

## Features of Gemini Mars Series Gas Cells

Mars Series gas cells from Gemini are ideally suited for demanding, industrial or process applications, where ruggedness and durability are of critical importance, yet precision fixed optical alignment is needed to assure good optical performance. Mars cells are simply constructed, and are rugged and reliable; designed never to need optical alignment and to provide ease of use and convenient serviceability.

**A - The valve and fitting endplate.** This plate is on the very top of the cell, and commonly carries the valves, gauges, fittings, and sample line connections. It can be easily removed from the cell without disturbing the other critical cell components or affecting optical alignment.

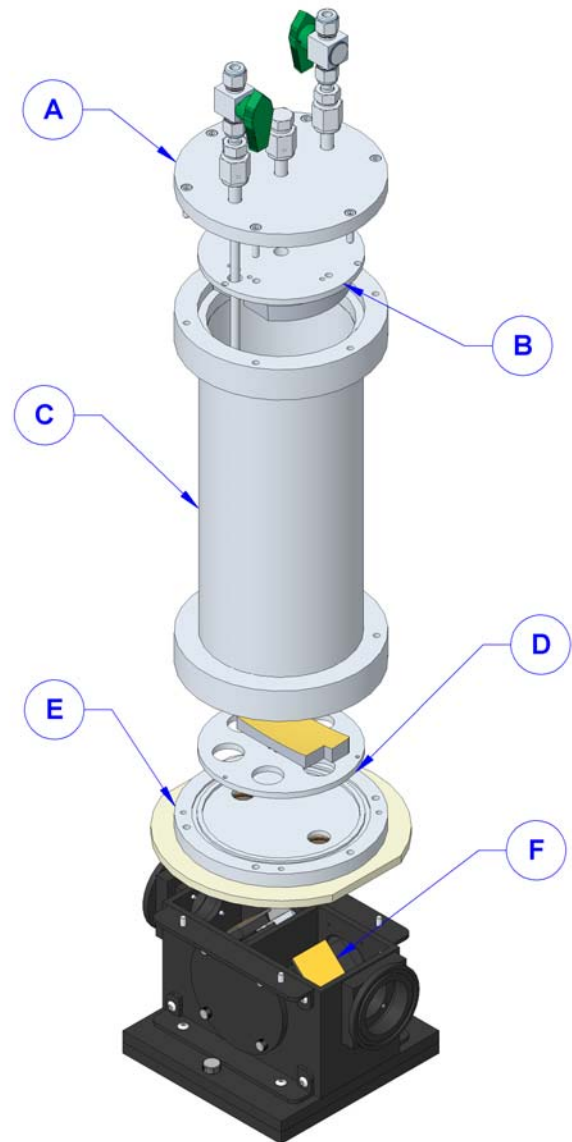
**B - The precision mirror mounting tray.** This element is virtually one solid piece containing the precision aligned optical components which define the cell pathlength. This piece rests inside the cell body on a relieved portion of the cell body wall, and is secured in place during operation by small stainless screws. The mirror tray is easily removed from the cell for cleaning or replacement.

**C - The Cell Body.** The outer cylindrical assembly which holds the whole system together consists of a heavy walled metal pipe with precision machined ends for high vacuum operation. Tapped holes draw the endplates together to form the seal, secured in place with six easy to remove bolts on each end. Metal cell bodies can be provided from various materials including passivated or electropolished stainless steel, nickel, anodized or nickel coated aluminum, or FEP Teflon coated aluminum.

**D - Precision aligned nesting mirror.** This item, like the removable mirror mounting tray, is a critical optical component, easily removed for service, but is in fixed, permanent alignment. The infrared images line up in two rows on this mirror using traditional White optical design; the number of images arrayed on the mirror defines the overall cell pathlength.

**E - The window endplate.** This item carries IR transmitting crystals of any type. Most commonly provided are KBr, ZnSe, BaF<sub>2</sub>, CaF<sub>2</sub>, or KRS5. It also is the main piece of hardware that is used to mount the cell transfer optics and mounting fixture, and forms the main vacuum/pressure seal of the system.

**F - The transfer optics and mounting fixture.** This assembly features two plane transfer optics on precision-alignment optical fixtures housed inside a purgable aluminum box, and mounted securely to the instrument-specific sample compartment and base plate.



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