



FACTORY ACCEPTANCE TEST FOR LOADER CUM TIPPER

Department: Quality Assurance

FAT No.:

Title: Factory Acceptance Test for Loader cum Tipper

Effective Date:

Supersedes: Nil

Review Date:

**FACTORY ACCEPTANCE TEST
FOR
LOADER CUM TIPPER**

Vendor:

	Title	Name	Signature	Date
Prepared by	Project Engineer			
Reviewed by	Quality Engineer			
Approved By	Quality Manager			

Client Formulations Approvals:

Title	Name	Signature	Date
Quality Assurance			
Project Engineer			
Project Consultant			



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1 INTRODUCTION:

The objective of this Factory Acceptance Test is to verify that the equipment has been built and engineered according to the design specification and as a result approves the equipment for Shipping to Client site and Handover will be following completion of successful site acceptance test.

This document will be completed as follows:

1. All people who enter data into this report will complete the section of this FAT titled 'FAT Personnel'. See Appendix. A, B, C, D, E, F.
2. Any corrections in handwriting will be made by deleting with a single pen stroke; the correction will be initialed and dated.
3. Entries shall be made in this document using a ballpoint pen or suitable indelible ink in Blue only.
4. Compliance will be indicated by a written YES or NO in the relevant boxes provided. 'Ticks' and 'crosses' must not be used.
5. Correction fluid is not allowed.
6. Each section will be signed and dated by the tester/s when it is complete.
7. Any non-compliance identified during the execution of the test protocols must be documented in a Deviation report. These report sheets must be attached to the appendix of this protocol.

The report will describe the deviation in detail and, whenever possible, identifying the cause.

The objective of this Factory Acceptance Test is to verify that the equipment has been built and engineered according to the design specification and as a result approve the equipment for handover to the client and shipping to site.



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2 OVERVIEW:

Vendor has received an order for the material procurement, and manufacture and supply of 1 No. of LOADER CUM TIPPER from M/s vide their purchase order No.:..... Date:.....

DOCUMENT VERIFICATION

Objective

Ensure that all relevant design documentation is in place and referenced.

Method

Log the document title, reference number, and approval date and revision number. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria

All columns in the table should be completed. All documents should be identified, approved and referenced.

Document Expected	Reference Number	Rev	Approval Date	Available Yes/No
Purchase Order				
G A Drawing				
URS				
FDS				
Electrical Drawings				
Material Chart				
Operating Manual				
Manual for Bought out components:				

Comments

	Signed	Date
Executed By:		
Reviewed By:		



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MAJOR COMPONENT VERIFICATION

Objective To verify that the Major Components are installed in accordance with the approved GA drawings.

Method Take a Copy of the Approved GA drawing Highlight the components present on the machine in the drawing then fill the table below. Fill in the drawing number when verified. Attach the Highlighted drawing with this document. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria There should not be any variance with approved GA.

S.No	PART	MODEL / SIZE / MOC	MAKE	VERIFIED YES / NO
1.	Cone	SS 316		
2.	Pillar	MS/SS CLDED		
3.	Top Bearing Hgs	MS/SS CLDED		
4.	Bottom Bearing Hgs	MS/SS CLDED		
5.	Column support Tipper	MS, PROXY PAINTED		
6.	Lifting Arm	SS 304		
7.	Power Pack	MS Powder coated		
8.	Power pack motor	HP-1,RPM-1440,NFLP		
9.	Hydraulic Cylinder	50 Dia Bore x 850 Strock		
10.	Lower Limit Switch	NG3KB-510M		



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11.	Upper Limit Switch	NG3KB-510M		
12.	Butterfly valve	6''		
13.	Operating panel	SS Push Button Type		
14.	Cone gasket	Silicon, 16 x 16 mm square		

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EQUIPMENT MOC VERIFICATION

Objective	To verify that the material of construction of the machine is as per approved documents.
Method	Verify the material chart and the Test certificates are available with respect to acceptable standards. Attach the copy of the Material chart along with this document. Use a yellow highlighter pen to mark the components verified. Note down any discrepancy in the discrepancy report in this document.
Acceptance Criteria	The MOC and test certificates thereof must comply with the requirement of approved documents.

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EQUIPMENT DIMENSION VERIFICATION

Objective:

To verify that the equipment manufactured is in accordance with approved drawing.

Procedure:

Refer the approved drawing and compare with the actual dimensions on the equipment. Recheck whether the drawing clearly specifies the manufacturing standards adopted. With a red pen clearly strike off the incorrect dimension and put the correct dimension. Correct the drawing with the proper dimensions name the drawing "FACTORY ACCEPTANCE DIMENSION CHECK DRG". Attach the market drawing with this Document

Acceptance Criteria

The measured dimensions should be within the acceptable limits.

Drawing no.:

Comments:

Signed

Date

Executed By:

Reviewed By:



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CRITICAL DIMENSION VERIFICATION

Objective: To verify that the critical dimensions are met as given in the approved GA drawing.

Procedure: Refer the approved drawing and compare with the actual dimensions on the equipment. Recheck whether the drawing clearly specifies the manufacturing standards adopted. With a red pen clearly strike off the incorrect dimension and put the correct dimension. Document it in the deviation if dimensions are out of acceptable limit.

Acceptance Criteria The measured dimensions should be within the acceptable limits.

Drawing no.:

Critical Dimension	As mentioned in GA drawing	Actual	Accepted Yes/No
Height of the Tipper	3270 mm		
Distance between Column & Tipper cone.	940 mm		
Height of lifting arm center from ground at lowest position.	939 mm		
Maximum discharge height	1855 mm		
Height of lifting arm center from ground at maximum position.	2316 mm		

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EQUIPMENT FINISH VERIFICATION

Objective: To ensure that the equipment finish is as per the approved drawing.

Procedure: Stainless Steel Internal finish:

- There should be a No. exposed threads.
- There should be no crevices or sharp corners, weld splatters.
- Edges should be smooth and rounded off.
- Using an RA meter or comparative plate check the external finish
- No scratches should be present on the surface.
- Mild Steel:
 - The part should be properly descaled, degreased and painted.

Other equipments/Components should be properly cleaned, deburred and should have no sharp edges. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria The finish should be as per the approved drawing and as above

Part	Finish SS Surface	Internal finish as specified in the approved documents	Pass/Fail
Pillar	External	Ra-0.6 (180 Grit Matt)	
Tipper Arm	External	Ra-0.6 (180 Grit Matt)	
Tipper Cone	Internal	Ra-0.4 (240 Grit Matt)	
Tipper Cone	External	Ra-0.6 (180 Grit Matt)	

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EQUIPMENT NAME PLATE VERIFICATION

Objective: To ensure that the Nameplate is provided on the machine and is easily visible. It should clearly mention the name, reference no. of the machine and the date of manufacture.

Procedure: Visually inspect the machine for the Nameplate and check whether it contains the date, reference no. And date of manufacture. Mark /highlight the Location on the drawing. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria The Nameplate has all the above data inscribed on it.

DESCRIPTIONS

VERIFIED (YES/NO)

Name Plate Location is Acceptable and marked on the drawing?

Model:	GMP	Capacity:		Pass/Fail
Type:	LOADER CUM TIPPER	Date of Mfg.:		
MOC:	SS316	Inspection By:	CLIENT	
Sr. No:				



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CONTROL PANEL BUILD QUALITY

Objective: To ensure that the electrical equipments are assembled as per electrical GA drawings.

Procedure: Check orientations, drawings, and placement of switchgears as per GA. Highlight the components on the GA, so verified. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria All the equipments are assembled as per GA.

Description	Verified Yes/No
Electrical Equipments orientations are as per GA Drg no. _____	
Electrical Wiring Diagram Attached?	
Panel Build Quality Acceptable?	

Comments:

	Signed	Date
Executed By:		
Reviewed By:		



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ELECTRICAL WIRING DIAGRAM

Objective:	To compare the electrical components in the panel and the wiring identification with the electrical drawings.
Procedure:	<p>The tester will compare the installed components with those specified on the drawings and check the wiring identification is as shown on the drawings and will mark with a 'highlighter' pen each of the details on the drawing which are verified. A minimum of 20% of the components fitted will be checked and highlighted. Any correction to the drawing will be written on the drawing by the relevant item in RED ink.</p> <p>When the tester has completed the check they will date and sign the marked-up print and write the words: - 'FACTORY ACCEPTANCE TEST ELECTRICAL COMPONENTS CHECK'</p> <p>The tester will attach the Marked-Up print to this report as an appendix given below. All attachments to this protocol to be marked up with this protocol number including the number of pages and the appendix to which it is attached.</p> <p>Any items on the drawings in non-compliance will be detailed in a deviation report.</p>
Acceptance Criteria	The connections are as per the wiring diagrams.

Electrical Drawing No.	Rev. No.	Pass/Fail

Comments:

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Reviewed By:		



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ELECTRICAL COMPONENT/WIRING TAG VERIFICATION

Objective	Confirm that all the electrical Components/Wires are as per given Tag in the drawings.
Method	Verify that the tags on the Components and wires are as per the wiring diagrams. Fill in the table below. Any discrepancies to be noted on the review form and on the Deviation Report.
Acceptance Criteria	The tag Numbers should tally.

S. No.	Description of components	Type / Specification	Qty.	Make	Verified Yes/No

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WIRING TUG TEST

Objective

Confirm that all the wires are connected to the electrical components tightly.

Method

Lightly Pull all the wires connected to the electrical components one by one testing any loose connections. Re do the connection if any is found loose. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria

Ensure all wires connected tightly to the electrical components.

Comments:

	Signed	Date
Executed By:		
Reviewed By:		



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EQUIPMENT CONTROL FUNCTIONS AND INTERLOCKS VERIFICATION

Objective

To verify that the equipment controls and interlocks function as specified in the manual

Method

Run the machine. By operating verify and check whether the controls and interlocks are in place by simulating the conditions. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria

The Controls and interlocks should function as per the manual

Controls	Procedure For Simulating condition	Observation	Pass/Fail
General			
Overload Relay			

Interlock on	Description	Procedure for Simulating condition	Observation	Pass/Fail
Power pack	Limit interlock	Power pack motor stops when upper or lower limit switch is pressed.		

Comments

	Signed	Date
Executed By:		
Reviewed By:		



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LOAD TRIAL VERIFICATION

Objective

To verify the functionality of the tipper.

Method

Fill the tipper cone with dummy Powder & then lift & Tilt the Tipper cone up and bring it down.
Document the results on the attachment.

Acceptance Criteria

The lifting and Tilting operation happens gently and without jerk. There should be no abnormal sound during operation.

MOTOR TRAIL WITH -----Kg LOAD

Motor RPM	Hydraulic Pr. (Limit to be add)	Motor Temp. < 80 ^{0c}	Ampere R, Y, B 1.5 Amp	Noise Level<80 db (to be done FAT)	Complies Yes/No
1440					

HYDRAULIC SYSTEM

Leakage from hydraulic system	Acceptance Criteria	Complies Yes/No
	NO Leakage	



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Post approval

Acceptance of the successful completion of the FAT, including satisfactory resolution of all discrepancies noted during execution, will be documented below, signed by the person with overall review responsibility for the protocol and by the client's authorized signatories who approved the protocol.

The FAT data for this equipment has been reviewed and found to be acceptable as per acceptance criteria.

Agreed criteria	Agreement YES / NO
1. Approval subjected to shipment as is	
2. Machine is approved with correction of all Deviation noted during FAT	
3. Machine is not approved & will require repeat FAT following correction of all deviation.	

VENDOR			
Reviewed By	Print Name	Signature	

Client			
	Print Name	Signature	Date
Consultant			
Engineering			
Quality Assurance			



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APPENDIX B - CALIBRATION CERTIFICATES REGISTER

Number	Description	Attached Yes/No

Comments

Tested By: (VENDOR) Date	Approved By (CLIENT) Date
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APPENDIX C - DEVIATION REPORTS PROCEDURE

During FAT testing, a Deviation Report must be raised when there is a failure to meet acceptance criteria.

The aim is to:

- Clearly describe the deviation.
- To document and approve the evaluation of the impact of the deviation.
- To document and approve the corrective action required to resolve it.
- To document the closing out of the deviation with the appropriate approvals.

Procedure

- a. If a test step fails to meet test acceptance criteria/method then a Deviation Report must be raised. See Appendix.
- b. All Deviation Reports must be logged by completing the Deviation Report Register. See Appendix
- c. Each Deviation Report must reference the following identification numbers: -
 - a. Protocol document reference number.
 - b. The applicable test reference number (XX) as defined in the protocol.
 - c. A unique deviation reference number, which comprises the specific test number and a sequential deviation number (YY) for that test in the format XX/YY. Subsequent deviations on the same
- d. The person raising the deviation must clearly describe the exact nature of the deviation (why acceptance criteria/method has not been met) using the 'details of deviation noted' box provided.
- e. The deviation must be fully evaluated and the necessary corrective action formulated and must be pre-approved by Vendor & the Client. The findings of this evaluation together with details of corrective action required to resolve the deviation should be clearly documented by completing the 'evaluation of deviation/corrective actions to be taken' box.
- f. Once the proposed corrective action has been pre-approved, the tester will execute the corrective work and verify implementation of corrective action by completing the 'Results of Corrective Action' box. The tester will then sign and date the Deviation report.
- g. The completed Deviation Report will require approval by the appropriate personnel on the Deviation Report.
- h. Completed Deviation Reports must be attached to the Appendix of this FAT protocol.



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APPENDIX E - DEVIATION REPORT SHEET

Deviation No:		Test Reference:		
Details of Deviation Noted:				
Completed By:			Date:	
Evaluation of Deviation / Corrective Actions To Be Taken:				
Completed By:			Date:	
PRE-APPROVALS - EVALUATION / CORRECTIVE ACTIONS				
The following signatures pre-approve the content of the evaluation and the necessary corrective actions to be taken.				
Function	Pre-Approval Required (Yes / No)	Name (Print)	Signature	Date
VENDOR				
Client				
Results Of Corrective Action:				
Completed By:			Date:	
APPROVALS - RESULTS OF CORRECTIVE ACTIONS/ DEVIATION CLOSE OUT				
The following signatures approve the results corrective actions taken and the closure of the deviation.				
Approvals	Name (Print)	Signature	Date	
(VENDOR				
Client				



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APPENDIX F - ATTACHMENTS REGISTER

Description	Number/Revision

Comments

Tested By: (VENDOR)	Approved By (CLIENT)
Date	Date



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CLEANLINESS AND APPEARANCE

Objective

Equipment and parts thereof properly cleaned after the Factory acceptance tests

Method

Physically examine the internal wetted part of equipment. Ensure there is no material retention, all surfaces are properly washed and fit for client use fill out the table below.
External Surface:
All surfaces should be cleaned for stains or marks if any. Visually inspect the cleaning after it is complete. Any discrepancies to be noted on the review form and on the Deviation Report.

Acceptance Criteria

Machine should be thoroughly cleaned

Part

**Part Cleaned
Yes/No**

Pillar

External

Lifting Arm

External

Control panel

External

Tipper cone

internal

Tipper cone

External

Comments:

Signed

Date

Executed By:

Reviewed By:



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POST FAT DOCUMENT

Objective

The machine has been dismantled and packed in accordance with PO and site conditions

Method

Machine should be dismantled, marked and matched to facilitate ease of Installation. Individual Sub-assemblies/components so dismantled should be wrapped in plastic and packed in accordance with the Shipment protocol. In case of over seas assignments painted parts should be greased and labeled" DE-GREASE BEFORE USE". Sub-assemblies/components should be properly secured to packing to prevent transit damage A detailed packing list will be filled as per format and signed out.

Acceptance Criteria

Packing list should be complete and no. of components must tally with list. Packing sizes should be in accordance with commercial documentation.

Comments:

	Signed	Date
Executed By:		
Reviewed By:		