

FEDERAL AVIATION ADMINISTRATION

E-290-15  
 PRATT & WHITNEY  
 Turbo Wasp  
 JT3C-4  
 JT3C-6  
 JT3C-7  
 JT3C-12  
 September 6, 1967

TYPE CERTIFICATE DATA SHEET NO. E-290

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. 290) 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, Connecticut

Model	Turbo Wasp	JT3C-4	JT3C-6	JT3C-7	JT3C-12
Type		Turbojet, Dual Axial, 16 stage compressor, 3 stage turbine and 8 cannular combustion chambers	- -	- -	- -
Ratings (See NOTE 11)					
Maximum continuous static thrust at sea level, lb.		9500	10,000	10,000	11,500
Takeoff static thrust at sea level, lb. dry (5 minutes)		11,200	11,200	12,000	13,000
with water injection (2-1/2 minutes)		12,500	13,500	—	- -
Fuel control		Hamilton JFC-12	- -	Hamilton JFC-25	- -
Fuel		See Note 14	- -	- -	- -
Fuel pump		Chandler Evans 9400 two-stage	- -	Chandler Evans 9430	- -
Air bleed governor		Holley A 12110	- -	Holley A 12115	- -
Oil (See Note 15)		Synthetic type conforming to P&WA 521 as revised.	- -	- -	- -
Principal Dimensions:					
Length, In. (maximum including front-mounted compressor bleed control)		138.97	- -	137.38	- -
Width		38.9	- -	- -	- -
Height		46.7	- -	- -	- -
Weight (dry), lb. (includes basic engine with all essential access., but excluding starter, exhaust nozzle, power source for the ignition system, and oil supply tank)		4234	- -	3495	3550
Center of gravity, in.					
Aft of front mount area center line		18.34	- -	20.27	20.30
Below engine center line		1.20	- -	- -	1.43
Ignition		GLA 18200-11 with two spark igniters: Champion AA-15S, AA-35S, AA-37S or AA-72S; BG 12625; AC JB-57, JC-571 or JB-3	- -	GLA 40355B with two spark igniters: Champion AA-15S, AA-35S, AA-37S or AA-72S; BG 12625; AC JB-57, JC-571 or JB-3.	- -
NOTES		1 thru 14	1 thru 14	1 thru 14	1 thru 14

"- -" indicates "same as previous model"  
 "—" indicates "not applicable"

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Certification basis CAR 13, effective June 15, 1956, as amended by 13-1, 13-2, and 13-3. Type Certificate No. 290 issued March 15, 1957, for JT3C-4; JT3C-6 added June 19, 1957; JT3C-7 added May 26, 1959; JT3C-12 added April 14, 1961.  
Date of Application for Type Certificate September 18, 1956.

Production basis Production Certificate No. 2.

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

	<u>JT3C-4, -6</u>	<u>JT3C-7</u>	<u>JT3C-12</u>
Low pressure compressor (N1)	7000	6850	- -
High pressure compressor (N2)	9950	- -	10150

NOTE 2. Maximum permissible temperatures are as follows:

Turbine outlet gas temperatures:			
Takeoff (5 minutes)	(630°C) 1166°F	(620°C) 1148°F	(665°C) 1229°F
Maximum continuous	(560°C) 1040°F	(540°C) 1004°F	(600°C) 1112°F
Maximum for acceleration (2 minutes)	(650°C) 1202°F	- -	(695°C) 1283°F
Starting: ground	(450°C) 842°F	- -	- -
air	(500°C) 932°F	- -	- -
Oil inlet	(121°C) 250°F	- -	(121°C) 250°F continuous operation (143°C) 290°F Ten (10) min. Ground operation only

External engine components, maximum temperature (Limiting temperature of specific components are as specified in pertinent engine installation and operating manual or P&WA Installation Handbook.)

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

Fuel pressure, at inlet to engine system pump, 7.5 p.s.i. above absolute fuel vapor pressure or 1.5 p.s.i. below fuel tank pressure, whichever is higher, with a maximum of 55 p.s.i. above absolute ambient atmospheric pressure.

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:

Low compressor:

<u>JT3C-4, C-6</u>	<u>JT3C-7</u>	<u>JT3C-12</u>
1% from idle to M.C.	2.75% at idle reducing to 2.0% at M.C.	2.75% at idle reducing to 2.4% at M.C.
2.2% at takeoff speed	2.2% at takeoff speed	1.2% at takeoff speed
1.8% intermittent for thermal anti-icing		

High compressor:

<u>JT3C-4, C-6, C-7</u>	<u>JT3C-12</u>
5.5% from idle to M.C.	5.5% at idle reducing to 4.5% at M.C.
2.0% at takeoff speed	2.4% at takeoff speed
3.1% for three-engine takeoff	3.1% for three-engine takeoff

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 Dwg. 279401  
P&WA bellmouth on air inlet  
No aircraft accessory loads or air extraction  
No anti-icing airflow  
Turbine outlet gas temperature limits not exceeded  
At engine data plate N2 r.p.m.

NOTE 6. The following accessory drive provisions are incorporated:

Drive	Direction of Rotation*	Speed Ratio to Turbine Shaft	Torque (in. lb.)		Overhang (in. lb.)
			Continuous	Static	
<u>Low Rotor</u>					
Tachometer	C	.679:1	7	50	-
<u>High Rotor</u>					
Starter	C	.700:1	**	**	625
Generator	C	.678:1	1000	4400	625
Fluid power pump***	C	.355:1	1000	4400	400
Tachometer	C	.421:1	7	50	-

\* "C" - Clockwise when viewed facing pad

\*\* Max. starter torque 550 pound-feet. Shear section should withstand 1100 pound-feet.

\*\*\* May be used as generator drive when proper shaftgear is installed at same ratio and overhang as other generator drive.

NOTE 7. The following optional items, when used, increase the basic engine weight as follows:

P&WA water regulator, piping and brackets.	
JT3C-4	40 lb.
JT3C-6	60 lb.
P&WA engine-mounted oil tank, Part No. 315183	25 lb.

NOTE 8. For water injection operation, the following water flow rates are utilized:

Constant water flow - lb./min.	<u>JT3C-4</u>	<u>JT3C-6</u>
	250	667
Feed pressure - p.s.i.	150 - 225	350 - 437

Water alone is specified and should contain no more than 10 (PPM) parts per million impurities.

Use of water with appreciable mineral content will cause gradual dry power deterioration from deposits on the compressor blades and result in the need for more frequent speed trimming and engine cleaning.

Use of water is limited to takeoff operation up to an altitude of 9,000 feet, at 11°F (minus 12°C) or above, ambient temperature, water injection to the engine diffuser only, and at 40°F (5°C) or above, ambient temperature, water injection to the compressor inlet and engine diffuser.

NOTE 9. 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 pressures. Pressure probes are included in the engine assembly for this reason.

NOTE 10. These engines meet FAA requirements for adequate turbine disc integrity and rotor blade containment and do not require external armoring. These engines have demonstrated satisfactory operation in icing conditions as defined in CAR 4b.1(b)7 and 8.

NOTE 11. (a) Maximum Continuous Thrust. Maximum continuous static thrust at sea level permitted as follows:

JT3C-6:	At -22°F ambient temperature and below, 13,500 lb.
JT3C-7:	At 41°F ambient temperature and below, 12,000 lb.
JT3C-12:	At 25°F ambient temperature and below, 13,000 lb.

The pertinent engine installation and operating manual of P&WA Installation Handbook should be consulted for variation in thrust between standard day and the ambient temperature stated above.

(b) Takeoff Thrust. Takeoff thrust (dry) permitted as follows:

JT3C-6: Below 11°F inlet temperature, 13,500 lb. for 5 minutes.  
JT3C-7: Below 43.5°F inlet temperature, 12,500 lb. for 5 minutes.

Takeoffs using both water injection and dry takeoff power are limited to a maximum period of 5 minutes including operation with water injection for not more than 2 1/2 minutes.

NOTE 12. The serial number suffix "B" designates engine for the Boeing 707 aircraft and the suffix "D" designates engines for the Douglas DC-8 aircraft. Differences in these engines involve differences in the routing of external engine lines.

NOTE 13. The above engines incorporate the following detailed characteristics:

JT3C Model

C-4	Basic model.
C-6	Same as C-4 except for increased wet takeoff and maximum continuous ratings.
C-7	Same as C-6 except for increased dry takeoff rating, decreased weight and no water injection.
C-12	Same as C-7 except for increased ratings with improved engine parts.

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 output. 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 Specification 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. in 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 approved brand oils.

NOTE 16. Certain engine parts are life limited. These limits are listed in the FAA-Approved Pratt & Whitney Aircraft JT3C-6 Turbojet Engine Overhaul Manual Part No. 363433, Fits and Clearances Section and the FAA-Approved Pratt & Whitney Aircraft JT3C-7 and -12 Turbojet Engines - Overhaul Manual Part No. 395954, Fits and Clearances Section.

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