Cyclone™ Series- Heatable Long Pathlength Gas Cells

The Cyclone™ series of fixed and variable long pathlength gas cells is the ultimate in sampling accessories for measuring the infrared spectra of gases and vapors.

Designed for use at a wide range of temperatures and pressures, they are the ideal choice for the analyst who demands superior performance characteristics ,high standard specifications and in-built upgradeability.

Based on the White cell principle of multiple light passes between an arrangement of reflecting mirrors, Cyclone™ gas cells are available in three sizes:

- Cyclone™ C2 Fixed or variable pathlengths ranging from 0.5m to 2.5m
- Cyclone™ C5 Fixed or variable pathlengths ranging from 1m to 8m
- Cyclone™ C10 Fixed or variable pathlengths ranging from 2.1m to 10.6m.

Cyclone™ series gas cells are suitable for operation in all modern FT-IR spectrometers using a Benchmark™ baseplate provided as standard.

Cells are available as standard with a borosilicate glass body for operation at ambient temperatures and pressures ranging from vacuum to 15 p.s.i. Protected gold mirrors, internal and external components made from nickel-plated aluminium and stainless steel, and Viton® 'O' rings are combined to ensure the highest chemicals compatibility and protection from leaks. Vacuum / gas inlet and outlet taps, KBr windows and a purgeable transfer optics box further enhance this already highly featured range.

Unsurpassed Upgradeability: Cyclone's™ impressive list of optional features means that any analytical challenge can be met:

- Variable pathlength mirror carriages, and a range of fixed pathlength mirror carriages can be used within a single gas cell body to greatly enhance analytical flexibility and reduce costs.
- Nickel-plated aluminium bodies can be specified for high pressure operation up to 125 psi.
- Heating jackets / high stability temperature controllers allow operation at temperatures up to200°C.
- Purge bellows allow the transfer optics to be used under inert gas atmospheres (e.g. nitrogen) in applications where the elimination of atmospheric H2O and CO2 absorbances is required.

Design Excellence: To ensure perfect operation and freedom from unwanted impurities, a number of unique features have been incorporated into the design and manufacture of the Cyclone™ series. The cells are completely free from adhesives and all of the Viton®'O' ring seals are carefully pre-baked to solvents or out-gassing. Internal screws have small bleed holes drilled into them to prevent any trapped pockets of gas causing sample cross contamination.

CE Compliance: All Cyclone™ series heated gas cell systems are CE compliant ensuring that they can be operated safely at all times under the recommended conditions.

Cyclone™ Overview of Specifications

Cyclone™ C2 Version

Pathlength:	0.5m - 2.5m (fixed or variable)
Pathlength steps:	0.5m
Volume:	0.19 liters
Cell body material:	Borosilicate glass (optional metal body)
Pressure range:	Vacuum to 15 p.s.i. (optional 125 p.s.i.)
Temperature range:	Ambient (optional heated systems available)
Mirrors:	Gold (protected)
Windows:	KBr (optional ZnSe or CaF_2)
Inlet/outlet fittings:	Stainless steel taps
'O' rings:	Viton®
Internal components:	Nickel-plated aluminium & stainless steel
Transfer optics:	Aluminium mirrors in purgeable optics box
Cell mount:	Benchmark™ series baseplate
Dimensions (mm):	H384 W153 D120

Cyclone™ C5 Version

Pathlength:	1m - 8m (fixed or variable)
Pathlength steps:	1m
Volume:	1.33 liters
Cell body material:	Borosilicate glass (optional metal body)
Pressure range:	Vacuum to 15 p.s.i. (optional 125 p.s.i.)
Temperature range:	Ambient (optional heated systems available)
Mirrors:	Gold (protected)
Windows:	KBr (optional ZnSe or CaF_2)
Inlet/outlet fittings:	Stainless steel taps
'O' rings:	Viton®
Internal components:	Nickel-plated aluminium & stainless steel
Transfer optics:	Aluminium mirrors in purgeable optics box
Cell mount:	Benchmark™ series baseplate
Dimensions (mm):	H536 W153 D130

Cyclone™ C10 Version

Pathlength:	2.1m - 10.6m (fixed or variable)
Pathlength steps:	1.06m
Volume:	2.6 liters
Cell body material:	Borosilicate glass (optional metal body)
Pressure range:	Vacuum to 15 p.s.i. (optional 125 p.s.i.)
Temperature range:	Ambient (optional heated systems available)
Mirrors:	Gold (protected)
Windows:	KBr (optional ZnSe or CaF_2)
Inlet/outlet fittings:	Stainless steel taps
'O' rings:	Viton®
Internal components:	Nickel-plated aluminium & stainless steel
Transfer optics:	Aluminium mirrors in purgeable optics box
Cell mount:	Benchmark™ series baseplate
Dimensions (mm):	H540 W153 D146

Cyclone™ Series Optional Features

Cyclone™ series heatable long pathlength gas cells have been designed with the serious analyst in mind. These high performance, superior quality cells are backed by a comprehensive range of optional upgrades ensuring that they meet every analytical challenge.

Purge Belows

A pair of purge bellows is available for the Cyclone™ series gas cells. These fit between the optics box of the cell and the spectrometer to allow the purging of transfer optics with inert gases such as nitrogen.

This feature allows absorbances due to atmospheric H2Oand CO2to be eliminated from spectral measurements.

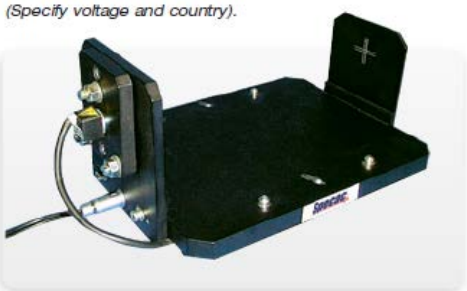
These bellows are designed to fit all Bench-mark™ sampling accessories.

Laser Alignment Accessory

This accessory allows the visual verification of the optical pathlength through Cyclone™ series gas cells. This is especially useful when different pathlengths are regularly used with variable pathlength cells.

The accessory is based on a low power (0.8mW)visible continuous wave LED precisely located in position in a Benchmark™ accessory alignment housing. The gas cell simply slots into the alignment accessory. The 635nm Class II laser can be powered from a battery unit or by the dedicated mains transformer supplied. Benchmark™

(Specify voltage and country).



Laser Alignment Accessory is CE compliant ensuring that it can be operated safely at all times under the recommended conditions.

Dessicant Storage Caps

These caps are designed to fit over the optical inlet and outlet ports of the Cyclone™ series gas cells to seal the transfer optics when the cells are not in use. One of the caps contains a desiccant material which maintains a dry atmosphere within the transfer optics box and extends the life of KBr windows.

Heating Jacket / Hight Stability Controler

All of the Cyclone™ series gas cells (glass and metal-bodied versions) can be upgraded to heatable gas cells by the addition of the appropriate Heating Jacket and High Stability Temperature Controller.

The heating jacket simply slides over the gas cell and it can be operated from ambient temperatures up to 200°C.

(Specify voltage and country).

Low voltage (30V) heaters are used to ensure safe operation at all times and the temperature controller can be fitted with an RS232, RS485 or USB interface to allow independent control using a computer.
Temperature stability is +/-1°C and a key feature of the design is the uniformity of the heating across the whole cell, which prevents localised “cold spots” within the cell.
All of the Cyclone™ series Heating Jacket / High Stability Temperature Controller systems are CE compliant ensuring that they can be operated safely at all times under the recommended conditions.

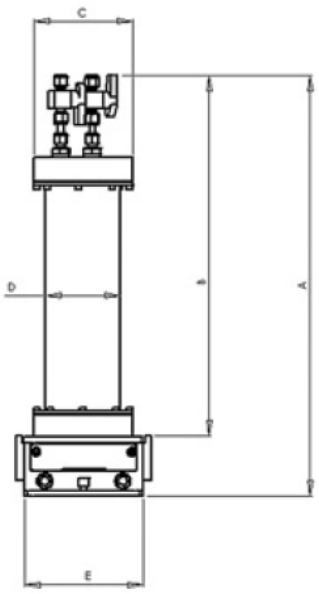
Pressure Gauge Kit

A pressure gauge kit is available to fit the Cyclone™ series gas cells. Gauges can be specified for low pressure operation (vacuum to 15 p.s.i.) and high pressure operation (vacuum to 125 p.s.i).

An integral pressure relief valve ensures that cells are automatically depressurised in the event of accidental over pressurisation. We recommend the use of a pressure gauge when operating gas cells at elevated pressures.

(Specify High or Low pressure).

Cyclone™ Series - Key Dimensions

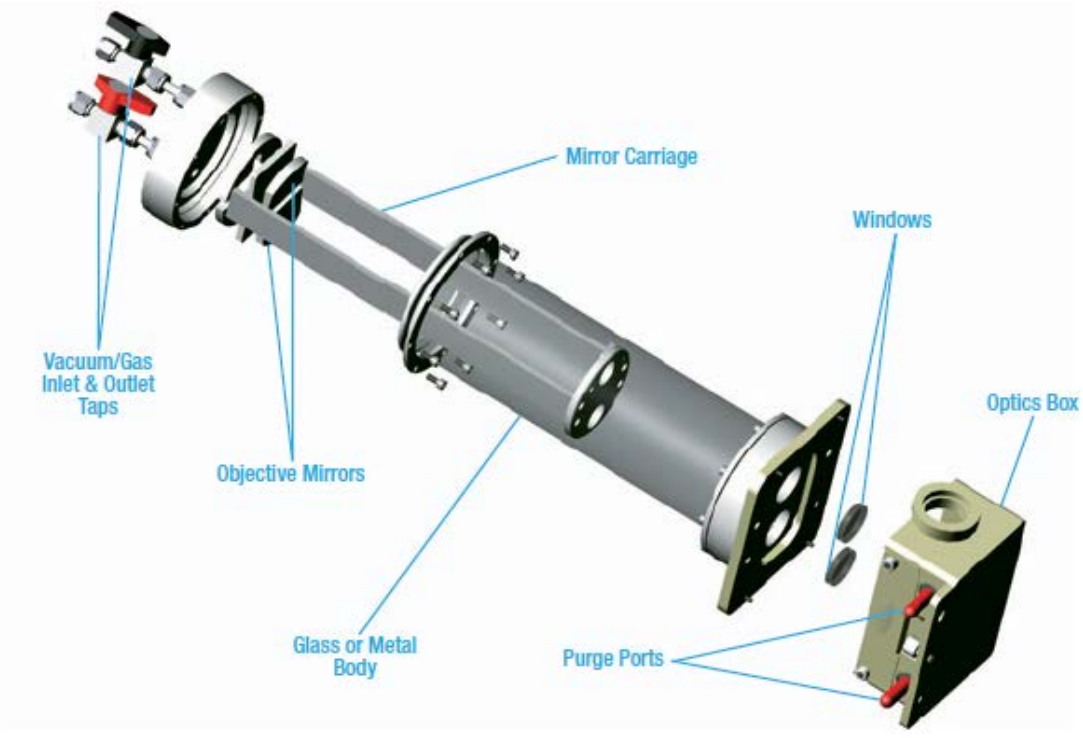


Cell	Base Pathlength	Pathlength Range	Volume
C2	12.5cm	0.5m to 2.5m (in 0.5m steps)	0.19 liters
C5	25cm	1m to 8m (in 1m steps)	1.33 liters
C10	26.4cm	2.1m to 10.6m (in 1.06m steps)	2.60 liters

Cell	A	B	C	D	E
C2	384	314	73	47	153
C5	536	466	114	87	153
C10	540	470	143	113	153

All dimensions in mm

Cyclone™ Assembly



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