

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E-291
Revision 12
PRATT & WHITNEY AIRCRAFT
Turbo Wasp
JT4A-3
JT4A-5
JT4A-9
JT4A-10
JT4A-11
JT4A-12

September 15, 1967

TYPE CERTIFICATE DATA SHEET E-291

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. 291) 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 Aircraft Corporation
East Hartford 8, Connecticut

Model	Turbo Wasp	JT4A-3, -5	JT4A-9, -10	JT4A-11, -12
Type	Turbojet			
Ratings				
Maximum continuous static thrust at sea level, lb.		12,500	13,500	14,900
Takeoff static thrust at sea level (5 min.), lb.		15,800	16,800	17,500
Fuel control	Hamilton JFC-25		--	--
Fuel pump	Pesco 023341 or Chandler Evans 9416		--	--
Fuel	See NOTE 14		--	--
Oil (See NOTE 15)	Synthetic type conforming to P&WA Spec. 521 as revised		--	--
Principal Dimensions:				
Length, in. (maximum including nose drive cover and the aft turbine bearing housing cone)		188.8	--	--
Diameter, in. (maximum)		58.5	--	--
Weight (dry), lb. (includes basic engine with all essential access, but excluding starter, propelling nozzle, power source for ignition system and oil supply tank.)		5020, 4815	5050, 4845	5100, 4895
Center of gravity, in.				
Aft of front mount area center line		18.6, 20.4	20.4	18.6, 20.4
Below engine center line		0.9	--	--
Ignition	General Laboratories Associates model 18200-11 or 40355 with two spark igniters, AC JC-75 or JB-3; Champion AA-16S, AA-42S, AA-63S, or AA-72S.		--	--
NOTES		1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14	--	--

"- -" indicates "same as preceding model"

"—" indicates "does not apply"

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Certification basis Type Certificate No. 291 issued March 15, 1957, for Model JT4A-3; Model JT4A-5 approved February 26, 1959, Models JT4A-9 and JT4A-10 approved December 30, 1959, Models JT4A-11 and JT4A-12 approved May 26, 1960.

Date of Application for Type Certificate November 8, 1956 (JT4A-3); February 26, 1958 (JT4A-5); October 20, 1959 (JT4A-9); January 6, 1959 (JT4A-10); December 21, 1959 (JT4A-11 and JT4A-12).

Production basis Production Certificate No. 2.

NOTE 1. Maximum permissible engine operating speeds for the engine rotors are as follows:

	<u>JT4A-3, -5</u>	<u>JT4A-9, -10</u>	<u>JT4A-11, -12</u>
Low pressure compressor (N1), r.p.m.	6950	7060	7160
High pressure compressor (N2), r.p.m.	9050	9135	9355

NOTE 2. Maximum permissible temperatures are as follows:

	<u>JT4A-3, -5</u>	<u>JT4A-9, -10</u>	<u>JT4A-11, -12</u>
Turbine outlet gas temperature			
Takeoff (5 minutes)	607°C (1125°F)	635°C (1175°F)	655°C (1211°F)
Maximum continuous	500°C (932°F)	516°C (960°F)	560°C (1040°F)
Maximum for acceleration (2 minutes)	607°C (1125°F)	635°C (1175°F)	649°C (1200°F)
Starting ground	400°C (752°F)	--	--
air	475°C (887°F)	--	--
Oil Inlet	121°C (250°F)	--	--
External engine components max. temperature	(Limiting temperature of specific components are as specified in pertinent P&WA Installation Handbooks)		

NOTE 3. Fuel and oil pressure limits are as follows:

Fuel absolute pressure at inlet to engine system pump, 7.5 p.s.i. above absolute fuel vapor pressure with maximum of 55 p.s.i. above absolute ambient atmospheric pressure. For aircraft fuel systems which do not require supply pumps, the inlet pressure minimum of 1.5 p.s.i. below the fuel tank pressure should also be considered.

Oil pressure

At idle, 30 p.s.i. minimum

Operating range, 40 to 50 p.s.i.

NOTE 4. Maximum permissible air bleed extraction is as follows:

Of total engine overflow:

Low compressor; 1.65% at takeoff and one wide open port (2%) for all other running.

High compressor; 1.5% at takeoff and 5.5% for all other running.

For 3-engine takeoff; low compressor 1.9% and high compressor 2.2%.

NOTE 5. These ratings are based upon static test stand operation under the following conditions:

Compressor inlet air at 59°F and 29.92 in. Hg.

Jet nozzle and exhaust pipe per P&WA Drawing 283201

P&WA bellmouth on air inlet

No aircraft accessory loads or air extraction

No anti-icing airflow

Turbine outlet gas temperature limit not exceeded

At engine data plate (N₂) r.p.m.

NOTE 6. The following accessory drive provision are incorporated:

Drive	Rotation (C-Clockwise CC-Counter Clockwise)	Speed Ratio to Turbine Shaft	Torque (in. lb.)		Overhang (in. -lb.)
			Continuous	Static	
<u>Low Rotor</u>					
Tachometer	CC	.620:1	7	50	-
<u>High Rotor</u>					
Starter	C	.823:1	*	*	625
Generator	C	.776:1	1000	4400	625
Fluid Power Pump	C	.40:1	1000	4400	400
Tachometer	C	.478:1	7	50	-

* Maximum starter torque, 550 pound-feet. Shear section should withstand 1100 pound-feet.

NOTE 7. A P&WA engine mounted oil tank (P&WA Part No. 316400) is available as optional equipment at an approximate weight increase of 30 lb.

NOTE 8. Power setting, power checks, and control of engine output in all operations is to be based upon P&WA engine charts referring to turbine discharge section gas pressure. Pressure probes are included in the engine assembly for this reason.

NOTE 9. This engine meets FAA requirements for adequate turbine disc integrity and rotor blade containment and does not require external armoring.

NOTE 10 and 11. Deleted April 30, 1959.

NOTE 12. The above engines incorporate the following detailed characteristics:

<u>JT4 model</u>	<u>Characteristics</u>
A-3	Basic model.
A-5	Same as A-3 except for decreased weight.
A-9	Same as A-3 except for increased ratings with improved engine parts.
A-10	Same as A-9 except for decreased weight.
A-11	Same as A-9 except for increased ratings with improved engine parts.
A-12	Same as A-11 except for decreased weight.

NOTE 13. The serial number suffix "B" designates engines for the Boeing 707 aircraft and the suffix "D" designates engines for the Douglas DC-8 aircraft. Differences in these engines involve difference in the routing of external engine lines.

NOTE 14. JP-1, JP-4, and JP-5 fuels conforming to P&WA Specification No. 522 and later revisions may be used separately or mixed in any proportions without adversely affecting the engine operation or power out-put. No fuel control adjustment is required when switching fuel types.

Phillips PFA-55MB anti-icing additive at the use concentration not in excess of 0.15% volume is approved for use in fuels conforming to P&WA Specifications No. 522D.

Shell ASA-3 anti-static additive at a concentration that will provide not in excess of 300 conductivity units, which is approximately equivalent to 1 p.p.m., is approved for use in fuels conforming to P&WA Specification No. 522E or later revision.

NOTE 15. P&WA Turbojet Engine Service Bulletin No. 238 lists approved brand oils.

NOTE 16. Certain engine parts are life limited. These limits are listed in the FAA Approved Pratt & Whitney Aircraft JT4A Series Turbojet Engines Overhaul Manual Part No. 384887, Fits and Clearance Section.

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