

POLYCOLD® PCC COMPACT COOLERS

EFFICIENT HEAT REMOVAL
FOR DEMANDING APPLICATIONS

www.hakuto-vacuum.cn
www.hakuto-vacuum.com.tw

The Polycold® PCC is a compact, high-performance cooling system that brings efficiency and reliability to your applications. PCC delivers proven, dependable cooling and is designed to ensure repeatable performance and minimise maintenance costs. Its compact design and remote cold end give you a robust system with a small footprint. This low-vibration heat removal system is capable of maintaining temperatures as low as -203° C (70 Kelvin).

PCC Components

Cold End: The rugged, low-vibration PCC cold end can be used in any orientation, and located remotely from the compressor. Available nickel plated or Mylar wrapped. For PT blends, options include standard or high performance.

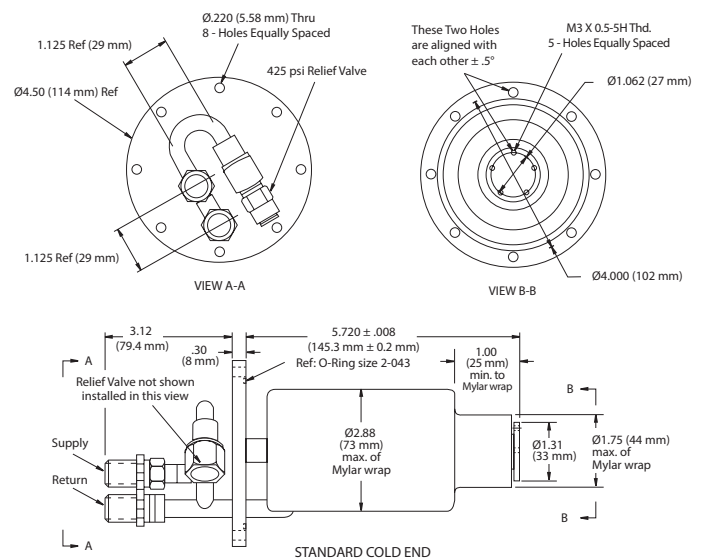
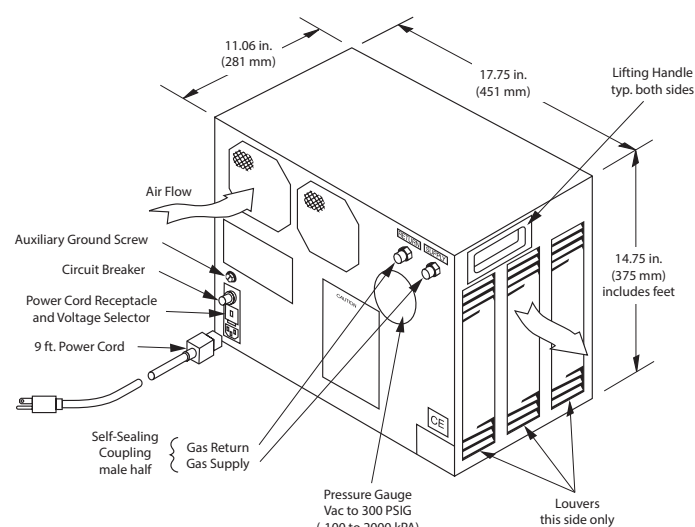
Compressor: The closed cycle PCC compressor uses patented gas blends and innovative oil management for quiet and reliable performance in a small footprint. Electricity is the only utility required for operation.

Gas Lines: Self-sealing couplings ensure quick and easy hook-up, and the compressor can be located up to 120 feet from the cold end. Refrigerant travels through the gas lines at room temperature.

Refrigerant Blends: Different patented mixed gas refrigerant blends tailor the temperature and cooling capacity for a wide variety of applications.



Polycold® PCC Compact Cooler Compressor,
Gas Lines and Cold End



Features and Benefits

- Compact size, remote cold end and minimal connections make this a smart solution for most applications
- Low vibration
- Cooling to -203°C (70 K)
- Rapid cooldown
- Eliminates the need for liquid nitrogen

Compressor and Gas Lines

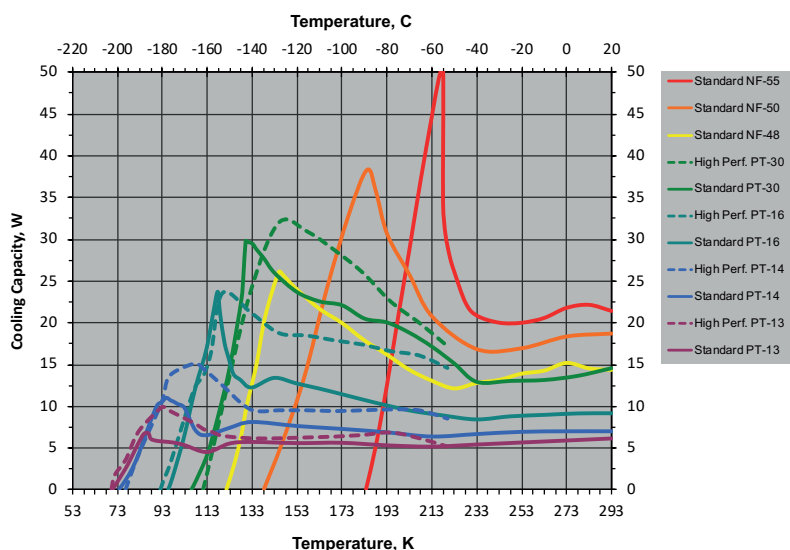
| Compressor | |
|--|--|
| Weight | 31.1 kg (68.5 lbs.) |
| Orientatio | Base down required (level to within 10°) |
| Power requirement | Single phase, 50/60 Hz, 500 Watts nominal. External switch allows you to select 100, 120, 220, or 240 Volt operation |
| Cooling | Air-cooled |
| Agency approvals | CE, NRTL, SEMI S2, SEMI F47 |
| Gas Lines | |
| Construction | Braided stainless steel |
| Diameter | 0.5 inch (12.9 mm) nominal |
| Lengths | 5, 10, 25, 50 or 75 ft (1.5, 3.1, 7.6, 15.2 or 22.9 m) |
| Minimum static centerline bend radius | 4 in. (102 mm) |
| Maximum distance from cold end to compressor | 120 Å |

Accessories

Edwards provides a variety of accessories for the PCC system, including 90° adapters for gas lines, electrical line isolators and line-to-line connectors.

Performance

PCC Cooling Capacities at 60Hz



Standard Cold End Specifications

| | |
|----------------------------------|-------------------------|
| Weight | 1.5 kg (3.2 lbs.) |
| Vacuum insulation requirement | $\leq 10^{-4}$ torr |
| Weight supported at the cold tip | ≤ 1.4 kg (3.0 lbs) |
| Orientatio | Any |

NF blends*

Cooldown Time (with no load):

NF-55: -55°C (218 K) in 7 minutes
 NF-50: -89°C (184 K) in 11 minutes
 NF-48: -128°C (145 K) in 19 minutes

Maximum cooling capacity for each gas blend:

NF-55: 50 Watts @ -55°C (218K)
 NF-50: 38 Watts @ -89°C (184K)
 NF-48: 26 Watts @ -128°C (145K)

Temperature Stability:

+/- 1.0 K. Performance with 10' Gas Lines.

*NF indicates non-flammable gases.

PT blends

Cooldown Time (with no load):

PT-30: -144°C (129K) in 22 minutes
 PT-16: -156°C (117K) in 26 minutes
 PT-14: -177°C (96K) in 45 minutes
 PT-13: -187°C (86K) in 61 minutes

Maximum cooling capacity for each gas blend:

PT-30: 29 Watts @ -144°C (129K)
 PT-16: 23 Watts @ -156°C (117K)
 PT-14: 10 Watts @ -177°C (96K)
 PT-13: 6 Watts @ -187°C (86K)

Temperature Stability:

+/- 1.0 K. Performance with 10' Gas Lines.

Note: 50 Hz operation may derate cooling capacity.

High Performance Cold End Specifications

| | |
|----------------------------------|-------------------------|
| Weight | 1.8 kg (4.0 lbs.) |
| Vacuum insulation requirement | $\leq 10^{-4}$ torr |
| Weight supported at the cold tip | ≤ 1.4 kg (3.0 lbs) |
| Orientatio | Any |

Cooldown Time (with no load):

PT-30: -128°C (145K) in 19 minutes
 PT-16: -153°C (120K) in 25 minutes
 PT-14: -166°C (107K) in 35 minutes
 PT-13: -179°C (94K) in 54 minutes

Maximum cooling capacity for each gas blend:

PT-30: 32 Watts @ -128°C (145K)
 PT-16: 24 Watts @ -153°C (120K)
 PT-14: 15 Watts @ -166°C (107K)
 PT-13: 7 Watts @ -179°C (94K)

Temperature Stability:

+/- 1.0 K. Performance with 10' Gas Lines.

Note: 50 Hz operation may derate cooling capacity.

伯东企业（上海）有限公司 销售及售后服务中心

上海浦东新区新金桥路1888号36号楼7楼702室

电 话: +86-21-5046-3511 / 139-1883-7267

传 真: +86-21-5046-1490

官 网: <http://www.hakuto-vacuum.cn>





伯东企业（上海）有限公司
HAKUTO ENTERPRISES (SHANGHAI) LTD.
TEL: (86) 21-5046 3511 TEL: (86) 21-5046 1322

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伯东企业（上海）有限公司 销售及售后服务中心

上海浦东新区新金桥路1888号36号楼7楼702室

电 话：+86-21-5046-3511 / 139-1883-7267

传 真：+86-21-5046-1490

官 网：<http://www.hakuto-vacuum.cn>



伯东企业（上海）有限公司 深圳办事处 销售中心

深圳市罗湖区宝安南路1036号鼎丰大厦501

电 话：+86- 0755-2547-3988. 643

传 真：+86-21-5046-1490

伯东企业（上海）有限公司 北京办事处 销售中心

北京丰台区芳群园四区22号楼金城中心705室

电 话：+86- 010-8768-4988

传 真：+86-21-5046-1490