

FEDERAL AVIATION AGENCY

E-272
Revision 9
WRIGHT
Double Row Turbo Cyclone
972TC18DA1
(Military R-3350-34,
R-3350-91)
972TC18DA2
972TC18DA3
972TC18DA4

December 28, 1983

TYPE CERTIFICATE DATA SHEET NO. E-272

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. E-272) and other approved data on file with the Federal Aviation Agency 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 Curtiss-Wright/Marquette, Inc.
Fountain Inn, South Carolina

Model	Double Row Turbo Cyclone	972TC18DA1 (R-3350-34, -91), 972TC18DA2	972TC18DA3, 972TC18DA4
Type	18RA with 3 Blow-down, exhaust-driven turbines	Reduction gear ratio 16:7 Turbo drive ratio 6.52:1	- - - -
Rating (with low impeller gear ratio)		6.46:1	- -
Max. continuous, hp, rpm, in.Hg. at:			
Critical pressure altitude (ft.)		2650-2600-45.0-6500	2750-2600-47.0-5800
Sea level pressure altitude		2600-2600-47.5-S.L.	2700-2600-49.0-S.L.
Takeoff (5 min.), hp, rpm, in.Hg. at:			
Critical pressure altitude (ft.)		3250-2900-53.0-5000	3250-2900-53.5-5500
Sea level pressure altitude (with high impeller gear ratio)		3250-2900-56.5-S.L. 8.67:1	3250-2900-56.5-S.L. - -
Max. continuous, hp, rpm, in.Hg. at:			
Critical pressure altitude (ft.)		2450-2600-47.0-16,400	- -
Low critical pressure altitude (ft.)		2405-2600-48.5-9550	2405-2600-48.5-10,050
Takeoff (5 min.), hp, rpm, in.Hg. at:			
Critical pressure altitude (ft.)		2550-2600-49.0-15,200	- -
Low critical pressure altitude (ft.)		2535-2600-49.5-12,800	2535-2600-49.5-13,300
Fuel (minimum grade aviation gasoline)		115/145	- -
Lubricating oil		MIL-L-6082, WAD Spec. 5815 or 5818	- -
Bore and stroke, in.		6.125 X 6.312	- -
Displacement, cu. in.		3350	- -
Compression ratio		6.70:1	- -
Weight (dry), lbs.		3550	- -
C.G. location (dry)			
Fwd. of mounting flange centerline, in.		18.22	- -
Left of vertical centerline, viewed from rear, in.		0.014	- -
Above propeller shaft, in.		0.133	- -
Propeller shaft, SAFE no.		60	- -

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Model	Double Row Turbo Cyclone	972TC18DA1 (R-3350-34, -91), 972TC18DA2	972TC18DA3, 972TC18DA4
Fuel injection model		Bendix Stromberg PR-58-S2 master control with two Direct injection pumps	--
Ignition, Dual		Scintilla DLN-9 magneto	--
Timing, °BTC		25 (30 in cruise)	--
Spark plugs		See Note 10.	--
NOTES		1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10

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

Certification basis Type Certificate No. 272

Production basis Production certificate No. 8

NOTE 1. Maximum permissible temperatures are as follows:

<u>Head (Well Type Thermocouple)</u>	<u>Barrel</u>	<u>Oil Inlet</u>
475° (500° for T.O. only)	350°	220°

NOTE 2. Fuel and oil pressure limits:
Oil pressure (psi) 70 ± 5. Fuel pressure (psi) 25 ± 2

NOTE 3. The following accessory drives are provided:

	Rotation*	Speed**	Maximum Torque (in. lbs.)		Maximum Bending Moment (in. lbs.)
			Continuous	Static	
Starter	C	1.000	-	36000	350
Generator and accessory (2)	C	3.110	1500	6600	400
Fuel pump (2)	CC	1.000	25	450	15
Hydraulic pump	C	1.400	600	2700	350
Vacuum pump (2)	C	1.400	250	1650	75
Tachometer (2)	1C	0.500	22	50	15
	1CC				
Propeller governor	C	0.857	125	825	30

*"C" - Clockwise viewing drive pad

"CC" - Counter clockwise

**Speed - Times crankshaft rpm

NOTE 4. These engines incorporate torquemeters, provisions for crankcase mounting and double-acting hydraulic propeller provisions.

NOTE 5. The ratings of these engines are based on standard conditions of temperature and barometric pressure (60°F and 29.92 in.Hg. at sea level) and 80% relative humidity. If corrected to dry standard air conditions, the rated powers would be increased approximately 2.5% at sea level to 0.4% at 15,000 ft. for equal manifold pressure settings.

NOTE 6. These engines incorporate 3 blow-down turbines for exhaust gas power recovery. To insure against secondary damage being caused by a turbine blade failure, it is required that each turbine wheel be provided with an approved type of guard prior to use in certificated aircraft. These guards should be capable of at least cushioning the energy effects of a failed blade.

NOTE 7. The military R-3350-34 and R-3350-91 engines are identical to the 972TC18DA1 and are eligible for use in certificated aircraft; however, when used civilly the engine name plate should be revised to include the corresponding civil model designations and type certificate no.

- NOTE 8. The model 972TC18DA2 and DA4 engines are similar to the 972TC18DA1 and DA3 models, respectively, except for installation feature differences.
- NOTE 9. These engines are eligible for use with grade 100/130 fuel at the following ratings for all operations including cruise:
- | | <u>972TC18DA1</u> | <u>972TC18DA3</u> |
|--|---------------------|---------------------|
| | <u>972TC18DA2</u> | <u>972TC18DA4</u> |
| With low impeller gear ratio: | | |
| Maximum continuous, hp, rpm, in. Hg. at: | | |
| Critical pressure altitude (ft.) | 2450-2600-41.0-9100 | 2450-2600-41.5-9400 |
| Sea level pressure altitude | 2380-2600-43.5-S.L. | 2380-2600-44.0-S.L. |
| Takeoff (5 min.), hp, rpm, in.Hg., at: | | |
| Critical pressure altitude (ft.) | 2950-2900-47.5-8100 | 2950-2900-48.0-8500 |
| Sea level pressure altitude | 2880-2900-53.0-S.L. | 2880-2900-53.0-S.L. |
| With high impeller gear ratio: | | |
| Operation with grade 100/130 fuel not permitted. | | |
- NOTE 10. The following spark plugs are approved on these engines:
AC 275, 286A, 288, 298
Champion R103, RHB27P, RHA29E, RHA29N, RHB29E, RHB29N
Lodge RS35R

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