

BL7-3 girder Components Alignment Plan

BL7-3 Girder Components consist of:

1. Pivot Mask
2. Mono Vertical Slits & Graphite
3. Be window
4. BL7-3 LN Mono
5. BTM
6. Hutch Stoppers

The beam line sits at a horizontal branch angle of 5.4mrad. The components will be aligned with the mono at wiggler centerline. Some components are shifted in X parallel to the horizontal axis. This is to give clearance to the BL7-2 beam pipe. See page two of SA 451-049-01-C2 which is posted at the beam line.

In the Y direction, the Pivot mask has a vertical aperture of 7mm. This feeds into the slits which has a large acceptance aperture. After the slits is the fix graphite filter that has a vertical opening of 7mm. The Be-window has a vertical opening of 5mm. So the Y tolerances are dictated by the pivot mask/graphite/Be window apertures.

In the X direction, the Pivot mask has a 0.8mrad opening which is ~0.48" wide centered on 5.4mrad branch angle. This is tiny compared to the graphite filter's 1.57" wide opening - even with the slit system shifted in X by .25". So tolerances can be high for X, but I limited to +/-0.040" in most cases to keep bellows & mating flanges happy. The slit tank (and internal components) & Mono tank is shifted 0.25" toward SSRL parallel to the branch line angle. The stopper tank is shifted 0.375" toward SSRL parallel to the branch line angle.

In Z, I already checked the slit tank and mono. Their current position is fine. The mono tank can be shifted +/- 0.25" in Z if needed for any odd reason.

7-3 Pivot Mask, It has been set, so if Y is off, check the girder position.

X: +/- 0.040"

Y: +/- 0.005"

Z - Self-determined

Roll - all ready set, +/- 2.0mrad

Pitch - self determined

Yaw - self determined

7-3 Slit tank (offset .25" from beam line axis)

X: +/- 0.040"

Y: +/- 0.005"

Z: +/- 0.25" Position already checked & ok.

Roll: +/- 3.0mrad

Pitch: +/-0.5mrad

Yaw: +/-3.0mrad

JK

Check Fix Graphite Filter

X: +/-0.020"

Yaw: +/- 3.3mrad"

Y: +/-0.005"

Pitch +/-0.8mrad

7-3 Mono (offset .25" from beam line axis)

X: +/- 0.040"

Roll: +/- 0.02"/20"

Be-Window Roll +/- 1.0mrad

Be-window X +/-0.040"

Be window Y +/-0.005"

Mono to Be-Window Pitch +/- .005"/14". Take the average of the u/s & d/s tooling balls

Mono Yaw: +/- .04"/20"

Mono Z: +/-0.25"

7-3 Stopper Tank (offset .375" from beam line axis)

Y – Offset +0.436in (exit height of mono port)

Y +/- 0.040"

X +/- 0.040" –Check clearance to BL7-2 beam pipe!

Z: +/- 0.25"

Roll +/- 3mrad

Pitch +/- 3mrad

Yaw +/- 1mrad (determined by transport pipe into 7-3 hutch)

If this tank needs some minor adjustment afterwards, we can do it with dial indicators.

SSK L BL 7-3

2/21/06
CB, FG

(Y)

HBL 7N 20

✓ 2/22/06
MR

HBL 7N 21

2942.837
2983.902

-41.065 ✓

2943.073
2983.902

-40.829 ✓

30.677
 1.750
32.427 ✓
 41.065

HI -8.638 ✓

30.440
 1.750
32.190 ✓
 40.829

HI = -8.639 ✓

AVG HI = 8.638 ✓

check Girder

W/S TB "A"
8.638
20.108
11.470 ✓

1

SK 10.470 ✓
10.467 ✓ +3

D/S TB "B"
8.638
20.108

SK 10.470 ✓
10.472 -2