



STANFORD LINEAR ACCELERATOR CENTER

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## **IR-2 RIGGING PROCEDURE and JOB HAZARD ANALYSIS FOR SPECIAL PURPOSE HANDLING FIXTURE SIDE GAP PLATE**

**1.0 Loads:**

Side Gap Plate	1876 lbs
Fixture	2572 lbs
Total Load (excluding rigging)	4448 lbs

**2.0 Rigging Layout:**

Drawing number SK-HJK080104-7

**3.0 Rigging Equipment:**

The 10 ton hoist shall have a 10,000 lb capacity digital crane scale (Scale 10) supported from the hook. The crane scale shall support a 4-ft long sling of 10,000 lb minimum working load rating with a 6.5 ton minimum capacity screw pin shackle on each end. The 50 ton main hoist shall also support a 4-ft long sling of 10,000 lb minimum working load rating plus 6.5 ton minimum capacity screw pin shackles on each end.

**4.0 Removal Procedure:**

Refer to drawing number SK-HJK080104-7. The fixture is designed such that the CGZ of the unloaded fixture is located at point A. Point B represents the CGZ of the combined fixture plus the Side Gap Plate weight.

- 4.1 Zero the crane scale readout with the rigging hardware hanging clear of the ground.
- 4.2 10 ton hoist: Connect the sling shackle to Point B on the fixture.
- 4.3 50-ton hoist: Connect shackle to Point C on the fixture.
- 4.4 Lift the fixture using both hoists. Keep the fixture horizontal. Scale 10 should read 1469 lbs. There are 1103 lbs of load on the 50-ton hoist.
- 4.5 Bring the fixture to the detector area.
- 4.6 Place the fixture in the proper position to mate to the desired side gap plate using the both hoists, the bridge, and the crane trolley. Bolt the fixture to the Side Gap Plate.
- 4.7 Lower the 50-ton hoist to allow approximately 6 inches of slack.
- 4.8 Slightly reposition the trolley over Point B.
- 4.9 Gently lift on the 10-ton hoist until Scale 10 reads 4448 lbs. Be certain not to put any load on the 50-ton hoist.
- 4.10 Gently loosen the Side Gap Plate bolts.
- 4.11 Readjust fixture/flux bar position using the 10-ton hoist if needed to minimize side loading on the Side Gap Plate bolts until all bolts are removed.
- 4.12 Remove the Side Gap Plate and bring to the IR-2 assembly area.

- 4.13 Raise the 50-ton hoist and lower the 10-ton hoist until the Side Gap Plate rotates 90 degrees to a horizontal position.
- 4.14 Lower the gap Side Gap Plate on 4x4 wood dunnage using the 50-ton hoist.
- 4.15 Unbolt the fixture from the Side Gap Plate.
- 4.16 Take the fixture away.
- 4.17 Raise the 10-ton hoist until the fixture rotates to a horizontal position.

## **5.0 Installation Procedure:**

- 5.1 Zero the crane scale readout with the rigging hardware hanging clear of the ground.
- 5.2 10 ton hoist: Connect the sling shackle to Point B on the fixture.
- 5.3 50-ton hoist: Connect shackle to Point C on the fixture.
- 5.4 Lift the fixture using both hoists. Attempt to keep the fixture horizontal. Scale 10 shall read 1469 lbs. There are 1103 lbs of load on the 50-ton hoist.
- 5.5 Raise the 50-ton hoist and lower the 10-ton hoist until the fixture rotates to vertical.
- 5.6 Bolt the fixture to the Side Gap Plate.
- 5.7 Raise the fixture/gap plate assembly several inches.
- 5.8 Raise the 10-ton hoist until the Side Gap Plate rotates to vertical.
- 5.9 Raise the fixture/gap plate assembly using both hoists. Scale 10 should read approximately 4448 lbs. At this point there is no load on the 50-ton hoist.
- 5.10 Bring the fixture/gap plate assembly to the detector area.
- 5.11 Position the Side Gap Plate against the detector in its proper orientation.
- 5.12 Bolt the Side Gap Plate to the detector.
- 5.13 Remove the slack from the 50-ton hoist.
- 5.14 Gently lower the 10-ton hoist until Scale 10 reads 1469 lbs.
- 5.15 Gently unbolt the fixture from the Side Gap Plate.
- 5.16 Take fixture back to IR-2 assembly area.

## **6.0 Potential Hazards:**

- 6.1 Crushed extremities.
- 6.2 Personnel in path of load movement or under load.
- 6.3 Unexpected load movement.
- 6.4 Operator error.
- 6.5 Equipment failure.

## **7.0 Hazard Controls:**

- 7.1 Crane Operator shall be a SLAC-certified (EFD) rigger.
- 7.2 No one will be allowed under a suspended load or in the path of a load.
- 7.3 Strict controls of crane control box and rigging procedures.
- 7.4 Inspection of equipment prior to use.
- 7.5 Inspection of crane functions.
- 7.6 Current training of personnel.
- 7.7 Crane maintenance current.
- 7.8 Review of procedures with rigging personnel.
- 7.9 Appropriate use of personnel protection equipment.
- 7.10 Appropriate supervision of tasks.
- 7.11 Continuous safety oversight is preferred.

