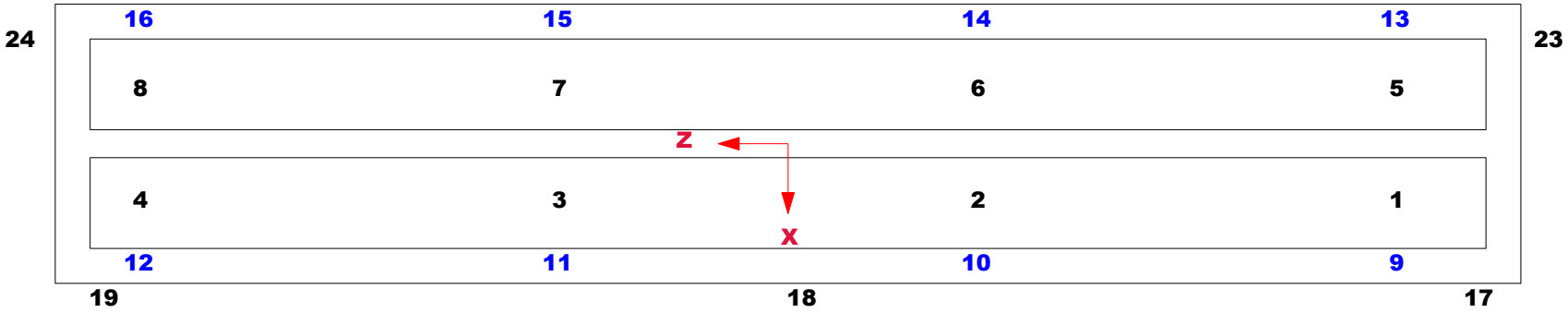
**.5in Tooling Ball Center Coordinates**

| Name | X Corr. | Y Corr. | Z Corr. |
|---|---|---|---|
| TB 9 | 429.883 | -0.727 | -1489.427 |
| TB 10 | 430.035 | -0.665 | -524.230 |
| TB 11 | 430.005 | -0.393 | 523.843 |
| TB 12 | 430.012 | -0.426 | 1489.450 |
| TB 13 | -430.084 | -0.433 | -1489.322 |
| TB 14 | -430.168 | -0.062 | -524.066 |
| TB 15 | -430.137 | 0.084 | 524.234 |
| TB 16 | -430.040 | -0.025 | 1489.050 |

**1.5in Tooling Ball Center Coordinates**

| Name | X Corr. | Y Corr. | Z Corr. |
|---|---|---|---|
| TB 1 | 98.013 | 135.648 | -1665.628 |
| TB 2 | 98.299 | 135.771 | -555.792 |
| TB 3 | 98.208 | 135.892 | 556.350 |
| TB 4 | 98.416 | 136.019 | 1665.984 |
| TB 5 | -98.404 | 135.617 | -1666.259 |
| TB 6 | -98.636 | 135.778 | -556.353 |
| TB 7 | -98.522 | 135.958 | 555.645 |
| TB 8 | -98.318 | 136.128 | 1665.630 |
| TB 17 | 471.221 | -229.538 | -1580.398 |
| TB 18 | 470.647 | -229.185 | 87.513 |
| TB 19 | 469.947 | -228.969 | 1580.472 |
| TB 23 | -403.780 | -227.682 | -1708.694 |
| TB 24 | -406.576 | -228.451 | 1707.935 |




**Grider centerline in reference to Pointed Magnets**

Dimensions in MM, Angles in Milliradians

SLAC NATIONAL ACCELERATOR LABORATORY
METROLOGY

# HGVPU -

**Fiducialization at 9mm Gap, Tooling Balls**

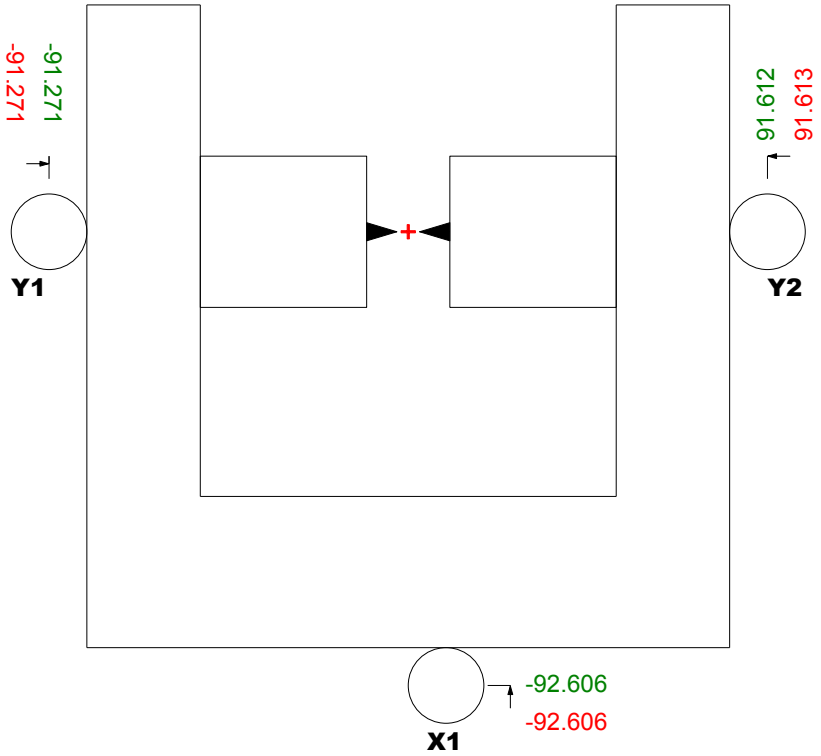
| | | | | | |
|---|---|---|---|---|---|
| | | **US Full :** | **9.000** | **DS Full :** | **8.9997** |
| **Nominal Gap :** | **9.000** | **US Wall Half :** | **4.5005** | **DS Wall Half :** | **4.4996** |
| **Nom. Taper :** | **0.000** | **US Aisle Half :** | **4.5020** | **DS Aisle Half :** | **4.5006** |

| | |
|---|---|
| **S/N** | **: HXU_018** |
| **Date** | **: 07-JUN-2019** |
| **Data Set** | **: 0001** |
| **Run** | **: FINAL** |
| **Cam Pos.** | **: B** |

## PM 2

## Up Stream

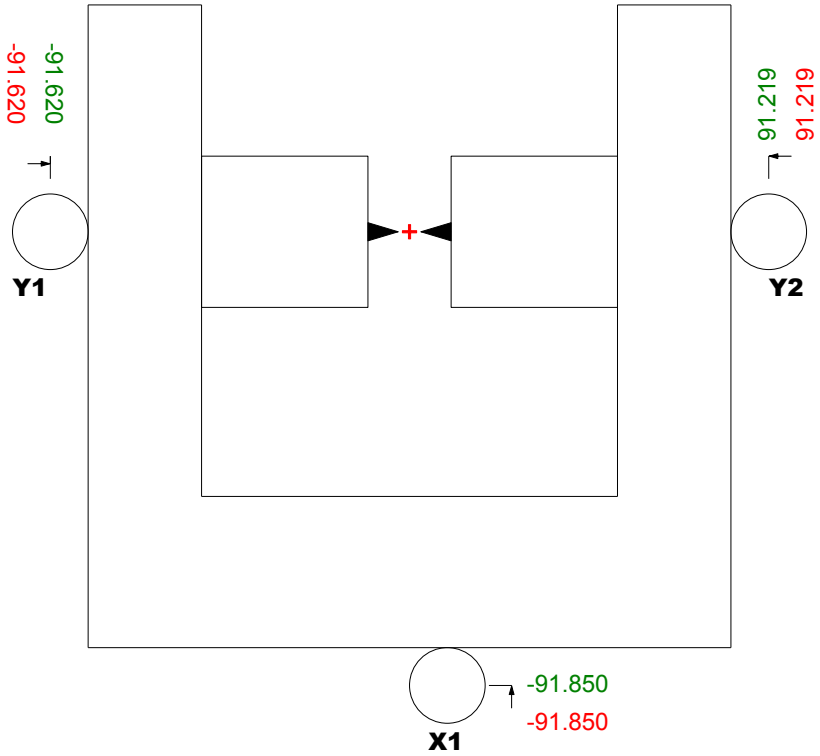
**Z Center = -1842.117**




## PM 3

## Down Stream

**Z Center = 1842.367**




**Red values are in Girder Coordinate System, includes Roll component from Girder**
**Green values are in End Magnet Coordinate System**
**Grider centerline in reference to Pointed Magnets**

Dimensions in MM, Angles in Milliradians

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METROLOGY

# HGVPU -

**Fiducialization, Pointed End Magnet Values**

| | | | | | |
|---|---|---|---|---|---|
| | | US Full : | 9.000 | DS Full : | 8.9997 |
| Nominal Gap : | 9.000 | US Wall Half : | 4.5005 | DS Wall Half : | 4.4996 |
| Nom. Taper : | 0.000 | US Aisle Half : | 4.5020 | DS Aisle Half : | 4.5006 |

| | |
|---|---|
| S/N | : HXU_018 |
| Date | : 07-JUN-2019 |
| Data Set | : 0001 |
| Run | : FINAL |
| Cam Pos. | : B |