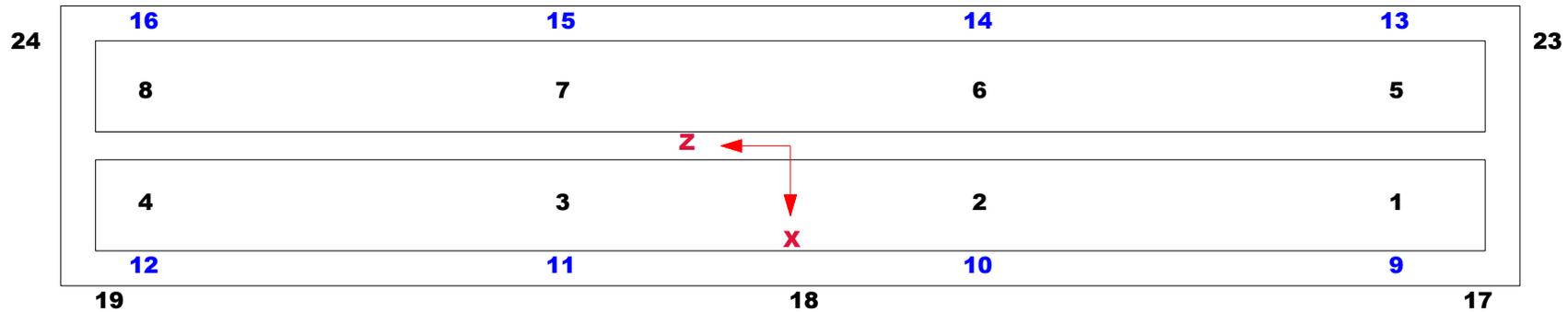


**.5in Tooling Ball Center Coordinates**

| Name  | X Corr.  | Y Corr. | Z Corr.   |
|-------|----------|---------|-----------|
| TB 9  | 430.007  | -0.251  | -1489.592 |
| TB 10 | 430.089  | -0.003  | -524.092  |
| TB 11 | 430.120  | -0.226  | 524.294   |
| TB 12 | 430.079  | -0.142  | 1489.627  |
| TB 13 | -430.369 | -0.208  | -1489.876 |
| TB 14 | -430.428 | -0.145  | -524.692  |
| TB 15 | -430.455 | 0.091   | 524.202   |
| TB 16 | -430.420 | -0.187  | 1489.221  |

**1.5in Tooling Ball Center Coordinates**

| Name  | X Corr.  | Y Corr.  | Z Corr.   |
|-------|----------|----------|-----------|
| TB 1  | 98.505   | 135.916  | -1665.811 |
| TB 2  | 98.519   | 135.964  | -555.931  |
| TB 3  | 98.476   | 136.003  | 556.289   |
| TB 4  | 98.473   | 136.071  | 1666.062  |
| TB 5  | -98.555  | 136.107  | -1666.173 |
| TB 6  | -98.890  | 136.089  | -556.507  |
| TB 7  | -98.789  | 136.105  | 555.962   |
| TB 8  | -98.687  | 136.114  | 1665.591  |
| TB 17 | 471.407  | -230.630 | -1580.151 |
| TB 18 | 472.277  | -229.030 | 87.930    |
| TB 19 | 472.617  | -229.613 | 1580.649  |
| TB 23 | -406.245 | -231.808 | -1708.486 |
| TB 24 | -403.975 | -233.496 | 1707.898  |



**Grider centerline in reference to Pointed Magnets**

Dimensions in MM, Angles in Milliradians



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

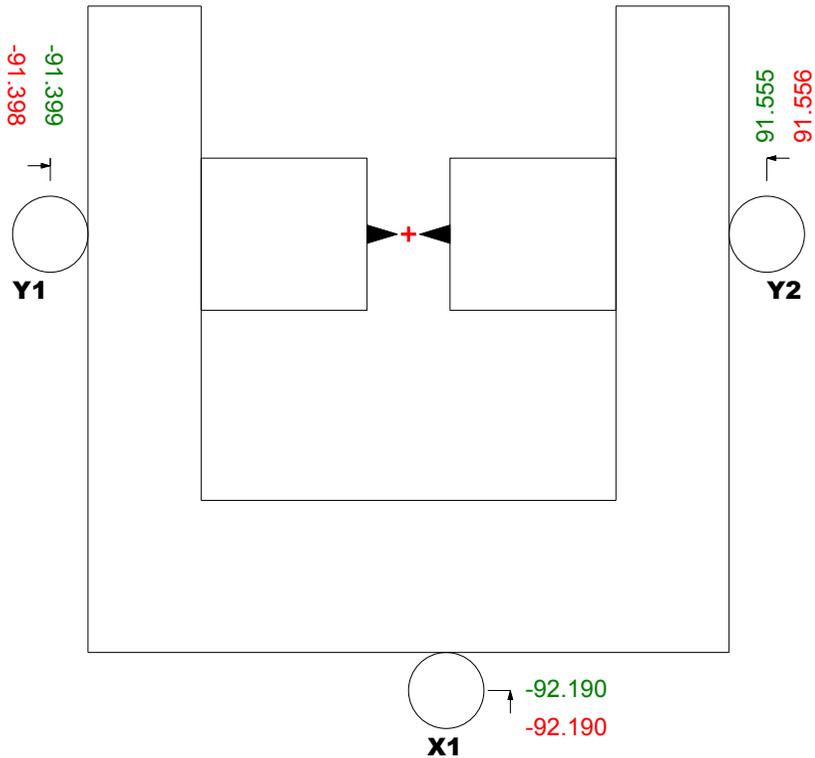
|                      |              |                        |               |                        |               |
|----------------------|--------------|------------------------|---------------|------------------------|---------------|
| <b>Nominal Gap :</b> | <b>9.000</b> | <b>US Full :</b>       | <b>8.999</b>  | <b>DS Full :</b>       | <b>9.0001</b> |
| <b>Nom. Taper :</b>  | <b>0.000</b> | <b>US Wall Half :</b>  | <b>4.4982</b> | <b>DS Wall Half :</b>  | <b>4.5000</b> |
|                      |              | <b>US Aisle Half :</b> | <b>4.4995</b> | <b>DS Aisle Half :</b> | <b>4.4988</b> |

|                 |                      |
|-----------------|----------------------|
| <b>S/N</b>      | <b>: HXU_022</b>     |
| <b>Date</b>     | <b>: 17-JUN-2019</b> |
| <b>Data Set</b> | <b>: 0001</b>        |
| <b>Run</b>      | <b>: FINAL</b>       |
| <b>Cam Pos.</b> | <b>: B</b>           |

## PM 2

### Up Stream

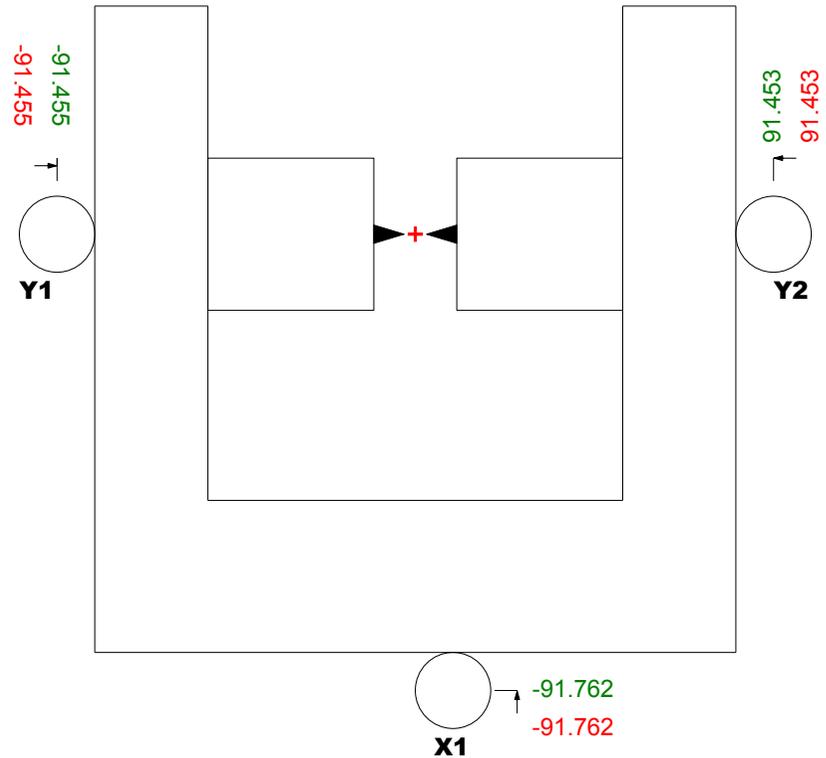
Z Center = -1841.919



## PM 3

### Down Stream

Z Center = 1842.492



Red values are in Girder Coordinate System, includes Roll component from Girder

Green values are in End Magnet Coordinate System

Girder centerline in reference to Pointed Magnets

Dimensions in MM, Angles in Milliradians



### HGVPU - Fiducialization, Pointed End Magnet Values

|               |       |                 |        |                 |        |
|---------------|-------|-----------------|--------|-----------------|--------|
| Nominal Gap : | 9.000 | US Full :       | 8.999  | DS Full :       | 9.0001 |
| Nom. Taper :  | 0.000 | US Wall Half :  | 4.4982 | DS Wall Half :  | 4.5000 |
|               |       | US Aisle Half : | 4.4995 | DS Aisle Half : | 4.4988 |

|          |               |
|----------|---------------|
| S/N      | : HXU_022     |
| Date     | : 17-JUN-2019 |
| Data Set | : 0001        |
| Run      | : FINAL       |
| Cam Pos. | : B           |