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¹⁾ Depending on effectivity.

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¹⁾ Depending on effectivity.

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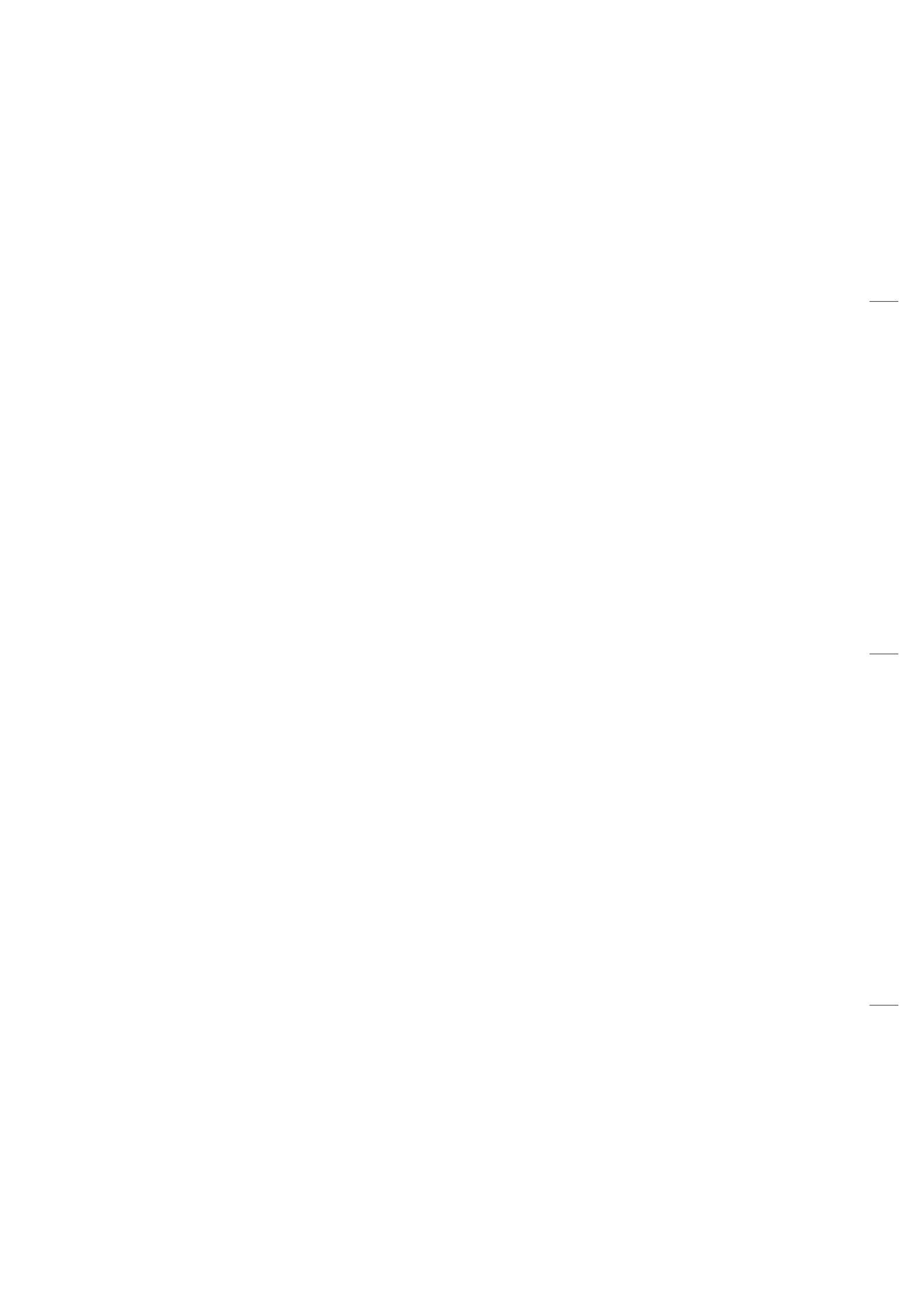
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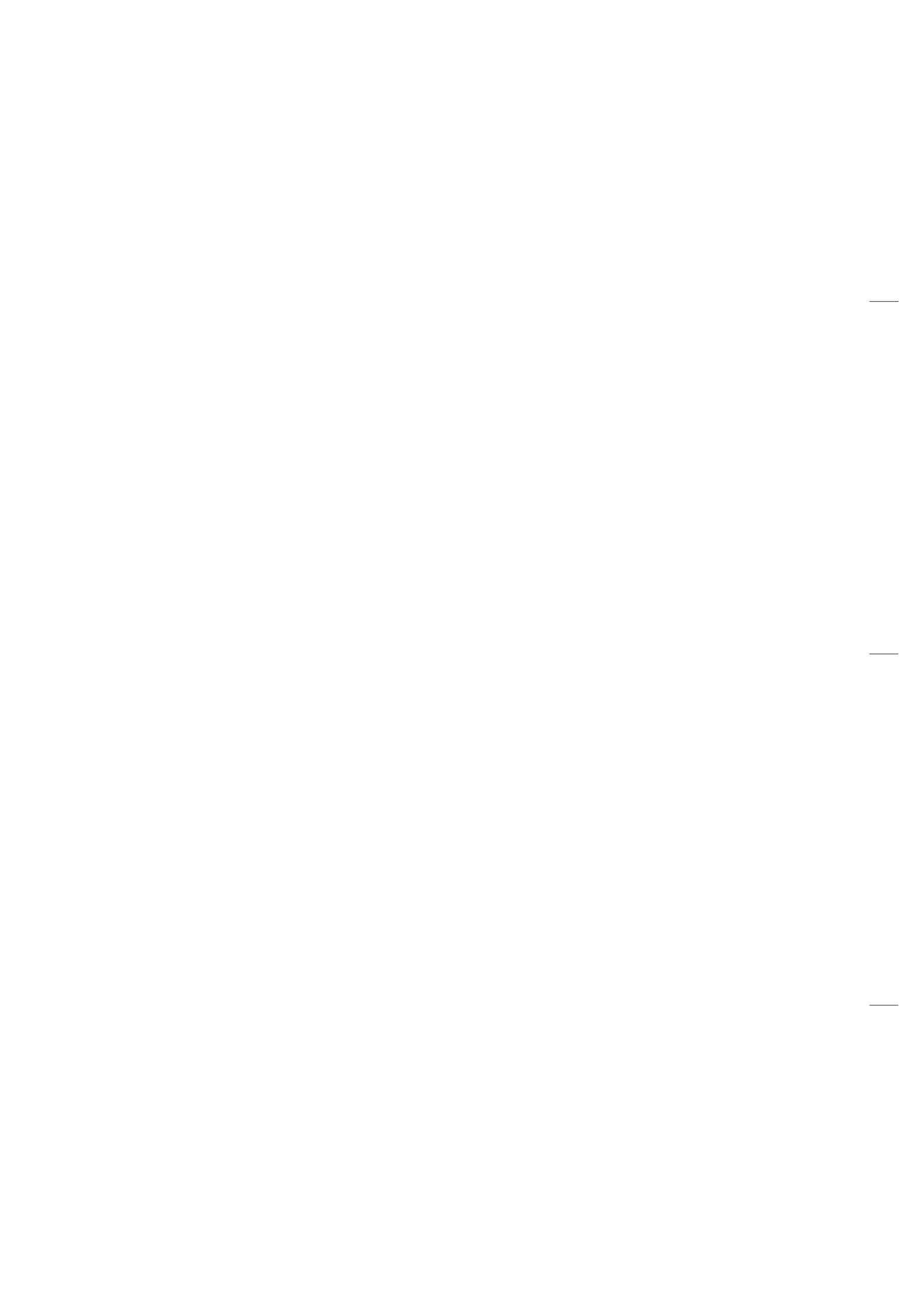
¹⁾ Depending on effectivity.

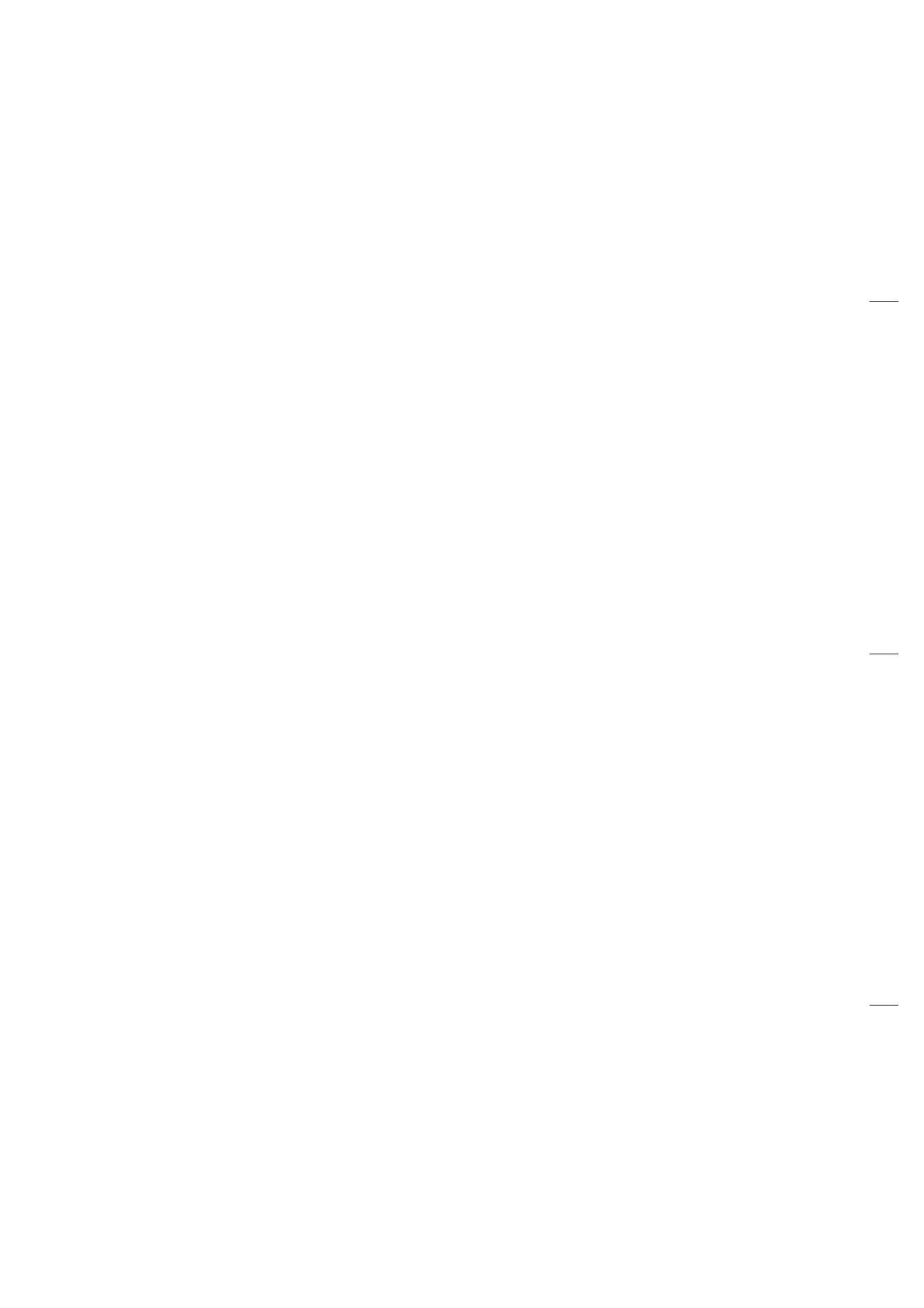
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¹⁾ Depending on effectivity.







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* The date refers to the issue / revision date of the respective chapter.

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DOA ref. EASA.21J.025.

20.08.2015

Date, Signature Office of Airworthiness



**CHAPTER 5
TIME LIMITS / MAINTENANCE CHECKS**

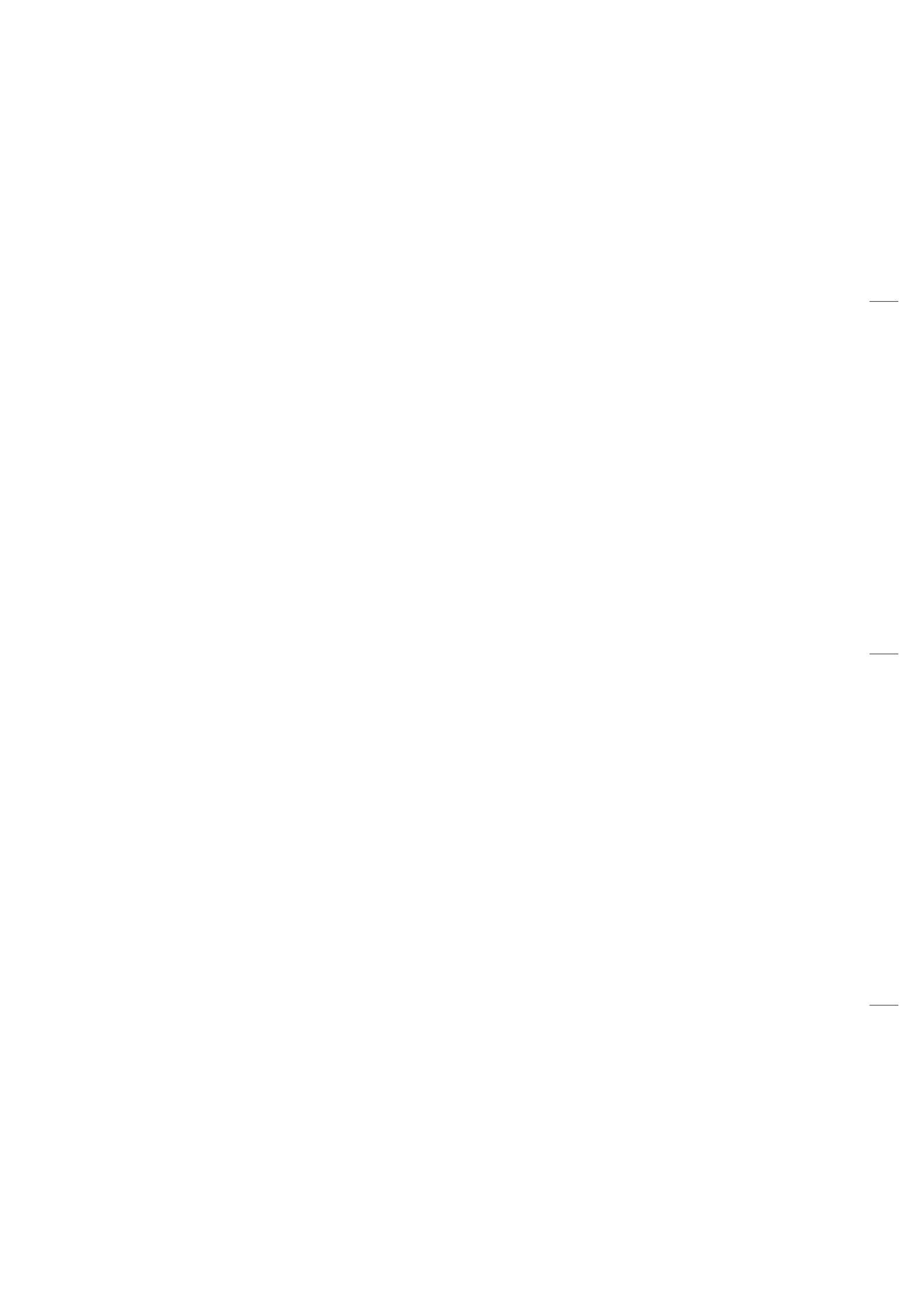
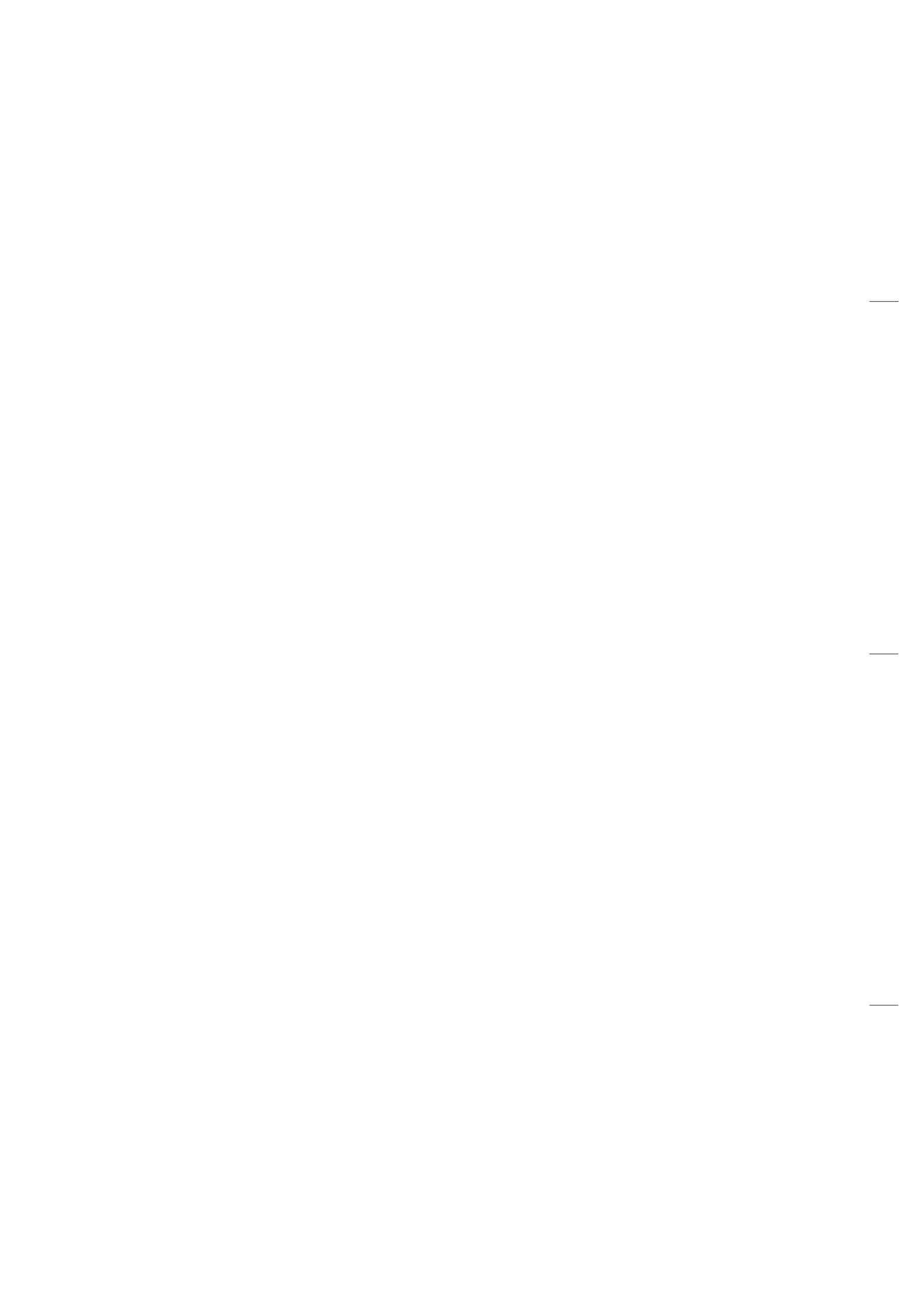


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TIME LIMITS / MAINTENANCE CHECKS - GENERAL

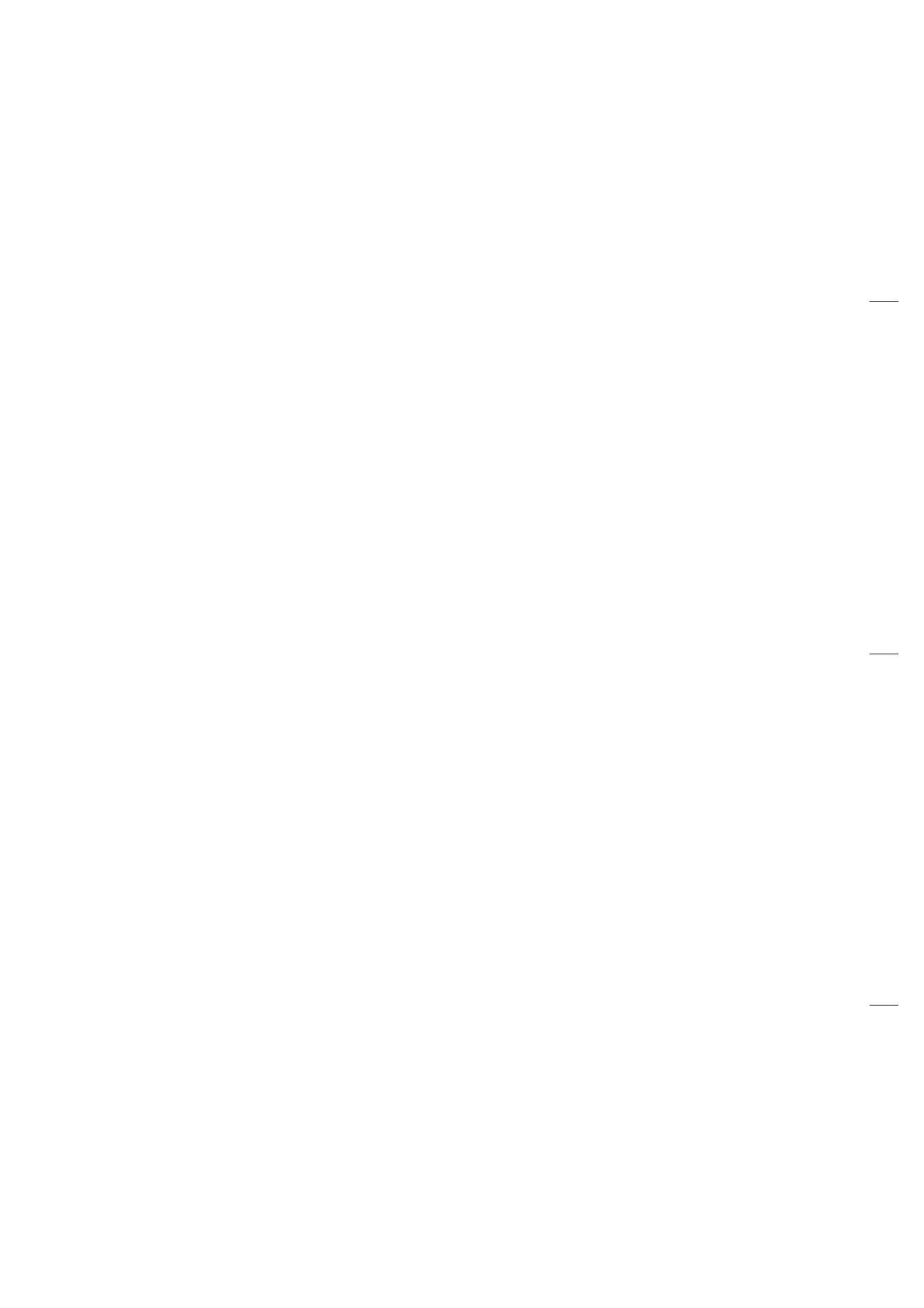
1. Introduction

- A. This chapter provides scheduled and unscheduled maintenance checks and inspections, recommended by the type certificate holder AQUILA Aviation GmbH as well as the time limits for service life limited components and parts.

2. General Description

In the following, a brief description and intended purpose of each section of this chapter is given.

- A. Section 05-00-00 - Time limits / Maintenance Checks - General. This section provides a general overview of the content and purpose of this chapter.
- B. Section 05-10-00 – Component Time Limits. This section contains the time limits of all service life limited components and parts and recommended time between overhaul (TBO) for components.
- C. Section 05-20-00 - Scheduled Maintenance Checks. This section contains information about recommended scheduled maintenance and inspections. The recommended maintenance and inspection program for the systems and components as well as the relevant intervals are embodied in a checklist included in this section.
- D. Section 05-30-00 - Daily Inspections. In this section pre-flight and post-flight checks are described, that have to be carried out every day the aircraft is in operation.
- E. Section 05-50-00 - Unscheduled Maintenance Checks. This section specifies checks, which have to be conducted after unusual events and incidences such as hard landings.



COMPONENT TIME LIMITS

1. General

- A. Different components and parts of the aircraft are certified for specific service life. When reaching this time limit, the respective item must be replaced or overhauled.
 In order to monitor permissible service life the installation or removal of each item must be recorded in the aircraft logbook.
 Where an interval is given in both flight time and calendar time, the limit which is reached first must be applied.

2. Component Time Limits

- A. Under certain circumstances the replacement or overhaul of components may be required before the time limits listed below are reached.
- B. Replacement time limits, recommended by the type certificate holder AQUILA Aviation GmbH:

Chapter	Component / Part	Replacement Time	Overhaul
24	Ignition lock	6000h	no
25	Restraint assy pilot / co-pilot	no	12 years
32	Rubber elements of the elastomer spring package at the nose gear	5 years	no
32	Flexible teflon hoses of the brake system ²⁾	2000h or 15 years	no
32	Flexible rubber hoses of the brake system ³⁾	10 years	no
71	Flexible teflon hoses of the oil / fuel system ¹⁾	2000h or 15 years	no
71	Flexible hoses of the cooling system	5 years	no
71	Engine shock mounts	with engine overhaul	no

1) Hoses that are not covered by the engine type certificate (TC).
 2) Beringer wheel and brake system only.
 3) Cleveland / Grove wheel and brake system only.

C. Vendor Established Component Time Limits

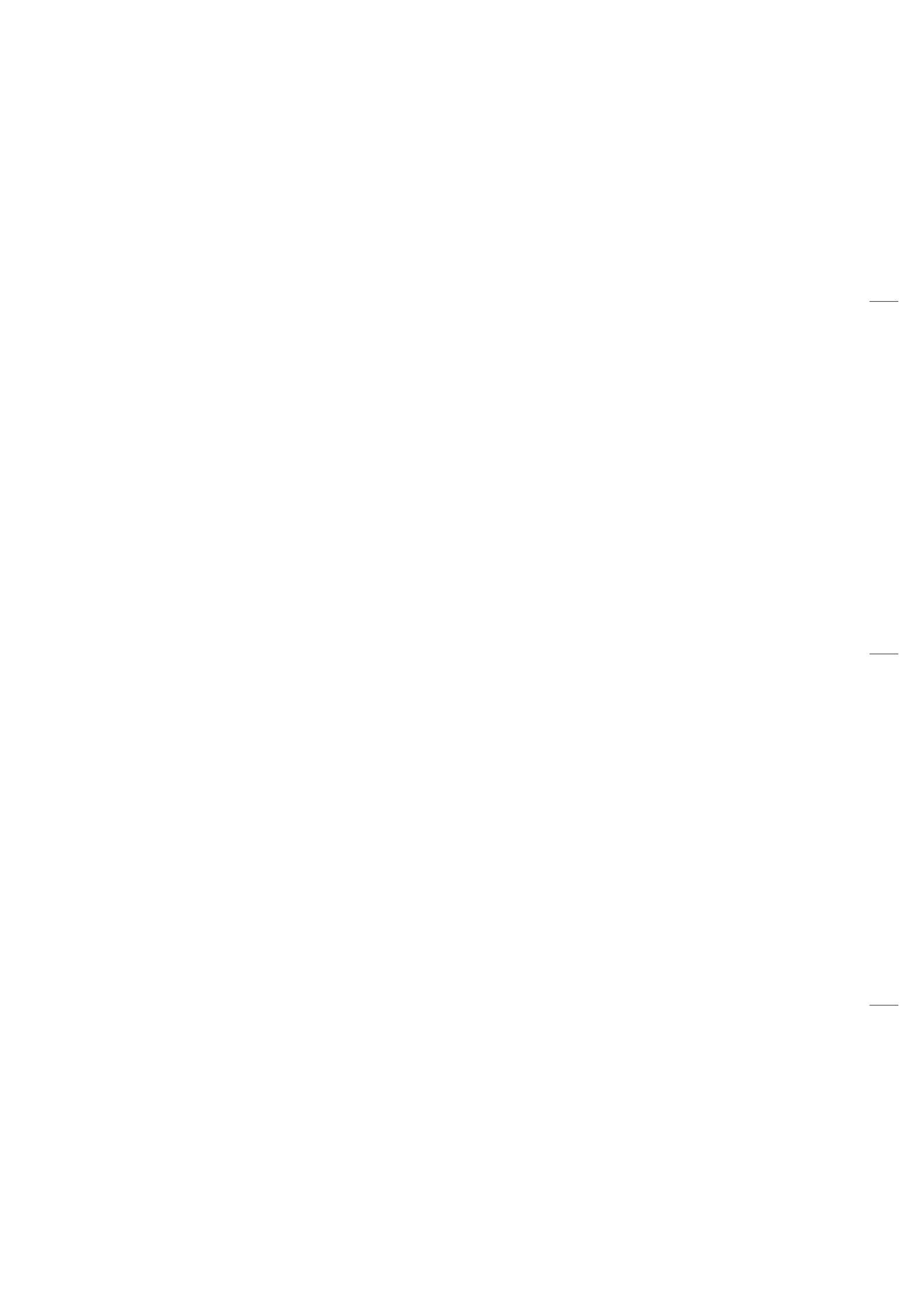
Chapter	Component / Part	Replacement Time	Overhaul
25	ELT battery	Note 1	no
25	Fire extinguisher Air Total	10 years	Note 4
25	Fire extinguisher H3R	12 years	no
31	ASPEN internal battery	800 h or 3 years	no
32	Wheel assembly ¹⁾	no	10.000h or 20 years Note 4
32	Brake assembly ¹⁾	no	10.000h or 20 years Note 4
32	Wheel bearings and bearing retaining rings ¹⁾	10 years	no Notes 6, 8
32	Wheel O-ring seals ¹⁾	5 years each tire change	no
32	Brake caliper seals, pistons and assembly screws ¹⁾	5 years Note 6	no
32	Brake pads ¹⁾	5 years Note 7	no
32	Brake discs ¹⁾	10 years Note 6	no
34	WINTER instruments	no	Note 5
61	Propeller MTV-21-A/170-05	no	2000 h or 6 years Note 2
61	Propeller governor P-850-12	no	2000 h or 6 years Note 2
71	Engine ROTAX 912S	no	2000 h or 15 years Note 3
71	ROTAX mechanical fuel pump	5 years Note 3	no

¹⁾ Beringer wheel and brake system only.

71	ROTAX flexible teflon hoses of the fuel system	with engine overhaul Note 3	no
71	ROTAX rubber parts of the engine (V-belt, hoses, carburetor parts)	5 years Note 3	no
71	Spark plugs	200 h Note 3	no

NOTES:

- Note 1: Refer to manufacturer instructions for battery replacement time limits.
- Note 2: Refer to latest issue of the mt-propeller Service Bulletin No. 1.-(), and to the mt-Propeller E-124 Operation and Installation Manual.
- Note 3: Refer to the latest issues of BRP-Rotax, i.e. Service Bulletins, Service Information and to the ROTAX Aircraft Engines Maintenance Manual for ROTAX Engine Type 912 Series.
- Note 4: Refer to manufacturer instruction for overhauling.
- Note 5: Though there is no TBO for these instruments, the manufacturer Gebr. Winter GmbH & Co. KG recommends that airspeed indicators and altimeters are subjected to retesting after 5 years.
- Note 6: Parts must be changed by pair on both left and right sides at the same time.
- Note 7: Brake pads must be changed all four at the same time even if not worn out. When new brake discs are installed brake pads must be changed to new ones even if not worn out.
- Note 8: Immediate replacement if corroded or damaged.



SCHEDULED MAINTENANCE CHECKS

1. General

- A. The inspection time intervals chart contained in this chapter shows the recommended intervals at which maintenance and maintenance checks should be carried out on the aircraft.

Annual inspections and 100 hour inspections on the AQUILA AT01-100 must include all inspection items as required by FAR 43, Appendix D, "Scope and detail of annual/100h inspections". Chapter 4 "Airworthiness Limitations" of this manual defines the inspection intervals for continued airworthiness.

- B. If an aircraft is being operated under unusual environmental conditions, maintenance intervals may be reduced.

2. Inspection Time Intervals Chart

- A. The maintenance and checks listed are to be carried out at the specified intervals and documented appropriately.

NOTE: For new aircraft and new engines the first check is carried out after 25 hours and should be of the extent of a 100-hour inspection. For new engines only an engine ground run and the checks listed in the "Engine" section have to be carried out.

NOTE: If more than 30% of operation hours have been flown with leaded fuel (e.g. AVGAS 100LL), an additional 50-hour inspection is necessary (refer to ROTAX Aircraft Engines SI-912-016).

NOTE: Where an interval is given in both flight time and calendar time, the limit which is reached first must be applied. The next interval starts with the flight time and calendar time of the latest performed maintenance check.

- B. For intervals between maintenance work, the following tolerances must not be exceeded:

Interval	Tolerance
up to and including 100 h	10% of interval
>100 h up to and including 1000 h	5% of interval
>1000 h	50 h
calendar time limits	30 days

These tolerances must not be added up. For example: if the 100-hour inspection was done at 107 h, the next inspection must be done at 200±10 h, not 207±10 h.

If an inspection is carried out earlier than allowed by the specified tolerance, all subsequent inspection intervals are counted from that inspection. For example: If the 100 h inspection was done at 87 h, the next inspection must be done at 187±10 h.

- C. Due to recent ROTAX publications the maintenance checks given for the ROTAX engine may not be up to date. Refer to the latest revisions of ROTAX Engine Type 912 Series Maintenance Manual and Service Bulletins.
- D. Due to the multiplicity of equipment coming onto the market, no maintenance instructions are given for electronic equipment. For information on a certain component use the documentation provided by the manufacturer of this component.

NOTES: R912* Maintenance Manual for ROTAX Engine Type 912 Series
 MT* mt-Propeller E-124 Operation and Installation Manual
 TTSN Total Time Since New
 TTSO Total Time Since Overhaul

E. Inspection Time Intervals Chart:

Aircraft S/N		Operating Hours		Registration Number	
Engine S/N		Operating Hours TTSN / TTSO:		Date	
Propeller S/N		Operating Hours TTSN / TTSO:		Type of Inspection	

No.	Pre-Inspection / Engine Ground Test	Reference	Interval		Initials
			100h	other	
1.	Check that the following documents are up-to-date and available upon request: - AT01-100 Maintenance Manual - AT01-100 Airplane Flight Manual - Aircraft Log Book and required certificates - Engine and Propeller Log Books - Equipment List and Weight and Balance Record - Airworthiness Directives - Service Bulletins and Service Information - Services Time Record	AT01-100 Maintenance Manual, AT01-100 Airplane Flight Manual	X		
2.	Airworthiness Directives - Verify all Airworthiness Directives have been complied with.		X		
3.	Service Letters, Service Bulletins, and Service Information - Verify all AQUILA GmbH and suppliers Service Letters, Service Bulletins and Service Information have been complied with.		X		
4.	Service time records, equipment list and weight and balance records - Check. Update if necessary.		X		
5.	Aircraft file and technical documentation - Verify complete and in proper order.		X		

No.	Pre-Inspection / Engine Ground Test (Cont.)	Reference	Interval		Initials
			100h	other	
6.	Engine and engine compartment - Clean for leakage check.	R912* 12-20-00 1)	X ¹⁾		
7.	<p>Perform an engine test run as follows: Start engine and warm-up at 820 RPM for approx. 2 minutes, continue at 1030 RPM, duration depends on ambient temperature until oil temperature reaches 50° C.</p> <p>Rudder pedal brakes and parking brake - Check for proper operation.</p> <p>Propeller governor - Set 1700 RPM and monitor the manifold pressure. Reduce engine speed by moving the propeller control by 200 RPM. Note the RPM drop and manifold pressure. Increase RPM to 1700 RPM. Repeat three times.</p> <p>RPM drop: _____ RPM / Man. press : _____ in. Hg</p> <p>Engine instruments - Check engine parameters.</p> <p>Magneto RPM drop - Set 1700 RPM. Check that RPM drop is less than 120 RPM while operating on one magneto and no more than a 50 RPM drop difference between left and right magnetos.</p> <p>RPM drop left magneto : _____ RPM RPM drop right magneto: _____ RPM</p> <p>Carburetor heat - Pull carburetor heat knob at 1700 RPM. Engine RPM should show a drop of at least 20 RPM.</p> <p>RPM drop: _____ RPM</p> <p>Engine full power - Advance throttle to full forward. Tachometer should read 2360 ±25 RPM.</p> <p>Full power RPM: _____ RPM</p> <p>Engine idle - Move throttle control lever to full aft. Tachometer should read 750 +50 RPM.</p> <p>Idle RPM: _____ RPM</p> <p>Cool down engine at 1100 RPM. Shut down engine, set the ignition switch and the master switch to the OFF position. Remove ignition key from aircraft.</p>	<p>R912* 12-20-00 8)</p> <p>32-40-00</p> <p>MT*</p>	X ¹⁾		
8.	Airframe, power plant, propeller - Do a walk around to detect damages, fluid leaks or other abnormalities.		X ¹⁾		
9.	Fuselage and empennage - Clean.		X		
10.	Aircraft interior - Clean and vacuum.		X		
11.	Record all malfunctions and abnormalities.		X		

1) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.

No.	Engine	Reference	Interval		Initials
			100h	other	
1.	Engine cowling - Remove engine cowling. Check for cracks, overheated areas, deformation, loose or missing fasteners. Check condition of fire protect paint and heat resistance shielding.		X		
2.	Engine oil change - Remove oil drain screw from oil tank. Drain old oil and dispose in accordance with environmental regulations.	12-12-00 R912* 12-20-00 11)	X ²⁾	50h ¹⁾	
3.	Oil tank - Check oil tank and clean if contaminated.	R912* 12-20-00 11)	X ¹⁾	200h	
4.	Oil filter - Remove old oil filter from engine and install new oil filter. Lubricate mating sealing ring of new oil filter with engine oil. Tighten new oil filter by hand. Cut open old oil filter without producing any metal chips and inspect filter mat for particles. Findings: _____	12-12-00 R912* 12-20-00 11)	X ²⁾	50h ¹⁾	
5.	Oil change - Renew gasket ring of drain screw on oil tank. Tighten drain screw to 25 Nm (221 in.lbs). Refill oil tank with approx. 3 liters of oil. For oil quality, see Operators Manual and SI-912-016. Refilled: _____ Quantity: _____ L CAUTION: DO NOT USE AIRCRAFT ENGINE OIL. Due to the friction clutch and the high stresses in the reduction gear 4-stroke motor cycle oils are recommended. For suitable lubricants and oil change intervals, see ROTAX Operators Manual and latest appropriate ROTAX publications.	12-12-00 R912* 12-10-00 4) R912* 12-20-00 11) SI-912-010 SB-912-040	X ²⁾	50h ¹⁾	
6.	Visual inspection of the magnetic plug for accumulation of chips	R912* 12-20-00 12)	X ²⁾	50h ¹⁾	
7.	Check compression by differential pressure method. Test pressure: 6 bar (appr. 6000 hPa / 87 psi) Pressure drop: max. 25% Cyl. 1 2 3 4 Pressure drop: _____	R912* 12-20-00 5)		200 h	
8.	Cooling air ducts, engine baffling and cylinder cooling fins - Check for obstructions, cracks, wear and general condition. Check for signs of abnormal temperatures. Check crankcase for cracks.	R912* 12-20-00 3) SB-912-029	X ²⁾		
9.	Leakage bore at the base of the water pump - Check for signs of leakage.	R912* 12-20-00 4)	X ²⁾		

1) If more than 30% of operation hours have been flown with leaded fuel e.g.: AVGAS 100LL

2) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.

No.	Engine (Cont.)	Reference	Interval		Initials
			100h	other	
10.	Cooling system - Renew coolant. Flush the cooling system.	12-14-00 R912* 12-20-00 9)		2 years	
11.	Coolant hoses and lines - Check for damage, leakage, hardening due to heat, porosity, loose connections and secure attachments. Check routing for kinks and narrow bends.	75-00-00 R912* 12-20-00 9)	X ¹⁾		
12.	Coolant expansion tank - Check for damage and abnormalities. Inspect rubber protection plate on tank base for secure fit. Check coolant level, replenish as necessary. Check gasket of radiator cover, inspect pressure control valve, and return valve. The pressure control valve opens at 1,2 bar (18 psi). Check coolant with densimeter or glycol tester.	75-00-00 R912* 12-10-00 3) R912* 12-20-00 9) SB-912-043	X ¹⁾		
13.	Overflow bottle - Inspect for damage and abnormalities. Verify coolant level, replenish as necessary. Inspect venting bore in cap of overflow bottle for clear passage. Check line from exp. tank to overflow bottle for damage, leakage and clear passage.	75-00-00 R912* 12-10-00 3) R912* 12-20-00 9)	X ¹⁾		
14.	Oil and coolant radiator - Check for obstructions, leaks and security of attachment. If necessary, clean cooling fins and do a pressure leakage test.	75-00-00 79-20-00	X ¹⁾		
15.	Oil lines - Inspect for damage, leakage, hardening due to heat, porosity, security of connections and attachments. Check routing for kinks or narrow bends. Check fire protection shielding.	R912* 12-20-00 4)	X ¹⁾		
16.	Oil tank vent line - Check for proper routing, for obstructions and clear passage		X ¹⁾		
17.	Fuel lines - Check for damage, leakage, hardening due to heat, porosity, secure connections and attachments. Check routing for kinks or narrow bends. Check metal fuel lines for cracks and scuffing marks.	R912* 12-20-00 4)	X ¹⁾		
18.	Fuel selector / shut-off valve - Check for security of attachment. Check that the valve engages noticeable into the positions LEFT, RIGHT and OFF.		X ¹⁾		
19.	Filter element of electrical fuel pump - Inspect and clean.	28-20-00	X ¹⁾		
20.	Battery - Clean. Check charge. Measure residual capacity ²⁾ . Residual capacity must be at least 19Ah ²⁾ . If necessary, charge/replace battery.	12-17-00	X ¹⁾		
21.	Battery tray, terminals and cables - Check for security, corrosion and general condition. Grease battery terminals.	12-22-00	X ¹⁾		
22.	Starter - Check security of attachment and electrical connections.		X ¹⁾		

1) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.
 2) N/VFR equipped aircraft only.

No.	Engine (Cont.)	Reference	Interval		Initials
			100h	other	
23.	Alternator - Check attachment and V-belt tension. Inspect electrical connections.	R912* 12-20-00 6)	X ²⁾		
24.	Spark plugs - Remove all spark plugs, check the heat range designation, clean, check electrode gap and adjust if necessary. Replace as required.	R912* 12-20-00 13)	X ²⁾		
25.	Spark plug connectors - Check that resistance spark plug connectors fit tightly on the spark plugs. Minimum pull-off force is 30 N (7 lb).			200h	
26.	Spark plugs - Replace spark plugs	R912* 12-20-00 13)	X ¹⁾	200h	
27.	Oil temperature / oil pressure sensor - Check for tight fit and condition.		X ²⁾		
28.	Exhaust system - Check attachment screws and springs for security and fit. Inspect system for damage and missing parts. Visual inspection of the muffler, exhaust pipes and mounting flanges for cracks, corrosion and leakage. Check heat shielding for condition.		X ²⁾		
29.	Cabin heat - Check heat shroud and heat ducts for damage and security of attachment. Check heat control function.		X ²⁾		
30.	Exhaust muffler - Remove heat shroud from muffler and inspect muffler for condition, corrosion and leakage. WARNING: FAILURE TO INSPECT MUFFLER FOR LEAKS COULD RESULT IN CARBON MONOXIDE ENTERING THE CABIN, LEADING TO SERIOUS INJURY OR DEATH!	78-10-00		200h	
31.	Propeller gear box - Check the friction torque in free rotation. Actual friction torque is measured: _____ Nm	R912* 12-20-00 14)	X ²⁾		
32.	Propeller gear box - Inspect overload clutch.	R912* 05-50-00 2) SB-912-033		600h ¹⁾	
33.	Propeller gear box - Check the propeller gearbox (with overload clutch).	R912* 12-20-00 14)		1000h	
34.	Carburetors - Check carburetor synchronization. Mechanical and pneumatic synchronization.	R912* 12-20-00 10)	X ²⁾		
35.	Carburetors - Inspect the float chamber assy for contamination and corrosion.	R912* 12-20-00 10) SI-912-021		200h	
36.	Carburetors - Check the ventilation of the float chambers. Any trouble with float chamber ventilation impairs engine and carburetor function and must therefore be avoided. Check that the passage of the ventilation lines is free and that no kinks can arise.			200h	

1) If more than 30% of operation hours have been flown with leaded fuel e.g.: AVGAS 100LL

2) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.

No.	Engine (Cont.)	Reference	Interval		Initials
			100h	other	
37.	Carburetors - Removal/assembly of the two carburetors for carburetor inspection.	Rotax Heavy MM 73-00-00 3.1)		200h	
38.	Carburetors - Check the free movement of the carburetor actuation (throttle lever and starting carburetor). Check that the Bowden cable allows full travel of the throttle lever from stop to stop. Check Bowden cables for bulging with control lever in the full throttle position. Adjust throttle control if necessary. Lubricate carburetor throttle shaft.	R912* 12-20-00 10) 76-00-00 12-22-00	x ²⁾		
39.	Carburetors - Check the idle speed.	R912* 12-20-00 10)	x ²⁾		
40.	Carburetor sockets and drip tray - Inspect the carburetor for damage and abnormalities, check for cracks, wear and good condition. Take note of any changes caused by temperature.	Rotax Heavy MM 73-00-00 3.4.3) SB-912-030		200h	
41.	Airbox assy - Check for damage, security of attachment and condition. Inspect connected air hoses for condition and leakage. Check that the flaps can be moved through their full arc of travel for hot and filtered ram air.		x ²⁾		
42.	Air filter - Inspect and clean. Renew if necessary. Clean air filter casing. Check the drain hole at the bottom of casing for obstructions or blockage.	R912* 12-20-00 2)	x ²⁾		
43.	Other external engine accessories - Inspect screws and nuts of all other external engine parts and accessories for tight fit. Inspect safety wiring if applicable, replace as necessary.		x ²⁾		
44.	Engine mounts (manufactured by ROTAX and AQUILA) - Check mounts for deformation, cracks, corrosion, security and damage from heat. Check mounting bolts for condition and correct torque value. At engine (4 bolts M10): 40 Nm (354 in.lbs) At shock mounts (4 bolts M10): 25 Nm (221 in.lbs) At firewall (4 bolts M10): 30 Nm (266 in.lbs) Inspect shock mounts for deterioration.	R912* 12-20-00 3) SB-912-028 SB-AT01-022	x ²⁾		
45.	Engine test run - Attach cowling and perform an engine test run as described above. After engine test run, re-tighten oil filter by hand and examine engine and engine compartment for signs of leakage. Compare results with first engine test run. Check oil level, replenish as necessary.	17-10-00 05-20-00 R912* 12-10-00 8)	x ²⁾	50h ¹⁾	

1) If more than 30% of operation hours have been flown with leaded fuel e.g.: AVGAS 100LL.

2) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.

No.	Propeller	Reference	Interval		Initials
			100h	other	
1.	Spinner - Remove from aircraft and check for delamination and cracks.	61-10-00	X		
2.	Spinner plate - Check for cracks and fit.		X		
3.	Blade root and hub area - Examine for oil and grease leaks.		X		
4.	Propeller blades - Check blade play (up to 3 mm [1/8 in.] allowed).		X		
5.	Propeller blades - Check blade angle play. (max. 2°)		X		
6.	Hub - Inspect outside condition of the hub and parts for cracks, corrosion and deterioration.		X		
7.	Check nuts for low pitch - Inspect for tightness and safety wire.		X		
8.	Propeller assy - Check safetying.		X		
9.	Propeller flange stop nuts - Check correct torque value (45 - 47 Nm [398 - 416 in.lbs]).		X		
10.	Propeller blades - Visual inspection for damage, repair if necessary. Attach spinner.	MT* 6.2) - 6.10)	X		
11.	Propeller governor - Visually inspect for signs of oil leakage. Check bolts and nuts are tightened properly and safety wired. Check governor actuation for free movement and bulging.	61-20-00	X		

No.	Fuselage / Cabin	Reference	Interval		Initials
			100h	other	
1.	Prepare aircraft for visual checks: Remove cabin carpets and floorboards; Remove glare shield; Remove baggage compartment floorboard; Remove access panel of the baggage compartment bulkhead; Remove access panel 210AB.	06-30-00	X		
2.	Fuselage shell - Visual inspection for paint coat damage, dents, cracks, holes, distortion and other evidence of failure. All unpainted parts for delamination (white spots).		X		
3.	Lower fin - Inspect fin and lower rudder for signs of breakage. Check skid plate for wear.		X		
4.	Canopy - Examine the acrylic glass for cracking, crazing and general condition. Inspect tubular canopy hinge frame and brackets for cracks, distortion, corrosion, wear, and security of attachment. Check the gas spring strut for sufficient power and evidence of leakage.		X		

No.	Fuselage / Cabin (Cont.)	Reference	Interval		Initials
			100h	other	
5.	Canopy locking - Check the canopy locking mechanism operates correctly. Check wear of parts. Check existence of the locking pin. The pin has to protrude the cover by approx. 2 mm. Cases of lacking locking pins have to be reported to the type certificate holder (contact information: see cover sheet). Check function of the locking pin. The canopy locking mechanism must not be too smooth-running. In the locked position of the latch, a smooth running release of the latch due to in-flight vibrations must not be possible. If necessary, readjust locking pin.	52-10-00	X		
6.	Lubricate canopy lock assembly.	12-22-00		annual	
7.	Baggage door - Check door seal, door latching mechanism, and door hinge for defects and condition. Lubricate if needed. Inspect door structure for cracks or other damage.	12-22-00	X		
8.	ELT - Perform ELT inspection. Check ELT mount and Velcro strap for security of attachment. Replace strap if necessary.	25-62-00		annual	
9.	Seat belts/harnesses for pilot / co-pilot - Check for proper operation, condition, and security of attachment.		X		
10.	Seats - Check security of attachment of the seat assy to aircraft structure. Check operation of seat adjustment mechanism and seat stops. Inspect gas spring struts for oil leakage or other damage.		X		
11.	Seats - Check ease of movement - if required remove seats, clean and lubricate seat rails.	25-10-00		annual	
12.	Center Console - Visually examine the parts of the engine controls, lines and cables, located in the center console.			annual	
13.	Main landing gear - Inspect fuselage structure at such points and areas where the main landing gear is attached. Check for stress marks, distortion, disbonding, and delamination. Inspect main landing gear strut brackets for distortion, cracks, corrosion, and security of attachment. Check wear and condition of the polyamide inserts. Check bolts for correct torque.		X		
14.	Parking brake valve - Check for evidence of leakage especially at the brake line connections. Check control assy for damage.		X		
15.	Flap actuator - Check for wear and damage, for secure mechanical connections and loose or missing lock devices. Check electrical wiring for wear, damage, and proper routing. Inspect electrical connections and switches for security, corrosion and poor condition. Check function of the limit switches and position indicator.		X		

No.	Fuselage / Cabin (Cont.)	Reference	Interval		Initials
			100h	other	
16.	Elevator trim system - Check the actuator and the springs for security, wear and damage. Check safetying. Check electrical wiring for wear, insulation damage, and proper routing. Inspect electrical connections and switches for security, corrosion and poor condition. Perform system test and check the correct function of the position indicator.		X		
17.	Aileron and elevator control - Check the control sticks, the brackets and the control rods for distortion, cracks, chafing, corrosion and security. Examine all bearings for condition and secure fit. Check safetying. Check travel of control surfaces if the control stick is in the full forward /neutral/ aft, and full left /neutral/ right positions. Verify no binding or jumpy movement of the control sticks through their full range of travel.		X		
18.	Rudder control - Check rudder control weldment and rudder bellcrank for cracks, distortion, chafing and security. Examine rudder control support brackets, rudder pedal pivot brackets and connection of the rudder controls with the nose gear steering tubes for security, condition and correct splintering. Check centering of springs and cables. Inspect control cables, control cable guides, cable connections, turnbuckles and hardware for correct installation, corrosion, wear, safetying and proper operation.		X		
19.	Rudder / aileron control interconnection - Check condition and correct function.		X		
20.	Rudder pedal bearing and Beringer brake master cylinder rod ends - Lubricate.	12-22-00		annual	
21.	Brake master cylinders and brake lines in the cabin area - Check for security, condition and signs of leakage.		X		
22.	Brake reservoir - Check for leakage and system for trapped air. Inspect the vent valve in the filler cap of the brake reservoir for obstruction and blockage. Make sure the hydraulic brake fluid level is correct and replenish, if necessary. Only use hydraulic brake fluid of the required grade.		X		
23.	Hydraulic brake fluid - Renew.	12-15-00		2 years	
24.	Fuel lines - Check for leakage and security.		X		
25.	Wing main bolts - Inspect for proper fit, condition and correct safetying.	57-10-00	X		
26.	Wing main bolts - Remove for visual inspection and lubrication. Lube type used: _____	57-10-00 12-22-00		500h ¹⁾ 5years ¹⁾ or annual ¹⁾	
27.	Engine and propeller controls - Check for proper function, security of attachment and for evidence of wear.		X		

1) Interval depends on lube type. Refer to 12-22-00.

No.	Fuselage / Cabin (Cont.)	Reference	Interval		Initials
			100h	other	
28.	Exterior / interior placards and markings - Check presence, legibility, and security.	11-20-00 11-30-00	X		

No.	Wings, Ailerons, Flaps	Reference	Interval		Initials
			100h	other	
1.	Wings with winglets, ailerons, and flaps - Visual inspection for paint coat damage, dents, cracks, holes, distortion and other evidence of failure. Examine all unpainted parts for delamination (white spots).		X		
2.	Wing spars in the fuselage belly - Remove spar covering and perform visual inspection of the spar web, the bonding between the spar web and the carbon fiber spar cap strip, as well as the attachment of the root ribs to the spars. Check security and function of control system brackets attached to the spars.			annual	
3.	Drain and vent holes - Check for blockage and suspect appearance of any liquid.		X		
4.	Ailerons - Check aileron hinges, bearings, and hinge brackets for security and excessive play. Check bolts and nuts for proper safetying. Examine aileron pushrod for correct installation with stop nuts. Check aileron actuation assembly for suspect binding, and excessive play.		X		
5.	Aileron hinges - Check play. Maximum play approx.: - Axial $\pm 1,00$ mm (± 0.04 in.) - Radial $\pm 0,30$ mm (± 0.01 in.)		X		
6.	Aileron control system - Measure the play in the aileron control system with the control surface locked. Apply a lateral force of 30 N (6.7 lb) to the control stick - the maximum play allowed on the top of the stick is 10 mm (0.4 in.) for both sides. The play should be measured for both control sticks. If excessive play is detected, investigate cause.		X		
7.	Flaps - Check hinge brackets for damaged paint, cracks and delamination. Check bearings for correct fit and excessive play. Check the correct safetying of all hinge bolts and castle nuts with cotter pins.		X		
8.	Flap hinges - Check play. Maximum play approx.: - Axial $\pm 0,30$ mm (± 0.01 in.) - Radial $\pm 0,30$ mm (± 0.01 in.) Measure the play in the flap control system at the flap trailing edge, at the inboard flap end. Max. play allowed with flaps in take-off and landing positions: ± 5 mm (0.2 in.). No play with flaps retracted.		X		

No.	Wings, Ailerons, Flaps (Cont.)	Reference	Interval		Initials
			100h	other	
9.	Flaps and ailerons - Check that the gap between fuselage and flaps, between flaps and ailerons, and at the outboard end of the ailerons is at least 2 mm (0.08 in.).		X		
10.	Stall warning system - Check for condition and proper operation.		X		
11.	Navigation / strobe lights - Check operation, condition of glass, and security of attachments.	33-40-00	X		
12.	Inner fuel tank ribs - Check connection of fuel and vent lines to the fuel tank and the flange gasket of the fuel level sensors for signs of leakage.	28-10-00 28-20-00 28-40-00		annual	
13.	Fuel vent lines - Check for blockage.		X		
14.	Fuel tank drain valves - Check for correct function and leakage.		X		
15.	Fuel filler caps - Check for proper function and leakage.		X		
16.	Tank inlet and upper wing shell in the fuel tank area - Check sealing of the bore hole in the tank inlet. Check wing skin for bubble formation or bulging.	SB-AT01-027		annual ¹⁾	
17.	Tie-down points - Check thread and structure around the tie-down attach points for any damage.	10-20-00	X		

No.	Empennage, Elevator, Rudder	Reference	Interval		Initials
			100h	other	
1.	Empennage - Inspect complete surface of the vertical and horizontal stabilizers, the elevator and the rudder for dents, cracks, holes and delamination.		X		
2.	Rudder hinge, elevator hinge and bellcranks - Check brackets and bellcranks for security of attachment and corrosion. Examine bearings for binding and excessive play. Check correct safetying of the lower rudder pivot pin with castellated nut and cotter pin.		X		
3.	Hinge play and control surface positioning - Verify clearance between horizontal stabilizer and elevator horns and clearance between vertical stabilizer and rudder horn is at least 1 mm (0.04 in.). Check elevator hinge and rudder hinge play. Maximum play approx.: - Axial ± 0,30 mm (± 0.01 in.) - Radial ± 0,30 mm (± 0.01 in.)			annual	
4.	Elevator control system - Measure the play in the elevator control system with the control surface locked. Apply a force of 50 N (11.2 lb) forwards and then backwards to the control stick - the maximum play allowed on the top of the stick is 10 mm (0.4 in.) for both sides.			annual	

¹⁾ AT01-100A/B/C-300 up to AT01-100A/B/C-312 only. Refer to SB-AT01-027, latest revision.

No.	Empennage, Elevator, Rudder (Cont.)	Reference	Interval		Initials
			100h	other	
5.	Rudder - Remove rudder if there is noticeable play. Examine the elevator actuation assembly inside the vertical stabilizer. Check for any damage, for correct installation and function and for security and wear. Inspect rudder hinge brackets, rudder yoke and control cable thimble-eyes for security, conditions and wear. Lubricate control cable thimble-eyes as required.	55-40-00		annual	
6.	Rudder rigging - Set rudder pedals in neutral position. Verify the rudder and the nose landing gear are also in neutral position. Set rudder pedals to fully left and then to full right. The rudder must hit the rudder travel stops and the distance from rudder pedal to firewall must be sufficient to apply the pedal brake. Adjust position of the rudder pedals by varying the length of nose wheel steering tubes. Adjust rudder neutral position and control cable tension by means of the turnbuckles in the cabin area.	27-20-00	X		

No.	Nose and Main Landing Gear	Reference	Interval		Initials
			100h	other	
1.	Wheel fairings - Check condition and correct fit. Remove and clean. Check for paint coat damage, cracks, dents and delamination.		X		
2.	Fairing mounts - Inspect for cracks, distortion or other damage.		X		
3.	Nose gear strut mount and wheel fork - Check for deformation, cracks and corrosion. Check nose gear strut journal bearing for proper operation, play and correct safetying.		X		
4.	Nose gear strut and elastomer package - Check strut for deformation, stress marks, and cracks. Inspect correct installation of the nose wheel fork. Inspect elastomer package for wear, deterioration, cracks, correct fit and security. Check journal bearings of the elastomer package for play and condition.		X		
5.	Nose wheel steering - Inspect nose wheel steering tubes for condition, excessive play and correct safetying. Check return springs at nose gear strut for security and verify they are tension-free, when the nose wheel is in neutral position.		X		
6.	Main landing gear - Check main gear struts for deformation, cracks, damage to the paint coat, and corrosion. Inspect wheel axles for security of attachment to struts and for any damage.		X		
7.	Wheels and rims - Clean. Check tires for wear, cuts, foreign matter and deterioration. Inspect rims for security, deformation, cracks and other damage. Examine wheel bearings for excessive play, corrosion and irregular operation. Check tire pressure and proper location of the red slide marks.		X		

No.	Nose and Main Landing Gear (Cont.)	Reference	Interval		Initials
			100h	other	
8.	Wheels - Disassemble, remove bearings. Remove screws and clips if they are out of tolerance. Clean all metal parts. Visually inspect wheel flanges and central spacer for cracks, nicks, corrosion or other damage.	32-40-00		6000h ¹⁾ 10years ¹⁾	
9.	Wheel bearings - Clean and lubricate.	12-22-00		500h ²⁾ annual ²⁾	
10.	Wheel brakes - Clean. Apply brakes, examine system for leaks. Inspect brake fluid carrying lines at the main landing gear for condition, leakage and security of attachment. Inspect brake discs for cracks, corrosion and wear. Replace brake discs if worn below: Beringer: 3.8mm (0.15 in.) Cleveland / Grove: 4.3mm (0.17 in.) Inspect brake pads for condition and wear. Replace linings when worn to: Beringer: 1mm (0.04 in.) Cleveland / Grove: 2.6mm (0.10 in.) Check freedom of movement of the pistons and pressure plates.	32-40-00	X		
11.	Wheel brakes - Check pistons retraction. Check brake caliper assembly bolt torque. Check play between brake disc and wheel clips. Change clips if play is above 0.4mm (0.016 in.)	32-40-00		annual ¹⁾	
12.	Wheel brakes - Remove caliper assembly from axle, disconnect from brake hose. Disassemble brake caliper. Clean all metal parts. Visually inspect caliper casing and back plate for cracks, nicks, corrosion or other damage.	32-40-00		3000h ¹⁾ 5 years ¹⁾	
13.	Wheel axles - Clean. Visually inspect for cracks, nicks, corrosion or other damage.			every wheel removal	

No.	Electrical System / Avionics	Reference	Interval		Initials
			100h	other	
1.	Electrical wiring system - Check the complete electrical wiring system for security, damage, wear and secure fit. Check all cable connections for tight fit, good contact, corrosion and condition.	R912* 12-20-00 13)	X ³⁾		
2.	Tank inlet bonding wires - Check bonding between electric ground (exhaust port) and tank inlet (max. 1Ω).			annual	
3.	Instruments - Check instrument panel mounting brackets for security and condition. Examine instruments for security of attachment. Check electrical cables, hoses and lines for correct installation, condition and proper routing.			annual	
4.	Pitot / static system - Check pitot tube for security of attachment, condition and obstructions. Check pitot and static pressure lines for correct installation, condition, water and proper routing. Check water traps for water.	34-11-00	X		

1) Beringer wheel and brake system only.

2) Cleveland / Grove wheel and brake system only.

3) Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.

No.	Electrical System / Avionics (Cont.)	Reference	Interval		Initials
			100h	other	
5.	Pitot heating system - Carefully check pitot tube for heating up with pitot heating switched ON. WARNING: RISK OF SKIN BURNS! DO NOT TOUCH PITOT TUBE WHEN HEATING IS SWITCHED ON!		X ¹⁾		
6.	Engine monitoring system - Check transducers and lines for leakage, loose fittings and proper installation. Check fittings for corrosion. Check electrical wires for chafing, breakage and loose connections. Check system for proper operation.		X ^{1) 3)}		
7.	Garmin G500 system - Check all components and wiring for damage, corrosion, proper operation and security of attachment.	34-25-00	X ³⁾		
8.	Garmin G500 system - Check bonding.	34-25-00		2000h ¹⁾ 10years ¹⁾	
9.	Aspen EFD1000 system - Check all components and wiring for damage, corrosion, proper operation and security of attachment. Perform bonding check.	34-25-00		annual ¹⁾	
10.	Tank inlet bonding wires - Check bonding wires at the airframe ground tube for yellow discoloration.	SB-AT01-027		annual ²⁾	

No.	Return to Service	Reference	Interval		Initials
			100h	other	
1.	Install wheel fairings. Install seats (if removed). Install cabin floor boards. Install baggage compartment floorboard. Install access panel of the baggage compartment bulkhead. Install access panel 210AB.	06-30-00	X		
2.	Flight controls - Check for full range of travel and excessive friction.		X		
3.	Flaps - Operate through full extension and retraction for steady and complete deployment. Check correct limit switches operation at CRUISE, T/O and LDG flap positions. Verify the corresponding flap switch position and the corresponding flap position indicator reading.		X		
4.	Elevator trim - Check for full range of travel and excessive friction. Inspect proper operation of the trim control switch, limit switches, and the trim position indicator. Verify that elevator control forces decrease or increase when operating elevator trim.		X		
5.	Engine and propeller controls - Check full range of motion without any obstruction or excessive friction to travel. Check throttle and propeller control levers friction lock.		X		
6.	Foreign items - Remove any foreign items from the aircraft.		X		

¹⁾ If installed.

²⁾ AT01-100A/B/C-300 up to AT01-100A/B/C-312 only. Refer to SB-AT01-027, latest revision.

³⁾ Check has to be carried out every 100 hours of operation or 12 month, whichever comes first.



**AQUILA AT01-100
MAINTENANCE MANUAL**

Maintenance Checks

The aircraft is airworthy and meets the condition specified in the aircraft data sheet. All maintenance required by Service Information and Airworthiness Directives and all prescribed scheduled maintenance checks have been carried out.

Service Station:

Next inspection when _____ hours of operation have been reached.

Place, Date

Name, Signature of Mechanic

Name, Signature of Inspector

Stamp

DAILY INSPECTIONS

1. General

- A. Pre-flight and post-flight checks must be carried out daily when the aircraft is in operation.

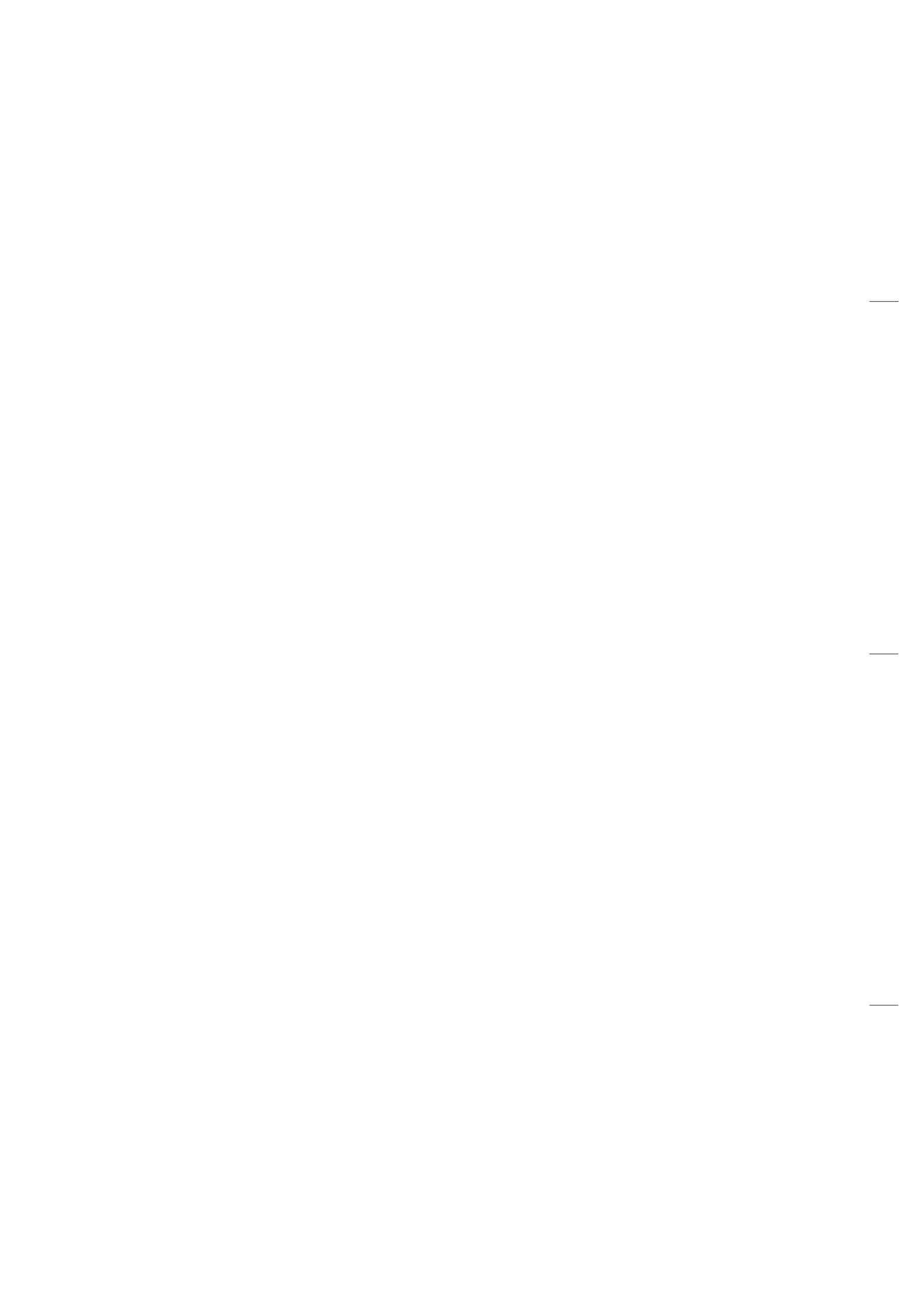
2. Pre-Flight Check

- A. This check must be carried out before the first flight of the day. In this way, the general condition of the aircraft and its engine can be ascertained. Pre-flight checks are essential for flight safety as numerous accidents can be traced back to inadequate pre-flight checks.

The scope of the pre-flight check is listed in the AQUILA AT01-100, section 4.

3. Post-Flight Check

- A. This check should be carried out after the final flight of the day. For the most part, it is a visual inspection.
- B. The check should contain all points of the pre-flight check.
 - (1) Supplementary measures:
 - (a) Re-fuel.
 - (b) Check that the aircraft is properly parked (refer to 10-10-00).
 - (c) Check the logbook entries for remarks about faults or defects, and for correct number of landings and flight hours.
 - (d) If necessary, moor the aircraft (refer to 10-20-00).



UNSCHEDULED MAINTENANCE CHECKS

1. General

- A. Special checks are to be carried out when an incident has occurred that may have caused damage to the aircraft or impaired airworthiness.

In addition, a 25-hour inspection must be carried out on new aircraft and its engine, on overhauled engines and after extensive airframe repairs.

2. Special Checks

A. 25-Hour Inspection

After the first 25 hours of operation of a new aircraft and its engine or an overhauled engine or after extensive airframe repairs, an inspection of the extent of a 100-hour inspection must be carried out (refer to 05-20-00).

After the first 25 hours of operation of a new or overhauled engine, the engine and the propeller must be inspected. Refer to ROTAX Aircraft Engines Maintenance Manual for ROTAX Engines Type 912 Series for detailed information on this inspection.

B. Hard Landing

After an excessively hard landing or other unusual loading of the landing gear a thorough inspection of the affected components and their attachments is required. Even if no obvious defects are detectable, a visual inspection must be carried out. Perform the following:

- (1) Prepare aircraft for visual checks as follows:
 - (a) Remove engine cowling (refer to 71-10-00).
 - (b) Remove landing gear fairings.
 - (c) Inside the cabin and baggage compartment - remove carpets and floorboards as required to gain access to the landing gear mounting brackets (refer to 25-12-00).
- (2) Inspect main landing gear.
 - (a) Check wheel fairings for cracks, dents and delamination.
 - (b) Check fairing mounts for cracks, distortion and other damage.
 - (c) Check fuselage structure visually at such points and areas where the main landing gear is attached. Check for stress marks, distortion, disbonding, and delamination. Check main landing gear strut brackets for distortion, cracks and security of attachment. Check condition of the polyamide inserts. Check bolts for correct torque.
 - (d) Check main gear struts for deformation and cracks. Examine wheel axles for security of attachment to struts and for any damage.
 - (e) Inspect tires for integrity and proper location of the red slide marks.
 - (f) Inspect brake fluid carrying lines at the main landing gear for condition, leakage, and security of attachment.

- (3) Inspect nose landing gear.
 - (a) Check wheel fairing for cracks, dents and delamination.
 - (b) Inspect fairing mounts for cracks, distortion and other damage.
 - (c) Check nose gear strut mount for deformation and cracks. Check nose gear strut journal bearing for proper operation and play.
 - (d) Check strut for deformation, stress marks, and cracks. Check elastomer package for deterioration, cracks, correct fit and security. Check journal bearings of the elastomer package for play and condition.
 - (e) Inspect nose wheel steering tubes for condition and excessive play.
 - (f) Inspect tire for integrity and proper location of the red slide marks.
- (4) Re-mount all items removed during the inspection.
- (5) Perform a brake and steering system operational test (refer to 32-40-00).

C. Engine Fire

After an engine fire, carry out the following:

WARNING: IF IT IS SUSPECTED THAT PARTS OF THE STRUCTURE OR COWLING COULD HAVE BEEN DAMAGED BY HIGH TEMPERATURES (INDICATED BY BLISTERING ON THE PROTECTIVE COATING), THE MANUFACTURER MUST BE CONTACTED FOR DEFECT APPRAISAL BEFORE THE AIRCRAFT IS FLOWN AGAIN.

- (1) Remove engine cowling (refer to 71-10-00).
- (2) Examine engine cowling. Check for signs of fire damage.
- (3) Disconnect battery (refer to 24-30-00).
- (4) Examine electrical cables for damaged insulation.
- (5) Examine fuel lines for damage of the fire-protection sleeves.
- (6) Check oil lines for damage of the fire-protection sleeves.
- (7) Check air filter element for fire damage.
- (8) Examine engine mount and shock mounts for any fire damage.
- (9) Check all other hoses and pipes, as well as all gaskets and seals for fire damage.
- (10) Replace damaged items.
- (11) Re-mount engine cowling (refer to 71-10-00).
- (12) Perform an engine test run (refer to 05-20-00).

D. Violent Stop of the Engine

In event that the propeller has touched the ground or the engine has been inadvertently stopped violently (shock loading), the propeller gear box must be disassembled and inspected by an authorized workshop. For further information on engine inspections necessary after a propeller ground strike and for more general information, refer to the relevant technical documents and the ROTAX Maintenance Manual.

CAUTION: ONLY QUALIFIED TECHNICIANS (AUTHORIZED BY THE NATIONAL AVIATION AUTHORITY AND AFTER SUCCESSFULLY COMPLETING THE RELEVANT ROTAX TRAINING COURSE) ARE AUTHORIZED TO PERFORM THIS WORK.

Check additional equipment (external alternator, hydraulic governor, ignition unit, coolant and oil hoses) for damage.



**AQUILA AT01-100
MAINTENANCE MANUAL**

CHAPTER 28

FUEL

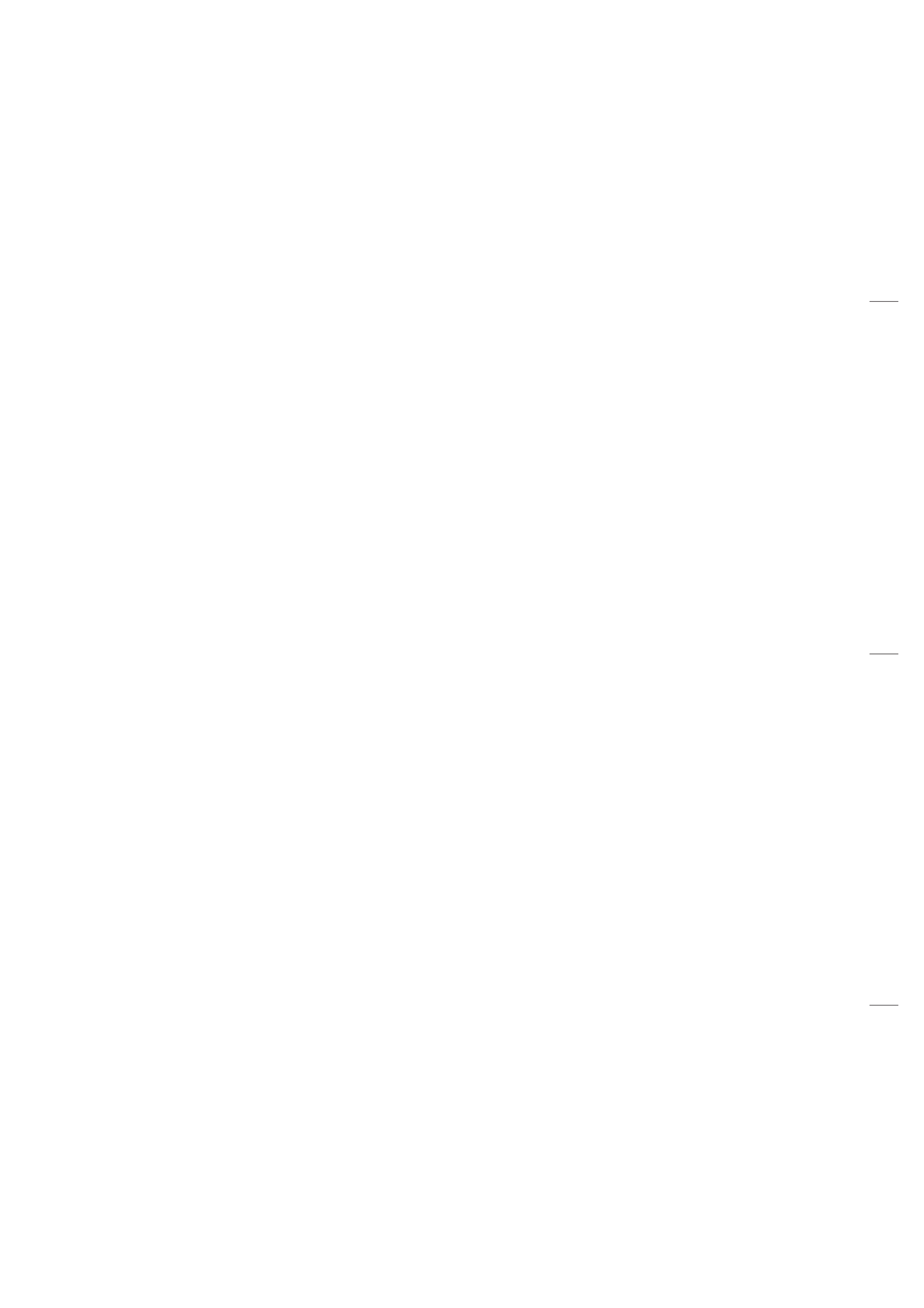
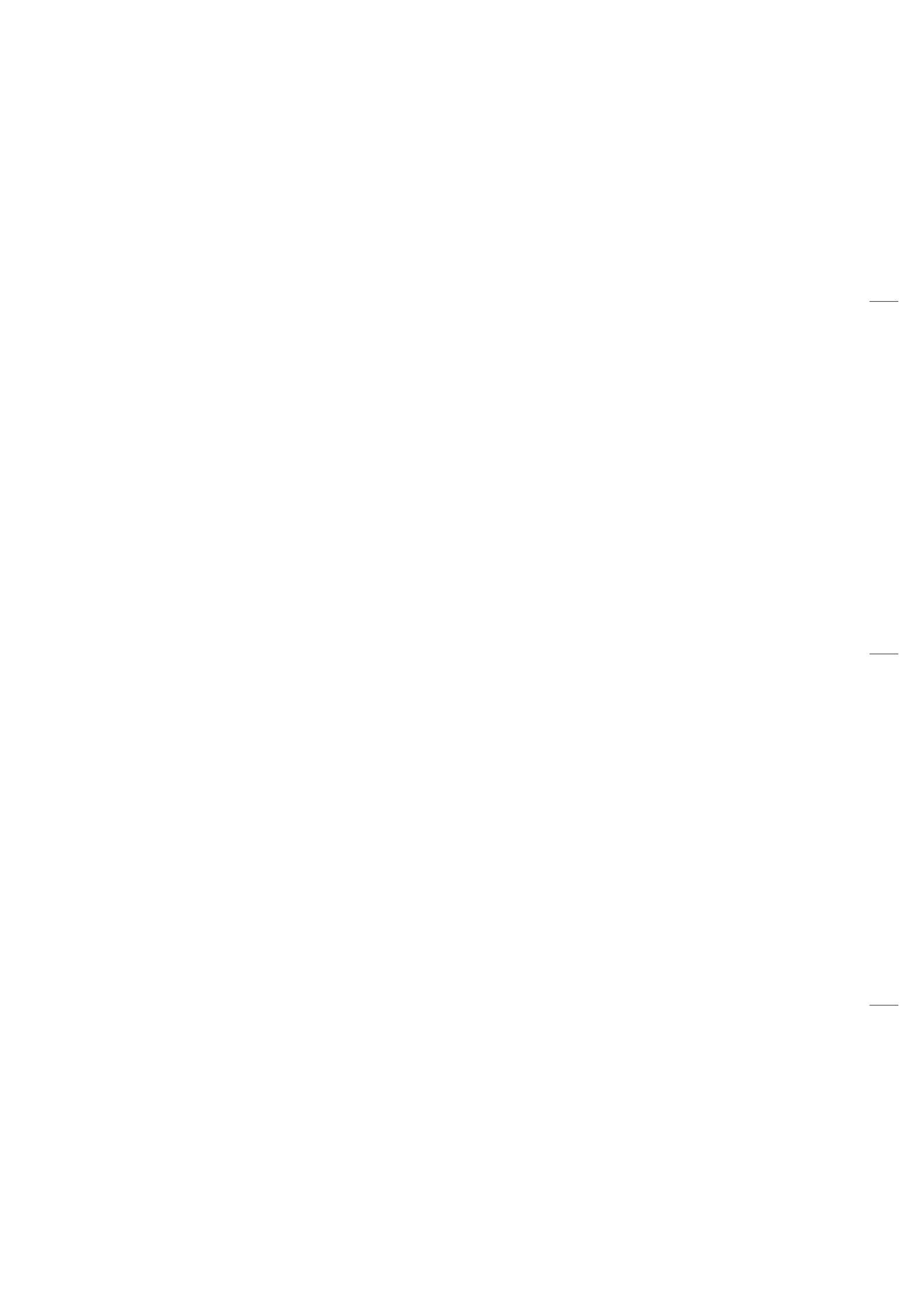


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FUEL - GENERAL

1. Introduction

- A. This chapter covers those units and components which are not part of the engine but store or deliver fuel to the engine or indicate fuel quantity and pressure. For additional information on the internal engine fuel system components, refer to the respective engine manufacturer's publications.

2. General Description

- A. The fuel system consists of two main fuel tanks which are integral parts of the wings, a fuel selector / shut-off valve on the center console, an auxiliary fuel pump with an integrated fuel filter, an engine driven fuel pump and two single-barrel float type carburetors in the engine compartment as well as flexible hoses and aluminum-fuel-lines.

Fuel Quantity Data:

Total fuel:	120 liters (31.7 gallons)
Usable fuel:	109,6 liters (28.9 gallons)
Unusable fuel:	10,4 liters (2.8 gallons)

B. Fuel Supply

- (1) Fuel is delivered to the carburetors by the engine driven fuel pump from the fuel tank that is pre-selected by the fuel selector / shut-off valve. An electrical fuel pump is provided in case of failure of the engine driven fuel pump. Excessive fuel flows through return lines and the fuel selector valve back to the same tank.
- (2) A fuel selector / shut-off valve is provided to select the desired fuel tank and to interrupt fuel supply in case of an emergency. The selector handle is mounted in view of the pilot and is easily accessible in the center console between the seats. The red, arrow shaped handle has a LEFT, RIGHT, and OFF position. Each position has a positive detent.

C. Fuel Indication

Fuel quantity is measured by resistive type fuel level sensors and indicated either by an analog instrument or the engine monitoring system (optional). Fuel pressure is measured at the engine and indicated either by a warning light or the engine monitoring system (optional).

D. Fuel System Ventilation

The fuel tanks are vented from the top of each fuel tank through a vent line, connected at the outboard fuel tank rib, to a vent located on the winglets.

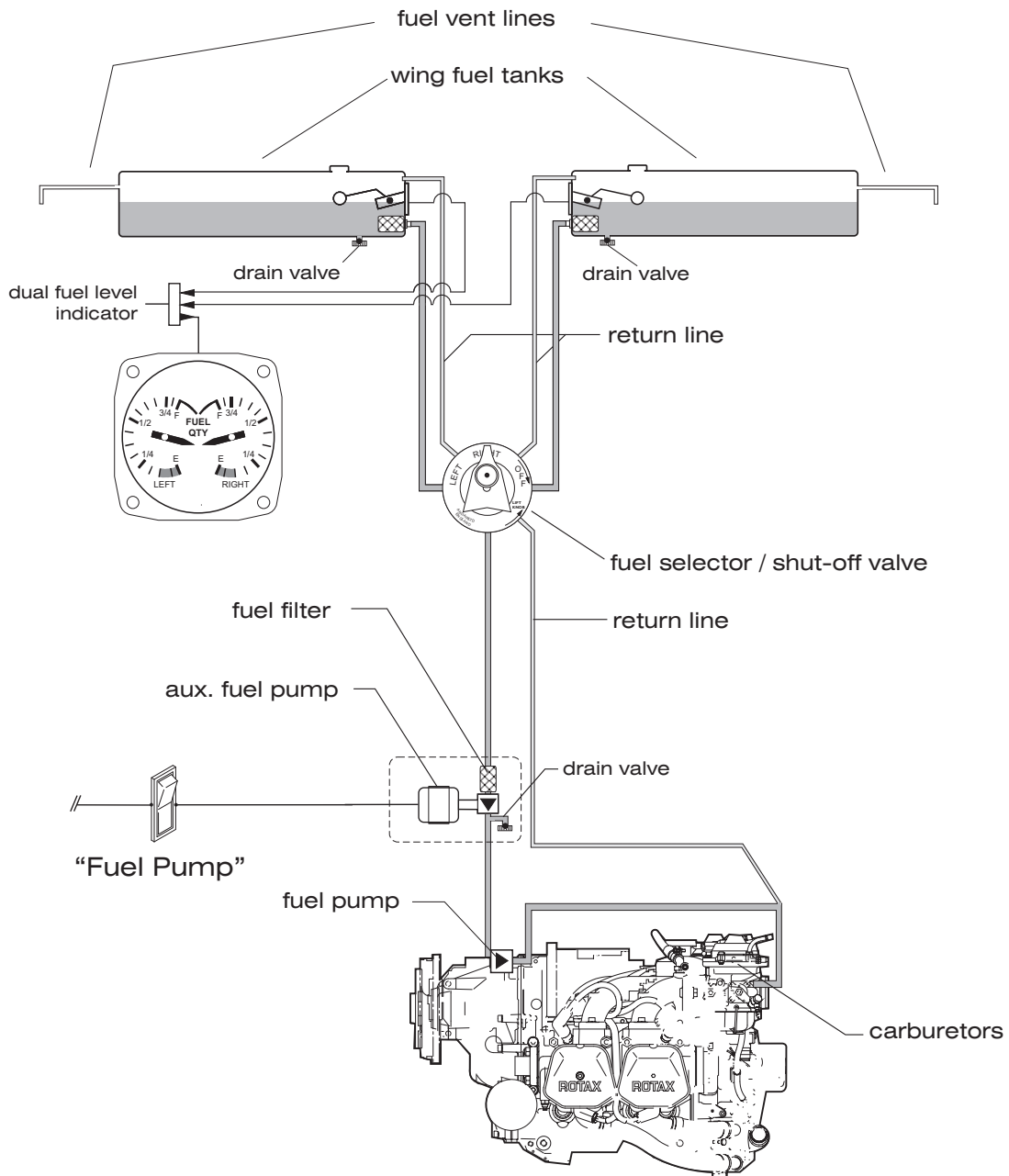
E. Fuel Drain System

Each tank has a manually operated drain at the bottom, inboard rear corner. A further drain valve is installed at the fuel system's lowest point, namely at the base of electrical fuel pump.

F. Fuel Lines

Fuel lines are made of aluminum tubing behind the firewall and stainless steel in the engine compartment. Flexible hoses are made of Teflon with steel fittings and silicone-coated fire sleeves

FUEL SYSTEM SCHEMATIC



Fuel System (Schematic)
Figure 1

FUEL STORAGE - MAINTENANCE

WARNING: PERFORM ALL FUEL SYSTEM MAINTENANCE IN ACCORDANCE WITH SAFETY PRECAUTIONS CONTAINED IN 12-11-00!

1. General

- A. The fuel storage system consists of two integral fuel tanks, located at the inboard portion of each wing in front of the main spar. They are bounded by the upper and lower wing skins which are reinforced in this area, the main spar web, and the inboard and outboard fuel tank ribs. Each fuel tank has a lockable fuel filler cap which is grounded to the airframe. The inner surfaces of the composite integral tanks are sealed with a special fuel tank sealing material to protect the composite fiber structure. A fuel baffle rib is provided to reduce fuel slosh in the fuel outlet and the fuel quantity sensor areas. The fuel tanks are vented from the top of each fuel tank through a vent line connected at the outboard fuel tank rib to a vent located on the winglets. Each inboard fuel tank rib has an outlet over the sump level that is equipped with a removable mesh strainer.

The inboard fuel tank ribs are easily accessible for maintenance work through access panel 610 BB / 510 BB in the lower wing skin.

- B. The wing fuel tanks are maintenance-free. However, if a leak is suspected, AQUILA Aviation GmbH should be consulted.

2. Wing Fuel Tank Leakage Test

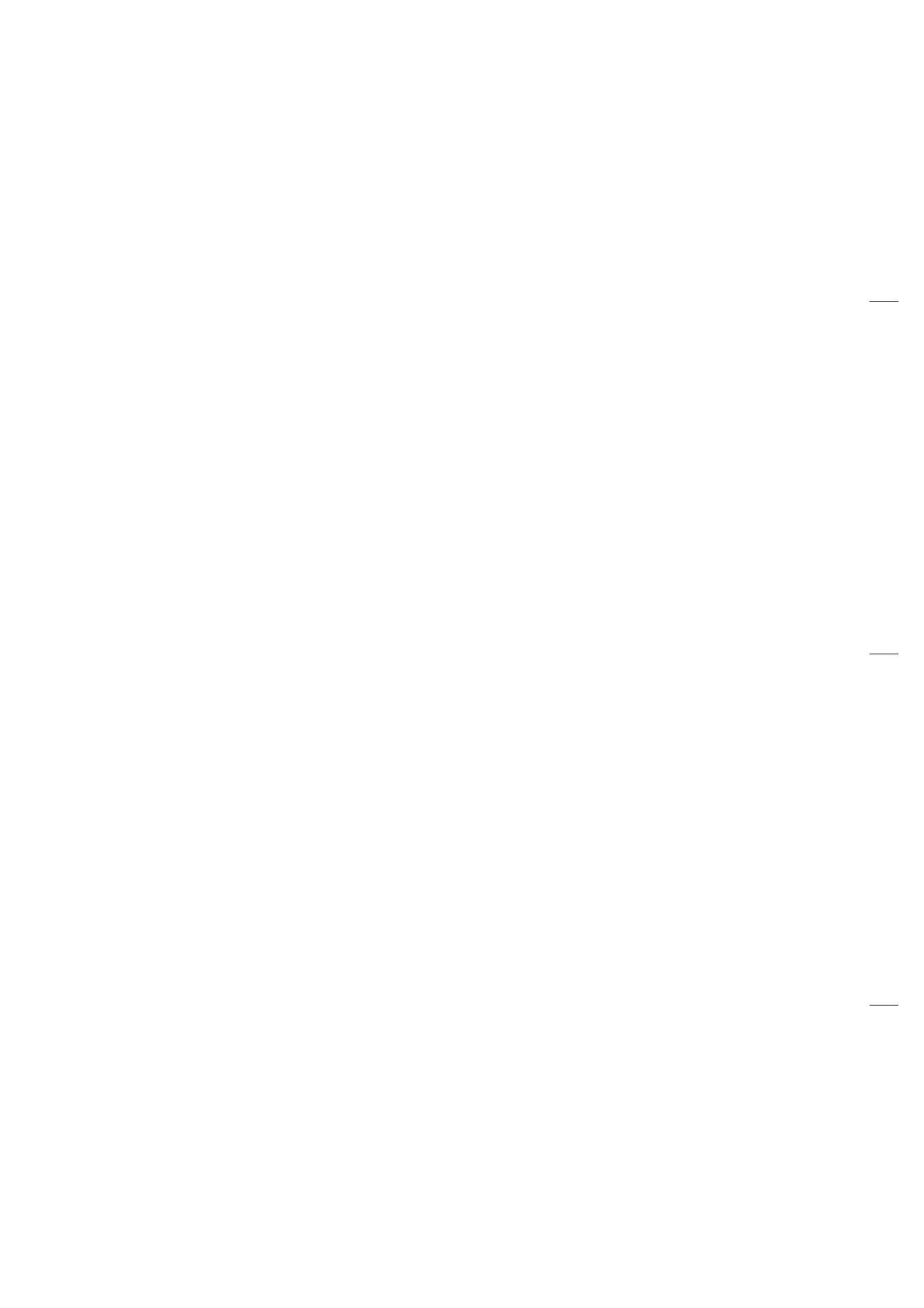
- A. The following procedure should be used to check a wing fuel tank for leakage.

- (1) Ensure electrical power to aircraft is OFF.
- (2) Disconnect battery (refer to 24-30-00).
- (3) Drain fuel from wing fuel tank.
- (4) Open access plate 610 BB (510 BB).
- (5) Disconnect fuel outlet line from fuel tank.
- (6) Disconnect fuel return line from fuel tank.
- (7) Cap fuel tank vent line.
- (8) Attach a suitable manometer (water manometer) to fuel tank outlet fitting.

WARNING: NEVER APPLY REGULATED OR UNREGULATED AIR FROM AN AIR COMPRESSOR TO THE FUEL SYSTEM OR COMPONENTS.

CAUTION: DO NOT PRESSURIZE THE FUEL TANKS TO MORE THAN 1.0 PSI. STRUCTURAL DAMAGE MAY OCCUR TO THE FUEL TANK IF MORE THAN 1.0 PSI IS APPLIED.

- (9) Connect a well-regulated supply of air (1.0 psi maximum) to the return line fitting.
- (10) Make sure filler cap is installed and sealed.
- (11) Apply pressure slowly until 1.0 psi is obtained.
- (12) Shut off air supply.
- (13) If fuel tank holds pressure for 15 minutes, the tank with vent line is sealed.



FUEL DISTRIBUTION - MAINTENANCE

WARNING: PERFORM ALL FUEL SYSTEM MAINTENANCE IN ACCORDANCE WITH SAFETY PRECAUTIONS CONTAINED IN 12-11-00!

1. General

- A. The fuel distribution system consists primarily of the fuel selector / shut-off valve, an electrical fuel pump, fuel lines and the fuel pump switch.

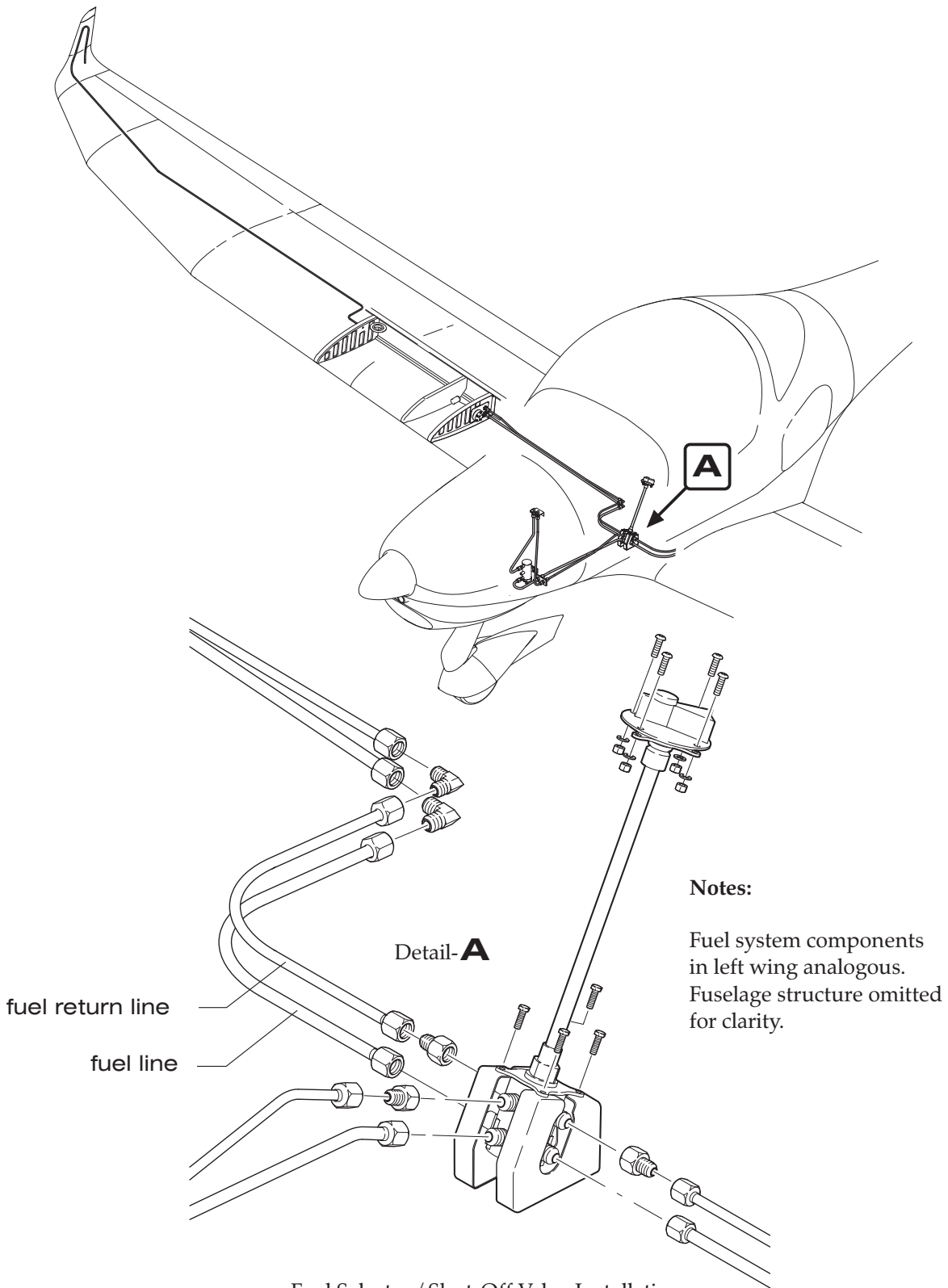
The fuel selector handle is located in the center console between the seats. The red, arrow shaped handle has a LEFT, RIGHT and OFF position. To switch the valve to the OFF position a knob located at the top of the handle must be pulled while the handle is rotated simultaneously. With the valve in this position fuel flow from and to the tanks is stopped. In both operating positions the fuel supply / return lines of the selected fuel tank are open while the fuel supply/ return lines of the other one are closed.

The electrical fuel pump is incorporated into the system without a bypass. In this way fuel flows through a fuel strainer which is integral of the fuel pump even if the pump is off. The electrical fuel pump is mounted in the engine compartment at the lower left firewall.

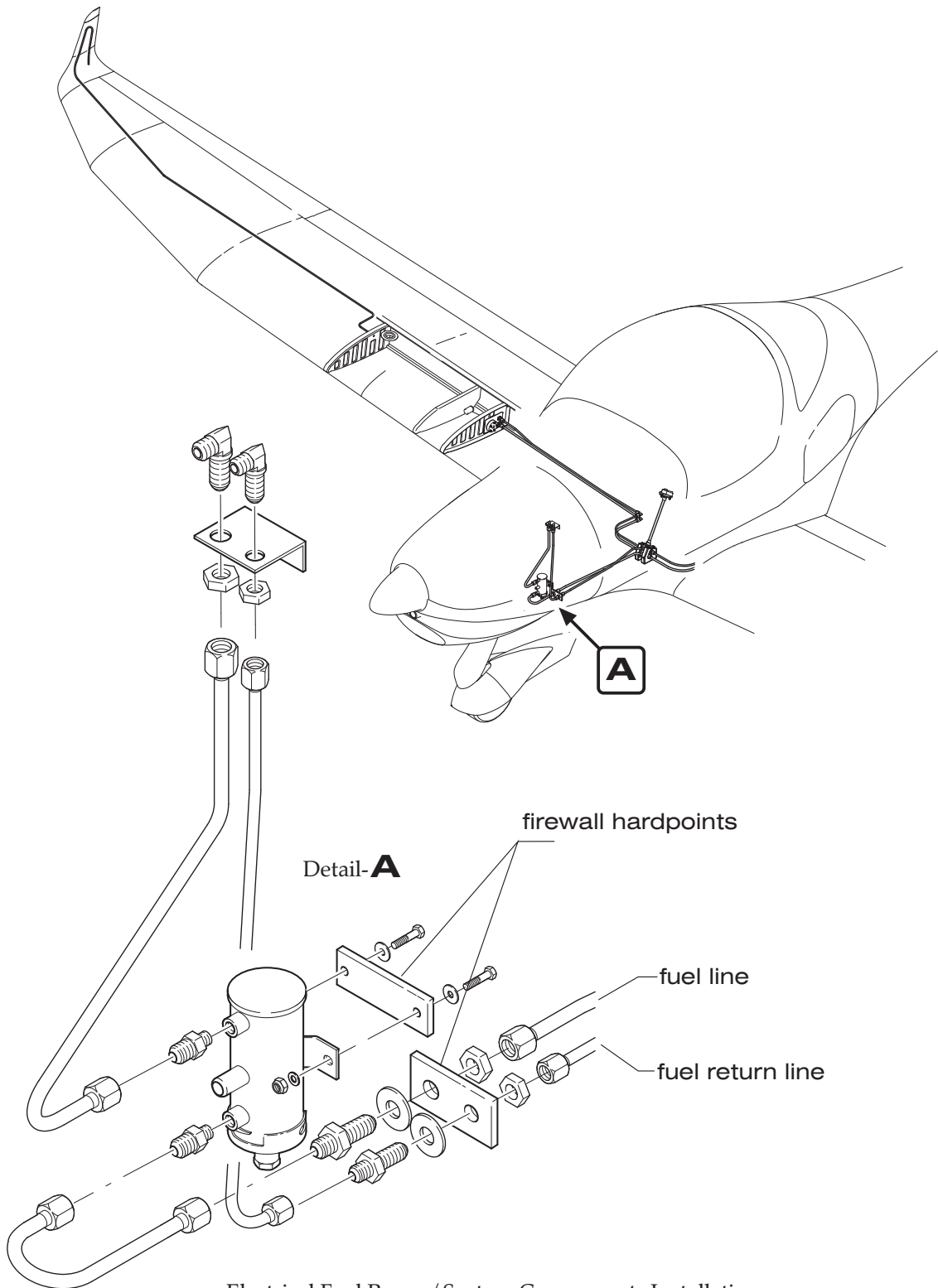
- B. A clean fuel distribution system is very important for the secure and continuous supply of fuel to the engine. The fuel system is equipped with drain valves with which fuel in the system can be examined for contamination and grade.
- (1) The electrical fuel pump has a filter screen which must be cleaned regularly. The filter screen can be removed for maintenance.
 - (2) A mesh strainer is installed on the fuel outlet in each fuel tank. The strainer is accessible by opening the fuel tank rib access panel 610 BB / 510 BB. The strainer is brazed to a fitting that is installed in the fuel tank port. The fuel strainers in the fuel tanks should always be cleaned after aircraft has been in storage. If any damage or restrictions are noted, the strainer should be replaced.
 - (3) The fuel system has a drain valve at it's lowest point, namely at the base of the electrical fuel pump. The drain valve is accessible from outside the nose section without removing any component. It should be used regularly to check fuel for water and contamination.
 - (4) Each wing fuel tank has a drain-valve at it's base. The drain valves are accessible from outside at the bottom of the wings in the wing root area. They should be used regularly to check fuel for water and contamination.

2. Fuel Selector / Shut-Off Valve Removal/Installation

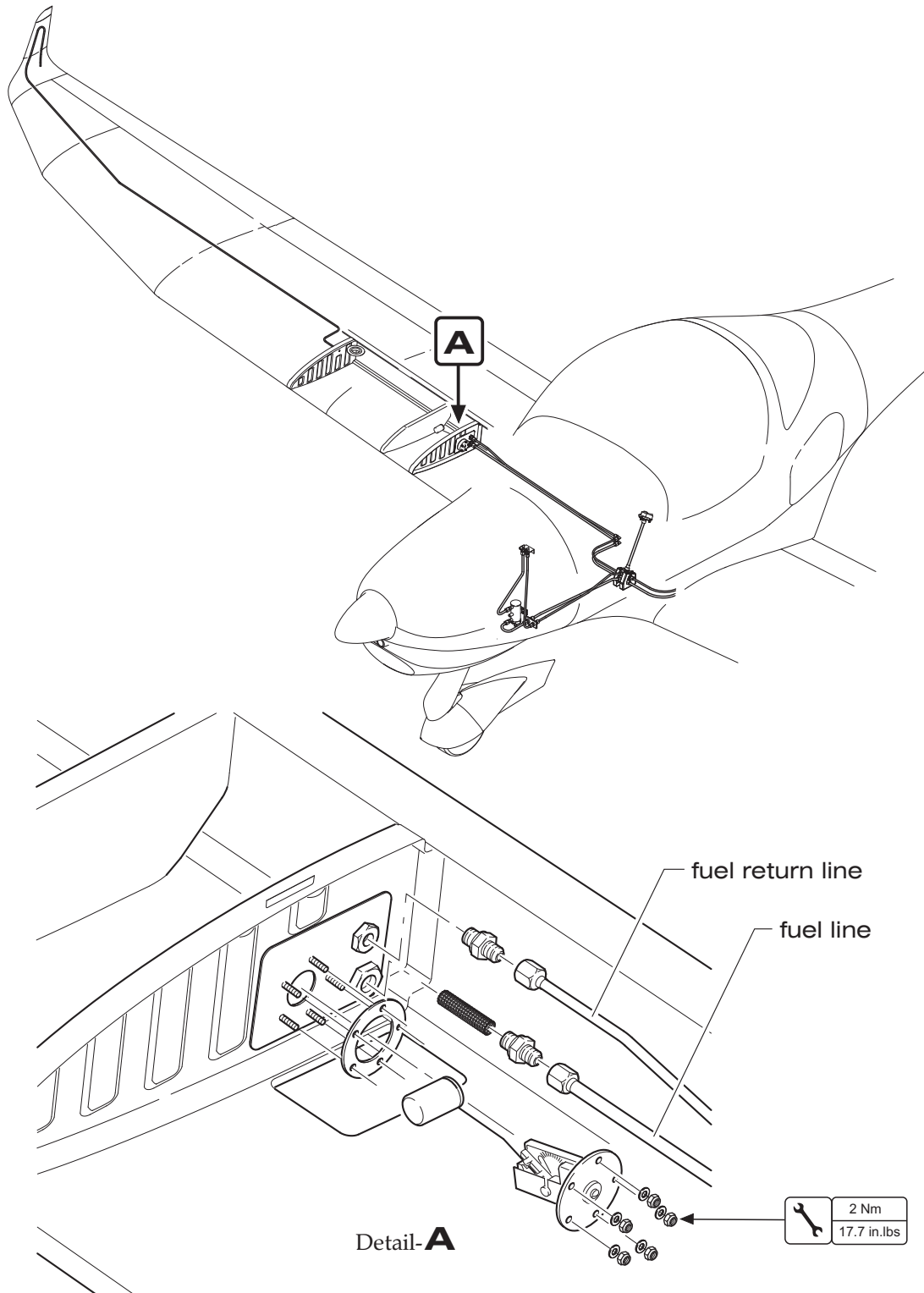
- A. Remove Fuel Selector / Shut-Off Valve
- (1) Ensure electrical power to aircraft is OFF.
 - (2) Disconnect battery (refer to 24-30-00).
 - (3) Drain fuel from fuel system completely using the wing fuel tank drains and the drain at the electrical fuel pump.
 - (4) Remove access panels 211 BB and 211 HL/HR in the cabin (refer to 25-12-00).
 - (5) Remove access panel 211 GT with fuel selector / shut-off valve control lever and connecting shaft (refer to 25-12-00).



Fuel Selector / Shut-Off Valve Installation
Figure 201



Electrical Fuel Pump / System Components Installation
Figure 202



Fuel System Components Installation
Figure 203

- (6) Disconnect the fuel supply and return lines at valve.
- (7) Remove bolts securing valve to mounting bracket and remove the fuel selector / shut-off valve assembly from aircraft.

B. Install Fuel Selector / Shut-Off Valve

- (1) Verify battery is disconnected and electrical power to aircraft is OFF.
- (2) Place fuel selector / shut-off valve in position and secure using washers and bolts.
- (3) Connect all fuel supply and return lines at valve.
- (4) Connect the fuel selector / shut-off valve control lever. Make sure that both the valve and the valve control lever are set to OFF and install access panel 211 GT with fuel selector / shut-off valve control lever and connecting shaft (refer to 25-12-00).
- (5) Refuel the aircraft.
- (6) Pressure check complete fuel system (refer to "Fuel System Pressure Test" below).
- (7) Inspect fuel selector / shut-off valve and enclosure for any signs of fuel leakage.
- (8) Reconnect battery (refer to 24-30-00).
- (9) Perform operational check of the fuel distribution system.
- (10) Install all items removed for access.

3. Electrical Fuel Pump Removal/Installation

A. Remove Electrical Fuel Pump

- (1) Ensure electrical power to aircraft is OFF.
- (2) Remove engine cowling (refer to 71-10-00).
- (3) Disconnect battery (refer to 24-30-00).
- (4) Close fuel selector / shut-off valve.
- (5) Disconnect the pump wires.
- (6) Disconnect fuel lines at electrical fuel pump. Drain fuel from line.
- (7) Remove bolts, washers and nuts securing electrical fuel pump to firewall and remove electrical fuel pump.

B. Install Electrical Fuel Pump

- (1) Verify battery is disconnected and electrical power to aircraft is OFF.
- (2) Secure electrical fuel pump to firewall using bolts, washers and nuts.
- (3) Reconnect fuel lines to electrical fuel pump.
- (4) Reconnect the pump electrical wires.
- (5) Reconnect battery (refer to 24-30-00).

4. Electrical Fuel Pump Filter Element Maintenance

A. Maintenance is accomplished by the following procedure:

- (1) Remove locking wire at lower fuel pump cap.
- (2) Remove lower cap.
- (3) Remove filter element and clean by washing.
- (4) Check disk magnet for metal particles.
- (5) Reassemble filter and cap.
- (6) Secure cap using locking wire.

5. Fuel System Pressure Test

A. Leak-test the fuel system by the following procedure:

- (1) Fill the wing fuel tank with approved fuel.
- (2) Remove engine cowling, crew seats and all other panels and covers to gain access to all fuel system components and fuel lines (refer to 25-10-00, 25-12-00 and 71-10-00).
- (3) Place the fuel selector / shut-off valve in LEFT (RIGHT) position.
- (4) Disconnect the pressure fuel line and return line in the engine compartment where the flexible fuel lines are connected to the aluminum lines and cap fittings.
- (5) Connect a rubber hose with a well-regulated supply of air (1.0 psi maximum) to the outboard end of either fuel tank vent line.
- (6) Connect a suitable manometer (water manometer) to the other fuel vent line.
- (7) Make sure filler caps are installed and sealed.

WARNING: NEVER APPLY REGULATED OR UNREGULATED AIR FROM AN AIR COMPRESSOR TO THE FUEL SYSTEM OR COMPONENTS.

NEVER ATTEMPT TO REMOVE THE FUEL FILLER CAP WITH PRESSURE IN THE FUEL SYSTEM.

CAUTION: DO NOT PRESSURIZE THE FUEL SYSTEM TO MORE THAN 1.0 PSI. DAMAGE MAY OCCUR TO SYSTEM COMPONENTS IF MORE THAN 1.0 PSI IS APPLIED.

- (8) Apply pressure to the system slowly until 1.0 psi is reached.
- (9) Shut off air supply
- (10) System pressure should remain constant for 15 minutes.
- (11) Inspect the seams, fittings and connections of the accessible portion of the wing fuel tank. Check the fuel lines, the fuel selector / shut-off valve and all other fuel related areas for signs of leakage.
- (12) If leakage is suspected (pressure readings drop) apply soapy water to the area in question and inspect for bubbles.
- (13) Release all pressure from the fuel system.
- (14) Remove the rubber hose with the supply of air and the manometer from the end of fuel vent lines.
- (15) Reconnect the pressure fuel line to the electrical fuel pump.
- (16) Remove plugs of fuel filler caps vent holes.
- (17) Install all items that have been removed prior to performing the test (refer to 25-10-00, 25-12-00 and 71-10-00).
- (18) If any leakage is detected, seal as required.

FUEL QUANTITY INDICATION - MAINTENANCE

WARNING: PERFORM ALL FUEL SYSTEM MAINTENANCE IN ACCORDANCE WITH SAFETY PRECAUTIONS CONTAINED IN 12-11-00!

1. General

- A. The fuel quantity indicating system consists of two resistive type fuel quantity sensors, one in each tank, a dual fuel quantity indicator and wiring connecting the components. The fuel quantity indicator is located on the right side of the instrument panel and has been calibrated during installation. The fuel quantity sensors are easily accessible for maintenance or replacement through access panels in the lower wing skin.
- B. Maintenance is limited to the removal and installation of the system components.

2. Fuel Quantity Indicator Removal/Installation

- A. Remove Fuel Quantity Indicator
- (1) Ensure electrical power to aircraft is OFF.
 - (2) Disconnect battery (refer to 24-30-00).
 - (3) Remove glare shield (refer to 31-10-00).
 - (4) Remove cable connector from back of indicator.
 - (5) While supporting indicator, remove screws attaching indicator to instrument panel.
 - (6) Remove indicator from aircraft.
- B. Install Fuel Quantity Indicator.
- (1) Position indicator to instrument panel hole and secure with screws.
 - (2) Install cable connector at back of indicator.
 - (3) Reconnect battery (refer to 24-30-00).
 - (4) Perform a fuel quantity indicating system test / calibration (refer to "Test/Calibration" below).
 - (5) Install glare shield (refer to 31-10-00).

3. Fuel Quantity Sensor Removal/Installation

- A. Remove Fuel Quantity Sensor
- (1) Ensure electrical power to aircraft is OFF.
 - (2) Disconnect battery (refer to 24-30-00).
 - (3) Drain wing fuel tank with sensor that is to be removed (refer to 12-11-00).
 - (4) Open access / inspection plate 510 BB / 610 BB to gain access to sensor (refer to 06-30-00).
 - (5) Remove nuts securing sensor to inboard fuel tank rib.
 - (6) Disconnect electrical cables from sensor.
 - (7) Carefully withdraw sensor from wing tank.

EFFECTIVITY

Aircraft equipped with analog fuel quantity gauge

B. Install Fuel Quantity Sensor

- (1) Verify battery is disconnected and electrical power to aircraft is OFF.
- (2) Check ease of movement of the float arm before installing the sensor.
- (3) Place sensor with new gasket on to the threaded studs at inboard fuel tank rib.

CAUTION: THE FUEL QUANTITY SENSOR SHOULD BE FED CAREFULLY INTO THE FUEL TANK. A BENT FLOAT ARM MAY CAUSE ERRONEOUS READINGS.

- (4) Connect electrical cables to sensor.
- (5) Secure sensor with washers and nuts. Torque nuts crosswise to 2 Nm (17.7 in.lbs).
- (6) Reconnect battery (refer to 24-30-00).
- (7) Perform a fuel quantity indicating system calibration (refer to "Test/Calibration" below).

4. Fuel Quantity Indicating System Test/Calibration

NOTE: When a fuel quantity sensor is replaced, the fuel quantity indicating system must be calibrated. When a fuel quantity indicator is replaced, the system must be at least functionally tested and recalibrated as necessary.

NOTE: Due to the dihedral angle of the wing and the position of the fuel quantity sensor (total) fuel levels above approx. 50 liters (13.21 gallons) are not gaugeable.

A. Fuel Quantity Indicating System Test

- (1) Prepare aircraft
 - (a) Drain fuel from wing tanks (refer to 12-11-00).
 - (b) Verify fuel selector / shut-off valve is in OFF position.
 - (c) Level the aircraft laterally and longitudinally (refer to 08-10-00).
- (2) Ensure ALT1 / BAT switch is in the OFF position.
- (3) Fill 5,2 liters (1.37 gallons) of fuel into each wing fuel tank.
- (4) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (5) Turn BAT switch to the ON position.
- (6) Wait until pointer settles in it's final position. Check that fuel quantity indicator reads empty for both tanks (<"E" up to S/N AT01-100A/B-326).
- (7) Turn BAT switch to the OFF position.
- (8) Add 27,4 liters (7.23 gallons) of fuel to each wing fuel tank.
- (9) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (10) Turn BAT switch to the ON position.
- (11) Wait until pointer settles in it's final position. Check that fuel quantity indicator reads "1/2" ±1 scale line for both tanks.
- (12) Turn BAT switch to the OFF position.
- (13) Add 27,4 liters (7.23 gallons) of fuel to LH wing fuel tank.
- (14) Turn BAT switch to the ON position.
- (15) Wait until pointer settles in it's final position.
Check that LH fuel quantity indicator reads full (>"3/4" from S/N AT01-100A/B-327).
- (16) Turn BAT switch to the OFF position.
- (17) Repeat steps (13) thru (16) for RH wing fuel tank.

EFFECTIVITY

Aircraft equipped with analog fuel quantity gauge

B. Fuel Quantity Indicating System Calibration

NOTE: A calibration module is necessary to perform the steps described below. The calibration module is installed at the back of the fuel quantity indicator. For further information on fuel tank calibration or if no calibration module is installed refer to SI-AT01-018, latest revision.

- (1) Prepare aircraft
 - (a) Drain fuel from wing tanks (refer to 12-11-00).
 - (b) Verify fuel selector / shut-off valve is in OFF position.
 - (c) Level the aircraft laterally and longitudinally (refer to 08-10-00).
 - (d) Remove glare shield (refer to 31-10-00).
- (2) Ensure ALT1 / BAT switch is in the OFF position.

Up to S/N AT01-100A/B-326:

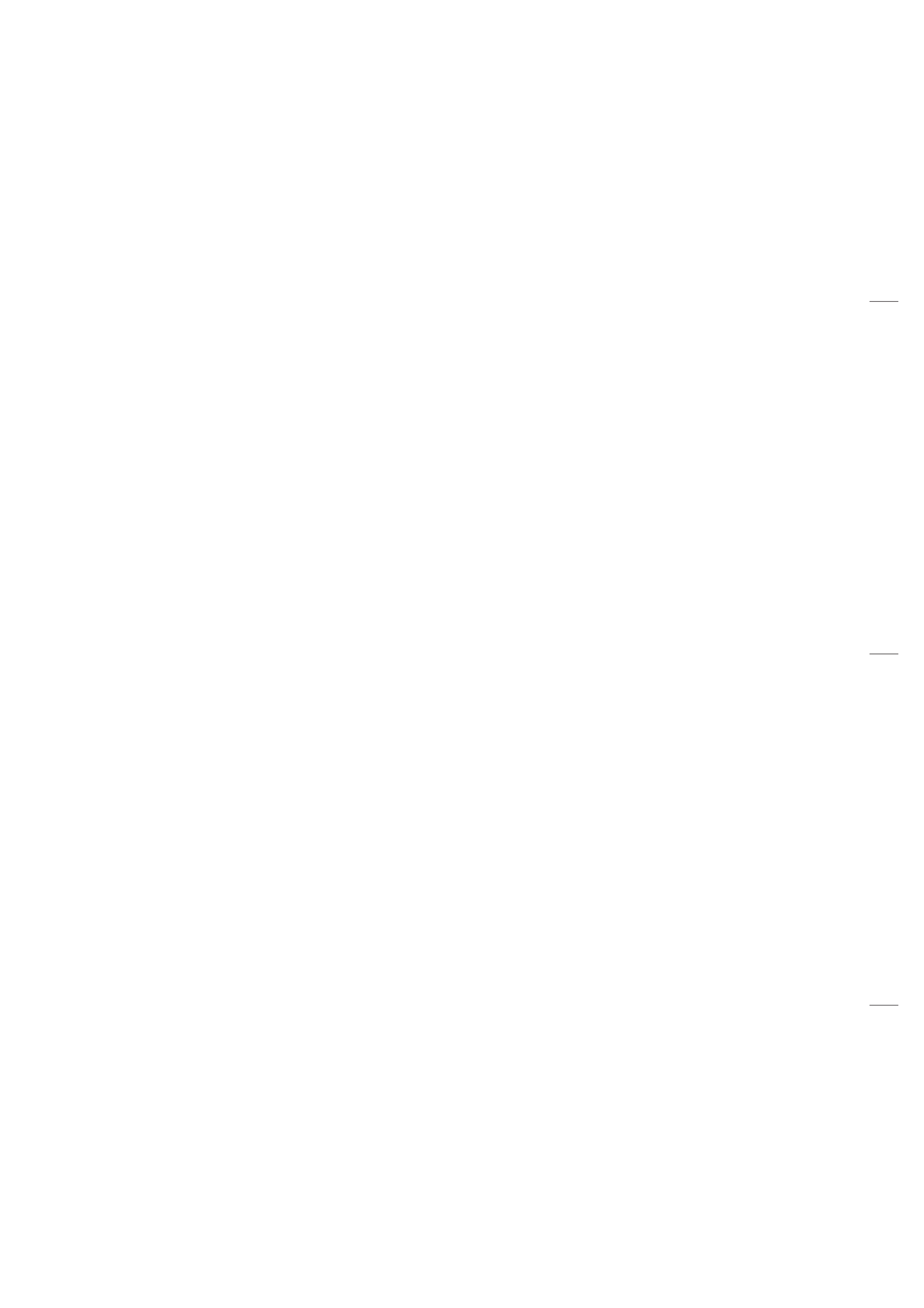
- (3) Fill 18,9 liters (4.99 gallons) of fuel into each wing fuel tank.
- (4) Gently shake wing to assure fuel quantity sensors settle in their final position.
- (5) Turn BAT switch to the ON position.
- (6) Use the two potentiometers of the calibration module at the back of the fuel quantity gauge to set the pointers of the gauge to "1/4". Pay attention to the delayed indication of the gauge.
- (7) Turn BAT switch to the OFF position and drain fuel from wing tanks (refer to 12-11-00).
- (8) Perform fuel quantity indicating system test as described above.
- (9) Reinstall glare shield (refer to 31-10-00).

From S/N AT01-100A/B-327:

- (3) Fill 5,2 liters (1.37 gallons) of fuel into each wing fuel tank.
- (4) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (5) Turn BAT switch to the ON position.
- (6) Use the two potentiometers of the calibration module at the back of the fuel quantity gauge to set the pointers of the gauge to "E". Pay attention to the delayed indication of the gauge.
- (7) Turn BAT switch to the OFF position and drain fuel from wing tanks (refer to 12-11-00).
- (8) Perform fuel quantity indicating system test as described above.
- (9) Reinstall glare shield (refer to 31-10-00).

EFFECTIVITY

Aircraft equipped with analog fuel quantity gauge



FUEL QUANTITY INDICATION - MAINTENANCE

WARNING: PERFORM ALL FUEL SYSTEM MAINTENANCE IN ACCORDANCE WITH SAFETY PRECAUTIONS CONTAINED IN 12-11-00!

1. General

- A. Fuel quantity indication is included in the engine monitoring system. Fuel quantity is measured by two resistive type fuel quantity sensors, one in each tank, electrically connected to the engine data converter (EDC) via an interface module (RFLM-4) at the back of the instrument panel. The fuel quantity sensors are easily accessible for maintenance or replacement through access panels in the lower wing skin.
- B. Maintenance is limited to the removal and installation of the system components. Refer to 77-40-00 for further information on maintenance of the engine monitoring system.

2. Fuel Quantity Sensor Removal/Installation

- A. Remove Fuel Quantity Sensor
- (1) Ensure electrical power to aircraft is OFF.
 - (2) Disconnect battery (refer to 24-30-00).
 - (3) Drain wing fuel tank with sensor that is to be removed (refer to 12-11-00).
 - (4) Open access / inspection plate 510 BB / 610 BB to gain access to sensor (refer to 06-30-00).
 - (5) Remove nuts securing sensor to inboard fuel tank rib.
 - (6) Disconnect electrical cables from sensor.
 - (7) Carefully withdraw sensor from wing tank.
- B. Install Fuel Quantity Sensor
- (1) Verify battery is disconnected and electrical power to aircraft is OFF.
 - (2) Check ease of movement of the float arm before installing the sensor.
 - (3) Place sensor with new gasket on to the threaded studs at inboard fuel tank rib.

CAUTION: THE FUEL QUANTITY SENSOR SHOULD BE FED CAREFULLY INTO THE FUEL TANK. A BENT FLOAT ARM MAY CAUSE ERRONEOUS READINGS.

- (4) Connect electrical cables to sensor.
- (5) Secure sensor with washers and nuts. Torque nuts crosswise to 2 Nm (17.7 in.lbs).
- (6) Reconnect battery (refer to 24-30-00).
- (7) Perform a fuel quantity indicating system calibration (refer to "Test/Calibration" below).

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3. Resistive Fuel Module Removal/Installation

A. Remove Resistive Fuel Module

- (1) Ensure electrical power to aircraft is OFF.
- (2) Disconnect battery (refer to 24-30-00).
- (3) Remove glare shield (refer to 31-10-00).
- (4) Disconnect electrical connectors from back of module.
- (5) While supporting the module, remove screws securing module to instrument panel.
- (6) Remove module from aircraft.

B. Install Resistive Fuel Module

- (1) Position module at back of instrument panel and attach with screws.
- (2) Connect electrical connectors to module.
- (3) Install glare shield (refer to 31-10-00).
- (4) Reconnect battery (refer to 24-30-00).
- (5) Perform a fuel quantity indicating system test (refer to "Test/Calibration" below).

4. Fuel Quantity Indicating System Test/Calibration

NOTE: When a fuel quantity sensor is replaced, the fuel quantity indicating system must be calibrated. When a resistive fuel module is replaced, the system must be functionally tested.

NOTE: Due to the dihedral angle of the wing and the position of the fuel quantity sensor (total) fuel levels above approx. 50 liters (13.21 gallons) are not gaugeable.

A. Fuel Quantity Indicating System Test

- (1) Prepare aircraft
 - (a) Drain fuel from wing tanks (refer to 12-11-00).
 - (b) Verify fuel selector / shut-off valve is in OFF position.
 - (c) Level the aircraft laterally and longitudinally (refer to 08-10-00).
- (2) Ensure ALT1 / BAT switch is in the OFF position.
- (3) Fill 5,2 liters (1.37 gallons) of fuel into each wing fuel tank.
- (4) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (5) Turn BAT switch to the ON position.
- (6) Check that engine monitoring system reads 0 liters (0 gallons) for both tanks.
- (7) Turn BAT switch to the OFF position.
- (8) Add 27,4 liters (7.23 gallons) of fuel to each wing fuel tank.
- (9) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (10) Turn BAT switch to the ON position.
- (11) Check that engine monitoring system reads 27 ± 3 liters (7.2 ± 0.8 gallons) for both tanks.
- (12) Turn BAT switch to the OFF position.
- (13) Add 27,4 liters (7.23 gallons) of fuel to LH wing fuel tank.
- (14) Turn BAT switch to the ON position.
- (15) Check that engine monitoring system reads > 52 liters (13.7 gallons) for LH fuel tank.
- (16) Turn BAT switch to the OFF position.
- (17) Repeat steps (13) thru (16) for RH wing fuel tank.

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B. Fuel Quantity Indicating System Calibration

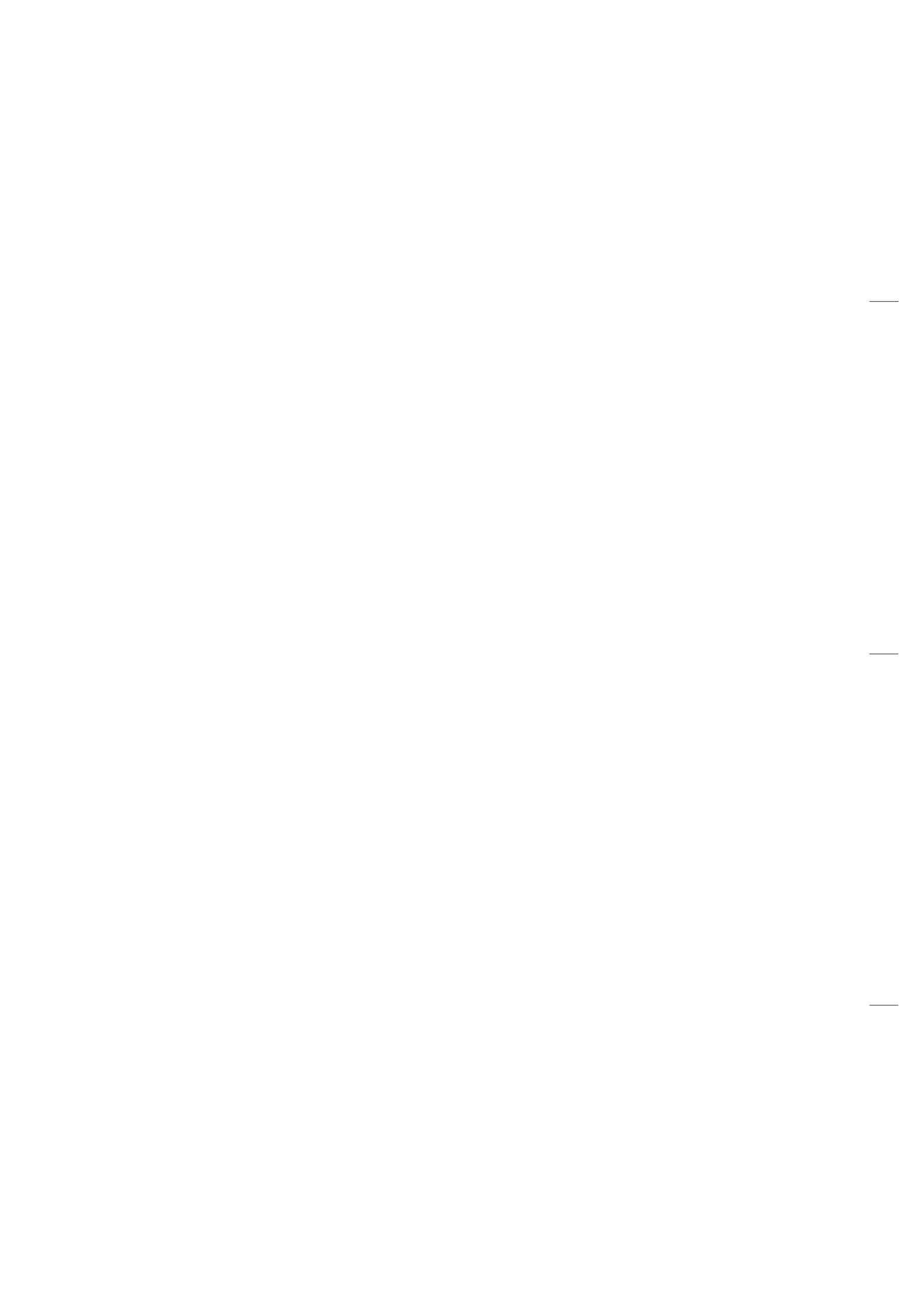
NOTE: Refer to Electronics International MVP-50 operating instructions for further information on the fuel tank calibration procedure. The necessary password can be obtained from Aquila Aviation GmbH on request.

- (1) Prepare aircraft
 - (a) Drain fuel from wing tanks (refer to 12-11-00).
 - (b) Verify fuel selector / shut-off valve is in OFF position.
 - (c) Level the aircraft laterally and longitudinally (refer to 08-10-00).
- (2) Ensure ALT1 / BAT switch is in the OFF position.
- (3) Fill 5,2 liters (1.37 gallons) of fuel into each wing fuel tank.
- (4) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (5) Turn BAT switch to the ON position.
- (6) Call up the MVP-50 "Fuel Tank Calibration Screen" (level 1 password required).
- (7) Select "Fuel Tank" - "FUEL L", "Calibration Point" - "Empty" and "Use Current Count" - "Yes" to transfer the current sensor count to the sensor count field of this calibration point.
- (8) Select "Fuel Tank" - "FUEL R" and repeat step (7) for the RH wing fuel tank.
- (9) Add 13,7 liters (3.62 gallons) of fuel to each wing fuel tank.
- (10) Wait approx. 30 seconds. Then gently shake wing to assure fuel quantity sensors settle in their final position.
- (11) Select "Fuel Tank" - "FUEL L" and "Calibration Point" - "2".
Set "Qty" to "3.6 GAL" and select "Use Current Count" - "Yes" for this calibration point.
(The tanks must be calibrated in U.S. gallons.)
- (12) Select "Fuel Tank" - "FUEL R" and repeat step (11) for the RH wing fuel tank.
- (13) Repeat steps (9) thru (12) for the remaining 3 calibration points:

Calibration Point	Qty. [gallons]	Total Fuel [liters (gallons)]	Usable Fuel [liters (gallons)]
Empty	0.0	5,2 (1.37)	0,0 (0.00)
2	3.6	18,9 (4.99)	13,7 (3.62)
3	7.2	32,6 (8.61)	27,4 (7.24)
4	10.9	46,3 (12.23)	41,1 (10.86)
Full	14.5	60,0 (15.85)	54,8 (14.48)

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Aircraft equipped with MVP-50



FUEL PRESSURE INDICATION - MAINTENANCE

WARNING: PERFORM ALL FUEL SYSTEM MAINTENANCE IN ACCORDANCE WITH SAFETY PRECAUTIONS CONTAINED IN 12-11-00!

1. General

- A. Fuel pressure indication is included in the engine monitoring system. Fuel pressure is measured by a pressure transducer electrically connected to the engine data converter (EDC). Fuel pressure is measured at the fuel manifold on top of the engine. To avoid damages caused by vibrations the pressure transducer is not mounted directly on the engine. It is installed on the upper left side of the engine mount and connected via a flexible fuel hose. The fuel hose is connected to the fuel system via a restricting orifice.
- B. Maintenance is limited to the removal and installation of the fuel pressure transducer. Refer to 77-40-00 for further information on maintenance of the engine monitoring system.

2. Fuel Pressure Transducer Removal/Installation

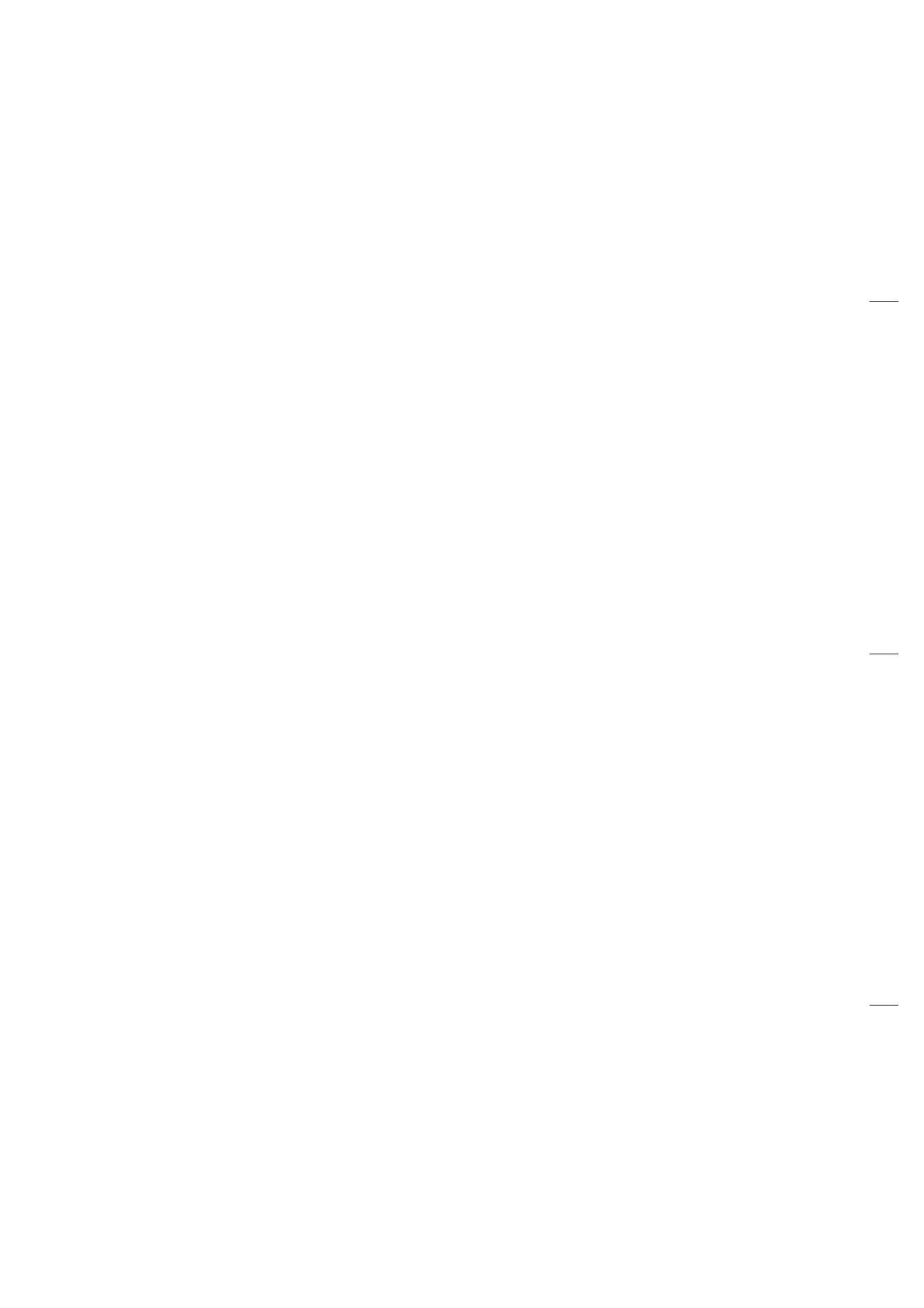
- A. Remove Fuel Pressure Transducer
- (1) Ensure electrical power to aircraft is OFF.
 - (2) Remove engine cowling (refer to 71-10-00).
 - (3) Disconnect battery (refer to 24-30-00).
 - (4) Disconnect electrical connector from transducer.
 - (5) Unscrew pressure fitting and remove transducer from clamp.
- B. Install Fuel Pressure Transducer
- (1) Verify battery is disconnected and electrical power to aircraft is OFF.
 - (2) Install transducer with clamp and connect fuel hose.

CAUTION: DO NOT USE THE PRESSURE TRANSDUCER CASING TO TIGHTEN THE PRESSURE FITTING!

- (3) Connect electrical connector to transducer.
- (4) Reconnect battery (refer to 24-30-00).
- (5) Install engine cowling (refer to 71-10-00).

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**AQUILA AT01-100
MAINTENANCE MANUAL**

**CHAPTER 76
ENGINE CONTROLS**

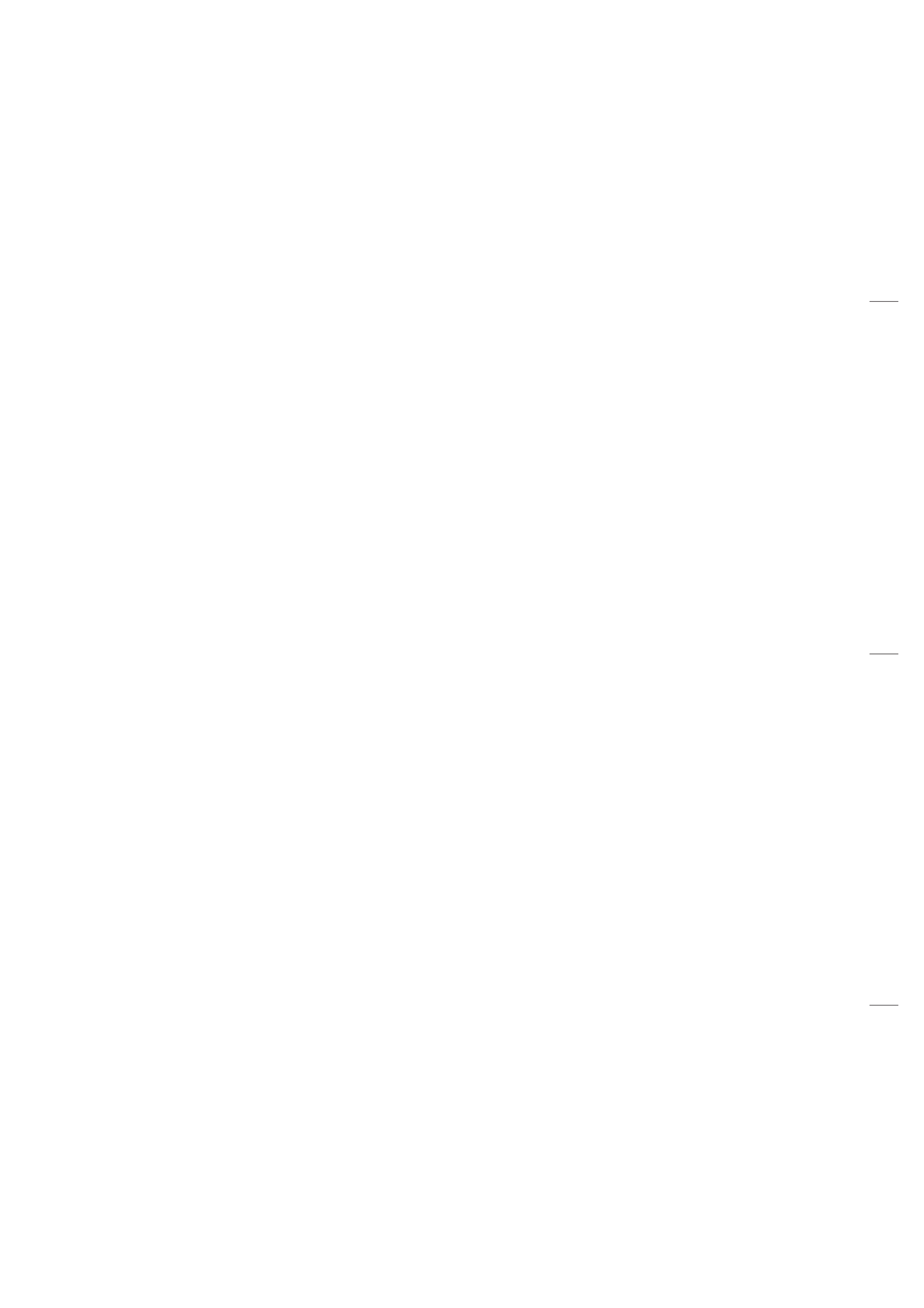
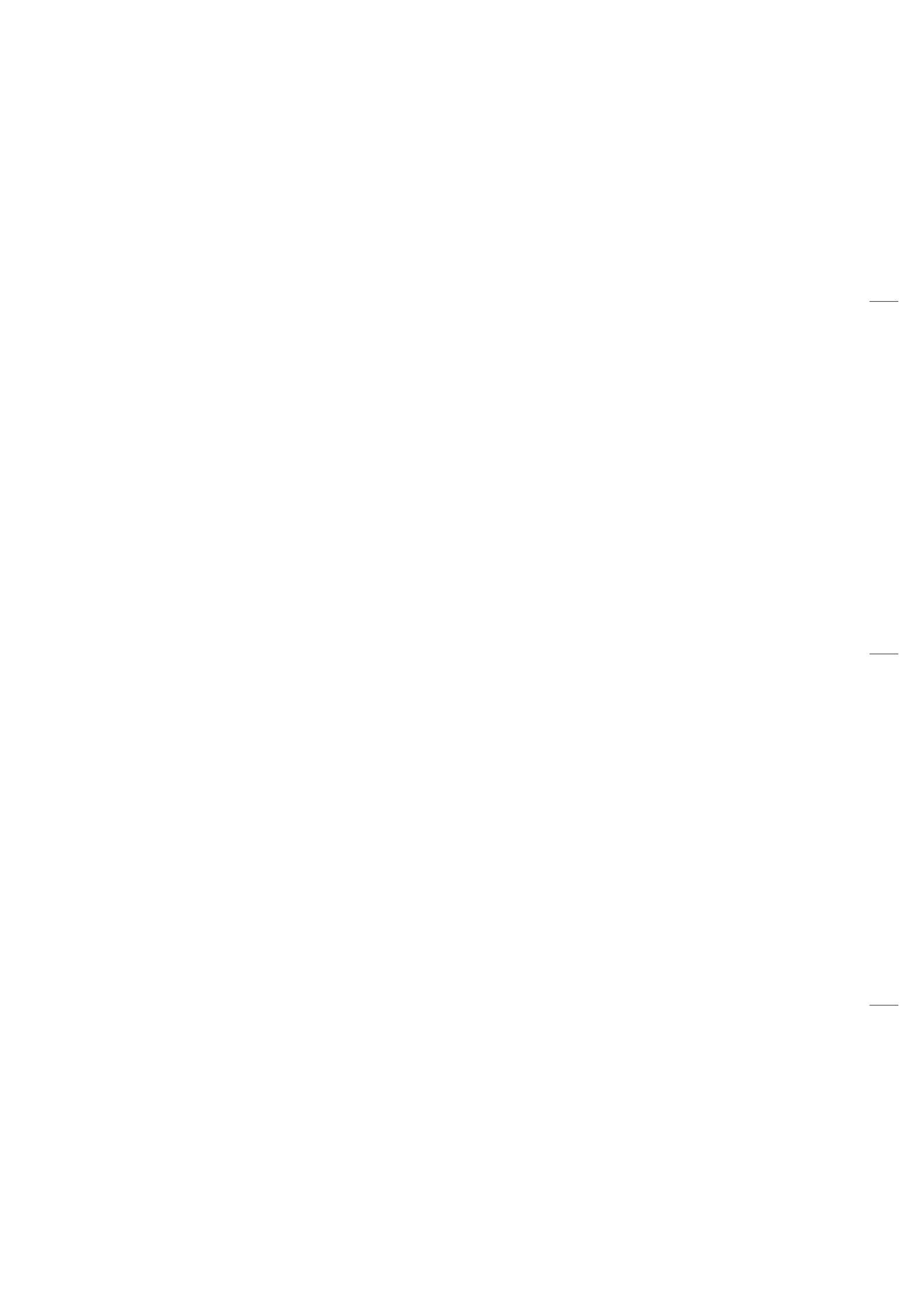


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ENGINE CONTROLS - GENERAL

1. Introduction

- A. This chapter describes and provides maintenance instructions for components and systems used to control the engine.

2. General Description

- A. Engine controls include throttle, choke, propeller and carburetor heat. The primary engine controls, the throttle and propeller controls, employ conventional push-pull type levers and are connected to a control quadrant mounted on the center console. The push-pull type choke and carburetor heat control knobs are to be found in the center console, below the instrument panel.

Throttle Control

The throttle control lever is connected via Bowden cables with the throttle actuation arm on each carburetor. The Bowden cable jackets are attached at both ends to a support bracket which is adjustable on the carburetor side.

Propeller Control

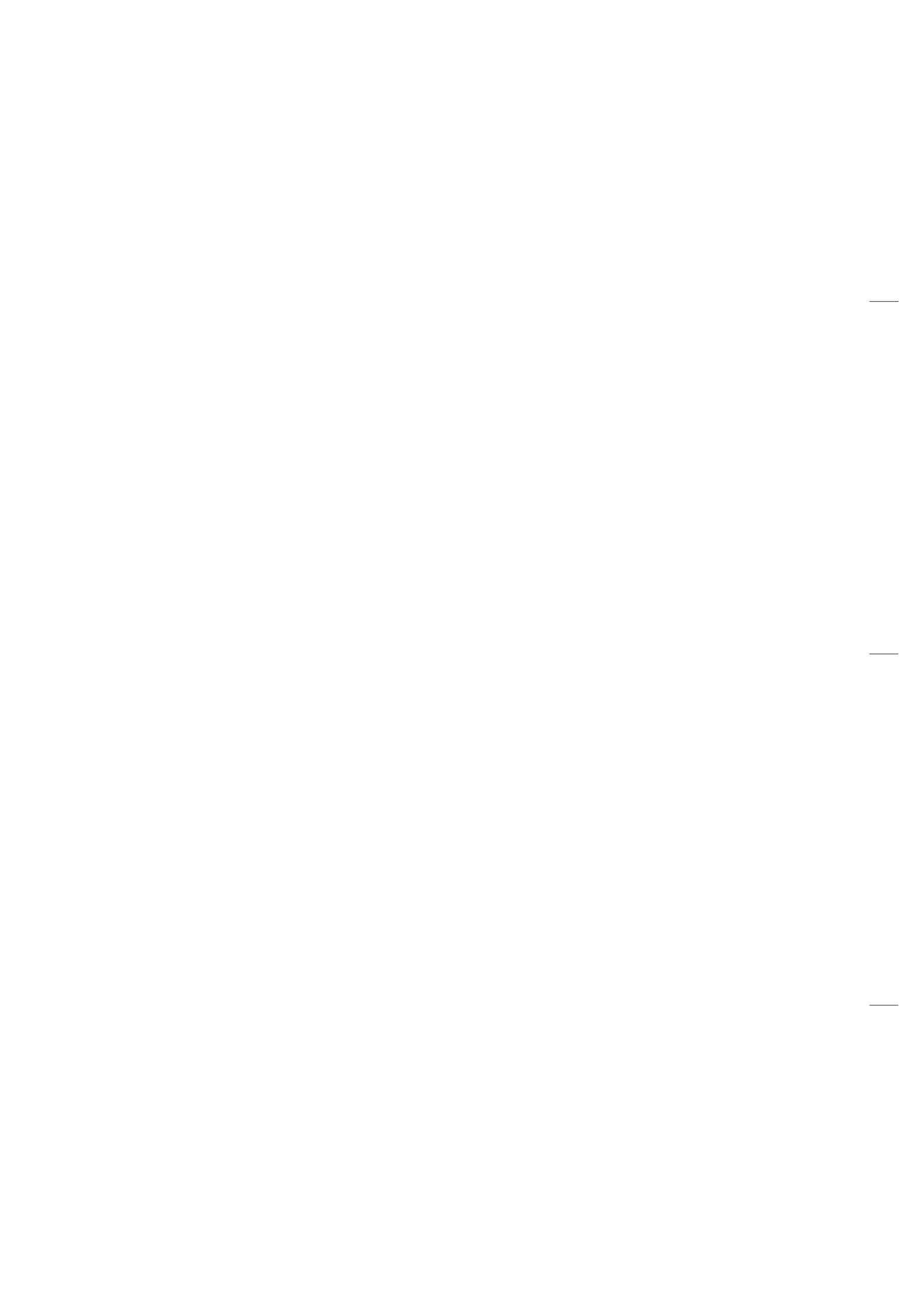
Movement of the propeller speed control lever is transferred to the propeller governor control arm via a Bowden cable. The Bowden cable is adjustable on the propeller governor.

Choke

The choke control knob is connected via Bowden cables to the choke actuation lever on each carburetor.

Carburetor Heat

By pulling the carburetor heat control knob, two coupled flap valves in the air distribution box are operated. The valves stop airflow from the air intake and allow heated alternate air from the exhaust muffler area to flow to the carburetors. Movement of the carburetor heat knob is transferred to the flap valves through a Bowden cable.



ENGINE CONTROLS - MAINTENANCE

1. General

- A. For propeller speed control adjustment/test procedures, refer to 61-20-00.
- B. For carburetor heat control adjustment/test procedures, refer to 71-60-00.

2. Control Quadrant Disassembly/Assembly

- A. For control quadrant disassembly/assembly, refer to figure 201.

3. Throttle Control Cable Removal/Installation

WARNING: WHEN THE THROTTLE CONTROL CABLES ARE NOT CONNECTED, THE CARBURETORS ARE IN FULL OPEN POSITION. NEVER START ENGINE WHEN THE CARBURETOR THROTTLE CONTROL CABLES ARE NOT CONNECTED.

A. Remove Throttle Control Cables

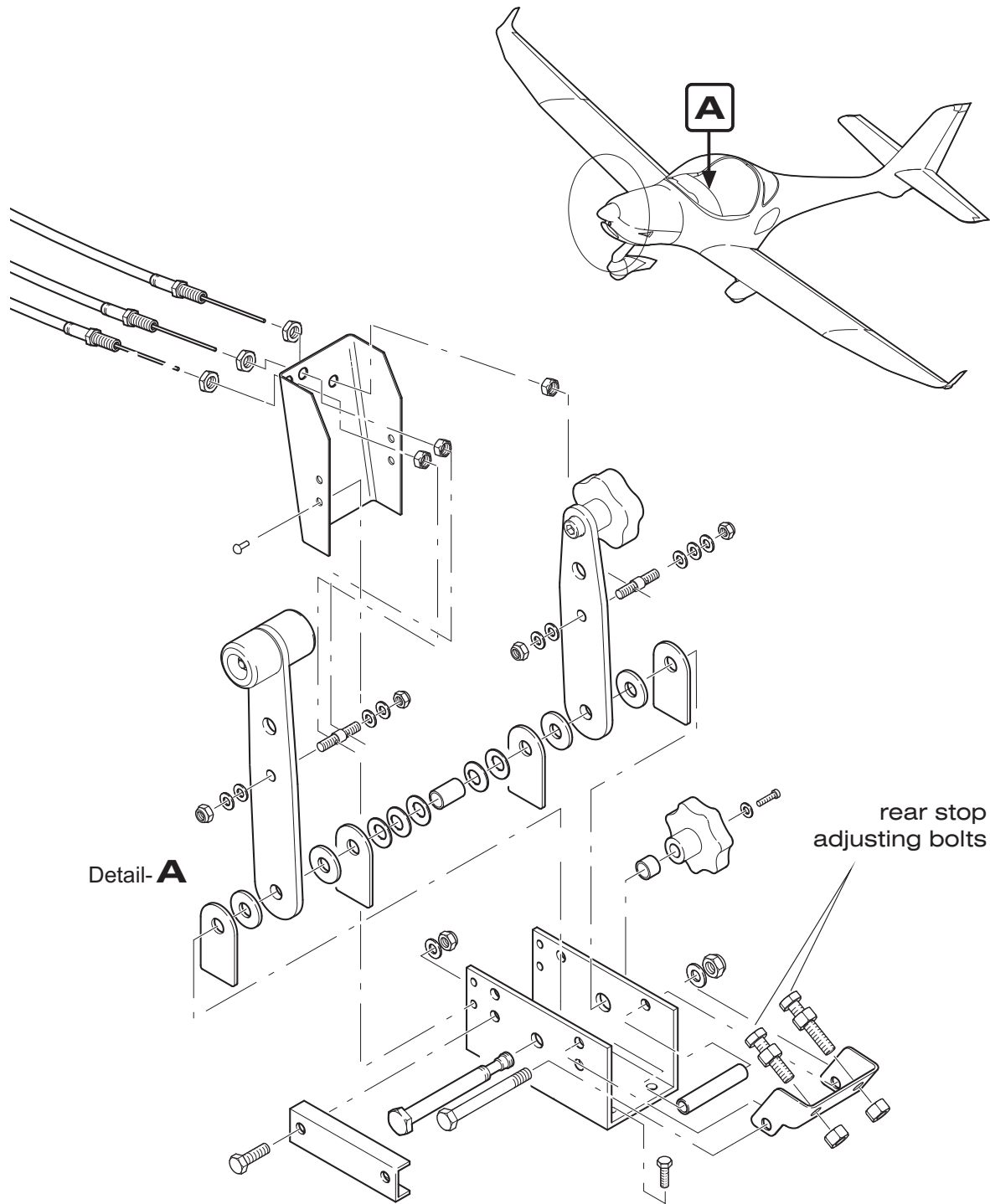
- (1) Remove engine cowling (refer to 71-10-00).
- (2) Remove access panels 211 FT, 211 FB, 211 EC (refer to 25-12-00) in the cabin.
- (3) Disconnect throttle control cables from carburetors.
- (4) Disconnect throttle control cables at throttle control lever.
- (5) Carefully pull throttle control cables through firewall and control cable support bracket, and remove from aircraft.

B. Install Throttle Control Cables

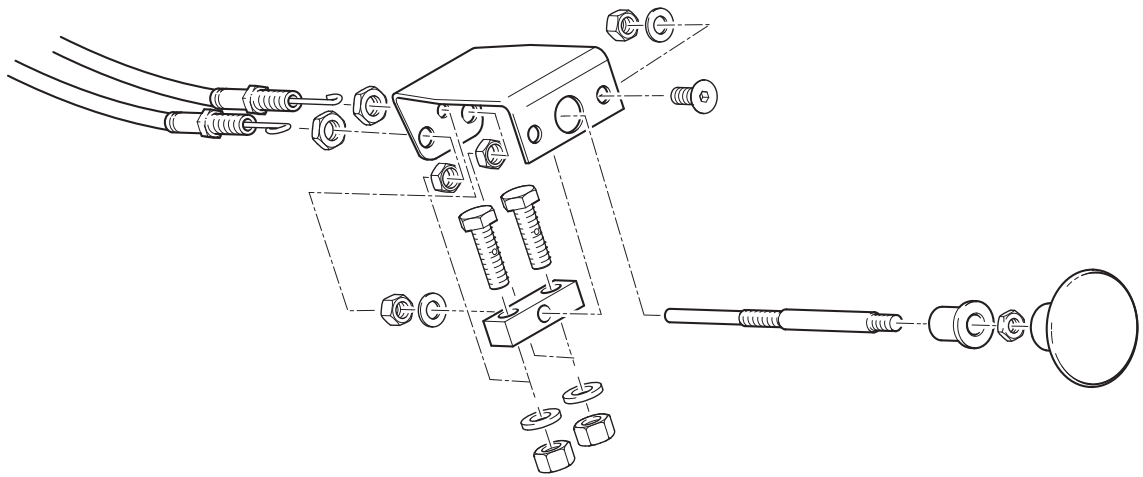
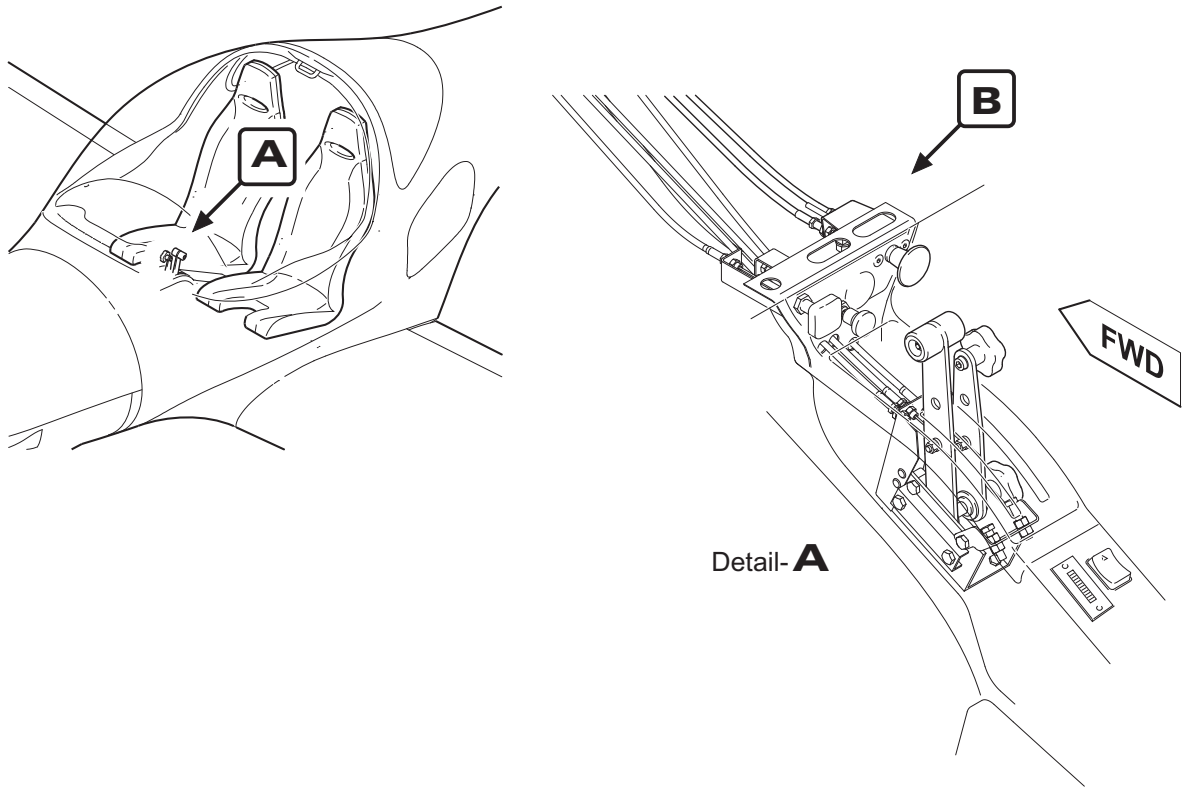
NOTE: When installing throttle control cables, ensure the cables are routed exactly as previously installed.

Before installing, ensure cable fitting on firewall is clear and free of sealant.

- (1) Route throttle cables from the cabin, through control cable support bracket and then through the firewall to the engine compartment.
- (2) Install washers and nuts securing control cables to cable support bracket at the console.
- (3) Secure control cables to support brackets at carburetors and connect to carburetor throttle control arm using hardware in the engine compartment.
- (4) With throttle control lever in full forward position, connect control cables to the throttle control lever in the cabin as shown in figure 201.
- (5) Perform throttle control cable adjustment/test (refer to "Throttle Control Adjustment/Test" below).
- (6) Fill firewall seal fitting with silicone sealant.
- (7) Install all items removed for access.



Control Quadrant Assembly
Figure 201



Detail- **B**

Choke Control Assembly
Figure 202

4. Governor Control Cable Removal/Installation

A. Remove Governor Control Cable

- (1) Remove engine cowling (refer to 71-10-00).
- (2) Remove access panels 211 FT, 211 FB, 211 EC (refer to 25-12-00) in the cabin.
- (3) Disconnect governor control cable from governor control arm.
- (4) Remove any clamps or ties securing governor cable to engine or engine mount.
- (5) Disconnect governor control cable at propeller control lever.
- (6) Carefully pull governor control cable through firewall and control cable support bracket, and remove from aircraft.

B. Install Governor Control Cables

NOTE: When installing throttle control cables, ensure the cables are routed exactly as previously installed.

Before installing, ensure cable fitting on firewall is clear and free of sealant.

- (1) Route governor cable from the cabin, through control cable support bracket and then through the firewall to the engine compartment.
- (2) Install washers and nuts securing control cable to cable support bracket at the console.
- (3) Install governor control cable to governor control arm using hardware at the governor in the engine compartment.
- (4) Connect control cable to the propeller control lever in the cabin as shown in figure 201.
- (5) Re-install clamps or ties securing governor cable to engine or engine mount.
- (6) Perform governor control adjustment/test (refer to 61-20-00).
- (7) Fill firewall seal fitting with silicone sealant.
- (8) Install all items removed for access.

5. Choke Control Adjustment/Test

A. Adjust Choke Control

- (1) Adjust control cables so, if the choke control knob is in the full forward position, the starting carburetor control arms on both carburetors reach their low stop.

6. Throttle Control Adjustment/Test

A. Idle Speed Adjustment

NOTE: Always perform idle speed adjustment at operating temperature of the engine.

- (1) Close idle mixture control screw by turning clockwise.
- (2) Open idle mixture control screw again 1.5 turns counterclockwise.

NOTE: Turning idle mixture control screw in clockwise direction results in a leaner mixture and turning counterclockwise in a richer mixture.
If no satisfactory engine idling cannot be achieved, an additional pneumatic synchronization will be necessary.

B. Adjust Throttle Control

- (1) Move throttle lever in the cockpit to full throttle position.
- (2) Disconnect control cables from the throttle control arms of both carburetors.
- (3) Move throttle lever in the cockpit 1-2 mm (0.04-0.08 in.) back.
- (4) Tighten the Bowden cable clamps on the throttle control arms of both carburetors.
- (5) Move throttle control lever between idle and full throttle positions. Ensure the throttle control lever is only limited by the throttle control arm stops on the carburetors and has positive clearance of 1 mm (0.04 in.) to the console slot in both the full forward and full aft positions. There must be no notable bulging of the Bowden cables on the carburetors with control lever in the full throttle position.

WARNING: IN FULL THROTTLE POSITION THE THROTTLE WIRE MUST NOT BULGE NOTABLE OUT OF LINE BETWEEN THE CARBURETOR LEVER AND THE BOWDEN CABLE ADJUSTMENT, BECAUSE THIS MAY RESULT IN FATIGUE FAILURE OF THE THROTTLE WIRE!

- (6) Adjust rear stop adjusting bolt in the cockpit so the throttle control lever and the control arms of the carburetors contact their rear stops simultaneously.
- (7) Perform carburetor synchronization (refer to ROTAX Maintenance Manual for Rotax Engine Type 912 Series, chapter 12-20-00, section 10).

C. Throttle Inspection/Check

- (1) Check proper Bowden cable routing to prevent influence to carburetors actuation caused by any movement of engine or other controls, thus possibly falsifying precise idle speed setting and synchronization.
- (2) Inspect the throttle control cable attachment to carburetors throttle control arm and to the control quadrant. Check hardware for security and condition.
- (3) Check the throttle control slides smoothly and without any resistance to movement throughout its full range of travel. Verify the throttle control lever is only limited by the throttle control arm stops on carburetors and has positive clearance of 1 mm (0.04 in.) to the console slot in both the full forward and full aft positions. There must be no notable bulging of the Bowden cables on the carburetor with control lever in the full throttle position.
- (4) Check reset springs and inspect engagement holes for wear.
- (5) If required lubricate carburetors actuation linkage with engine oil.

