MODELS: Pratt & Whitney Military R-2000 Series

T.C. NUMBER: 5E-5

Model - R-2000	-3,-7,-7M1	-7M2,-9M4	-4M2,-9, -9A,-9M1	-4,-4M1, -9M2,-9M3, -11M2,-11M3	-11,-11M1, -11M4	-7M3	-9M6
Type - 14RA	2:1 reduction gearing	--	--	--	-- (except 16:9 for 11M4)	16:9 reduction gearing	--
Rating: (With low impeller gear ratio)	7.15:1	--	--	--	--	--	--
Maximum continuous, (see NOTE 9), hp, rpm, in.Hg., at:							
Critical altitude (ft.)	1100-2550-41.0-7400	1200-2550-41.5-7000	1100-2500-36.5-8300	1200-2550-40.5-5200	1100-2550-36.5-8300	1100-2550-37.5-10000	1100-2550-36.5-8300
S.L. pressure altitude	1100-2550-42.0-S.L.	1200-2550-42.5-S.L.	1100-2550-38.5-S.L.	1200-2550-42.0-S.L.	1100-2550-38.5-S.L.	1100-2550-39.5-S.L.	1100-2550-38.5-S.L.
Take-off (5 minutes), hp, rpm, at in.Hg., at:							
Critical altitude (ft.)	1350-2700-49.0-3500	1450-2700-49.5-3500	1450-2700-49.5-1000	1450-2700-49.5-1000	1350-2700-45.0-3500	1350-2700-45.5-5800	1350-2700-45.0-3500
S.L. pressure altitude	1350-2700-50.0-S.L.	1450-2700-50.0-S.L.	1450-2700-50.0-S.L.	1450-2700-50.0-S.L.	1350-2700-46.0-S.L.	1350-2700-46.5-S.L.	1350-2700-46.0-S.L.
(With high impeller gear ratio)	8.47:1 (not applicable to -7M1)	--	9.52:1 (not applicable to -9M1)	9.52:1 (not applicable to -4M1, -9M3 and -11M2)	9.52:1 (not applicable to -11M1)	--	9.52:1
Maximum continuous, hp, rpm, in.Hg., at:							
Critical altitude (ft.)	1000-2550-41.5-12400	--	1000-2550-37.5-17700	1100-2550-43.0-15000	1000-2550-37.5-17700	--	1100-2550-43.0-15000
Low critical press. altitude (ft.)	1000-2550-42.0-10000	--	1000-2550-39.0-10000	1100-2550-44.0-7000	1000-2550-39.0-10000	--	1100-2550-44.0-7000
Fuel (minimum grade aviation gasoline) (See NOTE 7)	Grade 100/130	--	--	--	--	--	--
Bore and stroke, in.	5.75 x 5.5	--	--	--	--	--	--
Displacement, cu. in.	2004	--	--	--	--	--	--
Compression ratio	6.5:1	--	--	--	--	--	--
Center of gravity location (dry)							
Forward of mount pad C.L., in.	10.6	10.9	10.6	10.6 (-9M2, -11M3,-4) 10.9 (-4M1, -9M3,-11M2)	10.9	--	--
Above propeller shaft C.L., in.	.3	--	--	--	--	--	--
Propeller shaft, SAE No.	50	--	--	--	--	--	--
Carburetion	Stromberg PD-12F7,F8 or F13 carburetor	Stromberg PD-12F7,F8 or F13 carburetor except F7 not used on -9M4	Stromberg PD-12F7,F8 or F13 carburetor				
Ignition timing, degrees BTC	20	25 on -7M2 25 (37 in automatic cruise on -9M4)	25 (37 in automatic cruise)	25 on -11M2 and -3 25 (37 in auto cruise on -4, -4M1, -9M2 and 3)	25	20	25 (37 in automatic cruise)

NOTE 1. Maximum permissible temperatures: 500 degrees F. spark plug gasket, 475 degrees F. well type head thermocouple, 350 degrees F. cylinder barrel, and 200 degrees F. oil inlet.

NOTE 2. Pressure limits - normal operation

	Maximum	Minimum
Fuel pressure	16 psi	14 psi - with 5 lb. spring
	23 psi	21 psi - with 10 lb. spring
Oil pressure	100 psi	50 psi

NOTE 3. The following accessory provisions are available:

	Direction of Drive*	Speed Ratio of Drive**	Maximum Torque Driving	Maximum Torque Static	Maximum Overhang Moment (in. lbs.)
Starter (R-2000-7 and -11 series only)	C	1:1	2100	24600	200
	C	1:1	3100	16500	220
Generator (R-2000-7 and -11 series only)	C	3:1	300	1700	260
	C	3:1	500	2000	260
Fuel pump (2 on -7 and -11 series and 1 on -4, -9 series)	CC	.875:1	150	450	10
Vacuum pump (rear location)	C	1.4:1	150	2250	40
(side location)	C	1:1	90	800	20
Hydraulic pump	C	1.4:1	400	2250	70
Propeller governor	C	.958:1	100	600	--
Tachometer	C	.5:1	20	60	10

*"C" is clockwise viewing pad; "CC" is counter-clockwise viewing pad.
**Speed ratio is based on crankshaft speed.

NOTE 4. The following engines incorporate the additional detailed characteristics:

R-2000 Model	Wt. dry lbs.	Similar Certificated Twin Wasp	Characteristics
-3	1570	2SD-G	Similar to -7, incorporates a single cam drive. Generally used for cargo only and should be converted to -7 at first overhaul. Magnetos used are Scintilla SF14LN-8.
-4	1605	2SD13-G	Identical to certificated Twin Wasp 2SD13-G. Magnetos used are Scintilla SF14LN-8.
-4M1	1585	2SD13-G	Similar to -4 except incorporates single ratio supercharging.
-4M2	1605	2SD13-G	Similar to -4 except incorporates -11 cylinders and has -9 ratings.
-7	1570	2SD-G	Basic model; identical to certificated Twin Wasp 2SD-G. May incorporate the -11 type cam; this will result in a slight increase in power, but this increase is insufficient to necessitate a change in the power rating. May be modified to incorporate Twin Wasp 2SD13-G type power section which includes crankcase, plain type main bearings, crankshaft, improved pistons and master rods, followers and rollers, and a larger capacity nose scavenge pump. Engines modified in this manner should be identified by means of the letter "C" stamped on the engine after the engine serial number. Magnetos used are Scintilla SF14RN-8.
-7M1	1500	2SD-G	Similar to -7 except has single ratio supercharging.
-7M2	1585	2SD-G	Similar to -7M1 except has muffed barrel cylinders and 2SD13-G type power section. The -7M2 is eligible with the automatic cruise spark advance as used on the -9M4. Incorporation of the -9M4 spark advance components and SF14LN magnetos is necessary. Such engine should be identified by the letter "V" after the engine serial number. Also may be accomplished by using 2SD13-G nose.
-7M3	1595	2SD-G	Similar to -7M2 or Twin Wasp D5 with R-1830-75 or -94 reduction gear assembly, and reduced ratings.
-9	1590	2SD1-G	Basic model, identical to certificated Twin Wasp 2SD1-G, has all plain type main bearings and grooved face supercharger. Magnetos used are Scintilla SF14LN-8.
-9A	1590	2SD1-G	Similar to -9 except has -11 nose section and rocker sump, and magnetos used are Scintilla SF14RN-8.
-9M1	1570	2SD1-G	Similar to -9 except has Twin Wasp D3 type single ratio supercharging.
-9M2	1595	2SD1-G	Similar to -9 except has Twin Wasp 2SD13-G muff type cylinders and longer hold-down studs.
-9M3	1575	2SD1-G	Similar to -9M2 except has no high ratio supercharging gearing.
-9M4	1575	2SD1-G	Similar to -9M3 except has Twin Wasp D5 supercharger and ratings.
-9M6	1615	2SD13-G	Twin Wasp 2SD13-G engine with R-1830-75 or -94 reduction gear assembly. Magnetos used are Scintilla SF14LN-8.
-11	1580		Basic model, similar to -7 except has -9 type supercharger, heavier valve springs, new type cams, and after serial number P-105199 originally incorporated a plain type center main bearing. All these center main bearings should be removed and replaced with either a satisfactory roller bearing or have the power section converted to the Twin Wasp 2SD13-G type which includes crankcase, plain type main bearings, crankshaft, improved pistons and master rods, followers and rollers, and a larger capacity nose scavenge pump. Engines modified in this manner should be identified by means of the letter "C" stamped on the engine after the engine serial number. R-2000-11 and 11M1 suffix C engines are eligible for the 1450 BHP take-off ratings of the -9. Magnetos used are Scintilla SF14RN-8.
-11M1	1560		Similar to -11 except has Twin Wasp D3 type supercharging.
-11M2	1595		Similar to -11M1 except incorporates the Twin Wasp 2SD13-G type power section and cylinders, D3 type supercharger and has higher ratings.
-11M3	1605		Similar to -11M2 except it has both high and low blower supercharger ratios.
-11M4	1590		Similar to -11 except has R-1830-75 or -94 reduction gear assembly.

NOTE 5. When incorporated in certificated aircraft, the engine nameplate should be stamped "CAA Spec. 5E-5." If there is no room for this information on the existing nameplate, such information may be stamped on a plain thin metal plate attached beneath the existing plate by at least two of the mounting screws. When a new model designation is required because of changes to the engine, the new designation should be added to the nameplate.

NOTE 6. A new type 3-piece crankshaft, with one piece master rods located in cylinders 5 and 12 together with associated mating parts is eligible for use in all -4 and -9 series engines and those -7 and -11 engines which have the plain main bearing type crankcases at an additional weight of 10 lbs.

NOTE 7. All R-2000 engines listed are eligible for operation on Grade 91 fuel provided the following reduced ratings are not exceeded. High ratio supercharger drives, when available, should not be used with grade 91 fuel.

Take-off	1100 hp at 2700 rpm.
Maximum continuous	1000 hp at 2550 rpm.

NOTE 8. The following spark plugs are approved on these engines:

AC	161, 171, 181, 271, 281
Autolite	SL30, SL300
BG	BG340, BG345, RB19R-2, RB21R-1, RB23R, RB27R, RB27R-1, 240, 245, 340, 345
Champion	C34S, C35S, R37S-1, R115S, RC34S, RC35S, REA37N, RHA37E, RHB37E, RHA37N
Lodge	RS19-2R

NOTE 9. Continuous operation between 2310 rpm and 2510 rpm prohibited on all R-2000 model engines.