





FED. SUP. CLASS
 8115

GENERATOR CHARACTERISTICS	
RATED VOLTS	30
RATED CURRENT (NOMINAL AMPS)	300
RATED SPEED (RPM)	3000-3500
MINIMUM SPEED FOR REGULATION (RPM)	3500
MAXIMUM SPEED FOR REGULATION (RPM)	19,000
OVERSPEED (RPM)	11,000
REGULATED FIELD CURRENT (MAXIMUM AMPS)	6
POWER DISSIPATED BY REGULATOR (MAX. WATTS)	60
WEIGHT (MAXIMUM POUNDS)	88
MOMENT OF OVERHAUL (MAXIMUM INCH-POUNDS)	290
MINIMUM NATURAL FREQUENCY (CPS)	240
BLAST COVER (SEE NOTES)	142
SHEAR (POUNDS PER INCH)	1700 (240°)
EFFICIENCY MINIMUM 70% TO 100% (240°)	70%

REQUIREMENTS

1. 3" AXIAL SPOUT END PER ACCESS
 2. Q. A. D. FLANGE AND AIR OUTLET PER SHEET 1
 3. THERMOSTAT (SETTING 133 °C (3 °C), USED WITH -1 ONLY.
 4. THE AIRCRAFT MANUFACTURER SHALL ALLOW CONNECTION LEAD LENGTH FOR THE LIMITING GENERATOR DIMENSIONS SHOWN ON THE DRAWING.
 5. THE AIRCRAFT MANUFACTURER SHALL ALLOW ADEQUATE CLEARANCE FOR INSTALLATION AND MOVING THE GENERATOR.
 6. DIFFERENTIAL FAN REQUIRED FOR SELF-COOLING.
 7. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: FRACTIONS -1/32, DECIMALS -0.001.
 8. GENERATOR SHALL BE FINISHED IN A COLOR CONFORMING TO MILITARY STANDARD 581 (CHROME).
 9. TESTS. THE FINISH SHALL BE UNAFFECTED BY ENVIRONMENTAL CONDITIONS SPECIFIED IN REF. 17875. THE FINISH SHALL BE UNAFFECTED BY ENVIRONMENTAL CONDITIONS SPECIFIED IN REF. 17875.
 10. STARTER PERFORMANCE CRITERIA. STARTER PERFORMANCE CRITERIA IS BASED ON USE ON NAVY 1000 AMPERE, CONSTANT CURRENT ELECTRICAL POWER SYSTEM DESCRIBED IN MILITARY STANDARD 17875 (REV.) OF FEBRUARY 1963.
- STARTER CHARACTERISTICS. THE STARTER-GENERATOR WHILE OPERATING AS A STARTER, WITH 1.25 OHM EXTERNAL RESISTANCE IN SHUNT FIELD CIRCUIT, SHALL BE CAPABLE OF DELIVERING THE FOLLOWING MINIMUM CRANKING TORQUE AT THE INDICATED DRIVE SPEED (RPM) WHEN POWERED BY THE INDICATED INPUT.

INPUT (AMPERES)	INPUT (VOLTS)	DRIVE SPEED (RPM)	DRIVE TORQUE (IN. FT.)
1000	-	0	62
1000	-	700	62
-	73	1700	44
-	83	2500	0
-	20	1900	0

1. The generator is required to supply the specified current at the specified voltage and frequency. The generator shall be capable of operating at the specified voltage and frequency for the specified time. The generator shall be capable of operating at the specified voltage and frequency for the specified time.

 P.A. NAVY - 42
 Other Code

TITLE

 STARTER-GENERATOR, DIRECT CURRENT, 300 AMPERE,
 30 VOLT, WIDE SPEED RANGE,
 CLASS A, TYPE 1

MILITARY STANDARD
MS18108(AS)

 DOCUMENT SPECIFICATION
 MIL-G-8142

SUPERSEDES

SHEET 3 OF 3

11-60-100-0001

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VED SUP CLASS
8115

11. **ENDURANCE: (STARTER)** THE STARTER-GENERATOR SHALL BE CAPABLE OF COMPLETING 1200 CYCLES OF OPERATION WHEN OPERATING AS A STARTER IN ACCORDANCE WITH THE FOLLOWING DUTY CYCLE WITH 1.33 OHMS EXTERNAL RESISTANCE IN BRUSH FIELD CIRCUIT. EXTERNAL COOLING MAY BE USED TO EXPEDITE TESTING AND TO PREVENT EXCESSIVE TEMPERATURE. MAXIMUM TIME BETWEEN CYCLES SHALL BE THREE MINUTES.

TABLE 1 - ENDURANCE TEST - STARTER

FLYWHEEL POLAR NO. MENT OF INERTIA LB.-FT.	PHASE A			PHASE B			PHASE C		
	ACCELERATION - FROM REST WITHIN TIME INDICATED			STEADY STATE OPERATIONS WITH AUXILIARY TORQUE LOAD AS SPECIFIED			ACCELERATION - RPM TO WHICH FLYWHEEL SHALL BE ACCELERATED WITHIN TIME INDICATED		
	FINAL RPM	INPUT MAX AMPS	SEC	MIN DRIVE RPM	MAX TORQUE LB FT	TIME TERM SEC	FINAL RPM	TERM VOLT	MAX TIME SEC
01	650	1000	5	650	45	5	2000	22	15

PHASE A THIS PHASE SHALL CONSIST OF ACCELERATING THE SPECIFIED FLYWHEEL INERTIA LOAD FROM REST TO THE SPECIFIED SPEED WITHIN THE SPECIFIED TIME AND WITH THE INPUT CURRENT LIMITED TO SPECIFIED VALUE.

PHASE B THIS PHASE SHALL CONSIST OF A 10 SECOND PERIOD OF STEADY STATE OPERATION AT THE SPECIFIED LOAD AND TERMINAL VOLTAGE.

PHASE C AFTER COMPLETING PHASE B, THE TORQUE LOAD SHALL BE REMOVED AND THE STARTER PERMITTED TO ACCELERATE THE FLYWHEEL INERTIA LOAD TO THE SPECIFIED SPEED WITHIN THE SPECIFIED TIME.

NOTE: THE ACCELERATION SPECIFIED FOR PHASES A AND C ASSUMES A FRICTIONLESS SYSTEM AND DOES NOT CONSIDER TEST STAND LOSSES SUCH AS WINDAGE OR BEARING FRICTION. ACCORDINGLY, IN ORDER TO ENSURE THAT THE MINIMUM DRIVE SPEED SPECIFIED IN PHASE C IS ATTAINED, AN EXTERNAL ASSIST TORQUE MAY BE SUPPLIED ON THE FLYWHEEL INERTIA LOAD MAY BE REDUCED. IN ADDITION, PHASE C OPERATION MAY BE TERMINATED AT A DRIVE SPEED LESS THAN THE SPECIFIED VALUE PROVIDED THE TOTAL WORK-POWER-SECOND OUTPUT OF THE STARTER IS EQUIVALENT TO THAT WHICH WOULD BE REQUIRED TO ACCELERATE A FRICTIONLESS SYSTEM TO THE SPECIFIED CUT-OFF SPEED.

12. **LOW TEMPERATURE: (STARTER)** AFTER THE TEMPERATURE OF ALL COMPONENTS OF THE STARTER-GENERATOR HAS BEEN STABILIZED AT -85° F (-55° C) FOR A MINIMUM OF 4 HOURS, THE STARTER-GENERATOR SHALL BE SUBJECTED TO FOUR CONSECUTIVE ENDURANCE TEST CYCLES AS DESCRIBED IN TABLE 1. THE PERFORMANCE DEVELOPED DURING PHASE B OF EACH CYCLE SHALL NOT BE LESS THAN 90 PERCENT OF THE VALUES LISTED IN TABLE 1.
13. **HIGH TEMPERATURE: (STARTER)** REPEAT THE SAME PROCEDURE AS FOR LOW TEMPERATURE EXCEPT THAT THE STABILIZED TEMPERATURE SHALL BE 160° F (71° C). SEPARATION OF STARTER AND GENERATOR TESTS IS NECESSARY SINCE AN EXTREMELY SOPHISTICATED TEST STAND WOULD BE REQUIRED TO PERMIT STARTING AND GENERATING OPERATION IN QUICK SUCCESSION. PERFORMANCE LOSS SHALL NOT EXCEED THAT ALLOWED IN THE LOW TEMPERATURE TEST.
14. **CONSECUTIVE CYCLE: (STARTER)** THE STARTER-GENERATOR SHALL BE CAPABLE OF PERFORMING FIVE CYCLES OF OPERATION AT 30 SECOND INTERVALS. EACH CYCLE SHALL BE IN ACCORDANCE WITH DUTY CYCLE LISTED IN TABLE 1. NO EXTERNAL COOLING SHALL BE PROVIDED DURING THIS TEST.
15. **BRUSH MARKING:** EACH BRUSH SHALL HAVE A DIAGONAL GROOVE IN THE ANTI-DRIVE SIDE, EXTENDING FROM THE BRUSH FACE TO A POINT AT THE BRUSH RACK OR FRONT, WHICH INDICATES 100 PERCENT OF ALLOWABLE WEAR.

FOR CHANGES SEE SHEETS 1 THRU 5
REVISED 6
APPROVED 19 OCT 84

P.A. GARY - AS Chief Eng	FILE STARTER-GENERATOR, DIRECT CURRENT, 300 AMPERE, 30 VOLT, WIDE SPEED RANGE, CLASS A, TYPE 3	MILITARY STANDARD M518108(AS)
REQUIREMENT OR SPECIFICATION MIL-G-6162	SUPPLEMENT	REVISION 4

DD FORM 672-1 (1-67) (Rev. 10-1-67)

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POB SUP CLASS
G115

16. TERMINALS. THE INTERNAL WIRING OF THE STARTER-GENERATOR SHALL TERMINATE IN STAINLESS STEEL TERMINAL STUDS IN A TERMINAL BLOCK CONSPICUOUSLY MARKED FOR EASY IDENTIFICATION. SUITABLE MEANS MUST BE PROVIDED WITH EACH TERMINAL STUD, INDICATING POSITIVE MATE OF THE TERMINAL PROVIDED BETWEEN ADJACENT TERMINALS.
17. PROTECTIVE COVER. A PROTECTIVE COVER OF A FIRE-RESISTANT AND AIRCRAFT FLAME-RESISTANT MATERIAL SHALL BE PROVIDED FOR THE TERMINAL BLOCK. PROVISIONS SHALL BE MADE TO PERMIT REMOVAL OF COVER FROM THE TERMINAL BLOCK IN EITHER DIRECTION.
18. OVER-TEMPERATURE. A THERMALLY OPERATED OVER-TEMPERATURE INDICATING SWITCH SHALL BE PROVIDED WITH THE MOTOR. THE THERMOSTAT SWITCH SHALL BE SET AT 130°C. THE SWITCH SHALL BE PROVIDED WITH A TERMINATOR.
19. BEARING. THE ARMATURE OF THE STARTER-GENERATOR SHALL BE SUPPORTED ON BOTH ENDS BY ROLLER BEARINGS. THE BEARING SUPPORT ON THE DRIVE SHAFT END SHALL BE VENTED SO AS TO EQUALIZE PRESSURE ON BOTH ENDS OF THE BEARING. THE STARTER-GENERATOR BEARING SHALL REMAIN IN CONTACT IN THE EVENT OF PARTIAL OR TOTAL BEARING FAILURE.
20. HEATING. THE ABILITY OF THE GENERATOR TO DELIVER 100 AMPERES, 20 VOLT AT 3000 RPM AND 200 AMPERES, 30 VOLT AT 3000 RPM AND 250 AMPERES AT 3000 RPM WITH 1.25 INCHES OF EXTERNAL FLUID INSULATION AT 40 DEGREE CENTIGRADE AIR IN AND 0.9 INCH M_2O AND PRESSURE CONTINUOUSLY WITHIN 1 OR EXHAUST SHALL BE DEMONSTRATED.
21. OVERLOAD CAPACITY. THE GENERATOR SHALL BE CAPABLE OF DELIVERING 200 PERCENT OF RATED CAPACITY FOR 5 SECONDS AND 150 PERCENT OF RATED CAPACITY FOR 2 MINUTES AT 3000 RPM.
22. REGULATING VOLTAGE. THE REGULATING VOLTAGE FROM TEMPERATURE STABILIZATION SHALL BE 2.1 ± 0.1 VOLTS MEASURED BETWEEN D AND E TERMINALS.

APPROVED 19 OCT 64 REVISED (D). FOR CHANGES SEE SHEETS 1 THRU: 1

1. The first step is to identify the problem. This involves understanding the situation and the goals that need to be achieved.

P.3 NAVY - AS Other Code	TITLE STARTER-GENERATOR INPUT CURRENT, 300 AMPERE., 30 VOLT, 2000 SPEED MANIF., CLASS A, TYPE 3	MILITARY STANDARD
		R.518108(AS)
REQUIREMENT SPECIFICATION MIL-STD-883C	SUPERSEDES	SHEET 1 OF 1