Pilot's Operating Handbook

PS-28 Cruiser

equipped with Dynon EFIS D100 / EMS D120

Airplane Registration Number:

Airplane Serial Number:

This Pilot's Operating Handbook is
EASA approved under
Restricted Type Certificate No.: EASA.A.546

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RECORD OF REVISIONS

Rev. No.	Affected pages	Revision name	Approved	Date
1.	i, v, vii, viii, 2-8, 2-12, 3-14, 4-3, 4-5, 4-6, 4-11, 4-12	BRS moved to Supplement, specification of engine speed at airplane waiting	EASA AFM Approval 10041100	21. 8. 2012
2.	i, v, vii, viii, 1-5, 2-4, 2-6, 2-7, 6-3	Supplementation of maximum empty weight value, correction of max. fuel pressure limit value	EASA AFM Approval 10049423	05 June 2014

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1.2 Summary of performances

Weights:

Max. takeoff and landing weight ..... *600 kg*

Max. weight of fuel ..... *82 kg*

Max. baggage weight in rear fuselage ..... *18 kg*

Max. baggage weight in each wing locker .... *10 kg*

Maximum empty weight ..... *405 kg*

NOTE

Actual empty weight is shown in Section 9, Supplement No. 02

Wing loading ..... *49 kg/m^2*

Power loading ..... *8.15 kg/kW*

Speeds:

Maximum at sea level ..... *119 KIAS*

Cruise, 75% power at 3,000 ft ..... *93 KIAS*

Range and endurance:

Range ..... *512 NM* *(948 km)*

Endurance ..... *5:26 h:mm*

Conditions:

Usable fuel ..... 113 L

75% power of engine ..... 5,000 RPM

Altitude ..... 3,000 ft

Reserve ..... 30 minutes

Rate of climb:

At sea level ..... *825 fpm*

Best angle of climb speed (v_x) ..... *55 KIAS*

Best rate of climb speed (v_y) ..... *62 KIAS*

Stall speeds:

V_{S0} – flaps down, power - idle ..... *31 KIAS*

V_S – flaps up, power - idle ..... *37 KIAS*

Fuel:

Total fuel quantity ..... *114 L*

Total usable fuel ..... *113 L*

Approved types of fuel ..... see chapter 2.11

Engine power:

Maximum power at *5,800 RPM* ..... *73.5 kW*

Max. continuous power at *5,500 RPM* ..... *69 kW*

NOTE

Altitude losses shown in the table present max. values determined on the basis of flight tests using average piloting skill.

2.3 Flap extended speed range - V_{S0} to V_{FE}

Flaps operating range .....*31 - 75 KIAS*

2.4 Manoeuvring speed - V_A

Manoeuvring speed *at 600 kg* .....*88 KIAS*

2.5 Maximum structural cruising speed – V_{NO}

Maximum structural cruising speed .....*108 KIAS*

2.6 Never exceed speed - V_{NE}

Never exceed speed.....*138 KIAS*

2.7 Service ceiling

Service ceiling .....*15,090 ft*

2.8 Load factors

Maximum positive limit load factor ..... *+ 4 g*
Maximum negative limit load factor ..... *- 2 g*

Maximum positive limit load factor with flaps extended..... *+ 2 g*
Maximum negative limit load factor with flaps extended..... *0 g*

2.9 Approved manoeuvres

The *PS-28 Cruiser* is approved for normal and below listed manoeuvres:

- Steep turns not exceeding *60°* bank
- Lazy eights
- Chandelles
- Stalls (except whip stalls)

2.10 Operating weights and loading

Max. takeoff weight ..... *600 kg*

Max landing weight ..... *600 kg*

Max. weight of fuel ..... *82 kg*

Max. baggage weight in rear fuselage ..... *18 kg*

Max. baggage weight in each wing locker ..... *10 kg*

Maximum empty weight ..... *405 kg*

NOTE

Actual empty weight is shown in Section 9, Supplement No. 02

WARNING

Do not exceed maximum takeoff weight 600 kg.

Number of seats *2*

Minimum crew *(only on the left seat)* ..... *1* pilot

Minimum crew weight ..... *55 kg*

Maximum crew weight on each seat ..... *115 kg*

2.11 Fuel

Fuel quantity:

Wing fuel tanks quantity.....*2x 57 L*

Total fuel quantity.....*114 L*

Unusable fuel.....*2x 0.5 L*

Total usable fuel.....*113 L*

Maximum allowable difference in fuel tanks.....*30 L*

Recommended fuel type:

NOTE

Refer to the ROTAX Operator's Manual, section 2.4 Fuel, and Rotax Service Instruction SI-912-016

MOGAS

European standard	- min. RON 95, EN 228 Super, EN 228 Super plus
US standard	- ASTM D4814
Canadian standard	- min. AKI 91, CAN/CGSB-3.5 Quality 3

CAUTION

Fuels that contain more than 5% ethanol blend have not been tested and are not permitted for use.

AVGAS

US standard - AVGAS 100 LL (ASTM D910)

AVGAS 100 LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. Thus it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

2.12 Engine operating speeds and limits

Engine Model:		**ROTAX 912 S2**
Engine Manufacturer:		**BRP-Powertrain GmbH**
Power	***Max. takeoff:***	**73.5 kW *at 5,800 rpm (max. 5 min.)***
	Max. continuous:	**69 kW *at 5,500 rpm***
	Cruising (75%):	**51 kW *at 5,000 rpm***
Engine speed	***Max. takeoff:***	**5,800 rpm *(max. 5 min.)***
	Max. continuous:	**5,500 rpm**
	Cruising (75%):	**5,000 rpm**
	Idling:	**1,400 rpm *(minimum)***
Oil pressure	***Minimum:***	**0.8 bar *below 3,500 rpm***
	Maximum:	**7 bar *cold engine starting***
	Normal:	**2 - 5 bar *above 3,500 rpm***
Oil temperature	***Minimum:***	**50 °C**
	Maximum:	**130 °C**
	Normal:	**90 - 110 °C**
Cylinder head temp. (CHT)	***Maximum:***	**135 °C**
Exhaust gas temp. (EGT)	***Nominal:***	**800 °C**
	Maximum:	**850 °C**
	Max. takeoff:	**880 °C**
Fuel press.	***Minimum:***	**0.15 bar**
	Maximum:	**0.4 bar** **0.5 bar***
Engine start, operating temperature	***Minimum:***	**-25°C**
	Maximum:	**50 °C**
Limit of engine operation at zero gravity and in negative “g” condition		
	Maximum:	**5 seconds at max. -0.5 g**

* Applicable only for fuel pump from S/N 11.0036.

2.13 Engine instruments markings

Rotax 912 S2 73.5 kW *(98.6 hp)*	Minimum Limit *(red line)*	Caution Range (yellow arc)	Normal Operating Range (green arc)	Caution Range (yellow arc)	Maximum Range (red line)
Engine speed RPM	-	0-1,400	1,400-5,500	5,500-5,800	5,800
Oil Pressure	0.8 bar	0.8-2 bar	2-5 bar	5-7 bar	7 bar
Oil Temperature	50 °C	50-90 °C	90-110 °C	110-130 °C	130 °C
Cylinder Head Temperature (CHT)	-	to 50 °C	50-135 °C	-	135 °C
Exhaust Gas Temp. (EGT)	-	to 300 °C	300-850 °C	850-880 °C	880 °C
Fuel Pressure	0.15 bar	-	0.15-0.4 bar 0.15-0.5 bar*	-	0.4 bar 0.5 bar*
Manifold Pressure	-	-	10-35 inHg	-	-

* Applicable only for fuel pump from S/N 11.0036.

2.14 Other limitations

- ***No smoking on board of the aircraft!***
- ***Approved for Day VFR flights only.***
- ***Flight in rain***

  When flying in the rain, no additional steps are required.
  Aircraft qualities and performance are not substantially changed.
  However **VMC must be maintained!**

- ***Minimum instruments and equipment list for Day VFR flights:***
  - Airspeed indicator
  - Altimeter
  - Compass (is not required by CS-LSA)
  - Fuel quantity indicator
  - Tachometer (RPM)
  - Engine instruments as required by the engine manufacturer:
    - *Oil temperature indicator*
    - *Oil pressure indicator*
    - *Cylinder head temperature indicator*
  - Safety harness for every used seat

WARNING

IFR flights and intentional flights under icing conditions are PROHIBITED!

WARNING

Minimum 6 L of fuel quantity allows approximately 15 minutes of safe operation!

- Obtain measurement LN by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle left sides, to the datum on the left wing. Repeat on right side and average the measurements.

5. Using weights from item 3 and measurements from item 4 the airplane weight and C.G. can be determined.

6. Basic Empty Weight may be determined by completing appropriate table.

6.3 Operating weights and loading

Weights:

Max. takeoff weight ..... *600 kg*
Max landing weight ..... *600 kg*
Max. weight of fuel ..... *82 kg*
Max. baggage weight in rear fuselage ..... *18 kg*
Max. baggage weight in each wing locker ..... *10 kg*
Maximum empty weight ..... *405 kg*

Crew:

Number of seats *2*
Minimum crew *(only on the left seat)* ..... *1* pilot
Minimum crew weight ..... *55 kg*
Maximum crew weight on each seat ..... *115 kg*

Arms:

Pilot/Passenger ..... *700 mm*
Baggage compartment ..... *1,310 mm*
Wing lockers ..... *600 mm*
Fuel in tanks ..... *180 mm*

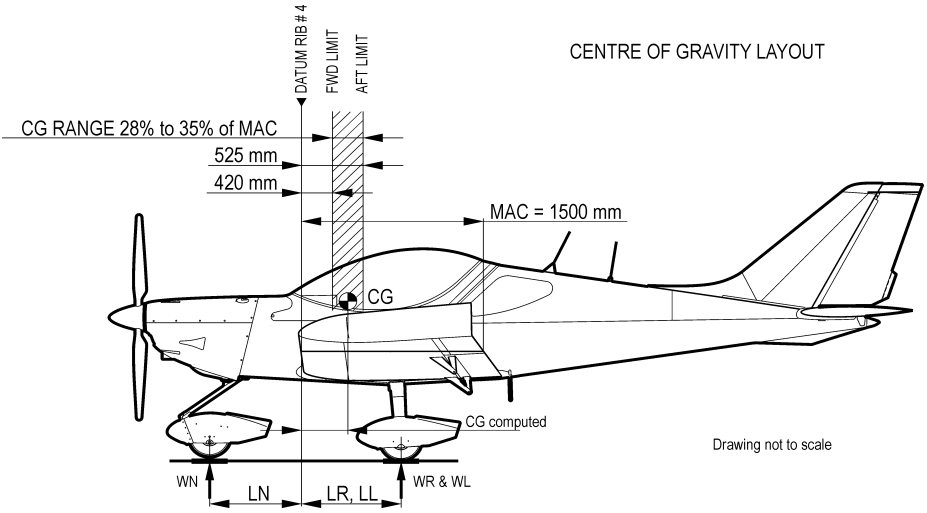
NOTE

Actual Empty weight is shown in Section 9, Supplement No. 02.

NOTE

For the needs of this Handbook the fuel specific weight of 0.72 kg / L was used to convert volume units into weight units.

6.4 Weight and balance C.G. layout



6.5 C.G. range and determination

6.5.1 Aircraft C.G. range:

Empty weight C.G. range..... *28.5 to 29.5 %* of MAC
427.5 to 442.5 mm of MAC

Operating C.G. range..... *28 to 35 %* of MAC
420 to 525 mm of MAC