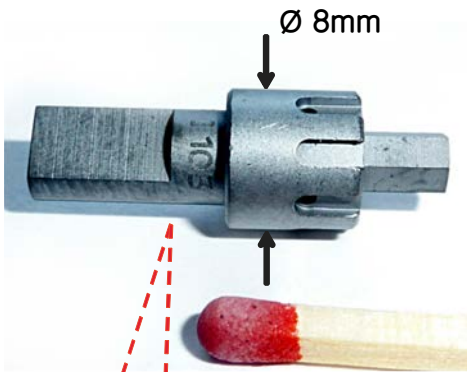


ATLAS

ULTRA-COMPACT FITTING SOLUTION FOR CO₂ COOLING SYSTEMS



The LAPP-ATLAS-IBL fitting was originally designed and produced for the CO₂ cooling circuit of the innermost detector of the ATLAS experiment, used for tracking particles at the Large Hadron Collider.

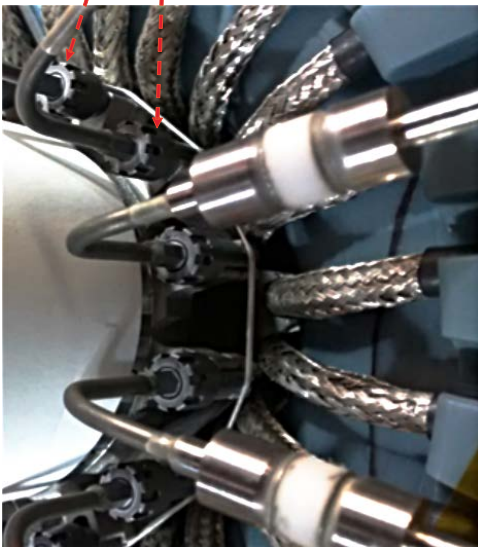
- Direct metal to metal tightness
- Composed of 3 components (cone, sphere, nut)
- Ultra-compact : 10mm and 8 mm Nut Outer Diameter
- Can be welded on a titanium pipe (Ø up to 3mm)
- Can be mounted/dismounted up to 20 times

DESCRIPTION

It has been designed to fit inside a limited volume with minimal material budget. It can be used for any application that needs compact metallic connection both for gas and liquid circuits with very low leak rates at low temperatures. The data sheet corresponds to validated performances.

DATA SHEET (ATLAS validated specifications)

- Maximum leak rate (He) : 10^{-8} mbar.l.s⁻¹ @ 20bar
- Working temperature : -45°C to +30°C
- Radiation level : up to 1 Grad
- Pressure : up to 150 bar
- Pipe material : Titanium grade 2 (Electron beam welded)
- Safe mounting/dismounting : 20 times
- Tightening torque : ~ 2.5 N.M (8 mm Nut Outer Diameter)



LAPP-ATLAS-IBL fittings in-situ

Ti-ceramic-stainless steel isolator acting as electrical break
Prevents electromagnetic perturbations from going in the ATLAS detector

Related development

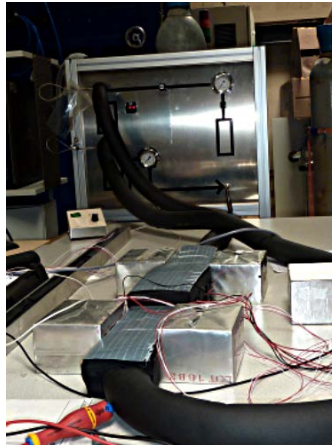
Tightening tool is also available by courtesy of LPNHE (Laboratoire de Physique Nucléaire et des Hautes Énergies, IN2P3-CNRS, UPMC)



Production & Qualification

Resulting from research developments, this new fitting has been qualified according to industrial standards. The overall production and qualification process has been reviewed by CETIM (Technical center for the mechanical industry).

Industrial expertise by :



LAPP qualification setups

Further development

Development to integrate an electrical isolator (ceramic) in series with the fitting is in progress.



Applications

As CO2 cooling is becoming the baseline technology for particle physics detectors, the technology started to be widely used in various industrial domains such as :

- Space and aeronautics
- Automotive industries
- High pressure cooling systems



Contact information

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