European Union Aviation Safety Agency

EASA
TYPE CERTIFICATE
DATA SHEET

EASA.A.059
P.180 - Series

Type Certificate Holder:

Piaggio Aviation SpA
Viale Generale Disegna 1
17038 – Villanova d'Albenga (SV)
– ITALY

For models: Avanti
Avanti II

Issue 15, 07 February 2020

CONTENT

SECTION A: P.180 Avanti

A.I. General

1.	a) Type b) Model c) Variant	P.180 Avanti ---
2.	Airworthiness Category	Normal
3.	Type Certificate Holder:	Piaggio Aviation SpA Viale Generale Disegna 1 17038 – Villanova d'Albenga (SV), ITALY
4.	Manufacturer:	Piaggio Aero Industries SpA Viale Generale Disegna, 1 17038 Villanova d'Albenga (SV) - ITALY until 1998 I.A.M. Rinaldo Piaggio S.p.A. ITALY
5.	Certification Application Date:	December 19th, 1983
6.	The ENAC Certification Date:	March 7th, 1990
7.	The EASA Type Certificate replaces the ENAC Type Certificate No. A 390	

A.II Certification Basis

1.	Reference Date for determining the applicable requirements:	--
2.	(reserved)	
3.	(reserved)	
4.	Airworthiness Requirements:	RAI Regolamento Tecnico Part 223, including amendments 223-1 through 223-33, correspondent to FAR 23, effective February 1st 1965, including amendments 23-1 through 23-33 JAR AWO Subpart 2, Change 2, dated August 1st 1996 RVSM specific requirements included in the JAA Leaflet n. 6 rev.1 and in the FAA Interim Guidance Material 91 – RVSM, Ch. 1

For airplanes incorporating the optional Mod. n. 80-0642 or equivalent SB 80-0215:
as above, except CS-23 requirements (first issue) applicable to the areas affected by the change (see CRI A-01 for mod 80-0642).

5. Requirements elected to comply:

Special Federal Aviation Regulations n. 27, effective 1st February 1974, including amendments 27-1 through 27-5.

FAR 23.2, amendment 36.

FAR 91 Appendix A dated August 18, 1989.
Applicable JAR 23 (first issue dated March 11, 1994) requirements for the following modifications

80-0228 “Vertical fin - aluminum alloy instead of composite”
80-0229 “Aluminum canard wing instead of composite”
80-0241 “Aluminum rudder and trim tab”

and for the relevant Service Bulletins:

80-0106 “Replacement of the Composite Forward Wing Assembly with the new metallic one”
80-0142 “Replacement of the Composite Material Tail-cone/Vertical Fin Assembly, with the Metal Construction Assembly, in the event of not repairable damages”

14 CFR Part 36, effective 1st Dec. 1969, including amendments 36-1 through 36-16.

EASA Certification Specifications CS-23, dated 23/11/2003, paragraph 23.1529.

6. EASA Special Conditions

Special Conditions enclosed to the RAI paper n. 257.240/SCMA dated July 21, 1989 (Docket n. 031 CE,
Special Conditions n. 23-ACE-29, and
Special Condition FAA n. 23-ACE-52) which include the following Issue Papers:

Issue Paper	Special Condition
C-1 Composite Structures Fatigue/Damage Tolerance	23-ACE-29 No. 4
C-2 Full Scale Airload Verification	23-ACE-29 No. 5
C-3 Doors and Exits (Outward Opening)	23-ACE-29 No. 6
C-4 Lightning Protection of Composite Structure	23-ACE-29 No. 4
C-6 Forward and Main Wing Flap Interconnection	23-ACE-29 No. 7
C-7 Loads for P180 Configuration	23-ACE-29 No. 5
F-1 Buffet Onset Envelope	23-ACE-29 No. 1
F-2 Effect of Rain or Contamination on Laminar Flow Airfoils	23-ACE-29 No. 3
F-5 Inadvertent Excursion Beyond Maximum Operating Speed	23-ACE-29 No. 2
P-6 Propeller Ground Clearance	23-ACE-29 No. 8
P-7 Propeller marking	23-ACE-29 No. 9
P-8 Propeller Ice Protection and Exhaust Gas Impingement	23-ACE-29 No. 10
SE-4 Cockpit Smoke Evacuation	23-ACE-29 No. 11
SE-5 Protection for Systems from Lightning and High Energy Radio Frequency (HERF)	23-ACE-52 No. 2

7. EASA Exemptions: None

8. EASA Equivalent Safety Findings:

23.1305(g)	Fuel pressure indication
23.1545(b)(5)	Marking of Air Speed Indicator for V_{YSE}

9. EASA Environmental Standards (see also TCDSN):

Noise: ICAO Annex 16,Ed. 1988, Vol. I, Chapter 10.
[Airplanes incorporating the optional Mod. n. 80-0642 or SB 80-0215: ICAO Annex 16, Ed. 1993, Amdt. 7, Vol. I, Chapter 10/EASA-CS 36 (see CRI A-01 mod 80-0642)]
Emissions: ICAO Annex 16, Ed. 1993, Vol. II, Part II, Chapter 2 (fuel venting).

10. EASA Operational Suitability Requirements.

CS-FCD - Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data CS-FCD, Initial issue dated 31 Jan 2014;
JAR-MMEL/MEL - Master Minimum Equipment List/ Minimum Equipment List Section 1, Subpart A and B, Amdt. 1, dated 1 August 2005, as defined in CRI A-MMEL;

10.1 Special conditions for OSD:
none
10.2 Exemptions for OSD:
none
10.3 Deviations for OSD:
none
10.4 Equivalent Safety for OSD:
none.

A.III Technical Characteristics and Operational Limitations

1. Type Design Definition: P.180 Avanti – Type Design Configuration" Piaggio Doc. n. 180-CNF-0000-00045.

2. Description:

Piaggio P180 Avanti is a bi-turboprop business aircraft with a max seating capability of 11 people including crew.

Its peculiar characteristic are the three lifting surface design (forward wing, main wing, and horizontal stabilizer) and pusher props.

3. Equipment:

The list of approved equipment is shown in Piaggio document "P.180 Master Equipment List" Doc. n. 5306.

4. Dimensions:

Forward Wing Span	3356 mm (11.01 ft)
Main Wing Span	14 033 mm (46.04 ft)
Length	14 408 mm (47.27 ft)
Height	3980 mm (13.05 ft)
Total Wing Area	16.00 m^2 (172.212 ft^2)

5. Engines: No. 2

Model: Pratt & Whitney of Canada PT6A-66 turboprop engines, each flat rated at 850 shp.
Right Engine 3037000 Build Spec. 676
Left Engine 3037000 Build Spec. 677

Type Certificate: EASA.IM.E.008

Airplanes incorporating the Mod. n. 80-0657 or SB 80-0231:

Model: Pratt & Whitney of Canada PT6A-66B turboprop engines, each flat rated at 850 shp. when installed on the aircraft.
Right Engine 3072196 Build Spec. 1223
Left Engine 3072196 Build Spec. 1224

Type Certificate: EASA.IM.E.008

5.1. Engine Limits

Operating Conditions	Shaft (shp.)	N1 Gas Generator Speed (%)	Torque ft-lbs (kgm)	Prop. shaft speed (r.p.m.)	Maximum Permissible Interstage Temperature (°C)
Takeoff Max. continuous Max. climb Max. cruise	850	104,1	2230 (308,3)	2000	830
Normal Climb Normal Cruise	850	104.1	2230 (308,3)	2000	820
Starting Limits (5 sec.)	-	-	-	-	1000
Transient (20 sec.)	-	104.1	2750 (380,2)	2205	870

Oil Temperature

Starting	- 40°C (min.)
Minimum Idle	- 40°C ÷ 110°C
Transient	0°C ÷ 110°C
Max. continuous and max. reverse	0°C ÷ 110°C

Note: The above mentioned engine limits are applicable to both engine models PT6A-66 and PT6A-66B

6. Propellers:

No.	2
Model	Hartzell Right: HC-E5N-3L or HC-E5N-3AL (hub) / LE 8218 (each blade) Left: HC-E5N-3 or HC-E5N-3A (hub) / HE 8218 (each blade)
Type Certificate	The EASA Propeller/engine Type Certification standard includes that of FAA TC P20NE based on individual EU member state acceptance or certification of this standard prior to 28 September 2003.

Number of blades 5

6.1. Sense of Rotation

Right propeller rotates Counterclockwise in view of flight direction
Left propeller rotates Clockwise in view of flight direction

6.2. Diameter 2159 mm maximum, 2146 mm minimum

6.3. Pitch

Nominal pitch angle at 0,761 m (30") station

Minimum on ground:	14° ± 0,5°
Minimum in flight:	18° ± 0,5°
Reverse (negative):	-13° ± 0,5°
Feathered:	89° ± 0,5°

6.4. Propeller Limits

No further reduction of the minimum diameter is allowed.

Stabilized ground operations between 600 and 900 rpm are prohibited.

Stabilized ground operations at or below 600 rpm are allowed only when the propeller is feathered.

Stabilized ground operations between 1300 and 1600 rpm are prohibited.

7. Fluids

7.1 Fuel

JP4, JP8, JET A, JET A-1, JET B; RP-3 (No.3 Jet Fuel); RT and TS-1 (as per GOST 10227-86) conforming to the latest revision of Pratt & Whitney Service Bulletin No. 14004.

Fuel Anti-Ice Additive compliant with Specification MIL- I-27686 must be used with JET A, JET A1, JET B and RP-3 fuels.

7.2 Oil

Mobile Jet Oil II, AeroShell Turbine Oil 500 and Castrol 5000.

Refer also to the Limitations Section of the Pilot's Operating Handbook and Airplane Flight Manual (latest revision).

8. Fluid Capacities

8.1 Fuel

Total:	1500 lt	(396.3 US Gal)
Usable:	1486 lt	(392.6 US Gal), or
Total:	1597 lt	(421.9 US Gal)
Usable:	1583 lt	(418.2 US Gal)

for Aeroplanes with modification n. 80-0257 "Wing Tank Extension" or SB 80-0123 embodied

8.2 Oil

Total:	25 lt (6.7 US Gal)
Usable quantity:	9,4 lt (2.5 US Gal),
	Refer to Note 3 for non-drainable oil.

9. Air Speeds

Speed		Condition	KIAS	Mach
Maximum operating speed	V_{MO}	up to 28.400 ft	260	--
	M_{MO}	above 28.400 ft	--	0,67, or
	M_{MO}	above 28.400 ft	--	0,7
	(for aeroplanes with modification n. 80-0407)			
Maneuvering speed	V_A	at 5239 kg (11550 lbs.)	199	--, or
	V_A	at 5489 kg (12100 lbs.)	202	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Flap Extended Speed	V_{FE}		175	--, or
	V_{FE}		177	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
	V_{FE}	take-off configuration (T.O.)	180	--, or
	V_{FE}	take-off configuration (T.O.)	183	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Flap Operating Speed	V_{FO}		150	--
	V_{FO}	take-off configuration	170	--
Max Landing Gear Extended Speed				
	V_{LO}		180	--, or
	V_{LO}		181	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Landing Gear Extended Speed				
	V_{LE}		185	--
Max Landing Light Operating / Extended Speed				
	V_{LLO} / V_{LLE}		160	--
Minimum Control Speed	V_{MC}	Propeller feathered	100	--
		Propeller windmilling	128	--

10. Maximum Operating Altitude: 12500 m / 41000 ft

11. All-weather Capability:

Airplanes with modification n. 80-0101 “Category II Kit” embodied may be authorised to perform Category 2 (Cat. II) operations according to the limitations included in the Supplement n. 26 of the Pilot’s Operating Handbook and Airplane Flight Manual.

12. Weights:

12.1 Maximum Weight for

Taxi and ramp	5262 kg (11600 lbs.)
Take-off	5239 kg (11550 lbs.)
Landing	4965 kg (10945 lbs.), or
Taxi and ramp	5511 kg (12150 lbs.)
Take-off	5489 kg (12100 lbs.)
Landing	5216 kg (11500 lbs.)

for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed

12.2	Zero Fuel Weight	at forward C.G. limit	4309 kg (9500 lbs.)
		at aft C.G. limit	4218 kg (9300 lbs.)
		Straight line variation between limits given	
		4445 kg (9800 lbs.) C.G. whereas	
		(S.N. 1016 and up airplanes)	

13. Centre of Gravity Range:

Landing gear extended C.G. range

From	To	Weight
5,273 m (207.6”)	5,435 m (214.0”)	5262 kg (11600 lbs.), or
5,340 m (210.25”)	5,435 m (214.0”)	5511 kg (12150 lbs.)]

for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed

4,958 m (195.2”)	5,435 m (214.0”)	3967 kg (8745 lbs.)
4,927 m (194.0”)	5,410 m (213.0”)	3856 kg (8500 lbs.)
4,927 m (194.0”)	5,328 m (209.8”)	3493 kg (7700 lbs.) or less

Straight line variation between limits given.

Empty Weight C.G. Range	None

14. Datum

6,000 m (236.22”) forward of the rear pressure bulkhead centerline (at the intersection between the forward pressure bulkhead and the cockpit floor centerline).

15. Mean Aerodynamic Cord (MAC) 1,270 m (50”)

16. Leveling Means

Refer to the “P.180 Maintenance Manual” Piaggio Doc. n. 9066, Chapter 8, or to the applicable Pilot’s Operating Handbook and Airplane Flight Manual, Sec. 8.

17. Minimum Flight Crew 1 (Pilot)

18. Maximum Passenger Seating Capacity 11

including flight crew at 1,250 m (49.2”) station.

Refer to the POH/AFM for Passengers and flight crew loading instructions and approved configuration

19. Exits (No. and type) 2

one main door

one emergency exit

20. Baggage / Cargo Compartments

Compartment		Weight	Station
Cabin compartment			
	on floor	23 kg (50 lbs.)	5,588 m (220”)
	on coat rod	18,1 kg (40 lbs.)	5,588 m (220”)
Rear compartment		181,4 kg (400 lbs.)	7,569 m (298”)

21. Wheels and Tires

For approved wheels types and tires types, rating, dimensions and ply rating, refer to applicable Pilot's Operating Handbook and Airplane Flight Manual

A.IV Operating and Servicing Instructions

1. Aircraft Flight Manual

“Pilot’s Operating Handbook and Airplane Flight Manual” – Report n. 6591, RAI approved on July 7, 1992, and subsequent approved revisions.

2. Maintenance Manual

“P.180 Maintenance Manual” – Report n. 9066

3. Structural Repair Manual

“P.180 Structural Repair Manual” - Report n. 180-MAN-0250-01106

4. Service Bulletins

Refer to Piaggio Report n. 9078

A.V Operational Suitability Data (OSD)

The Operational Suitability Data elements listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate EASA.A.059 as per Commission Regulation (EU) 748/2012 as amended by Commission Regulation (EU) No 69/2014;

1 **Master Minimum Equipment List**

Piaggio Report ref No 180-RPT-0000-09700 Rev 00 dated 11 May 2017 „MMEL P180 Avanti MSN 1004 through 1104“, or later approved revisions.

2 **Flight Crew Data**

The Flight Crew Data is defined in Piaggio Report ref 180 RPT-0000-10210 “P180 Avanti/Avanti II – EASA OSD Flight Crew” original Issue dated 24 February 2017, or later approved revisions.

3 **Cabin Crew Data**

Not applicable;

4 **SIM Data**

Not applicable;

5 **Maintenance Certifying Staff Data**

Not applicable;

A.VI Notes

1. Customized Cabin Interior and Seating Configurations must be approved

2. Applicable A/C Serial Number from MSN 1004 to 1104.

3. Requirements for the issue of the CofA
   - The minimum required equipment as prescribed in the applicable airworthiness regulations must be installed on the individual aircraft for certification.
   - Current weight and balance data, a list of equipment included in the certification empty weight and loading information when necessary must be provided for each aeroplane when the CoA will be issued

     The certification empty weight and balance data shall include the unusable fuel and the total engine oil as follows:

	Quantity	Station
Unusable fuel:	11,24 kg (24.8 lbs.)	6,319 m (248.8”)
Undrainable fuel:	3,94 kg (8.7 lbs.)	6,304 m (248.2”)
Undrainable oil:	2,2 kg (4.9 lbs.)	6,975 m (274.6”).
Total oil quantity:	25 Kg (55 lbs.)	6,975 m (274.6”).

   - Aeroplane Flight Manual is required

4. Placards

   All required placards as listed in the approved Airplane Flight Manual must be installed in the appropriate locations.

5. Continued Airworthiness

   Airworthiness Limitations and Service Life Limits of some equipment are contained in Chapter 4 (Airworthiness Limitations) and Chapter 5 (Maintenance Schedule and Time Limits) of the Piaggio Report n. 9066.

6. Painting

   Changing the color and the thickness of the exterior paint (including registration numbers) for composite components is only permissible after prior approval of the Type Certificate Holder.

SECTION B: P.180 Avanti II

B.I General

1.	a) Type b) Model c) Variant	P.180 Avanti II ---
2.	Airworthiness Category	Normal
3.	Type Certificate Holder:	Piaggio Aviation SpA Viale Generale Disegna 1 17038 – Villanova d'Albenga (SV) - ITALY
4.	Manufacturer:	Piaggio Aero Industries SpA Viale Generale Disegna, 1 17038 Villanova d'Albenga (SV) - ITALY
5.	Certification Application Date:	October 16th 2003
6.	The EASA Certification Date:	October 21st 2005

B.II Certification Basis

1.	Reference Date for determining the applicable requirements	October 16th 2003
2.	(reserved)	
3.	(reserved)	
4.	Airworthiness Requirements	As per para A.II.4, except the requirements applicable to the areas affected by the PA-05 major change (see CRI A-01) Airplanes incorporating the optional Mod. n. 80-1270 or SB 80-0459: as above, with the addition of ADS-B Out Specific Requirements included in the CS-ACNS Initial Issue (17 December 2013), section 4 "1090 MHz Extended Squitter ADS-B" Airplanes incorporating the optional Mod. n. 80-0642 or SB 80-0215: as above, except the CS 23 requirements (first issue) applicable to the areas affected by the change (see CRI A-01 mod 80-0642).
5.	Requirements elected to comply	As per para. A.II.5
6.	Special Conditions	Special Condition RAI-NTO SE-5 [FAA 23-ACE-52 n°.2] "Protection for Systems from Lightning and High Energy Radio Frequency" is superseded, for this design change, by the new Special Condition originated by CRI F- 01 (HIRF Protection) and by the conclusions of CRI F-02 (Protection from the Effects of Lightning Strike: Indirect Effects).

7. EASA Exemptions None

8. Equivalent Level of Safety

CRI B – 02	Equivalent Level of Safety	Airspeed Indicator Markings
CRI F – 05	Equivalent Level of Safety	Powerplant Display Instruments
CRI F – 06	Equivalent Level of Safety	Use of Digital only Display for Engine Oil Pressure and Temperature, Fuel Quantity and Flow

9. EASA Environmental Standards As per para. A.II.9

10. EASA Operational Suitability Requirements.

CS-FCD - Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data CS-FCD, Initial issue dated 31 Jan 2014;

CS-MMEL – Certification Specifications and Guidance Material for Master Minimum Equipment List, Initial Issue, dated 31 January 2014.

10.2 Special conditions for OSD
none
10.2 Exemptions for OSD:
none
10.3 Deviations for OSD:
none
10.4 Equivalent Safety for OSD:
none.

B.III Technical Characteristics and Operational Limitations

1. Type Design Definition: "P.180 Avanti II – Type Design Configuration" Piaggio Doc. n. 180-CNF-0000-00976.

"P.180 Avanti II List of approved type design changes" Piaggio Doc. N. 180-CNF-0000-01165.

2. Description:

2.1. General

The General Description of the P.180 Avanti (provided in § A.III, 2 of Section A1) applies to P.180 Avanti II, except for the avionics suite.

2.2. Avionics

The standard avionics package is a Collins Pro Line 21 avionic suite, as it has been configured for the P180.

2.3. Commercial Designations / Modification Packages

P.180 Avanti EVO is the informal, commercial designation used to identify P.180 Avanti II, MSN 3001 and up, fitted at delivery with the major modifications listed below:

- Winglet, DMT 80-1121
- Community Noise Reduction, DMT 80-1117,

that cannot be installed separately (DMT 80-1117 installed means that DMT 80-1121 is installed too).
This designation is not recognized as a separate model at EASA level

3. Equipment:

The list of approved equipment is shown in Piaggio document "P.180 Avanti II List of approved type design changes" Piaggio Doc. N. 180-CNF-0000-01165 at the latest revision.

4. Dimensions:

Forward Wing Span	3356 mm (11.01 ft)
Main Wing Span	14 033 mm (46.04 ft)
Length	14 408 mm (47.27 ft)
Height	3980 mm (13.05 ft)
Total Wing Area	16,00 m^2 (172.212 ft^2)

5. Engines: No. 2

Model: Pratt & Whitney of Canada PT6A-66 turboprop engines, each flat rated at 850 shp.
Right Engine 3037000 Build Spec. 676
Left Engine 3037000 Build Spec. 677

Type Certificate: EASA.IM.E.008

Airplanes incorporating the Mod. n. 80-0657 or SB 80-0231 :

Model: Pratt & Whitney of Canada PT6A-66B turboprop engines, each flat rated at 850 shp. when installed on the aircraft.
Right Engine 3072196 Build Spec. 1223
Left Engine 3072196 Build Spec. 1224

Type Certificate: EASA.IM.E.008

Airplanes incorporating the Mod. n. 80-1117:

Model: Pratt & Whitney of Canada PT6A-66B turboprop engines, each flat rated at 850 shp. when installed on the aircraft.
Right Engine 3072196 Build Spec. 1243
Left Engine 3072196 Build Spec. 1244

Type Certificate: EASA.IM.E.008

5.1. Engine Limits

Operating Conditions	Shaft (shp.)	N1 Gas Generator Speed (%)	Torque ft-lbs (kgm)	Prop. shaft speed (r.p.m.)	Maximum Permissible Interstage Temperature (°C)
Takeoff Max. continuous Max. climb Max. cruise	850	104.1	2230 (308,3) 2480 [*] (342,9) [*]	2000 1800 [*]	830
Normal Climb Normal Cruise	850	104.1	2230 (308,3) 2480 [*] (342,9) [*]	2000 1800 [*]	820
Starting Limits (5 sec.)	-	-	-	-	1000
Transient (20 sec.)	-	104.1	2750 (380,2)	2205	870

[*] for airplanes incorporating the Mod. n. 80-1117

Oil Temperature

Starting	- 40°C (min.)
Minimum Idle	- 40°C ÷ 110°C
Transient:	0°C ÷ 110°C
Max. continuous and max. reverse	0°C ÷ 110°C

Note: The above mentioned engine limits are applicable to both engine models: PT6A-66 and PT6A-66B.

6. Propellers:

6.1. For P180 MSN 1002 and P180 Avanti II, Modification 80-1117 “Community Noise Reduction” **not** incorporated

No.	2
Model	Hartzell Right: HC-E5N-3L or HC-E5N-3AL (hub) / LE 8218 (each blade) Left: HC-E5N-3 or HC-E5N-3A (hub) / HE 8218 (each blade)
Type Certificate:	EASA.(IM).P.125
Number of blades:	5

6.1.1. Sense of rotation

Right propeller rotates Counterclockwise in view of flight direction Left propeller rotates Clockwise in view of flight direction

6.1.2. Diameter 2159 mm maximum, 2146 mm minimum

6.1.3. Pitch

Nominal pitch angle at 0,761 m (30") station

- Minimum on ground: 14° ± 0,5°
- Minimum in flight: 18° ± 0,5°
- Reverse (negative): -13° ± 0,5°
- Feathered: 89° ± 0,5°

6.1.4. Propeller Limits

- No further reduction of the minimum diameter is allowed.
- Stabilized ground operations between 600 and 900 rpm are prohibited.
- Stabilized ground operations at or below 600 rpm are allowed only when the propeller is feathered.
- Stabilized ground operations between 1300 and 1600 rpm are prohibited.

6.2. For P.180 MSN 1002 and P.180 Avanti II, Modification 80-1117 "Community Noise Reduction" incorporated ("P.180 Avanti EVO")

No.	2
Model:	Hartzell Right: HC-E5N-3L or HC-E5N-3AL (hub) / LE 8492 (each blade) Left: HC-E5N-3 or HC-E5N-3A (hub) / HE 8492 (each blade)
Type Certificate:	EASA.(IM).P.125
Number of blades:	5

6.2.1. Sense of rotation

Right propeller rotates Counterclockwise in view of flight direction Left propeller rotates Clockwise in view of flight direction

6.2.2. Diameter 2197 mm maximum, 2184 mm minimum

6.2.3. Pitch

Nominal pitch angle at 0,761 m (30") station

- Minimum on ground: 14° ± 0,5°
- Minimum in flight: 19° ± 0,5°
- Reverse (negative): -8° ± 0,5°
- Feathered: 87.6° ± 0,5°

6.2.4. Propeller Limits

- No further reduction of the minimum diameter is allowed.
- Stabilized ground operations between 600 and 900 rpm are prohibited.
- Stabilized ground operations at or below 600 rpm are allowed only when the propeller is feathered.
- Stabilized ground operations between 1250 and 1550 rpm are prohibited.

7. Fluids

7.1. Fuel

JP4, JP8, JET A, JET A-1, JET B; RP-3 (No.3 Jet Fuel); RT and TS-1 (as per GOST 10227-86) conforming to the latest revision of Pratt & Whitney Service Bulletin No. 14004.

Fuel Anti-Ice Additive compliant with Specification MIL-I-27686 must be used with JET A, JET A1, JET B and RP-3 fuels

7.2. Oil

Mobile Jet Oil II, AeroShell Turbine Oil 500 and Castrol 5000.

Refer also to the Limitations Section of the Pilot's Operating Handbook and Airplane Flight Manual (latest revision)

8. Fluid capacities

8.1. Fuel

Total	1597 l (421.9 US Gal)
Usable	1583 l (418.2 US Gal), or
Total	1816 l (479.7 US Gal)
Usable	1802 l (476.0 US Gal)

for aeroplanes with modification n. 80-1091 "P.180 Extended Range" or S.B. 80-0424 embodied

8.2. Oil

Total	25 l (6.7 US Gal)
Usable quantity	9,4 l (2.5 US Gal)

Refer to Note 3 for non-drainable oil.

9. Air Speeds

Speed		Condition	KIAS	Mach
Maximum operating speed	V_{MO}	up to 28 400 ft	260	--
	M_{MO}	above 28 400 ft	--	0.7
Maneuvering speed	V_A	at 5239 kg (11550 lbs.)	199	--, or
	V_A	at 5489 kg (12100 lbs.)	202	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Flap Extended Speed	V_{FE}		175	--, or
	V_{FE}		177	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			

Speed		Condition	KIAS	Mach (contd)
	V_{FE}	take-off configuration (T.O.)	180	--, or
	V_{FE}	take-off configuration (T.O.)	183	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Flap Operating Speed	V_{FO}		150	--
	V_{FO}	take-off configuration	170	--
Max Landing Gear Operating Speed				
	V_{LO}		180	--, or
	V_{LO}		181	--
	(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)			
Max Landing Gear Extended Speed				
	V_{LE}		185	--
Max Landing Light Operating / Extended Speed				
	V_{LLO} / V_{LLE}		160	--
Minimum Control Speed	V_{MC}	Propeller feathered	100	--
		Propeller windmilling	128	--

10. Maximum Operating Altitude — 12500 m / 41000 ft

11. All-weather Capability

The airplanes are authorised to perform Category 2 (Cat. II) operations according to the limitations included in the applicable Airplane Flight Manual.

12. Maximum Weight

12.1 Maximum Weight for

Taxi and ramp	5262 kg (11600 lbs.)
Take-off	5239 kg (11550 lbs.)
Landing	4965 kg (10945 lbs.), or
Taxi and ramp	5511 kg (12150 lbs.)
Take-off	5489 kg (12100 lbs.)
Landing	5216 kg (11500 lbs.)

(for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed)

12.2 Zero Fuel 4445 kg (9800 lb)

13. Centre of Gravity Range

For Landing Gear Extended

From	To	Weight
5,273 m (207.6”)	5,435 m (214.0”)	5262 kg (11600 lbs.), or
5,340 m (210.25”)	5,435 m (214.0”)	5511 kg (12150 lbs.)]

for aeroplanes with modification n. 80-0642, or equivalent Service Bulletin n. 80-0215 installed

4,958 m (195.2”)	5,435 m (214.0”)	3967 kg (8745 lbs.)
4,927 m (194.0”)	5,410 m (213.0”)	3856 kg (8500 lbs.)
4,927 m (194.0”)	5,328 m (209.8”)	3493 kg (7700 lbs.) or less

Straight line variation between limits given

Empty Weight C.G. Range none

14. Datum

6,000 m (236.22”) forward of the rear pressure bulkhead centerline (at the intersection between the forward pressure bulkhead and the cockpit floor centerline).

15. Mean Aerodynamic Chord (MAC) 1,270 m (50”)

16. Leveling Means

Refer to the “P.180 Avanti II Maintenance Manual” or to the applicable Pilot’s Operating Handbook and Airplane Flight Manual.

17. Minimum Flight Crew 1 (Pilot)

18. Maximum Passenger Seating Capacity 11

including Flight Crew at 1,250 m (49.2”) station

Refer to the “P.180 Avanti II Weight and Balance Manual” for Passengers and flight crew loading instructions and approved configuration

19. Exits (No. and type) 2

one main door

one emergency exit

20. Baggage / Cargo Compartments

Compartment		Weight	Station
Cabin compartment			
	on floor	23 kg (50 lbs.)	5,588 m (220”)
	on coat rod	18,1 kg (40 lbs.)	5,588 m (220”)
Rear compartment		181,4 kg (400 lbs.)	7,569 m (298”)

21. Wheels and Tires

For approved wheels types and tires types, rating, dimensions and ply rating, refer to applicable Pilot's Operating Handbook and Airplane Flight Manual

B.IV Operating and Servicing Instructions

1. Aircraft Flight Manual

"P.180 Avanti II Airplane Flight Manual" – Report n.180-MAN-0010-01100

"P.180 Avanti II Weight and Balance Manual" – Report n. 180-MAN-0020-01101

2. Maintenance Manual

For P.180 MSN 1002 and P.180 Avanti II, Modification 80-1117 "Community Noise Reduction" **not** incorporated

- "P.180 Avanti II Maintenance Manual" – Report n. 180-MAN-0200-01105

Airworthiness Limitations are contained in P.180 Avanti II Chapter 4 (Airworthiness Limitations)

- Report n. 180-MAN-0200-01109

For P.180 MSN 1002 and P.180 Avanti II, Modification n. 80-1117 "Community Noise Reduction" incorporated ("P.180 Avanti EVO")

- "P.180 Avanti II Maintenance Manual" – Report n. 180-MAN-0200-01105(E)

Airworthiness Limitations are contained in P.180 Avanti II Chapter 4 (Airworthiness Limitations)

- Report n. 180-MAN-0200-01109(E)

3. Structural repair Manual

"P.180 Structural Repair Manual" – Report n.180-MAN-0250-01106

4. Service Bulletins

Refer to Piaggio Report n. 9078

B.V Operational Suitability Data (OSD)

The Operational Suitability Data elements listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate EASA.A.059 as per Commission Regulation (EU) 748/2012 as amended by Commission Regulation (EU) No 69/2014;

1 **Master Minimum Equipment List**

Piaggio Report ref No 180-RPT-0000-01203 Rev 01 dated 03 Dec 2014 „ MMEL P180 Avanti II MSN 1105 and up including P180 Avanti „EVO“ MSN 3001 and up“, or later approved revisions.

2 **Flight Crew Data**

The Flight Crew Data is defined in Piaggio Report ref 180 RPT-0000-10210 “P180 Avanti/Avanti II – EASA OSD Flight Crew” original Issue dated 24 February 2017, or later approved revisions.

3 **Cabin Crew Data**

Not applicable;

4 **SIM Data**

Not applicable;

5 **Maintenance Certifying Staff Data**

Not applicable;

B.VI Notes

1. Customized Cabin Interior and Seating Configurations must be approved

2. Applicable A/C serial numbers: MSN 1002 and from MSN 1105 and up.

3. Requirements for the issue of the CofA
   * The minimum required equipment as prescribed in the applicable airworthiness regulations must be installed on the individual aircraft for certification.
   * Current weight and balance data, a list of equipment included in the certification empty weight and loading information when necessary must be provided for each aeroplane when the CoA will be issued.
   * The certification empty weight and balance data shall include the unusable fuel and the total engine oil as follows

	Quantity	Station
Unusable fuel:	11,24 kg (24.8 lbs.)	6,319 m (248.8”)
Undrainable fuel:		
	3,94 kg (8.7 lbs.)	6,304 m (248.2”)
for aeroplanes with modification n. 80-1091 “P.180 Extended Range” or S.B. 80-0424 embodied	7 kg (15.4 lbs.)	6,012 m (236.7”)
Undrainable oil:	2,2 kg (4.9 lbs.)	6,975 m (274.6”)
Total oil quantity:	25 Kg (55 lbs.)	6,975 m (274.6”)

   * Aeroplane Flight Manual is required

4. Placards

All required placards as listed in the approved Airplane Flight Manual must be installed in the appropriate locations.

5. Painting

Changing the color and the thickness of the exterior paint (including registration numbers) for composite components is only permissible after prior approval of the Type Certificate Holder.

6. P.180 Avanti EVO

P.180 Avanti EVO is the informal, commercial designation used to identify P.180 Avanti II, MSN 3001 and up, fitted at delivery with the major modifications listed below:

- Winglet, DMT 80-1121
- Community Noise Reduction, DMT 80-1117

that cannot be installed separately (DMT 80-1117 installed means that DMT 80-1121 is installed too).
This designation is not recognized as a separate model at EASA level

ADMINISTRATIVE SECTION

I Acronyms

None

II Type Certificate Holder Record

Until 1998
I.A.M. Rinaldo Piaggio S.p.A.

Until April 2018
Piaggio Aero Industries SpA
Viale Castro Pretorio 116 – 00185 ROMA – ITALY
Headquarter:
Viale Generale Disegna, 1
17038 Villanova d'Albenga (SV) – ITALY

From 17 April 2018
Piaggio Aviation SpA
Viale Generale Disegna 1 – 17038 Villanova d'Albenga (SV) – ITALY

Contracted DOA Holder supporting TC Since 17 April 2018
Piaggio Aero Industries SpA
Viale Castro Pretorio 116 – 00185 ROMA - ITALY
Headquarter:
Viale Generale Disegna, 1
17038 Villanova d'Albenga (SV) – ITALY

From 19 September 2018 DOA Responsibility transfer to
Piaggio Aviation SpA
Viale Generale Disegna 1 – 17038 Villanova d'Albenga (SV)

EASA Approval 21J.685
From 19 September 2019 DOA Responsibility transfer to
Piaggio Aero Industries SpA
Viale Generale Disegna, 1
17038 Villanova d'Albenga (SV) – ITALY
EASA Approval 21J.220

III Change Record

Issue	Date	Changes
1	21-Oct-2005	- Initial EASA issue replacing ENAC / RAI TCDS
2	10-Jan-2006	- Addition of optional Mod 80-0642 or SB 80-0215
3	23-Mar-2007	- Addition of Mod. 80-0657 (P.EASA.A.C.03574)
4	19-Feb-2010	- Editorial changes and corrections
5	20-Apr-2010	- Editorial corrections to engine built specifications
6	18-Feb-2011	- RP-3 fuel type added - list of fuel types corrected - error in sense of rotation of propeller corrected
7	11-Oct-2012	- Russian fuels TS-1 and RT added
8	03-Jun-2014	- all pages: TCDS reformatted - all pages: minor editorial changes - page 10 & 18, Item 21: Wheels and Tires data removed and related reference to Flight Manual added (Mod. 80-1100). - page 16, item 8.1 new fuel tank capacity and undrainable fuel capacity values added for aeroplanes with Mod. 80-1091 "Extended Range" installed - page 20, item 3 new fuel tank capacity and undrainable fuel capacity values added for aeroplanes with Mod. 80-1091 "Extended Range" installed
9	28-Nov-2014	- page 1: Issue date revised, "Issue 9, 28-Nov-2014" added - page 13: Item B.III, 1. corrected for "P.180 Avanti II" Item B.III, 2.3. added - page 14: Item B.III, 5. Engine Information for Mod n. 80-1117 added - page 15: Item B.III, 5.1. Engine Information for Mod n. 80-1117 added Item B.III, 6.1. applicability added and for 6.1.1. to 6.1.4. numbering adapted - page 16: Item B.III, 6.2. added - page 20: Item B.IV, 2. information for Mod n. 80-1117 added - page 21: Item B.V, Note 6 added
10	23-May-2017	- page 3 Item A.I, Manufacturer address updated - page 5 Item A.III, Operational Suitability Data (OSD) requirements added - page 9 Item A.III (13.) CG envelope - Max Weight reference updated - page 9 Item A.III (19.) Doors "Type" definition corrected as "type" - page 10 Item A.V, Operational Suitability Data (OSD) added - page 11 Item A.VI notes section re-numbered - page 13 Item B.II, Operational Suitability Data (OSD) requirements added - page 14 Item B.III (3.) Ref. to Equipment reference documentation updated - page 19 Item B.III (13.) CG envelope - Max Weight reference updated - page 19 Item B.III (19.) Doors "Type" definition corrected as "type"

		- page 21	Item B.V Operational Suitability Data (OSD) added
		- page 21	Item B.VI notes section re-numbered
11	18-Sep-2017	- page 1	Issue date revised, “Issue 11, 18-Sep-2017” added
		- page 12	Item B.II (4.) CS ACNS First Issue, section 4, added
12	17 April 2018	-.Page 1	TC holder name changed
		- Page 3	TC holder name changed
		-.Page 12	TC holder name changed
		- Page 22	TC holder name changed, and contracted DOA provider name added.
13	19 September 2018	- Page 22	DOA record amended to ref 21J.685 Piaggio Aviation SpA.
14	19 September 2019	-Page 23	DOA record amended to ref 21J.220, Piaggio Aero Industries SpA
15	07 February 2020	-Page 8	Item A.III 9. Modification number corrected (was 80-0642, is 80-0407. Copy/paste error introduced at previous revision)
		-Page 14	Item B.III 2.3. clarification on configuration of EVO airplanes
		-Page 18	Item B.III 9.Table title re-positioned
		-Page 20	Item B.III 21. “Tyres” corrected in “Tires” Item B.IV 2. P.180 EVO Maintenance Manual (180-MAN-0200-01105(E)) applicability extended to P.180 MSN 1002
		-Page 22	Item B.VI 6. clarification on configuration of EVO airplanes
		-Various pages	Acronyms aligned for nomenclature (i.e. “shp.”, “lbs.”, “MSN”)