

Spec. No. 163-G

Date: April 17, 1942  
Revised : June 26, 1942  
          Oct. 26, 1942  
          Dec. 22, 1942  
          Jan. 16, 1943  
          Mar. 31, 1943

MODEL SPECIFICATION

ENGINE, AIRCRAFT: MODEL V-1710-81

ALLISON DIVISION  
General Motors Corporation  
Indianapolis, Indiana

(ALLISON MODEL DESIGNATION V-1710-F20R)

MODEL SPECIFICATION

ENGINE, AIRCRAFT: MODEL V-1710-81

Allison Division of General Motors Corporation

(Allison Model Designation V-1710-F20R)

A. APPLICABLE SPECIFICATIONS

A-1. The following specifications of the issue in effect on date of invitation for bids shall form a part of this specification:

A-1a. Army-Navy Specification:

AN-9500 Engines, Aircraft; General Specification and applicable specifications of the issues indicated on page 16.

B. TYPE AND MODEL.

B-1. This specification covers the requirements for the V-1710-81 engine.

C. MATERIAL AND WORKMANSHIP.

C-1. The requirements for material and workmanship shall be as specified in Specification AN-9500.

D. GENERAL REQUIREMENTS.

D-1. See Section E.

E. DETAIL REQUIREMENTS.

E-2. Drawings. The following Allison Division drawings form part of this specification:

43221 Engine Assembly, Complete - (Showing Accessory Drive Oil Seals)

43220-L Installation Drawing (Showing clearances for engine accessories and their removal)

43590 Priming System Assembly  
 42113-U Carburetor, PD12K6 Bendix-Stromberg  
 40600-N Spark Plug Assembly AC-LS85  
 40601-I Spark Plug Assembly Champion C34S  
 42354-D Terminal, Spark Plug (Contact)  
 40208 Lubrication System Diagram  
 41809-E Magneto  
 42290-B Radio Shielding Assembly  
 43016 Manifold Assem. - Spark Plug Cooling R. H.  
 43017 Manifold Assem. - Spark Plug Cooling L. H.  
 33536-Q Nut - Magneto Cable Shielding Conn.  
 42348-D Shielding - Spark Plug Cable - Intake  
 42347-I Shielding - Spark Plug Cable - Exhaust  
 42685-K Regulators Assem. - Auto. Manifold Pressure

E-3. Acceptance. The acceptance of this engine was based upon the satisfactory completion of Government tests run at Materiel Center, and is approved by letter from Materiel Center, LS:JS-70-5 June 19, 1942. The engine was model tested in accordance with AN-9502 with the exception to Par. F-3b of AN-9504 (Torsional Vibration) that the vibration amplitude measured at the rear of the crankshaft shall not exceed  $\pm 1.35^\circ$  for the 1-1/2 order single node vibration and  $\pm 0.35$  for the 6th order 2 node vibration. The engine shall perform satisfactorily with these limits.

E-4. Weight. The total dry weight of the engine complete shall not exceed the values indicated below:

Basic engine, including integral supercharger, supercharger drive mechanism, propeller reduction gears, coolant pump and piping on the engine, engine lubrication system oil pumps, starter connection, including starter dog, tachometer drives, fuel pump drive, generator drive, vacuum

pump drives, propeller governor drive and all piping and controls between engine parts	1265.0 lbs.
Carburetor and Injection Nozzle	32.0
Carburetor Screens and Gaskets	1.0
Magneto, Shielded	13.0
Ignition Distributors (included in Shielding Assembly)	
Radio Shielded Ignition Assembly, complete with Cable and Distributors	31.0
Spark Plugs	7.0
Priming System on Engine	1.0
Cooling Air Deflectors and Baffles	none
Accessory Drive Covers	2.0
TOTAL DRY WEIGHT OF ENGINE	1352.0 lbs.

E-5. Performance Characteristics. The engine shall be equipped with an Allison automatic Manifold Pressure Regulator Part #42685, and its use shall be a requirement in the installation of this engine. The ratings specified herein and the curves and data specified herein and shown on page 13, 14, and 15 shall constitute the power and specific fuel consumption guarantee, except when otherwise stated on the curve sheet. The terms used and the standard conditions shall be in accordance with the applicable definitions contained in Spec. AN-9502.

E-5a. Ratings. The engine shall be rated as follows, using fuel conforming to Specification AN-F-28 and oil conforming to AN-VV-0-446, Grade 1120.

870 B.H.P. at 2600 R.P.M. at sea level  
 1000 B.H.P. at 2600 R.P.M. normal rating at 14,400 ft.  
 1200 B.H.P. at 3000 R.P.M. take-off for five minutes.  
 1125 B.H.P. at 3000 R.P.M. military rating at 15,000 ft. for 15 minutes.  
 3120 R.P.M. rated overspeed dive R.P.M.

E-5b. Curves. The following curves shall be furnished as part of this specification:

E-5b(1). Horsepower vs Altitude at Rated Speeds as shown on Page 13.

E-5b(2). Estimated performance data at altitude as shown on Page 14.

E-5b(3). Estimated fuel consumption curves as shown on Page 15.

E-5e. Specific Oil Consumption. The specific oil consumption shall not exceed .025 lb./BHP/hr. at normal rated power and speed, .025 lb./BHP/hr. at 70 per cent normal rated power and 89 per cent normal rated speed.

E-5h. Coolant Flow and Heat Rejection. The following guarantee is given for the coolant flow and heat rejection to the coolant:

Conditions:

Operation . . . . . On dynamometer for 5 minutes.  
 Power . . . . . Take-off (1200 BHP)  
 Speed . . . . . Take-off (3000 RPM)  
 Fuel Consumption. . . Auto Rich  
 Oil Inlet Temp. . . . 185°F  
 Oil Pressure. . . . . 65 p.s.i.  
 Coolant Outlet Temp . 250°F  
 Oil Flow . . . . . 160 lb./min.  
 Air Blast on Engine . 60°F at 10 MPH

Guarantee:

Coolant flow not to exceed - 250 GPM  
 Heat rejection to coolant not to exceed - 430 HP

E-5i. Oil Flow and Heat Rejection. The following guarantee is given for the oil flow and heat rejection to the oil:

Conditions:

Operation . . . . . On dynamometer for 5 minutes  
 Power . . . . . Take-off (1200EHP)  
 Speed . . . . . Take-off (3000RPM)  
 Fuel Consumption. . . Auto Rich  
 Oil Inlet Temp. . . . 185°F  
 Oil Pressure. . . . . 65 p.s.i.  
 Coolant Outlet Temp . 250°F  
 Coolant Flow. . . . . 250GPM  
 Air Blast on Engine . 60°F at 10 MPH

Guarantee:

Oil flow not to exceed - 160 lb./min.  
Heat rejection to oil not to exceed - 155 HP.

E-7. Propeller. The engine shall have a number 50 propeller shaft end. Provision shall be made for a governor type of propeller control mechanism of the hydromatic type.

E-12. Overall Dimensions. The overall dimensions of the engine shall not exceed the following:

Length	85-27/32 inches
Width	29-9/32 inches
Height	36-3/4 inches

E-14. Preparation for Storage. The engine shall be prepared for storage in accordance with AN-F-E-568 with the following exceptions:

- (1) (Par. B-1b. AN-Aero. Standard Drawings). The following Allison Division drawings shall apply in lieu of AN parts.
  - 42288 - Plug Crankcase Dehydrator
  - 36411 - Cap - Prop. Shaft Thread
  - 41616 - Envelope - Engine Protector
- (2) (Par. F-2a(1) - Operation Procedure). The requirements of this paragraph shall be met except that the specified compound-lubricating oil mixture shall not be used in the manner specified. The engine shall be thoroughly flushed with the compound-lubricating oil mixture at a later operation during the preparation for storage procedure.
- (3) (Par. F-3h - Intake Manifold). A one pound bag of dehydrating agent shall be secured to the inside of the air intake cover.
- (4) (Par. F-3n - Crankcase). A dehydrator plug No. 42288 shall be installed in an appropriate opening of the crankcase.
- (5) (Par. F-4a(1) Packing Procedure). The base of the engine shipping box shall function as the shipping saddle and the upper case may be removed leaving the engine, bag, and shipping box base intact.

E-16b. Parts List of the Engine. The parts list applicable in all details for this engine shall be the same as for the engine which successfully completed model tests with the exception of (1) such design improvements as mutually agreed upon between the contractor and Government including the Intake Manifold Assembly No. 43330 and (2) the addition of parts relative to the Automatic Manifold Pressure Regulator, Allison Part No. 42685.

E-18. Propeller Drive. The engine shall be equipped with a reduction gear ratio of 2.00:1. The direction of propeller rotation when viewed from the anti-propeller end shall be clockwise.

E-19. Impeller Gear. The impeller gear ratio shall be 9.6:1 and the impeller shall be 9-1/2 inches in diameter.

E-20. Pistons. The engine shall be fitted with pistons of 6.65:1 compression ratio.

E-23a(1). Spark Plugs. The engine shall be fitted with AC-LS85 or Champion C34S spark plugs.

E-23b. Radio Shielded Ignition Assemblies. The engine shall be equipped with Allison designed radio shielded ignition assemblies with the following exceptions to AN-9510:

(1) (Ref. Par. D-1e. Mounting Lugs) Mounting clamps shall be provided in place of integral, soldered, or welded mounting lugs.

(2) (Ref. Par. E-8, Capacitance) The capacitance between the shielding and each ignition cable contained therein shall not exceed 175 micro-microfarads.

(3) (Ref. Par. E-1a. Single Cable Conduits) Single cable conduit connections shall be as shown on Allison Drawing Nos. 33536, 42347, and 42348.

E-23c. High Tension Ignition Cable. (Ref. AN-9500, Par. D-23c) The distributor to spark plug leads shall be 5mm neoprene covered ignition cable conforming to Packard Cable Part No. 52473R. All other cable shall conform to AN-J-C-56 (7mm).

E-23d. Magnetos. The engine shall be equipped with one Scintilla Type DFLN6 magneto in accordance with AN-9511 with the following exceptions:

(1) (Ref. Par. D-1b(1). Threads) Connections for the high tension terminals are 15/16-18 threads.

(2) (Ref. Par. E-1b(2) Type D Magneto) The heads of screws for securing the bearing retainer in the flange project beyond the .125" minimum recess in pilot specified in Fig. No. 3.

(3) (Ref. Par. E-2c. Normal Operating Temperature) The temperature rise of this magneto is 55.5°C. (100°F) above room temperature.

(4) (Ref. Par. E-2d. Endurance; F-4a(11)b. Elevated Temperature Run) This magneto will not meet the temperature requirements specified except for very short periods of time.

(5) (Ref. Par. E-3e. Simulated Service; F-4a(10)a Rain and Spray Test) The magneto will not meet the requirements when subjected to the test specified in this paragraph. The installation of this magneto on a liquid-cooled V engine requires and permits maximum ventilation in breaker cover.

E-23f. Cooling. (Ref. AN-9500 Par. D-23f) The engine shall be so designed as to permit the installation of adequate means for cooling the magnetos to required maximum temperature of 80°C. (176°F) Provision for cooling the spark plugs and the spark plug elbows shall consist of air ducts, as shown on Installation Drawing No. 43220 and Drawings No. 43016 and 43017, to which the airplane manufacturer shall connect. For flight and ground operation, spark plug elbows shall be satisfactory, provided the ignition wire temperature measured in the elbow does not exceed 115°C (239°F) and provided the cable furnished in accordance with paragraph E-23C of this specification does not fall below this temperature.

E-24c. Oil Leakage Test. (Ref. AN-9500, Par. D-24c) With a mixture of equal parts of aviation gasoline and oil conforming to AN-VV-O-446, Grade 1100, supplied to the pressure oil pump inlet under a head of 36 inches the total flow of oil into the engine shall not exceed 0.2 pounds per hour.

E-24e. Scavenging System. The engine scavenging system shall adequately scavenge the oil under the following conditions:

- (a) No air traps exist in the external scavenging systems.
- (b) Operating conditions are normal.
- (c) Maximum back pressure on scavange pumps:

Max. Flow 40 p.s.i.

Min. Idle 10 p.s.i.

Note: Since the gear type pump will not "prime" when air locked, the back pressures given above shall be permissible if not more than 2 p.s.i. of the pressure is due to a spring loaded relief valve. The reason is to permit free passage of air under airlock conditions.

- (d) Oil - grade 1100 or 1120 of AN-VV-O-446.
- (e) Viscosity of Inlet Oil -  $100 \pm 5$  S.U.S.

E-24f. Pressure Pump. In addition to the requirements of Par. D-24f of AN-9500, the oil pressure pump shall function satisfactorily when the inlet pressure is 82% or more of the absolute atmospheric pressure down to a minimum of 8 inches Hg. absolute,



when no air leaks exist in the external oil inlet line.

E-24g. Oil Cleaner. The engine shall be equipped with one Manual Cuno oil strainer, Allison Part No. 44044, and shall meet the requirements of AN-9500, Par. D-24g under normal operating conditions.

E-24j. Provision for Oil Connections. The oil inlet connection shall be a 2 in., 4-stud opening as shown on Installation Drawing.

E-24q. Crankcase Breathers. Ample breathing capacity shall be provided in accordance with Par. D-24q of Specification AN-9500; however, the airplane manufacturer shall locate the front and rear breather outlets to maintain a crankcase pressure measured at the front within the limits of +8 to -4 inches of water on any new or modified airplane installation. It is desired that the pressure at the front breather be held to 2 to 6 inches of water higher than pressure at the rear breather to provide proper ventilation through the engine from front to rear.

E-25. Fuel Metering System. The engine shall be equipped with one Bendix-Stromberg Model PD-12K6 injection carburetor in accordance with AN-9515 except for the following:

- (1) (Ref. Par. D-7, Strainer) The carburetor shall meet requirements except that foreign material is not removed with the strainer.
- (2) (Ref. Par. D-17, Mixture Control) The mixture control positions are located as follows:
  - (A) Idle cut-off full forward.
  - (B) Automatic lean directly back of A.
  - (C) Automatic rich directly back of B.
  - (D) Full rich directly back of C.
  - (E) Manual Control Range Between A & B.
- (3) (Ref. Par. D-26, Protective Treatment of Steel Parts) Cadmium plated parts shall have a minimum plating thickness of .0003".
- (4) (Ref. Par. D-32a(1), Metering Characteristics - Sea Level) The carburetors shall meet requirements except that at 30 to 70 per cent of airflow for normal rated power and speed the variation in fuel/air ratio shall be plus or minus 2 per cent.
- (5) (Ref. Par. D-32b(1), Metering Characteristics, Master Carb.) At take-off power and speed, the carburetor shall contain a setting which in the rich mixture control position will furnish mixture strengths within +4 -0 per cent of the guaranteed fuel consumption.

- (6) (Ref. Par. D-32b(13), Carburetor Heat on Test) The complete airflow to the carburetor shall be heated to avoid icing conditions on test. Duplication of the airplane method of admitting warm air shall not be attempted.
- (7) (Ref. Par. D-32c; Metering Characteristic of Production Carburetors.) The carburetors shall meet requirements except that at 30 to 70 per cent of airflow for normal rated power and speed the variation in fuel/air ratio shall be plus or minus 2 per cent.
- (8) (Ref. Par. F-4e(3) Metering Tests of Production Carburetors) A procedure for air box testing production carburetors, in accordance with War Department, Air Corps, Materiel Division letter of April 29, 1938, Serial No. E-57-809-16, shall be used, the procedure being as follows:

Mixture readings are obtained on the normal rated power and speed propeller load curve, using the following points; such points are subject to change to agree with individual carburetor specifications:

AIRFLOW	METERING TOLERANCE	MIXTURE CONTROL POSITION		
Take-off airflow	±2%	Auto.Rich	Auto.Lean	Full Rich
100% rated power airflow	"	"	"	"
75% " " "	"	"	"	"
62-1/2% " " "	"	"	Auto.Lean	"
50% " " "	"	"	"	Full Rich
35% " " "	"	"	"	"
22-1/2% " " "	±5%	"	"	"
15% " " "	"	"	"	"
10% " " "	"	"	"	"
Airflow at min. idling speed	"	"	"	Idle cut-off

In addition, carburetors designed for automatic altitude compensation are checked at an airflow equivalent to 50% of normal rated power airflow with the mixture control in the automatic rich position and readings are taken at air box pressures of 0, 4, 8, and 14 inches of Hg. less than atmospheric pressure.

E-26. Fuel Priming System. Provision shall be made for priming the engine with fuel from a separately installed priming pump and lead line, supplied by the airplane manufacturer and attached to the engine priming connection.

E-29. Coolant Pump. The coolant pump shall be supplied with an internal spring loaded packing. Replacement of the packing is made by disassembly of the pump. No provision shall be made for external packing adjustment.

E-30. Coolant Temperature. The cooling liquid outlet temperature for liquid cooled engines shall be 121°C (250°F).

E-31a(3). Supercharger Drain Valve. (Ref. AN-9500, Par.D-31a(3)). A fuel aspirator without a valve shall be the only provision made for automatic drainage of the induction system.

E-32a. Exhaust Flanges (Ref. AN-9500 Par. D-32a). The use of exhaust flanges in accordance with Allison Part No. 44018 (AMS-5080) or Part No. 34667 (AMS-5645) and exhaust flange gaskets Part No. 40751 shall be a requirement in the installation of this engine. The exhaust flanges shall not be furnished with the engine and separate procurement must be initiated by the airplane manufacturer. The gaskets and nuts shall be furnished with the engine.

E-36. Accessory Drives. The gear ratio of each accessory drive to the engine crankshaft, based on the lowest normal rated speed of the engine, the maximum permissible torque in inch-pounds for continuous operation, the maximum permissible static torque in inch-pounds, and the direction of rotation when looking at the end of the accessory drive shaft in the engine shall be as follows:

<u>ACCESSORY DRIVES</u>	<u>RATIO TO CRANKSHAFT</u>	<u>TORQUE RATINGS</u>		<u>ROTATION</u>
		<u>IN. - CONTINUOUS</u>	<u>LES. STATIC</u>	
<u>Starter</u>	1.000:1	-	16200	C
<u>Generator</u>	1.440:1	600	6000	C
<u>Fuel Pump</u>	0.864:1	25	450	CC
<u>Vacuum Pump (Rear)</u>	1.440:1	150	2250	C
<u>Vacuum Pump (Side)</u>	1.440:1	150	2250	CC
<u>Tachometer (Two Drives)</u>	0.500:1	2.5	12.5	C
<u>Propeller Governor</u>	0.845:1	15	150	CC

NOTE: CC indicates counter-clockwise rotation.  
C indicates clockwise rotation.

E-36a. Starter. The starter mounting pad and drive shall be Type I in accordance with Specification AN-9517. The direction of rotation when looking at the starter dog attached to the engine shall be clockwise.

E-36a(1). (Ref. AN-9517 Par. E-4b) Clearance shall be provided as shown on Installation Drawing No. 43220.

E-36c. Power Take-off Drive. A power take-off drive shall not be provided for driving gear box assembly.

E-36e. Pad and Drive for Gun Synchronizer Impulse Generator. Provision shall not be made for driving Gun Synchronizing Impulse Generators.

E-36e(1). Gun Synchronizing Impulse Generators. Gun Synchronizing Impulse Generators shall not be furnished.

E-36f. Vacuum and Hydraulic Mechanism Oil Pumps. Two Type II mounting pads and drives shall be furnished in accordance with AN-9521 with the exception to Par. E-3b that the slotted adapter bushing shall not be furnished as required in Figure 2 of AN-9521 on either pad, and the adapter flange shall not be furnished on the side drive.

F. METHODS OF SAMPLING, INSPECTION, AND TESTS

F-1 The requirements for sampling, inspection and tests shall be as shown in Specification AN-9500.

G. PACKAGING, PACKING, AND MARKING FOR SHIPMENT.

G-1. The requirements for packaging, packing and marking for shipment shall be as shown in Specification AN-9500.

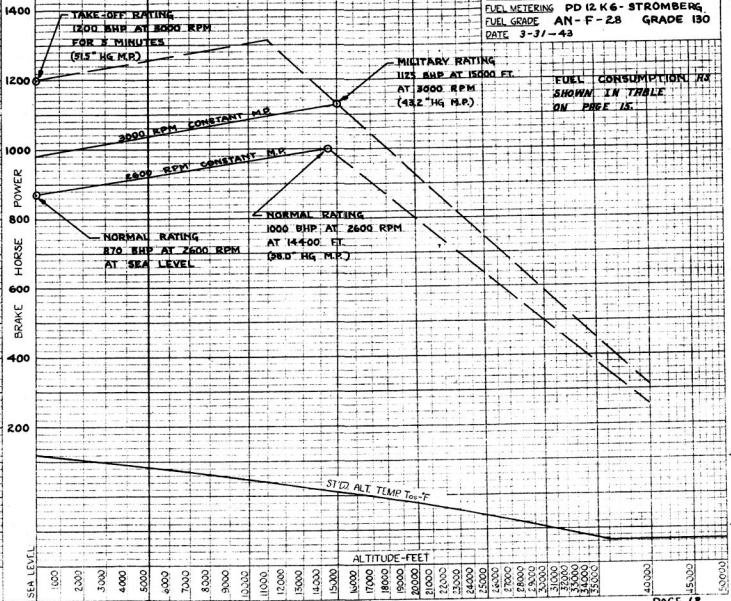
## ALTITUDE PERFORMANCE-HORSEPOWER AND MANIFOLD PRESSURE

AT STANDARD ATMOSPHERIC CONDITIONS WITH BEST POWER MIXTURE STRENGTHS UNLESS OTHERWISE NOTED

AIRCRAFT ENGINE  
NORMAL PERFORMANCE

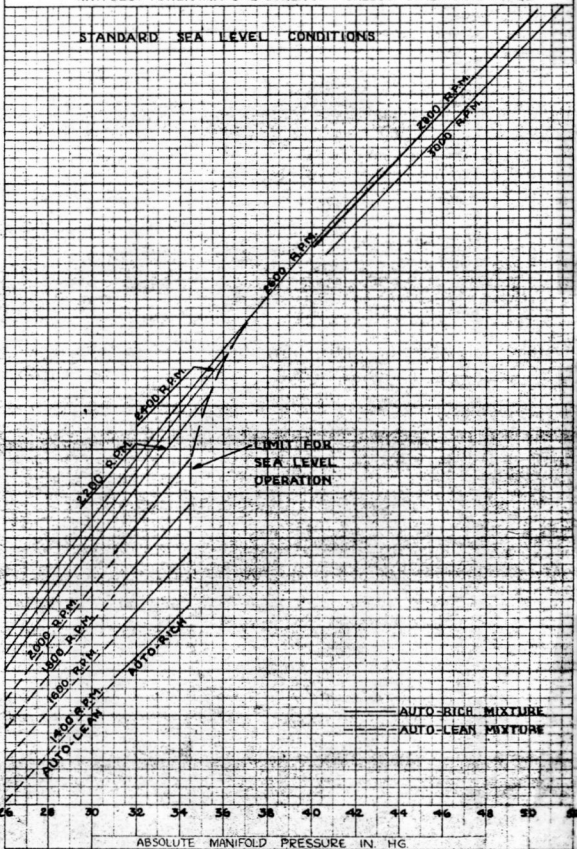
ENGINE MODEL V-1710-81 (F20R)  
 PROP. GEAR RATIO 2.0:1  
 COMPRESSION RATIO 6.65:1  
 IMPELLER GEAR RATIO 9.6:1  
 IMPELLER DIA IN 9.5  
 FUEL METERING PD 12 K6 - STROMBERG  
 FUEL GRADE AN-F-28 GRADE 130  
 DATE 3-31-43

## WITHOUT RAM

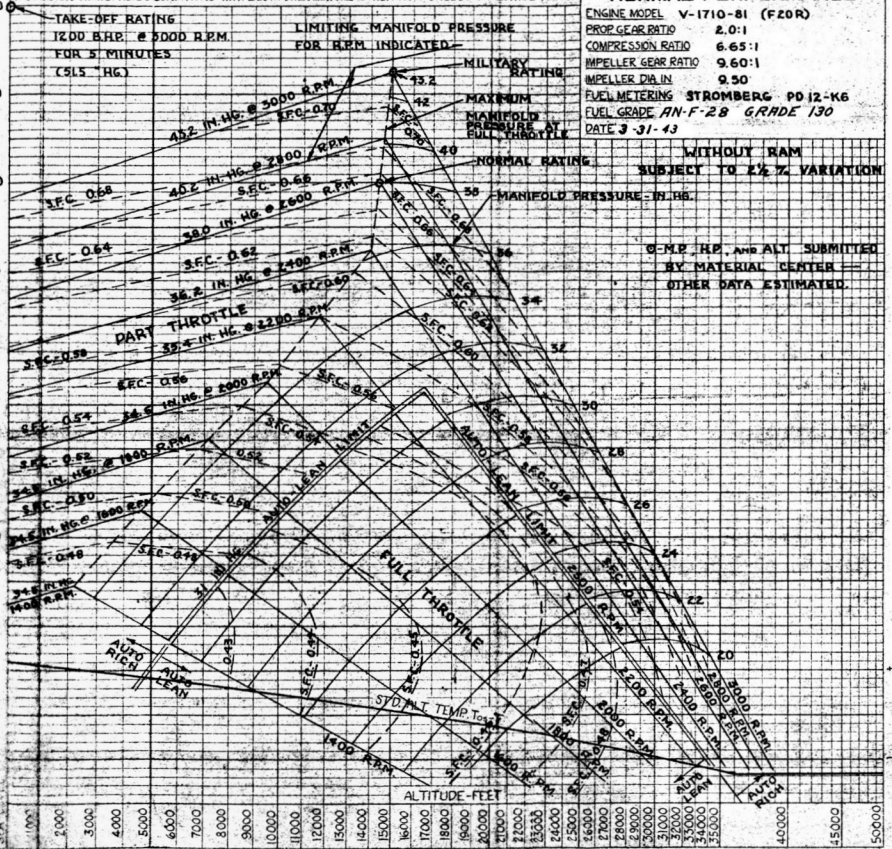


SEA LEVEL PERFORMANCE, HORSEPOWER VS. MANIFOLD PRESSURE WITH BEST POWER MIXTURE STRENGTH UNLESS OTHERWISE NOTED

STANDARD SEA LEVEL CONDITIONS



ALTITUDE PERFORMANCE - HORSEPOWER AND MANIFOLD PRESSURE AT STANDARD ATMOSPHERIC CONDITIONS WITH BEST POWER MIXTURE STRENGTHS UNLESS OTHERWISE NOTED



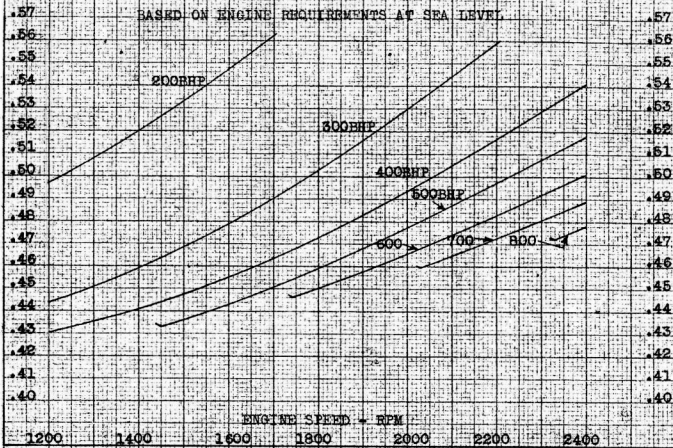
AIRCRAFT ENGINE NORMAL PERFORMANCE

ENGINE MODEL V-1710-81 (F20R)  
 PROP. GEAR RATIO 2.0:1  
 COMPRESSION RATIO 6.65:1  
 IMPELLER GEAR RATIO 9.60:1  
 IMPELLER DIA IN 9.50  
 FUEL METERING STROMBERG PD 12-K6  
 FUEL GRADE AN-F-28 GRADE 130  
 DATE 3-31-43

WITHOUT RAM SUBJECT TO 2 1/2% VARIATION

0-M.B. HP. AND ALT. SUBMITTED BY MATERIAL CENTER - OTHER DATA ESTIMATED.

ESTIMATED DATA ON MINIMUM SPECIFIC FUEL CONS.  
 BASED ON ENGINE REQUIREMENTS AT SEA LEVEL



ESTIMATED SPECIFIC FUEL  
 CONSUMPTION ON PROP LOAD  
 AS INDICATED USING FD1216  
 CARBURETOR AT SEA LEVEL

% Normal Power	LBS./HP/HR 870 BHP	LBS./HP/HR 1000 BHP
100%	0.64	0.66
90%	0.62	0.64
80%	0.58	0.60
75%	0.56	0.57
65%	0.52	0.53

Take-off Power-- 0.75  
 At Sea Level

Military Power-- 0.70  
 At 15,000 Feet

Specifications as of dates listed below shall be applicable to this model specification. Any specification revisions and/or amendments issued prior to date of bid for this model engine and after the particular dates listed below shall not be applicable.

Army-Navy Spec.	AN-9500a	March 30, 1940
" " "	AN-9501a	March 30, 1940
" " "	*AN-9502a	March 30, 1940
" " "	*AN-9503a	March 30, 1940
" " "	*AN-9504	March 1, 1939
" " "	(2)*AN-9506	March 1, 1939
" " "	(3)*AN-9507	March 1, 1939
" " "	(2)*AN-9510a	July 31, 1940
" " "	AN-9511a	July 31, 1940
" " "	AN-9513	March 1, 1939
" " "	*AN-9515a	March 30, 1940
" " "	AN-9516	March 1, 1939
" " "	AN-9517	March 1, 1939
" " "	AN-9518	March 1, 1939
" " "	AN-9519	March 1, 1939
" " "	*AN-9521	March 1, 1939
" " "	AN-9533	March 1, 1939
A-N Aero Spec.	AN-F-E-568	Nov. 27, 1941
" " "	*AN-GGG-S-126	July 5, 1939
" " "	*AN-J-C-56	Oct. 10, 1941
" " "	*AN-P-4	Jan. 14, 1942
" " "	*AN-QQ-M-181a	March 31, 1942
" " "	*AN-VV-C-566	Aug. 1, 1939
" " "	*AN-VV-P-746	Oct. 5, 1940
" " "	*AN-VV-P-748	Sept. 22, 1941
" " "	AN-F-28	Dec. 23, 1942
" " "	AN-VV-O-446	Dec. 15, 1941
Army-Navy Dwg.	AN-4034	Feb. 25, 1939
" " "	AN-4037	June 10, 1940
AND DWG.	AND-10201	April 12, 1940

Note: \*(Asterisk) and preface number in ( ) (parentheses) indicate that the specification has been amended and the particular amendment that is applicable.



REVISION RECORD 163-E

V-1710-81 (F2OR)

This revision was primarily made to substitute the Automatic Manifold Pressure Regulator for the Automatic Engine Control.

Detail Changes were made as follows:

Page 1                      Revision date March 31, 1943 added.

Par. E-2.                      Drawings.

Revision letter on 43220 changed from K to L.  
Revision letter on 42113 changed from L to U.  
Revision letter on 40600 changed from M to N.  
Revision letter on 40601 changed from H to I.  
"43389-B Spark Plug Assembly Champion C34S"  
eliminated.  
43556-B changed to 42347-I.  
36411-F, 41616-C, and 42288-B were removed  
from this paragraph and inserted in Par. E-14,  
Preparation for Storage.  
These changes made to conform to Current Pro-  
duction parts.

Par. E-5.                      Performance Characteristics.

"Automatic Engine Control, Part No. 43801"  
changed to "Automatic Manifold Pressure  
Regulator Part No. 42685". The model using  
an Automatic Engine Control has been designated  
V-1710-99 (F26R). The words "except when other-  
wise stated on the curve sheet" added to the  
end of the second sentence, to point out that  
all data shown is not guaranteed.

Par. E-5a.                      Ratings.

The fuel was changed from AN-VV-F-781 (Amend-  
ment No. 5) to AN-F-28 since AN-F-28 has super-  
seded AN-VV-F-781.

Par. E-14.                      Preparation for Storage.

This paragraph has been rewritten to conform  
to present practice.

Pr. E-16b.                      Parts List of the Engine.

"Automatic Engine Control" changed to "Auto-  
matic Manifold Pressure Regulator" and "Part  
No. 43801" changed to "Part No. 42865" to con-  
form to changes made in Par. E-5 above.

Par. E-23a(1)

Spark Plugs.

"Champion C35S" was removed, to conform to present practice.

Page 13.

Rated Power Curves.

The note regarding the droop of the automatic manifold pressure regulator has been removed since changes are under way to eliminate the droop characteristics.

Page 15.

The note "Guaranteed Specific Fuel Consumption" has been changed to read "Fuel Consumption as shown in Table on Page 15" - to correct an error.

Page 16.

"(5)\*AN-VV-F-781 Sept. 26, 1940" replaced by "AN-F-28 December 23, 1942". AN-F-28 fuel supersedes AN-VV-F-781.

**Note:** This revision record is submitted for your convenience. In case of discrepancy between the revision record and the specification, the specification shall be considered correct.