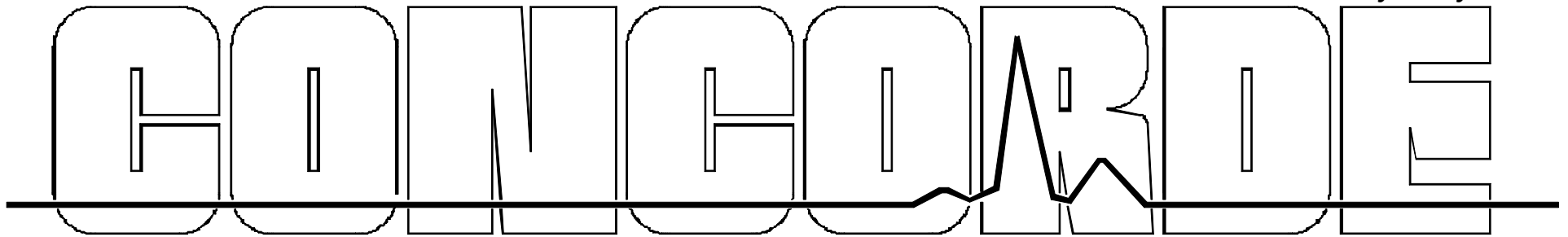


... the heart of your system. ®



Concorde Battery Corporation

2009 San Bernardino Road
West Covina, California, USA 91790

RG-300

24 VOLT 3.3 Ah, VALVE REGULATED, LEAD-ACID, AIRCRAFT BATTERY

DECLARATION OF DESIGN PERFORMANCE

TO THE REQUIREMENTS OF

RTCA DO-293 and IEC 60952-1

Applications: Emergency Aircraft Battery for Avionics

NOTE: Applications may not be a complete list of all applications for this battery type.

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Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Description	<p>The RG-300 is a 24 volt battery designed for emergency power to avionics.</p> <p>The battery consists of twelve 2 volt cells connected in series. Intercell connections are made on a circuit board at the top of the cells. The cells are housed in an epoxy fuse coated aluminum container and cover. The battery hold down is incorporated into the outer housing. The electrolyte is a sulfuric acid and water solution and is absorbed within the battery plates and separators. There is no free electrolyte. See Material Safety Data Sheet for hazardous material identification and precautions. Each battery is equipped with Power Pole style terminal connectors.</p> <p>The RG-300 is electrically identical to the TSO authorized RG-122-3 therefore many qualifications are based on similarity to the RG-122-3. The RG-300 conforms to Concorde envelope drawing <i>RG-300</i>.</p>		
Format	IEC 60952-2	Concorde Drawing No. RG-300	
Connector	IEC 60952-2	The battery is available with Power Pole type connectors	
Mass		RG-300.	4.4 kg (9.6 lbs)
Charging method	IEC 60952-1, 4.3	Constant potential at 28.25 V	
Any auxiliary requirement:		None	
Ventilation	DO-293, 1.9 IEC 60952-2	Battery is not equipped with vent tubes	
Flammability	IEC 60952-2	RG-300 outer container is fire resistant	
Unspillability		Non spill	
Electrical Performance			
Rated Capacity (C ₁)	DO-293, 2.2.2 IEC 60952-1, 5.1.1	3.3 Ah	
Capacity at -18°C	DO-293, 2.2.3 IEC 60952-1, 5.1.2	2.1 Ah, when discharged at the C ₁ rate.	
Capacity at -30°C	DO-293, 2.2.4 IEC 60952-1, 5.1.3	1.5 Ah, when discharged at the C ₁ rate.	
Capacity at +50°C	DO-293, 2.2.5 IEC 60952-1, 5.1.4	3.3 Ah, when discharged at the C ₁ rate.	
Power Rating +23°C	DO-293, 2.2.6.1 IEC 60952-1, 5.2.1.1	N/A, Not rated for engine starting	
Power Rating -18°C	DO-293, 2.2.6.2 IEC 60952-1, 5.2.1.2		
Power Rating -30°C	DO-293, 2.2.6.3 IEC 60952-1, 5.2.1.3		
Rapid Discharge Capacity at 23°C	DO-293, 2.3.1 IEC 60952-1, 5.3.1	1.9 Ah, when discharged at the 10C ₁ rate to 10V.	
Rapid Discharge Capacity at -30°C	DO-293, 2.3.2 IEC 60952-1, 5.3.2	0.7 Ah, when discharged at the 10C ₁ rate to 10V.	

Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Charge Retention	DO-293, 2.4 IEC 60952-1, 5.4	Qualification based on similarity to the RG-122-3. +23 C - Rating value for design = 95% of rated capacity.	
		Qualification based on similarity to the RG-122-3. +50 C - Rating value for design = 70% of rated capacity.	
Storage	DO-293, 2.5 IEC 60952-1, 5.5	Qualification based on similarity to the RG-122-3. DO-293 - 1 year storage life test successfully completed.	
Charge Stability	DO-293, 2.6 IEC 60952-1, 5.6, Class I	Qualification based on similarity to the RG-122-3. OK. Max battery temperature on charge = 50°C. Charge current fell during the entire charge period. Capacity at end of test > C ₁	
Short-circuit Current	DO-293, 2.7 IEC 60952-1, 5.7	Peak current = 433 A Last recorded current = 234 A at 3.3s	
Charge Acceptance	DO-293, 2.8 IEC 60952-1, 5.8	Qualification based on similarity to the RG-122-3. +23°C = 101%	
		+23°C = 101% after storage testing.	
		-18°C (battery with heaters only): N/A -40°C (battery with heaters only): N/A	
Insulation Resistance	DO-293, 2.9.1 IEC 60952-1, 5.9.1	All samples successfully met the test requirements	
Dielectric Strength	DO-293, 2.9.2 IEC 60952-1, 5.9.2	All samples successfully met the test requirements.	
Duty Cycle Performance	DO-293, 2.10 IEC 60952-1, 5.10	N/A, Not rated for engine starting.	
Water Consumption	DO-293, 2.11 IEC 60952-1, 5.11	N/A	
Overcharge Endurance	DO-293, no requirement IEC 60952-1, 5.12	Not tested	
Cyclic Endurance	DO-293, 2.12 IEC 60952-1, 5.13	Qualification based on similarity to the RG-122-3. 100 cycle requirement successfully met.	
Deep Discharge	DO-293, 2.13 IEC 60952-1, 5.14	Qualification based on similarity to the RG-122-3. Test requirements successfully completed.	
		After storage for 12 months: Test requirements successfully completed.	
Induced Destructive Overcharge	DO-293, 2.14 IEC 60952-1, 5.15	Qualification based on similarity to the RG-122-3. Test requirements successfully met.	
Electrical Emissions	DO-293, 2.15 IEC 60952-1, 5.16	N/A, Battery contains no active electronics.	
Environmental Performance			
Vibration	DO-293, 3.1 IEC 60952-1, 6.1	Test and qualified to DO-293.	

Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Acceleration	DO-293, no requirement IEC 60952-1, 6.2	Not tested.	
Operational Shock	DO-293, 3.3.1 IEC 60952-1, 6.3, Class I	Tested and qualified to DO-293.	
Crash Safety Shock	DO-293, 3.3.2 IEC 60952-1, 6.4	Tested and qualified to DO-293.	
Explosion Containment	DO-293, 3.4 IEC 60952-1, 6.5	Tested and qualified to DO-293.	
Altitude	DO-293, 3.5 IEC 60952-1, 6.6	<i>Qualification based on similarity to the RG-122-3.</i> Tested and qualified to DO-293.	
Rapid Decompression	DO-293, 3.5.2 IEC 60952 no requirement	<i>Qualification based on similarity to the RG-122-3.</i> Tested and qualified to DO-293.	
Temperature Shock	DO-293, 3.6 IEC 60952-1, 6.7	Tested and qualified to DO-293.	
Fungus Resistance	DO-293, 3.7 IEC 60952-1, 6.8	Tested and qualified to DO-293.	
Humidity	DO-293, 3.8 IEC 60952-1, 6.9	<i>Qualification based on similarity to the RG-122-3.</i> Tested and qualified to DO-293.	

Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Fluid Contamination	DO-293, 3.9 IEC 60952-1, 6.10	Test was performed on representative material samples. All samples successfully met the test requirement. Fluids tested: Fuels: Aviation Jet A fuel Aviation piston engine fuel (100LL AVGAS) Hydraulic fluids: Mineral based (MIL-H-5606) Non-mineral based synthetic (MIL-PRF-83282 and MIL-PRF-87257) Lubricating oils: Mineral based (MIL-L-6081) Ester based synthetic (MIL-L-23699) Internal combustion engine SAE 15W40 Solvents and cleaning fluids: Isopropyl alcohol (TT-I-735) Denatured alcohol De-icing fluid: Ethylene Glycol Propylene Glycol AMS 1424 (SAE AEA Type I) AMS 1428 (SAE AEA Type VI) Insecticides - none Sullage - none Disinfectants (heavy duty phenolics) - none Coolant dielectric fluid - none Fire extinguishants - none	
Salt Spray	DO-293, 3.10 IEC 60952-1, 6.11	<i>Qualification based on similarity to the RG-122-3.</i> Tested and qualified to DO-293.	
Physical Integrity at High Temperature	DO-293, 3.11 IEC 60952-1, 6.12	Tested and qualified to DO-293.	
Flammability	DO-293, no requirement IEC 60952-1, 6.13	Not tested. See Section 1	
Electrolyte Resistance	DO-293, 3.12 IEC 60952-1, 6.14	All samples met the specification requirements.	
Thermal Sensors	DO-293, 3.13 IEC 60952-1, 6.15	N/A.	
Component Qualification tests	DO-293, 3.14 IEC 60952-1, 6.16	All sample components successfully met the test requirements.	
Battery Airtightness	DO-293, no requirement IEC 60952-1, 6.17	N/A.	
Cell Baffle	DO-293, no requirement IEC 60952-1, 6.18	N/A	

Characteristic	RTCA DO-293 IEC 60952-1	Requirement/Performance	Test Report / Reference
Strength of Receptacle	DO-293, 3.15 IEC 60952-1, 6.19	N/A.	
Handle Strength	DO-293, 3.16 IEC 60952-1, 6.20	N/A.	

N/A = Not Applicable

Authentication:

Manufacturer: Concorde Battery Corporation

Signed:

Name of signatory: John B. Timmons, PE

Title or Function: Vice President Engineering