European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number : IM.E.024
Issue : 01
Date : 02 November 2006
Type : Superior Air Parts
O-360 series engines

Variants
Superior Air Parts O-360
Superior Air Parts IO-360

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I - General

1. Type / Variants : Superior Air Parts O-360 / Superior Air Parts O-360, IO-360

2. Type Certificate Holder :

Superior Air Parts, Inc.
621 South Royal Lane, Suite 100
Coppell, TX 75019-3805
USA

3. Manufacturer:

Superior Air Parts, Inc.

4. EASA Certification/Validation Application Date: 31 March 2006

5. Reference Date for determination of the applicable airworthiness standards: 17 July 2001

6. EASA Certification/Validation Date: 02 November 2006

II - Certification Basis

1. FAA Certification Basis: See FAA TCDS E00001SC

2. EASA Certification Basis:

2.1. Airworthiness Standards: JAR-E, Change 10 dated 15 August 1999

2.2. Special Conditions (SC):

none

2.3. Equivalent Safety Findings (ESF):

none

2.4. Deviations:

none

2.5. Environmental Standards:

none (not required for piston engines)

III - Technical Characteristics

1. Type Design Definition:

As defined by SAP Indented Stocklist for the O-360/IO-360

2. Description:

The Superior Air Parts O-360/IO-360 series engine is a naturally aspirated, horizontally opposed, four cylinder four stroke, spark ignited, air cooled, wet sump engine incorporating a bottom induction system, bottom exhaust, and provisions for front and rear mounted accessories. The variant O-360 is carburetted, the variant IO-360 fuel injected.
Displacement: 5.92 dm^3 (361 cu. in.)
Bore x stroke: 130.175 mm x 111 mm (5.125 in. x 4.37 in.)
Compression ratio: 8.5 : 1
Gear ratio: N/A

3. Equipment:

Magnetos: Unison 4371
Spark plugs: Champion REM40E, Unison UREM40E

4. Dimensions:

	O-360	IO-360
Overall Length	833 mm (32.8 in.)	833 mm (32.8 in.)
Overall Height	625 mm (24.6 in.)	610 mm (24.0 in.)
Width	848 mm (33.4 in.)	848 mm (33.4 in.)

5. Dry Weight:

O-360	IO-360			
130.6 kg	131.5 kg			
(288 lbs)	(290 lbs)			

6. Ratings:

Rating		O-360	IO-360	
Power, kW (HP)	Take-off Maximum Continuous at manifold pressure of 99.9 kPa (29.5 in.Hg)	134 (180) at 2700 rpm	134 (180) at 2700 rpm	

Note : the performance values specified above correspond to minimum values defined under the conditions of ICAO or ARDC standard atmosphere.

7. Control System

The O-360 engine is equipped with a Precision Airmotive carburettor MA-4-5, the IO-360 engine with a mechanical Precision Airmotive fuel injection system RSA-5.

8. Fluids (Fuel/Oil/Additives):

Fuel: Aviation Gasoline ASTM D910, minimum grade: 91/98 (lead optional)
Automotive Gasoline ASTM D4814, min. anti knock index ([RON+MON]/2): 91 (no alcohol)
EN 228, min. RON: 98 (no alcohol)

Oil: See Installation & Operation Manual SVIOM01

9. Aircraft Accessory Drives:

Designation	Rotation direction	Speed ratio to crankshaft	Max. Torque Nm (in. lbs) Continuous	static	Max. Overhang moment Nm (in. lbs)
Propeller governor [1)]	CW	0.866 : 1	14.12 (125)	93.21 (825)	4.52 (40)
Tachometer	CCW	0.5:1	0.79 (7)	5.65 (50)	0.56 (5)
Starter	CCW	16.51:1	……	50.84 (450)	16.95 (150)
Alternator	CW	3.25:1	6.78 (60)……	.13.56 (120)	19.77 (175)
Fuel pump	reciprocating	0.5:1			1.13 (10)
Accessory Drive [2)]	CCW	1.3:1	7.91 (70)	50.84 (450)	2.82 (25)

Notes : - CW - clockwise; CCW – counter clockwise (viewing drive pad)
[1)] AND 20010 drive pad, only applicable to models with provisions to control propeller pitch, shall be supplied with a cover.
[2)] AND 20000 drive pad, shall be supplied with a cover

IV - Operational Limitations

1. Temperature limits, °C

Cylinder head bayonet thermocouple: 260 °C (500 °F)
Oil inlet: 116 °C (240 °F)

2. Pressure Limits:

2.1 Fuel Pressure:

Inlet to injection pump, minimum: +3.4 kPa (+0.5 psig) (O-360)
+ 13.8 kPa (- 2.0 psig) (IO-360)
maximum: + 55.2 kPa (+8 psig) (O-360)
+ 241.3 kPa (+35 psig) (IO-360)

2.2 Oil Pressure Limits 2-4-6 side:

Idle: 137 kPa (20 psig)
Normal: 379…655 kPa (55...95 psig)
Maximum (cold oil) 793 kPa (115 psig)

V - Operational and Service Instructions

Installation & Operation Manual	SVIOM01
Maintenance Manual	SVMM01
Overhaul Manual	SVOHM01
Service Bulletins and Service Letters	As issued

VI - Notes

Note 1: The O-360 and IO-360 engines' detailed model designation includes a model suffix, which denotes details about the engine configuration in the format: O or IO-360-(letter)(number)(letter)(number). The first suffix digit is a letter which designates the crankshaft/propeller configuration, with 'A' designating provisions for a fixed pitch propeller and 'B' designating provisions to control propeller pitch with pressurized oil. The second suffix digit is a number which designates crankcase/engine mount configuration, with '1' designating a #1 dynafocal engine mount type, '2' designating a #2 dynafocal engine mount type, and '3' designating a conical engine mount type. The third suffix digit is a letter which designates accessory configuration, with 'A' being the only configuration. The last digit is a number designating power rating/compression ratio, with '2' being the only configuration.

Note 2: There is a higher probability of vapour locking on aircraft, especially on those equipped with fuel injected reciprocating engines when operating with high volatility fuels such as motor gasoline. Aircraft fuel system designs for the powerplant installation of these engines may need to incorporate special design features or enhanced cooling to accommodate operation with high volatility fuels such as motor gasoline. The aircraft fuel system hot weather testing requirements of CS/JAR/FAR 23.961 must be successfully accomplished for each aircraft powerplant installation design of these engines (both carbureted and fuel injected) to obtain approval for operation with motor gasoline.(Ref: AC 23.1521-1B)

Note 3: For recommended TBO see Installation & Operation Manual.

Note 4: Sales name and number of the engines: Vantage Engine SV-360