

VH-EZT



HANDLING NOTES

PIPER SPORTCRUISER

Limited Edition

2011

UNIVERSITY FLYING CLUB (Inc.)



TABLE OF CONTENTS

PART 1	Specifications	2
PART 2	Performance Airspeeds	4
PART 3	Operations Data	5
PART 4	Handling (Normal Procedures)	6
PART 5	Emergencies	13
PART 6	Weight / Balance and Performance	18
PART 7	Aircraft Systems	24
PART 8	Flight Deck Illustration	27
	Training Circuit Illustration	28

Part 1 – Specifications**1.0 Power Plant**

Type	Bombardier- Rotax GMBH ROTAX 912 ULS	
Rated Horsepower	Max. take-off	100 HP
	Max.continuous (METO)	95 HP
Rated RPM (Engine)	Max.take-off	5800 RPM (Max. 5 minutes)
	Max.continuous (METO)	5500 RPM
	Idling	1700 RPM (1400 minimum)

The engine is a 4 cylinder, horizontally opposed, 4 stroke liquid and air cooled unit with both dual contactless electronic ignition and carburetor systems powering a geared drive PSRU with integrated shock absorber. Lubrication is from a separate oil tank by forced action into a dry engine sump.

2.0 Propeller

Woodcomp Klassic 170/3/R

3 blade composite /ground adjustable pitch / Max. rated RPM 2360 PSRU controlled

Diameter (cm) 170.0

3.0 Principal Dimensions

Span	8.81 metres	28.90 ft
Length	6.50 metres	21.33 ft
Height	2.37 metres	7.78 ft
Width	1.28 metres	4.20 ft
Wing area	12.3 sq metres	132.3 sq feet
Wing loading	49.0 kg sqm	10 lb sq feet
Cockpit width	1.17 metres	46 in 3.8 ft

4.0 Weight Specifications

Empty Weight:	373kg (821lb)
Maximum AUW Take-off and Landing:	600kg (1320lb)
Maximum baggage:	58kg (128lb) [18kg (40lb) rear / 40kg(88lb) wings]
Maximum Fuel :	82kg (180lb) 114 litres @ AVGAS .72 SG
Maximum useful load:	227kg (500lb)
Maximum Crew Weight:	115kg (253lb) per seat

5.0 Tyres- Pressures

Nose wheel	17 PSI
Main wheels	26 PSI

6.0 Fuel

Capacity:	
(i) Usable	113 litres (2x56.5 lt)
(ii) Total	114 litres (2x57.0 lt)

Octane rating AVGAS 100/130 (with Decalin Lead Scavenging Agent / 25 hour Maint Schedule)
 MOGAS (min. octane 97)

7.0 Oil

Capacity	2.9 litre (min 2.5 litre)
Grade	Aeroshell Sport Plus 4 SAE: 10W-40 API: SL

Part 2 – Performance Airspeeds

Take-off:

(i) Nose Wheel Hold - OFF	35 – 40 kts
(i) Rotation	45 – 50 kts
(ii) Climbout TOSS /V4	65 – 70 kts

Climb:

(i) Best angle (V _x)	56 kts
(ii) Best rate (V _y)	62 kts
(iii) Cruise climb	75 – 80 kts

Cruise: (i) **Range** (ii) **Economy** (iii) **Standard** (iv) **Performance**

(i) 65% power 2500ft 4800 RPM	17.5 LPH Endr 6.3 Hours 600NM	95 kts
(ii) 75% power 2500ft 5000 RPM	19.0 LPH Endr 5.8 Hours 580NM	100 kts
(iii) 80% power 2500ft 5200 RPM	21.0 LPH Endr 5.2 Hours 570NM	110 kts
(iv) 85% power 2500ft 5500 RPM	23.0 LPH Endr 4.5 Hours 540NM	120 kts

Stalling:

(i) Flaps up: (V _{so}) nil power at MAUW	39 kts
(ii) Flaps full: (V _{s1}) nil power at MAUW	32 kts

Approach:

(i) Long Finals	65 kts
(ii) Mid Finals	60 kts
(iii) Short Finals	55 kts
(iv) Glide Approach (clean)	60 kts
(v) Performance (Short field)	50 kts

Part 3 – Operations Data

1.0 Airspeed Limitations

Never exceed speed (Vne)	138 kts
Maximum structural cruise (Vno/Vra)	108 kts
Maximum maneuvering (Va)	88 kts
Maximum cruise speed (Vh)	120kts
Rotation speed (Vr)	45kts
Initial climb speed (V4)	65kts
Flap extension (Vfe)	75kts
Approach speed (Vref)	55kts

2.0 Crosswind and Headwind Component

Maximum crosswind component (demonstrated)	12kts -15kts
Maximum take-off headwind component	25kts

3.0 Maximum Weights

AUW (All up Weight)	600kg NOT to be exceeded
EW (Empty Weight)	373kg
UW (Useful Weight)	227kg NOT to be exceeded

4.0 Manoeuvres Permitted

Operations shall be limited to normal flying maneuvers including straight ahead and steady Stalls(not Whip Stalls), Steep turns not exceeding 60 degrees bank , Lazy eights and Chandelles.

Maximum positive G load +4 Maximum negative G load -2

Aerobatics and intentional Spins are **PROHIBITED**

5.0 Smoking

Smoking is NOT permitted on board the Club aircraft in flight or on the ground.

Part 4 – Handling (Normal Procedures)

1.0 Pre-Flight Inspection

Remove Canopy, Prop. & Pitot covers, Engine & NACA vent Plugs, tie downs, chock and Chock Lock. Unlock canopy and stow covers, vent plugs and Chock Lock in the rear cabin storage area utility box. Release Seatbelt to unlock the control column. Ensure ALL switches are OFF and Ignition Keys are placed on the instrument coaming. Check throttle is set at closed position.

Before commencing pre-flight inspection, reposition EZT off the limestone tie down area and onto the tarmac or hard standing suitable for starting. Use the on board accessory nose wheel tow bar.

For propeller care ensure surrounding starting area is clear of loose tarmac stones/ debris and that taxi can be completed safely clear of other buildings and aircraft.

Check SUN location is in FRONT of OPEN CANOPY at 180deg range re Beam Focus Burn

Internal Check

Clear MR legal documentation and Flight Manual on board check / UFC Flight Log recording entries

Ignition switch -OFF (Keys on Coam)

Fuel Selector - OFF

Master switch - ON

Instruments switch - ON

Avonics switch - ON EFIS /EMS/ GPS screen settings/ Fuel Gauges contents / COM active

Control system - Visual inspection /clearance /360deg stick movement and correct sense to all stops / check wing flaps function and **leave down** 15deg /check Trims function via EMS & set neutral for Take-Off. Circuit Breakers checked set.

Instruments/Avonics Sw - OFF Allow for GPS/EFIS screen OFF countdown /then Master switch OFF

Canopy - Condition of attachment / latches and visually clean /Check SUN location

Cockpit - Check for loose objects and equipment stow security in rear cargo area.

External Check

Complete standard aircraft pre-flight airworthiness check walk around, airframe, controls, engine, propeller and fuel contents drain sample check. Add the required amount of DECALIN RunUp to each fuel tank after **EVERY** refueling operation . Check coolant quantity in expansion tank (use flexi light accessory). Check oil.

NOTE: BEFORE OIL QUANTITY CHECK ENSURE IGNITION SW IS **OFF** & KEYS OUT ON COAM

Then turn propeller by hand in the direction of rotation several times (20+) to pump oil from the engine dry sump into the dorsal oil tank reservoir UNTIL “BURP” SOUND for the quantity check.

2.0 Start-Up (Note: Canopy can be fully Open for Start-up.)

Ensure NO items (except Ignition Key set) are placed on the Instrument Coam (Dashboard) as Canopy will Contact and Scratch on items when closed shut.

Before engine start	- CHECK Sun Location is in front 180 deg range re Beam Focus Burn.
	- complete crew Safety Harness and security check
	- Rudder pedals ADJUSTED
	- Fuel selector ON (Select LEFT tank for START)
	- Park Brake ON
	- Master switch ON
	- Instruments switch ON (Log NAV Start / FUEL Exp TIME)
	- Electric Trims NEUTRAL SET for T/OFF
	- Avonics Switch ON (Record ATIS / QNH set / ACD) THEN OFF
	- Carburetor Heat OFF
	- Cabin Heating OFF
	- Flaps Select UP
	- Flight Controls FREE and correct SENSE
Engine start	- Ignition switch Key in SET on LEFT
	- Throttle SET for idling 1-2 cm open (MAX)
	- Choke (cold engine) Select lever ON
	FOR HOT START DO NOT USE CHOKE
	- Fuel Pump ON (Pressure up in 12 Sec GREEN) THEN OFF
	- Propeller CLEAR prop area and CALL
	- Starter Engage (8 sec MAX – wait 2 min to repeat)
Post start	- Avonics Switch ON / Activate Garmin GPS
	- Choke Close slowly after engine start (to smooth run)
	- EMS Check Oil Press / Fuel Press / Amps ACTIVE
	- Throttle initial SET 2100 RPM for 2 min (Avoid RAPID change)
	- EMS systems CHECK Oil temp increasing > 50C / CHT active
	- Throttle warm up Advance SET 2200 – 2500 RPM for warm up
	- Strobes / Nav Lts ON as Required
	- All Switches ON as Required

3.0 Taxi

Pre -taxi	-Crew / Pax Harness	Secure
	-Canopy Open Latch	as Required for Taxi
	-ATIS/ACD	Recorded / XPDR Code Set or 3000
	-XPDR	on STBY (OR on AUTO Set for Mode S)
	-Altimeter	QNH set
	- Radio	ON SMC set Taxi Call
Taxi	- SMC Clearance	Approved
	- Brakes / Steering	Check
	- Fuel Selector	Check ON Taxi Tank
	- Instruments	EFIS HDG/ALT Cross Check

4.0 Pre Take Off

Run up Bay	- Position	Clear REAR/Into Wind
	- Brakes	On Park SET

VITAL ACTIONS

T	- Trims	Neutral or SET for Take Off
	- Throttle	Check Friction SET
M	- Master/Inst/Avonics	ON
	- MAG Ignition Switch	ON BOTH
P	- Pump (Fuel)	ON check EMS pressure
F	- Fuel Tanks	Selector ON (Select Fullest Tank)
	- Flaps	SET as Required 0 – 15 Deg
I	- Instruments	EFIS/EMS Readouts / OIL TEMP >50C
S	- Ignition Switches	Engine Run up to 3800RPM Brakes HOLD Test 300 RPM Max Drop / 120 RPM DIF L:R Carb Heat Test / EMS readout Normal Slow Idle stop Check RPM 1700 (Min 1400) Idle SET 2200 RPM
C	- Flight Controls	Clear Operation / Correct Sense
	Carb Heat	Check select COLD
	CCT Breakers	Normal SET
H	- Hatches / Harness	Secure / Canopy Latch ON and LOCKED

Push up on Canopy to CHECK SECURE

5.0 Take Off

- Ready
 - XPDR ON ALT or AUTO / Code Check or SET3000
 - Strobe Lights ON
 - Landing Light ON
 - ATC Tower Call READY / Brakes OFF / ABORT Plan Rev

Line Up

- Power SLOW advance to 3500 RPM on BRAKES
- EMS readout check
- Release BRAKES Tracking C/Line Input RUDDER / DIF BRAKES
- Throttle advance smoothly to FULL POWER 5800 RPM (EMS CHECK)
- Nose Wheel HOLD OFF 35 kts
- ROTATE 45 – 50 kts (Accelerate to Climb Out Speed)
- Climb Out 65 – 70 kts VSI 900 – 1100 FPM
- RWY Heading Check

6.0 After Take Off

- F**
 - Flaps Up (if T/Off set) Above 350 ft (under 75 kts)
 - Fuel Pump OFF above 600 feet

- P**
 - METO Power SET 5500 RPM for Climb AS REQ
- A**
 - Airspeed SET BRC 62 / BAC 56 / Cruise Climb 80
- C**
 - Carb Heat COLD
- E**
 - EMS Systems Scan CHECK IN GREENS

- L**
 - Landing Light OFF
- T**
 - Transponder Alt or AUTO SET / CODE correct
- D**
 - Departure Flight Plan Action TRK / RDO FREQ / Calls

7.0 Cruise

Power SET	65%	75%	80%	85%
	4800 RPM	5000 RPM	5200 RPM	5500 RPM

8.0 NAV Checks

C L E A R O F

Compass / Log / Engine / Altimeter / Radio / Orientation / Fuel

9.0 Descent / Pre Landing

- A** ATIS - QNH SET / XPDR Class D SET 3000 for YPJT
- T** Throttle - Set 3000 RPM MIN (Monitor EMS for overcooling)
- Trim - As Required SET
- E** EFIS / EMS - SCAN Settings / Readouts
- B** Brakes - OFF Park Released (Heels on Floor)
- U M** UC / MIXTURE - FIXED
- P** Fuel Pump - ON
- F** Fuel Tanks - Selector SET ON correct TANK
- Flaps - As Required (below Vfe 75kts) SET 2500 RPM on BASE LEG
- S** Switches - Check Ign on BOTH / Landing & Strobe Lts ON / Panel SET
- C** Carb Heat - TEST and ON as Required
- H** Hatches / Harness - Secure

10.0 Short Finals

- F** Flaps - SET
- A** Airspeed - Vref 55kts SET
- C** Carb Heat - COLD
- T** Tower - CTL Approved

CAUTION: The nose wheel should be held off for as long as possible during the landing roll to reduce stress on the nose leg assembly and bulkhead attachments

11.0 After Landing (Clear of RWY)

- Flaps Identified - UP
- Fuel Pump - OFF
- Carb Heat - OFF
- Landing Light - OFF
- Trim - SET Take Off
- XPDR - LEAVE ON
- Canopy Taxi Latch - OPEN As Required
- RPM - Set 2200
- ATC - SMC Taxi Clearance

12.0 Engine Shut Down (Lead Mitigation Procedure)

- Location - Choose tarmac area free of loose debris to avoid Prop damage
- Parking Brake - ON
- ELT - Verify Silent and disarmed
- RPM - SET 2500 RPM for 1 minute (CHT readout stable)
- Ignition Switches - Check Left / Right / Both for normal operation
- RPM - Increase to 3500 RPM for 20 seconds then back to 2000 RPM
- XPDR / COM Radio - OFF
- Ignition Sw Shut Down - L /R / OFF (**Allow 3 sec SHOCK DELAY for each SWITCH**)
- Strobe / Nav Lights - OFF
- EMS - Record FUEL / TACHO / FLIGHT LOG TIME from GPS
- Instrument Switch - OFF
- Avonics Switch - OFF (Allow EFIS D100 and 695 GPS Screen to shut down first)
- Master Switch - OFF (after EFIS & GPS shutdown)
- Fuel Selector - Close OFF
- Parking Brake - SET as required
- Canopy - Unlatch (**NOTE-** Check for SUN position re Beam Focus Burn)

AND..... Park **FACING** the SUN

13.0 Stow and Secure

Reposition EZT to allocated tie down area using the on board accessory Tow Bar.

Parking Brake	- leave OFF
Ignition Switch	- OFF (Keys out to Flight Book clip)
Panel Switches	- All OFF position
Master Switch	- OFF
Fuel Selector	- OFF
Cabin Air Vents	- CLOSED BOTH sides
Control Column	- Secure LOCKED with PIC Harness
Remaining FUEL	- Tanks Dip Check / Flt LOG entry / Tank Caps Shut (lock as Req.)
Logs Record	- MR & UFC Flight Log Sheet Signed Off
Towbar	- STOWED on board
Tie Down Ropes	- SECURED Wing tips and Tail
Pitot and Prop Covers	- ON
Engine/ NACA vent plugs	- ATTACHED
Main Wheel Lock Chock	- ON (opposite MAIN use normal Chock)
Canopy	- Key LOCKED
Canopy Cover	-ON & SECURE
Propeller Dressed Correct	- In "Y" Position

ENSURE UFC FLIGHT BOOK AND KEYS ARE RETURNED TO CABINET, ADMIN DESK OR LOCKED BOX AND YOUR FLIGHT INVOICE IS COMPLETED FILED AWAY AND PAID FOR USING THE UFC EFTPOS TERMINAL IN CLUB FILING CABINET BEFORE YOU LEAVE

CLUB HEAD SETS AND LIFE JACKETS IF USED ARE ALSO TO BE RETURNED TO THEIR SECURE STORAGE AREA **AND USER RECORD BOOK SIGNED OUT RETURNED**

Part 5 - Emergencies

1.0 Engine Failure In Flight Cruise

IMMEDIATE ACTIONS

Fuel Pump	-	ON	PUMP	-	P
Fuel Selector	-	Change TANKS	TANKS	-	T
Carburetor Heat	-	ON	HEAT	-	H

ATTAIN BEST GLIDE SPEED 60KTS IAS – TRIM

TROUBLE CHECK

Master Switch	-	ON	MASTER	-	M
Ignition Switches	-	Cycle LEFT / RIGHT / BOTH	MAGS	-	M
Throttle lever	-	Check Operation	THROTTLE	-	T
EMS	-	SCAN Engine readouts	INSTRUMENTS	-	I

ATTEMPT ENGINE IGNITION KEY RESTART on 1/3 Throttle

FORCE LANDING

Speed	-	BEST GLIDE SPEED 60KTS	SPEED	-	S
Airfield	-	Select on ALT & 45deg down	AIRFIELD	-	A
Fix 1000ft Point	-	Approach FIX / WIND	1000FT FIX	-	F
Engine	-	Re Check P T H M M T I	ENGINE	-	E
Turn	-	Keep Field VISUAL	TURN	-	T
Yell	-	MAYDAY / CODE 7700	YELL	-	Y

AT 1000ft POINT

Brakes	-	OFF		-	B
Unlatch	-	CANOPY and allow for airflow in the open position		-	U
Flaps	-	FULL DOWN at “ Will Make Field Decision”		-	F
Switches all off	-	Fuel OFF / Ignition OFF/ MASTER OFF after FLAP		-	S
Harness	-	SECURE / PAX BRIEF AS REQ		-	H

“AVIATE” CHECK AIRSPEED TO TOUCHDOWN - DON’T STALL

2.0 Engine Failure Immediately After Take Off (Below 800 feet)

DO NOT ATTEMPT TO TURN BACK FOR LANDING

- Speed - LOWER NOSE GENTLY to MAINTAIN BEST GLIDE SPEED 60 KTS
- Ignition Switch - OFF
- Fuel Selector - Close OFF
- Master Switch - OFF

TOUCH DOWN STRAIGHT AHEAD - SLIGHT MANOEUVRING TO AVOID HAZARDS

3.0 Engine Fire During Start Up

- Fuel Selector - Close OFF
- Throttle - Advance to FULL POWER check BRAKES HOLDING
- Ignition Switch - OFF
- Master Switch - OFF
- Evacuate - USE Fire Extinguisher if SAFE to do so

4.0 Engine Fire In Flight

- Fuel Selector - CLOSE OFF
- Throttle - Increase to FULL until Engine Stops
- Ignition Switch - OFF
- Master Switch - OFF
- Heating & Vents - OFF & CLOSED
- Fast Descent - By SIDESLIP away from flames to attempt extinguish
- Force Land - ASAP **S A F E T Y** Drill **DO NOT ATTEMPT TO RESTART ENGINE**
- Exit Aircraft - IMMEDIATELY

5.0 Electrical Fire In Flight

- Master Switch - OFF
- Cabin Heating - OFF
- Extinguisher - As Required
- Land - ASAP and Investigate

6.0 Electrical Systems Failure

EMS ALARM BAR will flash with Audio Volts /Amps display shows discharge

- Radios - OFF
- Master Switch - OFF
- Circuit Breakers - Check and reset as required ALTERNATOR
- Master Switch - ON
- Instruments Switch - ON
- Avonics Switch - ON

If Volts /Amps display still shows discharge

- Electrics - ALL NON ESSENTIAL EQUIPMENT turn OFF
- Land - ASAP (As on BATT ONLY 15 min APROX run time)

7.0 Radio Failure

- Radio out - Check Circuit Breakers and Volume
- XPDR - SET code 7600 if still not responding

Listen out on ATIS and broadcast transmit **ALL** flight Position Reports to assume transmit function is still operational.

Proceed to suitable aerodrome and approach in compliance with ATIS if available.

Enter circuit at 1500ft AGL and **MAINTAIN** to establish circuit pattern. Then continue with standard letdown on DEAD side of circuit looking out for traffic and Light Signals from Tower.

8.0 Inadvertent Spin Recovery technique

NOTE: There is NO uncontrollable tendency for this aircraft to enter into a SPIN sequence using normal piloting techniques.

It is extremely stable even in the fully stalled configuration.

INTENTIONAL SPIN TYPE MANAUEVRES ARE PROHIBITED

For Recovery INITIATE

Throttle - Idle
Ailerons - Neutral
Rudder - Apply opposite rudder to SPIN direction

AFTER SPINNING STOPS – NEUTRALIZE THE RUDDER AND APPLY ELEVATOR GENTLY TO RECOVER NORMAL FLIGHT PROFILE. **DO NOT** USE AILERON TO TRY AND STOP THE SPIN AS THIS IS INEFFECTIVE.

9.0 Engine Malfunctions

If engine runs roughly with power decrease, the Air Filter may be clogged with dust or ice.

Carburetor Heat - Select ON
EMS - Monitor Readouts
Fuel / Ignition - CHECKS

If rough running or vibration continues set engine RPM to lowest stress level and prepare to land as soon as possible at the nearest suitable airfield.

10.0 Canopy Open Malfunction (on Take Off or Cruise)



Inadvertent canopy opening during takeoff

- During takeoff – aircraft rotation occurs, the canopy opens approximately 2 in (50 mm).
- During climb and descent with airspeed at 60-75 knots (110-139 km/h, 70-86 mph), the canopy stays opened 2-3.2 in (50-80 mm).
- During horizontal flight with airspeed at 60-80 knots (110-148 km/h, 70-92 mph), the canopy stays opened 2-3.2 in (50-80 mm).

- In all above-mentioned cases – there are no flight problems, no vibrations, good aircraft control, and no change of flight characteristics.
- It is not possible to close the canopy.

Recommended procedure if the canopy opens during takeoff:

1. **DO NOT TRY TO CLOSE THE CANOPY!**

2. Continue the takeoff **AVIATE** and fly aircraft **SAFELY !**
3. Climb to the safe altitude
 - maintain airspeed at 65 knot (120 km/h, 75 mph)
4. Continue to fly the normal traffic pattern (circuit)
 - max. airspeed 75 knot (139 km/h, 86 mph)
5. Land
 - after stopping, close and lock the canopy

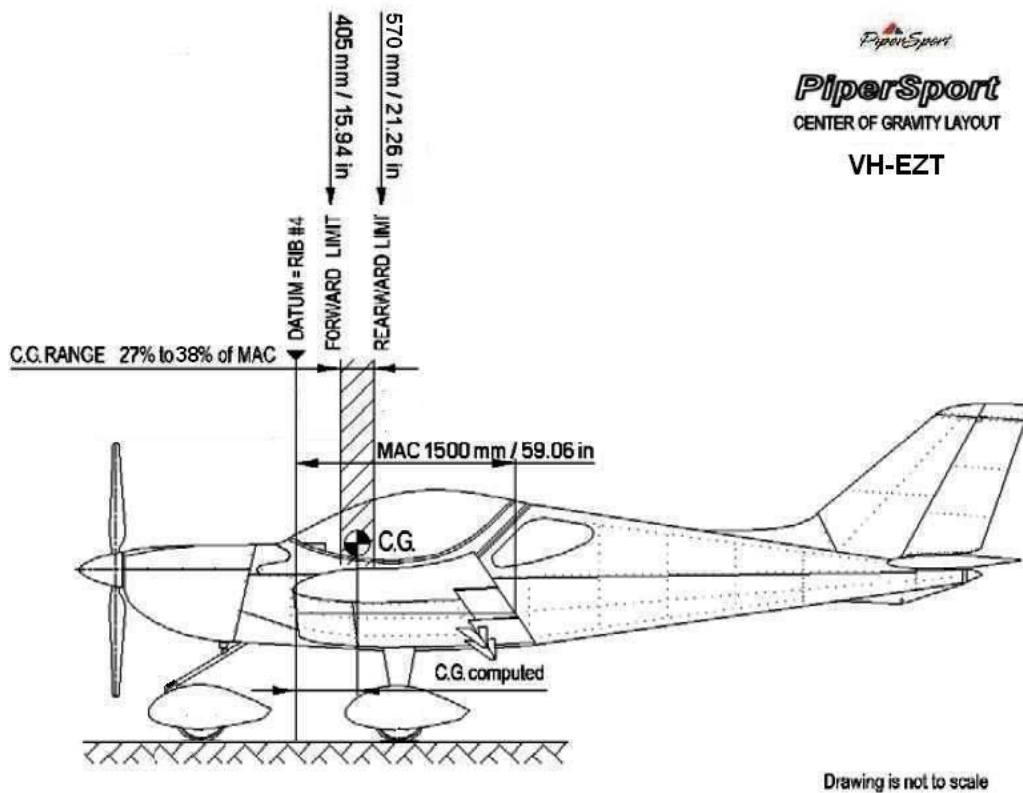
Recommendation: - Before takeoff, manually check the canopy is locked by pushing on the canopy upwards.

CAUTION

During the Flight, Approach or Landing DO NOT perform any Side Slip Manoeuvres

Part 6 - Weight & Balance and Performance

1.0 COG RANGE 27% TO 38% OF THE MEAN AERODYNAMIC CHORD (MAC)



Weight and balance C.G. layout

2.0 Sample Load Sheet



VH - EZT SAMPLE LOADING SHEET

WEIGHT & BALANCE RECORD
Rearward C.G. Check
of PiperSport aircraft s/n : P1001085

REARWARD C.G.	WEIGHT [kg]	ARM [mm]	MOMENT [WEIGHTxARM]
EMPTY AIRCRAFT	373.0	-----	168,136.8
PILOT	86.4	700	60,480.0
PASSENGER	86.4	700	60,480.0
BAGGAGE COMPARTMENT - A	15.0	1,310	19,650.0
BAGGAGE COMPARTMENT - B	3.0	1,800	5,400.0
WING LOCKERS	26.1	600	15,660.0
FUEL TANKS	0.0	180	0.0
TOTAL	$W_T = 589.9$ [kg]		$M_T = 329,806.8$
TAKEOFF WEIGHT	589.0 [kg]		C.G. = 559.1 [mm] 37.3% MAC

NOTE
MAXIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (10.1KG+14L) IS SUBTRACTED FROM MTOW (600KG)
MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION)

Max. takeoff weight : 600 [kg]

Max. weight in baggage compartment A+B : 18 [kg]

Max. weight in wing lockers together : 40 [kg]

Empty weight C.G. range : 420 to 480 mm / 28 to 32 % of MAC

Operating C.G. range : 405 to 570 mm / 27 to 38 % of MAC

Maximum useful weight:

$$W_{Max\ Useful} = W_{Max\ Takeoff} - W_E$$

$$W_{Max\ Useful} = 600 [kg] - 373.0 [kg] = 227.0 [kg]$$

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL

$$Aircraft\ C.G. = \frac{M_t (M_t)}{W_t (W_t)} [mm] \times \frac{100}{MAC} [%]$$

Serial No.:	P1001085
Date:	2011-02-09
By:	Pravel Lukoš



3.0 Blank Load Worksheet

WEIGHT & BALANCE RECORD

VH - EZT



REARWARD C.G.	WEIGHT [kg]	ARM [mm]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT	373	—	168,136.8
PILOT 78kg std		700	
PAX 78kg std		700	
BAGGAGE 15 kg COMPARTMENT - A		1310	
BAGGAGE 3 kg COMPARTMENT - B		1800	
WING CARGO 40kg		600	
FUEL TANKS 82kg		180	
TOTAL	$W_T =$ Kg		$M_T =$
TAKEOFF WEIGHT MAX 600 Kg			COG= <input type="text"/> % MAC

Max Take Off Weight	=	600 Kg
Max Weight in Baggage A + B	=	18 Kg
Max Weight in Wing Lockers TOGETHER	=	40 Kg
Max Weight Fuel	=	82 Kg

$$\% \text{ MAC Aircraft COG} = \frac{M_t}{W_t} \times \frac{100}{1500} \%$$

Operating COG Range VH-EZT : 405mm to 570mm 27% to 38% of MAC

4.0 Performance Data

The presented data has been computed by the manufacturer during actual flight tests using average piloting techniques and an aircraft in Factory delivered configuration .

The results are in ISA conditions at MTOW 600kg under calm conditions.

Allowance for DECREASED performance in conditions lower than ISA is to be considered



Takeoff distances

Conditions: - Altitude: 0 ft ISA
- Engine power: max. takeoff
- Flaps: 15°

RUNWAY SURFACE	Take-off run distance		Take-off distance over 50 ft (15 m) obstacle	
	ft	m	ft	m
CONCRETE	328	100	820	250
GRASS	361	110	918	280

Landing distances

Conditions: - Altitude: 0 ft ISA
- Engine power: idle
- Flaps: 30°
- Brakes fully depressed immediately after touch-down

RUNWAY SURFACE	Landing distance over 50 ft (15 m) obstacle		Landing run distance (braked)	
	ft	m	ft	m
CONCRETE	591	180	180	55
GRASS	558	170	197	60

Rate of climb

Conditions: Engine: max. power Flaps: 0°	Best rate of climb speed Vy (IAS)			Rate of climb Vz	
	Altitude	knot	km/h	mph	fpm
0 ft	65	120	75	1200	6.1
3000 ft	65	120	75	850	4.3
6000 ft	60	110	70	550	2.8
9000 ft	55	100	63	315	1.6



RPM setting and fuel consumption

Altitude		ft	3,000					
Engine speed	rpm		4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption	lh		11.5	14.0	16.5	18.5	21.0	23.0
	US gal/h		3.04	3.70	4.36	4.89	5.55	6.08
Airspeed	IAS	knot	75	83	92	97	106	112
		km/h	139	154	170	180	196	207
	CAS	knot	75	82	90	95	103	108
		km/h	139	152	167	176	191	200
	TAS	knot	78	85	93	98	106	111
		km/h	144	157	172	181	196	206
Endurance and Range at 113 liters (29.85 US gal)								
Endurance	hh:mm		9:50	8:04	6:51	6:06	5:23	4:55
Range	NM		766	686	637	599	570	545
	km		1419	1271	1180	1109	1056	1010
Endurance and Range at 90 liters (23.77 US gal)								
Endurance	hh:mm		7:50	6:26	5:27	4:52	4:17	3:55
Range	NM		610	546	507	477	454	434
	km		1131	1012	939	883	841	804
Endurance and Range at 60 liters (15.85 US gal)								
Endurance	hh:mm		5:13	4:17	3:38	3:14	2:52	2:37
Range	NM		407	364	338	318	303	290
	km		754	675	626	589	561	536
Endurance and Range at 30 liters (7.92 US gal)								
Endurance	hh:mm		2:37	2:08	1:49	1:37	1:26	1:18
Range	NM		203	182	169	159	151	145
	km		377	337	313	294	280	268
Endurance and Range at 15 liters (3.96 US gal)								
Endurance	hh:mm		1:18	1:04	0:55	0:49	0:43	0:39
Range	NM		102	91	85	79	76	72
	km		188	169	157	147	140	134



Cruise speeds

Altitude	Engine speed	IAS			CAS		
		ft	rpm	knot	km/h	mph	knot
1000	4200	77	143	89	77	143	89
	4500	86	159	99	85	157	98
	4800	95	176	109	93	172	107
	5000	101	187	116	98	181	113
	5300	110	204	127	106	196	122
	5500	116	215	133	111	206	128
	5800	125	232	144	119	220	137
3000	4200	75	139	86	75	139	86
	4500	83	154	95	82	152	94
	4800	92	170	106	90	167	104
	5000	97	180	112	95	176	109
	5300	106	196	122	103	191	118
	5500	112	207	129	108	200	124
	5800	120	222	138	116	215	133
5000	4200	72	133	83	72	133	83
	4500	80	148	92	79	146	91
	4800	88	163	101	86	159	99
	5000	94	174	108	92	170	106
	5300	102	189	117	99	183	114
	5500	107	198	123	104	193	120
	5800	116	215	133	112	207	129
7000	4200	69	128	79	70	130	81
	4500	77	143	89	77	143	89
	4800	84	156	97	83	154	95
	5000	90	167	104	88	163	101
	5300	97	180	112	95	176	109
	5500	103	191	118	100	185	115
	5800	111	206	128	107	198	123
9000	4200	65	120	75	66	122	76
	4500	73	135	84	73	135	84
	4800	80	148	92	80	148	92
	5000	85	157	98	84	156	97
	5300	93	172	107	91	169	105
	5500	98	181	113	95	176	109
	5800	105	194	121	102	189	117

Part 7 – Aircraft Systems



Canopy

Access to the cabin is from both sides. Make sure that the canopy is latched and mechanism is securely locked into position on both sides before operating the aircraft.

Fuel system

Each tank is equipped with a vent outlet, finger screen filter and float sensor. Drain valve located in the lowest point of the each tank and on the bottom edge of the bulkhead, on the gascollator.

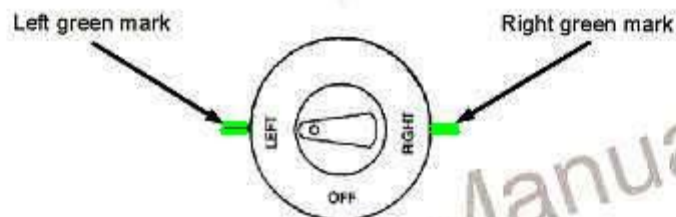
Fuel selector valve is on the central console in the cockpit.

The electric fuel pump is located on bulkhead and it is used for fuel line filling before engine starting.

Fuel return hose goes from the fuel pump into the left tank.

CAUTION

During operation, fuel valve shall be in "LEFT" or "RIGHT" tank position (position on green mark).



NOTE

If left tank is full, start engine with the fuel selector set to LEFT. If you would start the engine with the fuel selector set to RIGHT and the left tank is full, than fuel bleed from the left tank vent may occur because a fuel return hose is led only into the left tank and returning fuel will overflow the left tank.

CAUTION

Do not overfill the tanks to avoid fuel overflow through venting tubes.



Electrical system

Battery

The 12 [V] battery is mounted on the front side of forward bulkhead.

Master switch

Master switch connects the electrical system to the 12 [V] battery.

Pitot-static system

Standard **AVIATIK WA037383 pitot-static probe** is located below the left wing. Pressure distribution to the instruments is through flexible plastic hoses. Keep the pitot head clean to ensure proper function of the system.

Airframe

PiperSport aircraft is a single-engine, all metal, low-wing monoplane of semi-monocoque structure with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with a free castoring nose wheel.

All-metal construction, stressed skin, single curvature metal skins riveted to stiffeners. Construction is of 6061-T6 aluminum sheet metal riveted to aluminum angles with Avex rivets. This high strength aluminum alloy construction provides long life and low maintenance costs thanks to its durability and corrosion resistance characteristics.

The wing has a high lift airfoil equipped with flaps.

Flight controls

The plane is equipped with a dual stick control, adjustable rudder pedals with pedal hydraulic brakes for easy ground control of the castoring nose wheel.

Lateral and longitudinal control movement is transferred by mechanical system of pull rods and levers.

Rudder control is controlled by pedals of foot control. The rudder is interconnected with foot control pedals by cable system.

The elevator and aileron trims are electrically actuated by buttons on the control stick.

Wing flaps are electrically actuated by the rocker switch located on the middle panel.



Instrument panel

Actual picture, description in Part 8

- **Instrument panel layout**
- **Description of instrumentation and controls in the cockpit**
- **Instruments and Avionics**

NOTE

For instrument and avionics operating instructions refer to the documentation supplied with the instruments and avionics.

Engine

ROTAX 912 ULS engine 73.5 [kW] (98.6 [hp]) is installed in PiperSport. Rotax 912 ULS is a 4-stroke, 4-cylinder, horizontally opposed, spark ignition engine with one central camshaft-push-rod-OHV. Liquid cooled cylinder heads, ram air cooled cylinders.

Dry sump forced lubrication. Dual contactless capacitor discharge ignition. The engine is fitted with an electric starter, AC generator and mechanical fuel pump. Prop drive via reduction gear with integrated shock absorber

Engine controls

Throttle and Choke

Engine power is controlled by means of the THROTTLE lever and the CHOKE lever which are positioned in the middle channel between the seats side by side. Both levers are mechanically connected (*by cable*) to the flap on the carburetors. Springs are added to the throttle push rods to ensure that the engine will go to full power if the linkages fail.

Carburetor preheating

Heated air streaming from a heat exchanger to the carburetor through the airbox. The control lever is installed on the middle panel.

Ignition switch

Ignition switch must be on "BOTH" position to operate the engine. For safety remove the key when engine is not running.

NOTE

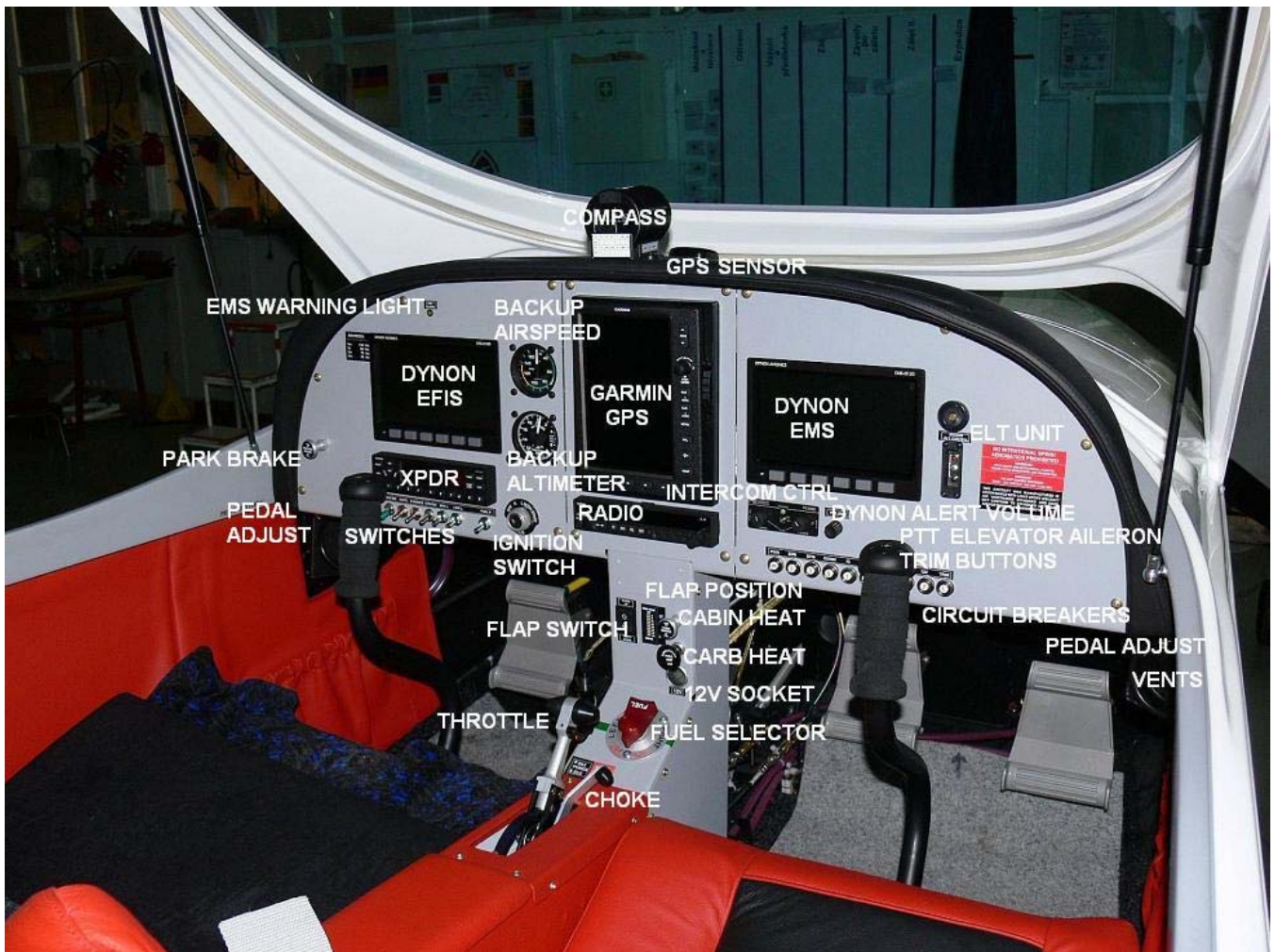
Ignition system is independent of the power source and will operate even with Master switch and/or breaker OFF.

(27)

Part 8

VH-EZT

FLIGHT DECK



TRAINING CIRCUIT

