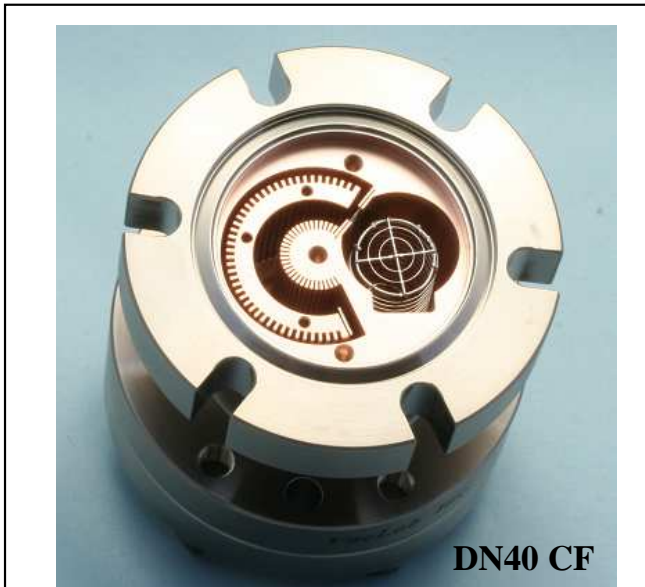


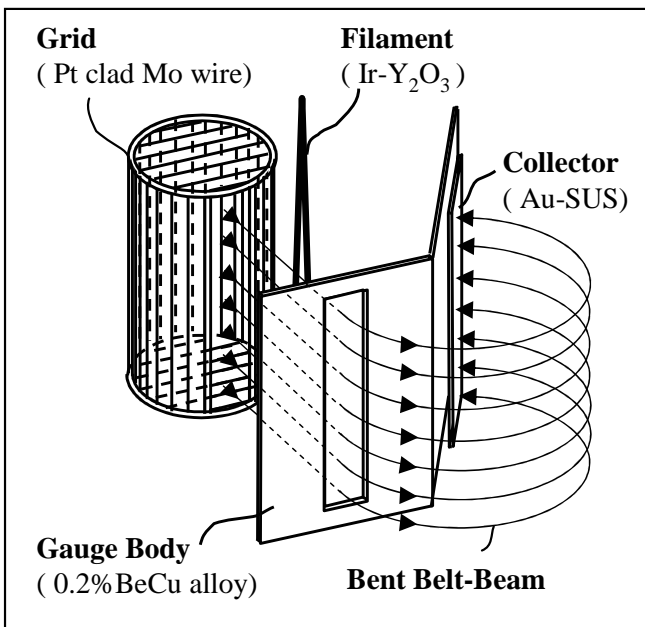
# New Product of XHV gauge head: **3BG-03**

## Measurable as low as $10^{-12}$ Pa

- **Reduction of Soft X-ray & ESD by Bent Belt-Beam method**
- **Full-closed cylindrical cage-grid with an axial-slit**
- **Low outgassing hot-cathode gauge by using 0.2%BeCu alloy body**



Top view of the 3BG-03, without the cover on the deflector and collector. The flanged mounting surface of the deflector can be seen in the picture, with its 3 mounting holes. Within the functional volume of the gauge, the deflector is an open array of bars and slots.



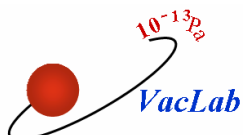
### What is Bent Belt-Beam (BBB) Gauge ?

**3BG-03** is a commercially extreme-high vacuum hot-cathode ionization gauge head that can measure pressures as low as  $5.4 \times 10^{-12}$  Pa, by reducing the limits imposed by soft x-rays, electron-stimulated desorption (ESD), and outgassing. The gauge construction includes a cylindrical grid, which is closed at both ends; ions are drawn from the grid through a long, axial slit made in the cylindrical surface. Thus, the ion beam that emerges forms a "belt". This belt-like ion beam is guided on a curved path by a cylindrical sector deflector and terminates on a plate collector arranged after a beam trajectory rotation of  $240^\circ$ . These elements are embedded in a solid cylinder of 0.2% BeCu alloy, which has a low emissivity (radiation factor) and high thermal conductivity. As a result, the effects of heat radiation and outgassing (caused by the hot-cathode filament) and soft x-ray photoemission (the grid is the soft x-ray source) are reduced in the deflector/collector region. This electrode arrangement can also greatly decrease the flux of soft x-rays and ESD in the direction of the belt ion beam because it sets to  $90^\circ$  the angle between the extracted gas-phase ion beam and the maximum flux of soft x-rays and ESD. In addition, it achieves an extremely low pressure measurement limit by minimizing loss in the ion transport, and because the collector is well hidden, being located after the large deflection of the ion beam.

### Operational Parameters & data

Electron energy = 120eV (standard)  
 Filament potential = 100 V (standard)  
 Filament Power = 2V × 1.5A at 1.6mA  
 Deflector bias = 155 V (between 1~4mA)  
 Degas = Electron Bombardment (450V × 10~45mA)  
 Bakeout Temperature = 280°Cmax  
 Size =  $\phi$  70mm × 58mm  
 Weight = 1.1 kg  
 Connector = BNC & 8pin Burndy-J  
 Sensitivity factor =  $5\sim 8 \times 10^{-2} \text{ Pa}^{-1}$  (at 1~4mA)  
 X-ray limit <  $5 \times 10^{-12}$  Pa

**3BG-03 can operate with Oerlikon Leybold IM540**



Design, manufacturing and consulting of vacuum gauge and RGA

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