

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

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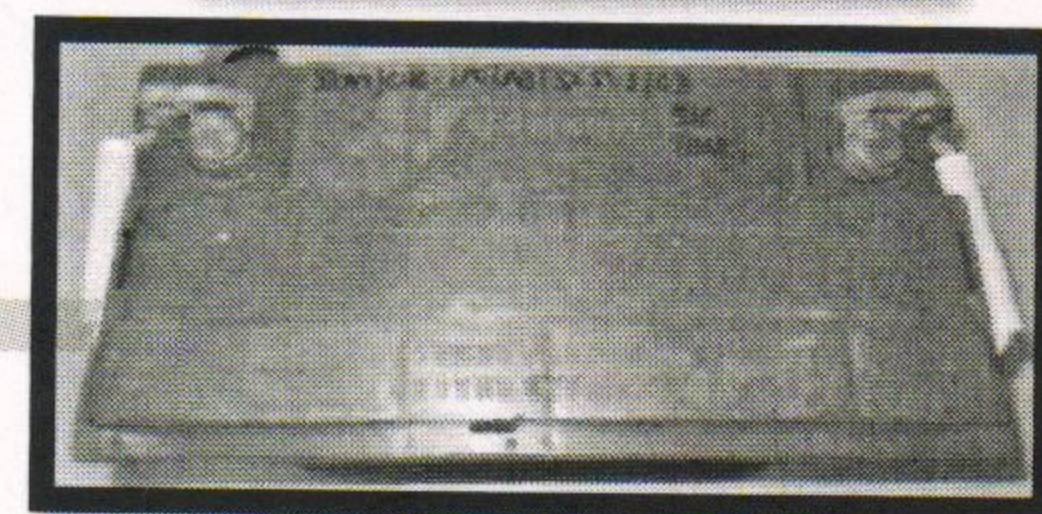
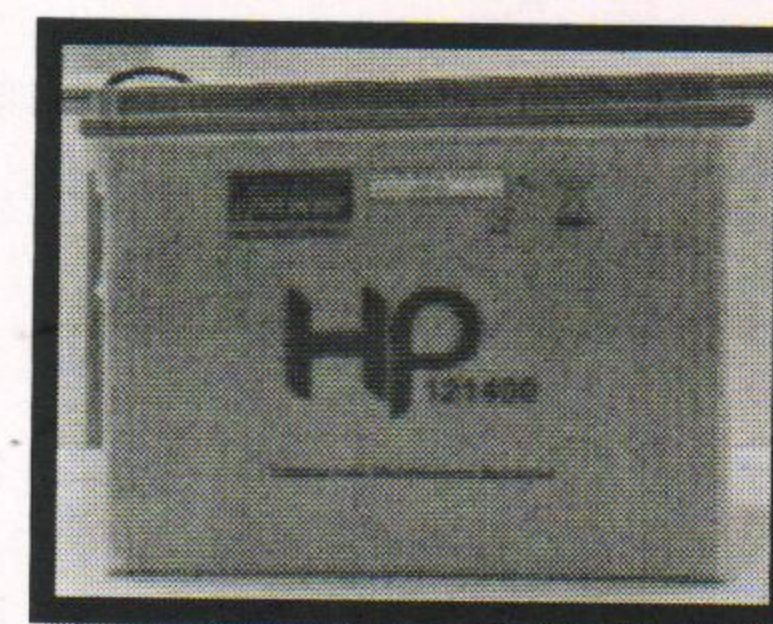
TEST REPORT

C T O B N 5036


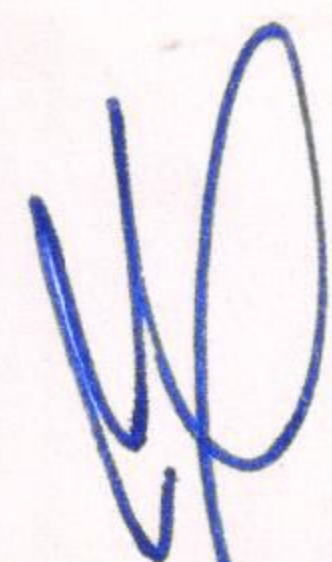

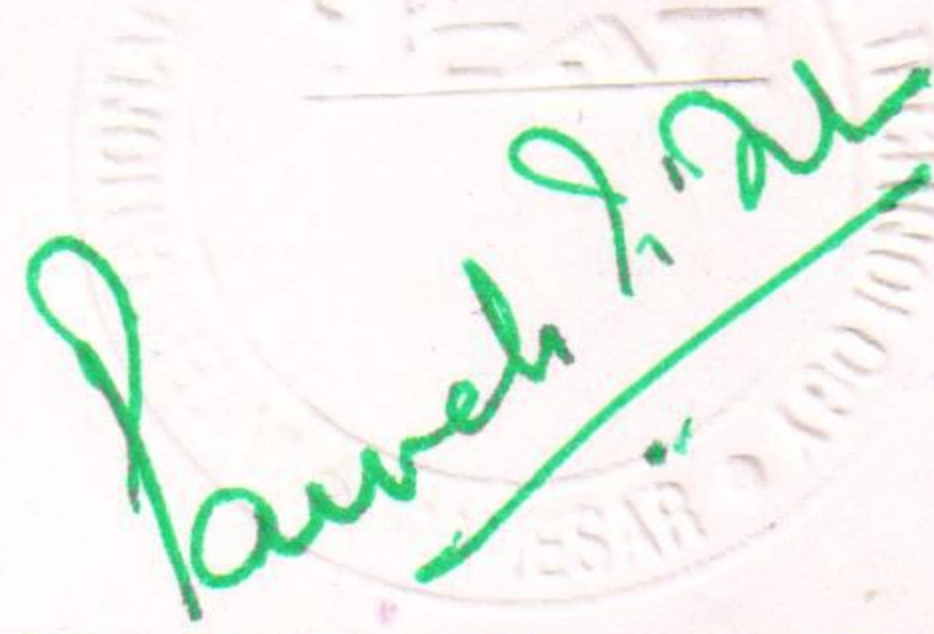

Date: 05.02.2018

- 1.0 NAME AND ADDRESS OF THE: **M/s. COMPUTECH SYSTEMS**
CUSTOMER G-4 ,Harsha House ,Karampura Complex ,
New Delhi -110015 , India
- 2.0 NAME AND ADDRESS OF THE: **M/s. JIANGSU KOLIXIN BATTERY CO.,LTD**
MANUFACTURER 38 Dongsan Road,Hongze Development Zone,Huanan
City,Jiangsu Province,China
- 3.0 CUSTOMER LETTER REF: IOCS No. CCTNCOMSMMEEG56501 Dated 30-Nov-2017

- 4.0 DESCRIPTION OF DEVICE UNDER TEST (DUT):
- DUT Name : Battery Module, 12 V
Battery Type : Tubular Lead acid battery
Battery Capacity(Ah) : 90 Ah (Ah in 5 hrs)
Rated Voltage : 12 V
Id/Model No. : HP12 1400
Quantity : 06 Nos.(ICAT/EEG/56501/01-06)
Trade Name : IPOWERR
Drawing No. : 201801001



- 5.0 OBJECTIVE OF THE TEST:
To validate the Safety Requirements of Traction Batteries as per AIS: 048 published in 2009.
- 6.0 TEST RESULTS:
Please refer the Test requirements and Results in Annexure-I of this report.
- 7.0 CONCLUSION:
The battery specified in Sr. No. 4.0 of this test report met all the test requirements when tested as per AIS: 048 published in March 2009.

Prepared By	Checked By		Approved By	
				
UDIT KAUL Asst. Manager	MADHUSUDAN JOSHI Dy. General Manager		PAMELA TIKKU Sr. General Manager	

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[56501]

Office Address : Plot No.-26, Sector-3, HSIIDC, IMT-Manesar, Gurugram-122050. Haryana (India)

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Phone : 0124-4586111, Fax : +91-124-2290005. E-mail: team@icat.in, Website : www.icat.in

(An ISO 9001, ISO 14001 and OHSAS 18001 certified, scope wise NABL accredited and BIS recognised Test House)

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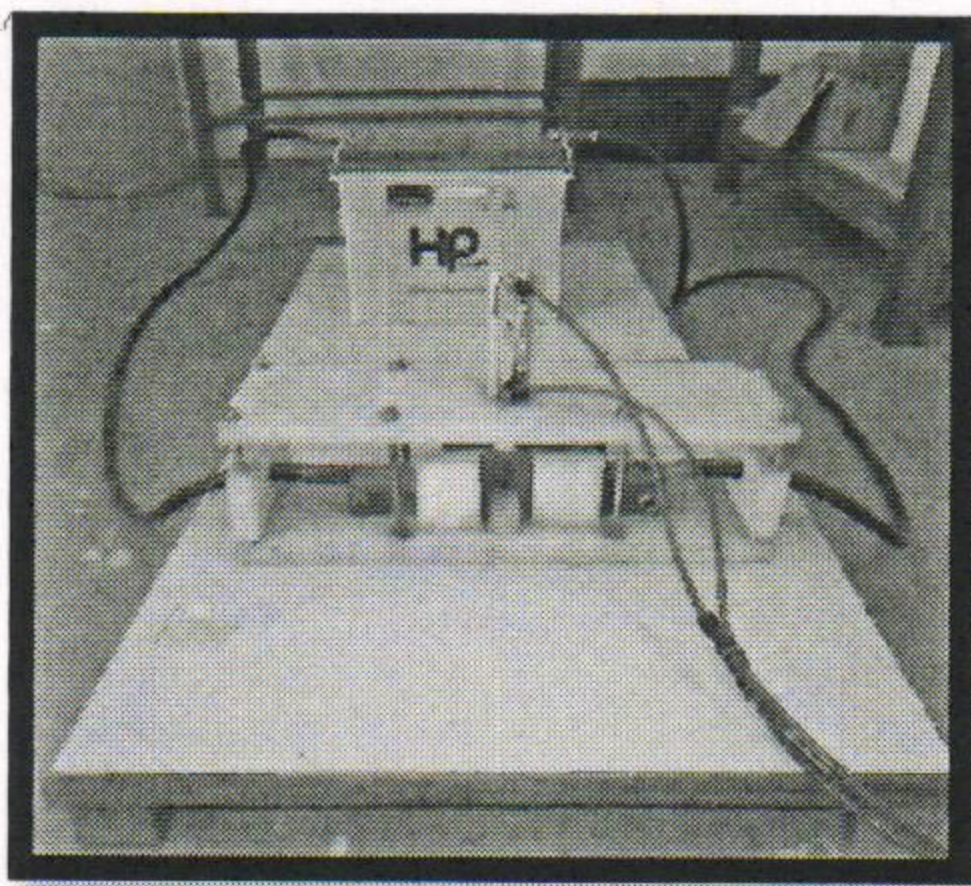
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The appropriate local court at Gurgaon shall have the jurisdiction in respect of any dispute, claim or liability arising out of this report.

<p>Prepared By</p>  <p>UDIT KAUL Asst. Manager</p>		<p>Checked By</p>  <p>MADHUSUDAN JOSHI Dy. General Manager</p>	<p>Page 2 of 7 + Dwg [56501]</p>
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Annexure – I

1.0 TEST REQUIREMENTS AND RESULTS:

Cl. No.	Test	Test Requirements	Observations/Results
2.1 Electrical Tests			
2.1.1	Short Circuit test (Test ID:ICAT/EEG/56501/01)	 <p>Battery Condition: Fully charged (100% SOC), contained at ambient temperature. Apply a hard short in less than one second to the battery module with a conductor specified in the standard. Test Duration: 10 minutes, or until another condition occurs which prevents completion of test (i.e. component melting, etc.) Lab temperature: Not exceeding 30°C Acceptance Criteria: After 2 hours of observation: At the end of the test, there shall be no: a) Physical damage to the casing or mechanical parts. b) Melting of components. c) Fire or explosion. It is acceptable for the battery to become dry at the end of the test.</p>	<p>Room temperature : 25°C</p> <p>Conductor of $\leq 5\text{m}\Omega$ was used and short was applied for 10 minutes.</p> <p>No physical damage, explosion or melting observed.</p> <p>Satisfactory.</p>

Prepared By





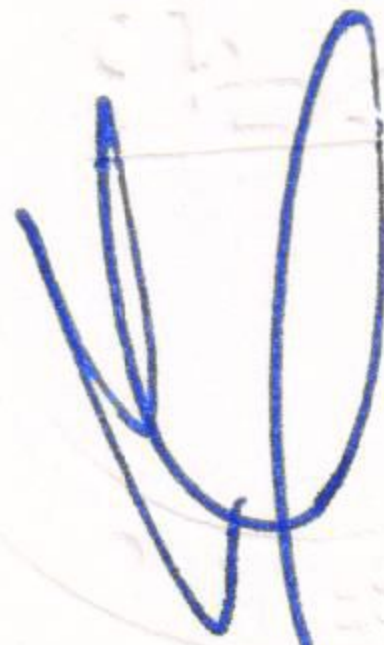
 UDIT KAUL
 Asst. Manager


Checked By



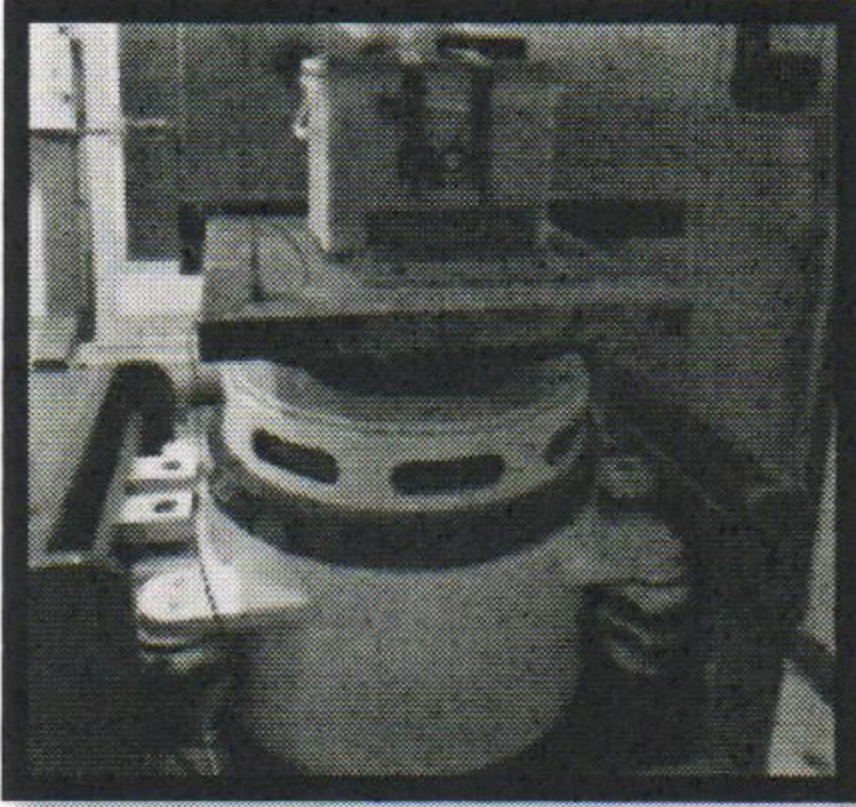
 MADHUSUDAN JOSHI
 Dy. General Manager




<p>2.1.2</p>	<p>Over Charge test (Test ID:ICAT/ EEG/56501/02)</p> <div data-bbox="902 432 1568 790" data-label="Image"> </div> <p>Battery Condition: Fully charged (100% SOC), contained at ambient temperature at $27\pm5^{\circ}\text{C}$. Duration: 10 hours</p> <p>The battery is to be overcharged at a constant charging current of 0.1 (C_{10}).</p> <p>Acceptance Criteria: At the end of the test, there shall be no:</p> <ul style="list-style-type: none"> a) Physical damage to the casing or other mechanical parts. b) Melting of components. c) Fire or explosion. 	<p>Battery was charged with 10.0 A for 10 hours.</p> <p>No physical damage, melting or explosion observed.</p> <p>Satisfactory.</p>
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Prepared By		Checked By	
			
UDIT KAUL		MADHUSUDAN JOSHI	
Asst. Manager		Dy. General Manager	

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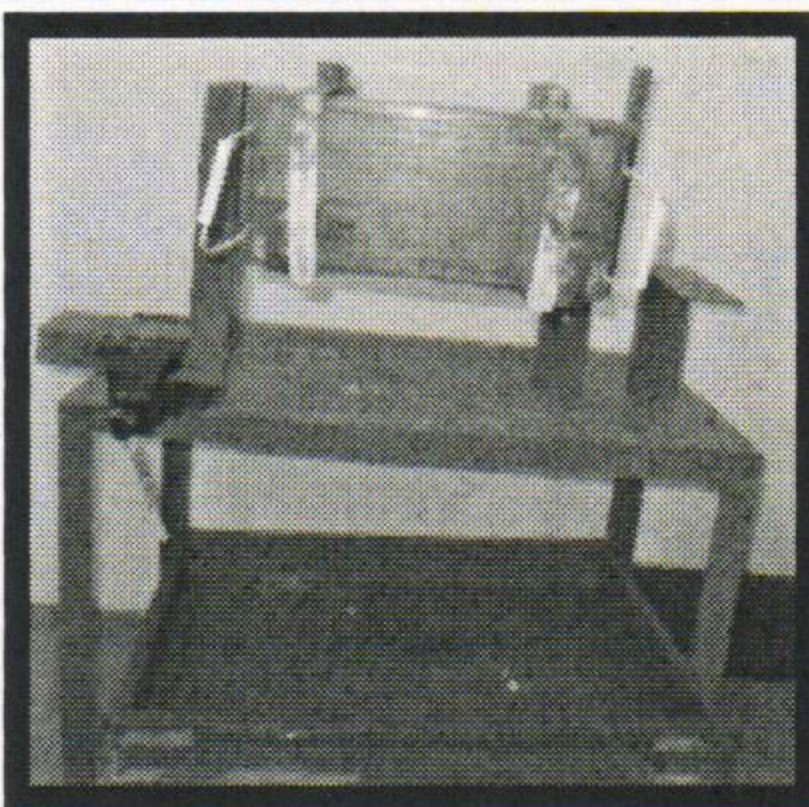
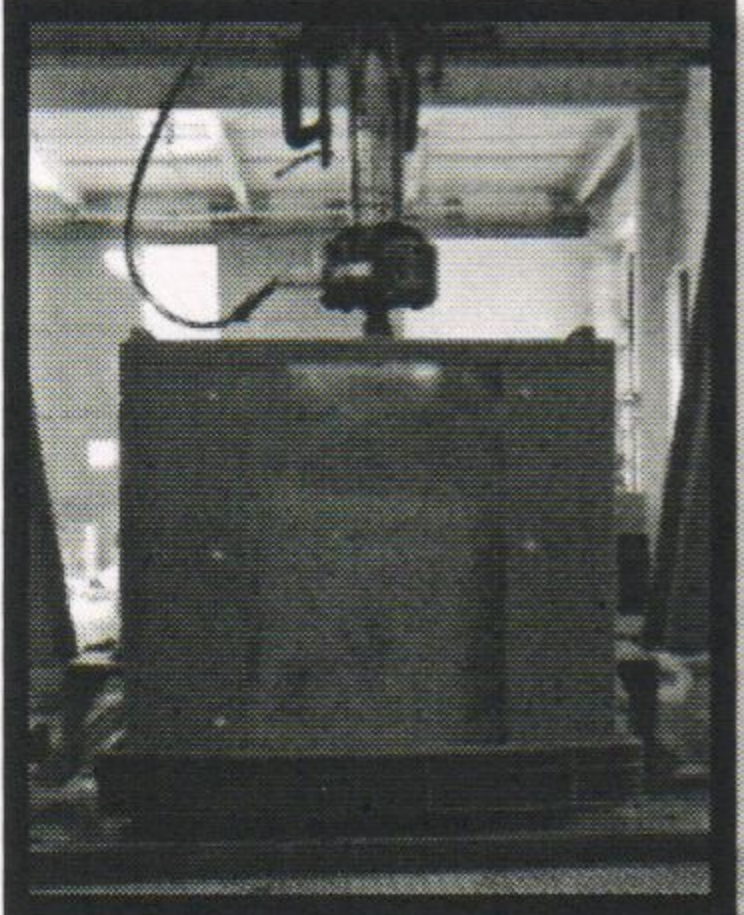
2.2 Mechanical Tests




<p>2.2.1</p>	<p>Vibration test (Test ID: ICAT/ EEG/56501/03)</p>	<div data-bbox="1006 476 1366 814" data-label="Image">  </div> <p>Battery Condition: Fully charged (100% SOC), contained at ambient temperature, firmly held on the vibration table in vehicle mounting position. Axis: Vertical and Horizontal axis, with battery positioned in longitudinal direction. Acceleration: 3 g (sinusoidal vibration) Frequency: 30-150 Hz Sweep rate: 1 octave per minute Duration: 2 hours in each axis Immediately after the test, discharge the battery at room temperature not exceeding 30°C, at the rate of $I = 0.2 \times \text{Battery capacity}(C_5)$</p> <p>Acceptance Criteria: During test, there shall be no electrolyte loss. The deterioration of battery rated capacity during discharging shall not be more than 10%. At the end of the test, there shall be no: a) Physical damage to the casing or other mechanical parts b) Fire or explosion</p>	<p>No electrolyte loss observed during test.</p> <p>Immediately after the test, battery was discharged at 18.0A And deterioration observed was not more than 10%.</p> <p>No physical damage or explosion observed.</p> <p>Satisfactory.</p>
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<p>Prepared By</p> <div data-bbox="400 2363 544 2581" data-label="Text">  </div> <p>UDIT KAUL Asst. Manager</p>	<div data-bbox="751 2387 983 2622" data-label="Image">  </div>	<p>Checked By</p> <div data-bbox="1238 2457 1383 2675" data-label="Text">  </div> <p>MADHUSUDAN JOSHI Dy. General Manager</p>	<p>Page 5 of 7 + Dwg [56501]</p>
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<p>2.2.2</p>	<p>Shock test (Test ID: ICAT/EEG/56501/04)</p>	<div data-bbox="1049 329 1330 705" data-label="Image"> </div> <div data-bbox="900 729 1485 1029" data-label="Image"> </div> <p>Battery Condition: Fully charged (100% SOC), contained at ambient temperature not exceeding 30°C, firmly held on the vibration table in vehicle mounting position. Axis: Vertical and Horizontal axis, with battery positioned in longitudinal direction. Acceleration: 30 g (half-sine wave) No. of shocks: 10 in each axis Duration: 15 ms of each shock Immediately after the test, discharge the battery at room temperature, at the rate of $I = 0.2 \times \text{Battery capacity}(C_5)$ Acceptance Criteria: The deterioration of battery rated capacity during discharging shall not be more than 10%. At the end of the test, there shall be no: a) Physical damage to the casing or other mechanical parts b) Fire or explosion.</p>	<p>Immediately after the test, battery was discharged at 18.0A and deterioration observed was not more than 10%.</p> <p>No physical damage or explosion observed.</p> <p>Satisfactory.</p>
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<p>Prepared By</p> <div data-bbox="421 2354 540 2560" data-label="Text"> </div> <p>UDIT KAUL Asst. Manager</p>	<div data-bbox="763 2401 1000 2637" data-label="Image"> </div>	<p>Checked By</p> <div data-bbox="1266 2481 1385 2716" data-label="Text"> </div> <p>MADHUSUDAN JOSHI Dy. General Manager</p>	<p>Page 6 of 7 + Dwg [56501]</p>
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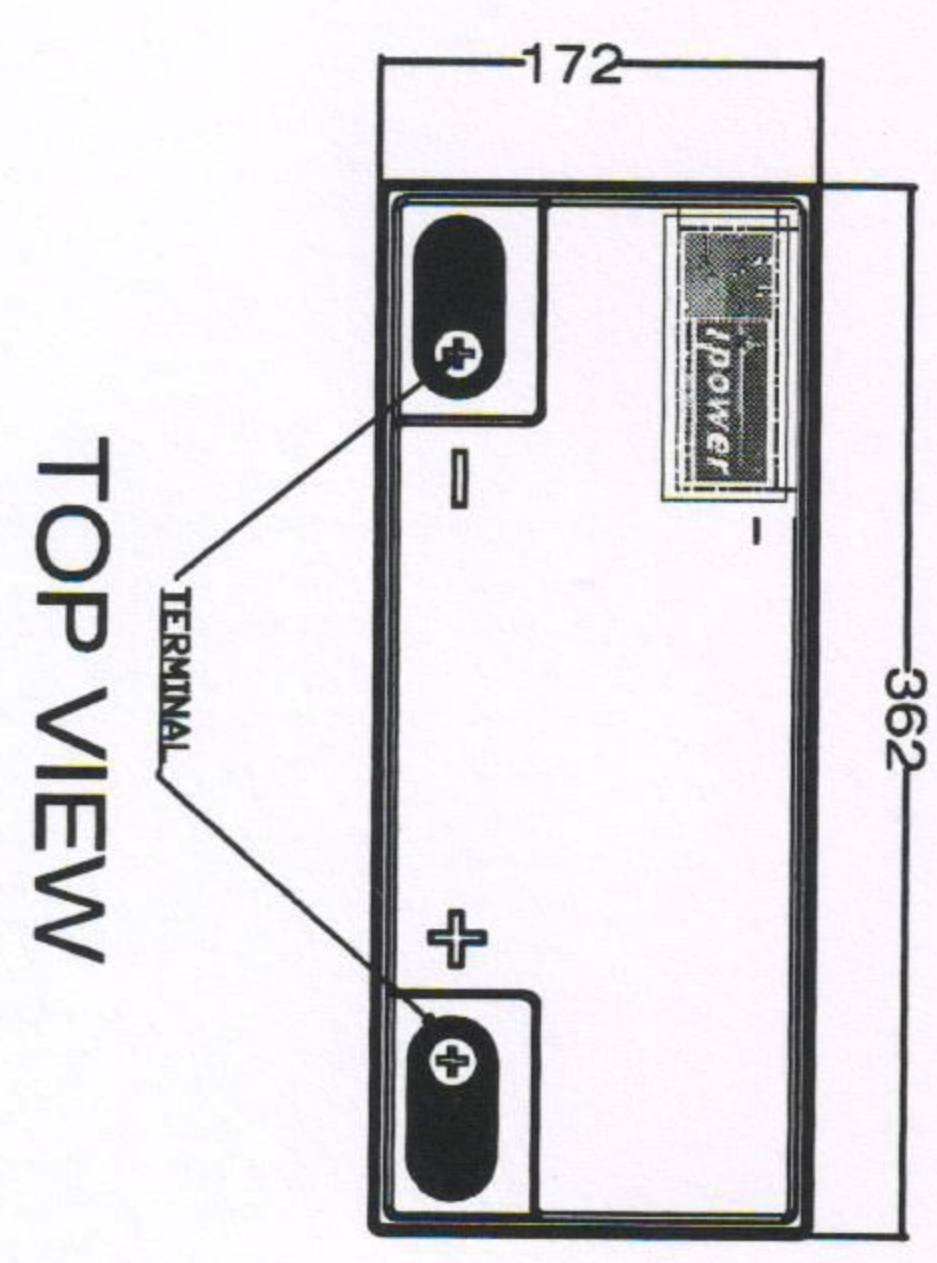
2.2.3	Roll-Over Test (Battery Module) (Test ID: ICAT/EEG/56501/05)	 <p>Rotate the battery module one complete revolution in one direction, for one minute in a continuous, slow-roll fashion, and observe leakage, if any. Then rotate the battery module in 90° increments in same direction for one full revolution. Hold the battery module for one hour at each position.</p> <p>Acceptance Criteria: The volume of electrolyte spilled in each position shall not be more than 25 ml per module.</p>	Spillage observed was less than 25ml in each position. Satisfactory.
2.2.4	Penetration Test (Test ID: ICAT/EEG/56501/06)	 <p>The battery module shall be penetrated with a mild steel (conductive) pointed rod, which will be electrically insulated from the test fixture.</p> <p>Rate of penetration: 8 cm/s. Diameter of Rod: 20mm Orientation of penetration: perpendicular to the electrode plates. Minimum Depth of penetration: Through three cells or 100 mm</p> <p>The battery should be observed, with the rod remaining in place, for a minimum of one hour after the test.</p> <p>Acceptance Criteria: At the end of the test, there shall be no: a) Melting of components. b) Fire or explosion.</p>	After penetration, up to a depth through three cells with a pointed mild steel rod of diameter 20mm, electrically insulated from the test fixture, no explosion, no fire and no melting observed. Satisfactory.

Prepared By		Checked By	
			
UDIT KAUL Asst. Manager		MADHUSUDAN JOSHI Dy. General Manager	Page 7 of 7 + Dwg [56501]

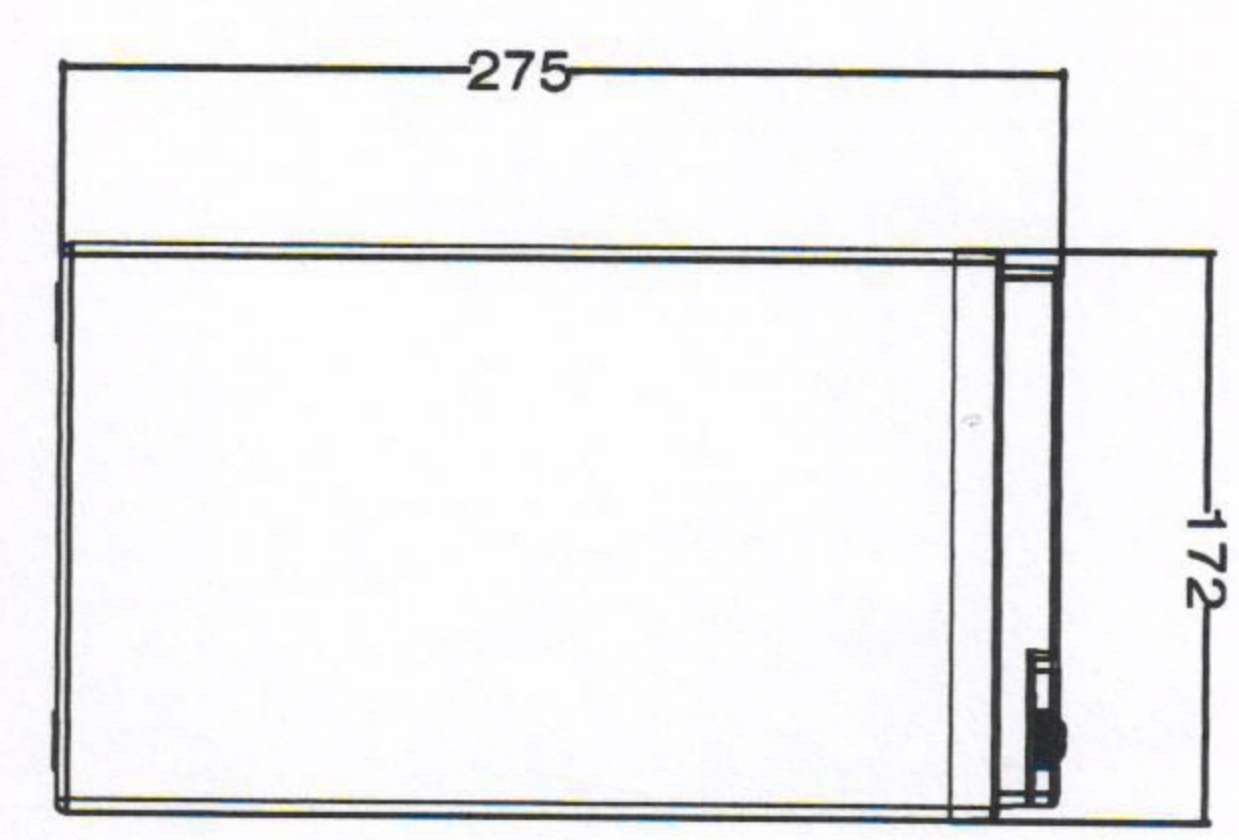
test report no:- CT08N5036 Dated:- 05.02.2018

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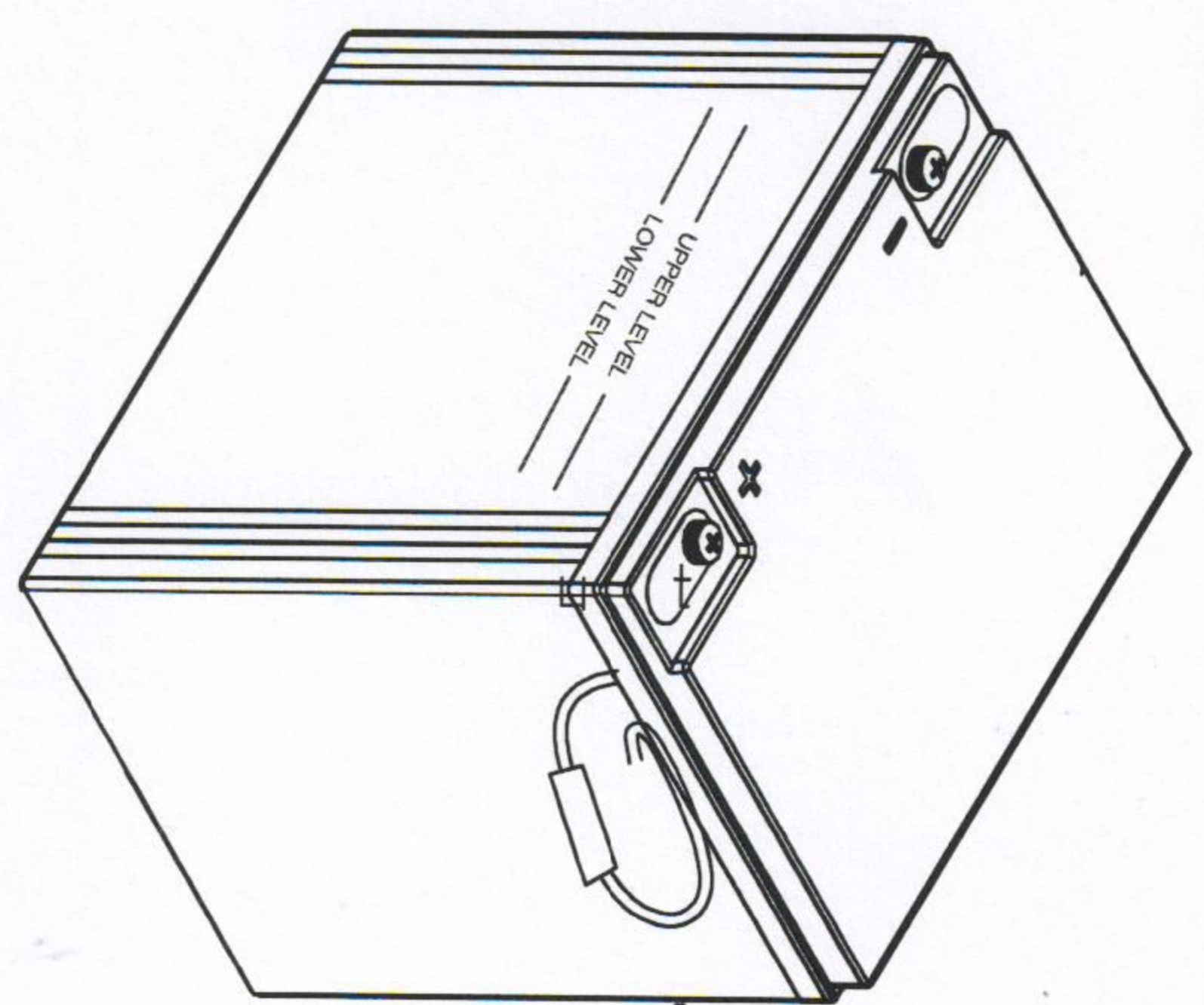
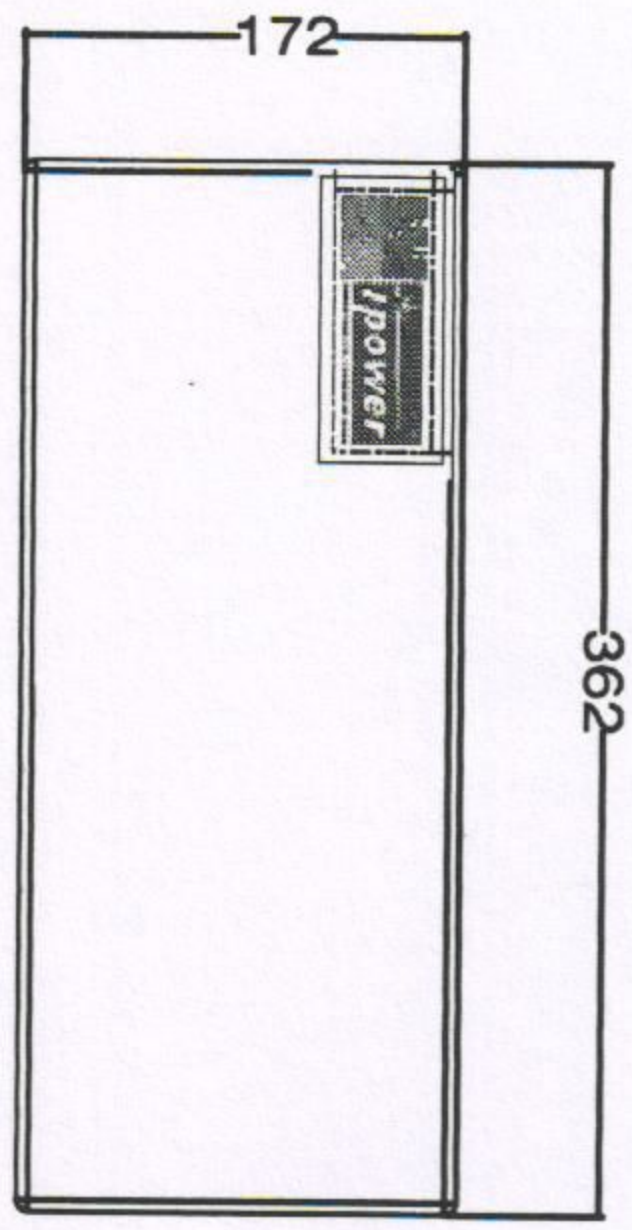
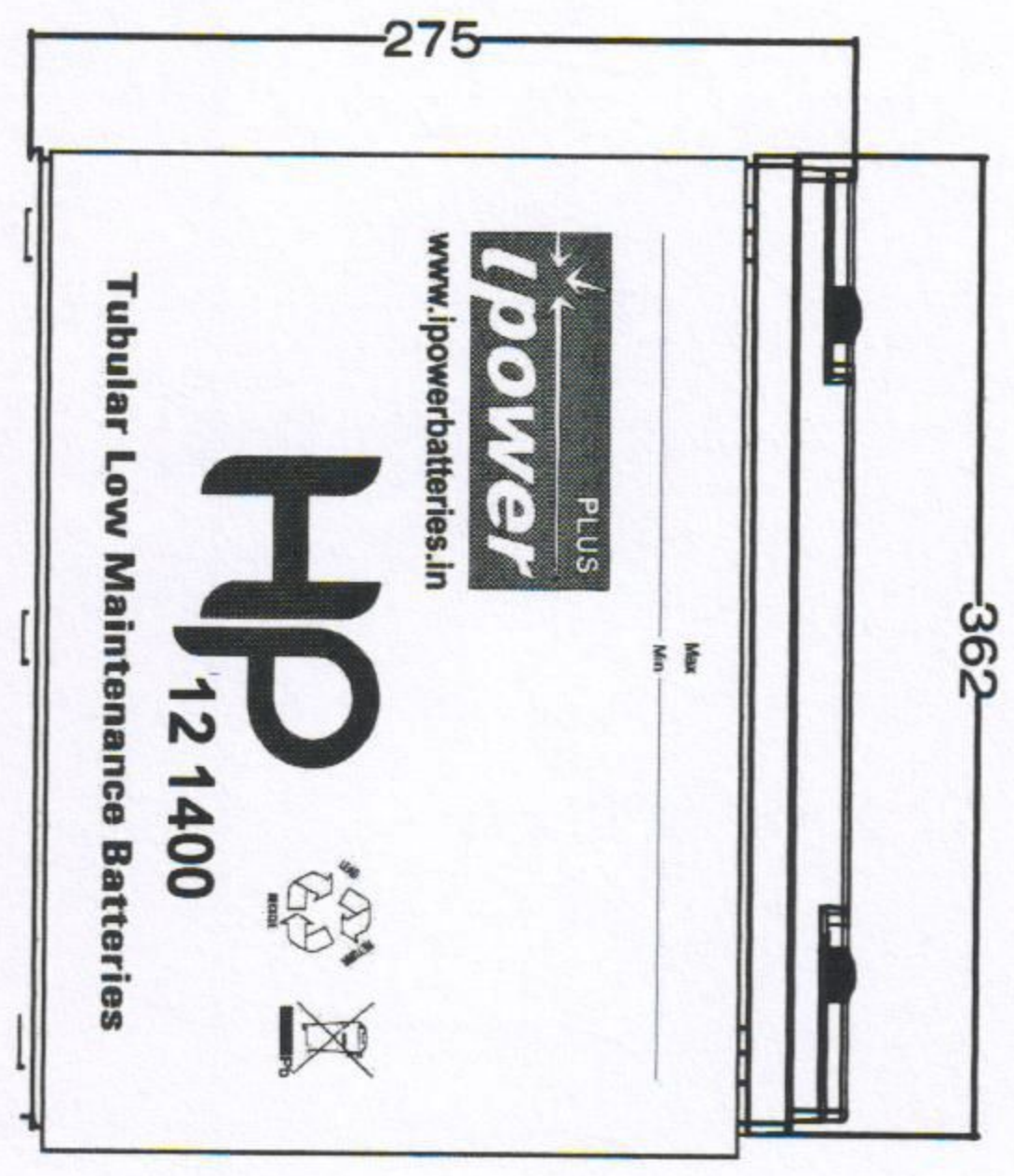
DRAWN	RIMPY
CHECKED	AMMY KR
DRWG NO.	201801001
DESIGNED	VIKAS AGGARWAL



TOP VIEW



SIDE VIEW



ISOMETRIC PREVIEW



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A				COMPUTECH SYSTEMS		CAPACITY :- 12V90AH/C5	
REV NO.		APPD. BY	G-4, Harsha House ,Karampura Complex DELHI 110015		TRADE NAME :- I POWER		
NO OF PLACE	MODIFICATION NO	DATE	PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT		DATE :- 13/01/18		

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