

Date: June 6, 1941

Revised: Aug. 18, 1941  
Revised: Sept. 20, 1941  
Revised: September 26, 1941  
Revised: Feb. 5, 1942

MODEL SPECIFICATION

ENGINE, AIRCRAFT: MODEL V-1710-51 and -55

Allison Division of General Motors Corp.

(Allison Model Designation V-1710-F10R & F10L)

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 17.

A-1b. U. S. Army Specification.

None Applicable

B. TYPE AND MODEL

B-1. This specification covers the requirements for the V-1710-51 and -55 engines.

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 Engineering drawings form part of this specification:

41001 Engine Assembly, Complete - (Showing Accessory Drive Oil Seals.) - V-1710-51

41581 Engine Assembly, Complete - (Showing Accessory Drive Oil Seals.) - V-1710-55

- 41000-D Installation Drawing (Showing clearances for engine accessories and their removal) - V-1710-51.
- 41580-D Installation Drawing (Showing clearances for engine accessories and their removal)- V-1710-55.
- 36905-E Priming System Assembly
- 42065 Carburetor, PD12K3 Bendix-Stromberg
- 40600-J Spark Plug Assembly AC-LS85
- 40601-B Spark Plug Assembly Champion C34S
- 42354 Terminal, Spark Plug
- 40208 Lubrication System Diagram
- 41550-A Magneto
- 42360 Radio Shielding Assembly - V-1710-51 - R.H.
- 42361 Radio Shielding Assembly - V-1710-55 - L.H.
- 37583-B Manifold Assem. - Spark Plug Cooling R.H.
- 37584-B Manifold Assem. - Spark Plug Cooling L.H.
- 33536-K Nut - Magneto Cable Shielding Conn.
- 42348 Shielding - Spark Plug Cable - Intake
- 42347 Shielding - Spark Plug Cable - Exhaust
- 41616-C Bag - Engine Shipping
- 36411-F Nut - #50 - Prop. Shaft Thread Protector
- 42288 Plug - Crankcase Dehydrator

E-3. Acceptance. - The engine shall be model tested in accordance with AN-9502 with the following exceptions:

(1) (Reference, Paragraph F-3b., Torsional Vibration and AN-9504, Par. E-3c and E-3e.) - The vibration amplitude measured at the rear of the crankshaft shall not exceed  $\pm 1.2^{\circ}$  for the 1-1/2 order, single node vibration, and  $0.35^{\circ}$  for the 6th order 2 node vibration.

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	1256.3 lbs
Carburetor and injection nozzle	34.5
Carburetor Screens and Gaskets	1.0
Magneto, Shielded	13.2 ✓
Ignition Distributors (included in Shielding Assembly)	
Radio Shielded Ignition assembly, complete with Cable and Distributors.	31.1
Spark Plugs	7.2
Priming System on Engine	.5
Cooling Air Deflectors and Baffles	None
Accessory Drive Covers	1.2
TOTAL DRY WEIGHT OF ENGINE	1345 lbs.

E-5. Performance Characteristics. - The ratings specified herein, and the curves specified herein and shown on pages 13, 14, 15 & 16 shall constitute the power and specific fuel consumption guarantees. The terms used and the standard conditions shall be in accordance with the applicable definitions contained in specification AN-9502.

E-5a. Ratings. - Both engines shall be rated as follows, using fuel conforming to specification AN-VV-F-781 and oil conforming to specification AN-VV-C-446, Grade 1120.

- 1100 B.H.P. at 2600 R.P.M. at sea level
- 1100 B.H.P. at 2600 R.P.M. from sea level to 25,000 feet with an exhaust turbo supercharger installation of suitable output.
- 1325 B.H.P. at 3000 R.P.M. Take-off for five minutes.
- 1325 B.H.P. at 3000 R.P.M. military rating from sea level to 25,000 feet, for 15 minutes with an exhaust turbo supercharger installation of suitable output.
- 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). Curve as specified in Paragraph E-5b (1) of specification AN-9501, - Page 15.
- E-5b. (2). Curve as shown on Page 16.

E-5b.(3). The curves shall be constructed as shown on page 13.

E-5b.(4). Engine power vs. exhaust back pressure curves will be incorporated on page 14 after calibration has been made on the particular airplane manufacturer's turbo exhaust piping.

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 (1325 BHP)
Speed . . . . .	Take-off (3000 RPM)
Fuel Consumption . . . . .	Guaranteed Specific
Oil Inlet Temp. . . . .	185°F.
Oil Pressure . . . . .	65 p.s.i.
Coolant Outlet Temp. . . . .	250°F.
Oil Flow . . . . .	150 lb./min.
Air Blast on Engine . . . . .	60°F. at 10 M.P.H.

Guarantee:

Coolant flow not to exceed - 265 G.P.M.  
Heat rejection to coolant not to exceed - 430 H.P.

E-5h.(1); E-5h(1)(a); E-5h.(1)(b). - Coolant Pump Data required shall be furnished as part of this specification after completion of model test.

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 (1325 BHP)
Speed . . . . .	Take-off (3000 RPM)
Fuel Consumption . . . . .	Guaranteed Specific
Oil Inlet Temp. . . . .	185°F.
Oil Pressure . . . . .	65 p.s.i.
Coolant Outlet Temp. . . . .	250°F.
Coolant Flow . . . . .	265 G.P.M.
Air Blast on Engine . . . . .	60°F. at 10 M.P.H.

Guarantee:

Oil flow not to exceed 150 lb./min.  
Heat rejection to oil not to exceed 150 H.P.

E-6. Engine Performance. - (Reference, specification AN-9500 paragraph D-6.) - The complete engine shall function satisfactorily at military rated power up to an altitude of 25,000 ft., in combination with an exhaust turbo installation of suitable output and performance. The contractor guarantees that the engine shall function satisfactorily; between 25,000 ft. and the service ceiling of the airplane, assuming 25,000 feet as the critical altitude and the power falling off from this altitude as a normal, integrally supercharged engine having a critical altitude rating of 25,000 ft.

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 hydraulic type.

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

Length	85	5/8	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) (Reference, Par. F-3h., Intake Manifold) - The dehydrator bags shall be placed on the top of the carburetor screen and the carburetor sealed by securing a gasketed cover to the carburetor.
- (2) (Ref. Par. F-3n., Crankcase) - Dehydrator plugs conforming to Allison Division drawing No. 42288 shall be installed in the crankcase breather as soon as they can be made available. The crankcase breather elbow, Part No. AN-850-16, shall be attached to the engine for shipment.
- (3) (Ref. Par. F-3o., Propeller Shaft) - A propeller shaft thread cap conforming to Allison Division Drawing No. 36411 shall be installed.
- (4) (Ref. Par. F-4a., Packing Procedure) - The engine bag shall conform to Allison Division Drawing No. 41616.
- (5) (Ref. Par. F-4a(1)., When removing the engine from the engine case it shall be possible to reheat seal the openings which must be cut in the engine bag to insert the lifting hooks.
- (6) (Ref. Par. F-4b.) - The engine shipping case shall conform to Allison Division Drawing No. 37780 which provides a window through which the indicator card may be inspected instead of a hinged door.

E-16b. Parts List of the Engine. - The parts list applicable in all details to the engine which successfully completes Government tests shall constitute a requirement of this specification.

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, for the V-1710-51 and counter-clockwise for the V-1710-55 engine.

E-19. Impeller Gear. - The impeller gear ratio shall be 7.48:1 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 Champion C343 or AC-LS85 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) (Reference, Par. D-1e, - Mounting Lugs) Mounting clamps shall be provided in place of integral, soldered, or welded mounting lugs.

(2) (Reference, 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. - (Reference, AN-9500, Par. D-23c) High tension ignition cable with saturated moisture resistant braid in conformance with U.S. Army Spec. 95-32152 shall be used on all distributor head to spark plug leads.

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

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

(2) (Reference, 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 Figure No. 3.

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

(4) (Reference, 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) (Reference, Par. E-3e., Simulated Service and Par. 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. - (Reference, Specification 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 Nos. 41000 and 41580, and Drawing Nos. 37583 and 37584, 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 U.S. Army Spec. 95-32152 does not fail below this temperature.

E-24c. Oil Leakage Test. - (Reference, Specification AN-9500, Paragraph D-24c.) - With a mixture of equal parts of aviation gasoline and oil conforming to Spec. AN-VV-C-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 and Pressure Pumps. - (Reference, Specification AN-9500, Paragraph D-24e and D-24f). - Provided no air traps exist in the external scavenging system, the engine scavenging system shall adequately scavenge the engine for extended periods of time under normal operating conditions, with a back pressure on the scavenging system not to exceed a maximum of 30 pounds per square inch at maximum flow, and two pounds per square inch at minimum idling speeds when using either Grade 1100 or Grade 1120 oil, conforming to Spec. AN-VV-C-446 at an inlet viscosity of 100 plus or minus 5 Saybolt Universal seconds. The oil pressure pump shall function properly when its inlet pressure is 88% or more of the absolute atmospheric pressure.

E-24g. Oil Cleaner. - The engine shall be equipped with one Automatic Cuno No. 10863 oil strainer.

E-24j. Provision for Oil Connections - The oil inlet connection shall be a 2 inch - 4 stud opening as shown on Installation Drawing Nos. 41000 and 41580.

E-24c. Crankcase Breathers. - Ample breathing capacity shall be provided in accordance with Paragraph D-24c., 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 PD12K3 injection carburetor in accordance with Specification AR-9515 except for the following:

(1) (Reference, Paragraph D-7, Strainer) - The carburetor shall meet requirements except that foreign material is not removed with the strainer.

(2) (Reference, Paragraph 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.

(3) (Reference, Paragraph D-26, Protective Treatment of Steel Parts.) - Cadmium plated parts shall have a minimum plating thickness of .0003".

(4) (Reference, Paragraph 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) (Reference, Paragraph D-32b(1), Metering Characteristics, Master Carburetor) - 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) (Reference, Paragraph 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) (Reference, paragraph D-32c., Metering Characteristics of Production Carburetors.) - The carburetors shall meet requirements except that at 30 to 70 percent of airflow for normal rated power and speed the variation in fuel/air ratio shall be plus or minus 2 percent.

(8) (Reference, paragraph 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 being subject to change to agree with individual carburetor specifications:

<u>AIRFLOW</u>	<u>METERING TOLERANCE</u>	<u>MIXTURE CONTROL POSITION</u>		
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. - (Reference, Specification AN-9500, paragraph D-31a(3).) - A gurgle passage without a valve shall be the only provision made for automatic drainage of the induction system.

E-32a. Exhaust Flanges. (Reference Specification AN-9500, paragraph D-32a). - Exhaust flanges and gaskets in accordance with installation

drawing Nos. 41000 and 41580 shall be supplied, but shall not be included in the engine dry weight. Flanges and gaskets shall be shipped with or separate from the engine, at the request of the procuring agency.

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 IN.-LBS.</u>		<u>ROTATION</u>	
		<u>CONTINUOUS</u>	<u>STATIC</u>	<u>-51</u>	<u>-55</u>
<u>Starter</u>	1.000:1	-	16200	C	CC
<u>Generator</u>	1.440:1	600	6000	C	C
<u>Fuel Pump</u>	0.864:1	25	450	CC	CC
<u>Vacuum Pump (Rear)</u>	1.440:1	150	2250	C	C
<u>Vacuum Pump (Side)</u>	1.440:1	150	2250	CC	CC
<u>Tachometer (Two drives)</u>	0.500:1	2.5	12.5	C	C
<u>Propeller Governor</u>	0.845:1	15	150	CC	C

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 on the -51 and counter-clockwise on the -55.

E-36a(1) (Reference, AN-9517, Par. E-4b) Clearance shall be provided as shown on Installation Drawing Nos. 41000 and 41580.

E-36c. Power Take-off Drive. - A power take-off drive shall not be provided for driving a 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 shall not be furnished.

E-45. Interchangeability. - The V-1710-51 engine can be built at assembly from the detail parts of the V-1710-55 engine, or vice versa, by the substitution, addition or deletion of a few uncommon parts that have been held to a practical minimum that is commensurate with similar performance and durability for either direction or rotation.

F. METHODS OF SAMPLING, INSPECTION, AND TESTS

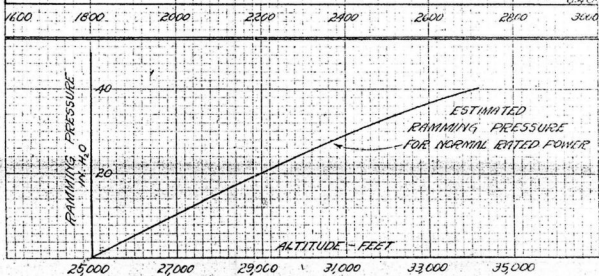
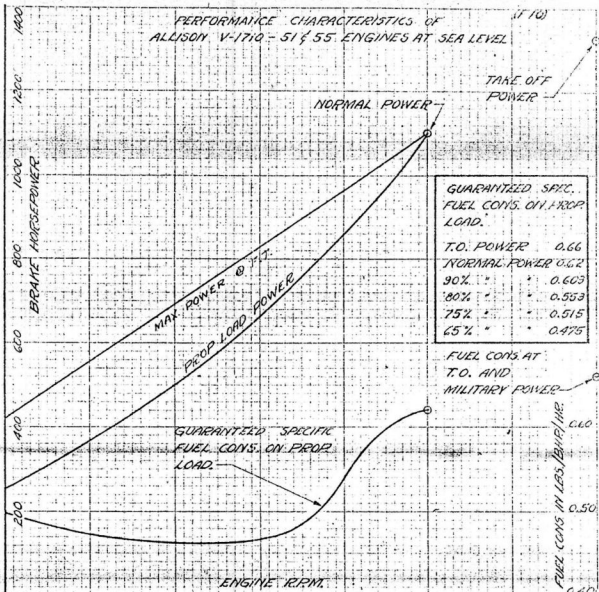
F-1. The requirements for sampling, inspection and tests shall be as shown in Specification AN-9500.

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.

PERFORMANCE CHARACTERISTICS OF  
ALLISON V-1710-51 & 55 ENGINES AT SEA LEVEL

(1710)



NOTE: Engine power vs. exhaust back pressure curve will be incorporated on this page after calibration with the particular aircraft manufacturer's exhaust piping. Exhaust piping design, as well as back pressure, affects power variation.

AIRPLANE ENGINE  
PERFORMANCE DATA(MIXTURE CONTROL AT MAXIMUM  
POWER UNLESS OTHERWISE NOTED)

MODEL V-1710-51E-55 (11)  
 ENGINE TYPE P-1100 2.00:1  
 FUEL-AIR RATIO 6.65:1  
 IS GEAR GEAR RATIO 7.48:1  
 IMPELLER DIA INCHES 5 1/2  
 CARBURETOR PD-12A3  
 FUEL SPEC AV-VV-F-781  
 NO FUEL-AIR MIXTURE METER  
 DATE 9-20-41

ALTITUDE PERFORMANCE  
WITHOUT RPMWITH EXHAUST TUBES-SUPERCHARGER INSTALLATION AT  
FULL THROTTLE & GUARANTEED SPECIFIC FUEL CONS.

CONDITIONS TO BE MET AT  
 GIVEN ALTITUDE (CARB. INLET PRESS. = 30" HG. ABS. (CORR.)  
 CARB. INLET TEMP. = 60°F.  
 EXHAUST BACK PRESS. = 30" HG. ABS.

1400  
1200  
1000  
800  
600  
400  
200  
150  
100  
50  
0  
-50

TEMP AND PRESS.  
STD  
AT  
POWER  
HORSE  
BRAKE

MILITARY RATED POWER  
3000 R.P.M.

NORMAL RATED POWER  
2600 R.P.M.

STANDARD ALTITUDE TEMPERATURE T<sub>1</sub> °F.SEA LEVEL PERFORMANCE  
WITHOUT RPMTO FIND ACTUAL HORSEPOWER  
FROM ALTITUDE, RPM, MANIFOLD  
PRESSURE AND AIR INLET TEMP

LOCATE A ON FULL THROTTLE ALTITUDE  
 CURVE FOR GIVEN RPM & MANIFOLD PRESS.  
 LOCATE B ON SEA LEVEL CURVE FOR RPM  
 & MANIFOLD PRESSURE & TRANSFER TO  
 CURVE "A" C BY STRAIGHT LINE & READ  
 HORSEPOWER AT GIVEN ALTITUDE D  
 NOTE: HORSEPOWER AT D FOR VARIATION  
 OF AIR INLET TEMPERATURE T<sub>1</sub> FROM  
 STANDARD ALTITUDE TEMPERATURE T<sub>1</sub> BY  
 FORMULA:

$HP \text{ AT } D = X \sqrt{\frac{460 + T_1}{460 + T_2}}$  = ACTUAL HP  
 (APPROXIMATELY 1% CORRECTION FOR  
 EACH 10°F VARIATION FROM T<sub>1</sub>)

TAKE-OFF RATED  
MANIFOLD PRESS.3000  
R.P.M.NORMAL RATED  
MANIFOLD PRESS.

2800 R.P.M.

2600 R.P.M.

2400 R.P.M.

2200 R.P.M.

2000 R.P.M.

1600 R.P.M.

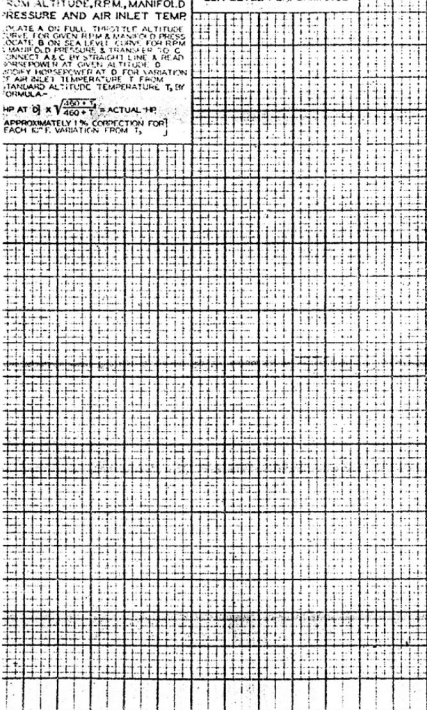
26 28 30 32 34 36 38 40 42 44 46 48

ACTUAL HORSEPOWER  
SEA LEVEL PERFORMANCE

INDICATE A ON FULL THROTTLE ALTITUDE  
CURVE FOR GIVEN RPM & MANIFOLD PRESSURE  
LOCATE B ON SEA LEVEL CURVE FOR RPM  
& MANIFOLD PRESSURE & TRANSFER TO C  
CONNECT A & C BY STRAIGHT LINE & READ  
HORSEPOWER AT GIVEN ALTITUDE D  
CORRECT HORSEPOWER AT D FOR VARIATION  
OF AIR INLET TEMPERATURE T FROM  
STANDARD ALTITUDE TEMPERATURE T<sub>s</sub> BY  
FORMULA:

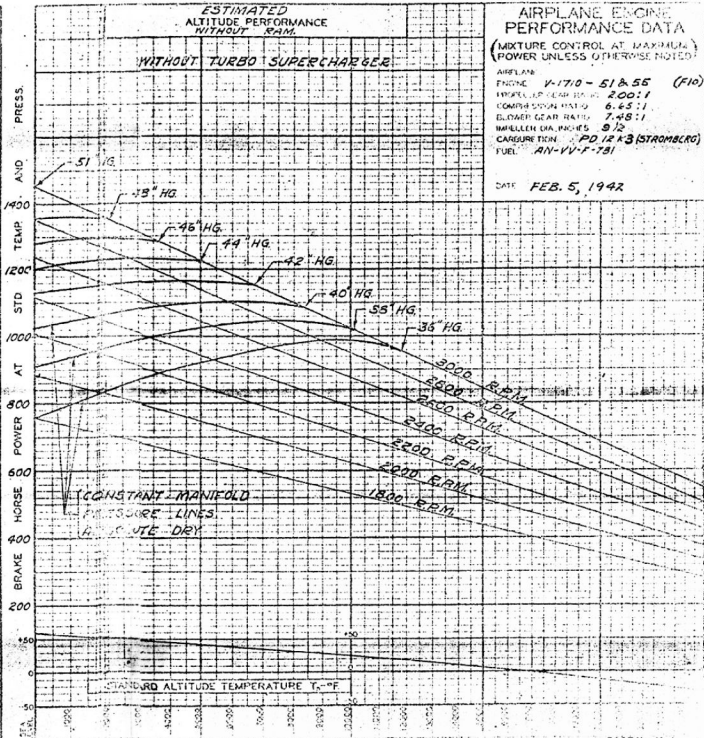
HP AT D  $\times \sqrt{\frac{520 + T_s}{520 + T}}$  = ACTUAL HP  
APPROXIMATE 1% CORRECTION FOR  
MACH NO. VARIATION FROM 1.

SEA LEVEL PERFORMANCE



ESTIMATED  
ALTITUDE PERFORMANCE  
WITHOUT RAM.

WITHOUT TURBO SUPERCHARGER

AIRPLANE ENGINE  
PERFORMANCE DATA(MIXTURE CONTROL AT MAXIMUM  
POWER UNLESS OTHERWISE NOTED)

AIRPLANE  
ENGINE V-1710-51 & 55 (F10)  
MIXTURE LEAN RATIO 2.00:1  
COMPRESSION RATIO 6.45:1  
BLOWER GEAR RATIO 7.48:1  
MAGNETO DIA. INCHES 9/2  
CARBURETOR PD 12 K3 (STROMBERG)  
FUEL AN-VV-F-781

DATE FEB. 5, 1942

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
" " "	AN-9509a	July 18, 1940
" " "	AN-9510a	July 31, 1940
" " "	AN-9511a	July 31, 1940
" " "	(2)*AN-9512	March 1, 1939
" " "	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
" " "	(2)*AN-9520	March 1, 1939
" " "	*AN-9521	March 1, 1939
" " "	AN-9533	March 1, 1939
U.S. Army	95-32152	Nov. 5, 1941
A-N Aero Spec.	AN-F-B-509	Nov. 27, 1941
" " "	AN-GOC-S-126	July 5, 1939
" " "	(2)*AN-OC-M-191	March 24, 1939
" " "	*AN-VV-C-568	August 1, 1939
" " "	*AN-VV-P-781	Sept. 26, 1940
" " "	AN-VV-O-446	Dec. 15, 1941
Army-Navy Drawg.	AN-4033	March 1, 1939
Army-Navy Drawg.	AN-4034	Feb. 25, 1939
Army-Navy Drawg.	AN-4037	March 1, 1939
Army-Navy Drawg.	AN-4060	
Army-Navy Drawg.	AN-4062	
Army-Navy Drawg.	AN-7511	
AND Drawg.	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.