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.

TABLE OF CONTENTS

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
0	A.09		0-1 to 0-6	03.03.2021
1	A.08		1-1 to 1-12	25.05.2020
2	A.09	X	2-1 to 2-10	03.03.2021
3	A.08	X	3-1 to 3-16	25.05.2020
4	A.09	X	4-1 to 4-18	03.03.2021
5	A.05	(X)*	5-1 to 5-22	26.06.2017
6	A.02		6-1 to 6-14	15.10.2013
7	A.08		7-1 to 7-22	25.05.2020
8	A.09		8-1 to 8-6	03.03.2021
9	A.09		9-1 to 9-2	03.03.2021

* - partially approved

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 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	10045112	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	Editorial changes, AS-23 „G5 AI / HSI“	0, 1, 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, 7, 9	10073568	25.05.2020
A.09	Editorial changes, AS-27 "(restricted) GFC500"	0, 2, 4, 8, 9	10076303	03.03.2021

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

Reporting of safety / airworthiness relevant occurrences:

Tel: ++49 (0)33731-707-0
Fax: ++49 (0)33731-707-11
E-Mail: occurrence@aquila-aviation.de

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

SECTION 2

LIMITATIONS

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.

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.

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	

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: (only for a short time)	101.5 psi	(7.0 bar)	

e) Fuel Pressure

Minimum: red warning light

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

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

2.5 MARKINGS ON POWER PLANT INSTRUMENTS

The following table shows the instrument markings on the power plants and their meaning.

Instrument	**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)	122-266 (50 – 130)	---	266 (130)
Cylinder Head Temperature [°F] ([°C])	---	---	---	248 / 264** (120 / 129**)
Oil Pressure [psi] ([bar[)	11.6 (0.8)	29 – 72.5 (2.0 – 5.0)	11.6 – 29 (0.8 – 2.0) 72.5 – 101.5 (5.0 – 7.0)	101.5 (7.0)

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

2.6 MARKINGS ON OTHER INSTRUMENTS

Instrument	**Red Arc** (minimum)	**Green / Red or Yellow Arc** (caution)	**Green Arc** (normal operating range)	**Red Arc** (maximum)
Voltmeter [V]	8 – 11	11 – 12	12 – 15	15 – 16
Amperemeter [A]	---	---	---	---

2.7 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.

2.8 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.

2.9 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 ≤ 60°

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.

2.10 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.

2.11 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.

2.12 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	• Altimeter (0 – 20,000 ft) • Airspeed Indicator (0 – 200 kts) • Magnetic Compass • Working timepiece with a seconds hand*** • VHF Transceiver* • VSI (±2000 ft/min)	• Attitude Indicator • Slip Indicator • Directional Gyro • Outside Air Temperature (OAT) Indicator • VHF Transceiver* • VOR Receiver* • Transponder (XPDR)
Power Plant Instruments	• Fuel gauge • Oil Temperature Indicator • Warning Light FUEL • Oil Pressure Indicator • Cylinder Head Temperature Indicator • Manifold Pressure Gauge • Ammeter	• Tachometer • Voltmeter • Warning Light ALT 1 • Warning Light ALT 2 • Warning Light VOLT
Lighting	• Position Lights • Anti Collision Lights • Landing Lights • Instrument lighting • Cabin Lighting • Flashlight	
Other Equipment	• Seat belts for each occupied seat • Emergency Hammer • Battery ≥ 26 Ah • 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.

NOTE

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

2.13 FUEL LIMITATIONS

	Left Fuel Tank	Right Fuel Tank
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 (54.0 l)
Unusable fuel:	1.37 US gal (5.2 l)	1.37 US gal (5.2 l)

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".

For approved fuel grades, please refer to paragraph 1.8.

2.14 TEMPERATURE LIMITATIONS

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

2.15 OPERATING ALTITUDE

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

2.16 PLACARDS

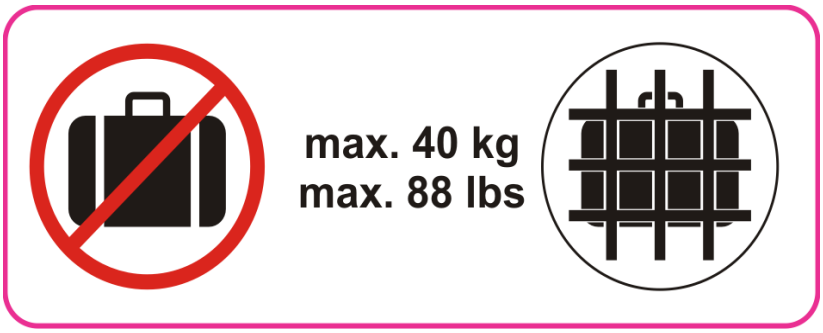
- On the instrument panel, in the lower middle section of the panel:

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.

- On the instrument panel below the Airspeed Indicator:

MANEUVERING SPEED
V_A = 112 KIAS

- On the inner surface of the baggage compartment door:



SECTION 4

NORMAL PROCEDURES

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.

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

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

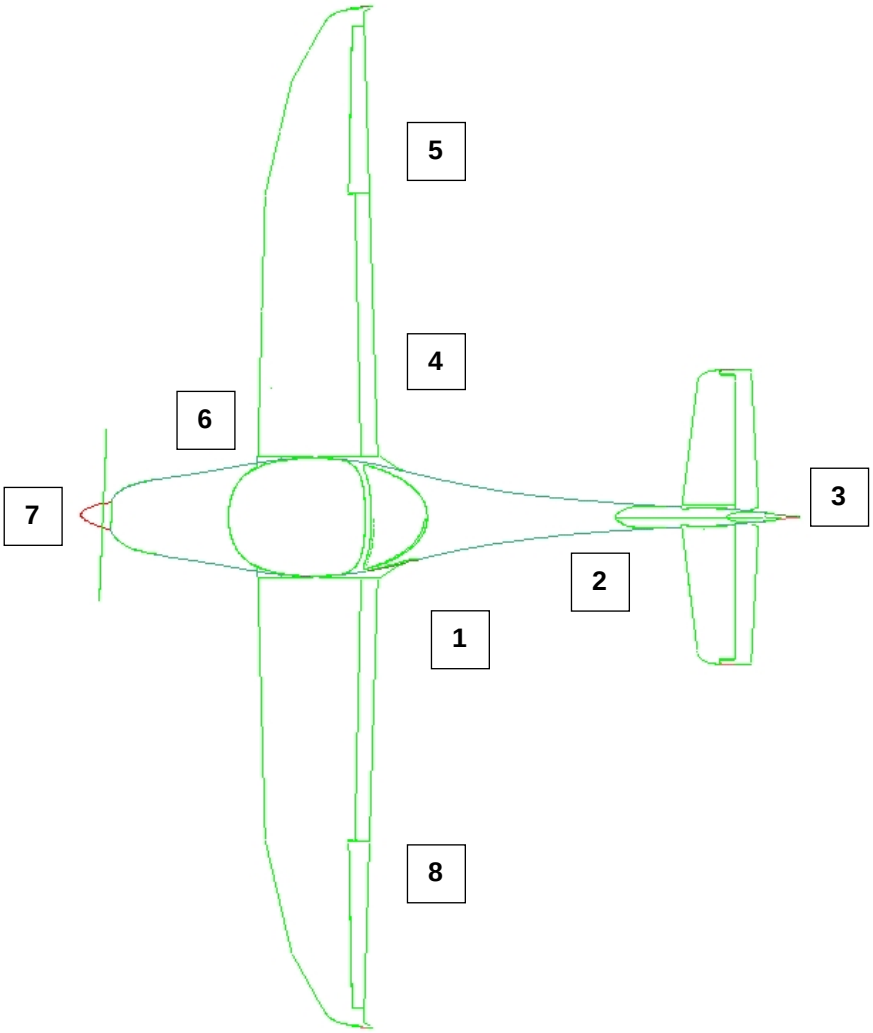
1.	Aircraft Documentation	CHECK on board
2.	Ignition key	REMOVED
3.	**ALT1/ BAT** switch	ON
4.	Warning lights (**ALT1, FUEL**)	ILLUMINATE
5.	Warning lights (**ALT 2**, **VOLT**)	ILLUMINATE

NOTE

If warning light VOLT does not illuminate, switch ON more electrical devices (e.g. Avionics and/or Landing Light) until warning light illuminates.

6.	**ALT1** switch	OFF
7.	Engine instruments	CHECK
8.	Fuel quantity	CHECK
9.	**Nav Lights** switch	ON, CHECK, OFF
10.	**Landing Light** switch	ON, CHECK, OFF
11.	**Instruments Lights** switch	ON, CHECK, OFF
12.	**BAT** switch	OFF
13.	ELT	CHECK operational
14.	Foreign objects	CHECK and REMOVE, when necessary
15.	Baggage	STOWED and SECURED
16.	Canopy	CHECK condition and cleanliness
17.	Flashlights	CHECK

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.

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

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

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

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 !

10. 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 !

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?

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
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

4.5.2 Engine Start-up

1.	**Fuel Pump** switch		ON
2.	**FUEL** warning light		OFF
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		CHECK, if oil pressure rises

CAUTION

The oil pressure has to show rising values within 10 seconds after engine start, otherwise 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

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
3.	Engine Instruments	CHECK

NOTE

Oil can be brought up to temperature during taxiing.

4.	Voltmeter	CHECK, if needle is within the green range
5.	Trim switch and indication	functional CHECK
6.	Flap switch and indication	functional CHECK, afterwards UP
7.	**P/S Heat** switch (if installed)	ON, **P/S HEAT** warning light goes off
8.	**P/S Heat** switch (if installed)	OFF, **P/S HEAT** warning light goes on

ALTERNATORTEST 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.

9.	**Nav Lights** switch	ON
10.	**Landing Light** switch	ON
11.	**Instrument Lights** switch	ON
	⇒ ammeter indication in „+“ zone (charge)	
12.	**ALT 1** switch	OFF
	⇒ ammeter indication in „-“ zone (discharge)	
13.	**ALT 2** circuit breaker	PULL
	⇒ increase of discharge	(**ALT 2** o.k.)
	⇒ no change	(**ALT 2** damaged)
14.	**ALT 2** circuit breaker	PUSH
15.	**ALT 1** switch	ON
	⇒ ammeter indication bounce up to high positive values (strong charge) and decline thereafter	(**ALT 1** o.k)
	⇒ no change	(**ALT 1** damaged)
16.	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.

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** warning light	OFF, (otherwise, do not attempt take-off)
6.	Engine instruments	CHECK if within 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 then: 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 then: 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

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-feet 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 RPM is intended to be in the caution area 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

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

*During flights above a pressure altitude of 6000 ft, the fuel pressure warning light must be monitored closely. If the **FUEL** warning light goes ON, 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:

Throttle	*First IDLE*
Propeller control lever	*Second START*
Throttle	*IDLE*
Carburetor heat	*PULL (ON)*
Flaps	*UP*
Airspeed	*130 KIAS*
Oil and cylinder head temperature	*maintain in green range*

4.5.10 Landing

1.	Lap belt	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** witch	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

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.	**Instruments Lights** switch	OFF
9.	**ALT1 / BAT** switch	OFF
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

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.

SECTION 8

HANDLING, SERVICE & MAINTENANCE

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.

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.

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.

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.

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.

SECTION 9

SUPPLEMENTS

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.

9.2 INDEX OF SUPPLEMENTS

Registration:	**S/N: AT01- 100A-**

Supplement No.	Title	Installed
AS-00	Winter Operation	variable
AS-01	Night VFR (AT01-100A)	
AS-02	ASPEN MFD	
AS-03*	ASPEN PFD (AT01-100A)	
AS-04	FLYMAP	
AS-05	Night VFR (AT01-100B)	X
AS-06	Night VFR (AT01-100C)	X
AS-07	Garmin SL 40	
AS-08	Garmin GTX 330 / 328	
AS-09*	Garmin GTN 650(Xi)	
AS-10*	Garmin GMA 350	
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)	
AS-24	Traffic Sensor AT-1	
AS-25	Garmin G3X PFD/MFD/EIS (AT01-100A)	
AS-26	Sandia SAI340A / Bendix King KI300	
AS-27	Autopilot (restricted) Garmin GFC500 (AT01-100B&C)	X

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).*

SECTION 9

Pilot's Operating Handbook Supplement AS-01

VFR-DAY and VFR-NIGHT operation

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

Section 1, 2, 3, 4 and 7 of the basic POH must be <u>completely</u> 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.

03.03.21

Date, Signature Office of Airworthiness

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 4-18	19.10.2015
A.04	Minor Changes	chapter 2, 3, 7	26.06.2017
A.05	Editorial Changes	chapter 1	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 3-20	A.06	25.05.2020
4-1 to 4-18	A.07	03.03.2021
7-1 to 7-22	A.06	25.05.2020

Page	Issue	Date

0.3 TABLE OF CONTENT