

Supplemental Type Certificate

(Continuation Sheet)

Number SE2352NM

Soloy, LLC

Reissued: 12/2/04

Amended: 12/17/82; 2/22/85; 4/23/86; 5/11/92; 12/2/04; 3/22/05

Limitations and Conditions: (continued)

The Limitations and Conditions shown on Type Certificate Data Sheet Number E4CE for the Rolls-Royce Model 250-C20S engine remain applicable, except:

Model: TURBINE PAC 780-1000-1

Type: Free Turbine Turboprop
Axial Centrifugal Compressor
Two-stage Gas Producer
Two-stage Power Turbine
Single Combustion Chamber

Propeller Drive Ratio: - - - 3.323:1

Ratings: (See NOTE 3):

<u>Maximum Continuous:</u>	Shaft Horsepower	- - - 398 hp
	Propeller Drive Speed	- - - 1,180 rpm
	Torque Pressure	- - - 96.4 psi
	Gas Producer Speed	- - - 52,220 rpm
	Turbine Rotor Speed	- - - 6,016 rpm
	Measured Gas Temperature	- - - 1,434°F (779°C)

<u>Takeoff (5 minutes):</u>	Shaft Horsepower	- - - 418 hp
	Propeller Drive Speed	- - - 1,810 rpm
	Torque Pressure	- - - 101.4 psi
	Gas Producer Speed	- - - 53,000 rpm
	Turbine Rotor Speed	- - - 6,016 rpm
	Measured Gas Temperature	- - - 1,490°F (810°C)

<u>Principal Dimensions:</u>	Length overall, inches	- - - 48.04
	Width, inches	- - - 29.70
	Height, inches	- - - 29.72

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Limitations and Conditions: (continued)

<u>Center of Gravity (CG):</u>	CG location, aft of propeller flange face, inches	--- 22.10
	CG location, below propeller axis, inches	--- 8.70
	CG location, right of propeller axis, inches	--- 0.10
<u>Weight:</u>	Basic turbine pac dry, lbs.	--- 317.3
<u>Propeller Drive:</u>	Flanged, 4.250 inch bolt circle right holes, 0.594± .005 inch diameter	
<u>Fuel:</u>	Refer to Type Certification Data Sheet Number E4CE for fuels approved for the Allison 250-C20S engines.	
<u>Oil:</u>	MIL-L-7808G or MIL-L-23699B and subsequent revisions thereto.	
<u>Control System:</u>	Bendix Gas Producer Fuel Control	--- DP-P2
	Bendix Power Turbine Governor (Turbine Overspeed Protection Only)	--- AL-AA1
	Soloy Propeller Governor	--- 780-3356-3
	Soloy Propeller Overspeed Governor	--- 780-3360-1
<u>Certification Basis:</u>	Part 13 of the Civil Air Regulations (CAR's), effective June 15, 1956, as amended by 13-1, 13-2, and 13-3, and exemption No. 219 from CAR 13.211, regulatory Docket 1337, dated August 6, 1962, and amended May 12, 1990, plus Section 33.4 of FAR Part 33, effective October 14, 1980.	
<u>STC Application:</u>	STC application, dated April 29, 1981, amended December 17, 1982.	

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Limitations and Conditions: (continued)

Note 1: Maximum permissible temperatures:

Measured gas temperatures:

Takeoff power	1,490°F (810°C)
Maximum continuous	1,434°F (779°C)
Maximum transient (not to exceed six seconds)	1,490°F (810°C)
	1,550°F (843°C)
Starting	1,490°F (810°C)
	1,700°F (927°C)

Oil inlet temperatures:

Maximum	225°F (93°C)
Minimum	
MIL-L-7808G type oil	- 65°F (-54°C)
MIL-L-23699B type oil	- 40°F (-40°C)

Note 2: Fuel inlet and oil pressure limits:

See Type Certification Data Sheet E4CE for Rolls-Royce 250-C20S engine.

Note 3: Soloy Turbine PAC Rating and Conditions are as shown herein.

Turbine PAC ratings, unless otherwise specified, are based on static sea level standard conditions with compressor inlet air (dry) 59°F, 29.92 in. hg., compressor inlet bell attached to provide suitable air approach conditions, no external accessory loads and no airbleed, and measured rated gas temperature as indicated by the average of the four gas temperature thermocouples.

Note 4: The following accessory drive or mounting provisions are available:

<u>Driven by Gas Producer Turbine</u>	<u>*Direction of Rotation</u>	<u>Speed Ratio to Turbine</u>	<u>Max. Torque (lb. in.) Continuous Static</u>		<u>Max. Overhung Moment (in. lb.)</u>
Spare	C	0.0728	35	75	30
Tachometer	CC	0.0824	7	50	4
Starter-Generator	C	0.2361	**	550	94

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Limitations and Conditions: (continued)

Note 4: (Continued)

Driven by Gas Turbine Power	*Direction of Rotation	Speed Ratio to Turbine	Max. Torque (lb. in.) Continuous Static		Max. Overhung Moment (in. lb.)
Power Takeoff-rear	C	0.1807	***4,608	8000	700
Tachometer	CC	0.1262	7	50	4

Driven by Power Turbine off the Reduction Gearbox Propeller Governor	*Direction of Rotation	Speed Ratio to Prop * * * *	Max. Torque (lb. in.) Continuous Static		Max. Overhung Moment (in. lb.)
Propeller Governor	CC	1.4577	125	825	25
Propeller Overspeed Governor	CC	1.821	100	800	25
Oil Pump	CC	1.821	100	800	25

* C - Clockwise viewing drive pad
 CC - Counterclockwise

** The maximum generator load is 150 amperes (9.3 hp)

*** The sum of the torque extracted in any combination from the front and rear power output drives shall not exceed the torque values specified in Note 7.

**** Speed ratio to propeller based on propeller shaft speed of 1,810 RPM (100% N₂)

Note 5 External air bleed may not exceed 4.5 percent.

Note 6 Water injection operation is not approved.

Note 7 The maximum allowable torque as measured by the torque meter for below standard inlet air temperature and/or RAM conditions is 384 lb. -ft. for takeoff and 349 lb. -ft. for maximum continuous operation.

Note 8 Maximum shaft speeds for momentary transients (up to 15 seconds) and for sustained operation:

	Transient	Sustained
Propeller Shaft	110%	105%
Power Turbine	110%	105%
Gas Producer	106%	105%

100% propeller speed is defined as 1,810 RPM

100% power turbine speed is defined as 6,016 RPM

100% gas producer is defined as 50,970 RPM

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Limitations and Conditions: (continued)

- Note 9 The turbine Pac Model 780-1000-1 is eligible for tractor applications only utilizing three-bladed propellers.
- Note 10 The turbine PAC Model 780-1000-1 has not been shown to meet FAA requirements for operation in icing conditions
- Note 11 Life limits established for the Turbine Pac Model 780-1000-1 engine are published in the Soloy Turbine Pac Maintenance and Overhaul Manual.
- Note 12 Life limits established for the Rolls-Royce Model 250-C20S engine are published in the Rolls-Royce Gas Turbine Operation and Maintenance Manual.
- Note 13 Installation requirements for the Turbine Pac Model 780-1000-1 are included in the Soloy Turbine Pac Installation Design Manual.

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