



*Quality and Value  
Through Engineering*

**Bernas tests**

Unit : Eaton 6200

Species = AsH4, BF3 and PHOS

Beam Current: 240uA - 430uA

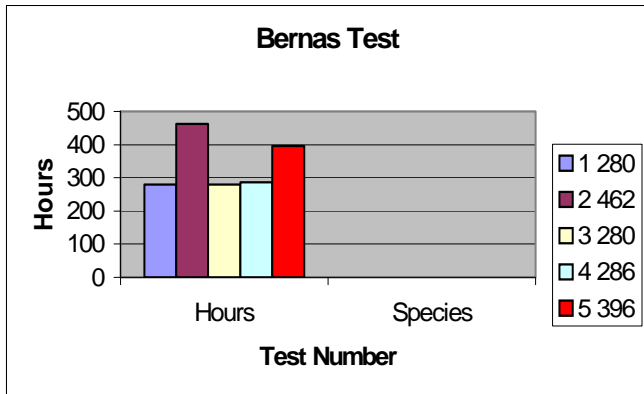
A HT Source was fitted with the Bernas components

Freeman HT normal life time = 96 hours = +/- 20 hours

Hours = time to filament failure

**Test number**

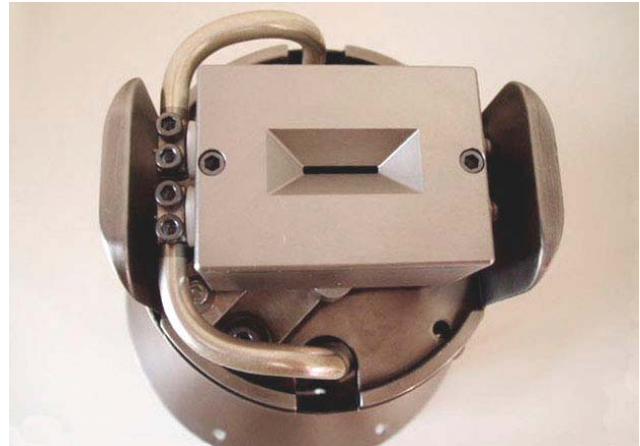
Test number	Hours	Species	Ave. Beam Current
1	280	AsH4	400uA
2	462	AsH4	240- 430uA
3	280	AsH4 + BF3	240 uA
4	286	AsH4 + BF3 + PHOS	240 uA
5	396	AsH4 + BF3 + PHOS	240 uA



A customer supplied the data above and it is typical of the results obtained in his production operation. This data is for gas only conversion. The Signet Bernas conversion is available in a gas only or gas and vapor inlet configurations. The gas only conversion is Signet Products kit 1088A.

**Axcelis - IMPLANTER PARTS  
Models 3204, 3206 and 6200**

**Signet Bernas Conversion**



**1088 Series Bernas Conversion Kit Cost Impact**

The cost of ownership is greatly influenced by implanter downtime. Source life is an important component of downtime. The average Eaton 3204, 3206 or 6200 medium current Freeman source has a life of approximately 100 hours using 60% Boron at 240 micro amps. The typical lost production time due to a source change is one hour. In a normal 24-hour per day, 6 days per week operation, 1.75 hours of operation are lost due to source changes per week. Over a one year period this means a total of **91** hours are loss due to source changes. Using the SEMI standard of \$500.00 per hour the cost of down time equals \$45,500 per year.

Depending on the processes used the Bernas source is expected to last 250 to 280 hours before a source change is required. Using the same 60% Boron at 240 micro amps and a source life of only 200 hours a saving of \$22,750 per year would be obtained. The \$22,750 saving is just due to savings in down time alone.

There are additional savings when using a Bernas source vs. the Freeman. They include:

- Less maintenance time as there are fewer source rebuilds.
- A 25% reduction in replacement parts cost as there are fewer source rebuilds.
- A reduction in gas cost as the gas consumption is lower as the Bernas source runs at a lower pressure.

**A Signet Bernas conversion would have a pay back period of less than 3 months in most operations.**

Ref. = Design Alteration of OEM Part

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