

INTRODUCTION

With the AQUILA AT01 you have acquired a very efficient training and utility aircraft, which is easy to operate and exhibits excellent handling qualities.

To ensure reliable operation and trouble free flight, we recommend that you read this Pilot's Operating Handbook thoroughly and adhere to the operating instructions and recommendations given herein.

CAUTION

All limitations, procedures and performance data contained in this handbook are EASA/FAA approved and mandatory. Failing to follow the procedures and limits set forth in this handbook can lead to a loss of liability by the manufacturer.

THE HANDBOOK


The handbook is presented in loose-leaf form to ease the substitution of revisions and is sized in A5-format for convenient storage in the aircraft.

Tab dividers throughout the handbook allow quick reference to each section. A Table of Contents is located at the beginning of each section to aid the location of specific data within that section.

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LIST OF EFFECTIVE PAGES

Note:

If the applicable POH / AFM supplement for Night VFR operation is implemented, the list of resulting effective chapters can be found in chapter 9.

Section	Issue	Approved	Page	Date
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LIST OF REVISIONS

All revisions to the handbook, with the exception of individual weight and balance data and revisions to the Equipment List, must be recorded in the List of Revisions. Revisions must either be approved by the EASA or, in the case of changes, in accordance with Part 21A.263(c)(2) by the Design Organization of AQUILA Aviation International GmbH.

Additions and revisions to text in an existing section will be identified by a vertical black line adjacent to the applicable revised area. A new issue code appears in the footer of the revised pages.

If revisions are distributed, the applicable sections are to be exchanged with the updated version. Generally only complete sections of the POH will be exchanged and not individual pages.

The operation of the AQUILA AT01 is only permitted with a current and up to date POH carried on board. Please refer to the following web page whenever the revision status of your POH is in question.

www.aquila-aviation.de

Issue	Description of Revision	Revised Section(s)	EASA Approval-number	Approval by AQUILA / EASA Date / Signature
A.01	First Issue	All	10045115	29.05.2013
A.02	Editorial changes, Supplements 8,33 kHz FAA certification	All		15.10.2013
A.03	AS-00 „Winter Operation“	0, 9		08.04.2014
A.04	Editorial changes	0, 4		19.10.2015
A.05	Minor changes, AS-21 "GTX 335 / 345", SB-AT01-029 incorporated	0, 2, 3, 5, 7, 9		26.06.2017
A.06	G500TXi, AS-22 „G5 Stby AI“	0, 1, 2, 3, 4, 7, 9		01.06.2018
A.07	AS-24 "AT-1"	0, 9		18.06.2019
A.08	Editorial changes, AS-25 "Garmin G3X"	0, 1, 2, 3, 4, 6, 7, 9	10073568	25.05.2020
A.09	Editorial changes, AS-27 "(restricted) GFC500"	0, 2, 4, 8, 9	10076303	03.03.2021

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POH / AFM
AQUILA AT01-100C

Section 0

The technical content of this document is approved under the authority of the DOA ref.
EASA.21J.025.

03.03.21

Date, Signature Office of Airworthiness

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AVAILABILITY OF TECHNICAL PUBLICATIONS

To guarantee safe operation and correct maintenance of the AQUILA AT01-100 aircraft, all manuals and technical publications must be kept in the current effective status.

All manuals and technical publications relating to the aircraft AQUILA AT01-100 are available from the companies listed below:

(a) AQUILA AT01-100 related Manuals and Publications

AQUILA Aviation International GmbH
OT Schönhagen, Flugplatz
D-14959 Trebbin

Tel: ++49 (0)33731-707-0
Fax: ++49 (0)33731-707-11
E-Mail: kontakt@aquila-aviation.de
Internet: <http://www.aquila-aviation.de>

(b) Engine ROTAX 912 S related Manuals and Publications

Contact the ROTAX® authorized distributor for ROTAX® Aircraft Engines of the applicable distribution area.

For contact details of the local authorized distributor for ROTAX Aircraft Engines, please refer to chapter 13 of the ROTAX® Operator's Manual for 912 S Engines.

(c) Propeller MTV-21 related Manuals and Publications

mt-Propeller Entwicklung GmbH
Flugplatz Straubing-Wallmühle
D-94348 ATTING

Tel: ++49 (0)9429-9409-0
Fax: ++49 (0)9429-8432
Internet: www.mt-propeller.com
E-Mail: sales@mt-propeller.com

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2.1 INTRODUCTION

This section includes all operating limitations, instrument markings and basic placards necessary for the safe operation of the aircraft, its engine, standard systems and standard equipment.

WARNING

The aircraft must be operated in compliance with the operating limitations.

The GARMIN G500 / G500 TXi Cockpit Reference Guide and the Operating Instructions for the Glass Panel Engine Monitor MVP-50P-AQ must be carried on board the aircraft and be accessible to the crew during flight.

2.2 AIRSPEED LIMITATIONS

The airspeeds given below are expressed in Indicated Airspeeds (IAS), the airspeed shown on the airspeed indicator:

Indicated Airspeed (IAS)	[kts]	Remarks
V_A Maneuvering speed	112	Do not make full or abrupt control movements above this speed. This may result in overloading the aircraft structure.
V_{FE} Maximum flap extended speed	90	Do not exceed this speed with flaps in T/O or LDG position.
V_{NO} Maximum structural cruising speed	130	Do not exceed this speed except in smooth air, and then only with caution.
V_{NE} Never exceed speed	165	Do not exceed this speed in any operational condition.

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2.3 AIRSPEED INDICATOR MARKINGS

The airspeeds given below are expressed in Indicated Airspeeds (IAS):

Marking (IAS)	[kts]	Remarks
White arc	39-90	Full flap operating range
Green arc	49-130	Normal operating range
Yellow arc	130-165	Operations in this region must be conducted with caution and only in smooth air.
Red line	165	Maximum speed for all operations.

2.4 POWER PLANT LIMITATIONS

2.4.1 Engine

- a) Manufacturer: BRP-ROTAX GmbH & Co KG, Gunskirchen, Austria
 b) Model: 912 S3

NOTE

The engine is equipped with a hydraulic propeller governor and drives the propeller via a reduction gearbox. The gearbox reduction ratio is 2.43 : 1.

The tachometer indicates the propeller speed. As a result, all rpm readings in this manual are expressed as propeller speeds, unlike the data in the Engine Operator's Manual.

- c) Power Plant Limitations

Maximum Takeoff Power:	98.6 BHP (73.5 kW)
Maximum Takeoff Prop Speed (5 min.):	2385 RPM
Maximum Continuous Power:	92.5 BHP (69.0 kW)
Maximum Continuous Prop Speed:	2260 RPM

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d) Oil Pressure

Minimum : 11.6 psi (0.8 bar) below 590 RPM
Normal: 29 –72.5 psi (2.0-5.0 bar) above 590 RPM
Maximum during a cold start: 101.5 psi (7.0 bar)
(only for a short time)

e) Fuel Pressure

Minimum: 2.2 psi (0.15 bar)
Maximum: 7.2 / 5.8* psi (0.5 / 0.4* bar)

f) Oil Temperature

Maximum: 266 °F (130 °C)
Minimum: 122 °F (50 °C)

g) Cylinder Head Temperature (CHT)

Maximum: 248 / 264** °F (120 / 129**) °C

h) Minimum temperature to start the engine

Minimum: -13 °F (-25 °C)
At an OAT below -13 °F (-25 °C) the engine must be preheated.

2.4.2 Propeller

a) Manufacturer: mt-Propeller Entwicklung GmbH, Atting, Germany

b) Model: MTV-21-A/170-05

c) Propeller diameter: (66.9 in) 1,70 m

d) Propeller speed limitations

Maximum take-off propeller speed (max. 5 min): 2385 RPM

Maximum continuous propeller speed: 2260 RPM

* mechanical fuel pump before S/N 11.0036 (see SB-AT01-031)

** old type of cylinder head at cylinder no. 3 (see SB-AT01-029)

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2.5 MARKINGS ON THE ENGINE MONITOR MVP-50P-AQ

The following table shows the instrument markings shown on the MVP-50P-AQ and their meaning.

MVP-50P-AQ	Red Line (minimum)	Green Arc (normal operating range)	Yellow Arc (caution)	Red Line (maximum)
Tachometer [RPM]	---	535 – 2260	2260 - 2385	2385
Oil Temperature [°F] ([°C])	122 (50 °C)	122-266 (50 – 130 °C)	---	266 (130 °C)
Cylinder Head Temperature [°F] ([°C])	---	---	---	248 / 264** (120 / 129**)
Oil Pressure [psi] ([bar])	11.6 (0.8 bar)	29 – 72.5 (2.0 – 5.0 bar)	11.6 – 29 (0.8 – 2.0bar) 72.5 – 101.5 (5.0 – 7.0bar)	101.5 (7.0 bar)
Fuel Pressure [psi] ([bar])	2.2 (0.15)	2.2 – 7.2 / 5.8* (0.15 – 0.5 / 0.4*)	---	7.2 / 5.8* (0.5 / 0.4*)
Voltmeter [V]	11	12.5 - 15.5	11 - 12.5	15.5

* mechanical fuel pump before S/N 11.0036 (see SB-AT01-031)

** old type of cylinder head at cylinder no. 3 (see SB-AT01-029)

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2.6 WEIGHT LIMITS

Maximum Takeoff Weight	1653 lb	(750 kg)
Maximum Landing Weight	1653 lb	(750 kg)
Max. Weight in Baggage Compartment	88.2 lb	(40 kg)

WARNING

Exceeding the weight limits can overload the aircraft and is prohibited. In addition, aircraft performance and handling characteristics may be detrimentally affected. The stall speed will increase, so that the instrument markings are no longer accurate.

2.7 CENTER OF GRAVITY LIMITS

The reference datum is located at the wing leading edge, at the fuselage-wing junction. With the aircraft leveled, the reference datum and the vertical fall in a plane.

The center of gravity must be within the following limits:

Forward Limit:	16.8 in.	(0.427 m)	aft of Datum
Rearward Limit:	20.6 in.	(0.523 m)	aft of Datum

WARNING

Exceeding the center of gravity limits is prohibited. Exceeding the limits reduces the controllability and stability of the aircraft.

The procedure to determine the center of gravity location for flight is provided in Section 6 of this handbook.

2.8 MANEUVER LIMITS

The aircraft is certificated in accordance to the JAR-VLA. That certification includes the following maneuvers:

- a) All normal, non acrobatic maneuvers.
- b) Stalls: Wings level stall
- c) Steep Turns: Angle of Bank $\leq 60^\circ$
- d) Chandelle: Entry Speed 120 kts
- e) Lazy Eight: Entry Speed 110 kts

NOTE

All acrobatic maneuvers as well as maneuvers with a bank angle exceeding 60° are prohibited.

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2.9 FLIGHT LOAD FACTORS

The following flight load factors may not be exceeded while performing any approved maneuvers.

Flight Load Factor [g]	at V_A	at V_{NE}	With Flaps Extended
Positive	4.0	4.0	2.0
Negative	-2.0	-2.0	0

WARNING

Exceeding the flight load factors limits may result in damage to the aircraft structure.

CAUTION

Maneuvers that include intentional negative flight load factors are not permitted.

Intentional Spinning is not permitted.

2.10 CREW

Maximum number of people on board: 2

Minimum crew: 1 Pilot

With only one person on board, the aircraft may only be operated from the left seat.

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2.11 KINDS OF OPERATION LIMITS / MINIMUM EQUIPMENT

Certified for: visual flights by Day and Night

Table 1	For VFR by Day and Night*
Flight and navigational instruments	<ul style="list-style-type: none"> • Garmin G-500 / G500 TXi • Magnetic Compass • Working timepiece with a seconds hand *** • VHF Transceiver * • GPS Receiver Garmin 400W/500W Series or GTN (6XX/7XX) • Attitude Indicator**** • Transponder with altitude encoding or a Transponder without altitude encoding plus an altimeter • Speed Indicator*****
Power Plant Instruments	<ul style="list-style-type: none"> • MVP-50P-AQ • Annunciator panel AP7DAQ
Lighting	<ul style="list-style-type: none"> • Position lights • Anti Collision Lights • Landing Lights • Instrument lighting • Cabin lighting • Flashlight
Other Equipment	<ul style="list-style-type: none"> • Seat belts for each occupied seat • Emergency Hammer • Battery \geq 26 Ah • Second alternator (ALT 2)

* The minimum equipment listed in Table 1 is valid for Germany. Other countries may require different minimum equipment. This may depend on the type of flight being carried out and the route being flown.

** In Germany a watch with a seconds hand may be used as a working timepiece. Please observe all differing national regulations.

*** In Germany a VHF Transceiver is not required for flights that do not leave the vicinity of an uncontrolled airfield (§4 Abs. 3 FSAV). Regulations of other nations must still be observed.

**** Not valid for FAA registered aircrafts

***** Valid only for FAA registered aircrafts

NOTE

For specific operations, additional equipment may be necessary. It is the aircraft operator's responsibility to observe the applicable requirements.

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2.12 FUEL LIMITATIONS

	<u>Left Fuel Tank</u>	<u>Right Fuel Tank</u>
Fuel capacity (total):	15.85 US gal (60.0 l)	15.85 US gal (60.0 l)
Usable fuel (total):	14.48 US gal (54.8 l)	14.48 US gal (54.8 l)
Unusable fuel:	1.37 US gal (5.2 l)	1.37 US gal (5.2 l)

For approved fuel grades, please refer to paragraph 1.8.

CAUTION

To ensure both fuel tanks are emptied evenly, switch to the other tank at least every 60 minutes.

NOTE

The amount of unusable fuel was determined with flap on LDG and $V_{FE} = 90$ kts. It is the worst case fuel supply configuration within section 4 "NORMAL PROCEDURES".

NOTE

The fuel quantity, fuel used and fuel remaining functions of the G500 / G500 TXi / MVP-50 are advisory information only and must be verified by the pilot.

2.13 TEMPERATURE LIMITATIONS

Parts of the aircraft structure that are exposed to direct vertical sunlight must be painted WHITE.

2.14 OPERATING ALTITUDE

The Aquila AT01-100 has a maximum operating altitude of 14,500 ft.

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2.15 PLACARDS

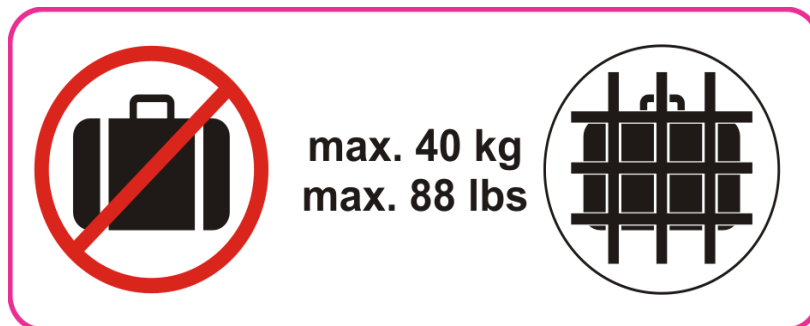
- 1) On the instrument panel, in the lower middle section of the panel:

This aeroplane is classified as VLA (Very Light Aeroplane) for Day and Night VFR in non-icing conditions. All aerobatic maneuvers including intentional spinning are prohibited. See Flight Manual for other limitations.

- 2) On the instrument panel below the Airspeed Indicator:

MANEUVERING SPEED
 $V_A = 112$ KIAS

- 3) On the inner surface of the baggage compartment door:



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4.1 INTRODUCTION

This section provides normal operating procedures and checklists for the aircraft as well as recommended airspeeds under D/VFR and N/VFR.

Additional information is provided in the current issues of the Operators Manual for ROTAX® engine Type 912 series and the Operation and Installation Manual of mt-Propeller® ATA 61-01-024.

Normal procedures associated with optional equipment can be found in Section 9.

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4.2 AIRSPEEDS FOR NORMAL OPERATION

The following airspeeds are based on the maximum take-off weight of 1653 lbs (750 kg). They may also be used for any lower operational weight.

TAKE-OFF		
Airspeed (IAS)		kts
Normal climb speed to 50 Feet (Flaps T/O)		57
Best rate of climb speed at sea level (Flaps UP)	V_Y	65
Best angle of climb speed at sea level (Flaps T/O)	V_X	52

LANDING		
Airspeed (IAS)		kts
Final approach speed for landing (Flaps LDG)		60
Balked landing (Flaps LDG)		60
Maximum demonstrated crosswind component for take-off or landing		15
Maximum airspeed with Flaps LDG	V_{FE}	90

CRUISE		
Airspeed (IAS)		kts
Maneuvering speed	V_A	112
Maximum Turbulent Air Operating Speed	V_{NO}	130

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4.3 DAILY INSPECTION

CAUTION

The daily inspection is begun by checking all 3 fuel sumps for water and contamination. This must be done **before** the aircraft is moved. Otherwise the fuel in the sump may mix.

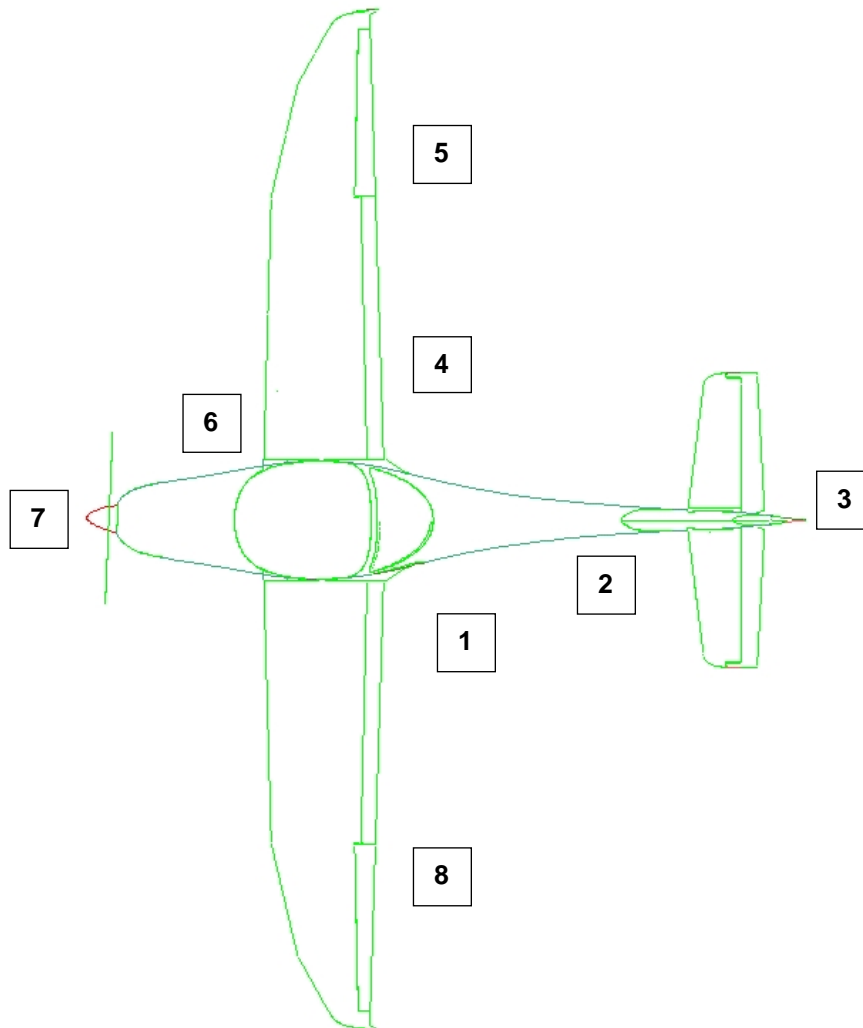
- | | | |
|----|--------------------------------|--|
| 1. | Tank drain (left / right wing) | drain and visually inspect for contamination |
| 2. | Electrical fuel pump drain | drain and visually inspect for contamination |

A) CABIN

- | | | |
|-----|----------------------------------|----------------------------------|
| 1. | Aircraft Documentation | CHECK on board |
| 2. | Ignition key | REMOVED |
| 3. | ALT1/ BAT switch | ON |
| 4. | Annunciator (warning lights) | Press TEST ; check all ON |
| 5. | ALT1 switch | OFF |
| 6. | Engine instruments | CHECK |
| 7. | Fuel quantity | CHECK |
| 8. | Nav Lights switch | ON, CHECK, OFF |
| 10. | Landing Light switch | ON, CHECK, OFF |
| 11. | Instruments Lights switch | ON, CHECK, OFF |
| 11. | BAT switch | OFF |
| 12. | ELT | CHECK operational |
| 13. | Foreign objects | CHECK and REMOVE, when necessary |
| 14. | Baggage | STOWED and SECURED |
| 15. | Canopy | CHECK condition and cleanliness |
| 16. | Flashlights | CHECK |

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B) EXTERIOR CHECK, Visual Inspection



CAUTION

*In this manual, visual inspection means the following:
Inspect for mechanical damage, dirt, cracks, delamination, excessive play, looseness,
leaks, incorrect attachment, foreign objects and general condition.*

Control surfaces: in addition, check for free movement.

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1. Left main landing gear
 - a) Landing gear strut Visual inspection
 - b) Wheel fairing Visual inspection (refer to 7.11.4)
 - c) Tire pressure and slip marking CHECK
 - d) Tire, wheel, brake Visual inspection
 - e) Chocks (if in use) REMOVE

2. Fuselage
 - a) Fuselage shell Visual inspection
 - b) Skid plate Visual inspection
 - c) Tail tie-down DISCONNECT

3. Empennage
 - a) Elevator Visual inspection
 - b) Horizontal stabilizer Visual inspection
 - c) Rudder Visual inspection,
CHECK: fitting and bolt
connection, proper control cable
connection and safe-tied.
 - d) Vertical stabilizer Visual inspection

4. Right main landing gear
 - a) Landing gear strut Visual inspection
 - b) Wheel Fairing Visual inspection (refer to 7.11.4)
 - c) Tire pressure and slip marking CHECK
 - d) Tire, wheel, brake Visual inspection
 - e) Chocks (if in use) REMOVE

5. Right wing
 - a) Entire wing surface (upper and under side) Visual inspection
 - b) Fuel vent CHECK if clear
 - c) Flap Visual inspection
 - d) Aileron and inspection window Visual inspection
 - e) Wing tip, NAV lights and ACL Visual inspection
 - f) Fuel level CHECK with dipstick (see inner
surface of baggage compartment
door) and verify with the indicated
fuel level on the fuel gauge cockpit
 - g) Fuel tank filler cap CHECK if closed
 - h) Wing tie-down DISCONNECT

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6. Nose section, cowling

WARNING

*Before cranking the propeller:
Ignition and **ALT1/BAT** switch: OFF
Set the parking brake.*

WARNING

RISK OF BURNS !

Only check the oil and coolant levels when the engine is cool.

- a) Check oil level Turn the propeller several times in the **direction of engine rotation** to pump oil from the engine back into the oil tank.

CAUTION

NEVER turn the propeller against the direction of engine rotation.

Stop turning the propeller when air begins to return to the oil tank. This is indicated by the sound of air rushing from the open oil tank.

Use the oil dip stick, to check that the oil level is between the -min./max.- markings. The difference between -min./max.- is approximately 0.48 US Quarts (0.45 l).

CAUTION

The oil specification in Section 1.9.1 must be adhered to!

- b) Check coolant level: Verify coolant level in the **expansion tank** and replenish as required. (The expansion tank must be at least 2/3 filled or coolant has to be visible at the gauge-glass.)

Verify coolant level in the **overflow bottle** and replenish as required. (The coolant level must be between the min. and max. markings.)

CAUTION

The coolant specification in Section 1.9.2 must be adhered to!

- | | |
|--------------------------|---|
| c) Air Intakes | CHECK if clear |
| d) Cooler intake | CHECK if free from obstructions |
| e) Cowling | Visual Inspection; CHECK Camloc fasteners |
| f) Propeller and Spinner | Visual inspection |
| g) Propeller blades | CHECK for cracks and other damage |

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7. Nose landing gear

- | | |
|--------------------|-------------------|
| a) Nose gear strut | Visual inspection |
| b) Wheel fairing | Visual inspection |

CAUTION

Both parts of the 2 piece nose wheel fairing must always be installed on the aircraft

- | | |
|-----------------------------------|-------------------|
| c) Tire pressure and slip marking | CHECK |
| d) Tire, wheel | Visual inspection |
| e) Shock absorber unit | Visual inspection |
| f) Chocks and tow bar | REMOVE |

8. Left wing

- | | |
|---|--|
| a) Entire wing surface (upper and under side) | Visual inspection |
| b) Fuel vent | CHECK if clear |
| c) BAT switch | ON |
| d) Stall warning | press to upper detent, warning tone is audible |
| e) BAT switch | OFF |
| f) Pitot / Static tube | REMOVE cover, CHECK if all openings are clear |
| g) Wing tip, NAV lights and ACL | Visual inspection |
| h) Aileron and inspection window | Visual inspection |
| i) Cooler cover (if installed) | Visual inspection |
| j) Fuel level | CHECK with dipstick and verify with the indicated fuel level on the fuel gauge |
| k) Fuel tank filler cap | CHECK if closed |
| l) Flap | Visual inspection |
| m) Wing tie-down | DISCONNECT |

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4.4 PRE-FLIGHT INSPECTION (Walk Around)

1. Daily Inspection Confirm has been carried out.
2. Tow bar Remove
3. Fuel level CHECK with dipstick and verify with the indicated fuel level on the fuel gauge

WARNING

*Before cranking the propeller:
Ignition and **ALT1/BAT** switch: OFF,
Set the parking brake.*

WARNING

*RISK OF BURNS !
Only check the oil and coolant levels when the engine is cool.*

4. Check oil level Turn the propeller several times in the direction of engine rotation to pump oil from the engine back into the oil tank.

Stop turning the propeller when air begins to return to the oil tank. This is indicated by the sound of air rushing from the open oil tank.

Use the oil dip stick to check that the oil level is between the min. and max. markings. The difference between min. and max. is approx. 0.48 US Quarts (0.45 l).

CAUTION

The oil specification in Section 1.9.1 must be adhered to!

5. Check Coolant Level Verify coolant level in the overflow bottle and replenish as required. (The coolant level must be between the min. and max. markings)

CAUTION

The coolant specification in Section 1.9.2 must be adhered to!

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- | | |
|-----------------------------|--|
| 6. Tie-down straps | remove |
| 7. Baggage door | CHECK if closed and locked |
| 8. Pitot cover | remove |
| 9. Control locks | remove |
| 10. Seating position | adjust and lock, check that nose wheel steering and brakes can be operated |
| 11. Carburetor heat | CHECK for free movement, then PUSH (OFF) |
| 12. Cabin heat | CHECK for free movement, then PUSH (OFF) |
| 13. Choke | CHECK for free movement and automatic reset |
| 14. Throttle | CHECK for free movement, then set IDLE |
| 15. Propeller Control Lever | CHECK for free movement, then set in START Position |
| 16. Weight and balance | within limits? |

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4.5 CHECKLISTS FOR NORMAL PROCEDURES

4.5.1 Before Engine Start-up

- | | |
|------------------------------------|--|
| 1. Daily and Pre-Flight Inspection | COMPLETED |
| 2. Passenger Briefing | COMPLETED |
| 3. Seats | ADJUSTED |
| 4. Seat Belts and Harnesses | FASTENED |
| 5. Canopy | CLOSED and LOCKED
Check locking mechanism |
| 6. Parking Brake | SET (pull lever back) |
| 7. Control column | CHECK for free movement and
correct control surface deflections |
| 8. Fuel Selector Valve | LEFT or RIGHT |
| 9. Carburetor Heat | PRESS |
| 10. Throttle | IDLE |
| 11. Propeller Control Lever | START position |
| 12: Avionics Switch | OFF |
| 13. P/S-Heat (if installed) | OFF |
| 14. Circuit Breakers | CHECK all set |

NOTE

*Cage the Attitude Indicator (if installed) before switching **ALT1/BAT** on.*

- | | |
|------------------------------|----|
| 15. ALT1 / BAT switch | ON |
|------------------------------|----|

NOTE

Pay attention to messages that may appear on the PFD and MFD displays while the system is loading.

The attitude indicators (AHRS module and stand-by indicator) require several minutes to stabilize. Pay attention to information given on the Garmin G500 / G500 TXi display.

- | | |
|--|-------------|
| 16. ALT 1 warning light | ILLUMINATES |
| 17. ALT 2 warning light | ILLUMINATES |
| 18. FUEL warning light | ILLUMINATES |
| 19. P/S-HEAT warning light (if installed) | ILLUMINATES |
| 20. ACL switch | ON |

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4.5.2 Engine Start-up

- | | | | |
|----|-------------------------|---------------|-------------------------------------|
| 1. | Fuel Pump switch | | ON |
| 2. | Fuel Pressure | | within GREEN range |
| 3. | Throttle | - Cold Engine | IDLE |
| | | - Hot Engine | 0.8 in. (2 cm) OPENED |
| 4. | Choke | - Cold Engine | PULL, and keep pulled |
| | | - Hot Engine | RELEASE (automatic reset) |
| 5. | Brakes | | PRESS both pedals |
| 6. | Propeller area | | CLEAR |
| 7. | Ignition switch | | START, then BOTH |
| 8. | Oil Pressure | | in GREEN range within 10
seconds |

CAUTION

If the oil pressure does not reach at least 21 psi (1.5 bar) within 10 seconds after engine start, shut down the engine immediately!

NOTE

The starter may not be operated for more than 10 seconds at a time. Allow the starter to cool off for at least 2 minutes between attempts.

- | | | |
|-----|----------------------------|-----|
| 9. | ALT 1 warning light | OFF |
| 10. | ALT 2 warning light | OFF |
| 11. | Fuel Pump switch | OFF |

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4.5.3 Before Taxiing

CAUTION

Warm up the engine for approx. 2 min at 800 RPM and then at 1000 RPM until the Oil Temperature reaches a temperature of at least 122°F (50°C)

- | | | |
|----|---------------------------------|-----|
| 1. | Avionics switch | ON |
| 2. | Avionics and flight instruments | SET |

The GARMIN G500 / G500 TXi has an integrated sensor that automatically adjusts the brightness of the display.

It is also possible to adjust the brightness of the display manually. Using the large knob of the G500 MFD to change to the AUX page. Use the small knob to adjust the brightness. When finished press the ENT button to save the changes. To manually adjust the brightness of a G500 TXi use the MFD touch-screen to change into menu "Home" than "System" and into "Backlight".

- | | | |
|----|--------------------|---|
| 3. | Annunciator panel | PRESS TEST and check that the ALT1, ALT2, ENG (YELLOW) and ENG (RED) warning lights illuminate |
| 4. | Engine instruments | CHECK |

NOTE

Oil can be brought up to temperature during taxiing.

- | | | |
|-----|--------------------------------|--|
| 5. | Voltmeter | CHECK if GREEN |
| 6. | Amperemeter | CHECK if GREEN |
| 7. | Trim switch and indication | functional CHECK |
| 8. | Flap switch and indication | functional CHECK, afterwards UP |
| 9. | P/S Heat switch (if installed) | ON, P/S HEAT warning light goes off |
| 10. | P/S Heat switch (if installed) | OFF, P/S HEAT warning light goes on |

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ALTERNATOR TEST at 1000 RPM:

CAUTION

There are two independently protected alternators installed, which are constantly in use during D- and N/VFR. Especially for night operation the proper function of both alternators is important.

- | | | | |
|-----|---|-------------|-------------------------|
| 11. | Nav Lights switch | ON | |
| 12. | Landing Light switch | ON | |
| 13. | Instrument Lights switch | ON | |
| | ⇒ ammeter indication with GREEN (positiv) values (charge) | | |
| 14. | ALT 1 switch | OFF | |
| | ⇒ ammeter indication with YELLOW (negative) values (discharge) | | |
| 15. | ALT 2 circuit breaker | PULL | |
| | ⇒ increase of discharge | | (ALT 2 o.k.) |
| | ⇒ no change | | (ALT 2 damaged) |
| 16. | ALT 2 circuit breaker | PUSH | |
| 17. | ALT 1 switch | ON | |
| | ⇒ ammeter indication bounce up to high positive GREEN values (strong charge) and decline thereafter | | (ALT 1 o.k.) |
| | ⇒ no change | | (ALT 1 damaged) |
| 18. | all switches | AS REQUIRED | |

4.5.4 Taxiing

- | | | |
|----|---------------------------------|---------------------------------|
| 1. | Parking Brake | RELEASE |
| 2. | Brakes | CHECK |
| 3. | Nose Wheel Steering | CHECK (function, free movement) |
| 4. | Flight instruments and Avionics | CHECK |

CAUTION

Do not operate the engine at high RPM when taxiing to prevent damage to the propeller through stones or other foreign objects.

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4.5.5 Before Take-off (at the Taxi Holding Position)

- | | | |
|-----|---|---|
| 1. | Brakes | APPLY |
| 2. | Parking Brake | SET |
| 3. | Compass and gyro Instruments | CHECK setting |
| 4. | Fuel Selector Valve | LEFT or RIGHT, switch to the fuller tank |
| 5. | Fuel Pressure | CHECK if in the GREEN range
(otherwise, <u>do not attempt</u> take-off) |
| 6. | Engine instruments | CHECK if in the GREEN range |
| 7. | Throttle | SET 1700 RPM |
| 8. | Ignition switch | Magneto check: SWITCH through:
“L-BOTH-R-BOTH” – positions.
CHECK RPM-drop
max. RPM-drop: 120 RPM
max. difference L/R: 50 RPM
RPM drop must be noticeable
<u>then</u> : BOTH position |
| 9. | Carburetor heat | PULL (ON)
(RPM drop: 20 to 50 RPM) |
| 10. | Carburetor temperature indicator (if installed) | CHECK |
| 11. | Carburetor heat | PUSH (OFF) |
| 12. | Propeller control lever | SWITCH 3 times between HIGH RPM
and LOW RPM positions (end stops) |
| | Check points: | 1) RPM drop: 200 ± 50 RPM
2) increase manifold pressure
3) constant oil pressure (± 0,5 bar
<u>then</u> : START position |

CAUTION

*Pull back the propeller control lever slowly to minimize the load on the two-piece crankshaft!
For training operation switching between HIGH RPM and LOW RPM once is sufficient.*

- | | | |
|-----|-------------------------|-------------------------|
| 13. | Throttle | IDLE |
| 14. | Fuel Pump switch | ON |
| 15. | Flap switch | T/O |
| 16. | Trim switch | white marking |
| 17. | Circuit breakers | CHECK all set |
| 18. | Control column | CHECK for free movement |
| 19. | Lap belt | FASTENED and TIGHTENED |
| 20. | Canopy | CLOSED and LOCKED |
| 21. | Parking brake | RELEASE |

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4.5.6 Take-off (up to 50 ft)

- | | | |
|----|--------------------------|------------------------------------|
| 1. | Throttle | WIDE OPEN |
| 2. | Tachometer | CHECK if within 2300 - 2385 RPM |
| 3. | Elevator, control column | NEUTRAL during initial ground roll |
| 4. | Rudder pedals | Maintain direction |
| 5. | Rotatespeed | 50 KIAS |
| 6. | Climb speed | 57 KIAS |

CAUTION

*To increase power setting raise RPM first and open throttle second.
To decrease power setting close throttle first and lower RPM second.*

CAUTION

For the shortest take-off distance over a 50-foot obstacle at sea level:

- | | | |
|----|-----------------------|---------|
| 7. | Rotate speed | 50 KIAS |
| 8. | Climb speed (V_X) | 52 KIAS |

4.5.7 Climb

- | | | |
|----|--|-------------------------------|
| 1. | Throttle | WIDE OPEN |
| 2. | Propeller control lever (max. 5 minutes) | 2385 RPM, afterwards 2260 RPM |
| 3. | Engine instruments | CHECK if in GREEN range |

NOTE

*During take-off and climb at take off power the yellow **ENG** warning illuminates because the maximum continuous rpm is exceeded. This is acceptable for max. 5 minutes.*

- | | | |
|----|-----------------------------|-----------------|
| 4. | Flap switch | UP |
| 5. | Climb speed | 65 KIAS |
| 6. | Landing Light switch | OFF |
| 7. | Trim switch | SET as required |

NOTE

The best rate-of-climb speed, V_Y , is a function of the operating weight and decreases with altitude. For more information, refer to Section 5.2.6.

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4.5.8 Cruise

- | | | |
|----|-------------------------|--|
| 1. | Throttle | AS REQUIRED (Ref. to Section 5, Page 5-11) |
| 2. | Propeller control lever | SET 1650 to 2260 RPM |

CAUTION

Continuous operation with throttle wide open and propeller revolution below 2140 RPM should be avoided to prevent engine damage in particular at pressure altitudes below 3000ft and at high CHT (see SL-912-016)

NOTE

For best manifold pressure/propeller speed combinations: Refer to Section 5, page 5-11

- | | | |
|----|---|--------------------------------------|
| 3. | Flaps switch | UP |
| 4. | Fuel Pump switch | OFF |
| 5. | Trim switch | SET as required |
| 6. | P/S Heat switch (if installed) | AS REQUIRED, OFF AT OAT >59°F (15°C) |
| 7. | Engine instruments | CHECK if in GREEN range |
| 8. | Carburetor temperature indicator (if installed) | MONITOR |

CAUTION

*Illumination of the red **ENG** warning due to low fuel pressure is **acceptable for up to 10 seconds and with displayed values ≥ 0.10 bar**. If the fuel pressure falls below the GREEN range in excess of this span the **Fuel Pump** must be switched ON to prevent fuel vapor formation in the fuel system.*

4.5.9 Descent

- | | | |
|----|---|----------------------------|
| 1. | Throttle | First decrease AS REQUIRED |
| 2. | Propeller control lever | Second SET above 2000 RPM |
| 3. | Carburetor heat | AS REQUIRED |
| 4. | Carburetor temperature indicator (if installed) | MONITOR |

CAUTION

For a rapid descent proceed as follows:

<i>Throttle</i>	<i>First IDLE</i>
<i>Propeller control lever</i>	<i>Second START</i>
<i>Carburetor heat</i>	<i>PULL (ON)</i>
<i>Flaps</i>	<i>UP</i>
<i>Airspeed</i>	<i>130 KIAS</i>
<i>Oil and cylinder head temperature</i>	<i>maintain in GREEN range</i>

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4.5.10 Landing

- | | | |
|-----|-----------------------------|------------------|
| 1. | Seat belts and harnesses | CHECK SECURE |
| 2. | Fuel Pump switch | ON |
| 3. | Carburetor heat | PULL (ON) |
| 4. | Throttle | AS REQUIRED |
| 5. | Airspeed | 90 KIAS |
| 6. | Flaps switch | T/O or LDG |
| 7. | Trim switch | AS REQUIRED |
| 8. | Flaps switch | LDG |
| 9. | Approach speed | 60 KIAS |
| 10. | Propeller control lever | START |
| 11. | Landing light switch | ON (as required) |

CAUTION

In strong headwinds or crosswinds, in turbulent air or in wind shear, it may be desirable to approach using less flaps and at a higher airspeed.

4.5.11 Go-Around (Balked Landing)

- | | | |
|----|-------------------------|-----------------|
| 1. | Throttle | First WIDE OPEN |
| 2. | Propeller control lever | Second START |
| 3. | Carburetor Heat | PUSH (OFF) |
| 4. | Flaps switch | T/O |
| 5. | Airspeed | 65 KIAS |

CAUTION

Any operation with throttle wide open and carburetor heat engaged should be avoided to prevent engine damage.

4.5.12 After Landing

- | | | |
|----|---------------------------------------|-------------|
| 1. | Throttle | AS REQUIRED |
| 2. | Flaps switch | UP |
| 3. | P/S Heat switch (if installed) | OFF |
| 4. | Carburetor Heat | PUSH (OFF) |
| 5. | Fuel Pump switch | OFF |
| 6. | Transponder | OFF |
| 7. | Landing light switch | OFF |

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4.5.13 Engine Shutdown

1. Throttle IDLE
2. Parking Brake SET
3. Flaps switch LDG
4. ELT CHECK (frequency 121.5 MHz)
5. **Avionics** switch OFF
6. Ignition Switch OFF
7. Electrical equipment OFF
8. **Instrument Lights** switch OFF
9. **ALT1 / BAT** switch OFF

NOTE

The GARMIN G500 / G500 TXi and the MVP-50P-AQ are turned off with the **ALT1/BAT** switch.

10. Chocks and tie-downs AS REQUIRED

4.5.14 Refueling

1. Engine Shutdown as in Section 4.5.13
2. Ground the aircraft

CAUTION

During refueling, the aircraft **must** be grounded (for example at the end of the exhaust pipe.)

3. Open fuel tank filler cap
4. Refuel both tanks equally

NOTE

Insert the fuel pump nozzle carefully into the tanks to avoid damage.

5. Replace the fuel tank filler caps
6. Remove grounding cable

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4.5.15 Flight in Heavy Rain and/or with Wing Contamination**CAUTION**

When flying with wet and/or contaminated wings and control surfaces, performance and handling qualities may be reduced. This applies in particular to take-off distance, climb performance, cruising speed and stall characteristics.

The stall speed may increase up to 3 kts and the air speed indicator may give false readings.

Visibility may deteriorate considerably in rain.

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SECTION 8

HANDLING, SERVICE & MAINTENANCE

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8.1 INTRODUCTION

Section 8 contains factory recommended procedures for correct ground handling as well as information regarding care and servicing of the AQUILA AT01. Furthermore, it includes requirements which must be adhered to during inspection as well as during maintenance and when modifications and repairs are carried out.

8.2 AIRCRAFT INSPECTION PERIODS

The required inspection items are listed and described in the AQUILA AT01 Maintenance Manual (Document number MM-AT01-1020-110), the Operation Manual of the ROTAX® type 912 engine series and the mt-propeller Operation and Installation Manual.

CAUTION

If the engine is operated extensively on AVGAS 100LL (more than 30 hrs within 100 hrs) the interval between oil changes shall be reduced to 50 hrs.

8.3 MODIFICATIONS AND REPAIRS

Changes to the aircraft are only permissible with the approval of the EASA or the appropriate National Aviation Authority to ensure that the airworthiness of the aircraft is not adversely affected.

All maintenance and repair work must be accomplished in accordance with the instructions contained in the current issue of the AQUILA AT01 Maintenance Manual.

Prior to major repairs and in situations where the cause of damage to the aircraft is unknown, the aircraft manufacturer or TC holder should be contacted.

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8.4 GROUND HANDLING

8.4.1 Towing

8.4.1.1 Moving forwards

The aircraft can be safely moved and controlled by one person on a smooth and level surface with the tow bar attached to the nose wheel.

CAUTION

The tow bar should always be removed from the aircraft when it is parked.

8.4.1.2 Moving backwards

The aircraft should be pushed backwards using the tow bar. If needed, it is possible to push on the propeller near the blade root. It is also possible to push on the leading edge of the wing near the fuselage.

8.4.1.3 Turning the aircraft on the ground

To turn tightly, push down on the fuselage in front of the vertical stabilizer to raise the nose wheel off the ground. Now the aircraft can be pivoted around the main landing gear.

CAUTION

- 1) *Never push, pull or lift on the horizontal stabilizer or the spinner!*
- 2) *Never push or lift the control surfaces and flaps!*

8.4.2 Parking

For short-term parking, align the aircraft into the wind, retract the flaps, set the parking brakes and chock the main wheels.

When parking the aircraft outside for longer periods or in unforeseeable weather conditions, the aircraft should be tied down as described in section 8.4.3.

Furthermore, cover the pitot-static tube and the stall warning, close the canopy, use a canopy cover and cap the openings in the cowling. To avoid damage to the aircraft and its control surfaces due to gusts or strong winds, secure the control column by pulling it to the control stop and securing it with the waist belt and tightening the straps.

It is, none the less, always recommended to hanger the aircraft.

CAUTION

Temperatures higher than 50°C in the cockpit may damage avionics and instruments. When parked in the sun, use a canopy cover to keep the cockpit cool.

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8.4.3 Tie-Down

The aircraft has three tie-down points; two are located on the lower surface of the wings in the outboard section (fitted with M 8 threads) and the third is located on the lower fin. The tie-down points are marked by red circles.

It is recommended to always carry the eye-bolts delivered with the aircraft and suitable tie-down ropes in the aircraft. The tie-down points should be covered with tape while flying to keep them clean.

8.4.4 Jacking

Two conical jacking points are located on the lower surface of the wing, at the wing root ribs. Both of these jacking points are marked with a red ring. The tail of the aircraft can be supported on the skid plate under the vertical stabilizer. A tail stand may be placed under the skid plate and attached to the tail tie-down point with a fastener.

The nose wheel may be lifted off the ground for maintenance or inspection by weighing the tail down. The weight is best attached at the tail tie-down point.

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8.5 CLEANING AND CARE

CAUTION

Any contamination on the surface of the aircraft deteriorates flight performance and handling qualities.

The stall warning (metal plate on the wing leading edge) is sensitive to excessive amounts of water. Care should be taken when washing the wings near the stall warning.

8.5.1 Painted Surfaces

To maintain the excellent flight performance and handling qualities of the AQUILA AT01 the aircraft must be kept clean and free of damage. Therefore it is recommended to regularly clean the aircraft, paying close attention to the leading edges of the wings and stabilizers.

8.5.1.1 Washing

The aircraft should be washed regularly, using plenty of water, a clean sponge and chamois leather. Severe contamination and dirt, especially insects, should be washed off immediately after every flight, as it is more difficult to remove them when dried.

Only use a mild detergent in cases where the dirt proves very hard to remove. Care should be taken because even a mild detergent will gradually wash away the protective wax coating.

Oil or grease can be removed using a cloth moistened with petroleum. Commercially available aircraft cleaning agents may also be used if they are grease-soluble.

8.5.1.2 Preservation

The aircraft exterior surface is protected with a durable and resistant automotive finish. To retain its protective characteristics, minor damages to the paint should be repaired as soon as practical and the exterior surface of the aircraft waxed one to three times per year using a good **silicone-free automotive hard wax.**

CAUTION

Only silicone-free cleaning and polishing agents may be used.

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8.5.2 Canopy

Since acrylic glass can be easily scratched, the same principles apply as for cleaning painted surfaces. The canopy should be cleaned using plenty of water, a soft clean sponge and chamois leather.

Special, commercially available, acrylic glass cleaners can be used to tackle stubborn contamination and dirt. **Never use solvents or thinner to clean the canopy glass.**

Minor scratches may be polished using special acrylic glass polishing pastes that are commercially available. Always follow the manufacturer's instruction to ensure the desired results.

The inside of the canopy may be treated in the same way.

8.5.3 Propeller

Refer to current issue of the Operating and Installation Manual, E-124, from mt-propeller.

8.5.4 Engine

Refer to current issue of the Operator's Manual for the ROTAX® 912s series engine.

8.5.5 Interior Cleaning

Dust and dirt in the interior of the aircraft should be removed using a vacuum cleaner. Prior to cleaning, loose objects and foreign objects should be removed or properly stowed.

The floor carpets may be removed for cleaning. They can be cleaned in the same manner as house-hold carpets or they may be professionally cleaned.

Use a lint-free, moist cloth to clean plastic surfaces such as the instrument panel cover.

The instruments may be cleaned with a dry and soft cloth.

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SECTION 9

SUPPLEMENTS

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9.1 INTRODUCTION

In this section, all equipment that is optionally installed in your aircraft is described by the POH-Supplements. Each supplement describes a complete modification or a piece of installed equipment. Only the supplements that apply to the configuration of your aircraft must be contained in this section.

Section 9.2 “Index of Supplements” lists all existing approved supplements for the AQUILA AT01. This table may be also used as a directory for this section, adapted to your aircraft. If modifications requiring an STC have been conducted on your aircraft at a Maintenance Organization other than AQUILA Aviation, it is the owner’s responsibility to ensure that the appropriate supplements are included in this manual and properly recorded in the index of supplements in section 9.2.

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9.2 INDEX OF SUPPLEMENTS

Registration:
S/N: AT01- 100C-

Supplement No.	Title	Installed
AS-00	Winter Operation	variable
AS-01	Night VFR (AT01-100A)	X
AS-02	ASPEN MFD	X
AS-03*	ASPEN PFD (AT01-100A)	X
AS-04	FLYMAP	X
AS-05	Night VFR (AT01-100B)	X
AS-06	Night VFR (AT01-100C)	
AS-07	Garmin SL 40	
AS-08	Garmin GTX 330 / 328	
AS-09*	Garmin GTN 650(Xi)	
AS-10	Garmin GMA 350(c)	
AS-11	ELT – Kannad 406	
AS-12	Garrecht TRX 1500	
AS-13	Garrecht TRX 2000	
AS-14	Trig TT22	
AS-15	Garmin SL 30	
AS-16	ADF – KR 87	
AS-17	Garmin GTR 225/225A/225B	
AS-18	Garmin GNC 255A/255B	
AS-19	Garmin GMA 340	
AS-20	Garmin GNS 430W	
AS-21	Garmin GTX 335 / 345	
AS-22	Garmin G5 Stby AI	
AS-23	Garmin G5 AI / HSI (AT01-100A)	X
AS-24	Traffic Sensor AT-1	
AS-25	Garmin G3X PFD/MFD/EIS (AT01-100A)	X
AS-26	Sandia SAI340A / Bendix King KI300	
AS-27	Autopilot (restricted) Garmin GFC500 (AT01-100B&C)	

NOTE

For the devices listed above and marked with an * software updates will be released on our website (www.aquila-aviation.de) via dedicated Service Information (SI).

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SECTION 9**Pilot's Operating Handbook Supplement AS-06****VFR-DAY and VFR-NIGHT operation****Garmin G500 / G500 TXi, MVP-50P-AQ**

This POH supplement is applicable and must be inserted into Section 9 of the Pilot's Operating Handbook when the AQUILA AT01-100C is equipped for Day- and Night-VFR.

Section 1, 2, 3, 4 and 7 of the basic POH must be completely replaced by the section 1, 2, 3, 4 und 7 of this supplement.

The information in this supplement adds to or replaces information in the basic POH.

The technical content of this document is approved under the authority of the DOA ref. EASA.21J.025.

03.03.2021

Date, Signature Office of Airworthiness

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0.1 RECORD OF REVISIONS

Issue	Reason for Change	Effected Pages	Date of Issue
A.01	Initial Issue	All	28.05.2013
A.02	Editorial Changes	All	15.10.2013
A.03	Amendment to Normal Procedures	4-1 to 4-20	19.10.2015
A.04	Minor Changes	chapter 2, 3, 7	26.06.2017
A.05	G500TXi, G5 Stby AI	All	01.06.2018
A.06	Editorial Changes	All	25.05.2020
A.07	Editorial Changes	chapter 2, 4	03.03.2021

0.2 LIST OF CURRENT PAGES

Page	Issue	Date
1-1 to 1-12	A.06	25.05.2020
2-1 to 2-10	A.07	03.03.2021
3-1 to 3-22	A.06	25.05.2020
4-1 to 4-20	A.07	03.03.2021
7-1 to 7-26	A.06	25.05.2020

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