

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E-238	TCDS NUMBER E-238  REVISION: 14* DATE: April 30, 2013  Franklin Sp. z.o.o.  <b>MODELS</b>  FRANKLIN 6A4-150-B3, B4, B31 6A4-165-B3, B4, B6 6A4-200-C6
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Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number 238) 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 Federal Aviation Regulations, provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

**TYPE CERTIFICATE (TC) HOLDER**

Franklin Sp. z.o.o.  
 Ul. Chelmińska 208  
 86-300 Grudziądz  
 Poland

**TYPE CERTIFICATE (TC) HOLDER RECORD**

WSK-PZL-RZESZOW transferred TC E-238 to Franklin Sp. z.o.o. on August 17, 2006

<b>I. MODELS</b>	<b>6A4-150-B3, B4, B31</b>	<b>6A4-165-B3, B4, B6</b>	<b>6A4-200-C6</b>
TYPE	6HOA Reduction Gear Ration / Direct Drive		
RATINGS			
Maximum Continuous hp, r.p.m., full throttle at: Sea level pressure altitude	150-2600-S.L.	165-2800-S.L.	200-3100-S.L.
Takeoff hp, r.p.m., full throttle	150-2600	165-2800	200-3100
FUEL			
Minimum grade aviation gasoline	80/87	--	91/96
COMPRESSION			
Bore and stroke, in.	4.5 x 3.5	--	--
Displacement, cu. in.	335	--	--
Compression ratio	7:1	--	8.5:1
WEIGHT (DRY) (lb)	277	280 (B3, B4); 291 (B6)	288

* PAGE	1	2	3	4	5	6
REV.	14	12	14	13	13	13

**LEGEND: "--" INDICATES "SAME AS PRECEDING MODEL"**  
**"--" NOT APPLICABLE**  
**NOTE: SIGNIFICANT CHANGES ARE BLACK-LINED IN THE LEFT MARGIN.**

<b>I. MODELS (Continued)</b>	<b>6A4-150-B3, B4, B31</b>	<b>6A4-165-B3, B4, B6</b>	<b>6A4-200-C6</b>
CENTER OF GRAVITY (in) (with starter & 15 amp generator)			
Forward of the mounting lug C.L.	5.6	--	6.5
From propeller shaft	1.0 below	--	0.7 above
PROPELLER SHAFT	Integral flange, eight .625 in. holes on 5.25 in. circle (B3); six 0.5 in. holes on 4.0 in. circle (B4); eight .625 in. holes on 5.0 in. circle (B31)	Integral flange, eight .625 in. holes on 5.25 in. circle (B3, B6); six 0.5 in. holes on 4.0 in. circle (B4)	Integral flange, eight .313-24 in. holes on 3.313 in. circle
CARBURETION	Marvel MA3-SPA	Marvel MA4-5 or Bendix PS-5BD	Marvel MA4-5
IGNITION (dual)	Eisemann LA-6 or Scintilla S6RN-21 magnetos	Eisemann LA-6 or Scintilla S6RN-21 magnetos (B3, B4); Scintilla S6RN-23 magnetos (B6)	Eisemann LA-6 or Scintilla S6RN-21 magnetos
TIMING, $\emptyset$ BTC	28	32	36
SPARK PLUGS	AC A-44, SA-43, SA-47; Autolite A-4, A48, A4SA; BG RB613S; Champion 78S, AJ-66, REJ-38, C10S-4, J-43	AC A-44, SA-43, SA-47; Autolite A-4, A4S, A48A; Champion 78S, AJ-66, C10S-4, J-43, REJ-38	AC A-47LY, LA-47, SR-47P; Champion AJ-10, L-34R, REL37B, REL37P, REL37W, REL38B; Jet Ignition 14-17-450
OIL SUMP CAPACITY, QT. USEABLE OIL, QT.	8	8.8	--
15 $\emptyset$ nose down	6	6.8	--
NOTES	1-6, 8,9	--	1-4, 7-9

## CERTIFICATION BASIS

CAR 13 effective August 1, 1941 for 6A4-145-A3, 6A4-150-B3, 6A4-165-B3, 6AG4-185-B12, and 6A4-150-B31 engine models.

CAR 13 effective August 1, 1949, as amended by 13-1 and 13-2 for 6A4-200-C6 engine model.

CAR 13, effective March 5, 1952, for 6A4-165-B6 engine model.

FAR 33, effective February 1, 1965, for 6A4-150-B4 and 6A4-165-B4 engine models.

Type Certificate 238 issued/revised:

<u>Model</u>	<u>Date of Application</u>	<u>Date TC Issued/Revised</u>
6A4-145-A3	08/23/45	09/05/45*
6A4-150-B3	08/23/45	09/05/45
6A4-150-B31	08/23/45	09/05/45
6A4-165-B3	06/11/46	06/18/47
6AG4-185-B12	06/11/46	06/18/47*
6A4-200-C6	11/26/51	02/14/52
6A4-165-B6	01/30/53	02/24/53
6A4-150-B4	08/09/66	02/21/67
6A4-165-B4	08/09/66	02/21/67
Reissued to WSK "PZL-RZESZOW"		11/05/81
Reissued to WSK "PZL-RZESZOW" SA		12/8/94
Reissued to Franklin Sp. z.o.o.		4/30/2013

\*Engine models 6A4-145-A3 and 6AG4-185-B12 were deleted from Type Certificate 238 on December 5, 1950. These models are no longer eligible for installation in certificated aircraft.

The General Inspectorate of Civil Aviation of Poland originally type certificated this engine. The FAA validated this product under U.S. Type Certificate Number E-238. Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product on behalf of Poland.

## PRODUCTION BASIS

1. Production Certificate No. 9 for U.S. production. There will be no further production of engines or replacement parts under this production certificate.
2. FAR 21.500 for production of engines or replacement parts under this type certificate by WSK "PZL-RZESZOW" SA under control of the Republic of Poland General Inspectorate of Civil Aviation (GICA).

Parts produced under either production basis are eligible to be used interchangeably.

## IMPORT REQUIREMENTS

To be considered eligible for installation on U.S. registered aircraft, each new engine to be exported to the United States with the General Inspectorate of Civil Aviation of Poland or EASA airworthiness approval shall have a Joint Aviation Authorities (JAA) or EASA Form 1, Authorized Release Certificate. The JAA or EASA Form 1 should state that the engine conforms to the type design approved under the U.S. Type Certificate E-238, is in a condition for safe operation and has undergone a final operational check.

Additional guidance is contained in FAA Advisory Circular 21-23, Airworthiness Certification of Civil Aircraft, Engines, Propellers, and Related Products, imported into the United States.

<b>NOTES</b>
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NOTE 1. Maximum permissible temperatures (øF):

<u>Model</u>	<u>Spark Plug Thermocouple</u>	<u>Well Type Head Thermocouple</u>	<u>Cylinder Base</u>	<u>Oil Inlet</u>
All except 6A4-200-C6	530	445	310	230
6A4-200-C6	530	435	310	230

NOTE 2. Carburetor inlet fuel pressure limits, p.s.i.:

<u>Carburetor</u>	<u>Pressure Feed</u>	<u>Gravity Feed</u>
MA-3SPA	1.0 to 7.0	0.5 to 5.0
MA4-5	2.0 to 9.0	Minimum fuel pressure is 16" fuel differential between carburetor float chamber and fuel inlet to carburetor.
PS-5BD (Press. feed only)	9.0 to 15.0	

Oil pressure limits - Normal operation 30 to 60 p.s.i.

NOTE 3. The following accessory drives are provided:

ACCESSORY	Type of Drive Pad	Rotation Facing Drive Pad	Speed Ratio to Crankshaft	Max. Torque (in. lb.)		Maximum Overhang Moment in. lb.
				Cont.	Static	
<b>Starter</b> (All except 6A4-165-B6 and 6A4-200-C6)	Special	CC	11.444:1	—	240	30
<b>Starter</b> (6A4-165-B6 and 6A4-200-C6 only)	Special	CC	11.444:1	—	300	90
<b>Generator</b> (All except 6A4-165-B6 and 6A4-200-C6)	Special	CC	1.500:1	18	50	75
<b>Generator</b> (6A4-165-B6 and 6A4-200-C6 only)	Special	CC	1.500:1	25	70	75
<b>Tachometer</b> (All models)	AND 10005	CC	.500:1	2	6	3
<b>Fuel Pump</b> (6A4-165-B6 and 6A4-200-C6 only)	AND 10000	CC	1.000:1	3	10	5
"CC" - counter clockwise facing engine drive pad						

NOTE 4. The above engines incorporate the following detailed differences:

<u>Model</u>	<u>Characteristics</u>
6A4-150-B4	Similar to B3 except incorporates a propeller shaft with six 1/2 inch holes on a four inch circle.
6A4-150-B31	Similar to B3 except incorporates a propeller shaft drilled for 5/8 inch bolts on a five inch circle.
6A4-165-B3	Differs additionally from Model 6A4-150-B3 in that it incorporates a modified valve cam.
6A4-165-B4	Similar to 6A4-165-B3 except incorporates a propeller shaft with six 1/2 inch holes on a four inch circle.
6A4-165-B6	Similar to 6A4-165-B3 except for intake pipes and magnetos, which are Scintilla S6RN-23. The B6 also uses the 6A4-200-C6 engine accessory section.
6A4-200-C6	Differs additionally from other models in that it incorporates a 6V4-200-C32 power section.

NOTE 5. Effective with Franklin engine model 6A4-165-B3, Serial No. 32084, the eight magneto drive gear absorbers used with each magneto gear installation are replaced by a single absorber, Franklin Part No. 18560. With this change a new magneto drive gear Franklin No. 18543 is also used. If any 6A4-165-B3 engines prior to Serial No. 32084, or 6A4-150-B3 and B31 engines Serial No. series 11000, 12000 and 13000, are modified to include the single absorber magneto drive gear, the letter "M" shall be suffixed to the engine serial number on the engine name plate (example: 32071M).

NOTE 6. 6A4-150-B3 engines are eligible when modified to Continental Inc. Drawing No. R-2-P3400.  
6A4-165-B3 engines are eligible when modified to Continental Inc. Drawing No. D-3-P3500.

NOTE 7. 6A4-200-C6 engines have been specifically approved for helicopter installation.

NOTE 8. Carburetors of the same model may vary with the aircraft installation. The aircraft specification and/or the engine manufacturer's manuals list the carburetor parts list number (on carburetor name plate) eligible for each aircraft installation.

NOTE 9. SERVICE INFORMATION:

Each of the documents listed below must state that it is approved by the European Aviation Safety Agency (EASA) or, for approvals made before September 28, 2003 by the General Inspectorate of Civil Aviation of Poland. Any such documents including those approved under a delegated authority, are accepted by the FAA and are considered FAA approved.

- Service bulletins,
- Structural repair manuals,
- Vendor manuals,
- Aircraft flight manuals, and
- Overhaul and maintenance manuals.

These approvals pertain to the type design only.

---THE END---