



STANFORD LINEAR ACCELERATOR CENTER

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IR-2 RIGGING PROCEDURE and JOB HAZARD ANALYSIS FOR SPECIAL PURPOSE HANDLING FIXTURE FWD SOLENOID SUPPORT ARM

1.0 Loads:

Solenoid Support Arm	574 lbs
Fixture	472 lbs
Total Load (excluding rigging)	1046 lbs

2.0 Rigging Layout:

Drawing number SK-HJK080104-9

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 5,000 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 5,000 lb minimum working load rating with a 6.5 ton minimum capacity screw pin shackle on each end.

4.0 Removal Procedure:

Refer to drawing number SK-HJK080104-9. 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 FWD Solenoid Support Arm weight.

- 4.1 10-ton hoist: Connect the sling shackle to Point B on the fixture.
- 4.2 50-ton hoist: Connect the sling shackle to Point C on the fixture.
- 4.3 Raise the fixture using both hoists and bring to the detector area. The load on Scale 10 should read 263 lbs. The load on the 50-ton hoist is 209 lbs.
- 4.4 Release the solenoid axial swivel foot support.
- 4.5 Remove the two bolts on the solenoid support arm that will be hidden by the removal fixture.
- 4.6 Position the fixture to mate with the appropriate FWD Solenoid Support Arm.
- 4.7 Position the trolley so that the 10-ton hoist is directly over Point B on the fixture.
- 4.8 Gently lower the 50-ton hoist to position the fixture perpendicular to the support arm.
- 4.9 Bolt the fixture to the FWD Solenoid Support Arm.
- 4.10 Gently raise the 10-ton hoist until Scale 10 reads 1046 lbs.
- 4.11 Slowly remove the six bolts that still fasten the Solenoid Support Arm to the detector. Adjust the two hoists to minimize side loading of the bolts until all bolts are removed.
- 4.12 Bring fixture/support arm assembly to the IR-2 assembly area.

- 4.13 Raise the 50-ton hoist and lower the 10-ton hoist until the Solenoid Support Arm is horizontal.
- 4.14 Lower Solenoid Support Arm on to wood dunnage.
- 4.15 Unbolt fixture from Solenoid Support Arm.
- 4.16 Lift the fixture with the 50-ton hoist and then raise the 10-ton hoist until the fixture rotates to horizontal.
- 4.17 Take fixture away.

5.0 Installation Procedure:

- 5.1 Connect the 10-ton sling shackle to Point B on the fixture.
- 5.2 Connect the 50-ton sling shackle to Point C on the fixture.
- 5.3 Lift the fixture using both hoists.
- 5.4 Raise the 50-ton hoist until the fixture rotates to vertical.
- 5.5 Lower the fixture and bolt same to the Solenoid Support Arm.
- 5.6 Lift the fixture/support arm assembly using the 50-ton hoist.
- 5.7 Raise the 10-ton hoist until the Solenoid Support Arm rotates to vertical. Scale 10 should read 1046 lbs. There will be almost no load on the 50-ton hoist at this point.
- 5.8 Lift the fixture/support arm assembly using both hoists and bring the fixture to the detector area.
- 5.9 Position the Solenoid Support Arm to mate with the appropriate FWD Corner Block.
- 5.10 Bolt the Solenoid Support Arm to the FWD Corner Block by installing the six bolts that are accessible at this point.
- 5.11 Take up the slack in the 50-ton hoist sling. Lower the 10-ton hoist slightly until Scale 10 reads 263 lbs.
- 5.12 Gently unbolt the fixture from the Solenoid Support Arm.
- 5.13 Take fixture back to IR-2 assembly area.
- 5.14 Install the remaining two bolts on the Solenoid Support Arm.
- 5.15 Re-adjust the solenoid axial swivel foot support.

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.

