/PT14)
 25-40 minutes to 130 K (PT16/PT30)

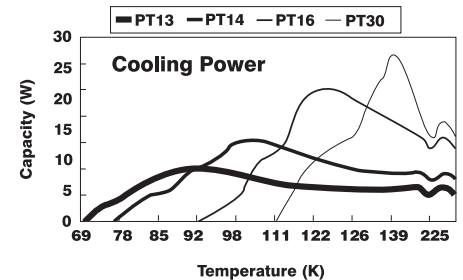
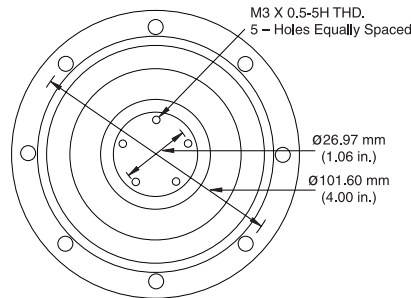
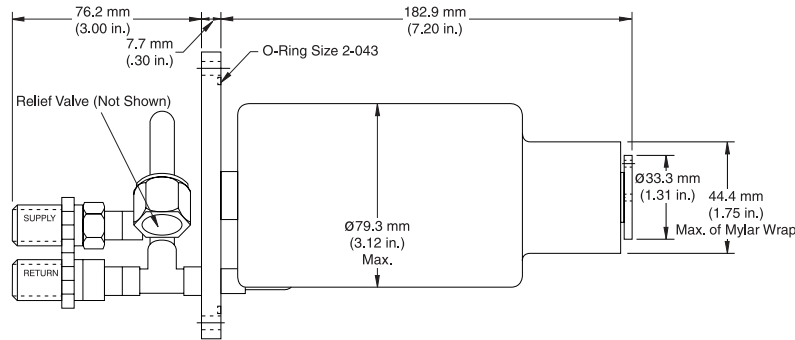
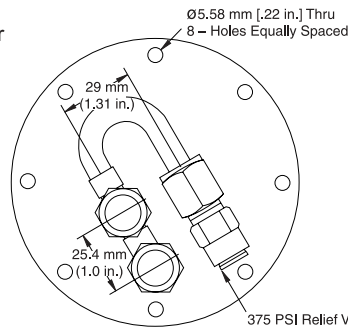
Optimal Wattages/Temperatures of Each Gas Blend*:

- PT13 = 3.5 watts @ -196°C (77 K)
- PT14 = 11.5 watts @ -179°C (94 K)
- PT16 = 24.5 watts @ -154°C (120 K)
- PT30= 30.0 watts @ -128°C (145 K)

Temperature Stability (at 20°C with a steady load):

+/- 0.5 Kelvin. Performance with 10' gas lines.

* 50Hz operation – derate by 17%



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