

FEDERAL AVIATION ADMINISTRATION

E-231
Revision 11
PRATT & WHITNEY
Double Wasp CA15, CA3
Double Wasp CA17, CA5
Double Wasp CA18, CA19, R2800-97

October 31, 1978

TYPE CERTIFICATE DATA SHEET NO. E-231

Engines of models described herein conforming with this specification and approved data on file with the Federal Aviation Administration are rated as airworthy for use in certificated aircraft in accordance with pertinent aircraft specifications and applicable portions of the Civil Air Regulations and Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer' manuals and other approved instructions.

Manufacturer Pratt & Whitney Aircraft
Division of United Aircraft Corporation
East Hartford, Connecticut

Models	Double Wasp	CA15	CA3	CA17
Type	18RA	20:9 reduction gearing	--	--
Rating				
	(With low impeller gear ratio)	7.29:1	--	--
	Max. cont., hp, rpm, in. Hg. at:			
	Rated pressure altitude (ft.)	1900-2600-46.5-4900	--	--
	Sea level pressure alt.	1900-2600-47.5-S.L.	--	--
		or 1800-2600-44.0-6500	--	--
		1800-2600-45.0-S.L.	--	--
	Takeoff (5 min.), hp, rpm, in. Hg. at:	(dry)	--	--
	Critical altitude	2100-2800-52.5-3400	--	2300-2800-58.0-700
	Sea level	2100-2800-53.5-S.L.	--	2300-2800-58.0-S.L.
		(with anti-detonant injection)		
	Critical altitude	2400-2800-56.0-1000	--	--
	Sea level	2400-2800-56.5-S.L.	--	--
	(With high impeller gear ratio)	9.45:1	—	9.45:1
	Max. cont., hp, rpm, in. Hg. at:			
	Rated pressure alt. (ft.)	1600-2600-45.0-16200	—	1700-2600-48.0-14800
	Low critical pressure alt. (ft.)	1600-2600-46.5-10000	—	1700-2600-48.5-8000
	Takeoff (5 min.), hp, rpm, in. Hg. at:			(with anti-detonant injection)
	High critical pressure alt. (ft.)	—	—	2000-2600-54.0-11000
	Low critical pressure alt. (ft.)	—	—	2000-2600-54.5-8000
	Fuel (Min. octane aviation gasoline)	Grade 100/130, 100LL	--	Grade 115/145
	Lubricating oils	See P&WA Service Bulletin No. 1183	--	--
	Bore and stroke, inches	5.75 x 6.00	--	--
	Displacement, cu. in.	2804	--	--
	Compression ratio	6.75:1	--	--
	Weight (dry), lbs.	2360	2327	2360
	C.G. location (dry)			
	Fwd. of mounting lug rear edge, in.	11.8	--	--
	Above prop. shaft C.L., in.	.2	--	--
	Propeller shaft, SAE No.	60A	--	--
	Carburetion	Stromberg PR-58E-4,-5	--	Stromberg PR-58E-5
	Ignition, dual (see NOTE 5)	Scintilla or General Electric		
	Ignition timing, °BTC	20 (35 in automatic or 25 manual for cruise advance)	--	--
	Spark plugs	See NOTE 9	--	--

"- -" Indicates "Same as preceding model."

"—" Indicates "Does not apply."

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Models	Double Wasp	CA5	CA18, R2800-97	CA19
Type	18RA	20:9 reduction gearing	--	--
Rating				
(With low impeller gear ratio)		7.29:1	--	--
Max. cont., hp, rpm, in. Hg. at:				
Rated pressure altitude (ft.)		1900-2600-46.5-4900	--	--
Sea level pressure alt.		1900-2600-47.5-S.L. or 1800-2600-44.0-6500 1800-2600-45.0-S.L.	-- -- --	-- -- --
Takeoff (5 min.), hp, rpm, in. Hg. at:		(dry)	--	--
Critical altitude		2300-2800-58.0-700	2100-2800-52.5-3400	2300-2800-58.0-700
Sea level		2300-2800-58.0-S.L. (with anti-detonant injection)	2100-2800-53.5-S.L.	2300-2800-58.0-S.L.
Critical altitude		2400-2800-56.0-1000	--	--
Sea level		2400-2800-56.5-S.L.	--	--
(With high impeller gear ratio)		—	9.1:1	--
Max. cont., hp, rpm, in. Hg. at:				
Rated pressure alt. (ft.)		—	1675-2600-47.0-13500	1800-2600-50.0-11500
Low critical pressure alt. (ft.)		—	1675-2600-49.0-8000	1800-2600-51.0-8000
Takeoff (5 min.), hp, rpm, in. Hg. at:			(with anti-detonant injection)	(with anti-detonant injection)
High critical pressure alt. (ft.)		—	1900-2600-49.0-10900	2100-2600-54.0-7700
Low critical pressure alt. (ft.)		—	1900-2600-49.5-8000	2100-2600-54.0-7700
Fuel (Min. octane aviation gasoline)		Grade 115/145	Grade 100/130, 100LL	Grade 115/145
Lubricating oils		See P&WA Service Bulletin No. 1183	--	--
Bore and stroke, inches		5.75 x 6.00	--	--
Displacement, cu. in.		2804	--	--
Compression ratio		6.75:1	--	--
Weight (dry), lbs.		2327	2360	2360
C.G. location (dry)				
Fwd. of mounting lug rear edge, in.		11.8	--	--
Above prop. shaft C.L., in.		.2	--	--
Propeller shaft, SAE No.		60A	--	--
Carburetion		Stromberg PR-58E-5	--	--
Ignition, dual (see NOTE 5)		Scintilla or General Electric		
Ignition timing, °BTC		20 (35 in automatic or 25 manual for cruise advance)	--	--
Spark plugs		See NOTE 9	--	--

"- -" Indicates "Same as preceding model."

"—" Indicates "Does not apply."

Certification basis Type Certificate No. 231
 Production basis Production Certificate No. 2

NOTE 1. Maximum permissible cylinder head, cylinder barrel and oil inlet temperatures are 500°F, 350°F, and 212°F respectively. The cylinder head temperature is measured with a well type thermocouple.

NOTE 2. Pressure limits - normal operation

	<u>Max.</u>	<u>Min.</u>
Fuel pressure, p.s.i.	25	21
Oil pressure, p.s.i.	100	60

NOTE 3. The following accessory drives are provided:

	<u>Rotation *</u>	<u>Speed *</u>	<u>Maximum Torque (in. lbs.)</u>		<u>Max. Overhang</u>
			<u>Continuous</u>	<u>Static</u>	<u>Moment, lb. in.</u>
Starter	C	1.000	—	30000	340
Generator	C	3.033	600	3000	300
Fuel pump	CC	0.864	355	1380	10
Vacuum or hydraulic pumps (2 provided)	C	1.400	250	2250	50
Power take-off	C	1.400	1300	12000	300
Propeller governor	CC	0.964	125	825	—
"C"	- Clockwise viewing pad				
"CC"	- Counterclockwise				
"Speed"	- Times crankshaft speed				

NOTE 4. Models CA3, CA15 and CA18 are similar respectively to models CA5, CA17 and CA19 except for the fuel used, carburetor setting and power rating. All engines incorporate a built-in torque meter.

NOTE 5. The takeoff ratings using anti-detonant injection are permissible when the engine is equipped with a P&W water regulator (whose detail settings are suitable for the desired wet ratings) at an additional weight of 13 lb. ADI fluid flow is 9.2 lb. min. in low blower (2400 bhp), 7.9 lb./min. in high blower for the CA17 (2000 hp) and the CA19 (2100 hp); 7.8 lb./min. in high blower (1900 bhp) for the CA18. The ADI fluid may be composed of any one of the following solutions of volume:

Methyl Alcohol 50%, water 50%)	Per Pratt & Whitney
Methyl Alcohol 60%, water 40%)	Specification 509
Methyl Alcohol 25%, Ethyl Alcohol 25%, water 50%)	

Methyl Alcohol 60 parts, water 40 parts, Anticorrosion oil one part (per British Specification D-Eng. R.D. 2470, dated 1-8-46).

NOTE 6. The following ignition systems are eligible:

- High Tension - Scintilla with one DF-18LN dual magneto, two high tension distributors and harness.
 - General Electric, with S18RG-PIA combined magneto-distributor units and P18HG-9 harness.
- Low Tension - Scintilla with one DLN-10 dual magneto, two low-tension distributors, harness, and cylinder head mounted ignition coils. Weight decrease with this system is 10 lb.

NOTE 7. These engines are eligible for operation on Grade 91/96 fuel in low blower at the following reduced ratings:

	<u>HP</u>	<u>RPM</u>	<u>MP</u>	<u>ALTITUDE</u>
Maximum continuous	1300	2600	32.5	15,000
Maximum continuous	1300	2600	35.5	S.L.
Takeoff	1350	2800	34.0	15,300
Takeoff	1350	2800	37.0	S.L.

NOTE 8. Engines having the symbols "NH" following the engine serial numbers have no propeller oil transfer bearing in the nose section making it impossible to utilize a hydraulically controllable propeller.

NOTE 9. The following spark plugs are approved on these engines:

AC	161, 165, 171, 175, 181, 261, 265, 271, 273, 275, 281.
BG	240, 245, 340, 341, 345, 346, RB19R-2, RB21R-1, RB27R, RB27R-1, RB39R.
Champion	C34S, R33S*, R37S-1, R56S, R103*, R111, R115, R214D, RC34S, RC35S, REA29N*, REA32N, REA37N, REB29N*, REB32N, REB37N, RHA29E*, RHA29N*, RHA32E, RHA32N, RHA37E, RHA37N, RHB29E*, RHB29N*, RHB32E, RHB32N, RHB37E, RHB37N.
Lodge	RS19-2R.

*May be used in rear position of both front and rear rows but not in front of either row.

NOTE 10. Engines incorporating the original CA type crankshaft with the heavyweight front damper and lightweight rear damper will be identified by having the suffix "H" added to the engine model designation listed on the nameplate. Example: Double Wasp CA15H. The CB type crankshaft with two lightweight dampers will require no change in the engine model designation for identification of the crankshaft.

NOTE 11. The military R2800-97 engine is identical to the Double Wasp CA18 and is eligible for use in certificated aircraft; however, when used civilly the engine name plate should be revised to include the corresponding civil model designation and Type Certificate No.

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