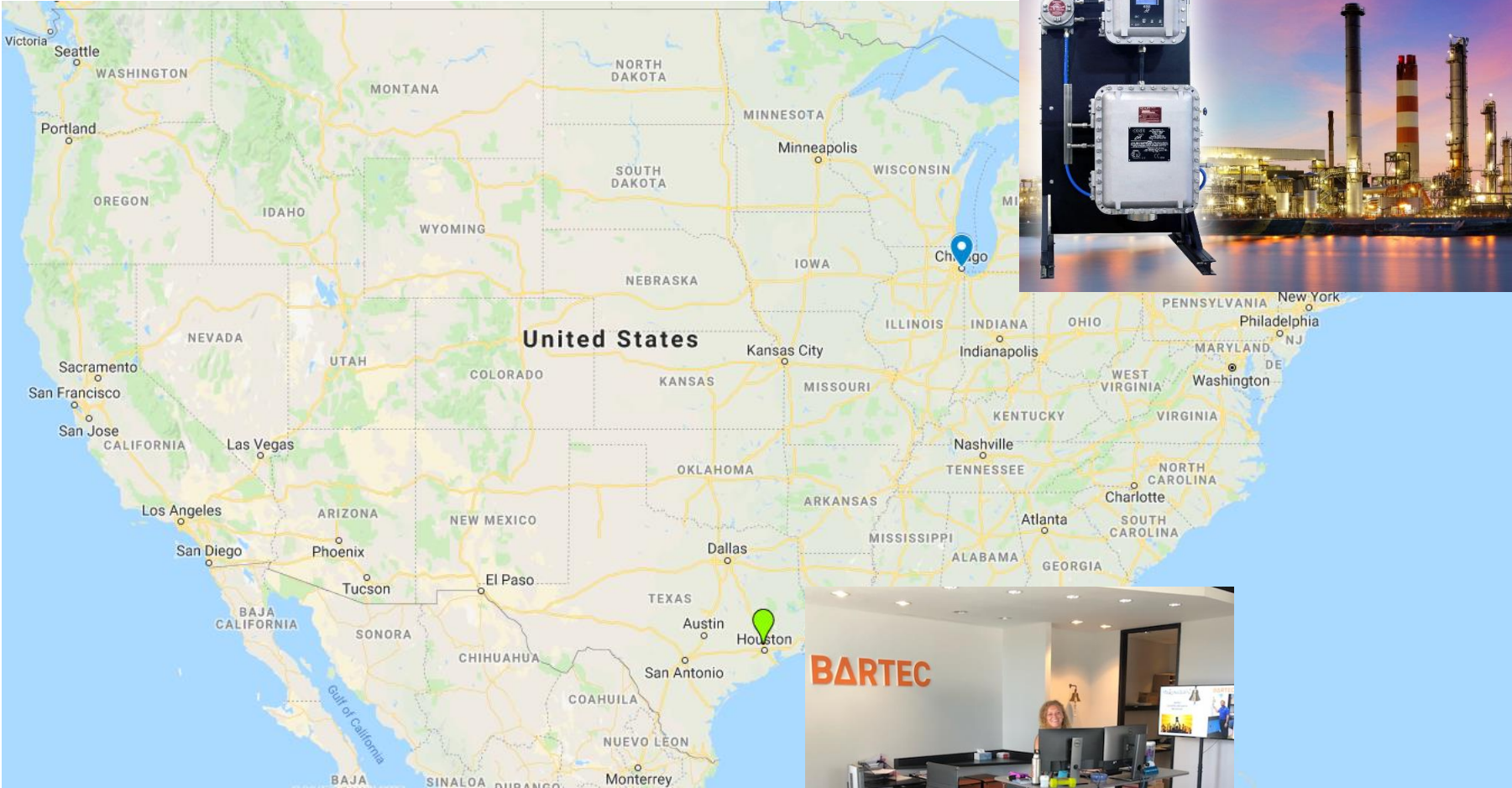


# Introduction of Bartec Orb: Now Part of Bartec US

# BARTEC



Chicago Location:  
Bartec Orb Line

- Manufacturing
- Engineering
- Technical Support



Houston Location:  
Bartec Orb Line

- Sales Support
- Invoicing/Finance



## **Sales & Order Inquiries**

David (Dave) Allen, Electrical Engineer, Houston Office,  
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## **Technical Inquiries & Support**

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Joseph (Joe) Otoo, Mechanical Engineer, Chicago Office,  
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# Bartec Orb: Common Product Details

# BARTEC

Although there are six different measurement options, the Bartec Orb line is actually one product with six different manufacturing configurations (the P-XXX identifier). This means the units have a common feel and much of the unit is standard. All units in the Bartec Orb Line offer:

- Complete Ex d (Flameproof) Construction
- Zone 1, Division 1 Installation Allowance
- Triple Certification, CSA/CUS, ATEX, IECEx
- IP 65 Ingress Protection
- Common Menu Structure

Customer Connections:  
100% Common

Measurement Control:  
95% Common

Analytics:  
Varies By Instrument



Bartec Orb  
Identifier -1400



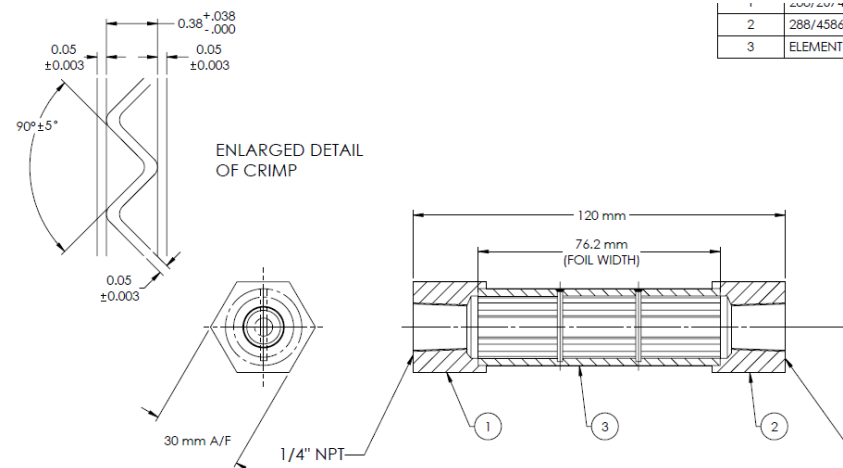
Bartec Orb  
Identifier -1600



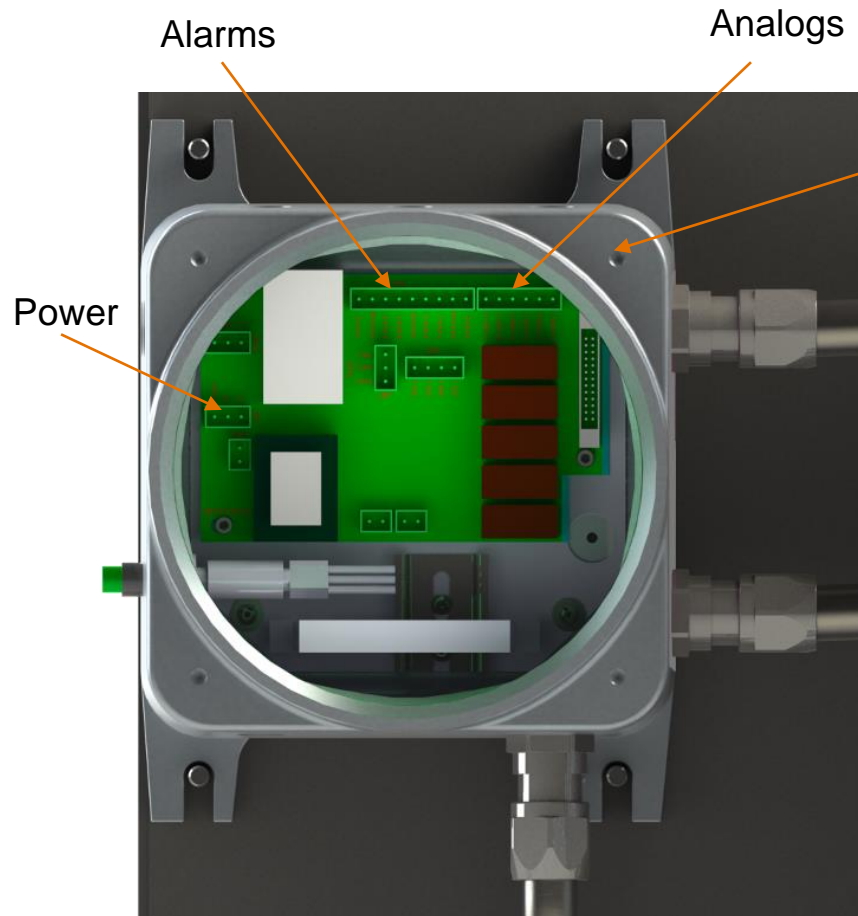
Bartec Orb  
Identifier -1500

## Common Construction Practices:

- All instruments come on free standing frames (painted steel) with removable legs for against wall mounting
- All enclosures are cast “copper free” (overall < 5%) aluminum
- All nameplates for port identification are engraved anodized aluminum
- All electrical inter-connections are either via barrier (potted) glands (ATEX/IECEX) or aluminum seal fittings for CSA/CUS construction
- All fluid connections (liquid or gas) are protected by crimped metal 316SS flame arrestors of Bartec Orb design



# Bartec Orb: Common Product Details



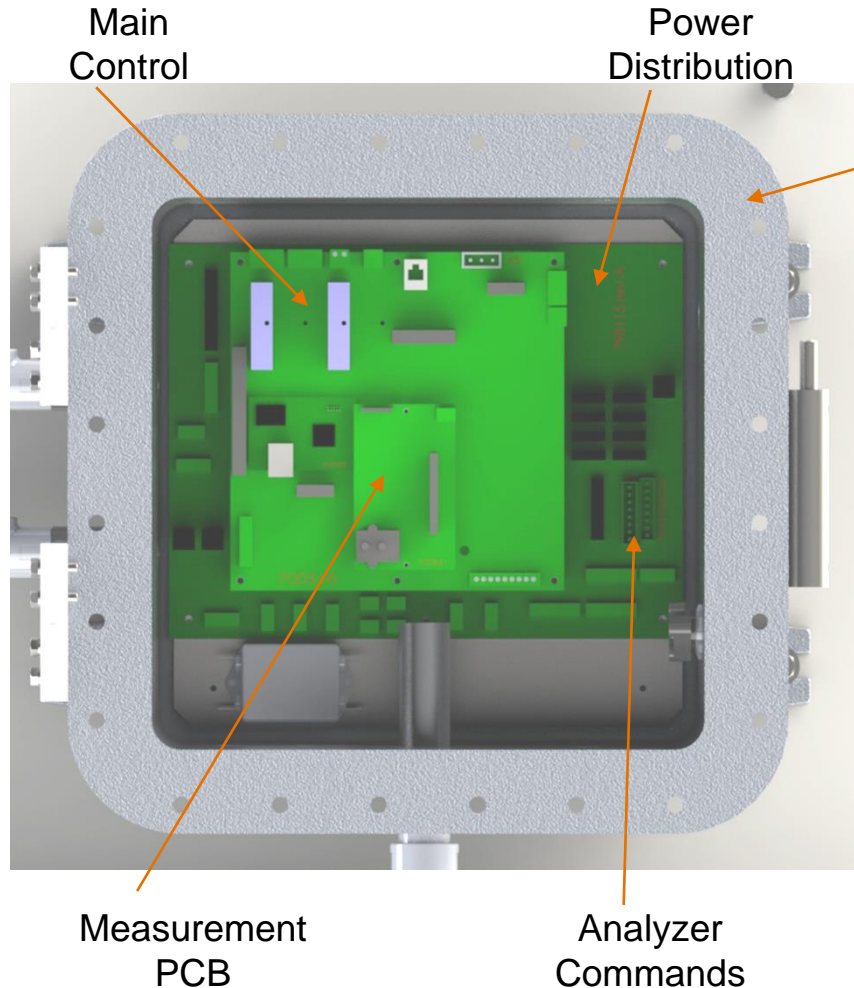
Customer Connections:  
100% Common

The customer connection enclosure is identical for every system and is where it is intended that the customer will make their power and signal terminations. All systems will have:

- 3 programmable alarm relays rated to 250 VAC, 3A
- Up to 3 self-powered and isolated 4-20 mA analog signals
- 100-250 VAC power input (jumper selectable)
- A leak detector circuit which kills all power to the complete system should a leak occur in the analytics enclosure



# Bartec Orb: Common Product Details



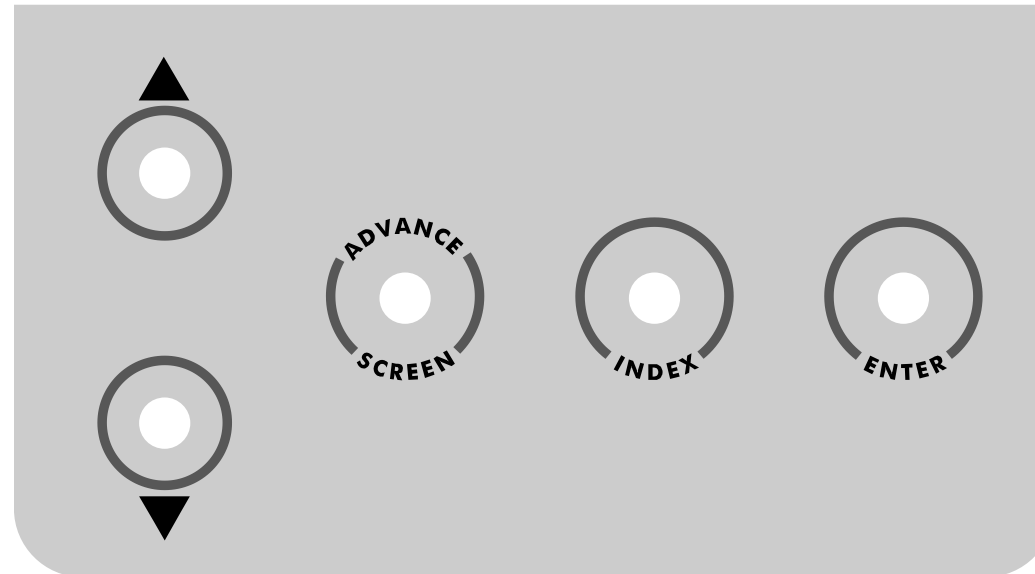
Measurement Control:  
95% Common

The measurement control enclosure is almost identical for every system and is where all analyzer controls and power distribution take place. This enclosure also acts as the user interface. All systems will have:

- Power distribution: line voltage, +24 VDC, +5 VDC, +/-12 VDC
- Modbus (both TCP/IP as well as serial) connections
- Analyzer commands (validation, remote standby, stream switch, external (customer) alarms)
- The only thing that changes is the measurement PCB



The Analyzer is programmed and controlled via a magnetic keypad on the front of the Electronics Enclosure. This eliminates the need for opening the enclosure to change operational settings, etc. A magnetic pencil is supplied with the instrument for this purpose.



# Bartec Orb: Common Product Details

To enter or exit the analysis mode, move to a new menu or within menu items, change a displayed value, the operator simply touches a magnet to the designated location on the keypad. These locations function as follows:

**Advance Screen Key** — When the Main Run screen displayed, touching this key brings up the Main Menu. When any other screen is displayed, touching this key returns the display to the previous screen.

**Index Key** — Touching this key scrolls the Analyzer through the various items available within a specific menu. The “active” menu line is highlighted by reversing the background and foreground colors. Once you reach the last menu item, the indicator returns to the top of the menu.

**Enter Key** — Touching this key advances you to the sub-menu or other item associated with a selected menu item. It is also used to accept certain commands which have been entered.

**(Up/Down Arrow) Keys** — Touching these keys changes the displayed value for the indicated item. Depending on the specific item, it will either change the status of the selection, toggle the display through the available selections, or increase/decrease the value.



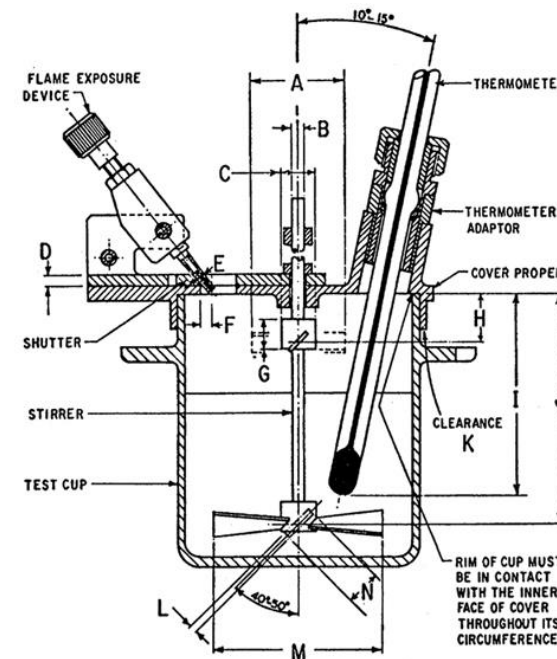


## Why Measure Flash?

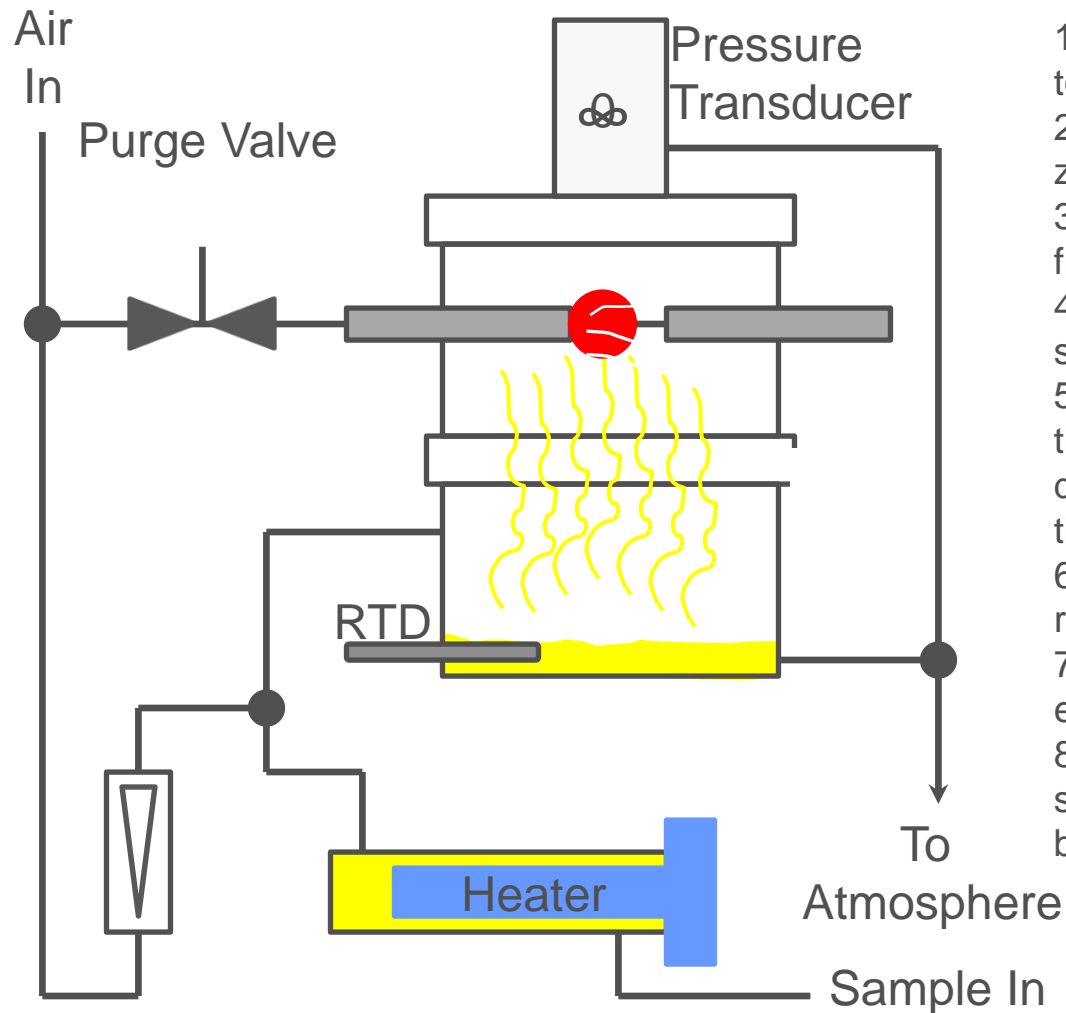
The fundamental reason for measuring flash point is to assess the safety hazard of a liquid with regard to its flammability and then classify the liquid into a recognized hazard group. This classification is used to warn of a risk and to enable the correct precautions to be taken when manufacturing, storing, transporting or using the liquid. Flash point requirements are listed in regulations and product specifications.

**Question: How Does One Measure Flash?**

**Answer: A known volume of hydrocarbons is heated while continuously subjected to a source of ignition at regular intervals until a flash is detected.**

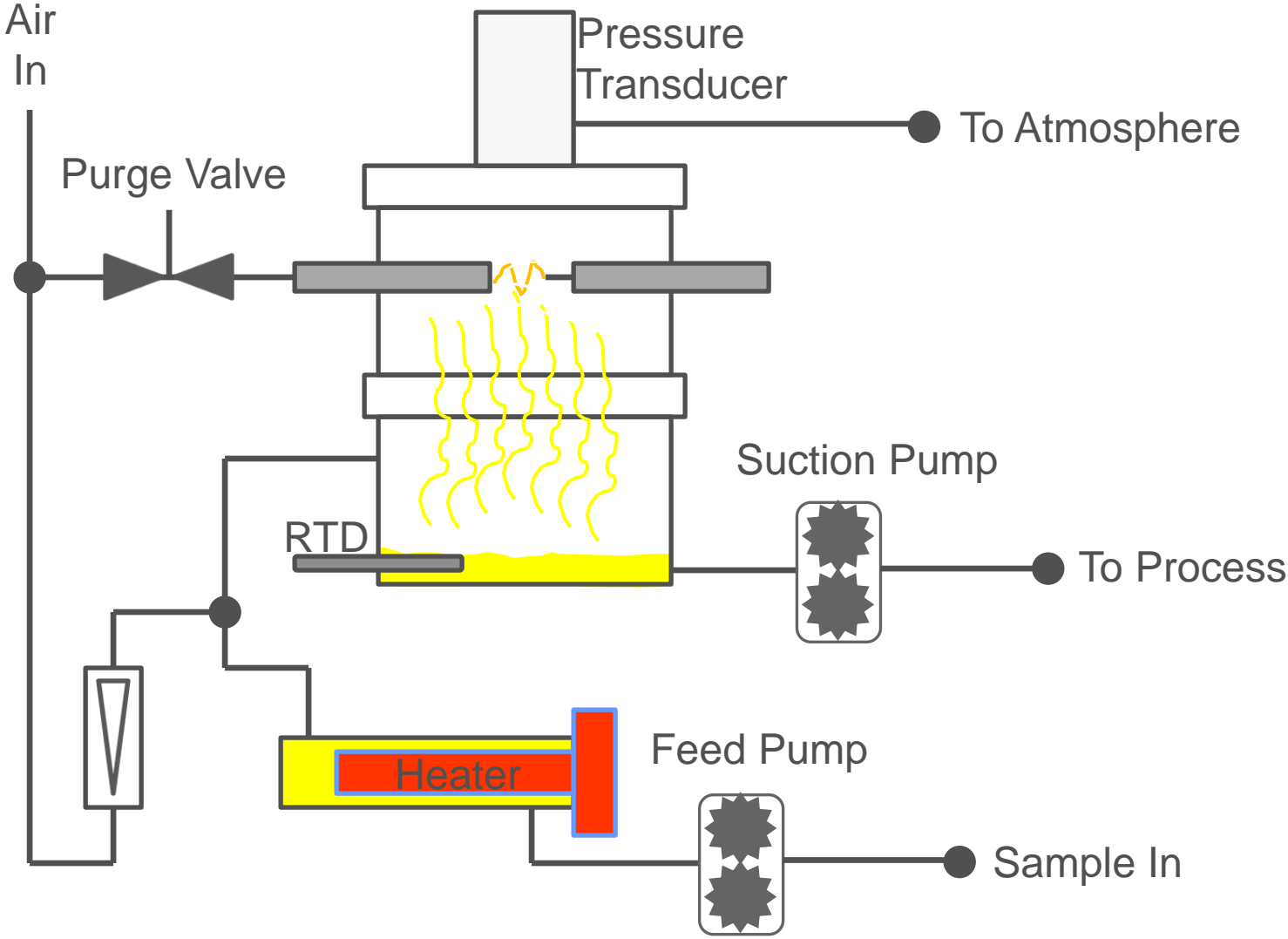


# Bartec Orb: Model P-500 Flash Point Analyzer

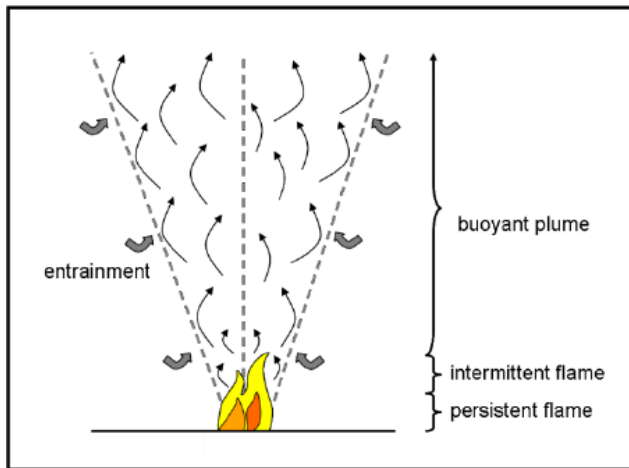


1. The electrodes are sparked to clean any residue off the tip.
2. The pressure transducer is zeroed.
3. Sample & air are continuously flowing at set ratios.
4. The electrodes are sparked at set intervals.
5. Heat is gradually applied to the sample until a flash is detected by means of a spike in the cell pressure.
6. The current temperature is recorded as the flash point.
7. Purge air is blown across the electrodes to keep them clean.
8. The sample is allowed to cool a set amount before the next cycle begins.

# Lessons Learned: Working Towards Higher Viscosity Applications

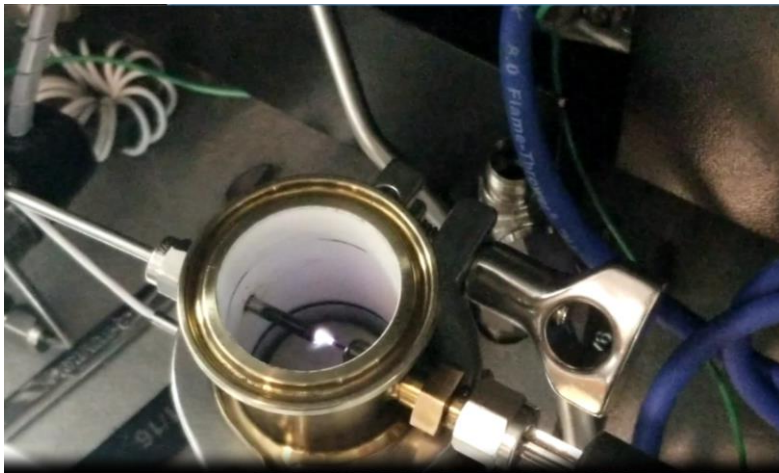


There are a number of ways to adjust the flash point reading:



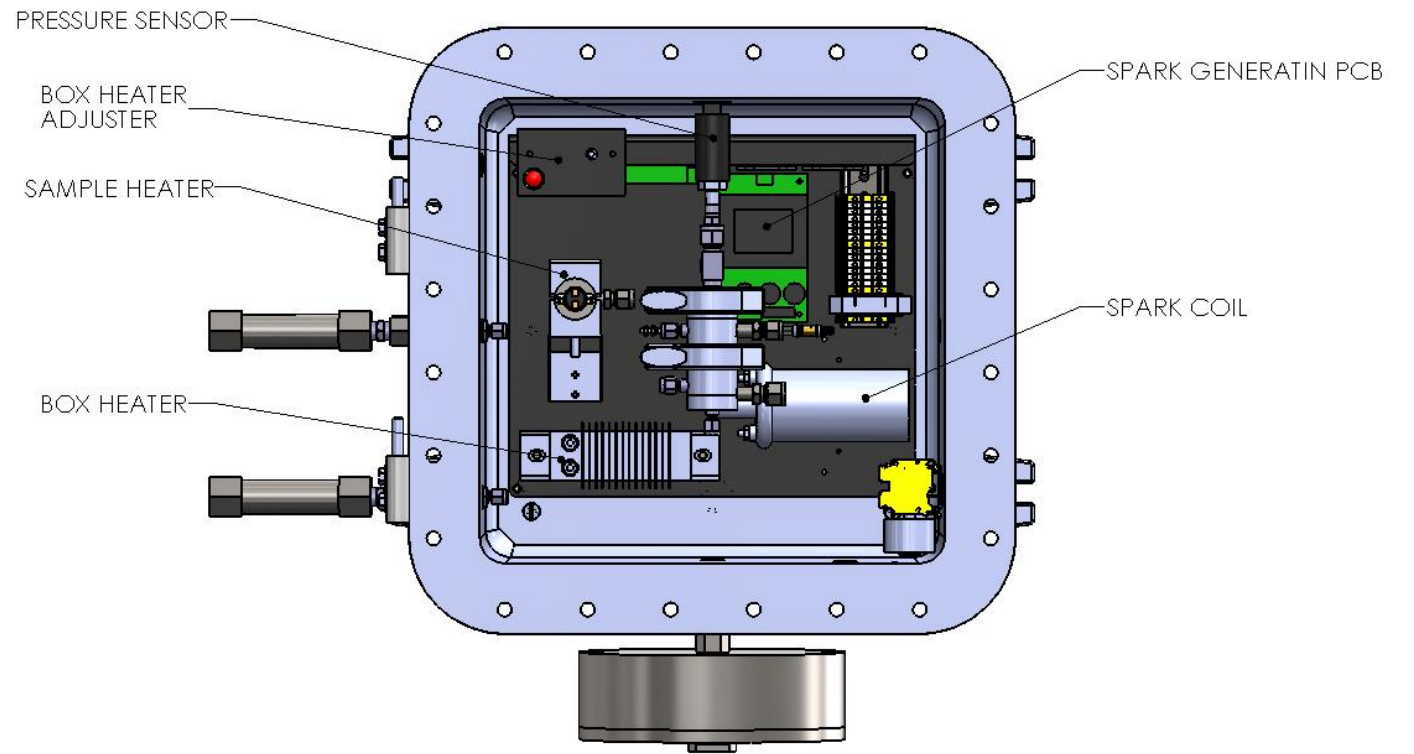
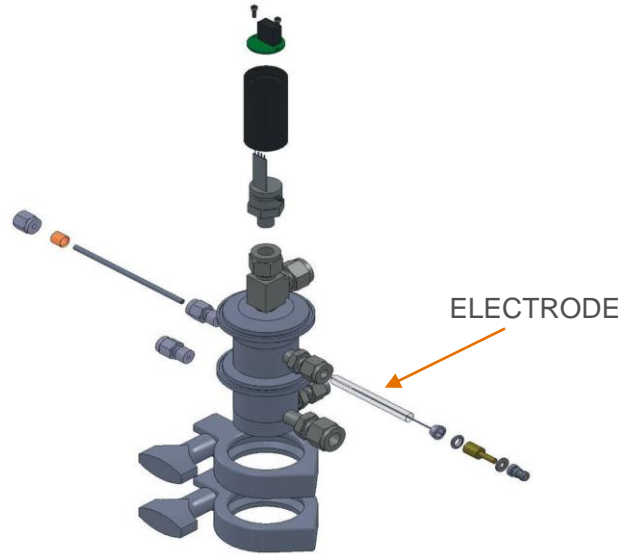
The sensitivity of the pressure sensor based on the plume size.

Adjusting the air flow to create an oxygen rich/deficient environment. Typically 10:1.



Adjusting the size of the spark gap.

## Common replacement items.



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## Common Flash Point Applications:

- Jet Fuels & Kerosene
- Diesel Blenders

## Unique Selling Points (USP's):

- Can handle higher sulphur concentrations.
- 100% ASTM compliant.
- A proprietary cup coating makes it harder for residues and fouling to adhere to the cup walls increasing the time in between cleaning intervals.
- Automated electrode bridge build up cleaning process "Spark Blast".
- Can handle higher viscosities.
- Cycle to cycle averaging functions to smooth out step changes.
- Separated sample heating module from flash chamber reduces likelihood of cup coking.

