FEDERAL AVIATION AGENCY

E-219
Revision 9
WRIGHT
Cyclone
702C9GC1, 2, 3, 4, 5, & 6
(GR-1820G-202A; Military R-1820-60, -71)
704C9GC1, 2, 3, 4, & 5 (GR-1820G-205A;
Military R-1820-87, -95)
728C9GC1, 2, 3, 4, 5, & 6
730C9GD1, 2, 3, 4, 5, & 6
731C9GC1 & 2

December 28, 1983

AIRCRAFT ENGINE SPECIFICATION

Engines of models described herein conforming with this specification and approved data on file with the Federal Aviation Agency, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft specifications 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

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Model Cyclone	702C9GC1, 2, 3, 4, 5, & 6	728C9GC1,2,3,4,5 & 6
Type 9RA-Propeller reduction gearing	3:2 on models 1,2,3 & 4	
	16:9 on models 5 & 6	3:2
Rating (with low impeller gear ratio)	7:1	
Maximum continuous,		
hp, rpm, in.Hg., at:		
Rated pressure altitude (ft.)	1100-2400-40.0-5500	1100-2400-41.5-4600
	or 1000-2300-37.2-6900	or 1000-2300-38.5-6000
Sea level pressure altitude	1100-2400-43.0-S.L.	1100-2400-44.0-S.L.
	or 1000-2300-39.5-S.L.	or 1000-2300-41.0-S.L.
Takeoff (5 minutes) hp, rpm, in. Hg.	1200-2500-45.5	1200-2500-47.0
	or 1100-2350-43.0	
Rating (with high impeller gear ratio)	_	_
Maximum continuous,		
hp, rpm, in.Hg. at:		
Rated pressure altitude (ft.)		_
Low critical pressure altitude (ft.)		_
Takeoff (5 minutes), hp, rpm, in. Hg., at:		
Rated pressure altitude (ft.)		_
Low critical press. altitude (ft.)	_	_
Fuel (Minimum grade aviation gas.)	91/96	
Bore and stroke, in.	6.125 x 6.875	
Displacement, cu. in.	1823	
Compression ratio	6.7:1	6.3:1
Weight (dry), lbs.	1310 for models 1,2,3,4 & 5	1310 for mod. 1,2 & 5
	1315 for model 6	1325 for mod. 3, 4 & 6
C.G. location (dry)		,
Fwd. of mounting face, in.	7.5	
Above prop. shaft, in.	.4	
* *		

[&]quot;--" indicates "same as preceding model."

[&]quot;—" indicates "does not apply."

Page No.	1	2	3	4
Rev. No.	9	9	9	9

E-219 2

Model Cyclone	702C9GC1, 2, 3, 4, 5, & 6	728C9GC1,2,3,4,5	728C9GC1,2,3,4,5 & 6		
Propeller shaft, SAE No.	50				
Crankshaft dampers - torsional	4½ order - front and rear				
Carburetion	Stromberg PD-12H3 or B7	for Stromberg PD-12H	Stromberg PD-12H3 or B7 for		
	engine models 1 & 4	engine models 1			
	Stromberg PD12K10 for mo	odels Stromberg PD12K			
	3, 5 & 6	5 & 6			
	Holley 1375C,E,F,H,HA or	HAR Holley 1375C,E,F.	H,HA or HAR		
	for model 2	for models 2 and			
Ignition, dual	Scintilla SF9L-3,-4, SF9LN	-4, or			
,	Bosch SF9LU-3, magnetos	,			
Ignition timing - °BTC	20				
Spark plugs	See NOTE 8				
NOTES	1,4,5,6,7,8	1,5,6,7,8			
Model Cyclone	730C9GD1,2,3,4,5 & 6	704C9GC1,2,3,4 & 5	731C9GC1 & 2		
Type 9RA-Propeller reduction gearing		3:2 on models 1,2,3 & 4			
	3:2	16:9 on model 5	16:9		
Rating (with low impeller gear ratio)	7:1	7.14:1	7.13:1		
Maximum continuous,					
hp, rpm, in.Hg., at:					
Rated pressure altitude (ft.)	1100-2400-39.8-5500	1100-2400-40.0-5500	1100-2400-42.0-4000		
	or 1000-2300-36.7-6900	or 1000-2300-37.2-6900	1000-2300-38.5-5500		
Sea level pressure altitude	1100-2400-42.5-S.L.	1100-2400-43.0-S.L.	1100-2400-43.0-S.L.		
	or 1000-2300-39.0-S.L.	or 1000-2300-39.5-S.L.	1000-2300-39.5-S.L.		
Takeoff (5 minutes) hp, rpm, in. Hg.	1200-2500-45.0	1200-2500-45.5			
		or 1100-2350-43.0			
Rating (with high impeller gear ratio)	_	10:1	10:06:1		
Maximum continuous,					
hp, rpm, in.Hg. at:					
Rated pressure altitude (ft.)		900-2300-40.0-15200	900-2300-42.0-15000		
Low critical pressure altitude (ft.)		900-2300-42.5-9700	900-2300-43.0-10000		
Takeoff (5 minutes), hp, rpm, in. Hg., at:					
Rated pressure altitude (ft.)	<u>—</u>	1000-2500-44.5-14200	1000-2500-47.0-14000		
Low critical press. altitude (ft.)		1000-2500-46.0-9200	1000-2500-48.0-9000		
Fuel (Minimum grade aviation gas.)		91/96 (Grade 100/130 for			
Tuel (Illining grade aviation gast)		rated high ratio takeoffs)			
Bore and stroke, in.	6.125 x 6.875				
Displacement, cu. in.	1823				
Compression ratio	6.2:1	6.7:1			
Weight (dry), lbs.	1310 for mod. 1,2 & 5	1320 for models 1,2 & 5	1320 for model 1		
Weight (dry), resi	1325 for mod. 3,4 & 6	1335 for models 3 & 4	1326 for model 2		
C.G. location (dry)	,				
Fwd. of mounting face, in.	7.5		7.2		
Above prop. shaft, in.	.4		.2		
Propeller shaft, SAE No.	50				
Crankshaft dampers - torsional	41/2 order - front and rear				
Carburetion	Stromberg PD-12H3 or B7		Stromberg PD-12K10		
	for engine models 1 & 3				
	Stromberg PD12K10 for	Stromberg PD-12K10 for			
	models 5 & 6	model 5			
	Holley 1375C,E,F,H,HA or				
	HAR for models 2 and 4				
:					

[&]quot;--" indicates "same as preceding model."
"--" indicates "does not apply."

3 E-219

Model Cyclone	730C9GM, 2,3,4,5 & 6	704C9CG1,2,3,4 & 5	731C9GC1 & 2
Ignition, dual	Scintilla SF9L-3,-4,	Scintilla SF9L-4	Scintilla SF9LN-4
	SF9LN-4, or Bosch	magnetos	magnetos
	SF9LU-3, magnetos		
Ignition timing - °BTC	20		
Spark plugs	See NOTE 8		
NOTES	1,3,5,6,7,8	1,2,4,5,6,7,8	1,5,6,7,8

[&]quot;--" indicates "same as preceding model."

Certification basis Type Certificate No. 219
Production basis Production Certificate No. 8

*"C" = Clockwise viewing pad.

- NOTE 1. Maximum permissible cylinder head, barrel and oil inlet temperatures, 450°F, 325°F and 220°F, respectively.
- NOTE 2. Models 7049GC1, 2, 3, 4, and 5 are eligible with an equivalent roller clutch 2-speed supercharger with drive ratios 7.134:1 and 10.06:1.
- NOTE 3. Models 730C9GD are similar to the models 702C9GC- and 728C9GC- except for the use of forged type cylinder heads which have a 1/8 in. larger exhaust port and other major differences as indicated.
- NOTE 4. Military model R-1820-71 is equivalent to civil model 70209GC1, Military models R-1820-87 and -95 are equivalent to civil model 704C9GC1. The -87 differs from -95 only in the cylinder baffles and accessories section. Model R-1820-60 may be converted to civil model Cyclone 702C9GC1 in accordance with Wright Aeronautical Corporation's instructions to incorporate at least the following new parts:

Supercharger impeller shaft, gear, cover, etc. Nos. 412379, 66682, 66681, 66386, 4040D5 and 34D33

(Remove high blower parts)

Breather assembly Nos. 68531, 2075D15, 206709.

Hydro oil connection Nos. 68529, 66251, 68530, 68533, 175D7

Carburetor PD-12H3 setting No. 68973N35A

When these military engines are used in certificated aircraft, the engine designation plate should be stamped with the corresponding certificated model designation. If there is no room for this information on the existing plate, such information may be stamped on a plain thin metal plate attached beneath the existing plate by at least two of the mounting screws, or a new plate may be secured from the manufacturer.

- NOTE 5. Models 702C9GC6; 728C9GC3, 4 & 6; 730C9GD3, 4 & 6; 704C9GC3 & 4; and 731C9GC2 incorporate a torquemeter built into the engine nose section.
- NOTE 6. The above listed power ratings are based on best power mixture at altitudes except for those shown for models 731C9GC1 & 2 which are based on Auto-Rich settings. The 702C9GC series engines are eligible with the following Auto-Rich altitude ratings when using carburetor settings Nos. 68973N35A, 68973N39A or 69267N30A:

Maximum continuous, hp, rpm, in.

Hg., at rated pressure altitude (ft.) 1100-2400-42.0-3700

"C" = Antilockwise viewing pad.

or 1000-2300-38.5-5200

NOTE 7.	The following accessory drives are provided:			Maximum Torque (in. lb.)		Maximum Overhang
	<u> </u>		Speed**	Continuous	Static	<u>(in. lb.)</u>
	Starter	C	1:0	_	25800	300
	Generator and Accessory gear	C	1:5	600	6000	350
	Generator and accessory gear					350
	(Model 702C9GC4 only)	C	3.27	230	1150	
	Fuel Pump	CC	1.0	16.5	450	_
	Vacuum Pump	CC	1.5	50	1200	25
	Hydraulic Pump	CC	1.5	150	2250	50
	Propeller Governor	C	1.0	260	2000	_

[&]quot;—" indicates "does not apply."

E-219 4

**"Speed" = Times crankshaft speed.

NOTE 8. The following spark plugs are approved on these engines.

AC 171, 181, 271, 281, 273, LS-87*, LS-88.

BG 3B2, 3B2S, 4B2, 4B2S, 314GS, RB19R-2, RB27R-1.

Champion R115, C27S, RC34S, RC35S, ED41N, EM41N, R37S-1, REA37N, REB37N, RHA37N, RHB37N,

RHA37E, RHB37E.

Hahn 702.

Jet Ignition J1-1**, J1-1A**.

....END....

^{*} Limited to use with engines of 1200 hp and under, and for 120 hours of service with no reconditioning permitted.

^{**} Limited to use with engines of 1300 hp and under, and for 120 hours of service with no reconditioning permitted.