MILITARY SPECIFICATION SHEET

STARTER, AIRCRAFT engine. AIR TURBINE MODEL A-24

The complete requirements for procuring the air turbine starter described herein shall consist of this document and the issue in effect of Specification MIL-S-19557C (AS).

APPLICABLE PARAGRAPH OF SPECIFICATION	
3.8.1	Envelope: Figure 1
3.7	Wt, Max (Lb): 30
6.3.1	Aircraft Model: c-2, E-2
4.5.16	Engine Model: T56
3.8.2.1	Quick-Attach-Detach Mounting: Yes
3.8.2.2	Engine Accessory Drive: AND20002, Type XIIS
3.8.3	Air Inlet and Exhaust Connections: Figure 1
3.5.5 3.9.1	Rotation Viewed from Anti-Drive End: Clockwise
3.3.2	Exposure Temperature Range (°F): -100 to +275
3.3.2	Ambient Temperature Operating Range (°F): -65 to +160
3.3.2.3 4.5.1.1 4.5.6	Control Valve: Opening Rate, Max: 22 psig per sec for the first 1 sec. Clsong Time, Max: 0.5 sec N avy Model: ATSCV-1
3.5.1	Rated Conditions: Output Drive Speed (RPM): 6100 Output Drive Torque, Min (Lb-Ft): 79 Airflow, Max (Lb per Min): 110 Air Inlet Total Pressure (In. Hg A): 100 Air Inlet Total Temperature (°F): 350
3.5.2 3.5.7	Cutout Speed (RPM): 8500 ±250

FSC 4J55

APPLICABLE PARAGRAPH OF SPECIFICATION	
39597	Automatic Shutoff Control: Either turbine wheel speed or output drive speed may be sensed for control operation.
3.5.8	Altitude: The starter shall be capable of meeting rated speed and output torque at 8000-ft altitude at rated inlet conditions. The starter shall not be damaged when subjected to 75,000-ft altitude in the overrunning mode of operation.
3.5.9	Attitude: The starter shall be capable of meeting the operational requirements of this specification when the starter centerline, taken through the output shaft, is in any position within 10 degrees of the horizontal position, unless specified otherwise on this Specification Sheet.
4.5.4	Initial Calibration:

Drive Torque (Lb-Ft)	Drive Speed (RPM)	Drive Speed Condition
124 Min, 185 Max	0	Stall
79 Min, ---	6100	Rated
54 Min ---	8250 Min	cutout

Airflow, Max (Lb per Min)	Drive Speed (RPM)	Drive Speed Condition
110	o	Stall

4.5.5	No-Load Operation: Time (See): 60 Minimum Drive Speed (RPM): 9500
3.3.5 4.5.6	Endurance Test: Number of cycles: 1200; no lubricant addition or change permitted. Each cycle shall consist of three connective phases as follows:

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APPLICABLE PARAGRAPH OF SPECIFICATION

Test Stand Rotor Polar Moment of Inertia	Phase A - Acceleration		Phase B - At Following Conditions			Phase C - Acceleration	
	Drive Speed RPM ±50	Time Max	Drive Speed RPM ±50	Drive Torque Lb-Ft	Time	Drive Speed Min RPM	Time
Lb-Ft^2		Sec		(Min)	Sec		Sec
72	2475	8	2475	120	10	6500	12

NOTE : The above values do not allow for flywheel windage losses, test stand drag, or inertia of the starter. In order to determine compliance with this specification, the test equipment must be calibrated and specific test results corrected accordingly. If the acceleration specified for Phase C is not developed because of test stand drag torque, the test stand inertia load may be reduced or external power may be applied to assist acceleration to cutout speed. Time from end of Phase C to starter cutout shall not exceed 15 seconds.

4.5.8 Rated Torque Calibration:
Minimum Output Drive Speed (RPM): 6100
Airflow, Max (Lb per Min): 110

3.3.5
4.5.9 Overrunning: The starter output drive shall be driven for 10 cycles in a clockwise direction (viewed from the anti-output shaft end) in accordance with the following 100-hour cycle:

Position of Starter Anti-Drive End With Respect to Starter Horizontal Centerline ±2°	Duration of Running Hours	Output Shaft Speed RPM ±250
-15°	6	14,230
50°	42	14,230
0° (Hoarizontal)	50	14,230
+10°	2	10,510

APPLICABLE PARAGRAPH OF SPECIFICATION

4.5.10 Extreme Temperature Operation:

Inlet Air Conditions		
Total Press. In. Hg A ±0.5	Total Temp (°F)	Ambient Temp (OF)
140	260	-65
90	445	+160

4.5.11 Consecutive Cyclical Operation: Number of Cycles: 5

4.5.12 Sustained Motoring: Time (Minutes): 2

4.5,13 Vibration: MIL-STD-810, Method 514, Procedure I, Curve F (Parts 1, 2, and 3).

4.5.15.1 Slip Clutch Torque, Max (Lb-Ft): 400

4.5.15.2 Shear Section Strength, Max (Lb-Ft): 400

4.5.18 Containment Tests: Applicable

4.5.18.1 Hub Containment Test:
Inlet Air Pressure (PSIA): 49
Inlet Air Temperature (°F): 345

4.5.18.2 Failure at No-Load:
Inlet Air Pressure (PSIA): 110
Inlet Air Temperature (°F): 680

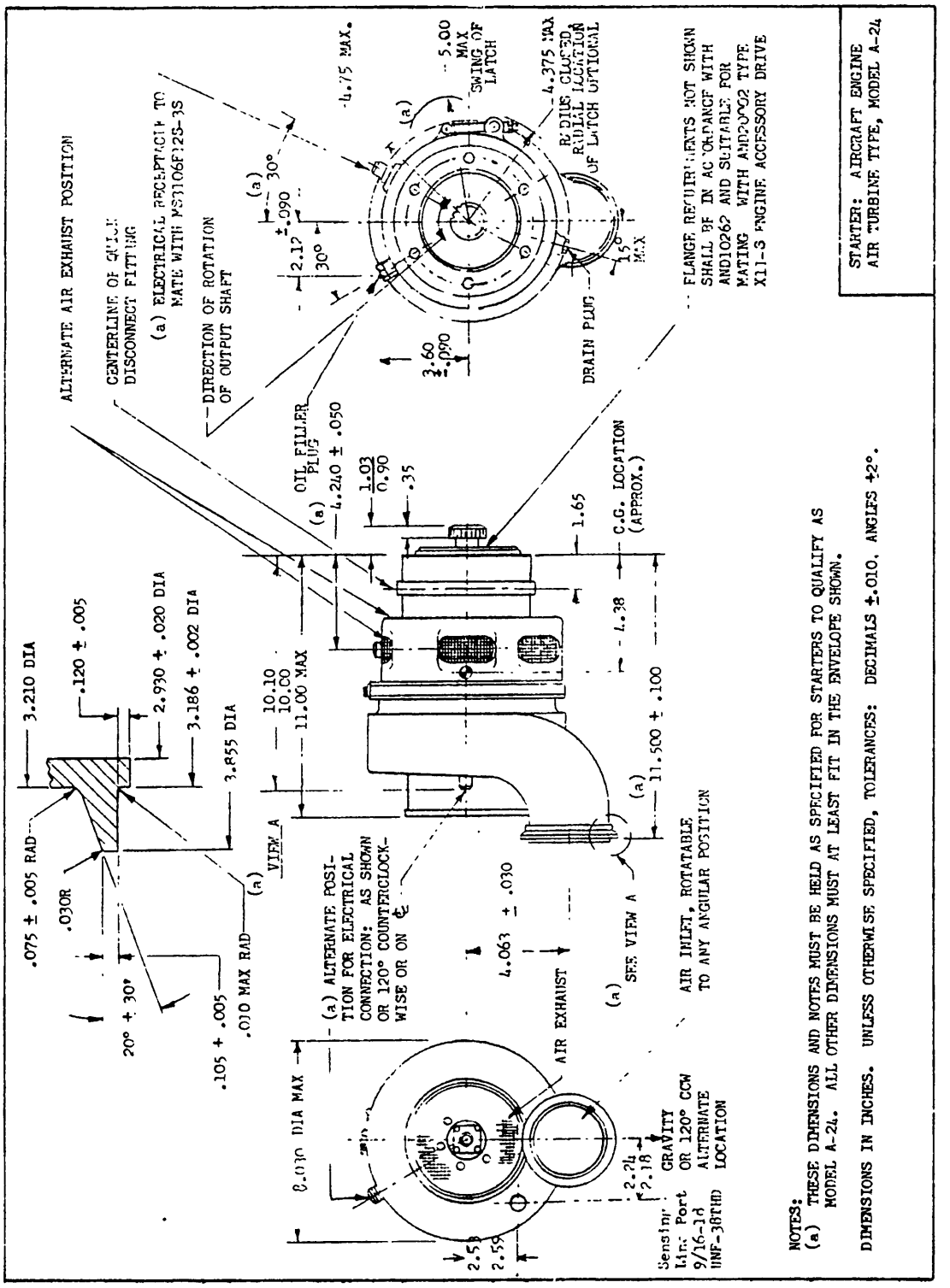

Figure 1

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION
MIL-S-19557/6(AS) STARTER, AIRCRAFT ENGINE, AIR TURBINE MODEL A-24

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A
☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?
   A. GIVE PARAGRAPH NUMBER AND WORDING.

   B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?
   ☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 66 1426

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.

S/N 0102-014-1801 C-25254

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