

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

E-230	
Revision 11	
Twin Wasp	Pratt & Whitney
2SD-G	2SD1-G
D-4	2SD13-G
D-3	D-5
D-7	D-14
September 15, 1975	

TYPE CERTIFICATE DATA SHEET NO. E-230

Engines of models described herein conforming with this data sheet (which is part of type certificate No. E-230) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Manufacturer Pratt & Whitney Aircraft  
Division of United Technologies Corporation  
East Hartford, Connecticut 06108

Model	Twin Wasp	2SD-G	2SD1-G	D-4	2SD13-G
Type	14RA-	2:1 reduction gearing	--	--	--
Rating					
(With low imp. gear ratio)		7.15:1	--	--	--
Max. continuous, hp.					
rpm, in. Hg., at:					
Critical alt. (ft.)		1100-2550-41.0-7400	1100-2550-36.5-8300	--	1200-2550-40.5-5200
Sea level press. alt.		1100-2550-42.0-S.L.	1100-2550-38.5-S.L.	--	1200-2550-42.0-S.L.
Takeoff (five minutes),					
hp, rpm, in. Hg., at:					
Critical alt. (ft.)		—	—	—	1450-2700-49.5-1000
Sea level press. alt.		1350-2700-50.0-S.L.	1450-2700-50.0-S.L.	--	1450-2700-50.0-S.L.
(With high imp. gear ratio)		8.47:1	9.52:1	—	9.52:1
Max. continuous, hp.					
rpm, in. Hg., at:					
Critical alt. (ft.)		1000-2550-41.5-12400	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
Fuel (Min. grade aviation gas.)		Grade 100/130	--	--	--
Lubricating oil		See P&WA Serv. Bulletin #1183	--	--	--
Bore and stroke, in.		5.75 X 5.5	--	--	--
Displacement, cu. in.		2004	--	--	--
Compression ratio		6.5:1	--	--	--
Weight (dry), lbs. (See NOTE 5)		1570	1590	1570	1605
Center of gravity location (dry)					
Fwd. of mount pad C.L., in.		10.6	--	10.9	10.6
Above prop. shaft C.L., in.		.3	--	--	--
Propeller shaft, SAE No.		50	--	--	--
Carburetion		Stromberg PD-12F7 carburetor with 3/4 in. venturi	Stromberg PD-12F8 or F13	--	--
Ignition, dual		Scintilla SF14RN-8 magnetos	Scintilla high or low tension	--	--
Ignition timing, °BTC		20	25 (37 in automatic cruise)	--	--
Spark plugs		See Note 7	--	--	--
NOTES		1,2,3,4,6,7	1,2,3,4,5,6,7	--	--

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Model	Twin Wasp	D-3	D-5	D-7	D14
Type	14RA-	2:1 reduction gearing	--	16:9 reduction gearing	--
Rating					
(With low imp. gear ratio)		7.15:1	--	--	--
Max. continuous, hp.					
rpm, in. Hg., at:					
Critical alt. (ft.)		1200-2550-40.5-5200	1200-2550-41.5-7000	--	1200-2550-40.5-5200
Sea level press. alt.		1200-2550-42.0-S.L.	1200-2550-42.5-S.L.	--	1200-2550-42.0-S.L.
Takeoff (five minutes), hp, rpm, in. Hg., at:					
Critical alt. (ft.)		1450-2700-49.5-1000	1450-2700-49.5-3500	--	1450-2700-49.5-1000
Sea level press. alt.		1450-2700-50.0-S.L.	1450-2700-50.0-S.L.	--	1450-2700-50.0-S.L.
(With high imp. gear ratio)		—	—	—	9.52:1
Max. continuous, hp.					
rpm, in. Hg., at:					
Critical alt. (ft.)		—	—	—	1100-2550-43.0-15000
Low critical press. altitude (ft.)		—	—	—	1100-2550-44.0-7000
Fuel (Min. grade aviation gas.)		Grade 100/130	--	--	--
Lubricating oil		See P&WA Serv. Bulletin #1183	--	--	--
Bore and stroke, in.		5.75 X 5.5	--	--	--
Displacement, cu. in.		2004	--	--	--
Compression ratio		6.5:1	--	--	--
Weight (dry), lbs. (See NOTE 5)		1585	1585	1595	1615
Center of gravity location (dry)					
Fwd. of mount pad C.L., in.		10.9	--	--	10.6
Above prop. shaft C.L., in.		.3	--	--	--
Propeller shaft, SAE No.		50	--	--	--
Carburetion		Stromberg PD-12F8 or F13	--	--	--
Ignition, dual		Scintilla high or low tension	--	--	--
Ignition timing, °BTC		25 (37 in automatic cruise)	--	--	--
Spark plugs		See Note 7	--	--	--
NOTES		1,2,3,4,5,6,7	--	--	--

"- -" indicates "same as preceding model".

"—" indicates "does not apply".

Certification basis           Type Certificate No. 230

Production basis            Production Certificate No. 2

NOTE 1. Maximum permissible temperature are as follows:

<u>Cylinder Head</u>	<u>Cylinder Barrel</u>	<u>Oil Inlet</u>
500°F spark plug gasket	350°F	200°F
475°F well-type		

NOTE 2. Fuel and Oil Pressure limits:

	<u>Maximum</u>	
Fuel pressure (psi)	16 23	14 with 5 lb. discharge nozzle spring 21 with 10 lb. discharge nozzle spring
Oil pressure (psi)	100 50	

NOTE 3. The following accessory provisions are available:

	Direction of Drive*	Speed Ratio of Drive**	Maximum Torque		Maximum Overhang Moment (in. lb.)
			Driving	Static	
Starter (2SD-G only)	C	1:1	2100	24600	220
	C	1:1	3100	16500	220
Generator (2SD-G only)	C	3:1	300	1700	260
	C	3:1	500	2000	260
Fuel Pump (2 on 2SD-G, 1 on 2SD1-G, 2SD13-G, D-4, D-3, D5, D7, D14)	CC	.875:1	150	450	10
Vacuum pump (rear location) (side location)	C	1.4:1	150	2250	40
	C	1:1	90	800	20
Hydraulic pump	C	1.4:1	400	2250	70
Propeller governor	C	.958:1	100	600	—

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

\*\* Speed ratio is based on crankshaft speed.

NOTE 4. These engine models differ essentially as follows:

<u>Model</u>	
2SD-G	Basic model.
2SD1-G	Similar to 2SD-G except has plain type main bearings, revised diffuser, impeller, ignition harness, cams, exhaust valves and guides plus the above listed differences.
2SD13-G	Similar to 2SD1-G except has aluminum finned cylinder barrels, plus the above listed differences.
D14	Similar to 2SD13-G except has 16:9 reduction gearing and an integral torquemeter.
D3	Same as 2SD13-G except has a single speed supercharger drive.
D4	Same as 2SD1-G except has a single speed supercharger drive.
D5	Similar to 2SD13-G except has a single speed supercharger drive with supercharger impeller and diffuser identical to those in the 2SD-G plus the difference listed above.
D7	Similar to D14 except has a single speed supercharger drive with impeller and diffuser identical to those in the D5.

NOTE 5. The following ignition systems are eligible in the pertinent engine models:

High tension type 2 Scintilla SFLN-8 magnetos with integral distributors, high tension harness and spark plug leads.

All Twin Wasp are eligible using SFRN-8 magnetos and the appropriate reversed direction gear train which eliminates the two-position spark advance. Such engines are designated by the letter "S" following the engine serial number.

Low tension type 2 Scintilla high frequency type L-8992 magnetos, L-8998 harness and leads with BG-712HF transformer spark plugs. Requires two 1/2 speed magneto drives.  
Engine weight is reduced 24 lbs.

NOTE 6. Twin Wasp D series engines 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.

Takeoff 1100 hp at 2700 rpm.  
Maximum continuous 1000 hp at 2550 rpm.

NOTE 7. The following spark plugs are approved for use on these engines:

AC	161, 171, 181, 261, 271, 281.
BG	240, 245, 340, 341, 345, 346, RB19R-2, RB21R-1, RB23R, RB27R, RB27R-1, RB39R.
Champion	C34S, C35S, RC34S, RC35S, R37S-1, REA37N, REB37N, RHA37N, RHB37N, RHA37E, RHB37E, R115.
Lodge	RS19-2R
Hahn	702.
Autolite	SL30, SL300

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