

MODELS: Pratt & Whitney Military R-1830 Series

T.C. NUMBER: 5E-4

Model	R-1830-43, -43A,-65,-67, -86M2,-90D	R-1830-49, -53,-57,-82, -92,-92A	R-1830-75	R-1830-61, -90B,-90C	R-1830-94, -94M1,-94M2	R-1830-96
Type - 14RA	16:9 reduction gear	--	--	--	--	--
Rating: (With low impeller ratio)	7.15:1	--	--	--	--	--
Maximum continuous, hp, rpm, in.Hg., at:						
Critical altitude (ft.)	1100-2550- 41.0-6200	1050-2550- 39.5-7500	1100-2600- 42.7-7400	1100-2550- 41.0-6200	1100-2600- 42.7-7400	1050-2550 39.5-7500

Sea level	1100-2550-43.5-S.L.	1050-2550-41.5-S.L.	1100-2600-43.5-S.L.	1100-2550-43.5-S.L.	1100-2600-43.5-S.L.	1050-2550-41.5-S.L.
Take-off (5 minutes), hp, rpm, in.Hg., at: Sea level	1200-2700-48.0	1200-2700-48.0 or 1200-2750-47.0	1350-2800-52.0	1200-2700-48.0	1350-2800-52.0	1200-2700-48.0 or 1200-2750-47.0
(With high impeller gear ratio)	--	--	--	8.47:1	8.47:1 (not on -94M2)	--
Maximum continuous, hp, rpm, in.Hg., at: Critical altitude (ft.)	--	--	--	1000-2700-39.0-14500	1000-2600-41.5-14250	--
Low critical altitude (ft.)	--	--	--	1000-2700-40.0-9000	1000-2600-42.2-10000	--
Fuel (minimum grade aviation gasoline)	100/130	91/96	100/130	--	--	91/96
Bore and stroke, in.	5.5 x 5.5	--	--	--	--	--
Displacement, cu. in.	1830	--	--	--	--	--
Compression ratio	6.7:1	--	--	--	--	--
Weight (dry), lbs.	Model -90D: 1490 Model -86M2: 1442 All others: 1500	Model -49, -57: 1473 Model -53: 1438	1555	1490	1573	1500
Propeller shaft, SAE No.	50	--	--	--	--	--
Carburetion:	PD-12F2 or F5 except Model -65 has Ceco 1900-CPB3 carburetor	PD-12H1 or H4 except Model which has PD-12B8 carburetor	PD-12F5 or F8 carburetor	PD-12F2 or F5 carburetor	PD-12F7 or PA-12:13-18 carburetor	PD-12H1 or H4 carburetor
Ignition, dual	SF14LU-6,-7,-8 or SF14LC-8 magnetos	SF14LU-6,-7,-8 or SF14LN-3 magnetos	SF14LN-8 magnetos	SF14LU-7 or -8 magnetos	SF14LN-8 magnetos	SF14RN magnetos
Ignition timing, degrees BTC	25	25	25 (37 cruising)	25	25 (32 cruising)	25

NOTE 1. Maximum permissible temperatures are as follows: cylinder head spark plug washer 500 degrees F.; cylinder head well type 475 degrees F.; cylinder base 335 degrees F.; oil inlet 220 degrees F.

NOTE 2. Pressure limits - normal operation:

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

NOTE 3. The following accessory provisions are available, except for -75 and -94:

	Direction of Drives*	**Speed Ratio of Drives	Maximum Torque (in. lbs.)		Maximum Overhang Moment (in. lbs.)
			Continuous	Static	
Starter	C	1.0	2500	16500	200
Generator	C	1.4	600	6000	260
Vacuum or hydraulic pump	C	1.4	250	1200	40
Vacuum or hydraulic pump	C	1.0	125	500	20
Fuel pump	CC	.875	150	450	10
Governor	C	.958	100	600	--
Tachometer					
R.H.	C	.5:1	20	60	10
L.H.	CC	.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 accessory provisions are available for -75 and -94 only:

	Direction of Drives*	**Speed Ratio of Drives	Maximum Torque (in. lbs.)		Maximum Overhang Moment (in. lbs.)
			Continuous	Static	
Starter	C	1:1	2100	16500	220
Generator	C	3:1	300	1700	260
Vacuum or hydraulic pump					
Right rear	C	1.4:1	150	2250	40
Bottom rear	C	1.4:1	150	2250	40
Side angular					
- right and left side	C	1:1	125	500	--
Fuel pump	CC	.875:1	150	450	10
Governor	C	.985:1	100	600	--
Tachometer					
R.H.	C	.5:1	100	600	--
L.H.	CC	.5:1	20	60	--

**C" is clockwise viewing pad; "CC" is counter clockwise viewing pad.

**Speed ratio is based on crankshaft speed.

NOTE 5. The following engines incorporate the additional detailed characteristics:

R-1830 Model	Similar Certificated Twin Wasp	Characteristics
-43	S3C4-G	Incorporates a two-speed type supercharger housing, low ratio only, and the 16:9 spline coupled type reduction gear assembly. Using 20 degrees BTC ignition timing, the reduced ratings for use with grade 91/96 fuel is the same as the ratings shown above for the -92 engine.
-43A	S3C4-G	Similar to -43.
-49	S1C3-G	May incorporate either the spline or rigid coupled type 16:9 reduction gear assembly.
-53	S1C3-G	Incorporates a rigid coupled 3:2 reduction gear assembly.
-57	S1C3-G	Incorporates the 16:9 spline coupled type reduction gear assembly.
-61	S3C4-G	Incorporates a two-speed type supercharger housing with the high ratio supercharger drive components, using 20 degrees BTC ignition timing, the reduced ratings for use with grade 91/96 fuel is the same as the ratings shown above for the -92 engine for the low ratio.
		High ratio M.C.:
		<u>bhp</u> <u>rpm</u> <u>in.Hg.</u> <u>Altitude - ft.</u>
		900 2550 35.5 15400
-65	S3C4-G	Similar to -43.
-67	S3C4-G	Similar to -43.
-75	2SC9-G	Low ratio only. Incorporates 16:9 spline coupled type reduction assembly. Reduced ratings for use with grade 91/96 fuel is as follows:
		Low ratio M.C.:
		<u>bhp</u> <u>rpm</u> <u>in.Hg.</u> <u>Altitude - ft.</u>
		1050 2550 41.0 8200
		1050 2550 41.5 S.L.
-82	S1C3-G	Similar to -49.
-86M2	S3C4-G	Similar to -43 except incorporates a rigid coupled 3:2 gear instead of a 16:9 spline coupled type reduction gear assembly. Has a -43 type supercharger and accessories case but uses nose mounted magnetos similar to the -96 engine.
-90B	S3C4-G	Incorporates a two-speed supercharger housing with the high ratio supercharger drive components. Includes British type ignition harness. Using 20 degrees BTC ignition timing, the reduced ratings for use with grade 91/96 fuel is the same as shown above for the -92 engine for the low ratio.
		High ratio M.C.:
		<u>bhp</u> <u>rpm</u> <u>in.Hg.</u> <u>Altitude - ft.</u>
		900 2550 35.5 15400
-90C	S3C4-G	Similar to -90B except incorporating American type ignition harness and the 16:9 spline coupled type reduction gear assembly. This engine may be converted to a -90D by removing the supercharge, drive clutches and high ratio gearing and installing the following parts common to the -43 etc: 47669 (or reworked part 96669) gear assembly, 4823b shaft, 56283 bushing, 96280 selector valve cover, plus minor parts such as miscellaneous gaskets.
-90D	S3C4-G	Similar to -43.
-92	S1C3-G	Incorporates a 16:9 spline coupled type reduction gear assembly.
-92A	S1C3-G	Incorporates a strengthened nose section.
-94	2SC9-G	Incorporates 16:9 spline coupled type reduction gear assembly. Reduced ratings for use with grade 91/96 fuel is as follows:
		Low ratio M.C.:
		<u>bhp</u> <u>rpm</u> <u>in.Hg.</u> <u>Altitude - ft.</u>
		1050 2550 41.0 8200
		1050 2550 41.5 S.L.
		High ratio M.C.:
		900 2550 37.5 16500
		Take-off:
		1200 2700 47.0 S.L.
-94M1	2SC9-G	Similar to -94 except incorporates -75 nose, power section, and accessory section, with the -94 supercharger section and part number 92536 accessory drive shaft.
-94M2	2SC9-G	Similar to -75 with lower drive clutches removed and single ratio solid gearing substituted.
-96	S1C3-G	Incorporates 16:9 spline coupled type reduction gear assembly and nose mounted magnetos.

NOTE 6. All models are eligible with -75 or -94 cylinders and associated changes and with no change in model designation.

NOTE 7. When incorporated in certificated aircraft, the engine nameplate should be stamped "CAA Spec. No. 5E-4." 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 8. The following spark plugs are approved on these engines:

AC	*LS87, LS88, 161, 171, 261, 271, 281
Autolite	SL30, SL300
EG	RE19R-2, RB21E-1, RB27R, RE27R-1, RB39R, 240, 245, 340, 345
Champion	C34S, C35S, RC34S, PC35S, R37S-1, REA37N, RHA37E, RHB37E, FHA37N, R115
Edgce	RS19-2R

*The AC LS87 is listed for use in these engines of 1200 hp. and under for 120 hours service with no reconditioning permitted. The ACLS87 and LS88 are not approved for use in the R-1830-75 and -94 series engines.