

## **SECTION 2**

### **LIMITATIONS**

#### **TABLE OF CONTENTS**

INTRODUCTION .....	2
AIRSPED LIMITATIONS.....	2
AIRSPED INDICATOR MARKINGS .....	3
POWERPLANT LIMITATIONS .....	4
PROPELLER .....	6
POWERPLANT INSTRUMENT MARKINGS .....	7
OTHER INSTRUMENT MARKINGS .....	7
WEIGHTS .....	8
CENTER OF GRAVITY RANGE .....	8
APPROVED MANEUVERS.....	9
MANEUVERING LOAD FACTOR LIMITS .....	9
FLIGHT CREW.....	10
KINDS OF OPERATION.....	10
FUEL .....	10
MAXIMUM PASSENGER SEATING .....	11
CROSSWIND LIMITATIONS .....	11
LIMITATION PLACARDS .....	11

## INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe operation of the P92-JS, its engine, standard systems and standard equipment.

<b>NOTE</b>
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*Refer to section 9 for possible variations to:*

## AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown below:

S P E E D		550 kg MTOW		600 kg MTOW		REMARKS
		KIAS	KCAS	KIAS	KCAS	
$V_{NE}$	Never exceed speed	134	128	141	135	Never exceed this speed in any operation.
$V_{NO}$	Maximum Structural Cruising Speed	106	102	110	106	Never exceed this speed unless in smooth air, and then only with caution.
$V_A$	Maneuvering speed	93	90	97	94	Do not make full or abrupt control movements above this speed as this may cause stress in excess of limit load factor
$V_{FE}$	Maximum flap extended speed	68	66	71	69	Never exceed this speed for any given flap setting.

## AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their color code are explained in the following table

Refer to section 9 of this Flight Manual for operational limitations for aircraft fitted with optional equipment.

MARKING	550 kg MTOW	600 kg MTOW	SIGNIFICANCE
	KIAS		
White arc	43* - 68	41 - 71	Positive Flap Operating Range (lower limit is V <sub>SO</sub> , at maximum weight and upper limit is maximum speed permissible with flaps extended positive)
Green arc	48* – 106	46 - 110	Normal Operating Range (lower limit is V <sub>S1</sub> at maximum weight and most forward c.g. with flaps retracted and upper limit is maximum structural speed V <sub>NO</sub> ).
Yellow arc	106 - 134	110- 141	Maneuvers must be conducted with caution and only in smooth air.
Red line	134	141	Maximum speed for all operations.

### CAUTION

For P92-JS with MTOW = 550kg the low limit of the white arc is 1.1  $V_{SO}$  while the low limit of the green arc is 1.1  $V_{S1}$

## POWERPLANT LIMITATIONS

The following table lists operating limitations for aircraft installed engine:

ENGINE MANUFACTURER: Bombardier Rotax GmbH.

ENGINE MODEL: 912 S2

MAXIMUM POWER: (see table below)

	Max Power kW ( <i>hp</i> )	Max RPM. RPM prop ( <i>eng.</i> )	Time max. (min.)
Maximum	73.5 (98.6)	2388 (5800)	5
Max cont.	69 (92.5)	2265 (5500)	-

**NOTE**

The static rpm range at full throttle (carburetors heat: Off) is 2100 ± 100 prop. rpm.

### TEMPERATURES:

Max cylinder heads*	135° C
Max coolant temperature	120° C
Max Oil:	130° C
Min Oil	50° C

\* applicable for Engines up to serial no. 4924543(included) and repaired engine which doesn't change the cylinder head n°3 with new one (part no. 413195)

### OIL PRESSURE:

Min	0.8 bar
Max	5 bar

**WARNING**

### ENGINE START, OPER. TEMP:

OAT Min	-25° C
OAT Max	+50° C

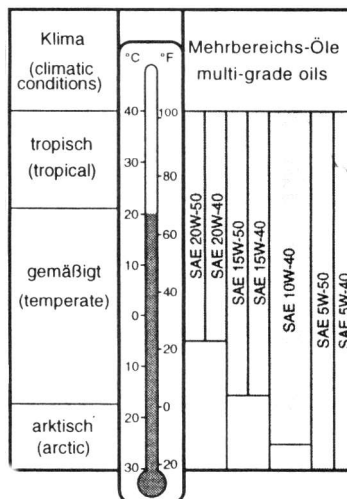
Admissible pressure for cold start is 7 bar maximum for short periods.

FUEL PRESSURE:Min      2.2 psi  
Max                            5.8 psi  
Max\*                          7.2 psi

*\*only applicable for fuel pump part no. 893115 and 893114*

## VISCOSITY

Use viscosity grade oil as specified in the following table:



## WARNING

Use of Aviation Grade Oil with or without additives is not permitted

## COOLANT:

Mixture: 80% concentrated antifreeze (e.g. BASF Glysantin Anticorrosion or equivalent) with anticorrosion additive and 20% demineralized water.

## **PROPELLER**

MANUFACTURER: HOFFMANN Propeller

MODEL: HO17GHM-174 177C or HO17GHM A 174 177C

PROPELLER TYPE: Wood twin blade fixed pitch

DIAMETER: 1740 mm (no reduction permitted)

## POWERPLANT INSTRUMENT MARKINGS

Powerplant instrument markings and their color code significance are shown below:

INSTRUMENT		RED LINE Minimum limit	GREEN ARC Normal operating	YELLOW ARC Caution	RED LINE Maximum limit
Prop tach	RPM	-----	580-2265	2265-2388	2388
Oil Temp.	°C	50	90-110	50 - 90 110-130	130
Cylinder heads temp <sup>(4)</sup> .	°C	-----	0 - 135	-----	135
Coolant temp.	°C		0 - 120		120
Oil pressure	bar	0.8	2 – 5	0.8 – 2 5 – 7 <sup>(1)</sup>	7
Fuel Press.	psi	2.2	2.2–5.8 or 7.26 <sup>(3)</sup>	----	5.8 or 7.26 <sup>(3)</sup>
Fuel quantity	liters	----- <sup>(2)</sup>	----	----	-----

## OTHER INSTRUMENT MARKINGS

INSTRUMENT	RED LINE Minimum limit	GREEN ARC Normal operating	YELLOW ARC Caution	RED LINE Maximum limit
Suction gage	4 in. Hg	4,5 - 5,5 in. Hg.	-----	-----
Voltmeter	10 Volt	12 - 14 Volt	-----	-----

<sup>1</sup> Admissible pressure for cold start is 7 bar maximum for short periods.

<sup>2</sup> - Unusable fuel for each tank is 1.6 litres

<sup>3</sup> – When fuel pump part no. 893115 and 893114 is installed

<sup>4</sup> - Applicable for Engines up to serial no. 4924543(included) and repaired engine which doesn't change the cylinder head n°3 with new one (part no. 413195)

**WEIGHTS**

	550 kg MTOW	600 kg MTOW
Maximum takeoff weight	550 kg	600 kg
Maximum landing weight	550 kg	600 kg
Maximum zero fuel weight	550 kg	600 kg
Maximum baggage weight (2.18 m from datum)	20 kg	20 kg

**NOTE**

*Refer to section 6 for correct stowing and loading of baggage.*

**CENTER OF GRAVITY RANGE**

Ref. for levelling	Cabin floor
Datum	Propeller support flange without spacer
Forward limit	1.727 m (23% MAC) aft of datum for all weights
Aft limit	1.769 m (26% MAC) aft of datum for all weights

**WARNING**

*It is the pilot's responsibility to insure that the airplane is properly loaded.  
Refer to section 6 for appropriate instructions.*



## APPROVED MANEUVERS

This aircraft is certified in the CS-VLA category.

CS-VLA applies to airplanes intended for non-aerobatic operation only. Non-aerobatic operation includes:

- Any maneuver pertaining to “normal” flight
- Stalls (except whip stalls)
- Lazy eights
- Chandelles
- Turns in which the angle of bank is not more than 60°

Acrobatic maneuvers, including spins, are not approved

Recommended entry speed for each approved maneuver is as follows:

MANEUVER	KIAS	
	550 kg MTOW	600 kg MTOW
Lazy eights	93	97
Chandelles	93	97
Steep turns max 60°	93	97
Stalls	Slow Deceleration (1 Kts/sec.)	

## MANEUVERING LOAD FACTOR LIMITS

Maneuvering load factors are as follows:

FLAPS		
0°	+3.8	- 1.9
38°	+1.9	0

## **FLIGHT CREW**

Minimum crew for flight is one pilot seated on the left side.

## **KINDS OF OPERATION**

The airplane, in standard configuration, is approved only for day VFR operation with terrain visual contact. Minimum equipment required is as follows:

- Altimeter
- Airspeed Indicator
- Heading Indicator
- Fuel Gage
- Oil Pressure Indicator
- Oil Temp. Indicator
- Cylinder Heads Temp. Indicator
- Outside Air Temp. indicator
- Tachometer
- Chronometer
- First Aid Kit
- Hand-held fire extinguisher

For further standard equipment refer to section 6.

Flight into expected and/or known icing conditions is prohibited.

## **FUEL**

TWO TANKS: 35 liters each (*45 liters optional*)

TOTAL FUEL CAPACITY: 70 liters (*90 liters*)

USABLE FUEL: 66.8 liters (*86.8 liters*)

UNUSABLE FUEL: 3.2 liters (*3.2 liters*)

During all phases of flight engine fuel feed must be supplied by both tanks.  
Compensate uneven fuel tank levels by acting on fuel taps located in cabin.

**APPROVED FUEL**

- EN 228 Premium
- EN 228 Premium plus
- AVGAS 100LL (see *Warning* below)

*Prolonged use of Aviation Fuel Avgas 100LL results in greater wear of valve*

**WARNING**

*seats and greater combustion deposits inside cylinders due to higher lead content. It is therefore suggested to avoid using this type of fuel unless strictly necessary.*

**MAXIMUM PASSENGER SEATING**

Only one passenger is allowed on board this aircraft.

**CROSSWIND LIMITATIONS**

Maximum allowed crosswind component is 15 Kts (refer to section 5 for further details).

**LIMITATION PLACARDS**

The following limitation placards must be placed in plain view on the aircraft. Near the airspeed indicator a placard will state the following:

MANEUVERING SPEED  $V_A=93$  KIAS

For 550 kg MTOW

MANEUVERING SPEED  $V_A=97$  KIAS

For 600 kg MTOW

On the Middle panel of the instrument panel a placard will state the following:

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**2-11**

THIS AIRPLANE IS CLASSIFIED AS A VERY LIGHT AIRPLANE APPROVED FOR DAY VFR ONLY, IN NON-ICING CONDITIONS. ALL AEROBATIC MANEUVERS INCLUDING INTENTIONAL SPIN ARE PROHIBITED. SEE FLIGHT MANUAL FOR OTHER LIMITATIONS.

NO SMOKING

Near baggage compartment a placard will state the following:

FASTEN TIE-DOWN NET  
MAXIMUM WEIGHT 20 kg  
MAX. PRESS 12.5 Kg/dm<sup>2</sup>