



STANFORD LINEAR ACCELERATOR CENTER

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

**1.0 Loads:**

FWD Upper Center Gap Plate	2824 lbs
Fixture	1870 lbs
Total Load (excluding rigging)	4694 lbs

**2.0 Rigging Layout:**

Drawing number SK-HJK080104-4

**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 plus a 3-ton minimum capacity manual hoist (come-along) and three 6.5 ton minimum capacity screw pin shackles. The 50 ton main hoist shall support a 4-ft long sling of 5,000 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-HJK080104-4. The fixture is designed such that the CGZ of the unloaded fixture is located at points A and B. Points C and D represent the CGZ of the combined fixture plus the FWD Upper Center 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 C on the fixture. Connect the manual hoist shackle to Point D.
- 4.3 50-ton hoist: Connect shackle to Point E on the fixture.
- 4.4 Lift the fixture using both hoists. Attempt to keep the fixture horizontal. Scale 10 should read approximately 984 lbs. The load on the 50-ton hoist is approximately 886 lbs.
- 4.5 Bring the fixture to the detector area.
- 4.6 Place the fixture in the proper position to mate to the FWD Upper Center Gap Plate using the 10-ton hoist, the bridge, and the crane trolley. It may be necessary to make slight angular adjustments using the manual hoist. Bolt the fixture to the FWD Upper Center Gap Plate.
- 4.7 Gently lift on the 10-ton hoist until Scale 10 reads 4694 lbs.
- 4.8 Gently loosen the FWD Upper Center Gap Plate bolts.
- 4.9 Readjust fixture/gap plate position using the 10-ton hoist and the manual hoist as needed to minimize side loading on the gap plate bolts until all bolts are removed.
- 4.10 Remove the gap plate.

- 4.11 Bring the gap plate to the IR-2 assembly area.
- 4.12 Lower the 10-ton hoist and raise the 50-ton hoist until the fixture/gap plate assembly rotates to a position where the gap plate is horizontal.
- 4.13 Lower the gap flux bar on 4x4 wood dunnage using the 50-ton hoist.
- 4.14 Unbolt the fixture from the gap plate.
- 4.15 Raise the 10-ton hoist until the fixture rotates to a horizontal position.
- 4.16 Take the fixture away.

## 5.0 Installation Procedure:

- 5.1 The FWD Upper Center Gap Plate should be sitting on dunnage in a horizontal position.
- 5.2 Zero the crane scale readout with the rigging hardware hanging clear of the ground.
- 5.3 10 ton hoist: Connect the sling shackle to Point C on the fixture. Connect the manual hoist shackle to Point D.
- 5.4 50-ton hoist: Connect shackle to Point E on the fixture.
- 5.5 Lift the fixture using both hoists. Attempt to keep the fixture horizontal. Scale 10 shall read 984 lbs. There are 886 lbs of load on the 50-ton hoist.
- 5.6 Raise the 50-ton hoist and lower the 10-ton hoist until the fixture rotates 90 degrees.
- 5.7 Bolt the fixture to the Upper Center Gap Plate.
- 5.8 Raise the fixture/gap plate assembly using the 50-ton hoist.
- 5.9 Raise the 10-ton hoist rotating the fixture/gap plate assembly until the gap plate is vertical. Scale 10 should read approximately 4694 lbs.
- 5.10 Bring the gap plate to the detector area.
- 5.11 Position the FWD Upper Center gap Plate against the detector in its proper orientation.
- 5.12 Bolt the gap plate to the detector.
- 5.13 Lower the 10-ton hoist until scale 10 reads 984 lbs.
- 5.14 Gently unbolt the fixture from the FWD Upper Center Gap Plate.
- 5.15 Take fixture away.

## 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.

