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Title:	**Project / System:**
Technical Specifications of Ground Handling Equipment for Antenna	Ground Handling Equipment for Antenna
	Model No. LIAPL/LCA-GHEA
	HAL ITEM CODE: 40503383

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Amendment History

Issue No.	Issue Date	Brief Description of Amendment	Change Request Ref.	Affected Pages	Affected Section	Change Effective From
01		Initial Issue	NA	NA	NA	ALL

List of Acronyms & Abbreviations:

Abbreviation /Acronyms	Definition
LIAPL	Laversab India Aviation Pvt Ltd
GHEA	Ground Handling Equipment for Antenna
DGAQA	Directorate General of Aeronautical Quality Assurance
NDT	Non-Destructive Testing
HAL	Hindustan Aeronautics Limited
MDI	Master Drawing Index
MTBF	Mean time Between Failure
QTP	Qualification Test Procedure
ORDAQA	Office of the Regional Director Aeronautical Quality Assurance
RDAQA	Regional Director Aeronautical Quality Assurance

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1. Introduction:

The Ground handling equipment (GHE) for Antenna is to install / remove AESA Antenna on LCA
MK1A Aircraft. It includes stackers along with lifting Frame, Pulley, sling, hook and swivel-eyebolts.

2. Scope.

This document establishes the technical requirements of Line Cooling System. It consists of physical dimensions, working principle with flow diagrams, material requirements including the specifications of vacuum pump. It also includes the technical specification of the Line Cooling System.

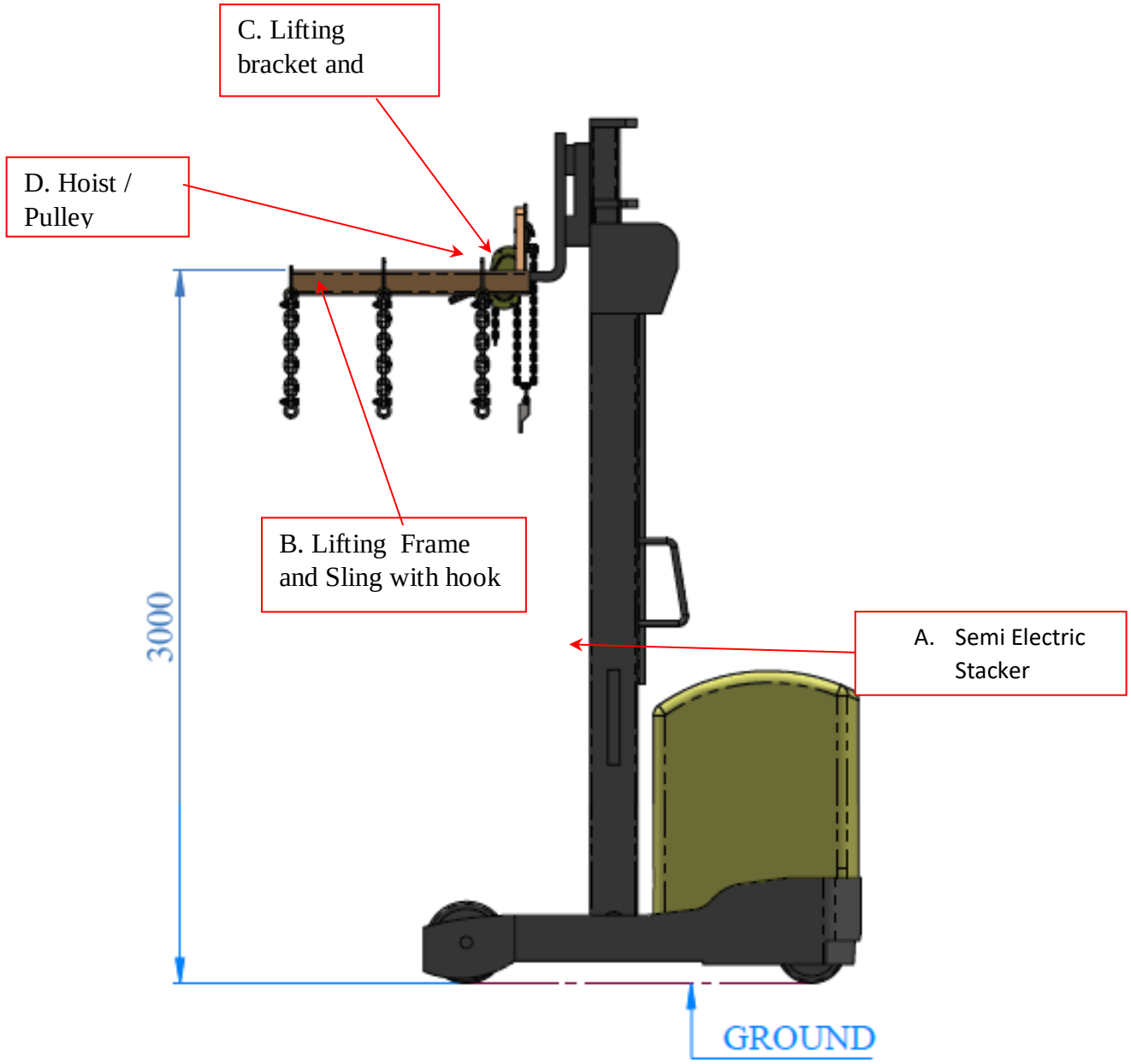
3. Reference Document:

Sl No	Description	Doc/Ref No
1	Technical Specification	07/LIAPL/GHEA/TS/001-Rev0/231224
2	Master Drawing Index	08/LIAPL/GHEA/MDI/001-Rev0/301224
3	Bill of Material	09/LIAPL/GHEA/BOM/001-Rev0/301224
4	Drawing Nos	LIAPL/GHEA/MDWG/001-REV3/211224

4. Equipment specification:

SL No	Item Description	Qty	Specification	Material
1	Stacker	1 No	Type: semi-automatic capacity 1.0 Ton Lifting Height: 3 Mtrs.	STD
2	Frame	1 No	As per Fig 1	Mild Steel Grade E250
3	Lifting bracket	1 No	Suitable	Mild Steel Grade E250
4	Slings	6 Nos	Each 0.5 Mtrs. (with stand min 300 Kgs)	Mild Steel Grade E250
5	Eye boult	6 Nos	Size:M8	Mild Steel Grade E250
6	Pulley with sling	1 No	Std (with stand Min 300 Kgs)	Mild Steel Grade E250

5. Construction:



A. **Stacker**

- Robust steel construction of chassis designed in order enhance stability during movement and turning.
- Polyurethane wheels Have designed for noiseless smooth ride over variety of surfaces.
- Multifunctional tilter head designed with ergonomically arranged switches for lift and lowering.
- Load carrying capacity 1 Ton.
- Robust steel fabricated mast and fork carriage should have free lift up to 3 Mtrs.

Pictorial view of semi electric stacker – reputed make

B. **Lifting Frame and Sling with hook as per drawing below**

- This will be fixed to stacker fork, and hooks will be attached to Antenna.
- It has to handle 100 kg weight to have 3 times safety margin considered. Dimensions of the frame will be as per below Fig:1.

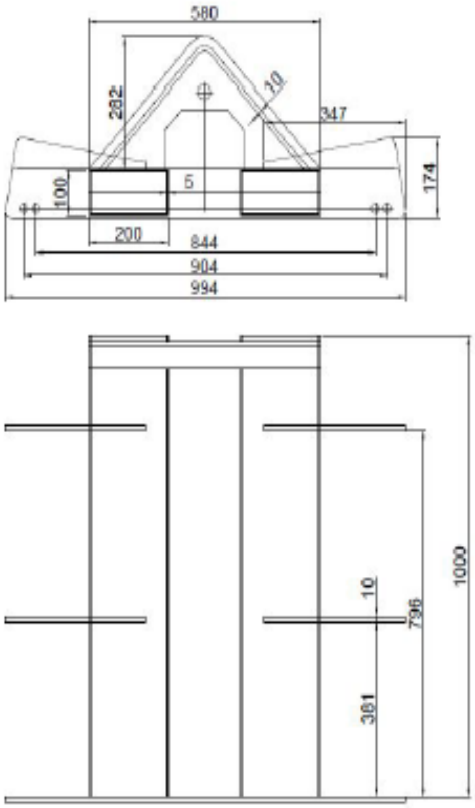


Fig:1 (Frame dimensions)

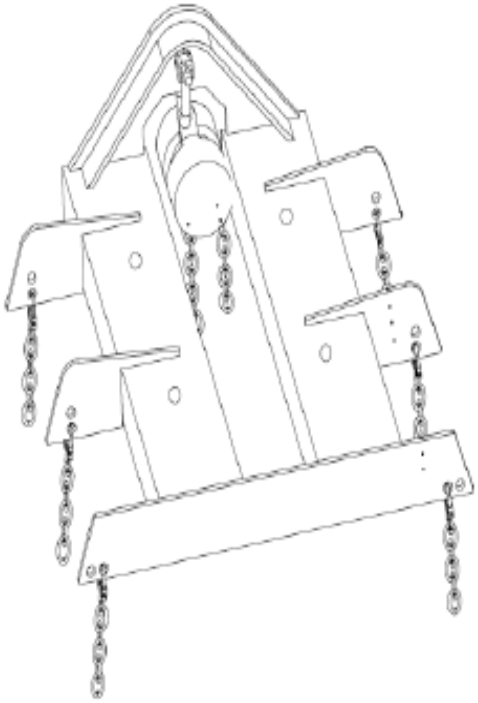


Fig:2 (Frame outline)

C. **Lifting bracket and swivel-eyebolt**

- Suitable lifting bracket and eye bolts with load carrying capacity min 300 Kg to hold antenna in position.
- Swivel eye bolts will be fixed to the antenna for which slings will be attached for lifting. Lifting bracket will be used along with pulley/ hoist for tilting the Antenna.
- Fig:2 and Fig:3 for reference.

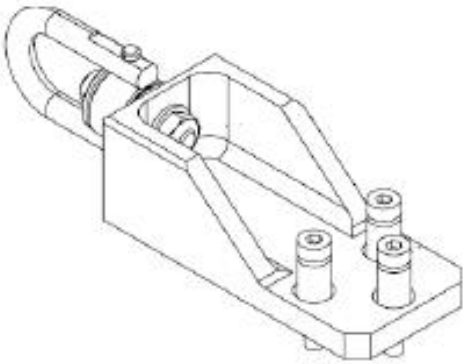


Fig 3 (Lifting bracket)

Fig 4 (Swivel Eye bolt)

D. **Pulley / Hoist**

- Pulley will help antenna to rotate orientation from horizontal to vertical position in order to install on Aircraft nose. It has to handle 100 kg weight to have 3 times safety margin.
- Hand operated wrench along with lever mechanism to position up and down.

6. Working Principle:

a. After opening the antenna-packing box, attach 2 swivel eye bolts and bracket to antenna for lifting.

b. Connect slings to eye bolt and bracket.

c. Lift the antenna from packing box with the help of stacker.

d. Antenna will be lifted and moved near to aircraft with the help of stacker and it's supporting elements (frame, slings, eye bolts).

e. Ground height of the antenna to be adjusted approx. 1.2 Mtrs (to the height of nose) with the help of stacker.

f. After attaining the appropriate height, Antenna will be rotated to slanting position with the help of lifting bracket and pulley fixed to stacker.

g. Finally, Antenna will be fixed on aircraft manually.

7. Documentations and others:

a) Documents:
   - Operating & Maintenance manual: Should contains operating procedure, storage conditions, components details, Calibration details etc
   - Calibration certificate: Should explain the procedure for doing the calibration and periodicity of calibration with agency addresses.
   - Warranty certificate: For 12 months from the date of delivery
   - Certificate of Conformity (COC)

b) Do's & Don't's & Operating procedures: Stickers of Do's & Don'ts, Operating procedures are to be pasted on equipment.

c) Spares: Manufacturer's recommended list of spares required for trouble-free maintenance of the equipment for a period of 5 years if any.

8. Qualification tests:

Refer the QTP document No: **07/LIAPL/GHEA/QTP/001-Rev0/021224.**

9. Conclusions:

After successful completion of the tests mentioned in this document for the first manufactured unit, the PC (Provisional clearance) and BPC (Bulk production clearance) may be provided for bulk manufacturing.

10. Product, Parameter & Functional Tested

- Primary test will be conducted at vender place without Jammer Pod
- Secondary trial at HAL Aircraft division Bangalore with Jammer POD fitted on LCA MKIA aircraft as per customer requirement and report will be submitted.
- After the successful trial will be dispatched to HAL Hyderabad.

11. Maintenance Specification

User manual and working instructions will be submitted along with product

12. Packaging and storage

The Test Jig will be in a shock proof packing for transportation to prevent damage during transportation / handling. The test jig weight is minimal and does not require any special equipment for handling.

The storage of the test jig shall be in a normal room condition (cool and dry).

13. Marking

The following details will be marked on the casing of the Differential Pressure Sensor.

- Manufacturer Name.
- Unit name.
- Model Number / Serial Number / Year of manufacture.

14. Product Deliverables

a. Deliverable Documentation

Following is the detailed list of items that will be delivered to HAL

LIST OF ALL THE DOCUMENTS TO BE DELIVERD

SL. No	Description	Quantity to be delivered
1.	General Arrangement (GA) Drawing and Bill of Materials with Specifications	1 Set
2.	Operating & Maintenance manual	1 Set
3.	Calibration certificate	1 Set
4.	Certificate of Conformity (COC) & Warranty certificate	1 Set