Barrel HV plate status

Atlas group Duke HEP
Straw hole measurements

- Now look at the data two ways
  1. Fixation Hole – origin
  2. Average of all straw holes – origin (12 points)
     - We noticed that the fixation hole is not cylindrical - Studied one plate and found ~ 0.020 mm shift between top and bottom - not surprising due to depth of hole and diameter of hole.

- Using the origin from the straw holes when looking at the deviation from nominal position – straw hole positions look good in all types!!!
Type 1 Straw holes

Histogram Straw Hole deviation from nominal (type 1)

- **Origin Straws**
  - Average: 0.021 mm
  - RMS: 0.009 mm

- **Fix A Origin**
  - Average: 0.034 mm
  - RMS: 0.019 mm

Histogram of distance from nominal position (Type 1 mirror)

- **Straw Hole Origin**
  - Average: 0.022 mm
  - RMS: 0.011 mm

- **Fix A Origin**
  - Average: 0.042 mm
  - RMS: 0.024 mm
Type 2 Straw holes

Histogram distance from nominal position type 2

- avg straw org
- Fix A org

Average = 0.029
RMS = 0.011

Average = 0.040
RMS = 0.019

Histogram straw hole distance from nominal type 2 (mirrored)

- avg straw org
- Fix A org

Average = 0.023
RMS = 0.010

Average = 0.045
RMS = 0.022
Type 3 Straw holes

Histogram - Type 3 HV plates
distance from nominal

- Straw holes - org
- Fix hole org

Average - 0.032 mm
RMS - 0.014 mm

Average - 0.044 mm
RMS - 0.030 mm

Histogram - Type 3 mirrored HV plates
distance from nominal

- straw holes - org
- Fix hole - org

Average - 0.035 mm
RMS - 0.021 mm

Average - 0.065 mm
RMS - 0.045 mm
HV Plates status

- **Completed plates:**
  - Type 1 - 24 sets out of 35 (69%)
  - Type 2 – 15 sets out of 35 (43%)
  - Type 3 – 5 sets out of 36 (14%)

- **Partially completed plates**
  - Type 1 – 10 sets to be laminated No more machining
  - Type 2 – have at least 19 sets of acceptable plates
  - Type 3 - 10 sets are in process should be shipped to FNAL soon for measurements
Conclusions

- Fixation hole not cylindrical. (+- 0.030 mm)
- Using straw holes to determine origin all type 1 and type 2 plates pass straw hole location spec. ( < 0.075 mm from ideal location)
- Type 3 distributions better – fewer plates fail do to straw hole positions
- Soon will have all Type 1 plates needed
- Good progress on type 2 plates
- Waiting on vendor to see if OK with type 3 plates