

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E-238	TCDS NUMBER E-238 REVISION: 12* DATE: DECEMBER 8, 1994 WYTWORNIA SPRZETU KOMUNIKACYJNEGO "PZL-RZESZOW"- SPOLKA AKCYJNA MODELS: 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 Wytwornia Sprzetu Komunikacyjnego (WSK) "PZL-RZESZOW" - Spolka Akcyjna (SA)
 ul. Hetmanska 120
 35-078 Rzeszow
 Poland

I. MODELS	6A4-150-B3, B4, B31	6A4-165-B3, B4, B6	6A4-200-C6
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
CENTER OF GRAVITY (in) (with stater & 15 amp generator)			
Forward of the mounting lug C.L.	5.6	--	6.5
From propeller shaft	1.0 below	--	0.7 above

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LEGEND: "--" INDICATES "SAME AS PRECEDING MODEL"
 "---" INDICATES "DOES NOT APPLY"

I. MODELS (Continued)	6A4-150-B3, B4, B31	6A4-165-B3, B4, B6	6A4-200-C6
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, θ 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 14-17-450S
OIL SUMP CAPACITY, QT.	8	8.8	--
USABLE OIL, QT. 15 θ 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	

*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.

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 for installation on United States registered aircraft, each engine (or propeller) to be exported to the United States shall be accompanied by a certificate of airworthiness for export, or certifying statement endorsed by the exporting cognizant civil airworthiness authority, which contains the following language:

- (1) This engine (or propeller) conforms to its United States type design (Type Certificate Number 238) and is in a condition for safe operation.
- (2) This engine (or propeller) has been subjected by the manufacturer to a final operational check and is in a proper state of airworthiness.

Reference FAR Section 21.500, which provides for the airworthiness acceptance of aircraft engines or propellers manufactured outside of the United States for which a United States type certificate has been issued.

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.

NOTES

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	
Starter (All except 6A4-165-B6 and 6A4-200-C6)	Special	CC	11.444:1	—	240	30
Starter (6A4-165-B6 and 6A4-200-C6 only)	Special	CC	11.444:1	—	300	90
Generator (All except 6A4-165-B6 and 6A4-200-C6)	Special	CC	1.500:1	18	50	75
Generator (6A4-165-B6 and 6A4-200-C6 only)	Special	CC	1.500:1	25	70	75
Tachometer (All models)	AND 10005	CC	.500:1	2	6	3
Fuel Pump (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 Bulletins, structural repair manuals, vendor manuals, aircraft flight manuals, and overhaul and maintenance manuals, which contain a statement that the document is Republic of Poland General Inspectorate of Civil Aviation (GICA) approved, are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only.

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