Airplane Maintenance Manual (AMM)

Airplane Type : CT

Airplane Model : CTLS-LSA

Airplane Registration Number : _______________

Airplane Serial Number _______________

Document Number : AF 0480 0015

Date of Issue : 15-Jul-15

This document is approved under Manufacturer Self Declaration.

I RECORD OF MANUAL REVISIONS

Manual revisions are provided by Flight Design GmbH as available and approved through the Agency (if applicable). The updates shall be manually entered to the individual printed version of the AMM by the owner/operator of the aircraft.

Manual updates are provided in electronic format (pdf file) directly to aircraft owners/operators, when the owner/operator leaves the correct contact information with Flight Design GmbH.

It is the duty of the aircraft owner/operator to ensure that the manual contains all updates applicable to his aircraft serial number. Updates are done by manually removing invalid pages and inserting new or updated pages. Manual update must be logged in the subsequent table.

Rev. No.	***Date***	***Sections Removed***	***Sections Inserted***	***Signature***
00	15-Jul-15	n/a	all	n/a
01	13-Sep-15	11-00	11-00	n/a
02	06-Dec-19	Title I-1, I-2; II-1; 01-00-2; 01-00-3; 02-00-1 – 02-00-3; 03-00-2; 04-00-1; 05-00-1, 05-00-2; 05-10-1, 05-10-2; 05-20-1 – 05-20-20; 11-00-1, 11-00-2; 23-10-1 – 23-10-3; 25-00-1 – 25-00-9; 27-00-2; 27-10-4; 27-20-1 – 27-20-7; 27-40-1 – 27-40-10; 27-50-8; 28-00-3 – 28-00-7; 33-00-1; 33-40-1 –	Title I-1, I-2; II-1; 01-00-2; 01-00-3; 02-00-1 – 02-00-3; 03-00-2; 04-00-1; 05-00-1, 05-00-2; 05-10-1, 05-10-2; 05-20-1 – 05-20-20; 11-00-1, 11-00-2; 23-10-1 – 23-10-3; 25-00-1 – 25-00-9; 27-00-2; 27-10-4; 27-20-1 – 27-20-7; 27-40-1 – 27-40-11; 27-50-8, 27-50-9; 28-00-3 – 28-00-10; 33-00-1;	
		33-40-8; 55-10-1 – 55-10-10.	33-40-1 – 33-40-12; 55-10-1 – 55-10-13.	

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III TABLE OF CONTENTS

CHAPTER 01 –
INTRODUCTION

Contents

01-00.1 General

This Airplane Maintenance Manual (AMM) contains the data necessary to carry out the maintenance of the CTLS-LSA. This AMM contains a full description of the systems including wiring diagrams for the electrical systems, removal and installation procedures and maintenance instructions.

Use the following additional sources of information together with this AMM:

1. Applicable Service Notifications including Service Instructions referenced form there,
2. Applicable Service Bulletins including Service Instructions referenced form there,
3. Applicable Safety Alerts including Service Instructions referenced form there,
4. ROTAX® 912 Series Manuals, issued by ROTAX® for the affected engine
   - Operator's Manual OM-912
   - Maintenance Manual (Line Maintenance) MML-912
   - Maintenance Manual (Heavy Maintenance) MMH-912
5. Operating and Maintenance Manual of the installed propeller
6. Other equipment manufacturer instruction made applicable with this AMM, refer to Appendix I.

01-00.2 Approval

The contents of this document is approved by Flight Design under manufacturer self declaration.

01-00.3 Certification Basis

The aircraft is in compliance with ASTM F2245.

The engine Rotax 912 ULS is in compliance with ASTM F2339. The engine Rotax 912 S is Type Certified in compliance with FAR 33 Amdt. 15.

The propeller is in compliance with ASTM F2506.

The Maintenance Manual is in compliance with ASTM F2483.

Continued airworthiness is conducted in compliance with ASTM F2259

The revision level of the standards applicable to the specific S/N is identified on the aircraft's Statement of Compliance.

01-00.4 Manufacturer Contact

The aircraft is manufactured by:

Flight Design general aviation GmbH
Am Flugplatz 3, 99820 Hörselberg Hainich
Germany
Web: www.flightdesign.com
e-mail: info@flightdesign.com

01-00.5 Recovery of Certification You may contact Flight Design either directly, or through the Flight Design distributor or service center that is responsible for your area. You can find contact details of the distributors and service centers on the Flight Design web page.

01-00.5 Recovery of Certification Data

If the original manufacturer will lose the ability to support the make and model of this aircraft, you can recover certification documentation through the following contact:

Flight Design Engineering Ukraine Ltd.
Rabochaya 82a
73000 Kherson
Ukraine

01-00.6 General Safety Information

Consider the following warnings to avoid unnecessary risks while you carry out maintenance of the aircraft:

▲Warning: Only the personnel with adequate qualification may carry out an inspection and maintenance work.

▲Warning: You shall carry out inspection and maintenance in accordance with respective national safety requirements.

▲Warning: Before you begin any work, you shall read and understand all relevant sections of this AMM. In case of any doubt or missing information you shall first contact the manufacturer for advice.

▲Warning: Consider the safety notes in this manual as unconditional.

01-00.7 Source to Purchase Parts

Spare parts can be ordered directly with the airplane manufacturer:

Flight Design general aviation GmbH
Am Flugplatz 3, 99820 Hörselberg Hainich
Germany
Web: www.flightdesign.com
e-mail: info@flightdesign.com

or through the Flight Design distributor or service center that is responsible for your area. You can find contact details of the distributors and service centers on the Flight Design web page.

01-00.8 List of Disposable Replacement Parts

Air filter	RU0810 RD CNT AIR FILTER; K&N
Oil filter	Oil filter – according to specification provided within ROTAX® maintenance manual
Front & Main Wheel	Tube 13 x 500-6, Desser Tire & Rubber Co., Inc; or Tire 4.00-6" 6ply, Desser Tire & Rubber Co., Inc; or Tube SAVA 4.00-6 JS87 90/90, SAVATECH; or Tire SAVA B 11 4.00-6” 66L B11, SAVATECH; or Tyre 400-6 8 Ply Aero Classic Premium TT/Tubeless, 2 Groove Pattern
Tundra Main Wheel	Tyre 4-ply 6.00-6" Air TRAC (420x140); or Tyre 4-ply 6.00-6" Air TRAC
Batteries	Battery SBS 8, SBS 15 Hawker PC310 Oddyssey 10 P Super B
Brake Assemblies	Master brake cylinder Part No. MCMC-4CT, MATCO mfg
	Brake pads Part No. WHLWI62L-4 (part of set), MATCO mfg
	Brake disk Part No. WHLWI62L-4 (part of set), MATCO mfg
	Brake Caliper Part No. WHLWI62L-4 (part of set), MATCO mfg
	Aeroshell Brake Fluid 41 MIL-H-5606
Brake Fluid	Brake Fluid i.a.w. MIL-H-5606, for example Shell Fluid 41
Sparkplugs	Ignition plug - according to specification provided within ROTAX® maintenance manual

01-00.9 Recommended Torque Values

Table with recommended torque values is provided in CHAPTER 20.

CHAPTER 02 –
ORGANIZATION AND HANDLING OF THE MANUAL

Contents

02-00.1 Manual Structure

02-00.1.1 Chapter and Subchapter Structure

This AMM is structured using the ATA 100 structure for system / subsystem as guideline. This is reflected in the main header of each Chapter, Section and in the page numbers. The contents of chapter and subchapter are structured similarly, so that you can find required information quickly. For your convenience each chapter contains its own table of contents. Four digits are used that represent:

27	-	20
System	-	Subsystem
Chapter No.	-	Section No.

02-00.1.2 Page Numbering System

Pages are numbered using a combination of the chapter and section number, followed by the page number, each separated with a dash "-".

02-00.1.3 Figures

Figures are numbered using a combination of the chapter and section number, followed by a sequential number that starts with 1 for each subsystem, each separated with a dash "-".

02-00.1.4 Warnings, Cautions and Notes

Please pay attention to the following symbols which are used throughout this document to emphasize certain information:

- **▲Warning:** Used to identify an instruction which if not followed may cause serious injury or even death.
- **■ Caution:** Used to identify an instruction which if not followed may damage the aircraft severely or lead to the warranty suspension.
- **● Note:** Information useful for better handling.

"Shall", "will", "should" and "may":

The words "shall" or "will" are used to express a mandatory requirement or instruction. The word "should" is used to express non-mandatory provisions that are nevertheless highly recommended. The word "may" is used to express permissible provisions.

02-00.1.5 Abbreviations

The table below contains the abbreviations used in this AMM.

Abbreviation	***Meaning***
AMM	Airplane Maintenance Manual
ATC	Air Traffic Control
CAA	Civil Aviation Authority – used to refer to the Authority of any applicable country
CAS	Calibrated Airspeed (indicated airspeed, corrected for installation and instrument errors. CAS is TAS at ISA standard atmosphere at MSL)
CG	Center of Gravity
EASA	European Aviation Safety Agency
ELT	Emergency Locator Transmitter
FAA	Federal Aviation Authority of the USA
IAS	Indicated Airspeed (the speed shown by the airspeed indicator)
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
ISA	International Standard Atmosphere
LSA	Light Sport Aircraft
MAC	Mean Aerodynamic Chord; for CTLS-LSA this is equal to the wing chord
MSL	Mean Sea Level
MTOM	Maximum Take-Off Mass
POH	Pilot’s Operating Handbook
rpm	Revolutions Per Minute
TAS	True Airspeed (the speed of the airplane relative to the air)
TBO	Time Between Overhaul
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions

02-00.2 Manual Handling

02-00.2.1 Record of Revisions

This AMM has a Record of Revisions. Use the Record of Revisions to show when changes were included in this AMM.

02-00.2.2 List of Effective Sections

This AMM has a List of Effective Sections. The List of Effective Sections shows you the number and effective date of each section of this AMM. This system implies that revisions are always done section wise; when information in one section changes, all pages of that section get exchanged.

02-00.2.3 Feedback Template

Use the Service Difficulty Report (SDR) Feedback Template to inform the manufacturer about difficulties experienced during maintenance of the airplane. Usage of the template ensures that all relevant information is provided to the manufacturer that allows to handle the report properly.

Service Difficulty Report (SDR)	SDR number:________ (to be filled by Flight Design)
Use this template only for difficulties experienced **during maintenance or servicing**. Describe the difficulties experienced with the aircraft; state the occasion, component, that generated what difficulty exactly	Flight Design general aviation GmbH Am Flugplatz 3 D-99820, Hörselberg Hainich airworthiness@flightdesign.com www.flightdesign.com

Airplane Serial Number: -_ _ - _ _ - _ _

Person Reporting: ____

Contact Information: ____

Time and Location: ____

Engine Model and S/N: ____

Total Time Airframe/Engine: ____

Description of Difficulty:____

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Please be as specific as possible. If needed, attach additional sheets, drawings, sketches, etc.

CHAPTER 03 –
GENERAL DESCRIPTION OF THE AIRPLANE

Contents

03-00.1 General

The CTLS-LSA is a two seat aircraft of composite construction. The aircraft is arranged as a high wing mono-plane with cantilevered wings and a conventional empennage. The aircraft incorporates a tricycle landing gear. The wings are easily removable. Removal of the wings may only be done by qualified personnel according to the maintenance manual and to the valid national regulations.

The horizontal tail of the CTLS-LSA is a Stabilator (all-moving horizontal tail). To improve control feel, the stabilizer is equipped with an anti-tab that moves in the same direction as the Stabilator. The anti-tab is attached to the horizontal tail with a composite membrane. The anti-tab can be adjusted by the pilot to provide pitch trim.

The spacious cockpit is comfortably accessible for the pilot and the passenger via two large gull wing doors held open by gas struts. The extensive acrylic windshield offers outstanding visibility for a high-wing aircraft. The rear side windows allow rearward vision. Skylight windows allow excellent view in the upward direction.

Behind the cockpit there are baggage compartments on the right hand and left hand side with standard tie-downs. The baggage compartments are accessed via lockable hatches on the side of the aircraft to facilitate loading and unloading. Loading through the cabin is also possible.

03-00.2 Equipment List

Each aircraft is delivered with a filled equipment list. The next page shows an example view that is not valid for your aircraft.

Every time when there is an update to the installed equipment, a new equipment list must be compiled and added to the aircraft documentation. The owner of the aircraft is responsible for ensuring that the equipment list is current and has a corresponding mass and balance report.

The equipment list is a snapshot of the aircraft configuration at the time when it is created. It is mandatory to record the installation and/or removal of instruments in the aircraft logbook, in addition to the update of the equipment list.

Equipment List for LSA Aircraft

Type	CT	Prod. Number	XX-XX-XX
Model	CTLS-LSA	Date	xx.Xxx.xx

Item	Type	Manufacturer	Location	Weight	Installed
1. Minimum Equipment					
Airspeed indicator	16-211-161	U.M.A., INC	-6,0 in	0,44 lb	X
Altimeter	5-410-20	U.M.A., INC	-6,2 in	0,48 lb	X
Compass	MCPN-2L	Falcon Gauge	3,1 in	0,77 lb	X
Rescue System	BRS-6 1350 HS	BRS	53,9 in	32,82 lb	X
Battery	SBS 8	Hawker	-24,0 in	1,78 lb	X
Propeller 3 blade fixed pitch	CR3-65-47-101,6"	Neuform	-49,6 in	13,59 lb	X
2. Additional Equipment					
EFIS	EFIS-D100	Dynon Avionics INC.	-7,1 in	5,84 lb	X
EMS	EMS-D120	Dynon Avionics INC.	-8,7 in	6,94 lb	X
Engine Hour Counter	85094	Hobbs	-3,9 in	0,20 lb	X
3. Additional Equipment Avionic					
Radio	SL 40	Garmin	-9,1 in	5,86 lb	X
Transponder	GTX330	Garmin	-8,9 in	6,39 lb	X
GPS	GPSMAP496	Garmin	-4,4 in	3,30 lb	X
ELT	AK-450	AMERI-King Co	57,1 in	4,41 lb	X
Intercom	PM 3000A	PS Engineering	-5,8 in	1,87 lb	X
4. Optional Equipment					
Oil and Water Thermostat	-	Flight Design	-33,3 in	3,68 lb	X
Towing Hook	E 22	Tost			
Towing Mirror System	-	Flight Design			
Autopilot 1 Axis	CT Pilot 1-Axis	Trutrak			
Autopilot 2 / 3 Axis	CT Pilot 2/3- Axis	Trutrak	15,4 in	8,00 lb	X
Strobe / Position Light	EPL / ACL / ERB	Thiesen	104,7 in	1,41 lb	X
Landing Light	-	Flight Design	-43,3 in	0,59 lb	X
Landing Light LED	ELL	Thiesen			
Tundra Wheels					
Sport Seat Leather and cushion	-	Flight Design	27,0 in	6,39 lb	X
Sun Visors	-	Flight Design	3,5 in	1,39 lb	X
Fire Extinguisher			27,6 in	1,10 lb	X
Main Wheel Fairings	-	Flight Design	24,6 in	3,57 lb	X
Nose Wheel Fairing	-	Flight Design	-33,9 in	2,29 lb	X
5. Misc. Equipment					
	Total Weight All Equipment		8,7 in	161,64 lb	

Signature City Date

- **Note:** This is only the sample of the equipment list; not valid for the actual aircraft.

CHAPTER 04 –
AIRWORTHINESS LIMITATIONS

Contents

04-00.1 General

This chapter gives information on mandatory limitations established by the airframe manufacturer.

Compliance with the specified times and intervals is mandatory for maintaining the airworthiness of the aircraft. In addition to this, the manufacturer recommends you to comply with the maintenance time limits and to work with the maintenance checklists (refer to CHAPTER 05).

In any case you must comply with the national maintenance requirements.

04-00.2 Airworthiness Limitations

04-00.2.1 Airframe

There is no structure life limit. Structural inspections given in CHAPTER 05 cover all required structure checks.

04-00.2.2 Outside Painting and Temperature Limit

All structural parts which are exposed to direct vertical sunlight have to be painted WHITE except of areas provided in Section 51-70.6.5.

The upper temperature limit of the CTLS-LSA is +50°C (122°F). This limit is based on the storage temperature of the aircraft glazing. The composite structure is capable to withstand full operational loads at temperatures up to 54°C.

04-00.2.3 Structural Repairs

Major repairs which are not covered by standard repair practices described in CHAPTER 51 of this manual may only be carried out under the authority of the manufacturer or in accordance with a repair scheme which has been approved by the manufacturer.

04-00.3 Continued Airworthiness

Scheduled inspections of the airplane including replacement and overhaul of defined components are required to ensure Continued Airworthiness of the Flight Design CTLS-LSA aircraft. Maintenance checklists and time limits as listed in CHAPTER 05 shall be used to ensure continued airworthiness of the Flight Design CTLS-LSA, unless an alternate inspection program is approved by the competent National Airworthiness Authority.

- **Caution:** Non-consideration of the continued airworthiness instructions can cause severe damage to the aircraft and/or lead to warranty suspension and withdrawal of registration.

04-00.4 Life Limited Components

The aircraft is not equipped with life limited components. Time limits as listed in CHAPTER 05 shall be used to ensure continued airworthiness of the Flight Design CTLS-LSA, unless an alternate inspection program is approved by the competent National Airworthiness Authority.

CHAPTER 05 –
TIME LIMITS AND MAINTENANCE CHECK

Contents

05-00.1 General

This chapter contains time limits and maintenance checklists for the CTLS-LSA. We highly recommend you to comply with the maintenance time limits and to work with the maintenance checklists.

05-00.2 Levels of Certification

Levels of certification used in this manual are:

Pilot/Owner (P/O):	Pilot or owner of the aircraft. Depending form national requirements, the pilot or owner must show specific qualification. Examples are qualification requirements in accordance with Part-M.A.803, applicable for EASA countries.
LSA- Mechanic (LSAM):	Person authorized to perform maintenance independently from maintenance organizations, or qualified specifically for work on LSA aircraft. Examples are RLSA-M licensed mechanic under FAA, or in EASA countries independent certifying staff qualified in accordance with Part-66. The LSA- Mechanic is qualified to conduct Pilot/Owner maintenance.
Aircraft Mechanic (ACM)	Person authorized to perform maintenance on certified aircraft, engines, propellers, appliances, and other aircraft components. Examples are A&P mechanic under FAA, or in EASA countries personnel of a Part-M, Section A Subpart F, or of Part-145 maintenance organizations. The Aircraft Mechanic is qualified to conduct LSA- Mechanic and Pilot/Owner maintenance

It is in the responsibility of the mechanic conducting the individual task, that the adequate qualification is present as per relevant national regulations, meeting the definitions above.

SECTION 05-10 –
TIME LIMITS

05-10.1 General

All scheduled maintenance checks have time limits. You shall do the scheduled maintenance within the time limits.

05-10.2 Scheduled Maintenance Time Limits

The table below contains scheduled maintenance time limits recommended by the manufacturer. Different tolerances may apply due to national regulations, depending from the type of operation.

Scheduled Maintenance	*Task at these times*	*Tolerance*
100 hour check	At 100 hours since new and every 100 hour interval. Do the work of 100 hour check. Perform all engine 100 hour inspection items per engine manufacturer maintenance manual Perform all propeller 100 hour inspection items per propeller manufacturer maintenance manual	±10 hours
25 hour check	At 25 hours since new or at 25 hours after change or overhaul of engine and/or propeller. Perform all engine 100 hour inspection items per engine manufacturer maintenance manual Perform all propeller 25 hour inspection items per propeller manufacturer maintenance manual	±5 hours
“Other times” checks	At specified time interval from checklist since new and every specified time interval. Do the work for “other times” interval specified in checklist	±10 hours
Annual check	At 12 month from new and every 12 month interval. Do the work of annual check.	±30 days

05-10.3 Component Time Limits

The following table lists airplane components which must be replaced or overhauled (as specified) at a specific time.

To allow monitoring the permissible service life the installation or removal of each item must be recorded in the aircraft documentation.

■ **Caution:** Under specific environmental circumstances the replacement or overhaul of components may be required before reaching the time limits as listed below. Also, authorized extensions or exceeding of time limits may exist from particular component manufacturers.

Chapter	Item	Overhaul	Replacement
25-00.2.2	Safety Harness pilot/ Co-pilot	no	12 years
32-20	Shock absorber elements in the nose gear	no	5 years
32-40	Flexible hoses of the aircraft brake system	no	10 years
25-62	ELT Battery	no	(3)
26-00	Fire Extinguisher	no	(4)
05-20.4	Structure – a comprehensive airframe inspection is mandatory when reaching the inspection time limit	Inspection at 6.000 h (overhaul only on condition)	no
28-00 75-00 79-00 71-00.3.3	All engine rubber parts, such as: ▪ Venting hose of the carburetor ▪ All rubber hoses of the cooling system ▪ All rubber hoses of the fuel system within the engine compartment (incl. Teflon hoses, fuel pump and insulating flange if this is fixed with fuel hoses) ▪ All rubber hoses of the lubrication system within the engine compartment ▪ Carburetor sockets ▪ Connecting hose of the air intake system ▪ Diaphragm of both carburetors ▪ Rubber hoses on the compensating tube	no	5 years
Rotax LMM	ROTAX® mechanical fuel pump	no	5 years
71-00.3.2	Engine ROTAX® 912S or ULS	2.000h or 15 years, whichever comes first (1)	On condition
71-00.3.2	Engine shock mount	no	2.000 h or with engine replacement, whichever comes first
61-00	Propeller Neuform CR3-65-(IP)-47-101.6	1.500 h or 5 years, whichever comes first (2)	On condition
61-00	Propeller Neuform CR3-V-70-(IP)-R2-ECS	750 h or 5 years, whichever comes first (2)	On condition

(1) Refer to latest information issued by BRP- ROTAX® concerning the TBO, (Service Bulletins, Service Information, Maintenance Manual for ROTAX® Engine Type 912 Series.

(2) Refer to latest issue of propeller manufacturer´s manual.

(3) Refer to manufacturer´s instructions for battery replacement time limits.

(4) Refer to expiring date on the bottom of Fire Extinguisher.

SECTION 05-20 –
SCHEDULED MAINTENANCE CHECK

05-20.1 General

Perform the scheduled maintenance checks in this Section at the intervals (flight hours and calendar time) marked in SECTION 05-20 with a "☐" or at the time specified.

- **Note:** Only persons authorized by the National Aviation Authority of the country where the airplane is registered may perform these checks. Refer to the minimum level of certification identified for maintenance staff.
- **Note:** The inspection level for each item is a general visual inspection unless differently specified.
- **Note:** The Maintenance Manual of the ROTAX® 912 ULS or S engine contains the periodic maintenance schedule for this engine. We highly recommend you to perform the 100-hour checks of the engine at the same time with the airframe inspection.
- **Note:** The Operating and Maintenance Manual of the Neuform propeller contains the periodic maintenance schedule for this propeller. We highly recommend you to perform the 100-hour checks of the propeller at the same time with the airframe inspection.

05-20.2 Scheduled Maintenance Checklist CTLS-LSA

05-20.2.1 Identification

Name of Owner / Operator		**Call-sign**	
Aircraft S/N	F-___-___-___	**Operating Hours**	
Engine S/N		**Operating Hours TTSN/ TTSO**	
Propeller S/N		**Operating Hours TTSN/ TTSO**	
Maintenance Organization		**Name of Inspector**	
Hours since Last Scheduled Inspection		**Type of Last Scheduled Inspection**	☐100h ☐annual ☐other:______________
Date of Inspection		**Type of Inspection**	☐100h ☐annual ☐other:______________

05-20.2.2 Aircraft Records

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Aircraft records. Check the presence and condition of the Registration certificate and the Airworthiness Certificate.	☐	☐		P/O	
Aircraft identification tag. Check that the tag is secure and readable.	☐	☐		P/O	
Aircraft, Engine and Propeller logbooks. Determine total times, times since the overhaul and times since the last required or recommended maintenance checks and record these times in Identification Table.	☐	☐		P/O	
Airworthiness Directives (AD), Service Notifications (SN), Service Bulletins (SB) and Safety Alerts (SA) Check ADs, SNs, SBs and SAs which shall be complied with during the inspection period for airframe and aircraft components.	☐	☐		P/O	
Pilot's Operating Handbook (POH), Airplane Maintenance Manual (AMM), component manuals. You shall always have the latest issue of the POH, AMM and Manuals for components	☐	☐		P/O	
List of **Life Time Limited Components.** Check life time of components	☐	☐		P/O	
Latest **Equipment List** corresponds to aircraft equipment	☐	☐		P/O	
Latest **Weight and Balance information.** Consideration of 4 year periodical check, refer to CHAPTER 08	☐	☐		P/O	
Latest **Avionic test.** Check if Avionic test still valid	☐	☐		P/O	

05-20.2.3 Run-Up

▲**Warning:** Run-up shall be performed before any inspection.

▲**Warning:** Run-up shall continue until all temperatures are acceptable for take-off.

Inspection and/or Required Maintenance Checklist	100hour	Annual	Other Times	Minimum Level of Certification	Initials / Remarks
Engine and engine compartment Clean for leakage check	☐	☐		P/O	
Run up of engine: Conduct per following checklist, fill pre-inspection values only:	☐	☐		P/O	

Systems	Pre-inspection	Post-inspection
Engine oil. Check the level of oil and follow the Operator's Manual for all versions of ROTAX® 912 S or SECTION 12-10.	☐	☐
Brakes and parking brake. Check for proper operation	☐	☐
Starter. Smooth operation, starting properties	☐	☐
Oil pressure. 2…5 bar / 29…73 PSI	bar/PSI	bar/PSI
Engine Instruments. Check engine parameters	☐	☐
Ignition ground test. (See Operator's Manual for all versions of ROTAX® 912)	☐	☐
Oil temperature. 90…110°C /190…230°C	°C/°F	°C/°F
▲**Warning:** Ensure that cylinder head temperature (CHT) and oil temperature are within limits.		
Cabin heat	☐	☐
Idle RPM. Tachometer should read 1400 RPM	RPM	RPM
Engine full power RPM. With ground adjustable propeller installed, tachometer should read 4900 to 5000 rpm. With constant speed propeller, rpm indication should match setting selected on controller.	RPM	RPM
Ignition check. Set RPM to 4000. Ignition left. Record rpm drop. Must not be more than 300 Ignition both. Ignition right. Record rpm drop. Must not be more than 300. Determine rpm drop difference Must not be more than 120.	 RPM RPM RPM	 RPM RPM RPM
Carburetor heat. Pull carburetor heat knob at 4000-5300 RPM, engine RPM should show a drop down of 100-200 RPM	RPM	RPM
Directional stability of nose gear	☐	☐
▲**Warning:** Allow engine to cool down to 149°C (300°F) (CHT) before shutdown. Shut down the engine, set the ignition switch and the master switch to the off position. Remove ignition key from the aircraft.		
Check for fuel and exhaust odors in cabin	☐	☐
Check for fuel stains on floor	☐	☐
Check fuel valve off function	☐	☐
Notes:		

05-20.2.4 Post Run-Up, Pre-inspection and Preparations

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Airframe, engine, propeller Perform a walk around to detect damages, fluid leaks or other abnormalities, Check visual the installation geometry between fuselage/ wing/ empennage and engine/ propeller/ cowling Check leveling of aircraft on ground. Refer to CHAPTER 08.	☐	☐		P/O	
Fuselage, wings and empennage Clean.	☐	☐		P/O	
Aircraft interior Clean and vacuum.	☐	☐		P/O	
Engine cowling Remove engine cowling. Refer to Section 71-00.3.1	☐	☐		P/O	
Spinner Remove spinner. Refer to CHAPTER 61	☐	☐		P/O	
Landing gear Remove main landing gear wheel fairings and upper fairings. Refer to Section 32-10.3.1 and 32-10.3.4	☐	☐		P/O	
Cabin Remove: - Roof cover - Access panels - Fabric covers and carpets. Refer to Section 25-00.2.3, 25-00.2.4, 25-00.2.5	☐	☐		P/O	
Instrument panels. Remove instrument panels. Do not use magnetic tools. Refer to Section 31-00.3.1	☐	☐		P/O	
Make record of all malfunctions and abnormalities	☐	☐		P/O	

05-20.2.5 Propulsion System

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Cleaning. Clean the engine as required in the Maintenance Manual for ROTAX® Engine Type 912 Series.	☐	☐		P/O	
Spinner. Remove the spinner. Inspect for cracks, security to propeller. Clean the spinner inside. Refer to Section 61.3.1	☐	☐		P/O	
Spinner plate. Check for cracks and fixing.	☐	☐		P/O	
Propeller hub. Inspect for cracks and corrosion. Check correct torque value (27 Nm). Refer to CHAPTER 61	☐	☐		LSAM	
Propeller blades. Inspect for play, dents, nicks, cracks, corrosion, pitting, and leading edge erosion. Refer to propeller manual.	☐	☐		LSAM	
Spacer. Check for damages and fixing.	☐	☐		LSAM	
Propeller. Conduct 100 hrs inspection as per Maintenance Manual of the installed propeller.	☐	☐		LSAM	
Engine. Conduct 100 hrs inspection as per Maintenance Manual for ROTAX® Engine Type 912 Series.	☐	☐		LSAM	
Engine. Conduct 200 hrs inspection as per Maintenance Manual for ROTAX® Engine Type 912 Series.			200 hrs	LSAM	
Engine cowling. Inspect for cracks, chafing, heat damages, delamination, exhaust or fluid leaks, condition of fastening system, and condition of paint.	☐	☐		P/O	
Engine control panel. Check for full range of travel, stop adjustment and required friction. Remove cover and check levers for damages, cracks, corrosion. Check cables for wear and security. Refer to Section 25-00.2.3	☐	☐		LSAM	
Cooling air ducts, engine baffling and cylinder cooling fins. Check for obstructions, cracks, wear and general condition. Check for signs of abnormal temperatures. Refer to CHAPTER 75	☐	☐		LSAM	
Oil and coolant radiator. Check for obstructions, leaks and security of attachment. If necessary clean cooling ribs. Refer to Section 75-00.3.1	☐	☐		LSAM	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Coolant hoses and lines. Check for damage, leakage, hardening from heat, porosity, for loose connections and secure attachments. Check routing for kinks and restricted elbows. Check fire protection shielding. Refer to CHAPTER 75	☐	☐		P/O	
Oil Lines. Inspect for damage, leakage, hardening from heat, porosity, security of connections and attachments. Verify routing for kinks or restricted elbows. Check fire protection shielding. Refer to CHAPTER 79	☐	☐		LSAM	
Oil tank vent line. Check for proper routing, for obstructions and clear passage Refer to CHAPTER 79	☐	☐		LSAM	
Fuel lines. Check for damage, leakage, hardening from heat, porosity, secure connections and attachments. Verify routing for kinks or restricted elbows. Metal fuel lines if applicable additionally check for cracks and for scuffing marks. Check fire protection shielding on the all fuel lines in engine and pilot compartment. Refer to Section 28-00.3	☐	☐		LSAM	
Gascolator. Open the gascolator, remove the filter and check for cleanliness. Clean filter and re-install. Check gascolator drain valve for correct function and leakage. Refer to Section 28-00.3	☐	☐		LSAM	
Fuel shut off valve. Check for security of attachment and signs of fuel leaks. Check that valve engages noticeable into the position ON/OFF. Refer to Section 28-00.3	☐	☐		LSAM	
Fuel Flow Rate. Check the value of fuel flow rate. Fuel flow rate: L 40 /____ / (l/h) R 40 /____/ (l/h). Refer to Section 12-10.2.3	☐	☐		LSAM	
Fuel contamination test. Take fuel samples from both wings. Inspect for contamination. Refer to Section 12-10.2.2	☐	☐		P/O	
Induction system. Check connection of manifolds between NACA-Inlet, Air filter box and carburetors for damage, security of attachments and condition. Inspect connected air hoses for condition and leakage. Refer to Section 71-00.3.3	☐	☐		P/O	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Air filter box. Check that the sealing surfaces are in good condition and clean. Inspect and clean filter. Replace if necessary. Clean air filter box inside. Check the drain hole at the bottom of the box for obstructions or blockage. Refer to Section 71-00.3.3	☐	☐		P/O	
Carburetor heat. Inspect connected air hoses for condition, leakage and security of attachments. Check the carburetor heater activation system for proper operation. Check activation system for wear and security of attachments. Refer to Section 71-00.3.3	☐	☐		P/O	
Cabin heater. Check heat shroud and heater attachments. Check the manifold for holes and attachments. Check the heater activation system for proper operation. Check activation system for wear and security of attachments. Refer to CHAPTER 21		☐		P/O	
Exhaust system. Checks attachment screws and springs for security and fit. Inspect system for damage and missing parts. Visual inspection of muffler, exhaust pipes and mounting flanges for cracks, corrosion and leakage. Refer to CHAPTER 78	☐	☐		LSAM	
Exhaust muffler. Remove heat shroud from muffler and inspect muffler for condition, corrosion and leakage Refer to CHAPTER 78			200h	LSAM	
▲Warning: Failure to inspect Muffler for leaks could result in Carbon monoxide entering the cabin, leading to serious injury or death!					
Firewall. Inspect for cracks, delaminations, buckling, and other signs of damage. Inspect all items attached to firewall for security. Inspect fire protection coat for condition, signs of overheating and full coverage of firewall.	☐	☐		LSAM	
Engine mount. Lift up the nose landing gear off of the ground and inspect for deformation, cracks, corrosion, damages from heat, loose hardware, chafing by cables, wires, hoses, etc., and make sure that any flexible item is secured to the engine mount. Check mounting bolts for condition and visual signs for loss of torque. If necessary check correct torque value (see 200h). Refer to Section 71-00.3.2	☐	☐		LSAM	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Engine mount. Check mounting bolts for condition and correct values. At engine (4 bolts M10): 35 Nm At shock mounts (4 bolts M10): 35 Nm At firewall (6 bolts M8): 22.5 Nm Replace safety wire where necessary Refer to Section 71-00.3.2			200h	LSAM	
Engine shock mounts. Inspect for porosity, cuts, damages and deformations Refer to Section 71-00.3.2	☐	☐		LSAM	
Battery attachment. Inspect for security of mounting and condition. Ensure that the vent holes are clean. Refer to CHAPTER 24	☐	☐		P/O	
Battery. Fully charge and clean up the battery surface and cables. Check the battery for reliable contact with the cables.	☐	☐		P/O	
Battery tray, terminals and cables. Check for security, corrosion and general condition. Refer to CHAPTER 24	☐	☐		P/O	
Starter. Check security of attachment and electrical connections. Refer to CHAPTER 24	☐	☐		LSAM	
Electrical wiring system. Verify the complete electrical wiring system for security, damage, wear and secure fit. Check all cable connections for tight fit, good contact, corrosion and condition.	☐	☐		LSAM	
Other engine external accessories. Inspect screws and nuts of all other external engine parts and accessories for tight fit.	☐	☐		P/O	
Foreign objects. Check the engine compartment for foreign objects.	☐	☐		P/O	

05-20.2.6 Fuselage

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Skin surface. Inspect for obvious signs of damage, including cracks, holes, buckling. Check the drain holes for obstructions. Check the paint condition and cleanliness.	☐	☐		LSAM	
Main frame. Inspect for cracks, dents, and delamination from the fuselage. Refer to CHAPTER 53		☐		LSAM	
Tail boom (from the baggage compartment towards tail) and the empennage interior structure. Inspect for cracks, delamination, or other signs of damage. Make sure that all drain holes are not obstructed. Check the rudder control cable guides and push-pull cable guides for delamination. Refer to CHAPTER 53, SECTION 27-20, 27-40		☐		LSAM	
Floor (pyramid), tunnel, fuselage root ribs, spar box, A-pillars. Inspect for cracks, holes, delamination and general condition. Inspect bonding areas for cracks and separations. Refer to CHAPTER 53		☐		LSAM	
Access panels. Inspect for condition. Check fasteners for condition. Refer to Section 25-00.2.3		☐		P/O	
Windows. Inspect windshield, roof window, door windows and rear windows for cleanliness, scratches, cracks and bonding.	☐	☐		P/O	
Cabin doors. Inspect for smooth operation and fit. Inspect the skin, hinges, gas struts, latching mechanisms and door seals. Inspect apertures protection of latching mechanism. Inspect door structure for cracks and other damages. Lubricate hinges and all moving parts. Refer to Section 52-00.3.1		☐		LSAM	
Baggage door. Inspect for operating and fit. Inspect door skin, attachment pins, and latching mechanism. Check condition of security robe. Refer to Section 52-30.3.1		☐		LSAM	
Baggage compartment. Check floor and luggage hooks for cracks, delaminations, dents and holes.		☐		P/O	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Wing attachment area. Remove the wings Refer to Section 57-00.3.1 Check the fuselage root ribs for cracks and delaminations. Check the tunnel for wing tongues for any signs of damages. Inspect the bushes/ ball eyes for wing pin connection for tight connection to the structure, for corrosion and any sign of increasingly wear. Check air pressure lines for damages, chafing, kinks. Check connectors for proper installation and connecting functioning. **Check each 600 hrs or at the next 100 hrs inspection after 2 years, whichever occurs first.**			600h or 2 years	LSAM	
Flight controls. Check for smooth operation of all flight controls with flaps in retracted and extended positions. Leave flaps in the full up position when checks are completed.	☐	☐		LSAM	
Aileron and Stabilator control. Check the control sticks, the brackets, the control rods and the Stabilator push-pull for distortion, cracks, chafing, corrosion and security. Examine all bearings for condition and security fit. Verify all safety means to be intact. 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. Ensure proper contact of the Stabilator forward and aft stops with stop plate and aileron left and right with stop body. Refer to Section 27-00.3		☐		LSAM	
Rudder control. Check rudder control pedals and rudder bell crank for deformations, cracks, distortions, corrosion, chafing and security. Inspect rudder pedal pivot brackets and connection of the rudder controls with the nose gear steering tubes for security and condition. Lubricate the PVC supports of the pedals. Refer to Section 27-20.2		☐		LSAM	
Rudder neutral position system. Check for deformations, cracks, distortions, corrosion, chafing and security. Release the nose gear and check proper function and rudder deflection limited by travel stops. Refer to Section 27-20.3.1		☐		LSAM	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Rudder control cables. Inspect control cables, control cable guides, cable connections, turnbuckles, and hardware for correct installation, wear, securing and proper operation. Check cable tension. Refer to Section 27-20.3.4	☐	☐		LSAM	
Flap actuator. Clean and run flaps up and down to check for smooth operation. Check for play, wear and damage, for secure of mechanical connections and loose or missing lock devices. Check lubrication of guide pin of drive of potentiometer and limit switches. 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 indication. Refer to Section 27-50.3.4	☐	☐		LSAM	
Trim systems. Check Trim systems for smooth operation. Check correct function of trim position indicators. Remove cover from trim wheel/ indicator and cover in center tunnel and check Trim systems for wear and damage, condition of cables and cable hoses and for secure of mechanical connections and loose or missing lock devices. In case of installed electrical stabilator trim system check the condition of switch and wiring. Refer to Sections: 27.10.2.1; 27-20.2.2; 27-40.2.1; 25-00.2.3		☐		LSAM	
Environmental Control System (ECS). Check operation of the door window vents. Check the sliding window for smooth operation. Refer to CHAPTER 52		☐		P/O	
Placards. Inspect exterior placards for presence and condition. Refer to CHAPTER 11	☐	☐		P/O	
Static port. Check static port for obstructions and security. Refer to SECTION 34-20	☐	☐		P/O	
▲Warning: Do not apply compressed air to the system, since this will result in damage to the static air flight instruments.					
Antennas. Inspect for security and condition. Refer to SECTION 23-10		☐		P/O	

05-20.2.7 Wings

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Wings, Ailerons, Flaps. Check condition of paint and inspect for obvious signs of damage, including cracks, dents, holes, buckling and other evidence of failure. Take special care for leading and trailing edge area. Refer to Section 57-00.2	☐	☐		LSAM	
Ailerons. Inspect for damage, looseness, or play in attached pivots and bearings and condition of rod end attachment. Check bolts and nuts for proper securing. Refer to Section 57-52.2	☐	☐		LSAM	
Aileron steering. Check play allowed Maximum allowed play is 3 mm. Refer to Section 27-00.3		☐		LSAM	
Flaps. Inspect for damage, looseness, or play in attached pivots and bearings and condition of rod end attachment. Check bolts and nuts for proper securing. Refer to Section 57-51.2	☐	☐		LSAM	
Flap steering. Check play allowed Maximum allowed play is 5 mm. Refer to Section 27-00.3		☐		LSAM	
Wing pivots. Check pivots for ailerons and flaps and attached bearings for security and excessive play. Inspect the brackets for condition and any sign of bending. Refer to Section 57-00.3.2	☐	☐		LSAM	
Flap deflection. Ensure that the flaps extend equally on each side of the aircraft in the take-off, cruise and landing configurations. Refer to Section 27-50.3.2	☐	☐		LSAM	
Flight controls. Inspect all push-pull rods, rod end bearings and bellcranks for condition, play, security of attachment. Lubricate them. Ensure proper locking where applicable.	☐	☐		LSAM	
Wing interior. Inspect the wing spar and inner wing structure through the outer access panel for signs of cracks, delaminations and damages. Inspect visible bonded areas of ribs and other structures. Refer to Section 57-00.2		☐		LSAM	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Wing interior. Inspect the wing spar through the outer access panel and access holes along the trailing edge for signs of cracks or delaminations. Inspect visible bonded areas of ribs and other structures. Refer to Section 57-00.2			200h	LSAM	
Wing main bolts. Check for proper installation and re-torque. Refer to Section 57-00.3.1	☐	☐		LSAM	
Wing attachment area. Check the wing/fuselage joint for tangential play, Refer to Section 57-00.3.3		☐		LSAM	
Wing attachment area. Remove the wings. Refer to Section 57-00.3.1 Inspect the wing spar and main bolt bushings for cracks, delaminations or any other damage. Check the root ribs for de-bonding cracks and delaminations. Inspect the main bolts for straightness, corrosion, indentation or any other sign of increasingly wear. Check bushing installation for abnormal play. Refer to Section 57-00.2 Inspect the root rib pins for tight connection to the root ribs, for corrosion, indentation or any other sign of increasingly wear, and the forward pins for fuel leaks. Inspect all push-pull rods, rod end bearings and bellcranks for condition, play, security of attachment. Lubricate them. Ensure proper locking where applicable. Check air pressure lines for damages, chafing, kinks. Check connectors for proper installation and connecting functioning. **Check each 600 hrs or at the next 100 hrs inspection after 2 years, whichever occurs first.** Assemble the wings including all necessary checks. Refer to 57-00.3.1			600h or 2 years	LSAM	
Tie down points. Check thread and structure around the tie down attach point for any damage. Refer to Section 57-00.3.4		☐		P/O	
Drain and vent holes. Check for blockage and suspect appearance of any liquid. Refer to Sections 57-00.3.2, 57-51.3.2, 57-52.3.2		☐		P/O	

Inspection and/or Required Maintenance Checklist	***100hour***	***Annual***	***Other Times***	***Minimum Level of Certification***	***Initials / Remarks***
Fuel tanks. Check the wing leading edge for cracks and for fuel leaks. Inspect the outer skin in the fuel tank area for fuel leaks. Inspect the visible area of the fuel tank for foreign objects.	☐	☐		LSAM	
Fuel tanks. Open the side wing cap and inspect inner fuel tank for condition of sealant and inner structure. Inspect the outer fuel tank section through the filler. If necessary clean/ slosh the fuel tank. Inspect fuel flap in slosh rib for proper functioning and attachment. Refer to Section 28-00.3			600h	LSAM	
Fuel outlet screens. Inspect the screens for contamination. If necessary remove and clean. Refer to Section 28-00.3			600h	LSAM	
Fuel vent lines. Check fuel vent lines and connections for leakage and blockage Refer to Section 28-00.3	☐	☐		P/O	
Fuel filler caps. Inspect for proper locking and leakage. Check that the placards are present and readable. Refer to Section 28-00.2	☐	☐		P/O	
Fuel sight gauges. Inspect for security and presence of fuel leakage, and readable indication. Replace gauges if necessary. Refer to Section 28-00.2	☐	☐		P/O	
Pitot system. Inspect the Pitot tube for obstruction, signs of damage, which may affect proper airflow. Check static pressure lines for correct installation, kinks and water. Test for proper operation after reinstallation. Refer to SECTION 34-20	☐	☐		P/O	
AOA system. Inspect the AOA sensor for obstruction, signs of damage, which may affect proper indication. Check AOA pressure lines for correct installation, kinks and water. Test for proper operation after reinstallation. Refer to SECTION 34-20	☐	☐		P/O	
Navigation lights or Combi lights (whatever is installed). Check operation, condition of plastic body, and security of attachments.	☐	☐		P/O	

05-20.2.8 Empennage

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Empennage. Inspect complete surface of the vertical and horizontal Stabilator, of the trim tab, of the rudder and underfin for damage such as dents, cracks, holes and delaminations.	☐	☐		LSAM	
Underfin. Inspect attach points for security and condition. Check skid plate for wear. Refer to SECTION 55-30,	☐	☐		P/O	
Tail light (if installed). Check operation, condition of plastic body, and security of attachments.	☐	☐		P/O	
Drain and vent holes. Check for blockage and suspect appearance of any liquid. Refer to Sections 55-10.3.3, 55-30.3.2, 55-40.3.2		☐		P/O	
Rudder. Inspect the bearings for damage or play, check the condition of hinge attachments and rudder cable attachments. Lubricate the hinges and the cable attachment points. Refer to SECTION 55-40		☐		LSAM	
Rudder steering. Check play allowed. Make sure that play on the rudder trailing edge does not exceed 3 mm. Refer to Section 27-00.3		☐		LSAM	
Beacon light (if installed). Check operation, condition of plastic body, and security of attachments	☐	☐		P/O	
Stabilator with trim tab. Inspect looseness or play in mounting pivot attachments and control rod connection to trim tab. Refer to Section 55-10.2		☐		LSAM	
Stabilator mounting pivot. Inspect for deformation, cracks, corrosion and chafing. Inspect the pivot bearings for play and lubricate them. Maximum allowed play is 2 mm. Refer to Section 55-10.3.3	☐	☐		LSAM	
Stabilator trim tab steering. Check play allowed. Make sure that play on the Stabilator trim tab trailing edge does not exceed 3 mm. Refer to Section 55-10.3.3		☐		LSAM	
Flight controls. Inspect push-pull, control rods and rod end bearings for condition, play, security of attachment. Lubricate them. Refer to CHAPTER 27	☐	☐		LSAM	

05-20.2.9 Landing Gear

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Wheel fairings and upper main landing gear fairings. Inspect for condition, scratches, cracks, and signs of overstress. Clean the fairings inside.	☐	☐		P/O	
Fairing mounts. Inspect for cracks, distortion or other damages. Refer to Sections 32-10.3.1, 32-10.3.2, 32-10.3.4	☐	☐		P/O	
Main landing gear attachment boxes. Inspect fuselage structure for cracks, delamination and security of hardware at such points and areas where the main landing gear is attached. Refer to Section 32-10.2	☐	☐		LSAM	
Landing gear struts. Clean, Inspect the landing gear legs and attachment clamps for scratches, cracks, corrosion, signs of overstress and side-loading. Check for presence, positioning and condition of rubbers installed in clamp attachment.	☐	☐		LSAM	
Wheels and rims. Clean, Check tires for wear, flat spots, cuts, dry- rotting, foreign matters and deterioration. Inspect rims for security, deformation and cracks and other damage. Check all hardware for loss of torque. Check the tire pressure, and service as necessary. Check proper location of red slide mark. Inspect wheel axles for security of attachment to struts and for any damage. Refer to Section 32-10.3.2	☐	☐		LSAM	
Wheel bearings. Inspect the bearings for damage, wear, and corrosion. Check bearing for excessive play, binding. Inspect the bearing protection plate for condition. Refer to SECTION 32-10	☐	☐		LSAM	
Nose landing gear strut. Inspect strut and strut attachment to engine mount for signs of bending, deformations, stress marks, scratches and corrosion. Refer to SECTION 32-20	☐	☐		LSAM	
Nose landing gear. Lift up the nose landing gear and check that it rotates within operating limits. Check the steering rods, steering lever and the strut for play and correct securing. Check proper functioning of centering device. Inspect correct installation of the nose gear strut to the wheel. Check security of assembly. Refer to Section 32.20.3.3		☐		LSAM	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Shock absorber. Inspect the shock absorber of nose landing gear for binding and unusual noises while operating. Refer to Section 32-20.3.6		☐		LSAM	
Brake System. Clean and check hydraulic cylinders, activation handle and connections for condition, braking fluid leaks, for cracks and corrosion, security of components. Refer to Section 32-40.2	☐	☐		P/O	
Hydraulic brake lines. Inspect brake fluid carrying lines at the main landing gear for condition, leakage and security of attachment. Inspect brake lines that are tie wrapped to the main gear strut. Check for security and evidence of chafing. Inspect the protection of brake lines in the places where they go through the fuselage skin Refer to SECTION 32-40	☐	☐		P/O	
Brake calipers, brake pads and brake discs. Check freedom of movement of the pistons and pressure plates. Inspect brake disks and linings for condition and wear. Replace brake disk if worn to 3.95/0.155 mm/inch Replace brake linings when worn by 2.54/0.1 mm/inch Inspect all hardware for signs of loss of torque. Do not lubricate. Refer to SECTION 32-40	☐	☐		LSAM	
Parking brake valve. Inspect for security of mounting, signs of leaks and function.	☐	☐		P/O	
Brake fluid reservoir. Inspect for condition, security, and fluid level. Check vent tube on top of the reservoir for blockage. Service if necessary. Use only brake fluid of the required grade. Refer to Section 32-40.2	☐	☐		P/O	
Brake fluid. Renew. Refer to Section 12-10.2.6			2 years	LSAM	

05-20.2.10 Cabin and Baggage Compartment

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Fire extinguisher. Remove the fire extinguisher (if applicable) and check that expiration date is not exceeded. Replace if necessary. Refer to CHAPTER 26		☐		P/O	
Safety belts. Inspect belts for wear, cuts, and broken stitching. Check all buckles for proper locking and release. Check belt attachments to structure. Refer to Section 25-00.2.2		☐		P/O	
Seats. Check operation of seat adjustment mechanism including belt and seat stops. Check operation of inflatable cushions. Remove seats. Remove upholstery partly and inspect seat structure for general condition, cracks. Inspect cushions, inflatable cushions lining, hand pump and upholstery for condition. Refer to Section 25-00.2.1, 25-00.2.6		☐		P/O	
Seat guides and stops. Inspect for cracks, wear of latching holes and guides, and security of guides and stops. Refer to Section 25-00.2.1		☐		P/O	
Avionics. Check the control knobs for operating. Check security of indicators, radios, GPS display (if applicable), controls on side and central panels, and markings legibility. Do not use magnetic tools.		☐		P/O	
Instruments. Check instrument panel mounting brackets for security and condition, and markings readability. Do not use magnetic tools.		☐		P/O	
Instrument panels. Inspect for general condition, security of attachment, and cleanliness. Do not use magnetic tools.		☐		P/O	
Instrument console inside and back side of panels. Inspect all lines, wires, control cables, hoses, instruments, and so on, for chafing, interference, proper routing and loose stressed connections. CHAPTER 23, CHAPTER 31 and CHAPTER 34		☐		LSAM	
Magnetic compass. Inspect for security and oil leaks. Inspect compass correction card for presence and legibility of all headings. Do not use magnetic tools.		☐		P/O	

Inspection and/or Required Maintenance Checklist	100hour	Annual	Other Times	Minimum Level of Certification	Initials / Remarks
ELT. Dismount the ELT from the bracket and remove the battery cover. Inspect for battery corrosion and any obvious internal or external damage to housing. Check that the battery replacement date matches the date on the housing placard. Reinstall the battery cover. Inspect as required in the ELT Maintenance Manual. Record the battery replacement due date: ________________ Refer to SECTION 25-62	☐	☐		P/O	
ELT installation. Inspect the ELT wiring and antenna cable for security, routing, and chafing. Check connectors for security of pins and proper connection. Inspect the ELT bracket for cracks and security. Replace the bracket if any cracks are found. Refer to SECTION 25-62		☐		P/O	
Interior placards. Inspect for presence, legibility and security of all required interior placards. Refer to CHAPTER 11		☐		P/O	
CO_2Detector. Check for presence and condition. Check expiry date. Replace if necessary.	☐	☐		P/O	

05-20.2.11 Return to Service

Inspection and/or Required Maintenance Checklist	100hour	Annual	Other Times	Minimum Level of Certification	Initials / Remarks
Fuselage and wings. Make sure that aircraft is free of any tools, parts, and foreign objects. Reinstall all access panels, fairings, seats, etc., which were removed for the inspection.	☐	☐		P/O	
Reinstall instrument panels. Check the security of attachment and condition. Refer to CHAPTER 31		☐		LSAM	
Propeller. Install spinner Refer to CHAPTER 61	☐	☐		P/O	
Engine. Check the presence of the oil in the oil tank, cooling liquid in the expansion tank. Make sure that the coolant level in the overflow bottle is between **min** and **max** marks as required by the Operator's Manual for all versions of ROTAX® 912 S. Check that the engine compartment is free of tools, rags, and any other foreign objects.	☐	☐		P/O	

Inspection and/or Required Maintenance Checklist	*100hour*	*Annual*	*Other Times*	*Minimum Level of Certification*	*Initials / Remarks*
Engine. Run the engine for no more than two minutes at 1400 to 1800 RPM. After shutdown, check for the oil filter leaks, and any other components removed during this inspection. Install the cowlings, if there are no leaks detected.	☐	☐		P/O	
Engine. Warm up the engine at 2000 to 2500 RPM. Check all aircraft systems to ensure proper operation. During the engine warming, operate the engine systems at appropriate engine speeds and complete all checks listed on the Run-up checklist; fill data to the post-inspection column. Check the wheel brakes and parking brake for functioning.	☐	☐		P/O	
Flight controls. Check for full range of travel and excessive friction	☐	☐		P/O	
Flaps. Operate through full extension and retraction steady and complete deployment. Check correct limit switch operation. Verify the corresponding flap position indicator reading.	☐	☐		P/O	
Trim System. Check for full range of travel and excessive friction. Inspect proper operation for trim position indicator.	☐	☐		P/O	
Airworthiness Directives. Verify all airworthiness directives, Service Bulletins, service information complied with.	☐	☐		P/O	
Aircraft records. Input all necessary entries in the logbooks and any other required records. Service time Records, Equipment list and weight and balance Records – update, if necessary	☐	☐		LSAM	

All service items required by Service Notifications, Service Bulletins, Safety Alerts and Airworthiness Directives and all prescribed scheduled maintenance checks are successfully accomplished. The aircraft is airworthy and meets the condition specified in the aircraft data sheet.

Service station: Next inspection when ________hours of operation has been reached.

Place, Date

Name, signature of mechanic Name, signature of inspector stamp

05-20.3 Flight-Line Check

05-20.3.1 General

The flight-line checks include the pre-flight and post-flight checks. Do these checks each day the airplane is used.

05-20.3.2 Pre-Flight Check

Perform all Preflight Inspection items as defined in the aircraft POH before the first flight of the day to make sure that the general condition of the airplane and of the engine is good. It is important for flight safety. Look in the airplane log-book for problems before doing the pre-flight check.

▲Warning: Do all the steps of the pre-flight check carefully. Accidents can occur if the pre-flight check is not done correctly.

05-20.3.3 Post-Flight Check

Re-do all Preflight Inspection items as defined in the aircraft POH after the last flight of the day.

You shall also:

- Refuel the airplane (Section 12-10.2.1).
- Record in the log book each problem found in flight and during post-flight check.
- Park the airplane.

05-20.4 Major Structure Inspection

A comprehensive airframe structural inspection is mandatory after reaching the time limit defined in Chapter 05-10.3 Component Time Limits. The corresponding inspection program will be announced by the aircraft manufacturer prior to the highest time CTLS-LSA reaching the defined time limit.

When you are approaching the time limit and no inspection program is published, contact Flight Design in due time before reaching the time limit, so that the inspection program can be announced.

SECTION 05-30 –
UNSCHEDULED MAINTENANCE CHECK

Please contact the aircraft manufacturer for further instructions.

CHAPTER 06 –
DIMENSIONS

Contents

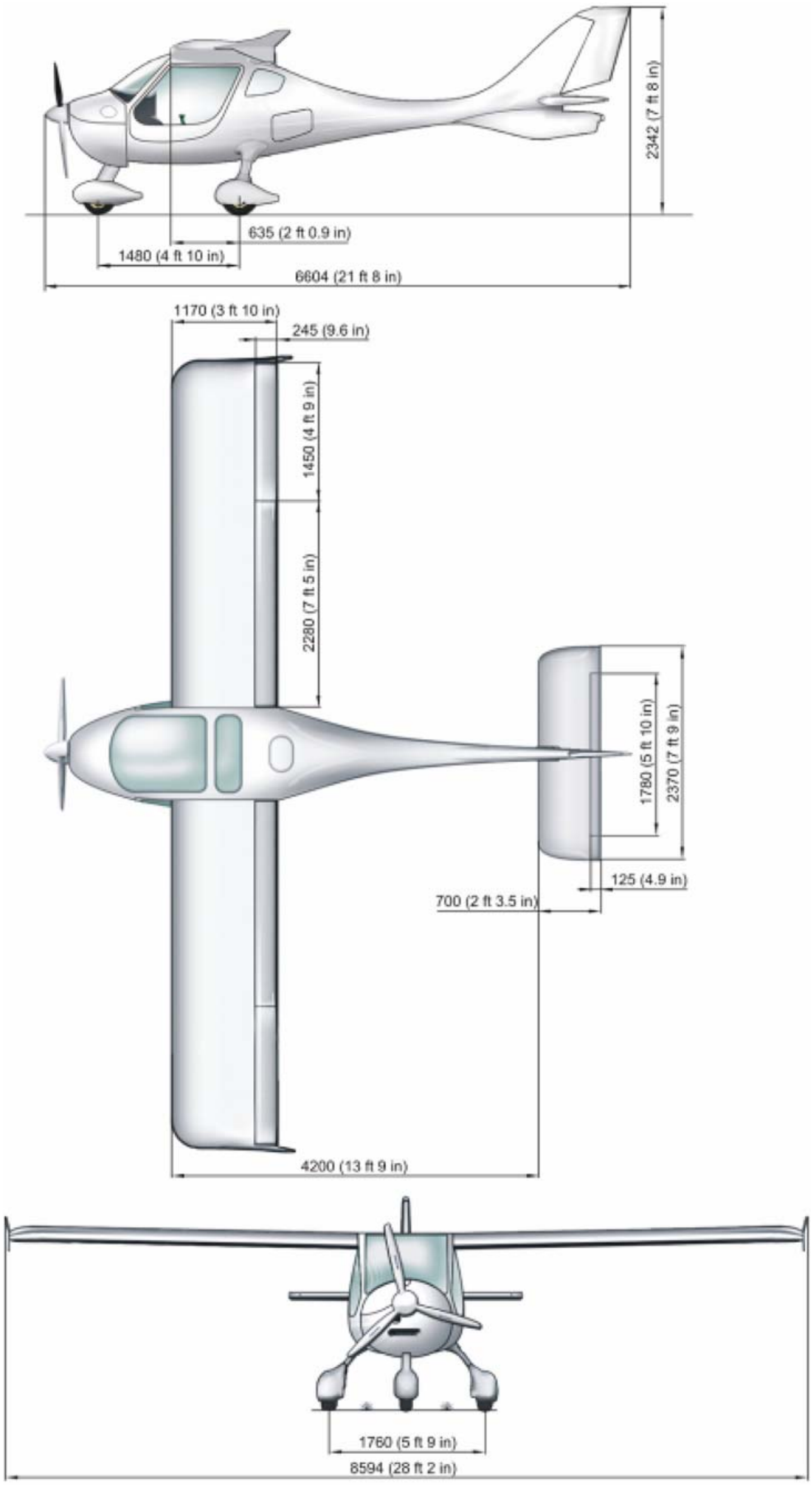
06-00.1 General

In this chapter you can find the information on the airplane main dimensions and the three-view drawing of the CTLS-LSA. All dimensions shown below are approximate.

06-00.2 Dimensions

General		
Max. length	6604 mm	21 ft 8 in
Max. height	2342 mm	7 ft 8 in
Wing span	8594 mm	28 ft 2 in
Areas		
Wing	9.98 m^2	107.43 sq. ft
Stabilator	1.60 m^2	17.20 sq. ft
Vertical tail	1.41 m^2	15.16 sq. ft
Aspect Ratios		
Wing	7.29	
Stabilator	3.38	

06-00.3 Three-View Drawing



CHAPTER 07 – JACKING

Contents

07-00.1 General

This chapter provides instructions for jacking of the aircraft.

▲**Warning:** Take particular care when jacking the complete aircraft. The fuselage is a delicate, light-weight composite sandwich structure. Distribute jacking load over large area and stop aircraft from rolling to the side.

07-00.2 Jacking

07-00.2.1.1 Type of Maintenance

Line

07-00.2.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

07-00.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Jacking of the main wheel

Step	***Action***	***Reference***
1	Secure the airplane against inadvertent rolling by applying the parking brake and positioning chocks under the wheels which are on the ground.	
2	Remove the wheel fairing.	32-10.3.1
3	Hold the airplane in the wing area of the stiffened rib where aileron/flap brackets installed and lift the wing slightly.	
4	Place the jack under the fuselage belly right under an undercarriage.	
5	Remove the wheel.	32-10.3.2

C. Jacking of the nose wheel

Step	***Action***	***Reference***
1	Secure the airplane against inadvertent rolling by applying the parking brake and positioning chocks under the wheels which are on the ground.	
2	Detach nose wheel fairing. Lift up. Hang fairing with any suitable rope/stripe.	32-20.3.2
3	Hold the tail down until the nose wheel is free. Place the jack under the fuselage belly right under the firewall.	
4	Remove the wheel.	32-20.3.1

CHAPTER 08 –
WEIGHING AND LEVELING

Contents

08-00.1 General

This chapter provides you with information how to weight and level an airplane.

08-00.2 Weighing and Leveling

08-00.2.1.1 Type of Maintenance

Line

08-00.2.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

08-00.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Scale	3	pcs
Digital level	1	pcs

B. Weighing

Step	*Action*	*Reference*
1	Set the airplane on parking brake	
2	Make sure that all of aircraft equipment is installed in the proper location.	
3	Clean the aircraft, remove foreign objects.	
4	De-fuel aircraft except of unusable fuel.	12-10.2.1
5	Fill the engine operating fluids (oil, coolant) and brake fluid.	12-10.2.4 12-10.2.5
6	Move the seats to the most forward position.	
7	Retract flaps completely.	
8	Set all control surfaces in neutral position.	
9	Put the airplane on a level space on three scales or one scale with leveling blocks.	
10	Make sure that the plane is leveled using a digital level put onto the tunnel between the seats.	

C. Leveling

Step	*Action*	*Reference*
1	Set the airplane on parking brake	
2	Make sure that the plane is leveled in longitudinal direction using a digital level put onto the tunnel between the seats.	
3	Make sure that airplane is leveled in transversal direction using a digital level put onto the fuselage roof above the spar box.	

CHAPTER 09 –
TOWING AND TAXIING

Contents

09-00.1 General

This chapter provides you with information how to weight and level an airplane.

09-00.2 Description

The aircraft is equipped with an interface for Tow Bar connection, there are two protruded pins attached to the nose gear leg. The tow bar is attached to these pins. The tow bar attachment size fits to one of the most common tow bars that also fit most Cessna aircraft models. See Fig. 09-00-1.

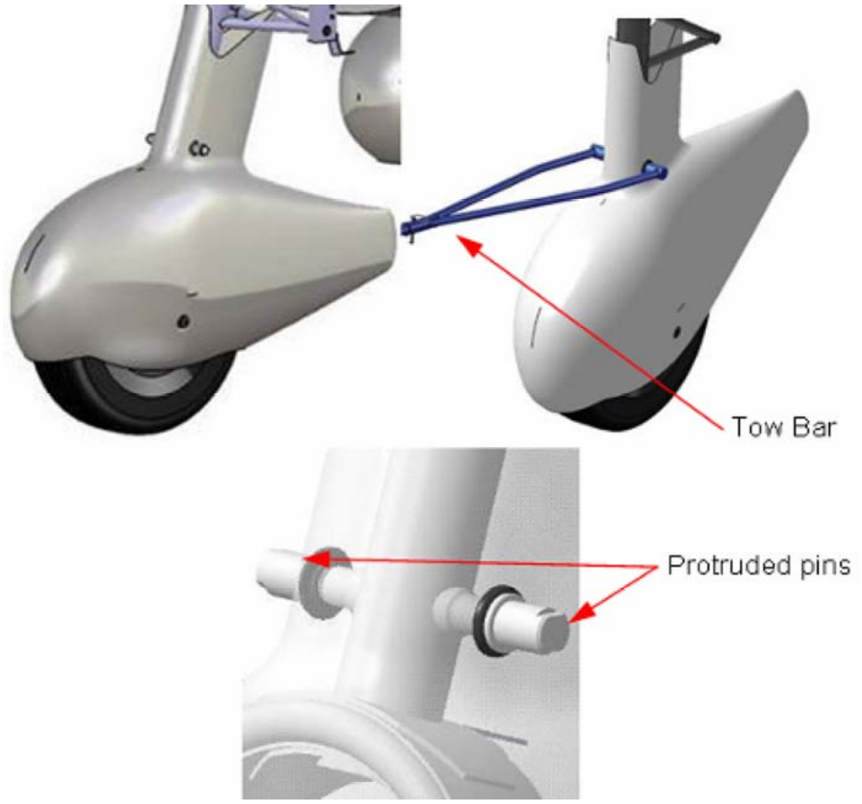


Fig. 09-00-1

09-00.3 Placards and Markings

The tow bar may only be used when the following markings are present on the aircraft (Fig. 09-00-2). Markings must match with the rudder control system stop adjustment.

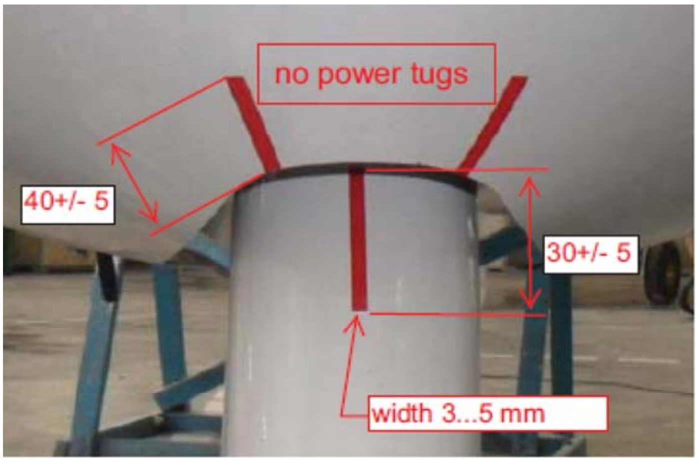


Fig. 09-00-2

Two red lines on the cowling mark the maximum deflection obtainable with the nose gear.

One red line on the nose wheel fairing marks the center reference line of the nose wheel and provides the steering position. This marking is in line with the tow bar towing direction, when attached (Fig. 09-00-3).

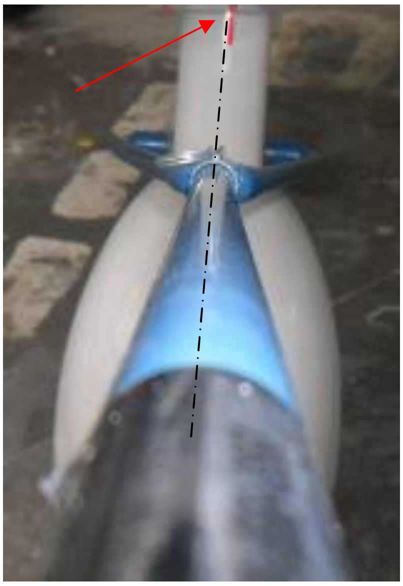


Fig. 09-00-3

09-00.4 Maintenance Practices

09-00.4.1 *Towing*

09-00.4.1.1 Type of Maintenance

Line

09-00.4.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

09-00.4.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Towing bar	1	pc

B. Towing

Step	***Action***	***Reference***
1	To attach the towing bar to the towing pins, follow the instructions of the individual towing bar design. Make sure the towing bar dimensions properly match the towing pins.	
2	When the tow bar is attached to the nose gear, the aircraft can be easily moved by hand. You should always pull or slow down with the tow bar. Avoid pulling on the propeller, to avoid damages to the propeller.	
3	To steer the aircraft while pulling, move the tow bar to the sides. The range of steering is limited by the stops of the rudder control system. Red lines on the lower cowling show the allowed range of steering. The red line on the nose gear fairing must always stay in between the two lines on the cowling (Fig. 09-00-4).	

▲Warning: The tow bar has a long arm. When you steer with the tow bar you can bring high force to the nose gear steering mechanism. When you try steer more than is possible by the rudder control system stops, you can easily damage the rudder control system. Therefore, always stay within the area indicated by the red lines on the cowling.

▲Warning: Do not use power tugs! The tow bar interface is designed to support towing by hand, only. Usage of power tugs provides a high risk to damage the rudder control system stops.

Fig. 09-00-4

09-00.4.2 *Markings Installation*

09-00.4.2.1 Type of Maintenance

Line

09-00.4.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

09-00.4.2.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Markings Installation

When cowling and/or nose wheel fairing has been replaced, or when the markings do not match with the actual adjustment of the rudder control system stops, or when the existing markings are damaged and unusable, new markings must be applied as follows.

Step	***Action***	***Reference***
1	Prepare three pieces of red film, in accordance with Fig. 09-00-5. Use ORACAL 951 series red film, or 3M red film or another red film with similar adhesive properties and color fastness.	
2	Mark the center of the nose landing gear fairing. This marking must align with the tow bar (Fig. 09-00-6).	
3	Carefully turn the nose landing gear to the left, up to the stop. Mark this position on the cowling with the tape. This marking must align with the center mark on the nose wheel fairing (Fig. 09-00-7).	
4	Do this for the right side (Fig. 09-00-8).	
5	Check the correctness of the markings: carefully turn the nose landing gear, looking along the tow bar and using the center marking on the nose wheel fairing. If the markings on the fairing and on the cowling align and the nose landing gear reaches the stops, then the markings are done correctly. The stops shall never be reached before the markings line up. It is acceptable when the markings line up just before the stop is reached.	
6	Install the “No Power Tugs” sticker as shown on Fig. 09-00-5.	

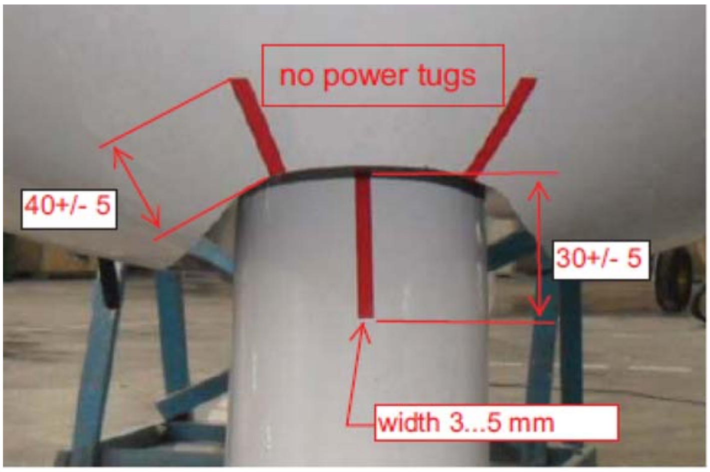


Fig. 09-00-6


Fig. 09-00-7


Fig. 09-00-8

CHAPTER 11 –
PLACARDS AND MARKINGS

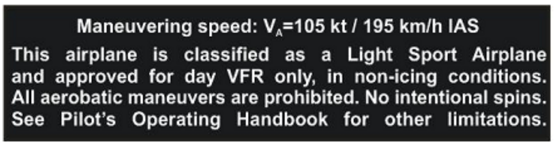
Contents

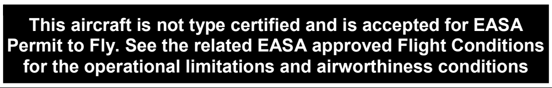
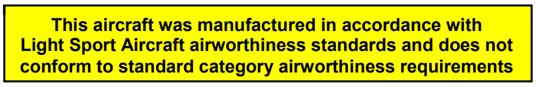
11-00.1 General

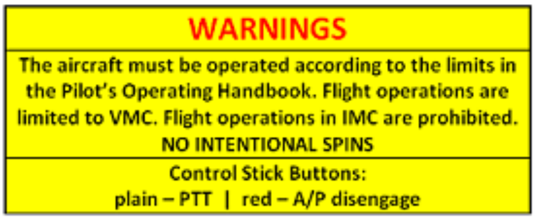
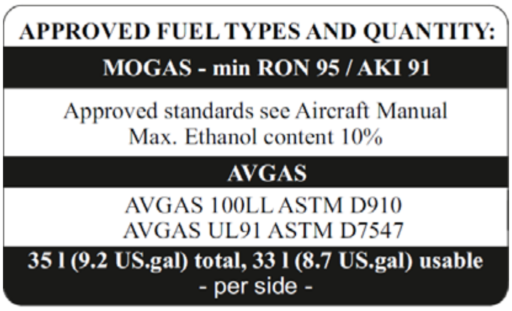
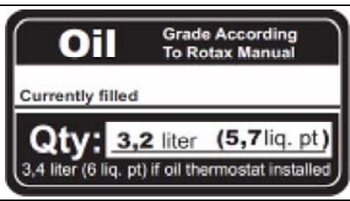
This chapter provides you with information about exterior and interior placards and markings.

11-00.2 Placards and Markings

The aircraft is equipped with the following markings and placards:

<table>
<tr><th colspan="2">Item</th><th>Location</th></tr>
<tr><td>Warning labels –
LSA aircraft operated in
EASA countries under
Permit to Fly</td><td>

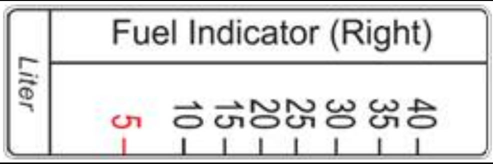

</td><td>Instrument panel</td></tr>
<tr><td>Warning labels –
LSA aircraft in
other countries</td><td>


</td><td>Instrument panel</td></tr>
<tr><td>Fuel grade</td><td>
</td><td>Adjacent to each fuel tank filler cap</td></tr>
<tr><td>Oil grade and amount</td><td>
</td><td>Inspection flap
engine cowling</td></tr>
</table>

Baggage payload		Both sides of the baggage compartment
Baggage payload		Both sides of the hat rack
Warning		Both sides of the baggage compartment

These placards markings are required minimum and are listed in the POH in Section 2 – Limitations.

The following additional placards are applied:

Engine operation		Adjacent to the relevant control
Trim operation		Adjacent to the trim controls
Trim operation		Adjacent to the trim controls
Fuel quantity		Adjacent to the fuel level sight gages
Carb heat and cabin heat		On the relevant knobs
Brakes		Adjacent to brake lever and park brake valve
Door lock		Adjacent to the door lock handles
No step		On the trim tab of the Stabilator
No power tugs		Adjacent to the nose wheel on the cowling
Door opening		Outside door surface, below the sliding windows

CHAPTER 12 – SERVICING

Contents

12-00.1 General

The procedures described in this chapter are important for correct servicing of aircraft.

SECTION 12-10 – REPLENISHING

12-10.1 General

This section provides instructions concerning replenishing procedures.

12-10.2 Replenishing Practices

12-10.2.1 *Refueling and Defueling*

Fuel content:	130 l (65 l per wing tank)
Maximum Usable fuel:	124 l
Fuel specification:	EN 228 Super min. RON 95 EN 228 Super plus min. RON 95 AVGAS 100 LL ASTM D910 AVGAS UL 91 ASTM D7547 no Ethanol

12-10.2.1.1 Type of Maintenance

Line

12-10.2.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

12-10.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Refueling

Step	*Action*	*Reference*
1	Turn the engine off.	
2	Set parking brake	
3	Remove the filler cap situated on the upper surface of wing skin.	
4	Fill the fuel tank with fuel	
5	Install the fuel filler cap	
6	Do steps 3-5 for the other wing	

C. Defueling

Step	*Action*	*Reference*
1	Turn the engine off.	
2	Set parking brake	
3	Put a container below the gascolator drain valve.	
4	Open the gascolator drain valve. Drain all accessible fuel from the tanks.	
5	Close the gascolator drain valve.	

12-10.2.2 *Fuel Contamination Test*

12-10.2.2.1 Type of Maintenance
Line

12-10.2.2.2 Minimum Level of Certification
Pilot/Owner (P/O)

12-10.2.2.3 Procedure
A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Transparent fuel tester	1	pcs

B. Fuel Contamination Test

Do this test each day you operate the airplane.

Step	*Action*	*Reference*
1	Put the fuel tester under the gascolator drain valve.	
2	Open the drain valve.	
3	When the container is half full, close the drain valve.	
4	Let the fuel in the glass container stand for 1minute.	
5	Examine the fuel. Look for small drops of water in the bottom of glass container. Look for small particles of solid material.	
6	If you find any contamination of the fuel you must do the test again.	12-10.2.1

C. Troubleshooting.

If you find any contamination of the fuel you must do the following:

Step	*Action*	*Reference*
1	Repeat the fuel contamination test.	
2	If you still find contamination after three tests, drain the fuel tank.	12-10.2.1
3	Flush the tank and fill it clean fuel.	12-10.2.1

12-10.2.3 *Fuel Flow Rate Check*

12-10.2.3.1 Type of Maintenance
Line

12-10.2.3.2 Minimum Level of Certification
Part 145, Part M, Part 66 CS

12-10.2.3.3 Procedure
A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Transparent container	1	pcs

B. Fuel Flow Rate Check

Check the fuel flow per minute of each tank through the gascolator exactly and note and compare with the previous fuel flow rate. If there is a drop more than 5%, then check full system (bows in fuel lines) and if still a difference, check the fuel filters in the wings.

Step	***Action***	***Reference***
1	Set the plane on the prepared platform.	
2	Attach the wings.	57-00.3.1
3	Set a fuselage on horizon level, using supports under the main wheels.	08.2
4	Fill in a left wings' tank with not less than 5 liters of fuel. Open the gascolator drain valve. Fuel should drain by gravity.	
5	If it is not, create superfluous pressure in a tank in the following way: - close NACA inlet in the right wing tip; - connect the hose to the NACA inlet in the right wing tip; - blow into the free end of the hose to promote the superfluous pressure in the tank.	
▲Warning: Don't use any pumping devises to prevent fuel tank from the damage.		
6	After the fuel starts to flow down, remove the superfluous pressure in a tank.	
7	**Inspection: checking the fuel pipe throughput. Fuel should drain from a gascolator by gravity with the charge not less 40 l / hour.**	
8	Drain all fuel from the left wings' tank. Close the gascolator' drain valve.	
9	Repeat procedure for the right wing.	

C. Troubleshooting.

If the charge is less than 40 l / hour, it is necessary to check up:

Step	***Action***	***Reference***
1	Check fuel hoses for absence of inflections.	
2	Cleanliness of the fuel filter and a gascolator.	28.3.1
3	After checking the fuel hoses repeat the test.	

12-10.2.4 *Replenishing of Engine Oil*

Quality automotive motor oil as specified by the engine manufacturer has to be used. The engine is not approved for aircraft motor oil.

Oil capacity: 2 l min … 3 l max

Oil Specification: Refer to Chapter 10 of the Engine Operator's Manual applicable to your engine.
Do not use oil additives.

▲Warning: Engine operation with no engine oil (or very low oil level) will cause engine malfunction or failure.

12-10.2.4.1 Type of Maintenance

Line

12-10.2.4.2 Minimum Level of Certification

Pilot/Owner (P/O)

12-10.2.4.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Replenishing of Engine Oil

Step	Action	Reference
1	Open the inspection hatch in the top cowling.	
2	Remove the small filler cap.	
3	Get the dip stick from the oil tank.	
4	Clean the oil dip stick.	
5	Sink the dip stick into the fuel tank.	
5	Remove the deep stick and read the oil contents from dip stick.	
6	If necessary, fill the oil system to the correct level.	
7	Sink the dip stick into the oil tank. Install the filler cap.	
8	Close the inspection hatch in the top cowling.	

12-10.2.5 *Oil Changing*

12-10.2.5.1 Type of Maintenance

Line

12-10.2.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

12-10.2.5.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Oil Changing

Step	Action	Reference
1	Remove the engine cowlings	71-00.3.1
2	Place suitable container under the oil tank drain valve	
3	Remove safety wire form the bolt screwed into the drainage valve	
4	Unscrew the drainage bolt	
5	Drain the oil into container	
6	Make 10 rotations of propeller by hand to provide drainage of fuel rest	
7	Screw in and tighten the drainage bolt.	
8	Install the lock wire.	20.4
9	Fill the oil tank with new engine oil to the maximum level.	
10	Do an engine run	
11	Check oil level and refill when necessary	12-10.2.3
12	Check for leaks.	
13	Install the engine cowlings.	71-00.3.1

12-10.2.6 *Replenishing of Coolant*

Cooling fluid in accordance with the ROTAX® Engine Operation Manual has to be selected.
Attention: different coolants cannot be mixed! If in doubt, drain the complete coolant content and replace completely with new coolant of one type.

▲**Warning:** Engine operation with no coolant (or very low coolant level) will cause engine malfunction or failure.

12-10.2.6.1 Type of Maintenance

Line

12-10.2.6.2 Minimum Level of Certification

Pilot/Owner (P/O)

12-10.2.6.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Replenishing of Engine Oil

Step	*Action*	*Reference*
1	Prepare coolant mixture in accordance with ROTAX® Operation Manual	
2	Remove the cowlings	71-00.3.1
6	Fill the coolant system through the expansion tank in accordance with ROTAX® Operation Manual	
7	Conduct engine run	
8	Check coolant level and refill when necessary in accordance with ROTAX® Operation Manual	
10	Install the cowlings.	71-00.3.1

12-10.2.7 *Coolant Changing*

Cooling fluid in accordance with the ROTAX® Engine Operation Manual has to be selected.
Attention: different coolants cannot be mixed! If in doubt, drain the complete coolant content and replace completely with new coolant of one type.

▲**Warning:** Engine operation with no coolant (or very low coolant level) will cause engine malfunction or failure.

▲**Warning:** Waterless coolant is not permitted on Flight Design LSA aircraft.

12-10.2.7.1 Type of Maintenance

Line

12-10.2.7.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

12-10.2.7.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Coolant Changing

Step	Action	Reference
1	Prepare coolant mixture in accordance with ROTAX® Operation Manual	
2	Remove the cowlings	71-00.3.1
3	Disconnect the system in any lowest point	
4	Drain the coolant to any suitable container	
5	Connect disconnected hoses.	
6	Fill the coolant system through the expansion tank in accordance with ROTAX® Operation Manual	
7	Conduct engine run in accordance with ROTAX® Operation Manual	
8	Check coolant level and refill when necessary in accordance with ROTAX® Operation Manual	
9	Check for leaks.	
10	Install the cowlings.	71-00.3.1

12-10.2.8 *Replenishing of Brake Fluid*

Braking fluid: Aeroshell Fluid 41 MIL-H-5606 Brake Fluid

12-10.2.8.1 Type of Maintenance

Line

12-10.2.8.2 Minimum Level of Certification

LSA- Mechanic (LSAM) r

12-10.2.8.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Replenishing of Brake Fluid

Step	Action	Reference
1	Visually check the system for integrity and tightness	
2	Make sure the brake control handle is in most forward position.	
3	Make sure the aircraft is not set on parking brake	
4	Place a suitable canister under the expansion tank to collect brake fluid in case of overfilling	
5	Using a piece of tube C9997205R (6x4 nylon tube) connect a 0.35 pint / 200 ml syringe filled with brake fluid without air bubbles.	
6	Screw in the connector A (Fig. 12-10.1).	
7	Move the brake control handle back and forth 5 to 8. Note if there are air bubbles in the line nearby the caliper.	
8	Unscrew the connector A 1 to 2 turns (Fig. 12-10.1).	
9	Add as more brake fluid as enough to eliminate air bubbles nearby the caliper	
10	Repeat operations 6 through 9 until full elimination of air in the caliper with pads	

	activated.	
11	Screw in the connector A (Fig. 12-10.1).	
12	Close the valve and move the handle 2 to 3 times back and forth. Note if there are air bubbles in the line nearby the check valve.	
13	Inspect joints and connections for leaks.	
14	Open the valve sharply (Fig. 12-10.1).	
15	Unscrew the connector A 1 to 2 turns	
16	Add as more brake fluid to eliminate air bubbles nearby the check valve	
17	Repeat operations 11 through 16 until full elimination of air in the brake system controls.	
18	Tighten the connector A up to torque 80 lb-in / 9 Nm. Disconnect the syringe (Fig. 12-10.1).	
19	Make sure the line is completely filled by fluid, no air bubbles are seen and the capacity of expansion tank is ¾ full.	
20	Make sure the brake disks and pads are dry and clean.	
21	Check brakes for operating 2 to 3 times before flight while warming up the engine and taxiing.	

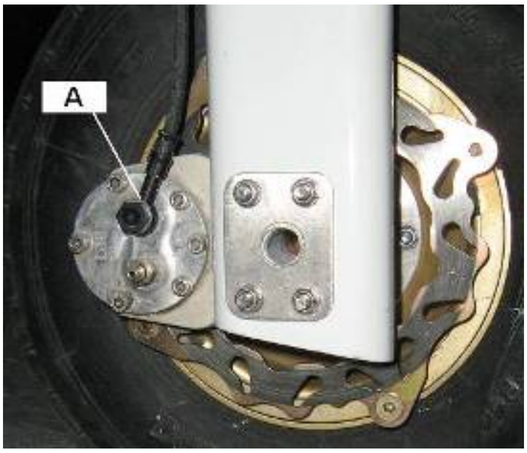


Fig. 12-10-1

12-10.2.9 *Tire Inflation*

Main wheels: 29 PSI / 2 bar

Nose wheel: 29 PSI / 2 bar

12-10.2.9.1 Type of Maintenance

Line

12-10.2.9.2 Minimum Level of Certification

Pilot/Owner (P/O)

12-10.2.9.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Tire Inflation

Step	***Action***	***Reference***
1	Examine the tires. Look especially for cuts, friction. Damages, correct alignment of the slippage markers.	
2	Measure the tire pressure. If necessary, inflate the tires to the correct pressure.	

SECTION 12-20 – SCHEDULED SERVICING

12-20.1 General

This section provides lubrication schedule and list of recommended lubricants.

12-20.2 Lubrication Chart

Item	*Interval, hours*	*Recommended Lubricant*	*Supplier*
Hinges of cabin doors	100	Retinax EP2, Alvania EP2	SHELL
Sliding supports of rudder pedals	1000	Retinax EP2, Alvania EP2	SHELL
Rudder-cable attach points	1000	Retinax EP2, Alvania EP2	SHELL
Nose wheel bearings	200	Retinax EP2, Alvania EP2	SHELL
Main wheels bearings	200	Retinax EP2, Alvania EP2	SHELL
Stabilator axis	200	Retinax EP2, Alvania EP2	SHELL
Rod end bearings of control systems	100	GLEITMO 800 Greasing for rod end bearings	FLURO-Gelenklager GmbH
Ailerons and flaps attachment bearings	Do Not Lubricate		
Stabilator attachment bearings	100	GLEITMO 800 Greasing for rod end bearings	FLURO-Gelenklager GmbH

SECTION 12-30 –
UNSCHEDULED SERVICING

12-30.1 General

This section provides instructions how to clean the aircraft.

Care must be taken when cleaning modern aircraft built with composite materials. Many products have been developed to clean a specific type of material and may be unsuitable or even damaging to others. Using the wrong product may damage your aircraft or its structures. Affected parts may be plainly visible or may be hidden from view. The type of damage can vary from the simply unsightly to the outright dangerous. You must always read the instructions for your cleaning products before using them. If you should have any questions about a product’s suitability please contact your local dealer.

Each structure has its own cleaning requirements.

12-30.2 Cleaning of the Basic Airframe and Wing Structure

Composite aircraft are typically constructed of a sandwich of a structural material (Fiberglass-Carbon Fiber or Kevlar) over a foam core.

The Flight Design CTLS-LSA is made up of a Carbon fiber-foam-Carbon fiber and Kevlar laminate sandwich which is filled with polyester filler, sanded and painted with two-part urethane paint. The foam core of the wings is partially Rohacell foam which was chosen for its stiffness and resistance to fuel. The fuselage core is Airex foam which allows the contours for the CTLS-LSA fuselage.

The Rohacell foam, while highly resistant to fuel, is not resistant to strong Alkali cleaners or even water with very high alkali content. Therefore Flight Design requires that the cleaners used on the CTLS-LSA be PH neutral. Cleaners, such as Fantastik®, Formula 409®, Carbonex® and Castrol Super Clean®, which are otherwise good Alkali cleaning products, should not be used on the CTLS-LSA.

The use of this category cleaner can dissolve the foam core of the sandwich leaving a dented looking area that must be repaired and re-painted. Please note that the wing spars of the CTLS-LSA are sealed in epoxy and fiberglass and cannot be damaged in this manner.

12-30.3 Cleaning of the Windshield and Side Windows

The windows of the CTLS-LSA are tinted, heat molded acrylic (also known as Plexiglas®). While durable, they must be carefully cleaned to avoid scratching the surface. Never use an abrasive pad, abrasive pastes or even dirty rags when cleaning the window surfaces. Always flush the window surface with water to remove as much dust and dirt before using an aircraft window specific cleaner or a plastic cleaner approved for cleaning acrylic windshields.

When polishing the windshield or side windows never polish in a circular motion, this creates a halo affect when looking into the sun. Always use horizontal or vertical pattern.

12-30.4 Cleaning of the Engine and Engine Compartment

The ROTAX® 912 maintenance manual recommends the use of a commercially available cold cleaning agent. Some citrus based products have been found to be suitable. However, always read the instructions for any product to be used, keeping in mind that it must be compatible with both the engine components and the airframe structures.

12-30.5 Interior Cleaning

Clean the interior with a flame-proof vacuum cleaner.

12-30.6 Ice and Snow Removal

Remove snow and ice as soon as possible to prevent melted water from freezing later and causing damage.

Use soft brushes to remove snow from the surfaces. If possible put the airplane in a heated hangar to remove ice.

CHAPTER 20 –
STANDARD PRACTICES ON AIRFRAME

Contents

20-00.1 General

This chapter provides information on standard practices on airframe.

20-00.2 Bolt and Nut Types Used in the Airplane

Unless otherwise specified, we use class 8.8 zinc-plated or stainless steel bolts and screws, according to DIN standard.

▲**Warning:** Unsecured bolts (with standard nuts) must be locked with thread locker middle strength.

▲**Warning:** Once unscrewed self locking nuts (with plastic locking ring) must be replaced for new ones.

▲**Warning:** Due to variable thickness of composite structure the length of bolts installed on aircraft may be different from the length defined in the manual. Therefore each bolt must be measured after removal to prevent further installation of bolt with wrong length.

20-00.3 Recommended Torque Values

▲**Warning:** All bolts have to be mounted up to down, inside to outside or front to aft, unless explicitly stated otherwise.

● **Note:** Tolerances ±4% of torque moments indicated in the table are allowed.

Bolt	**Bolt M5 DIN 912-8.8** **Bolt M5 DIN 931-8.8** **Bolt M5 DIN 933-8.8**	**Bolt M6 DIN 912-8.8** **Bolt M6 DIN 931-8.8** **Bolt M6 DIN 933-8.8**	**Bolt M8 DIN 912-8.8** **Bolt M8 DIN 931-8.8** **Bolt M8 DIN 933-8.8**	**Bolt M5 DIN 7991-8.8 (countersunk)**	**Bolt M6 DIN 7991-8.8 (countersunk)**
Nut	**Nut M5 DIN 985-8.8**	**Nut M6 DIN 985-8.8**	**Nut M8 DIN 985-8.8**	**Nut M5 DIN 985-8.8**	**Nut M6 DIN 985-8.8**
Recommended Torques for class 8.8 (ISO 898) fasteners	52 lb-in 5.9 Nm	89 lb-in 10 Nm	222 lb-in 25 Nm	52 lb-in 5.9 Nm	89 lb-in 10 Nm
For areas with bonding paste	49 lb-in 5.5 Nm	80 lb-in 9 Nm	200 lb-in 22.5 Nm	40 lb-in 4.5 Nm	71 lb-in 8 Nm
Parts of PVC	49 lb-in 5.5 Nm	80 lb-in 9 Nm	200 lb-in 22.5 Nm	49 lb-in 5.5 Nm	80 lb-in 9 Nm
Carbon fabric composite packages assemblies	49 lb-in 5.5 Nm	80 lb-in 9 Nm	200 lb-in 22.5 Nm	49 lb-in 5.5 Nm	80 lb-in 9 Nm
Plywood bonded into composite	40 lb-in 4.5 Nm	71 lb-in 8 Nm	160 lb-in 18 Nm	31 lb-in 3.5 Nm	62 lb-in 7 Nm
Glass fiber composite packages	49 lb-in 5.5 Nm	80 lb-in 9 Nm	200 lb-in 22.5 Nm	49 lb-in 5.5 Nm	80 lb-in 9 Nm
Metal parts assemblies (steel, stainless steel, aluminum alloys)	53 lb-in 6 Nm	89 lb-in 10 Nm	222 lb-in 25 Nm	53 lb-in 6 Nm	89 lb-in 10 Nm

20-00.4 Standard Practices on Airframe

20-00.4.1 *Installation of the Safety Wire*

20-00.4.1.1 Type of Maintenance

Line

20-00.4.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

20-00.4.1.3 Procedure

Safety wire is used on cylinder studs, control cables turnbuckles and engine accessory attaching bolts.

There are two methods of safety wiring: the double-twist method that is most commonly used, and the single-wire method used on screws, bolts, and/or nuts in a closely-spaced or closed-geometrical pattern such as a triangle, square, rectangle, or circle. The single-wire method may also be used on parts in electrical systems and in places that are difficult to reach.

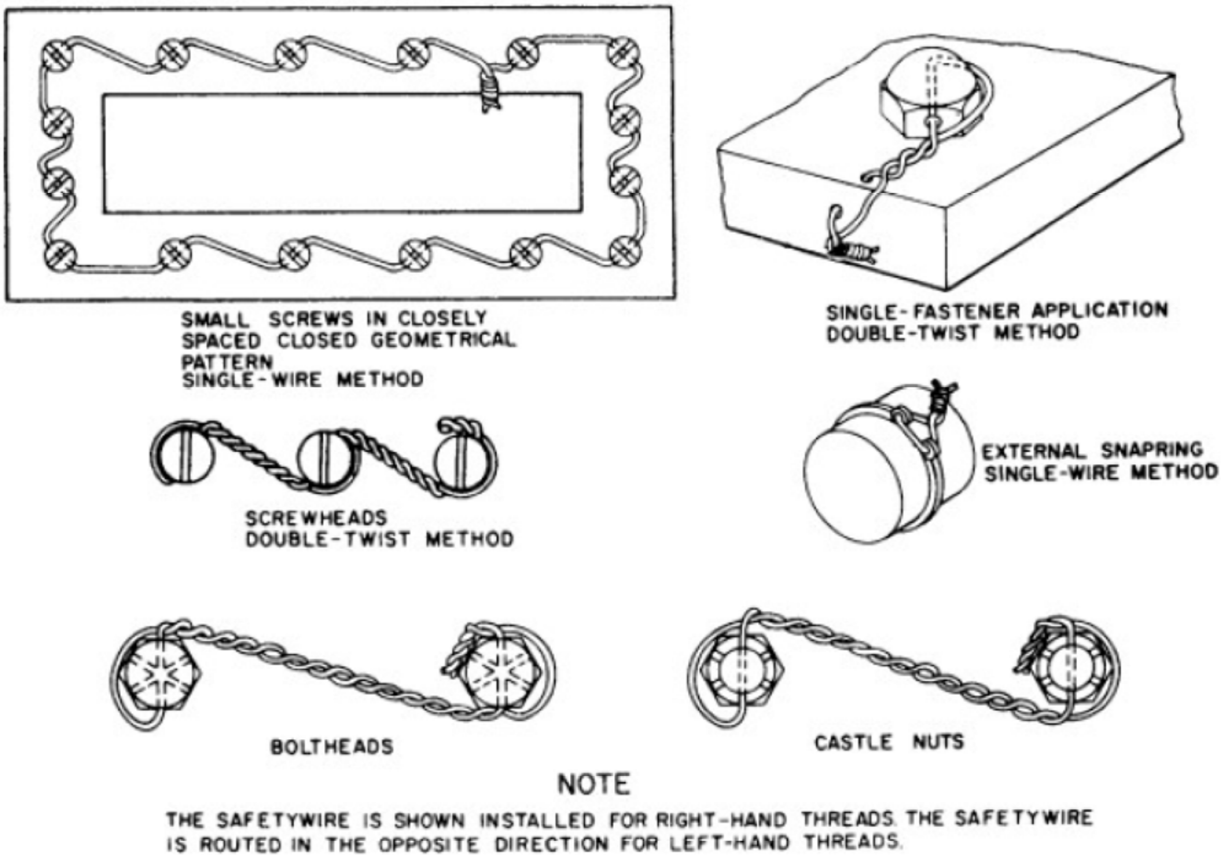


Fig. 20-00-1

▲Warning: Safety wire must never be over-stressed. Safety wire will break under vibrations if twisted too tightly. Safety wire must be pulled taut when being twisted, and maintain a light tension when secured.

A. Recommended Special Tools and Parts

Item	Quantity	Unit
Wire twisting tool	1	pcs

B. Wiring the bolts (Fig. 20-00-2)

Step	Action	Reference
1	Thread the safety wire through the hole provided in bolt head. When the bolts are closely grouped – it is more convenient to wire them in series.	
2	Rote the safety wire in a manner that will prevent the tendency of the part to loosen.	
3	Twist the wire ends with a wire twisting tool.	

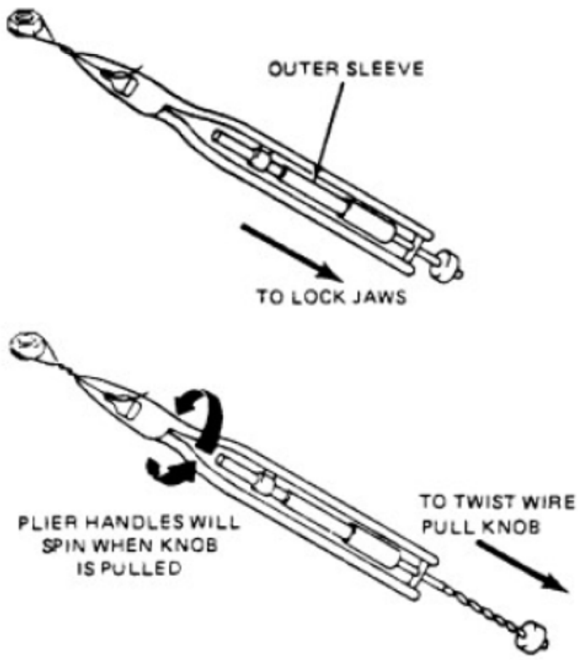


Fig. 20-00-2

C. Wiring the Turnbuckles (Fig. 20-00-3)

Step	Action	Reference
1	Thread the safety wire through the hole provided in the middle of turnbuckle.	
2	Rote the safety wire through the end of turnbuckles in a manner that will prevent the tendency of the part to loosen.	
3	Twist the wire ends with a wire twisting tool.	

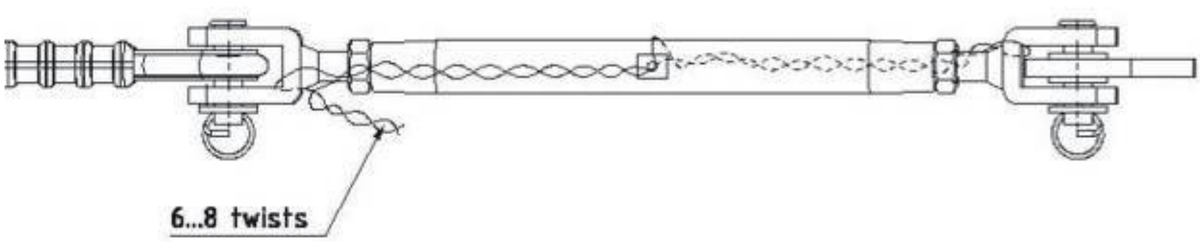


Fig. 20-00-3

20-00.4.2 *Adjustment of Control Rods Length*

20-00.4.2.1 Type of Maintenance

Line

20-00.4.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

20-00.4.2.3 Procedure

Each controls push rod is provided with adjustable rod ends.

▲Warning: When the length of rod has been adjusted, the rod end must be properly locked by the lock-nut.

▲Warning: The rod end must be screwed into the rod on the length of not less than 8 mm.

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Adjustment of Control Rods Length (Fig. 20-00-4)

Step	*Action*	*Reference*
1	Loosen the lock-nut (2) that locks the rods end (1).	
2	Adjust the rod (3) on the required length.	
3	Lock the rod end with the lock-nut.	

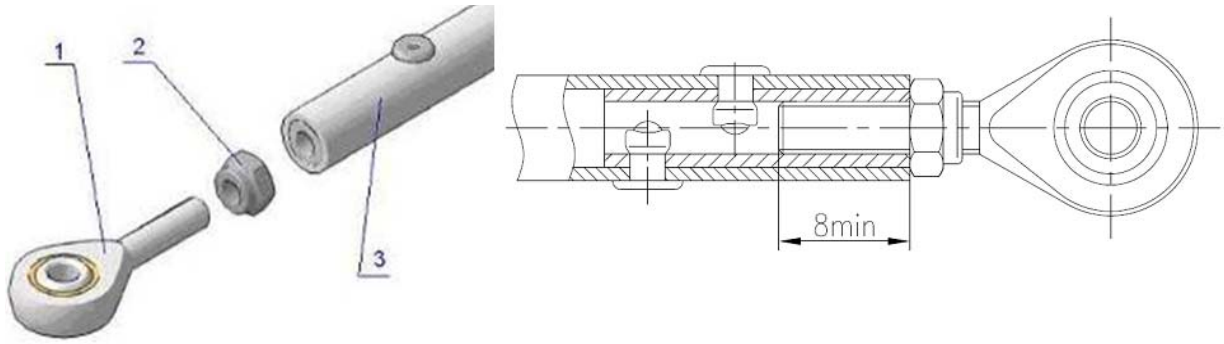


Fig. 20-00-4

20-00.4.3 *Crimping of Rudder Cables*

20-00.4.3.1 Type of Maintenance

Line

20-00.4.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

20-00.4.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Nicopress tool	1	pcs

B. Crimping of Rudder Cables (Fig. 20-00-5)

Step	***Action***	***Reference***
1	Thread the cable end through the sleeve in a manner to create a loop	
2	Install the thimble to the loop. Tighten the loop to provide proper contact between the cable and the thimble.	
3	Make three compressions on the sleeve in order shown on Fig. 20-00-5	

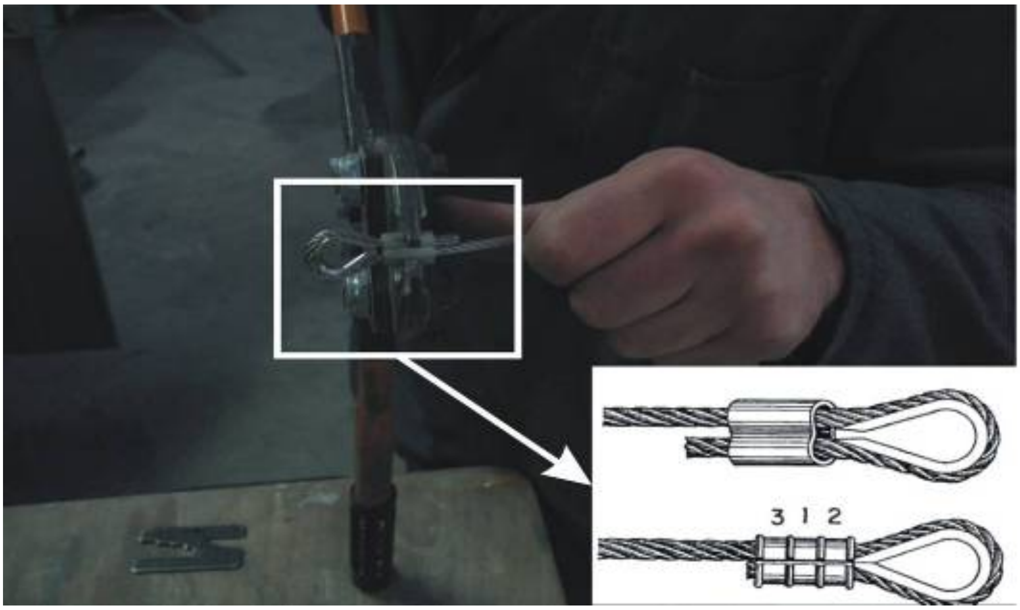


Fig. 20-00-5

20-00.4.4 *Usage of Bonding Liquids*

20-00.4.4.1 Type of Maintenance

Line

20-00.4.4.2 Minimum Level of Certification

Pilot/Owner (P/O)

20-00.4.4.3 Procedure

Middle strength bonding liquid (Loctite 243) is applied to the screws where no other means of protection against the loosening (self-locking nuts, safety wire) are not provided.

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Usage of Bonding Liquid

Step	*Action*	*Reference*
1	Apply the small quantity (1-2 drops) of middle strength bonding liquid on the screw.	
2	Install the screw. Apply the torque moment commended for the current type connection.	

20-00.4.5 *Hoses and Lines Clamping*

20-00.4.5.1 Type of Maintenance

Line

20-00.4.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

20-00.4.5.3 Procedure

All the fuel and oil lines and its fire protection sleeves are secured with band clamps.

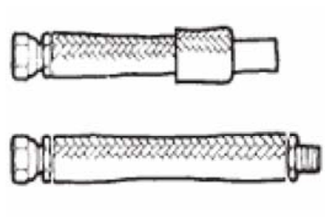
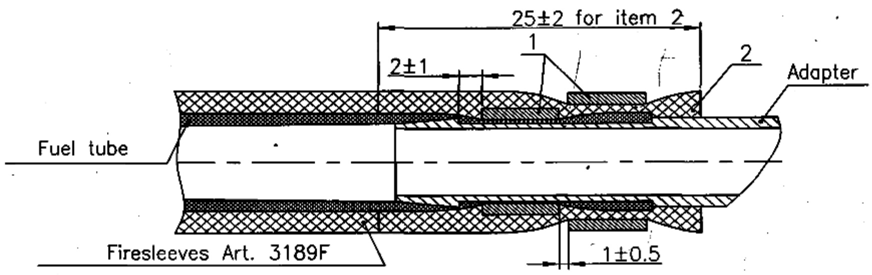
Fig. 20-00-6. Band clamp

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Tool for band clamp	1	pcs

Fig. 20-00-7. Tool for band clamp

B. Band clamp (JS242) installation.

Step	Action	Reference
1	Prepare hose and fire sleeve required length. Fire sleeve must be 20÷25mm/1`` longer than hose.	
2	Put the fire sleeve to hose.	
3	Put the band clamp to fire sleeve.	
4	Push fire sleeve back from end of hose.  Cover not less 25mm/1`` of fire sleeve with the fireproof silicone and allow to dry.	
5	Put the band clamp to end of hose. 	
6	Pass hose end through clamp.	
7	Assemble fitting with the hose free end.	
8	Insert tail of band clamp into tool for band clamp.	
9	Position band clamp around middle of socket and tighten with tool. Bend end of band back over the buckle.	
10	Move fire sleeve to cover tightened clamp.	
11	Repeat 3-10 for other end of hose.	
12	Position band clamp as shown at scheme and tighten with tool. Bend end of band back over the buckle.  1 – Clamp (Art No. C9997720) 2 – Silicone black fireproof (Art No. C9993549 E)	
13	Repeat 12 for other end of fire sleeve.	

CHAPTER 21 –
AIR CONDITIONING

Contents

21-00.1 General

This chapter provides description of the cabin ventilation and cabin heat.

21-00.2 Description

21-00.2.1 Cabin Ventilation

The windows in both doors are equipped with sliding windows. The sliding windows can be opened to provide visibility in the extreme unlikely case when the windows get fogged.

The sliding windows are equipped with a small flap that can be opened. Fresh air is provided to the cabin through the side sliding windows and small fresh air scoops that can be opened.

21-00.2.2 Cabin Heat

Heated air is provided to the cabin through specific warm air nozzles. The warm air is generated in a shroud that guides fresh air from the intake at the middle of the lower cowling around the exhaust muffler.

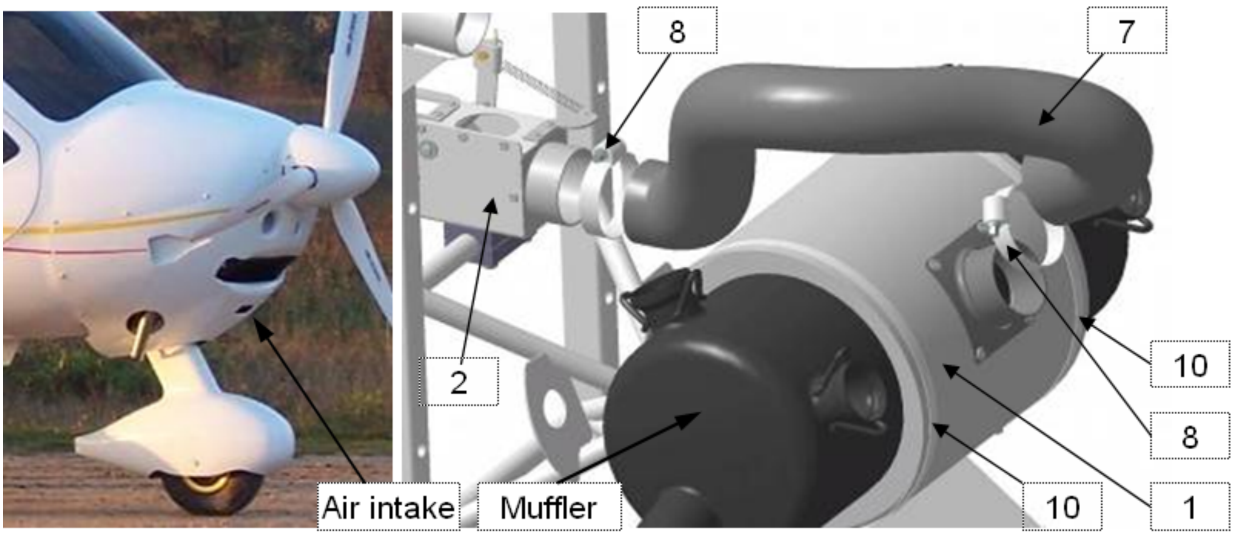


Fig. 21-00-1

The warm air comes through the operated valve to the cabin where is distributed via spreader installed internally of the tunnel under the instrument console.

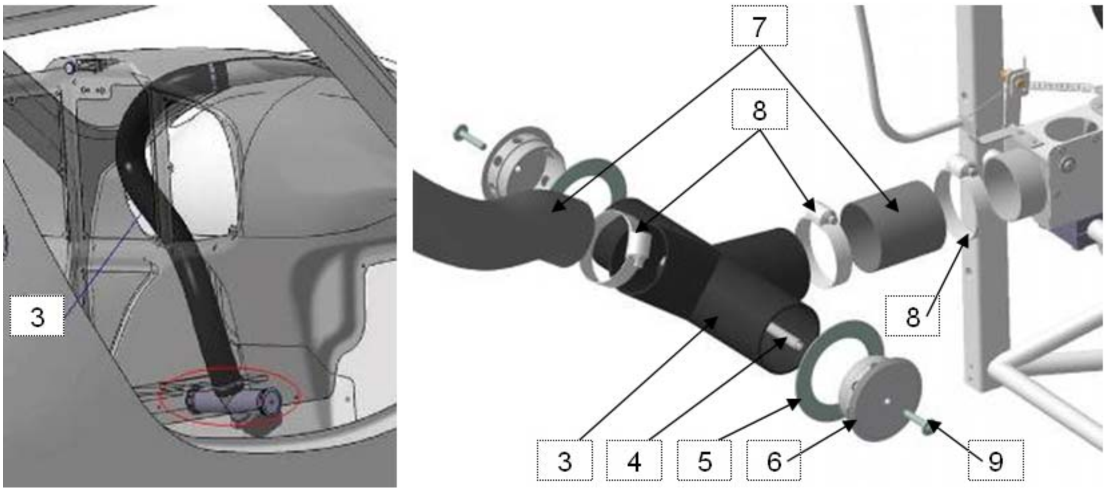


Fig. 21-00-2

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
21-00-1 21-00-2	1	Shroud		KF21400100
	2	Thermic Choke		KF21400200
	3	Air Terminal Unit		KF21400400
	4	Pin		KF21400005
	5	Washer		KF21400006
	6	Vent		KF21400040
	7	Aeroduct Hose		C9993188
	8	Clamp		C9997723
	9	Screw		C9996159C
	10	Clamp, Shroud		C9997710A, C9997726

A cabin heat valve allows to regulate the amount of warm air that is guided into the cabin. Within the cabin the warm air is distributed between two openings (one per side) at the side of the main tunnel, next to the pilot and copilot feet, and to slots in the upper instrument console, right at the lower rim of the windscreen. The heat valve is operated from the cabin by the handle installed on the instrument console (Fig 21-00-3).

To improve the heating capability in severe winter operation it is recommended to cover the cabin openings in the root rib area with self-gluing clear plastic film. Only use clear plastic film, so that the daily inspections can be conducted as required.

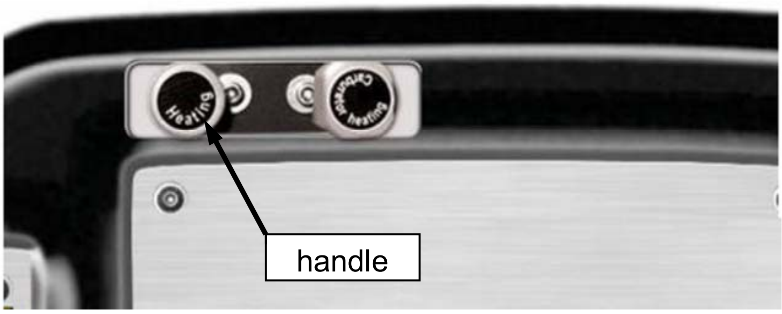


Fig. 21-00-3

21-00.3 Maintenance Practices

21-00.3.1 *Cabin Heating System Inspection*

21-00.3.1.1 Type of Maintenance

Line

21-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

21-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Cabin Heating System Inspection

Step	Action	Reference
1	Remove the cowlings to get access to the lower part of the firewall.	71-1
2	Check the cabin heater choke for operation: When the handle is pushed, the Thermic choke is OFF. When the handle is pulled, the Cabin heater choke is ON.	
3	Inspect the connecting cable between the choke and the handle.	
4	Remove the central panel from the instrument board.	31.3.1.3
5	Inspect all hoses for integrity and connections for proper fastening. Replace if required.	
6	Loose the Clamps 10 and 8. Remove the Shroud 1. (Fig 21-00-1)	
7	Inspect the Shroud 1 for damages, chafing marks and burn spots. Clean if required.	
8	Install Shroud in reversed direction order.	
9	Remove the cowlings to get access to the lower part of the firewall.	71-1

21-00.3.2 *Inspection and Repair in Case of Malfunction*

21-00.3.2.1 Type of Maintenance

Line

21-00.3.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

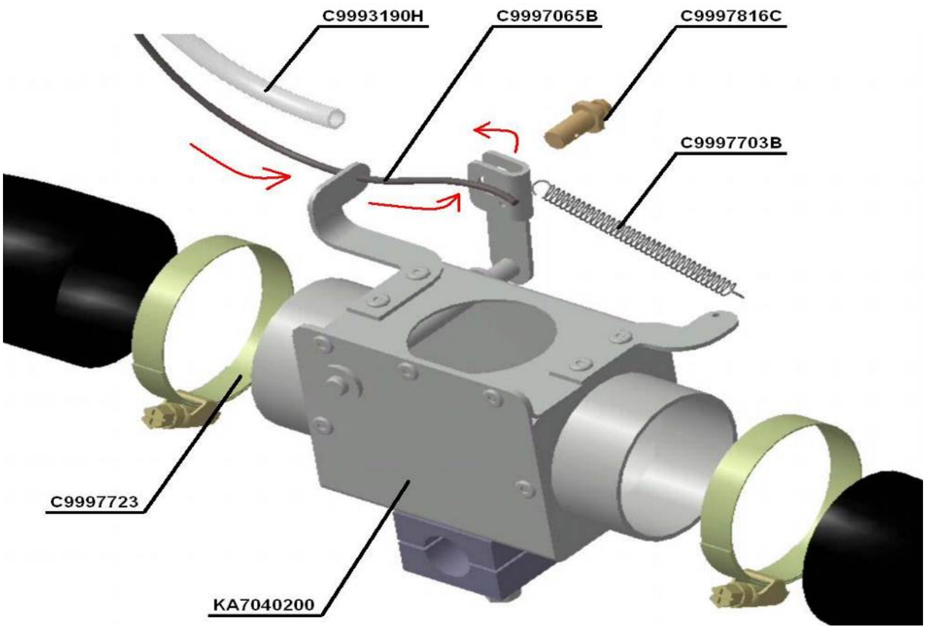
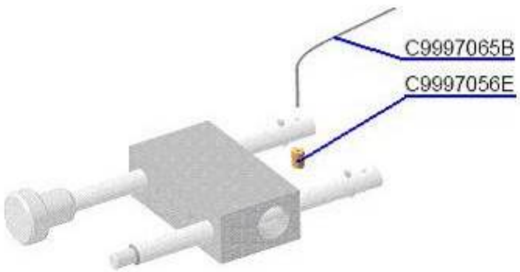
21-00.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Inspection and Repair in Case of Malfunction

B1. If the cabin heater choke does not operate, inspect the connecting cable between the choke and the handle and eliminate damage as follows:

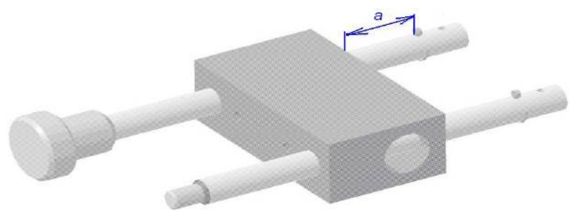
Step	***Action***	***Reference***
1	Check if there is the spring C9997703B Spring 0.5x5.0x25.0 at the Cabin Heater Choke KA7040200. If the spring is missing or damaged, set a new one. (Fig. 21-00-4).  **Fig. 21-00-4**	
2	Check if the cable C9997065B Steel rope 7x7 1 mm is frayed and if there is the stop C9997816C Cable stop 1806-Z ni at the cable attachment to the Cabin heater choke KA7040200. (Fig. 21-00-4).	
3	If the stop C9997816C (Cable stop 1806-Z ni) is missing, connect the cable C9997065B (Steel rope 7x7 1 mm) to the Cabin heater choke as shown at Fig. 21-00-4 and fix it fix it by the stop C9997816C (Cable stop 1806-Z ni) using a screwdriver.	
4	Remove the panel from the instrument board using 3 hex-nut wrench and check the cable C9997065B (Steel rope 7x7 1 mm) for fraying and if there is the sleeve C9997056E (Nicopress stop sleeve 1.5-1.7 mm for 1.6 mm cable) at the cable attachment to the handle. (Fig. 21-00-5).  **Fig. 21-00-5**	
5	If the sleeve C9997056E (Nicopress stop sleeve 1.5-1.7 mm for 1.6 mm cable) is missing, connect the cable C9997065B (Steel rope 7x7 1 mm) to the handle and	

	secure it with the sleeve C9997056E (Nicopress stop sleeve 1.5-1.7 mm).	
6	If frayed, replace the cable to a new one C9997065B (Steel rope 7x7 1 mm), 59 in. / 1.5 m long. While replacing the handle must be pushed in. (Fig. 21-00-3). • Pass it through the tube C9993190H PTFE tube 4.0x6.0 mm into the engine compartment. • Attach the cable C9997065B (Steel rope 7x7 1 mm) to the heating Cabin heater choke KA7040200 as shown by arrows at Fig. 21-00-4, secure the cable by C9997816C Cable stop 1806-Z ni.	
7	Remove the damaged cable, secure a tip of the new cable by the sleeve C9997056E (Nicopress stop sleeve 1.5-1.7 mm for 1.6 mm cable) using a Nicopress tool for rope 0.45 - 2.00 mm. (Fig. 21-00-5).	
8	Check the Cabin heater choke KA7040200 for operating according to the item 2. If positive, follow maintenance procedure B2 of this section	21-00-B2

B2. If, while the handle is pulled, the choke is OFF

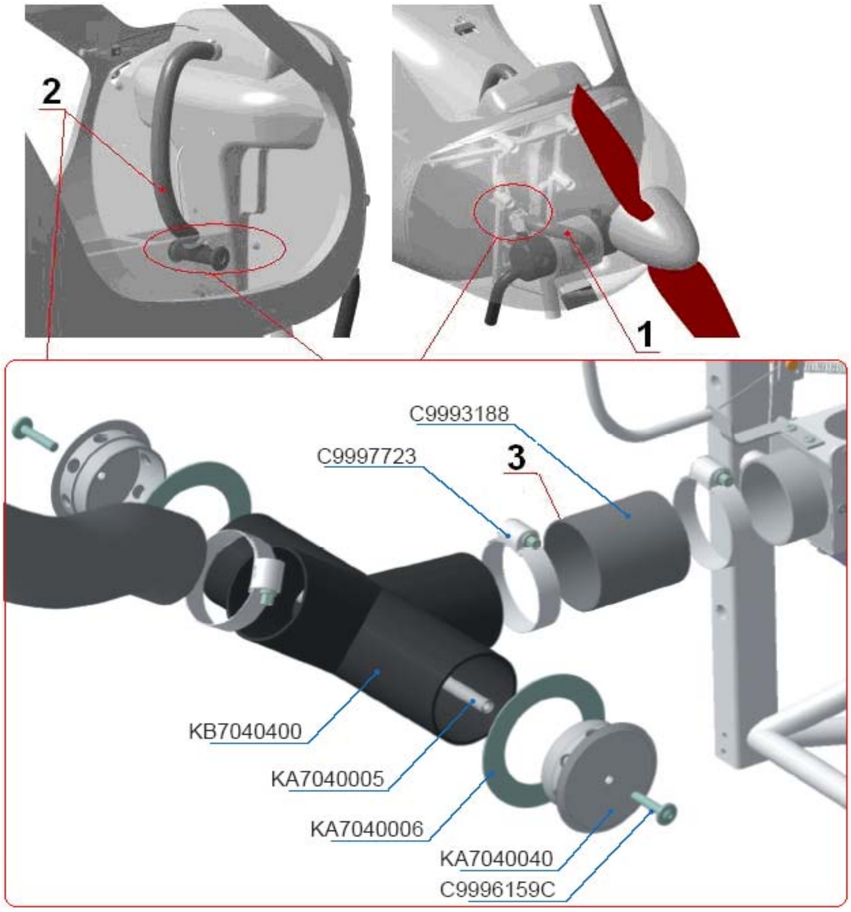
1	Release the stop C9997816C (Cable stop 1806-Z ni) a little by a screwdriver and tighten the cable C9997065B (Steel rope 7x7 1 mm). ● **Note:** The stop can move along the cable, when the bolt is not tightened.	
2	Secure stop 9997816C (Cable stop 1806-Z ni) position by a screwdriver.	
3	Follow maintenance procedure B3 of this section	21-00-B3

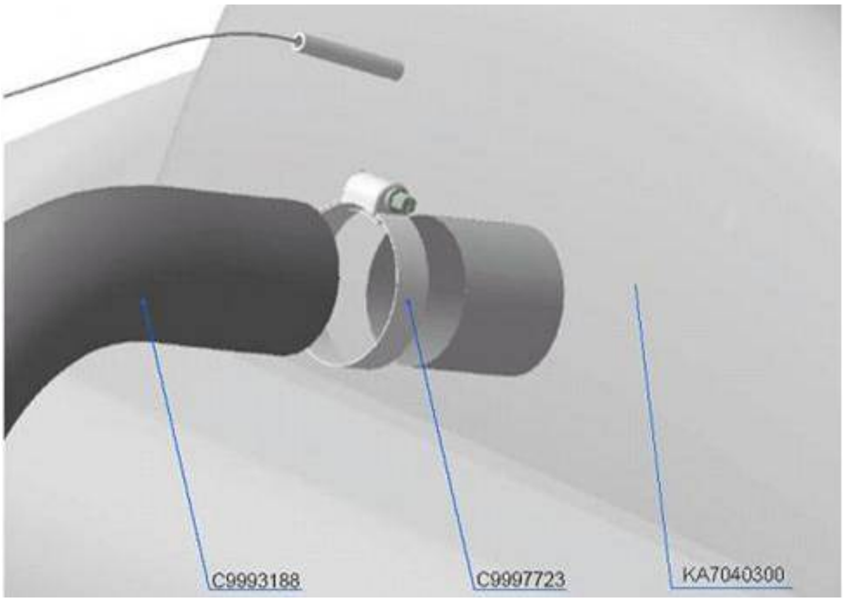
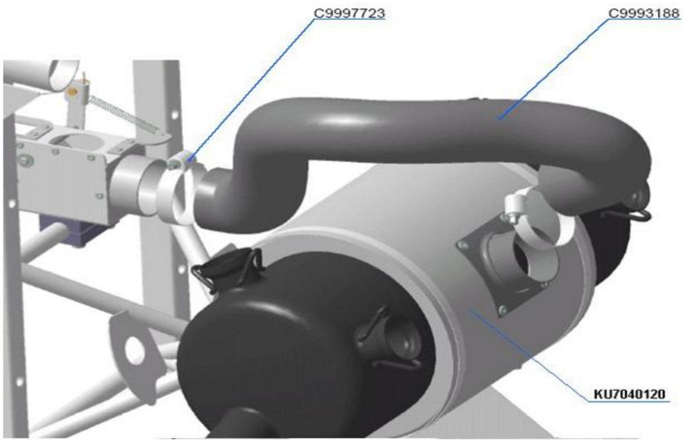
B3. If the choke KA7040200 is at OFF position and the handle is not fully pulled out

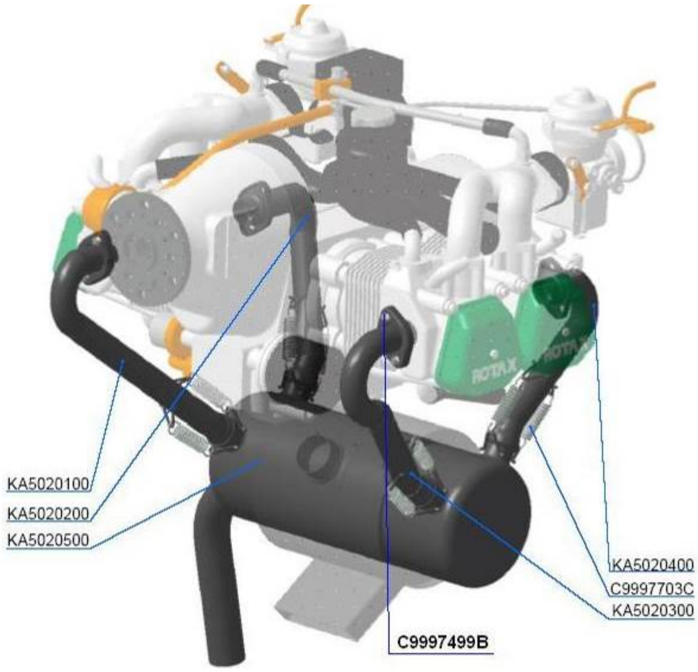
1	Mark on the handle length it can be pulled out more (distance from the bracket to the cotter-pin in the handle). (Fig. 21-00-6).  **Fig. 21-00-6**	
2	Release the stop C9997816C (Cable stop 1806-Z ni) unscrewing the bolt in the stop by a screwdriver.	
3	Move the stop C9997816C (Cable stop 1806-Z ni) on a distance towards the tip of the cable C9997065B (Steel rope 7x7 1 mm) and secure the stop C9997816C (Cable stop 1806-Z ni) by a screwdriver.	
4	Follow maintenance procedure B1 of this section	21-00-B1

B4. If the Aeroduct Hose is damaged

1	Remove the central panel from the instrument board by a 3 hex-nut screwdriver and inspect all parts of the manifold C9993188 (AERODUCT tube CEET-7 1-3/4 ID) for integrity. The manifold consist of three pieces of hose C9993188 AERODUCT tube CEET-7 1-3/4 ID (1 long piece in the engine compartment (1), long piece in the cabin (under the instrument board) (2), and the short piece (3) between the Cabin heater choke KA7040200 and KB7040400 Air branch canal (Fig. 21-00-7) If no damages are found, proceed to item 8, otherwise replace the	

	C9993188 (AERODUCT tube CEET-7 1-3/4 ID) in the cabin as follows:	
2	Unscrew the bolt by a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near KB7040400 Air branch canal. (Fig. 21-00-7).  **Fig. 21-00-7**	
3	Unscrew the bolt by a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near KB7040300 (Air mixer) under the instrument board. (Fig. 21-00-8).	

	 **Fig. 21-00-8**	
4	Replace the damaged piece of hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to a new one of the same length. Put the clamps C9997723 (Clamp 40-60) on the new hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID).	
5	Tighten the clamps C9997723 (Clamp 40-60) by a cross-screwdriver or wrench with header 7.	
6	Unscrew the bolt by a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near the heating Cabin heater choke KA7040200. (Fig. 21-00-9):  **Fig. 21-00-9**	
7	Unscrew the bolt C9996053 (Bolt DIN 912 M6x10-8.8) by a hex-nut wrench 5 and remove the shield KA5030001 (Protection plate, left).	
8	Unscrew the bolt C9996053 (Bolt DIN 912 M6x10-8.8) by a hex-nut wrench 5 and remove the shield KA5030002 (Protection plate, right).	
9	Disconnect the springs C9997703C from the muffler KA5020500 (Muffler with exhaust pipe). (Fig. 21-00-10).	

	 **Fig. 21-00-10**	
10	Release the nuts C9997499B (Soldering nut M8x1) by a screwdriver with header 12 (unscrew 3-5 turns towards the engine, but do not remove them).	
11	Remove the muffler KA5020500 (Muffler with exhaust pipe). (Fig. 21-00-10).	
12	Unscrew the bolt by a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near the heater KU7040120 (Air heater) in the engine compartment. (Fig. 21-00-9).	
13	Disconnect the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) from the heater KU7040120 (Air heater). (Fig. 21-00-9).	
14	Replace the damaged piece hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to a new one of the same length. Put the clamps C9997723 (Clamp 40-60) on the new hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID).	
15	Attach the hose C9993188 AERODUCT tube CEET-7 1-3/4 ID to the heater KU7040120 (Air Heater).	
16	Tighten the clamp C9997723 (Clamp 40-60) by a screwdriver or wrench with header 7.	
17	Install the muffler KA5020500 (Muffler with exhaust pipe) and connect the springs C9997703C.	
18	Tighten the nuts C9997499B (Soldering nut M8x1) by a screwdriver with header 12.	
19	Set the shield KA5030001 (Protection plate, left). Put the washer C9996504 (Washer DIN 125 A2B-6.4 mm) under the bolt and tighten the bolt C9996053 (Bolt DIN 912 M6x10-8.8) by a 5 hex-nut wrench.	
20	Set the shield KA5030002 (Protection plate, right). Put the washer C9996504 (Washer DIN 125 A2B-6.4 mm) and tighten the bolt C9996053 (Bolt DIN 912 M6x10-8.8) by a 5 hex-nut wrench.	
21	Connect the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to the Cabin heater choke KA7040200.	
22	Tighten the clamp C9997723 (Clamp 40-60) by a cross-screwdriver or wrench	

	with header 7	
23	To change a damaged hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) between the Cabin heater choke KA7040200 and KB7040400 (Air branch canal) do the following.	
25	Set the control handle to OFF position. (Fig. 21-00-3).	
26	Unscrew the lower bolts of the instrument board KA1081000 by a 3 hex-nut screwdriver.	
27	Disconnect KA7040002 (Tap) from KB7040400 (Air branch canal). (Fig. 21-00-7).	
28	Unscrew the bolt by a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near KB7040400 Air branch canal. (Fig. 21-00-7).	
29	Unscrew the bolt with a cross-screwdriver or wrench with header 7 and release the clamp C9997723 Clamp 40-60 that secures the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) near the Cabin heater choke KA7040200. (Fig. 21-00-7).	
30	Unscrew the bolts C9996283C by 8 wrench. Remove the clamp KA704004 (Clamp) and the Cabin heater choke KA7040200 from the engine mount. Remove KB7040400 (Air branch canal).	
34	Replace the damaged piece of hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to a new one of the same length. Pass the hose through the hole in the firewall from inside the cabin. Put the clamps C9997723 Clamp 40-60 on the new hose.	
31	Set the heating Cabin heater choke KA7040200 on the engine mount. Connect the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to the Cabin heater choke KA7040200. Secure the choke by a clamp KA704004 (Clamp) and tighten the bolts C9996283C by a wrench 8.	
32	Connect the hose C9993188 (AERODUCT tube CEET-7 1-3/4 ID) to KB7040400 Air branch canal.	
33	Tighten the clamps C9997723 (Clamp 40-60) by a cross-screwdriver or wrench with header 7.	
34	Set KA7040002 Tap. Secure the bottom edge of the instrument board KA1081000 tightening bolts by a hex-nut screwdriver 3.	
35	Install and secure the central and left panels of the instrument panel. Tighten bolts by a 3 hex-nut wrench or hex-nut screwdriver.	

CHAPTER 23 –
INSTRUMENTS

Contents

23-00.1 General

This chapter provides description Instruments. The aircraft is provided with minimum equipment.

23-00.2 Description

The CTLS-LSA includes equipments, located on instrument panels upper and lower section.

The upper panel area holds the main flight and engine monitoring instruments and the avionic equipment. Fig. 23-00-1 shows the typical arrangement using analog instruments. Installation with integrated glass cockpits differ.

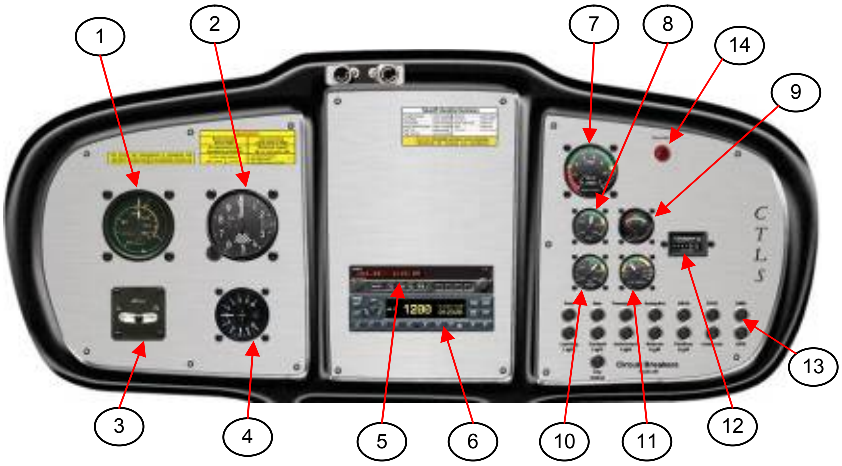


Fig. 23-00-1. Upper Panel with basic analog cockpit, basic ATC equipment

Pos.	*Manufacturer*	*Type*	*Description*
1	Winter	6 FMS 4	Analog airspeed indicator 3.25 in, km/h or kt
2	Winter	4 FGH 10	Analog three pointer altimeter, 80 mm
3	Winter	Gr 1	Slip indicator, 58 mm
4	Winter	5 STVM 5	Vertical speed indicator, 58 mm
5	Garmin	SL40	COM radio
6	Garmin	GTX 328; or GTX330	Transponder mode S.
7	UMA	19-519-211	Analog tachometer 2.25 in
8	UMA	N12116V150C010 or N12116V300F020	Analog cylinder head temperature gauge 32 mm; units °C … units F
9	UMA	N141100917V060	Analog voltmeter 32 mm
10	UMA	N12113V150C020 or N12113V300F0A0	Analog oil temperature gauge 32 mm, units °C … units F
11	UMA	N04113V010B010 or N04113V130P070	Analog oil pressure gauge 32 mm, units bar … units PSI
12	Honeywell	85094	Hobbs hour meter
13	n/a	n/a	Circuit breakers area
14	n/a	n/a	Warning lights engine & generator

The equipment in the lower panel is installed as shown in Fig. 23-00-2. The positions identified in the figure are as follows:

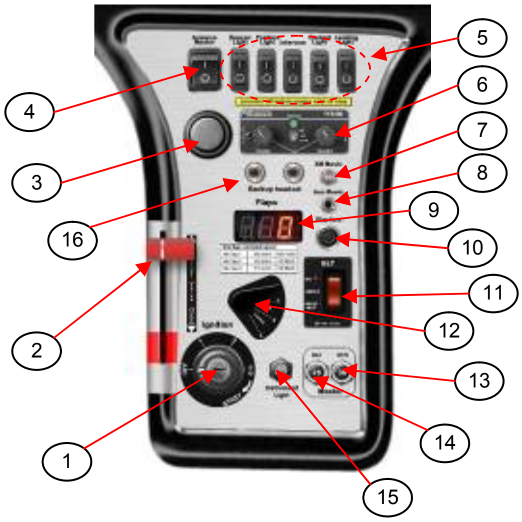


Fig. 23-00-2

Pos.	*Manufacturer*	*Type*	*Description*
1	n/a	n/a	Ignition key switch, operates starter and ignition circuits
2	n/a	n/a	Fuel valve; lift to open, push down to close. Covers ignition key switch when locked
3	n/a	n/a	12V power connector
4	n/a	n/a	Avionic master switch; allows disconnect of Avionic equipment
5	n/a	n/a	Individual switches for (left to right): beacon light, position light, intercom, cockpit light, landing light (switches active when respective equipment installed)
6	PS Engineering	PM 3000	Intercom
7	n/a	n/a	Two-way switch to select between XM music (when XM GPS installed, XM music gets audible over the Intercom) and Aux music input. To fast mute music, switch to the channel that has no active input
8	n/a	n/a	Aux music input (MP3 player or similar)
9	Flight Design	n/a	Flap position selector display. Flashes when selected position not yet reached; shows flap position permanent when position is reached
10	n/a	n/a	Circuit breaker for the flap controller
11	Kannad	AF 406 Compact	406 MHz ELT unit. Remote control visible here; ELT unit installed to luggage area, on top of center tunnel
12	Flight Design	n/a	Flap selector switch. Switch to desired flap position. Manual backup control above -12° position (flaps move to maximum negative), or below +35° (flaps move to maximum positive)
13	n/a	n/a	Generator Switch. Push to engage , pull to disengage
14	n/a	n/a	Bat master breaker. Pull to disengage, push to engage. When pulled, aircraft power is disconnected (does not stop a running engine)
15	n/a	n/a	Brightness of instrument lights. Rotate clockwise to make brighter, counter-clockwise to reduce brightness. Active only when instrument lights installed
16	n/a	n/a	Backup headset connectors. Can be used by pilot in case of intercom failure

SECTION 23-10 –
SPEECH COMMUNICATION

23-10.1 General

This section provides description and information about Speech Communication System.

23-10.2 Description

The speech communication system represents the radio Garmin SL40 is typically installed to the upper center panel. Every installation of a radio goes along with an intercom that is typically installed to the lower center panel. Headset plugs are provided at the hat rack of the rear main bulkhead. A set of backup headsets is provided in the lower central panel. This set provides a bypass of the intercom and allows to deal with intercom failure. The radio may be connected with a GPS receiver that allows frequency pre-selection from the GPS database.

Transmit and receive the signal to/from ground ATC execute by use COMM antenna.

The COMM antenna is located on the fuselage roof.

23-10.3 Maintenance Practices

23-10.3.1 *Radio Installation, Removal and Maintenance*

23-10.3.1.1 Type of Maintenance

Line

23-10.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM), unless higher qualification required by Radio manufacturer

23-10.3.1.3 Procedure

Follow instructions provided by the Radio manufacturer.

23-10.3.2 *COM Antenna Uninstalling and Installing*

23-10.3.2.1 Type of Maintenance

Line

23-10.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

23-10.3.2.3 Procedure

COM Antenna Comant CI-121(optionally RAMI AV-10) assembly is shown on Fig. 23-10-1.

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Antenna Uninstalling

Step	***Action***	***Reference***
1	Disconnect Antenna connector RG 142 item 6	
2	Unscrew nuts item 5	
3	Remove shield	

C. Antenna Installing

Step	***Action***	***Reference***
1	Install Antenna in reversed order	

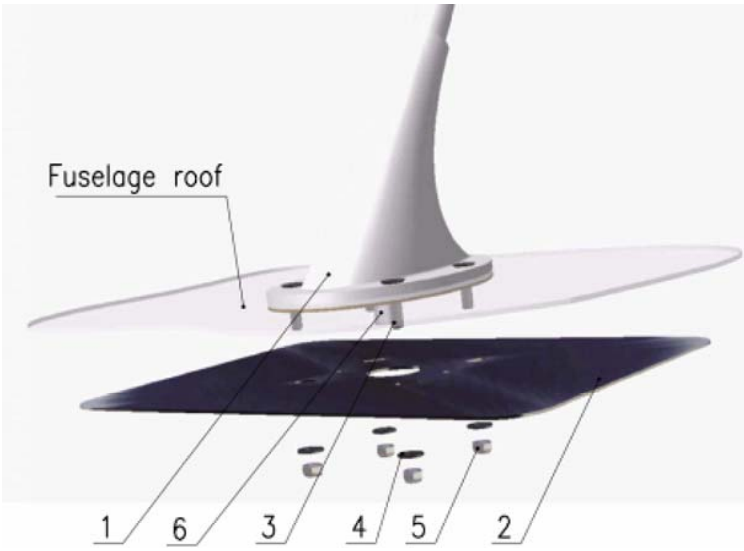


Fig. 23-10-1

Fig.	***Item***	***Part Name***	***Torque***	***Reference***
23-10-1	1	Antenna Comant CI-121VHF com		C9997423N
		Antenna RAMI AV-10		C9997423K
	2	Shield		KF24000173
	3	Machine screw DIN 965 M4x20 A2-70		C9996270F
	4	Washer DIN 125 A4-4.3mm		C9996502A
	5	Self-locking nut DIN 985-M4, regular		C9996332
	6	Connector RG 142 (angle)		C9999355X

23-10.3.3 *COM Antenna Inspection*

23-10.3.3.1 Type of Maintenance

Line

23-10.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

23-10.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Antenna Inspection

Step	***Action***	***Reference***
1	Check security of attachment	
2	Check communication	

CHAPTER 24 –
ELECTRICAL SYSTEM

Contents

24-00.1 General

This chapter provides description and information on Electrical System.

24-00.2 Description

The electrical system is powered by a 12V, 7Ah lead-gel battery. A 14 Ah lead-gel battery is available as option. The battery is located at the engine side of the firewall. This battery has a high performance and needs specific charging procedure in case it gets fully discharged. If properly maintained it has a very long service life.

The battery is charged by the integrated generator of the ROTAX® engine. The AC generator, integrated to the rear crankcase of the engine, provides a maximum power of 250 Watt to an external rectifier-regulator. The rectifier-regulator is attached to the upper firewall on the engine side.

Power is distributed via a common power bus. The individual circuit breakers of the individual circuits are connected to the power bus. The breakers for the avionic equipment are connected to the power bus through the Avionic Master Switch. Power is then transferred to the electric loads using switches or dimmers where necessary.

All ground lines are connected to the battery via a ground bus. The avionics are grounded separately from the rest of the aircraft in order to avoid interference.

The master breaker function of the electric system is achieved by dual breaker-switches. The breakers are designed and qualified to be used as switches. This allows to reduce the amount of components in the system, and therefore reduces the possibility for system failures.

The layout of the electrical system is shown with a simplified block diagram in the figure below. The block diagram illustrates the wiring layout and helps to explain the electric system function.

The simplified block diagram of electrical system is shown on Fig. 24-00-1.

The major components of the electric system within engine compartment are shown on Fig. 24-00-2.

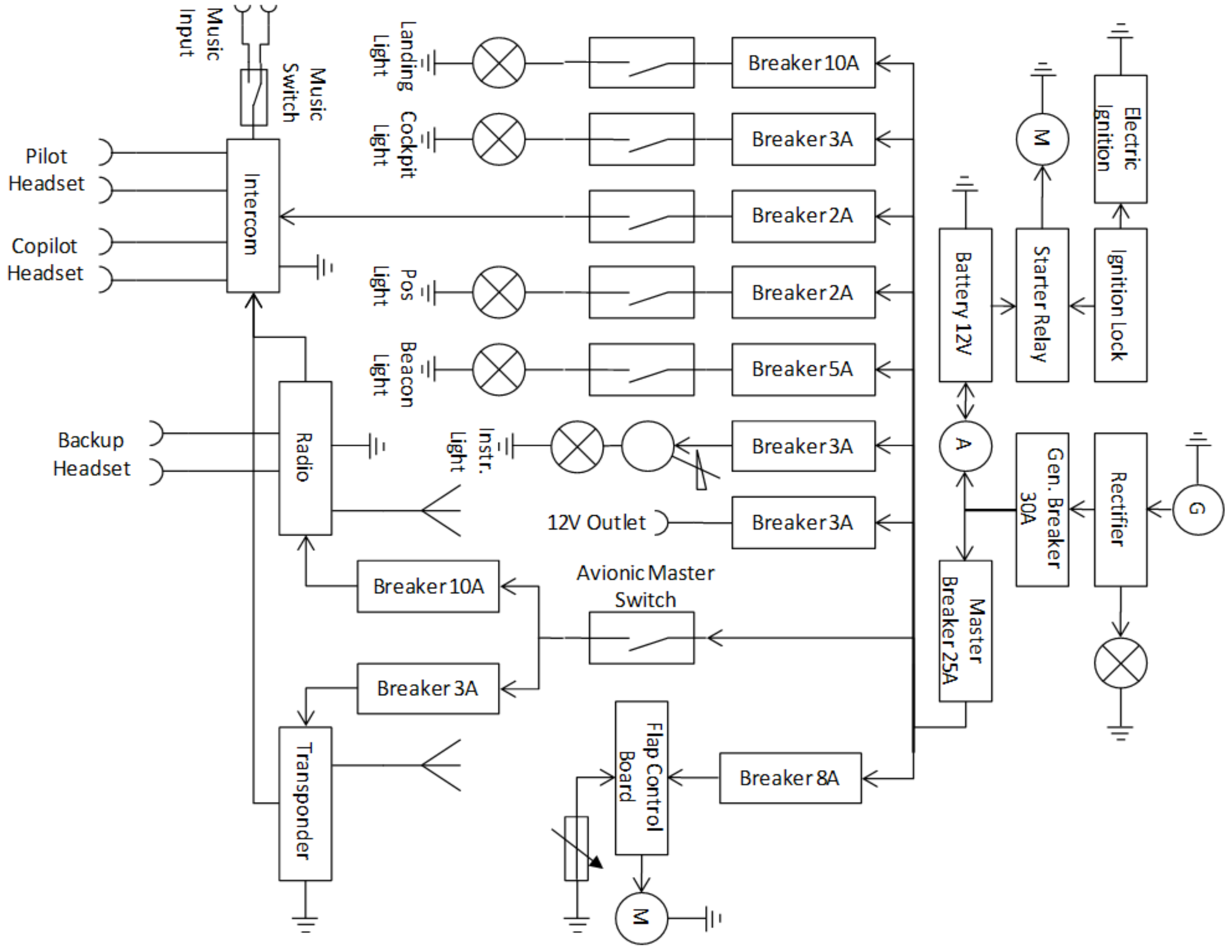


Fig. 24-00-1. Electrical System - Simplified Block Diagram

Fig. 24-00-2

24-00.3 Maintenance Practices

24-00.3.1 *Starter Relay Uninstalling and Installing*

24-00.3.1.1 Type of Maintenance

Line

24-00.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

24-00.3.1.3 Procedure

Starter Relay assembly is shown on Fig. 24-00-3.

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Starter Relay Uninstalling

Step	*Action*	*Reference*
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	Disconnect control wire	
3	Demount Cap for nut M6 item 2	
4	Unscrew two nuts item 3	
5	Remove the 2 screws item 8 connecting the Starter Relay to the firewall	

C. Starter Relay Installing

Step	*Action*	*Reference*
1	Install Starter Relay in reversed order	
2	Use only new self-locking nuts Items 5 and 3	

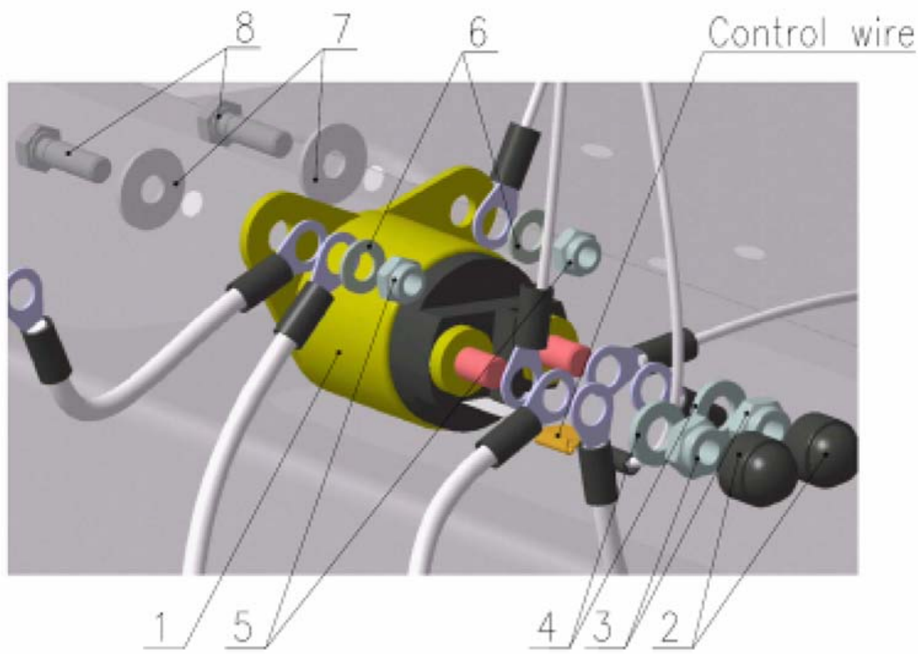


Fig. 24-00-3

Fig.	Item	Part Name	Torque	Reference
24-3	1	Starter relay assy		C9997494
	2	Cap for nut M6		C9996364
	3	Self-locking nut DIN 985-M6, regular		C9996334
	4	Washer DIN 125 A2B-6.4mm		C9996504
	5	Self-locking nut DIN 985-M5, regular		C9996333
	6	Washer DIN 9021-5.3mm VZ		C9996563
	7	Washer DIN 9021-5.3mm VZ		C9996563
	8	Bolt DIN 933-M5x16-8.8		C9996283

24-00.3.2 *Capacitor Uninstalling and Installing*

24-00.3.2.1 Type of Maintenance

Line

24-00.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

24-00.3.2.3 Procedure

Capacitor assembly is shown on Fig. 24-00-4.

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Capacitor Uninstalling

Step	Action	Reference
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	Disconnect terminals items 1, 2	
3	Cut TY-wraps item 5	

C. Capacitor Installing

Step	Action	Reference
1	Install Capacitor in reversed order	

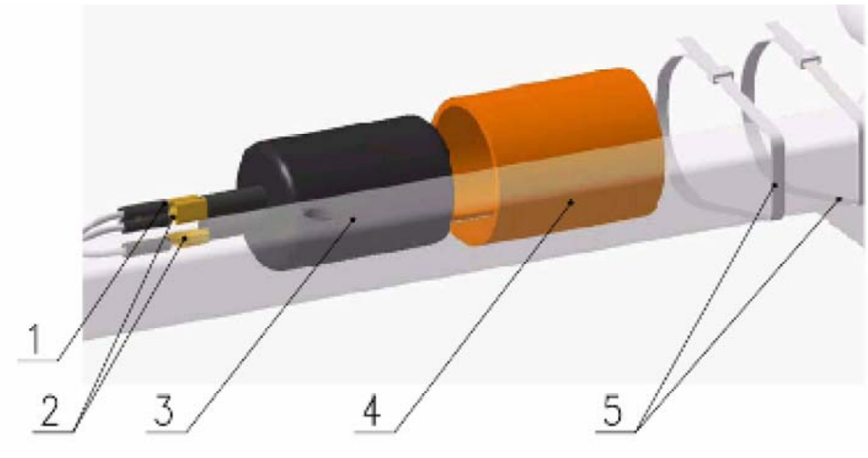


Fig. 24-00-4

Fig.	Item	Part Name	Torque	Reference
24-4	1	Socket double flat 6.3x0.8mm 1.5-2.5sqmm		C9997129G
	2	Socket flat iso. blue 6.3x0.8mm 1.5-2.5sqmm		C9997128H
	3	Capacitor Type LG 22000mkF 25V		C9999355P
	4	SEPCO Fire Sleeve RL2274G-5/8"		C9993189G
	5	TY-wraps CV-250 white		C9997727F

24-00.3.3 *Battery Uninstalling and Installing*

24-00.3.3.1 Type of Maintenance

Line

24-00.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

24-00.3.3.3 Procedure

Refer to battery manufacturer’s instructions for batteries other than the one specified.

To remove battery refer to Fig. 24-00-5.

▲Warning: To reduce the chance of personal injury and possible equipment damage, remove the negative wire before removing the positive wire.

Failure to reconnect the battery connectors properly could result in reversing the polarity of the battery. Battery terminals face forward when properly installed.

2. Install the battery cover plate over the battery, and install 4 screws, using Self-locking nut DIN 985-M5 only and tightened them to torque 49 lb-in / 5.5 Nm.

3. Reconnect the two connectors to the battery.

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Battery Uninstalling

Step	Action	Reference
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	Disconnect the two connectors (unscrew the bolts item 7).	
3	Remove the 4 screws connecting the battery cover plate to the firewall	
4	Remove the battery.	

C. Battery Installing

Step	Action	Reference
1	Install battery in reversed order	
2	Use only new self-locking nuts Item 5	

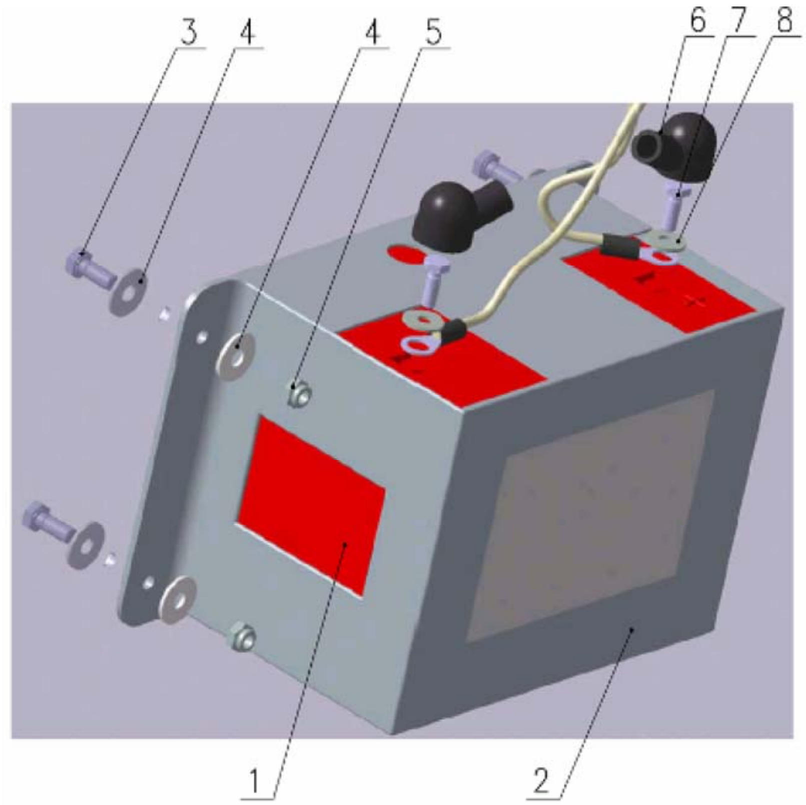


Fig. 24-00-5

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
24-5	1	Battery SBS 8		C9997180C
	2	Bracket Battery		KF24000053
	3	Bolt DIN 933-M5x16-8.8		C9996283
	4	Washer DIN 9021-5.3mm VZ		C9996563
	5	Self-locking nut DIN 985-M5, regular		C9996333
	6	Cap for Battery		C9997180D
	7	Washer DIN 125 A2B-6.4mm		C9996504
	8	Bolt		part of set C9997180C

24-00.3.4 *Circuit Breakers Uninstalling and Installing*

24-00.3.4.1 Type of Maintenance

Line

24-00.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

24-00.3.4.3 Procedure

To install and uninstall circuit breakers refer to Fig. 24-00-6.

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Circuit Breakers Uninstalling

Step	Action	Reference
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	Unscrew circuit breaker attachment nut	
3	Remove the circuit breaker	
4	Remove shrink hose	
5	Unscrew attachment bolts M4 that hold the sockets to circuit breaker terminals	

C. Battery Installing

Step	Action	Reference
1	Install circuit breaker in reversed order	
2	Use new shrink hose	

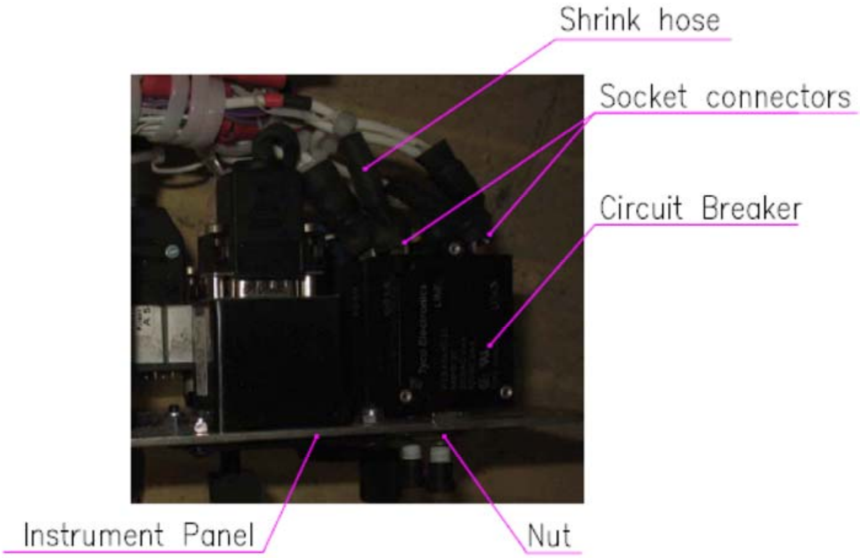


Fig. 24-00-6

24-00.3.5 *Switches Uninstalling and Installing*

24-00.3.5.1 Type of Maintenance

Line

24-00.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

24-00.3.5.3 Procedure

To install and uninstall switches refer to Fig. 24-00-7.

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Circuit Breakers Uninstalling

Step	Action	Reference
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	By the pressing switch locks remove switch	
3	Remove shrink hose	
4	Disconnect socket connectors	

C. Battery Installing

Step	Action	Reference
1	Install switch in reversed order	
2	Use new shrink hose	

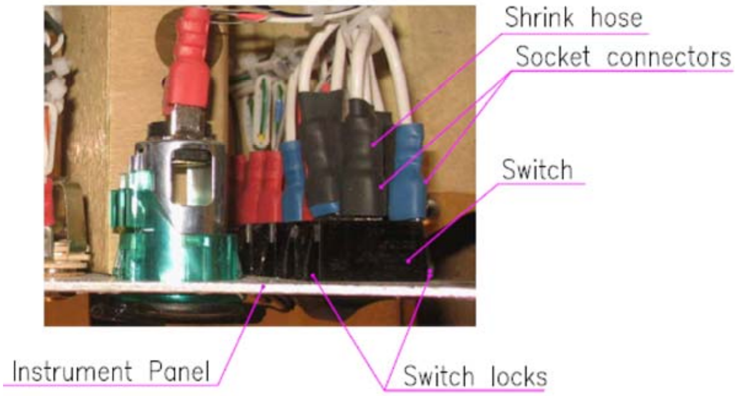


Fig. 24-00-7

24-00.3.6 *Electrical Wiring System Inspection*

24-00.3.6.1 Type of Maintenance

Line

24-00.3.6.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

24-00.3.6.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
Multimeter	1	pc

B. Electrical Wiring System Inspection

Step	Action	Reference
1	Inspect wiring insulation for integrity. Replace wire, if insulation is damaged.	
2	Tighten bolt connections and re-braze soldered connections	
3	Inspect each electric instrument for secure ground connection using multimeter.	
4	Inspect for leakage current using an multimeter	
5	Inspect terminals and studs for oxidation. Dress the oxidized studs, if necessary. Apply LITOL-24M (Retinax EP 2. Alvania EP-2 (SHELL); Alvania Grease R3 (Petroleum Co, Ltd); Mobilgrease MP, Mobilux 3 (Mobil Oil Corp.); Energrease LS 3 (British Petroleum Co.); Beacom 3 (Esso)) onto the ground and battery terminals.	

24-00.3.7 *Starter Inspection*

24-00.3.7.1 Type of Maintenance

Line

24-00.3.7.2 Minimum Level of Certification

Pilot/Owner (P/O)

24-00.3.7.3 Procedure

To inspect the starter connections refer to Fig. 24-00-8.

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Starter Inspection

Step	*Action*	*Reference*
1	Check security of attachment and electrical connections	

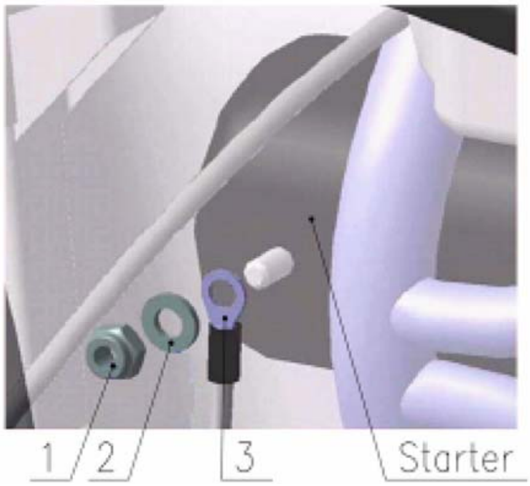


Fig. 24-00-8

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
24-6	1	Self-locking nut DIN 985-M6, regular		C9996334
	2	Washer DIN 125 A2B-6.4mm		C9996504
	3	Socket non isol.DIN46211 6x4.3mm 6-10sqmm		C9997133R

24-00.3.8 *Battery Inspection*

24-00.3.8.1 Type of Maintenance

Line

24-00.3.8.2 Minimum Level of Certification

Pilot/Owner (P/O)

24-00.3.8.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Battery Inspection

Step	*Action*	*Reference*
1	Check for security, corrosion and general condition of battery tray, terminals and wirings	
2	Inspect for security of mounting and condition. Ensure that the vent holes are clean.	

▲Warning: For extended service life, disconnect the battery to prevent it from being continuously charged by external power when the aircraft is in maintenance.

When the aircraft is stored for an extended period of time, remove the battery and charge it fully. Then store it in a warm dry place. Never leave the battery discharged.

Provide adequate ventilation when charging or using batteries in an enclosed space, keep sparks, flames and cigarettes away.

Do not replace the sealed lead acid battery with a wet lead acid battery.

Never “jump-start” an aircraft that has a “dead” or discharged battery. It takes approximately three hours to recharge a fully discharged battery with the aircraft generating system or external power.

Unauthorized modifications, including the fitting of optional electrical equipment, must not be carried out under any circumstances without official modification authorizations issued by the factory.

CHAPTER 25 –
EQUIPMENT/FURNISHINGS

Contents

25-00.1 General

This chapter provides maintenance practices on the seats and safety belt.

25-00.2 Maintenance Practices

25-00.2.1 *Seat Uninstalling and Installing*

25-00.2.1.1 Type of Maintenance

Line

25-00.2.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

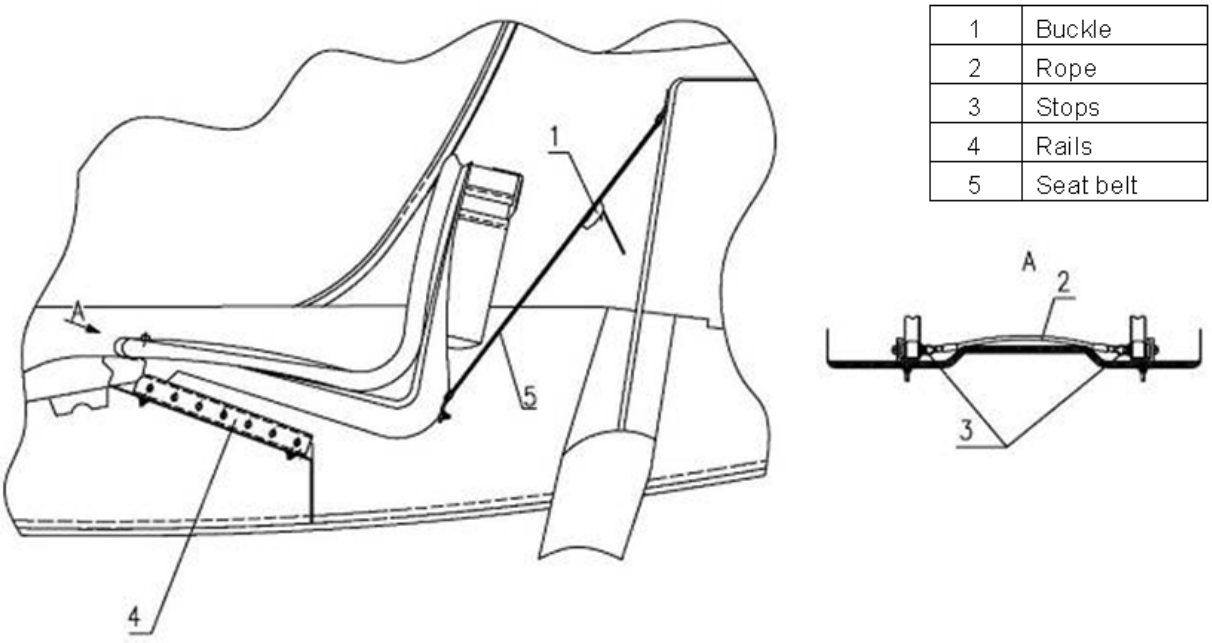
25-00.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Seat Uninstalling and Installing (Fig. 25-00-1)

Step	***Action***	***Reference***
1	Release the buckle 1 that fixes the seat belt	
2	Remove the free end of seat belt from the buckle	
3	Pull the rope 2 located under the seat until the pins of seat rolls are got out from attachment holes in the rails.	
4	Holding the rope 2 tensioned move the seat forwards and upwards to demount it from the rails.	
5	Remove the seat through the door opening.	
6	Installation is done in a reverse order.	



1	Buckle
2	Rope
3	Stops
4	Rails
5	Seat belt

Fig. 25-00-1

25-00.2.2 *Safety Belt Uninstalling and Installing*

25-00.2.2.1 Type of Maintenance

Line

25-00.2.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Safety Belt Uninstalling and Installing (Fig. 25-00-2)

Step	*Action*	*Reference*
1	Unscrew 6 bolt-nut connections M6 (bolt (1), washer (3), nut (4)) that fix aluminum clamps (2) and reinforcement plates (5) to the main bulkhead.	
2	Remove the clamps.	
3	Remove the reinforcement plates (in upper attachment points).	
4	Remove the belt.	
5	Installation is done in a reverse order.	

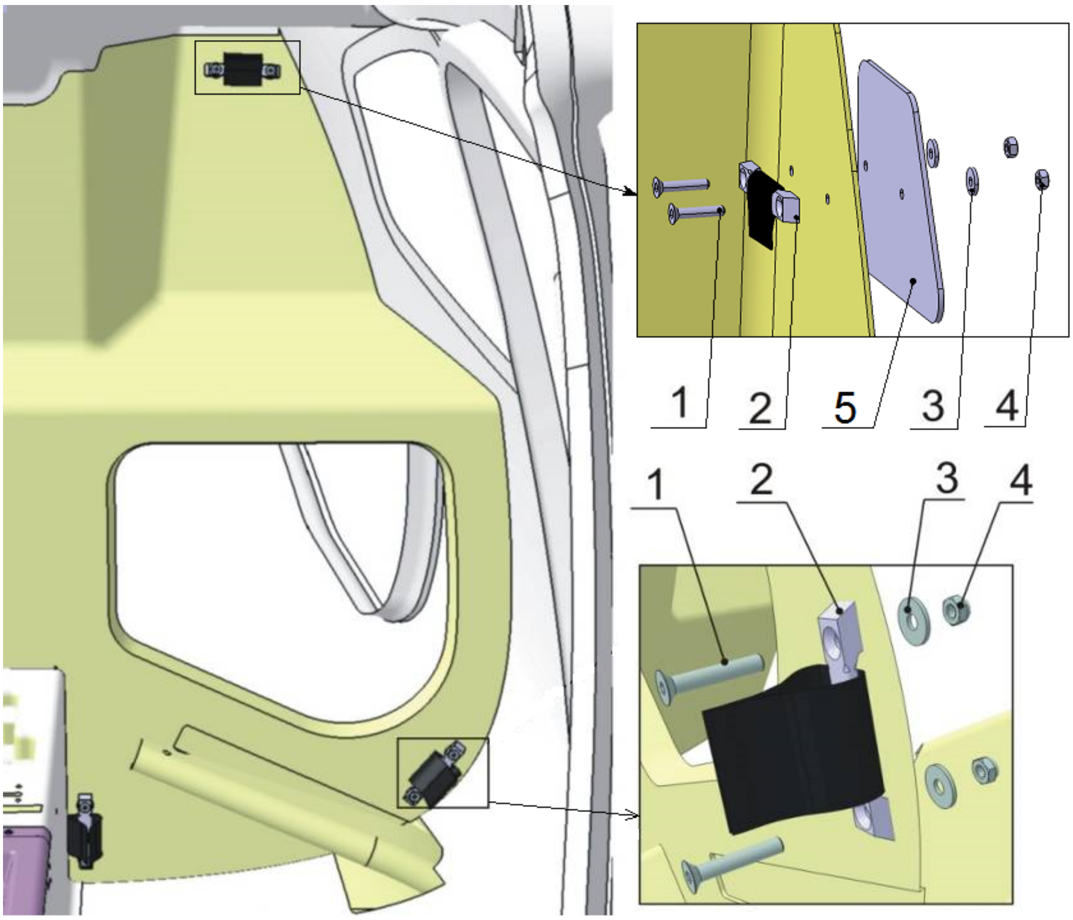


Fig. 25-00-2

25-00.2.3 *Access Panels Removal and Installation*

25-00.2.3.1 Type of Maintenance

Line

25-00.2.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Access Panels Removal and Installation (Fig. 25-00-3).

Remove access panels to provide access to systems and structural components inspection in accordance with instructions below.

Step	***Action***	***Reference***
1	Roof cover (1) provides access to components of flap and aileron controls, antennas. Unscrew 10 bolts (8) to remove the roof cover.	
2	Panel (2) provides access to components of aileron controls. Remove the panel 2 as per follows: - remove the seat; - remove 4 screws that fix the panel; - remove the panel.	25.2.1
3	Panel (3) provides access to brake system, Stabilator controls and aileron trim. It is fixed by 2 bolts (6) from the rear side and by engine control panel (4) from the front side. Unscrew 2 bolts (6) to remove the panel.	
4	Engine control panel (4) provides access to engine control components. Remove the panel.	76.2.1
5	To provide access to the rest of control components lower middle instrument panel has to be removed.	31.3.1.3
6	Panels installation is done in a reverse order.	

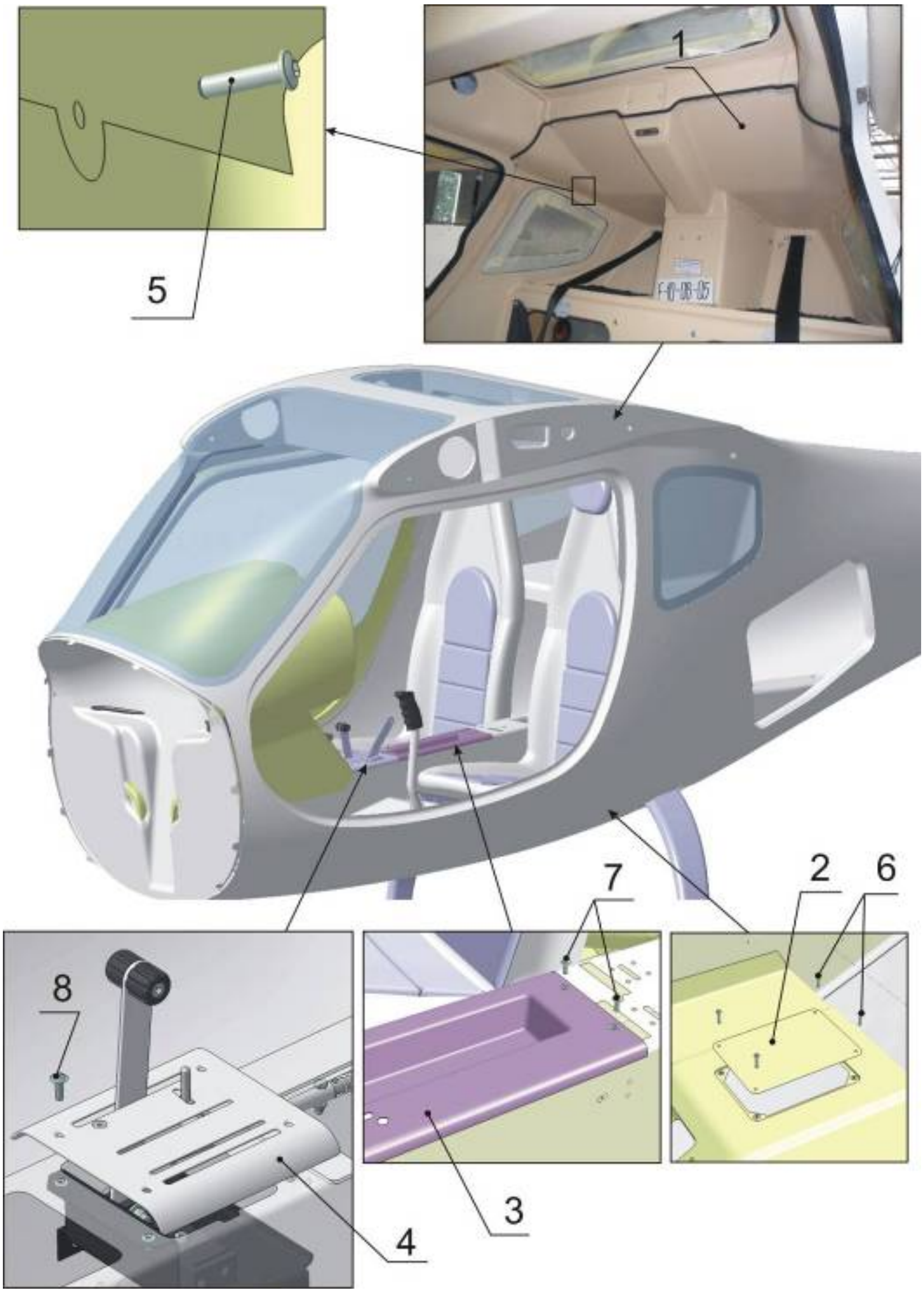


Fig. 25-00-3

25-00.2.4 *Fabric Covers Removal and Installation*

25-00.2.4.1 Type of Maintenance

Line

25-00.2.4.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.4.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Fabric Covers Removal and Installation (Fig. 25-00-4).

Step	Action	Reference
1	Free the lower 3 loops of the cover (1) from the pins (2) to provide access to luggage compartment.	
2	Push and unfix 2 knobs (4) to remove cover fully.	
3	Installation is done in a reverse order.	

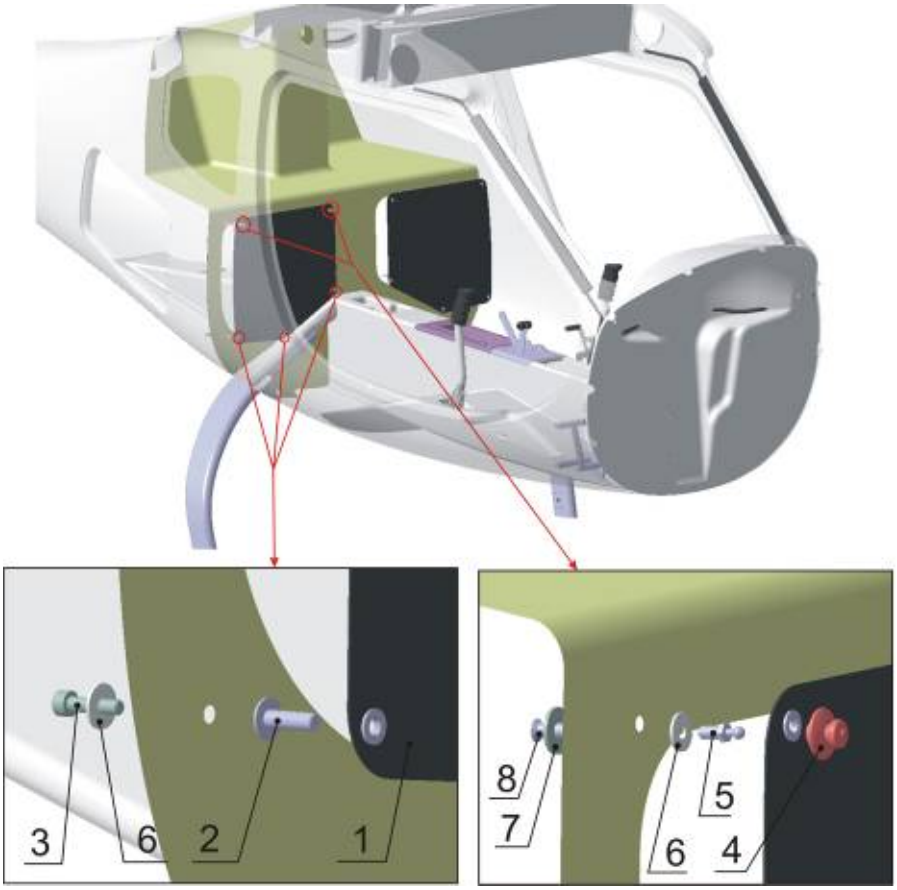


Fig. 25-00-4

Fig.	Item	Part Name	Torque	Reference
25-4	1	Fabric Cover		
	2	Pin		
	3	Bolt DIN 933 M5x20-8.8		C9996283C
	4	Button TENAX		C9997541A
	5	Pin for the Button TENAX		
	6	Washer DIN 9021-5.3mm VZ		C9996563
	7	Washer DIN 9021-6.4mm		C9996565
	8	Cap nut M5		C9996836

25-00.2.5 *Carpets Removal and Installation*

25-00.2.5.1 Type of Maintenance

Line

25-00.2.5.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.5.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Carpets Removal and Installation (Fig. 25-00-5).

Step	*Action*	*Reference*
1	Velcro tapes are used for the carpets fixation on the cockpit floor.	

Fig. 25-00-5

25-00.2.6 *Seat Upholstery Removal and Installation*

25-00.2.2.1 Type of Maintenance

Line

25-00.2.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Seat Upholstery Removal (Fig. 25-00-6)

Step	*Action*	*Reference*
1	Unscrew nut (1) that fixes the head-rest (2).	
2	Unscrew two nuts (5) that fix buckle (3).	
3	Unhook two ropes (6) and one loop (7) that fix upholstery to the seat bottom.	
4	Remove the upholstery from the seat.	

C. Installation.

Step	*Action*	*Reference*
1	Installation is done in a reverse order.	

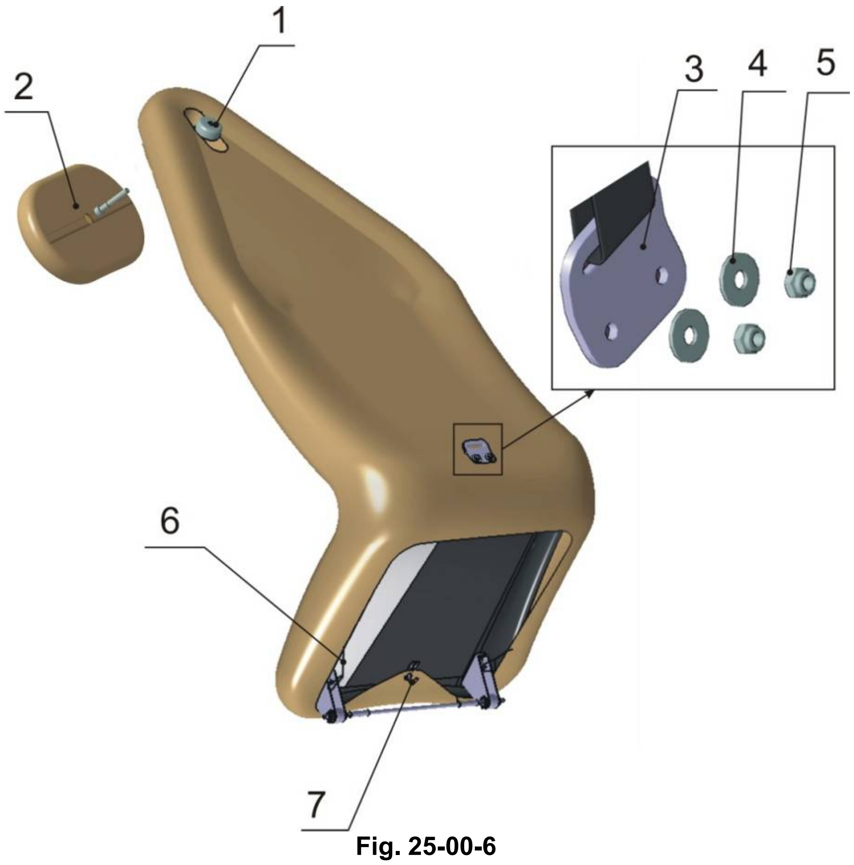


Fig. 25-00-6

25-00.2.7 *Seat Inspection*

25-00.2.2.1 Type of Maintenance

Line

25-00.2.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-00.2.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Seat Inspection

Step	*Action*	*Reference*
1	Remove the seat.	25.2.1
2	Remove the upholstery.	25.2.6
3	Inspect the seat for damage, cracks, delaminations.	
4	Inspect the seat brackets for damage, looseness, or play.	
5	Inspect the seat rails for deformations and signs of damage.	
6	Check latching mechanism for operation.	

SECTION 25-62 –
EMERGENCY LOCATOR TRANSMITTER

25-62.1 General

This section provides description and information about Emergency Locator Transmitter KANNAND ELT 406 AF.

25-62.2 Description

ELT is installed on the airplane for transmitting of emergency signal in cases of emergency. ELT is located in the rear of the luggage compartment above the tunnel. The ELT Antenna is located in the top of the fuselage rear from the shut-out opening. Location of ELT and ELT Antenna is described on Fig. 25-62-1.

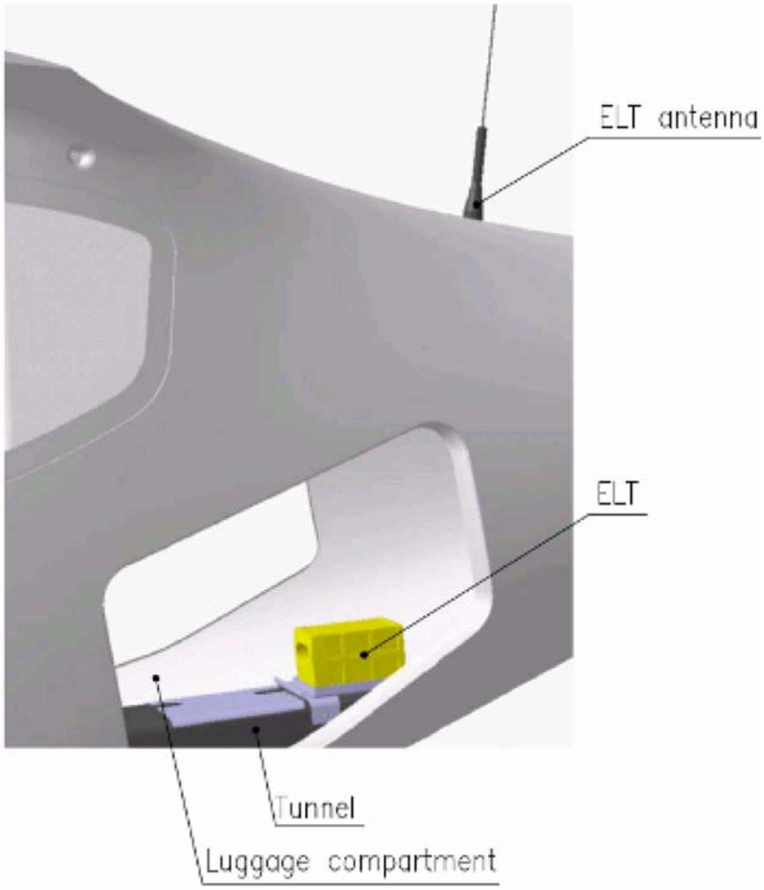


Fig. 25-62-1

25-62.3 Maintenance Practices

25-62.3.1 *ELT Uninstalling and Installing*

25-62.3.1.1 Type of Maintenance

Line

25-62.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-62.3.1.3 Procedure

Fig. 25-2 is described procedure for ELT installing and uninstalling

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. ELT Uninstalling

Step	***Action***	***Reference***
1	Switch the ELT to OFF	
2	Disconnect the outside antenna from the BNC connector of the ELT	
3	If connected, disconnect the DIN 12 Connector of Remote Control Panel 2 or 3-wire bundle from the DIN12 socket of the ELT	
4	Unfasten the self-stripping strap	
5	Remove the transmitter from the bracket	

C. ELT Installing

Step	***Action***	***Reference***
1	Install ELT in reversed order	

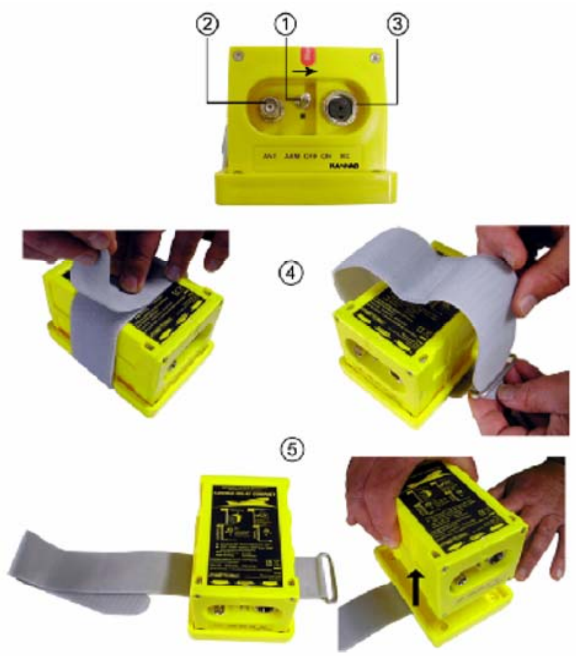


Fig. 25-62-2

25-62.3.2 *ELT Antenna Uninstalling and Installing*

25-62.3.2.1 Type of Maintenance

Line

25-62.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

25-62.3.2.3 Procedure

Fig. 25-62-3 is described procedure for ELT Antenna installing and uninstalling

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Antenna Uninstalling

Step	*Action*	*Reference*
1	Switch the ELT to OFF	
2	Disconnect the BNC connector item 5 from ELT Antenna	
3	Unscrew nut item 4 and remove lock washer item 3 and washer item 2	
4	Remove ELT Antenna	

C. Antenna Installing

Step	*Action*	*Reference*
1	Install ELT Antenna in reversed order	

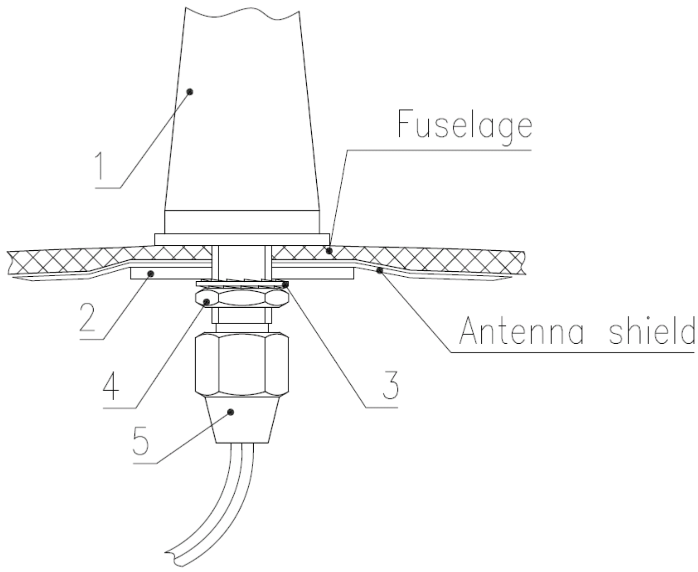


Fig. 25-62-3

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
25-62-3	1	WHIP Antenna, ANT AV200 (white)		C9997433H
	2	Washer		KF24002141
	3	Lock washer		part of set C9997433H
	4	ELT Hex Nut 1/2-28		part of set C9997433H
	5	Connector 50 ohm, RG 58/141/142/223 Angle 90°		C9999355X

25-62.3.3 *ELT and ELT Antenna Inspection*

25-62.3.3.1 Type of Maintenance

Line

25-62.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

25-62.3.3.3 Procedure

The ELT and ELT Antenna inspection is described in ELT KANNAD installation manual.

CHAPTER 26 –
FIRE PROTECTION

Contents

26-00.1 General

This chapter provides information concerning extinguisher located in the pocket at the backside of the copilot seat backrest. Refer to fire extinguisher manufacturer's manual for more data about the extinguisher.

26-00.2 Description

▲Warning: Every CTLS-LSA has the fire extinguisher in the pocket on the back of the passenger seat. It can be used to fight small fires in the cockpit.

▲Warning: By the nature of these types of fire extinguishers, they do not ensure functionality at very low temperatures. Verify the specified limitations for the extinguisher used on your specific aircraft.

▲Warning: Fire extinguishers have a limited lifetime. Make sure you replace the fire extinguisher against a suitable new one when the lifetime limit is reached.

CHAPTER 27 –
FLIGHT CONTROLS

Contents

27-00.1 General

This chapter provides description and information on Flight Controls.

27-00.2 Description

The aircraft has dual controls, thus allowing operation from both seats. The dual controls cannot be separated.

Even when the aircraft can be fully operated from both seats, the pilot in command is defined on the left hand seat. The arrangement of the instruments and operating devices is primarily optimized for this seat. Thanks to the dual controls, the aircraft is well equipped for training and instruction. In this case, the instructor sits on the right hand seat.

27-00.3 Control Surface Deflections

Adjustment Report					
Inspector:				***Airplane S/N***	F-___-___-___
Control surface	***Position***	***Limits, degrees/mm***	***Tolerance, degrees/mm***	***Actual, degrees/mm***	***Notes***
Flap left	up	11.5 deg	±0.5 deg		
	down	30 deg	+0.5 / -1 deg		
Flap right	up	11.5 deg	±0.5 deg		
	down	30 deg	+0.5 / -1 deg		
Aileron left	up	26.5 deg	±1.5 deg		Aileron and flap zero position is -12°
		109 mm	±6 mm		
	up	12.5 deg	±1.5 deg		Aileron and flap zero position is -12°
		52 mm	±6 mm		
Aileron right	up	26.5 deg	±1.5 deg		Aileron and flap zero position is -12°
		109 mm	±6 mm		
	up	12.5 deg	±1.5 deg		Aileron and flap zero position is -12°
		52 mm	±6 mm		
Stabilator	up	13 deg	-1 deg		
	down	7 deg	±1 deg		
Trim tab Manual	up (tab down)	27 mm	±2 mm		Stabilator neutral
	down (tab up)	14 mm	±2 mm		
	up	max. 55 mm	n/a		Stick full forward
	down	max. 53 mm	n/a		Stick full rearward
Trim tab Electric (if installed)	up (tab down)	20 mm	±3 mm		Stabilator neutral
	down (tab up)	15 mm	±1 mm		
	up	max. 53 mm	n/a		Stick full forward
	down	max. 50 mm	n/a		Stick full rearward
Rudder	left (deg)	28.5 deg	±1.5 deg		
	left (mm)	217 mm	±11 mm		
	right (deg)	28.5 deg	±1.5 deg		
	right (mm)	217 mm	±11 mm		
Date:		***Inspector's signature:***			

SECTION 27-10 –
AILERONS

27-10.1 General

This section provides description of the Aileron control system.

27-10.2 Description

The ailerons are activated via push rods which run from the control stick through the tunnel to the mixer in the baggage compartment behind the main frame. In the mixer, at the upper end of the main bulkhead, the aileron input is coupled with the flap setting. When flaps are extended, the ailerons follow the flaps to a certain amount.

The following figure shows the aileron control system in the fuselage, with mixer and with connection to the wings. All levers and rod rockers are provided with roller or spherical bearings. The push-rods used in the control system have standard end fittings. All rods have two adjustable eye-end fittings. The end fitting has an eye-end with a threaded shaft. The eye-end has a spherical bearing. A lock-nut on the threaded shaft locks the eye-end in position. You can turn the eye-end to adjust the length of the rod.

The aileron controls have return springs which ensure a harmonic control feel also at slow speeds. These springs are installed between rear side of the main bulkhead and aileron control system.

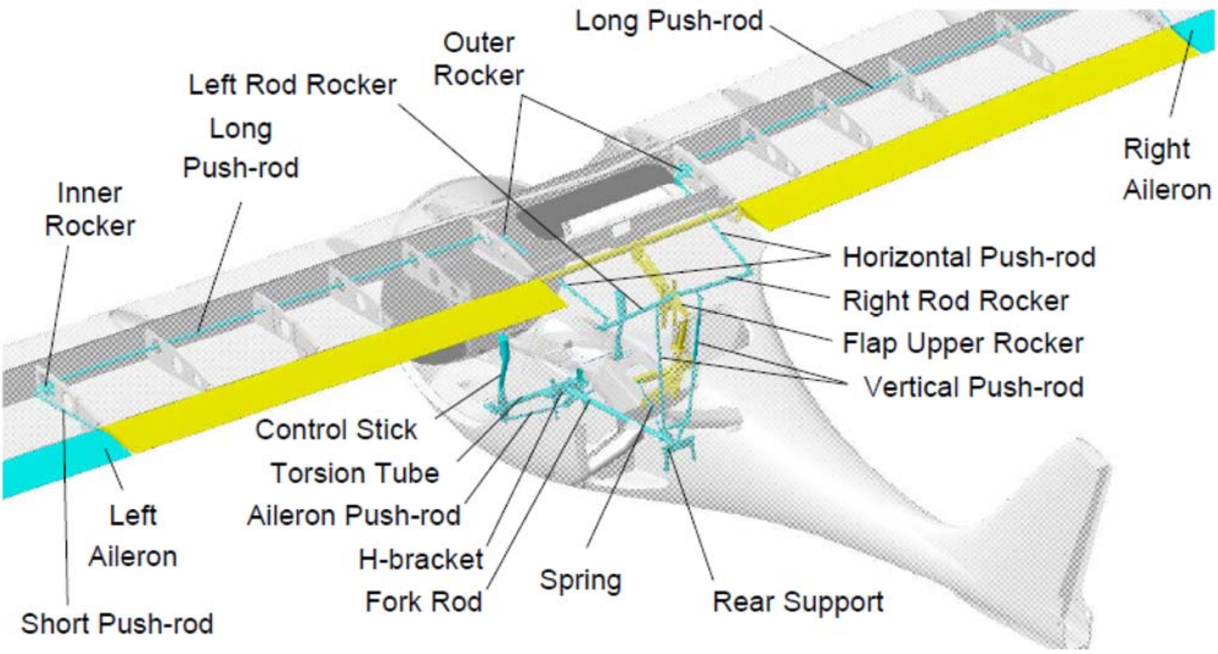


Fig. 27-10-1. Aileron Control, General View

The CTLS-LSA has a control stick for each pilot for the aileron and elevator controls. Aileron push-rods are connected to the bottom of the control sticks. The push-rods are connected to the fork rod at the H-bracket. Fork Rod is mounted to H-bracket and Rear support. H-bracket and Rear support are attached to tunnel of fuselage.

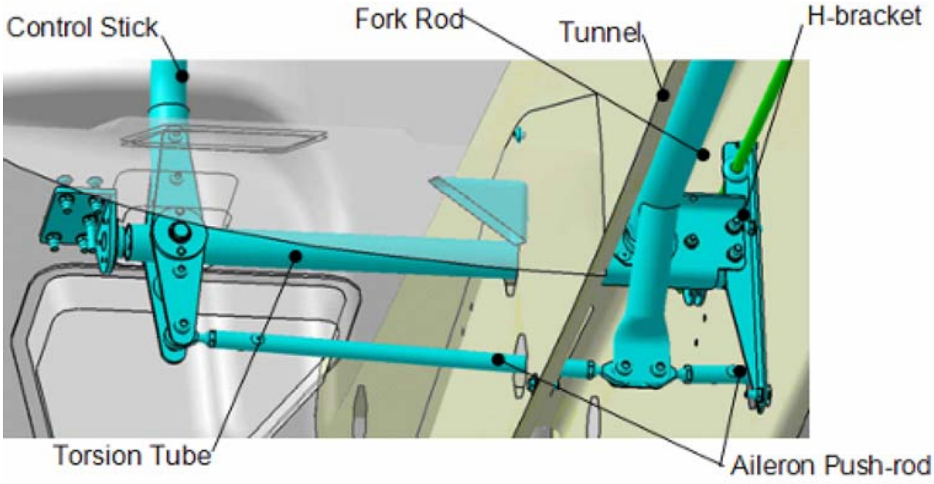


Fig. 27-10-2

The fork rod connects left and right rod rockers in luggage compartment with two push-rods. Return springs are connected to fork rod, too.

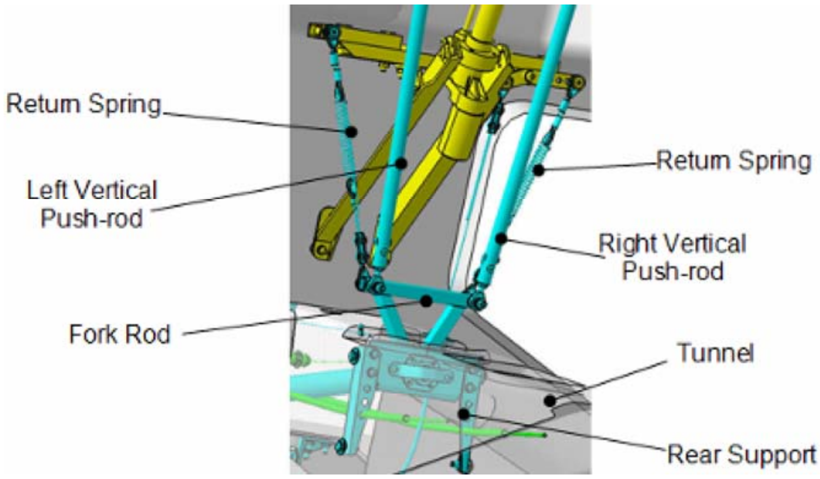


Fig. 27-10-3

Rod rockers are attached to flap rocker from the one side and from the other side mounted on guide pins attached to fuselage.

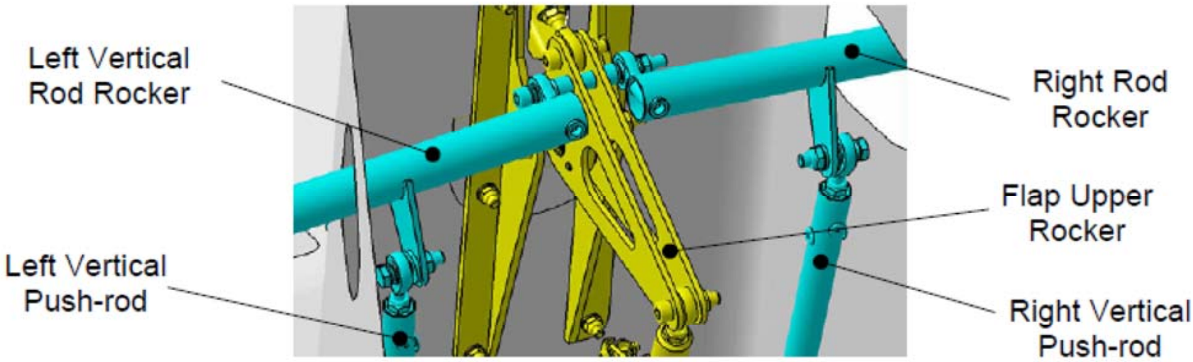


Fig. 27-10-4

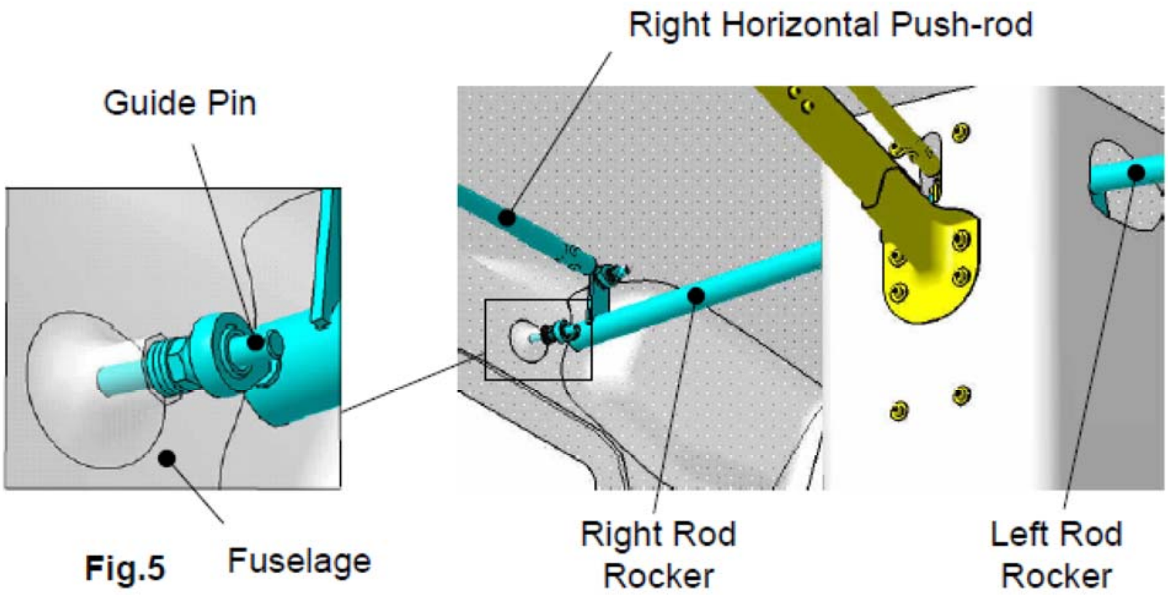


Fig. 27-10-5

Left and right rod-rockers are connected to outer rockers of left and right wings with horizontal push-rods. Outer rockers are attached to root ribs of wings.

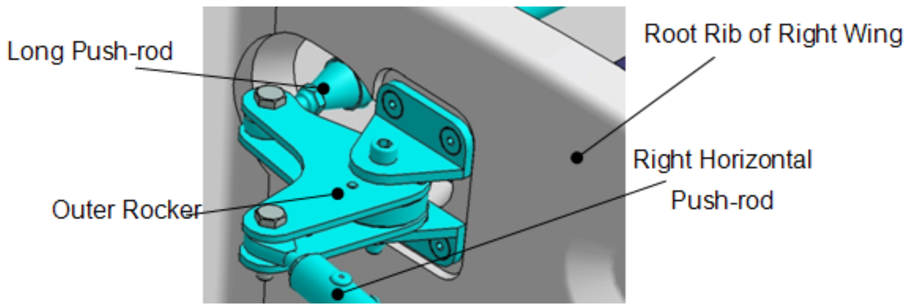


Fig. 27-10-6

The two long push-rods are connected to the inner rockers, one in each wing. The inner rockers are attached to the rib of each wing.

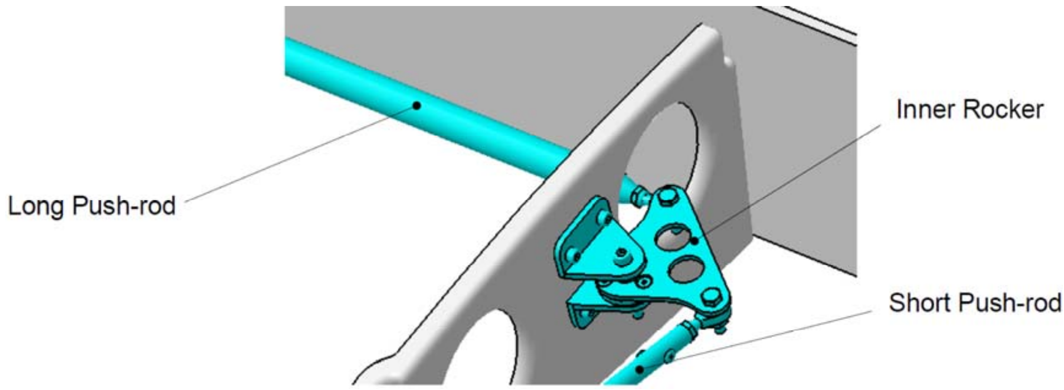


Fig. 27-10-7

Short push-rods connect the inner rocker to ailerons.

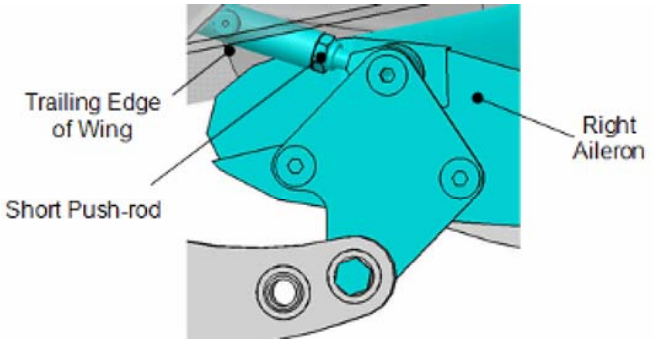


Fig. 27-10-8

The ailerons stop limits the control sticks movements. Ailerons stopper is a bush located on control sticks under torsion tube. The bush hampers to the torsion tube when control stick is deflected to the limit position. In case of need you can adjust ailerons stop installing the bushes with other diameter.

Bushes with greater diameter decrease control sticks (ailerons) deflection range. Bushes with smaller diameter increase deflection range. Left and right bushes shall be of the same diameter always.

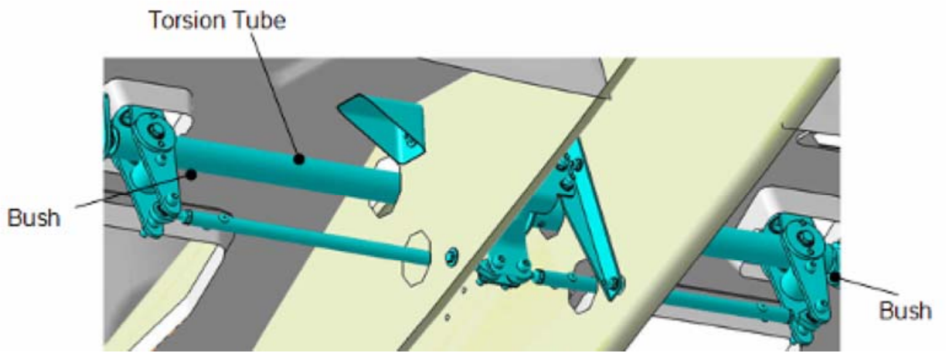


Fig. 27-10-9

27.10.2.1 *Aileron Trim*

Aileron trim is activated by a trim wheel in the middle of the tunnel between the pilot and co-pilot. By turning the trim wheel to the right, the aircraft will bank to the right - by turning it to the left, the aircraft will bank to the left. The aileron trim system takes influence to the return springs in the aileron control system by changing the pretension of one of the springs. Due to trim kinematics, it is usual that trimming in one direction requires a bit more control force than in the other direction. The movable indicator shows trim position.

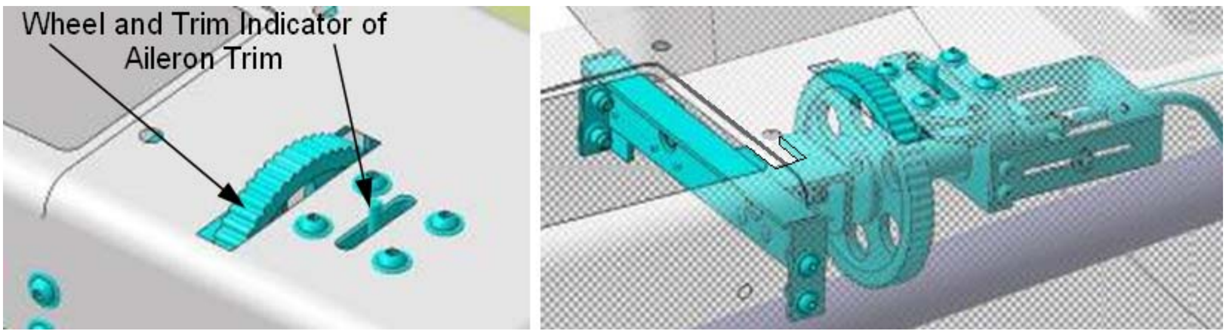


Fig. 27-10-10

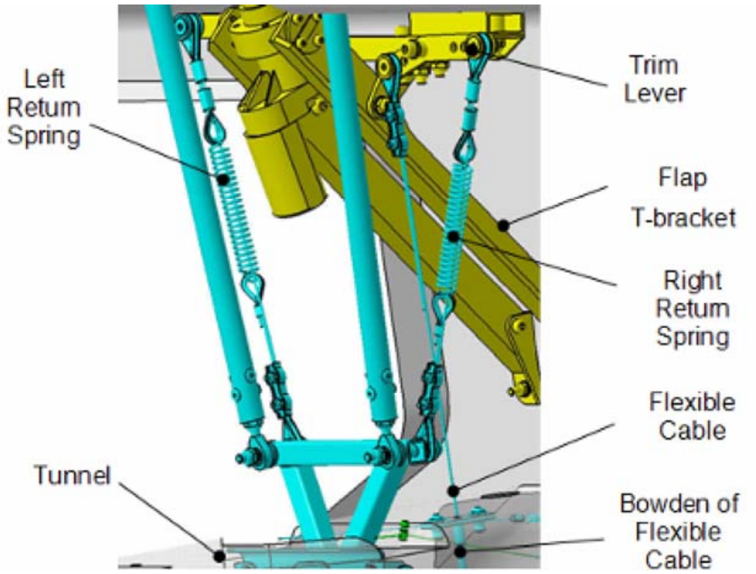


Fig. 27-10-11

Rotating trim wheel you change tension of the right return spring. Left rotation is increase tension. Right – decrease. The left return spring seeks the balance of tension and rotates fork rod. It changes position of ailerons.

27-10.3 Maintenance Practices

27-10.3.1 *Rigging of Aileron "Zero" Position*

27-10.3.1.1 Type of Maintenance

Heavy

27-10.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-10.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Rigging of Aileron "Zero" Position

The "Zero" position of the ailerons is the position when the ailerons are aligned with the flaps in cruise configuration.

Step	***Action***	***Reference***
1	Set the flap at cruise position "0" by flap controller	27-00.3
2	Fix the control stick at neutral position. The stick shall be oriented perpendicularly to the torsion tube Fig. 27-10-9. The Fork-rod shall be at neutral position. The beam of the Fork-rod (Fig. 27-10-12) shall be oriented parallel to the fuselage roof at wing spar box area. In case of need adjust Fork-rod neutral position by Push-rods under the pyramid (Fig. 27-10-2).	

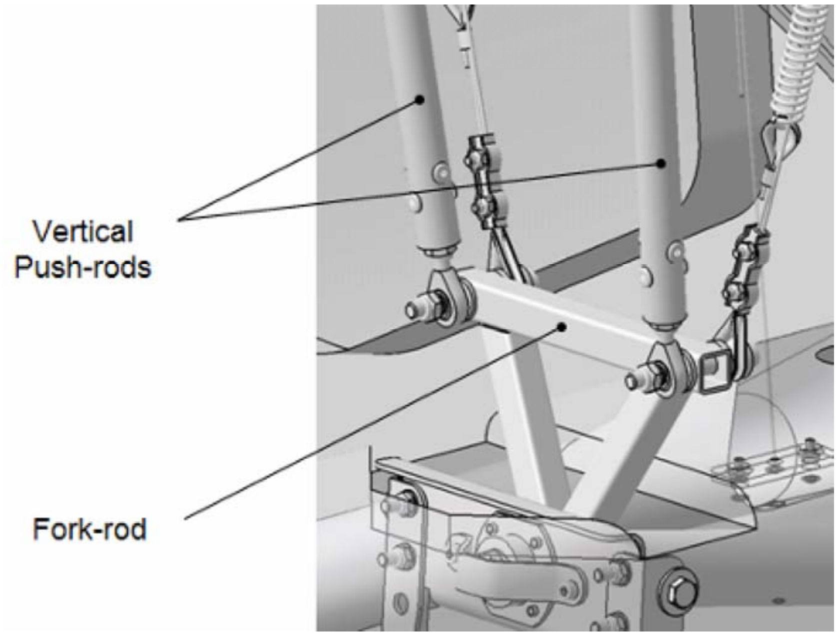


Fig. 27-10-12

3	Adjust ailerons position against the flaps by the vertical rods length adjusting (Fig. 27-10-12) and Wing short rod (Fig. 27-10-13).	

Fig. 27-10-13

27-10.3.2 *Measuring of Aileron Deflection*

27-10.3.2.1 Type of Maintenance

Line

27-10.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-10.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Ruler	1	pc

B. Measuring of Aileron Deflection

Step	Action	Reference
1	Aileron deflections are defined in the deflection table.	27.3
2	Set the flaps at cruise position “0”	
3	Deflect the aileron to upper extreme position by control stick. Measure distance between trailing edges of aileron and flap (Fig 27-10-14).	

Fig. 27-10-14

Step	Action	Reference
4	Deflect the aileron to lower extreme position by control stick. Measure distance between trailing edges of aileron and flap (Fig 27-10-14).	
5	Do step 3 and 4 for other aileron.	

27-10.3.3 *Aileron Deflection Adjustment*

27-10.3.3.1 Type of Maintenance

Heavy

27-10.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

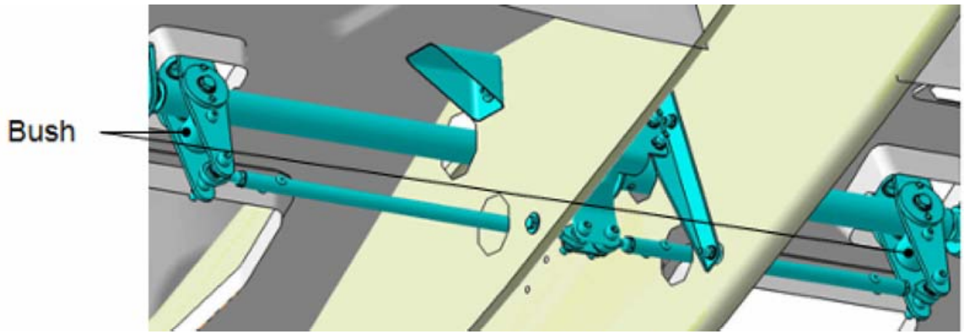
27-10.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Aileron Deflection Adjustment

Step	Action	Reference
1	Aileron deflection (flaps at cruise position “0”) can be adjusted by changing diameter of the bush on control stick (Fig. 27-10-15). Bush of greater diameter decreases control sticks (ailerons) deflection range. Bush of smaller diameter increases deflection range. Left and right bushes shall be of same diameter always.	

 Fig. 27-10-15		
2	After each adjustment check the angles of aileron deflection.	27-10.3.2

27-10.3.4 *Aileron Controls Inspections*

27-10.3.4.1 Type of Maintenance

Line

27-10.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-10.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Checking for Play

Step	***Action***	***Reference***
1	Fix the control stick in zero position.	
2	Slightly shake trailing edges of the aileron up and down.	
3	Total play of the trailing edge must not exceed 3 mm.	
4	Repeat procedure for the second aileron.	

C. Troubleshooting

Step	***Action***	***Reference***
1	In case when any abnormalities during inspection was found contact with manufacturer for further instructions.	

SECTION 27-20 –
RUDDER

27-20.1 General

This section provides description of the Rudder control system.

27-20.2 Description

The rudder is activated via control cables which are housed in a plastic sleeve in the tunnel and along the tail beam (Fig. 27-20-1).

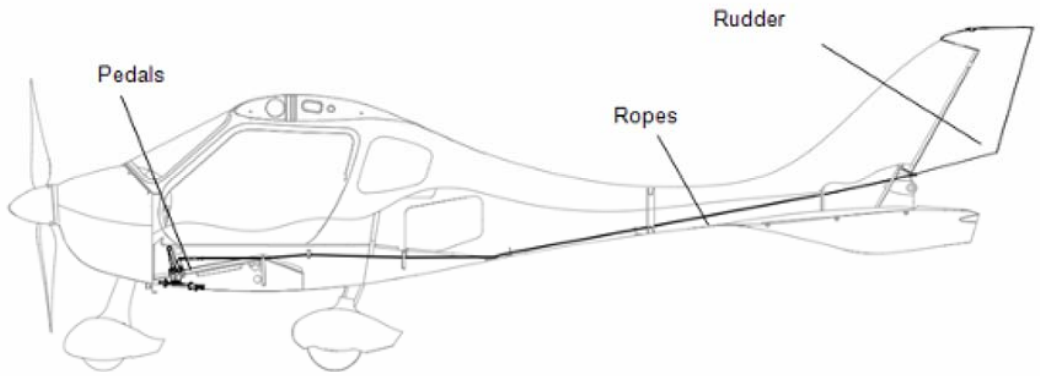


Fig. 27-20-1. Rudder Control, General View

The left and right foot pedals are coupled through the tunnel. The turnbuckle units used to tension the cables and the connection to the nose wheel steering are in the front section of the tunnel.

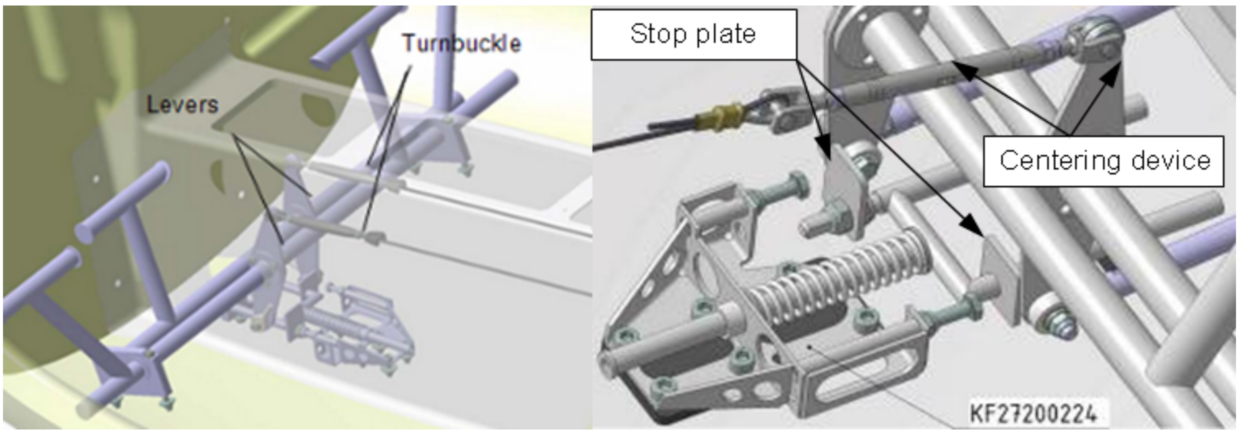


Fig. 27-20-2

A spring loaded centering device (Fig. 27-20-2) is located in the tunnel. This device helps to center the rudder pedals in flight, and holds the pedals in neutral position. A minimum force is required to move the pedals from their center position. Also the centering device provides stops for rudder control and limits pedals deflection.

Via turnbuckles the steel cables are connected to levers. The cables are routed along fuselage and tail beam. The cables looked out the rear wall of fuselage and are connected to rudder (Fig. 27-20-3).

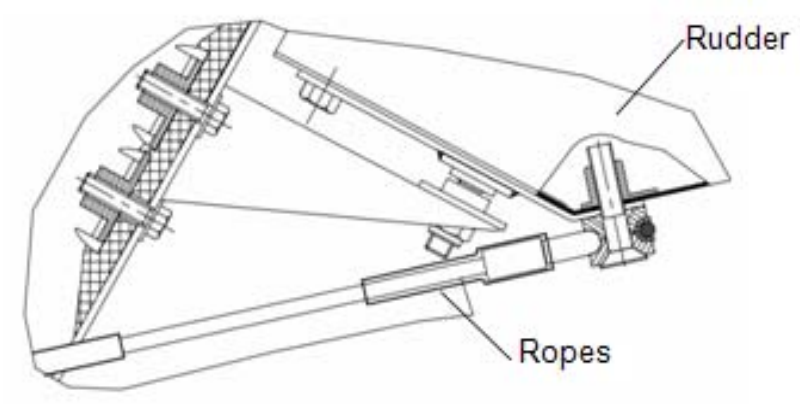


Fig. 27-20-3

The nose wheel steering is coupled fix to the rudder pedals, using two pushrods. This allows direct and precise steering when taxiing the aircraft.

27-20.2.1 *Rudder Trim*

Rudder trim is activated by a trim wheel in the middle of the tunnel between the pilot and co-pilot. By turning the trim wheel to the right, the aircraft will bank to the right - by turning it to the left, the aircraft will bank to the left. The movable indicator shows trim position.

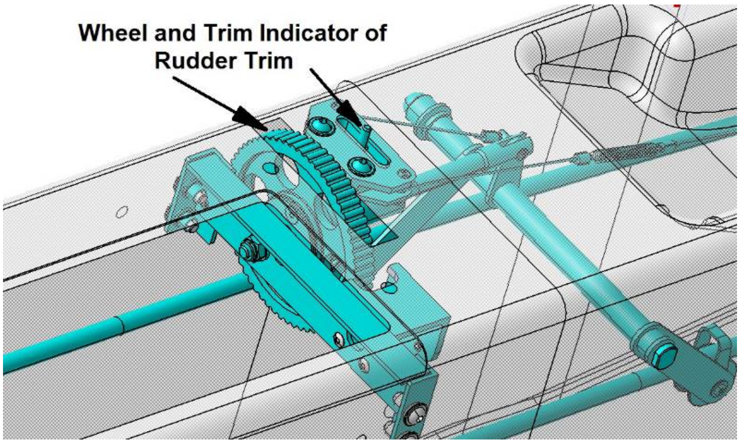


Fig. 27-20-4

27-20.3 Maintenance Practices

The deflection ranges of control surfaces provided in Section 27-00.3 of this manual.

27-20.3.1 *Rigging of Rudder "Zero" Position*

27-20.3.1.1 Type of Maintenance

Heavy

27-20.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-20.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Rigging of Rudder “Zero” Position

The adjustment is done by the movable stopper plate. To change neutral position of the rudder it is necessary to change position of stopper plate in centering fork KF27100200 (Fig. 27-20-5).

Step	Action	Reference
1	Remove the middle lower instrument panel	31.3.1.3
2	Loose nut M8 installed behind the plate.	
3	Turn nut M8 in required direction. When turning the stopper plate is moved resulting in rudder neutral position changing.	
4	Check neutral position of the rudder.	
5	When necessary repeat step3	
6	After adjusting tight nut M8 installed behind the plate.	
7	Check cables tension. Adjust when necessary.	27-20.3.4

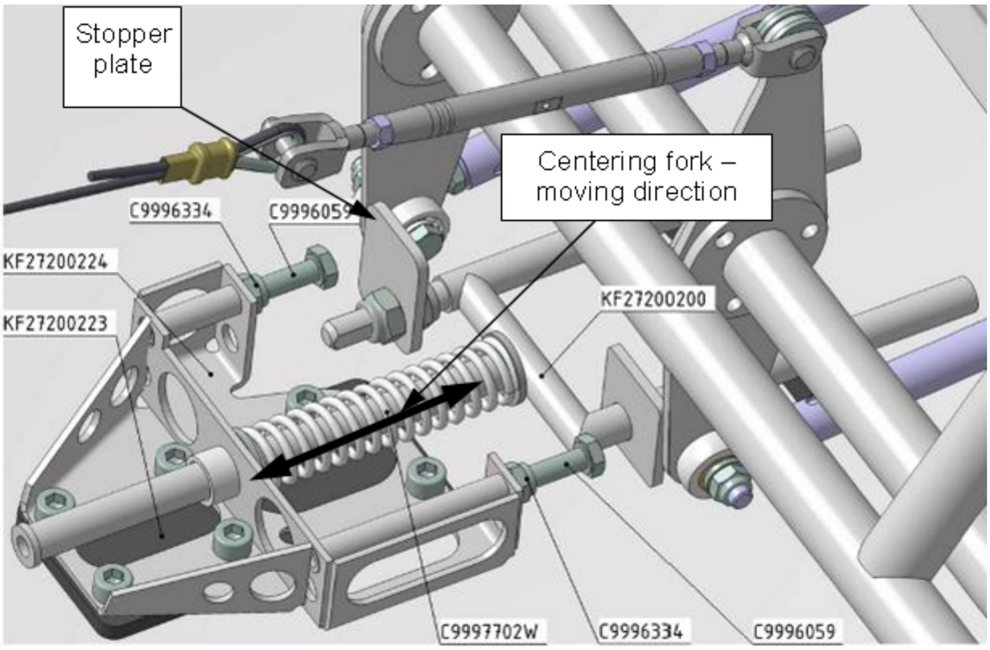


Fig. 27-20-5

27-20.3.2 *Measuring of Rudder Deflection*

27-20.3.2.1 Type of Maintenance

Line

27-20.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-20.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
Ruler	1	pcs

B. Measuring of Rudder Deflection (Fig. 27-20-6)

Step	***Action***	***Reference***
1	Rudder deflections are defined in the deflection table.	27.3
2	Set rudder at neutral position	
3	Deflect rudder to extreme position by pedals. Measure travel range of the lowest point of the rudder trailing edge.	
4	Deflect rudder to another extreme position by pedals. Measure travel range of the lowest point of the rudder trailing edge.	
5	Adjust when necessary	27-20.3.3

Fig. 27-20-6

27-20.3.3 *Rudder Deflection Adjustment*

27-20.3.3.1 Type of Maintenance

Heavy

27-20.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-20.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Ruler	1	pcs

B. Rudder Deflection Adjustment

The rudder deflection is limited by stops in centering device. When steering the stopper plates get contact with stopper bolts (Fig 27-20-5). To reduce rudder deflection it is necessary to unscrew stopper bolts out. To increase rudder deflection it is necessary to screw bolts in.

Step	Action	Reference
1	Remove the middle lower instrument panel	31.3.1.3
2	Loose lock nuts M6	
3	Adjust stopper bolts position	
4	Check rudder deflection range	27-20.3.2
5	If necessary repeat step 2, 3	
6	When adjusted tight lock nuts M6	

27-20.3.4 *Measuring of Rudder Cables Tension*

27-20.3.4.1 Type of Maintenance

Line

27-20.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-20.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
Tensiometer for cables with diameter 4 mm	1	pc

B. Measuring of Rudder Cables Tension (Fig. 27-20-7)

Step	Action	Reference
1	Set rudder at neutral position.	
2	Remove the middle lower instrument panel	31.3.1.3
3	Check the cables tension using access through the tunnel opening. The tension value must be in range 11.5…12 kg.	27-20.3.4
4	Adjust when necessary.	27-20.3.5

Fig. 27-20-7

27-20.3.5 *Control Cable Tension Adjustment*

▲**Warning:** After each centering device maintenance the tension of the control cables must be checked.

▲**Warning:** Make sure that the tips of turnbuckles are threaded in on not less than 8 mm.

There are two methods of tension adjustment: coarse and fine. The coarse tension adjustment is performed by the nose wheel steering rods and the fine adjustment is performed by turnbuckles of control cables.

27-20.3.5.1 Type of Maintenance

Heavy

27-20.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-20.3.5.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Coarse Control Cable Tension Adjustment

Step	***Action***	***Reference***
1	Remove the middle lower instrument panel	31.3.1.3
2	Remove the safety wire winded through the turnbuckles	
3	Loose locking nuts. Release tips,	
4	Screwing/unscrewing tips change cables tension. Screw/unscrew tips in both turnbuckles.	
5	Check cables tension	27-20.3.4
6	Repeat steps 4, 5 when necessary	
7	Check zero position of the rudder. Adjust when necessary	27-20.3.1
8	Check measuring deflection.	27-20.3.2
9	Adjust when necessary	27-20.3.3
10	Tighten the lock-nuts on turnbuckles	
11	Install the safety wire on turnbuckles	20.4.1

27-20.3.6 *Rudder Controls Inspections*

27-20.3.6.1 Type of Maintenance
Line

27-20.3.6.2 Minimum Level of Certification
LSA- Mechanic (LSAM)

27-20.3.6.3 Procedure
A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Checking for Play

Step	*Action*	*Reference*
1	Fix the pedals at neutral positions.	
2	Slightly shake trailing edges of the rudder left and right.	
3	Total play of the trailing edge must not exceed 3mm.	

C. Troubleshooting

Step	*Action*	*Reference*
1	In case when any abnormalities during inspection was found contact with manufacturer for further instructions.	

27-20.3.7 *Control Cable Replacement*
Contact manufacturer for instructions.

SECTION 27-40 –
STABILATOR

27-40.1 General

This section provides description of the Stabilator control system.

27-40.2 Description

The CTLS-LSA has a drag-optimized Stabilator (all-moving) with an anti-tab. It is attached to a fuselage-mounted Stabilator pivot. An individually matched counter-weight, attached to the Stabilator pivot inside the fuselage, ensures full mass-balance.

The anti-tab on the trailing edge of the horizontal tail covers 75% of the Stabilator span. It is aerodynamically optimally attached to the fin with an elastic composite membrane. It is activated through a mechanical coupling when the Stabilator is deflected. In this way the anti-tab deflects in the same direction and further as the Stabilator, thus improving Stabilator effectiveness and ensuring a proper control force feeling.

The Stabilator is activated by the control sticks via special push-pull cable (PPC) that runs through the tunnel and along the fuselage floor. This push-pull cable aligns itself to the fuselage and is maintenance-free.

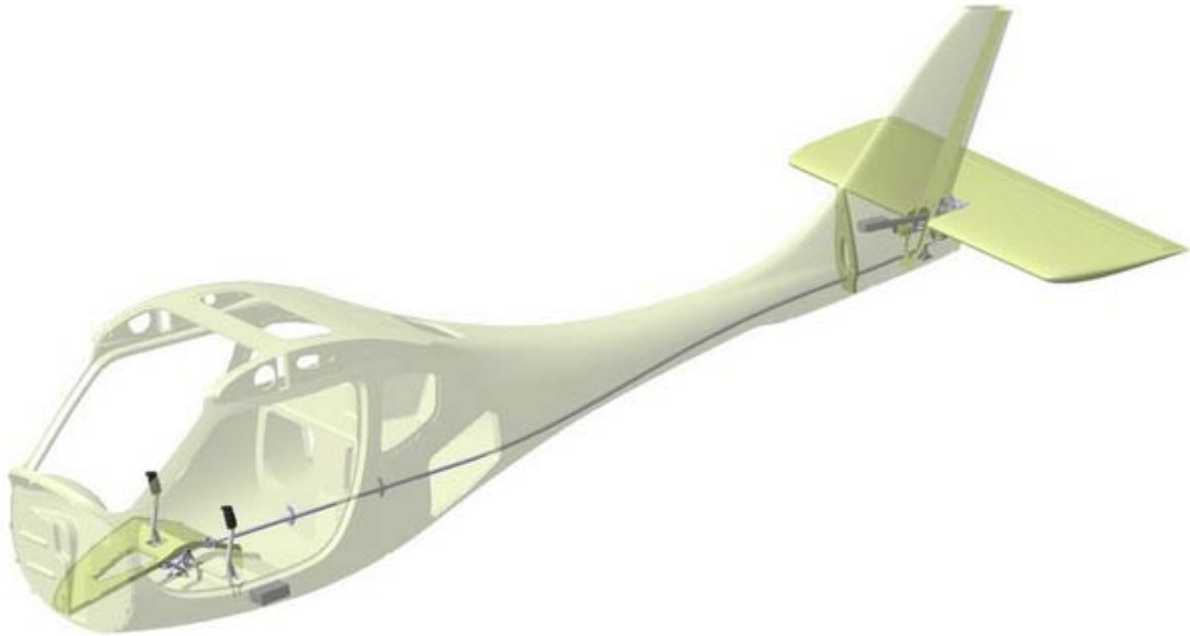
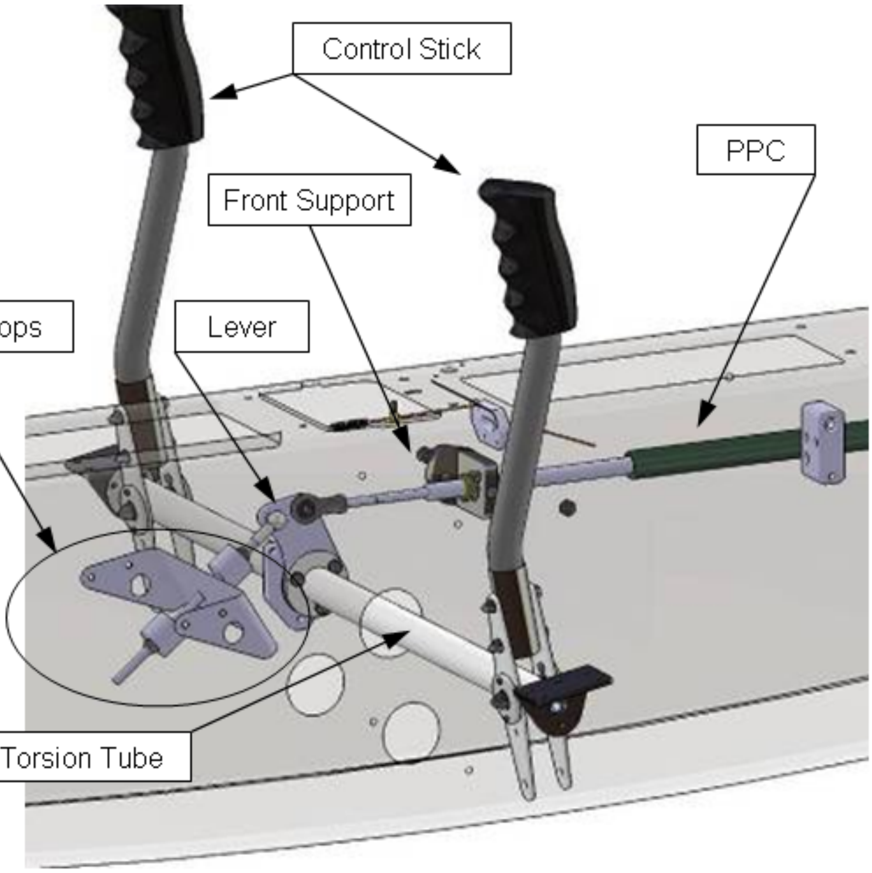


Fig. 27-40-1. Stabilator Control, General View

The control sticks are couplet through the tunnel via torsion tube. The PPC connects lever in the torsion tube from one side and Stabilator mounting bracket from another side. The PPC is supported by the front and rear supports (Fig. 27-40-2).



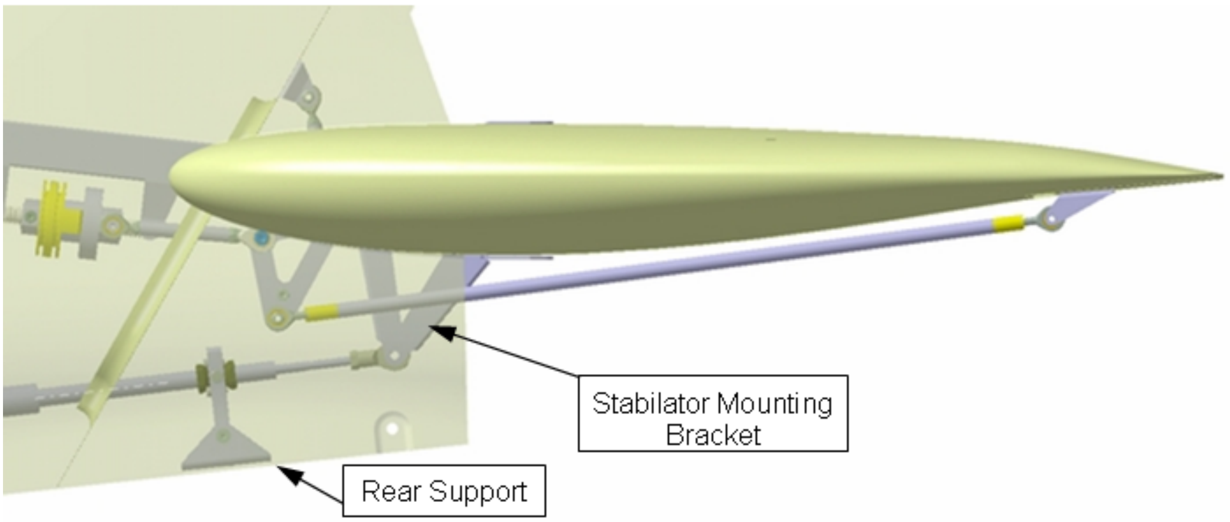


Fig. 27-40-2

The system is provided with stops. The stops are installed internally in the tunnel. The stops are done as pads set on threaded pin. The pads are locked with nuts. At extreme deflection of the control sticks the pads get contact with stopper plate Fig. 27-40-3.

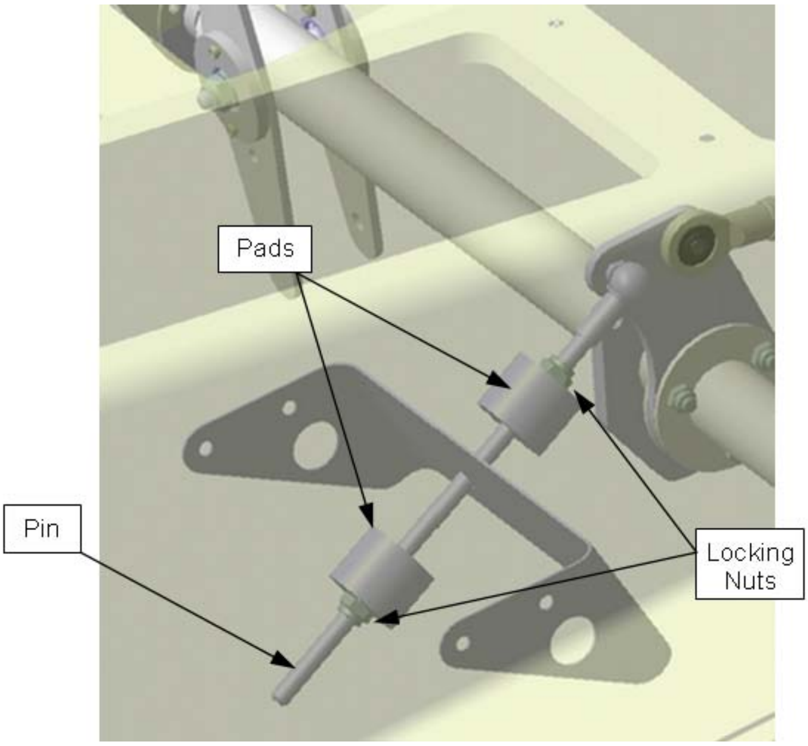


Fig. 27-40-3

27-40.2.1 *Stabilator with Manual Trim Actuator (earlier models)*

Stabilator trim is adjusted with the trim wheel in the center console, next to the throttle. The trim indicator is located directly next to the trim wheel. The aircraft becomes nose heavy when the wheel is rotated forward and tail heavy when it is turned backward.

The trim wheel activates a threaded spindle at the Stabilator pivot bearing via a Bowden cable. This spindle is self-locking and adjusts the zero position of the anti-tab (Fig. 27-40-6). Since the anti-tab has a large span, the required deflection is not very big.

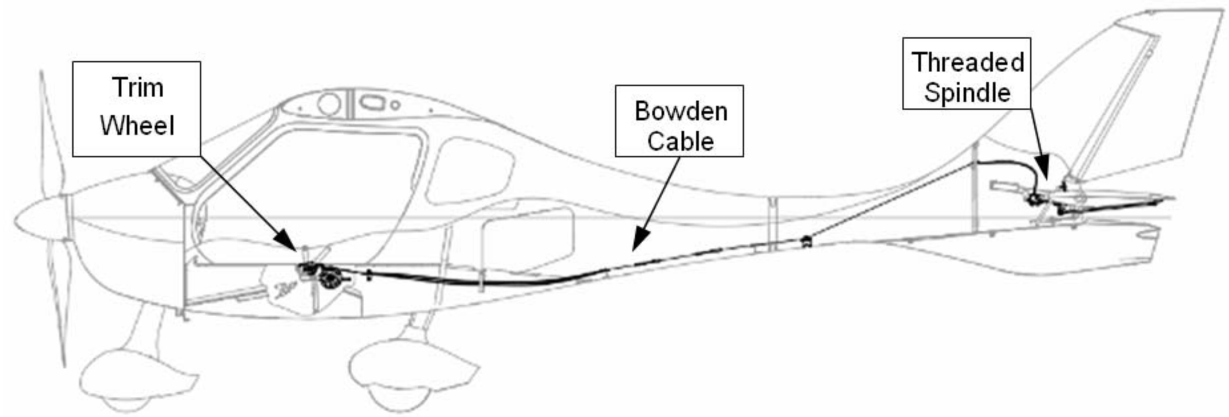


Fig. 27-40-4. Stabilator Trim, General View

The trim system is provided with indicator. The indicator shows trim position (Fig. 27-40-5).

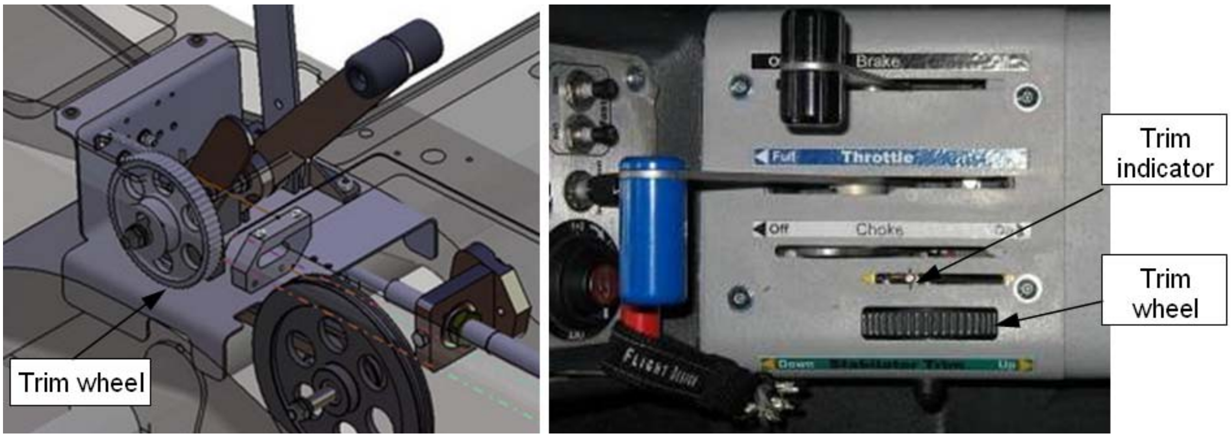


Fig. 27-40-5

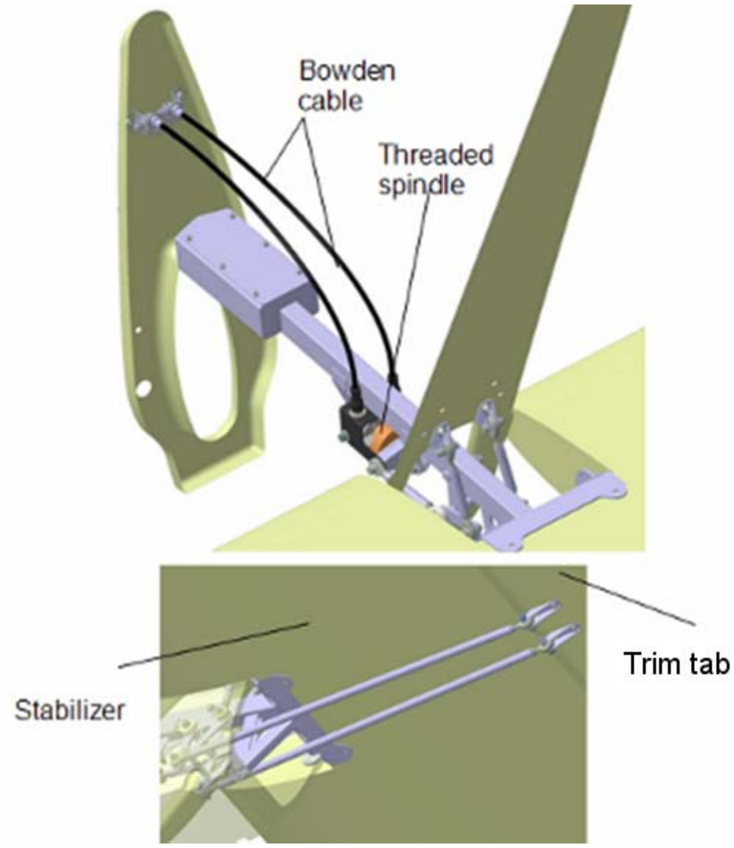


Fig. 27-40-6

27-40.2.2 *Stabilator with Electrical Trim Actuator (newer models)*

Electric Pitch Trim Actuator (1) is installed to Stabilator Mounting Pivot (2) (see Fig. 27-40-7) and replaces standard mechanical spindle drive. The kinematic system that is operated by this actuator is not changed compared to the basic aircraft. The servo is actuated rocker switch commanding by pilot. Trim position indication is provided to the pilot on the EMS screen.

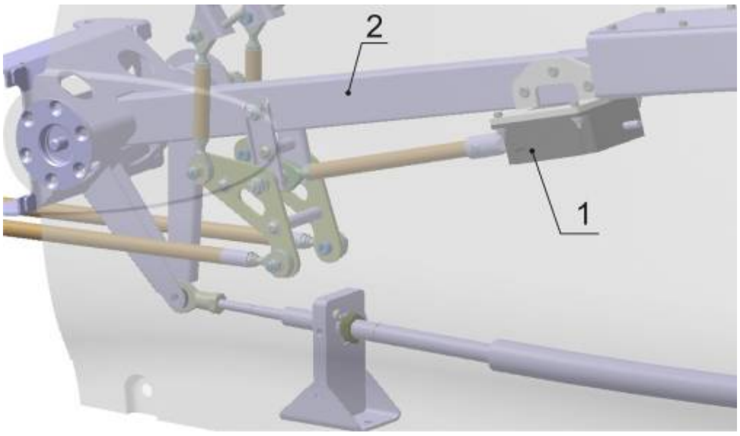


Fig. 27-40-7

Deflection of trim tab is controlled by rocker switch located at the throttle quadrant (see Fig.).

Fig. 27-40-8

The display is in the Dynon screen on the EMS page (see Fig. 24-40-9).

Fig. 27-40-9

27-40.2.3 *Adjustment of Stabilator with Electrical and Manual Trim*

For additional adjustment instructions for electrical and manual trim contact the aircraft manufacturer.

27-40.3 Maintenance Practices

27-40.3.1 *Stabilator Deflection Measuring*

27-40.3.1.1 Type of Maintenance

Line

27-40.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-40.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Digital level	1	pcs

B. Stabilator deflection measuring

Step	***Action***	***Reference***
1	Stabilator deflections are defined in deflection table	27.3
1	Set the plane at parking brake	
2	Set the Stabilator at neutral position. At this position the leading edge of Stabilator coincides with corresponded protuberated area of the fuselage (Fig. 27-40-10).	

Fig. 27-40-10

Step	***Action***	***Reference***
3	Put the lever on the Stabilator. Calibrate level and set “0” (Fig. 27-40-11)	

Fig. 27-40-11

Step	***Action***	***Reference***
4	Deflect Stabilator by control stick to extreme position until stop meets stopper plate. Read the measured deflection value in reference to the Stabilator neutral position (Fig. 27-40-12).	

Fig. 27-40-12

5	Do step 4 in another direction	

27-40.3.2 *Stabilator Deflection Adjustment*

The Stabilator deflection range is adjusted by stoppers position.

27-40.3.2.1 Type of Maintenance

Line

27-40.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-40.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
Digital lever	1	pc

B. Stabilator Deflection down Adjustment

Step	***Action***	***Reference***
1	Remove the middle lower instrument panel	27-20.3.1
2	Loose locking nut at the upper stopper pad (Fig. 27-40-13)	
3	Screw pad down/up to reduce/increase Stabilator deflection	
4	Measure Stabilator deflection. When necessary repeat step 3.	27-40.3.1
5	Lock stopper pad with locking nut	

C. Stabilator Deflection up Adjustment

Step	***Action***	***Reference***
1	Remove the middle lower instrument panel	27-20.3.1
2	Loose locking nut at the lower stopper pad (Fig. 27-40-13)	
3	Screw pad down/up to increase/reduce Stabilator deflection	
4	Measure Stabilator deflection. When necessary repeat step 3.	27-40.3.1
5	Lock stopper pad with locking nut	

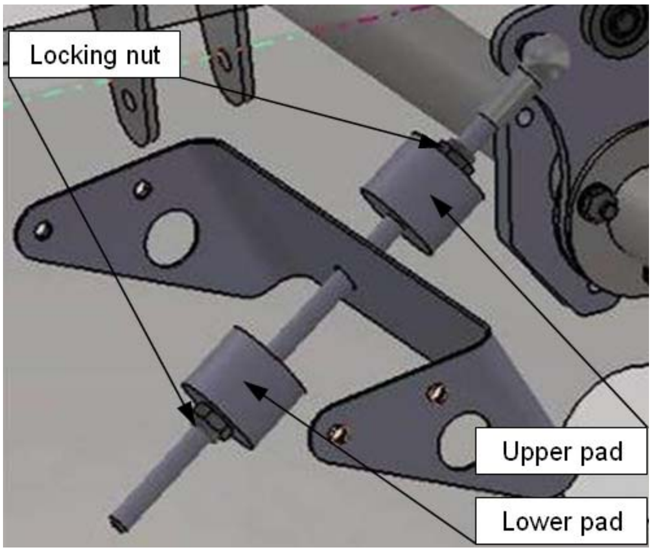


Fig. 27-40-13

27-40.3.3 *Measuring of Trim Tab Deflection*

27-40.3.3.1 Type of Maintenance

Line

27-40.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-40.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Measuring ruler	1	pcs

B. Measuring of Trim Tab Deflection (Fig. 27-40-14).

Step	*Action*	*Reference*
1	Set Stabilator at neutral position. Set trim tab at neutral position. Check position of the trailing edges of the Stabilator and trim tab. When necessary adjust.	27-40.3.4
2	Deflect trim tab to extreme up position by wheel. Measure trim tab deflection	
3	Deflect Stabilator to extreme up position. Measure trim tab deflection.	
4	Set Stabilator at neutral position.	
5	Deflect trim tab to extreme down position by wheel. Measure trim tab deflection	
6	Deflect Stabilator to extreme down position. Measure trim tab deflection.	

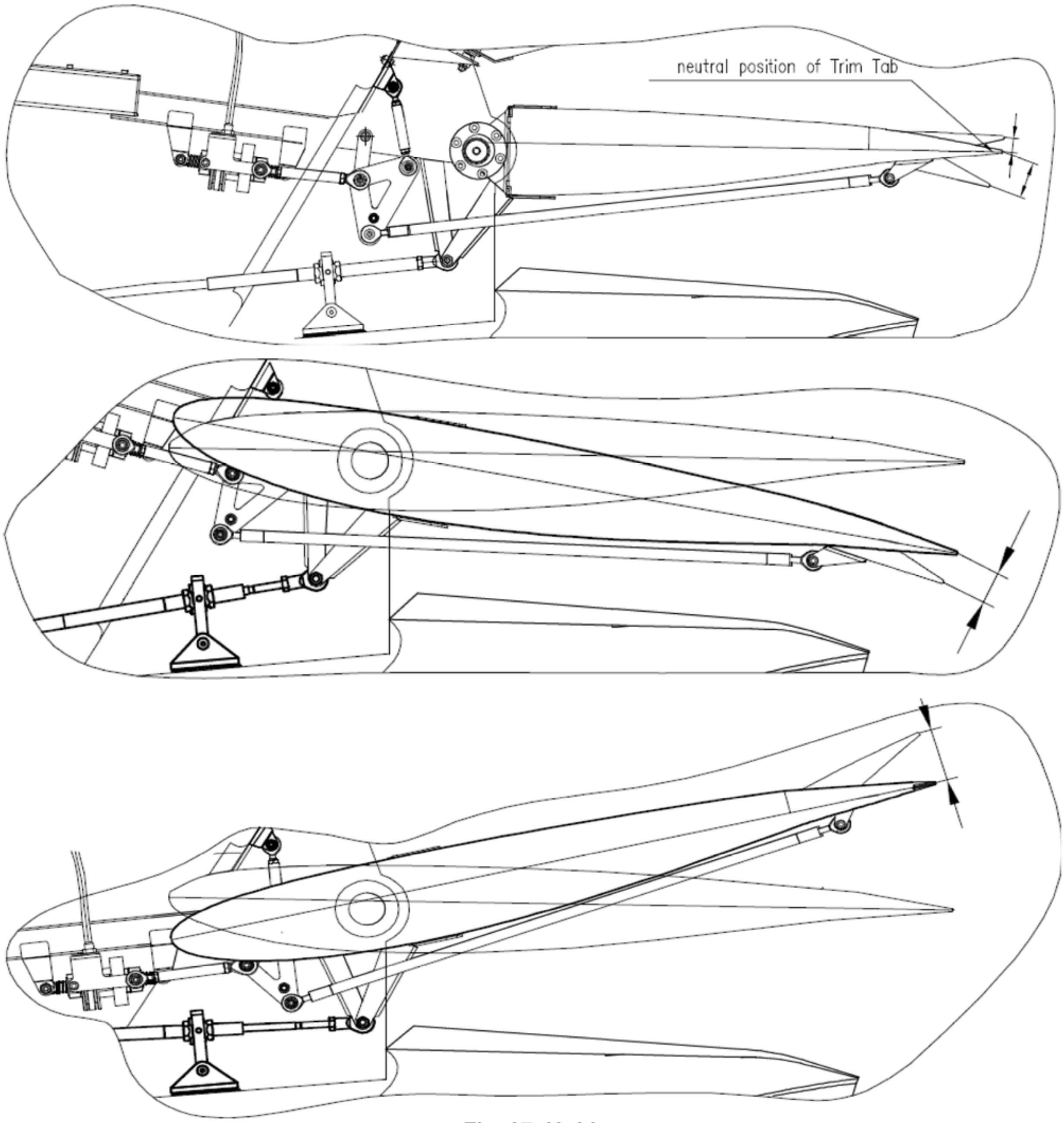


Fig. 27-40-14

27-40.3.4 *Rigging of Trim Tab “Zero” Position*

The trim tab is factory adjusted so as the trailing edge of the trim tab coincides with trailing edge of the Stabilator when trim tab as well as Stabilator, are at neutral position.

The trim tab is connected to the control unit by two push-pull rods (Fig. 27-40-15). The neutral position of the trim tab can be adjusted by changing of the push-pull rods.

27-40.3.4.1 Type of Maintenance

Line

27-40.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-40.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Measuring Ruler	1	pcs

B. Rigging of Trim Tab “Zero” Position

Step	*Action*	*Reference*
1	Loose locking nuts (item 2 Fig. 27-40-15)	
2	Screw in/out rod end to change trim tab position	
3	Check neutral position of the trim tab. When necessary repeat step 2	
4	Lock rod ends tightening the nuts	

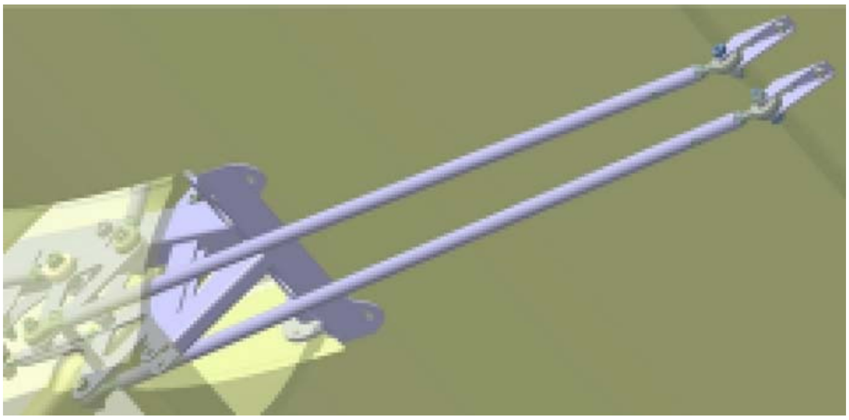


Fig. 27-40-15

27-40.3.5 *Stabilator Controls Inspections*

27-40.3.5.1 Type of Maintenance

Line

27-40.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-40.3.5.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Checking for Play

Step	***Action***	***Reference***
1	Fix the control stick at neutral positions.	
2	Slightly shake trailing edges of the Stabilator up and down.	
3	Total play of the trailing edge must not exceed 3mm.	

C. Troubleshooting

Step	***Action***	***Reference***
1	In case when any abnormalities during inspection was found contact with manufacturer for further instructions.	

SECTION 27-50 –
FLAPS

27-50.1 General

This section provides description of the Flap Control System

27-50.2 Description

The flaps are driven by a geared and self-locking electric motor and are activated from the flap control unit in the lower section of the instrument panel. The desired flap setting is selected with a lever switch. The position indicator will flash as long as the flaps are moving to the desired setting. Once the desired setting has been reached, the position will be permanently shown in the display. The flaps may be set at any of the following positions:

0 – Cruise Flight

1 – Takeoff (long runways)

2 – Takeoff (short runways) / Regular Landing

3 – Short Field Landing

The following figure shows the flap drive installed to the fuselage.

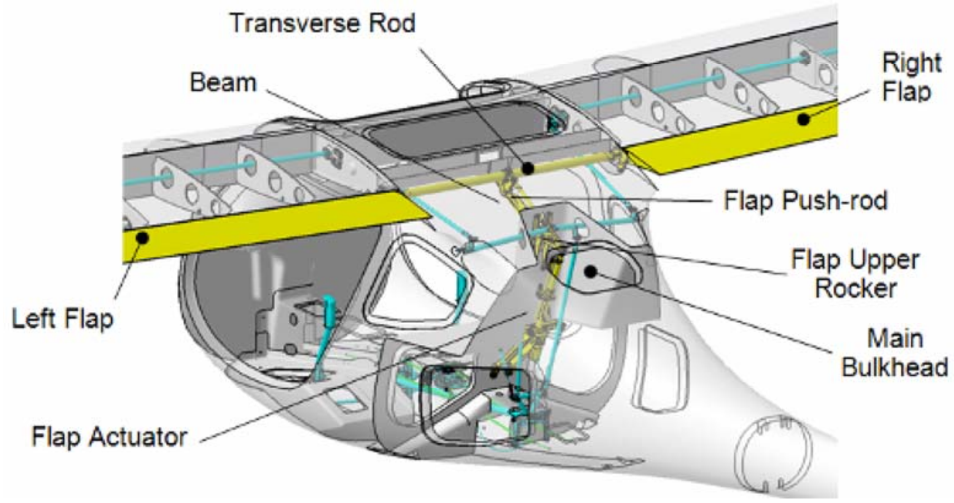


Fig. 27-50-1

The flap motor is installed to the metal T-bracket in the luggage compartment. The T-bracket is attached directly to the main bulkhead (Fig. 27-50-2).

The flap motor moves an upper rocker (Fig. 27-50-2). This rocker moves a pushrod that is placed under the rear cabin roof (Fig. 27-50-3). Another rocker connects to transverse tubes that drive the flaps.

The motor is attached between bronze bushings which function as friction bearings (Fig. 27-50-2).

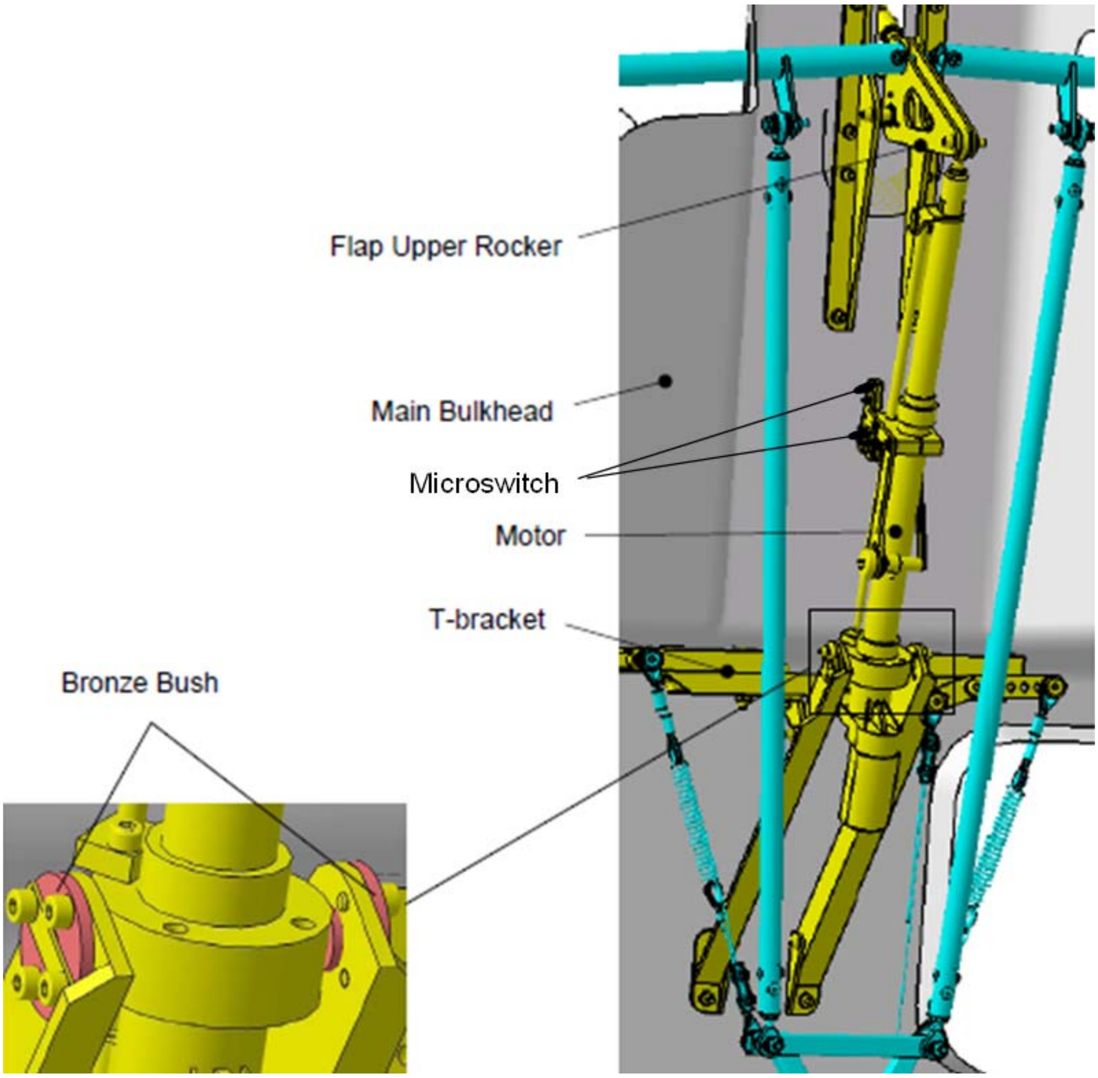


Fig. 27-50-2

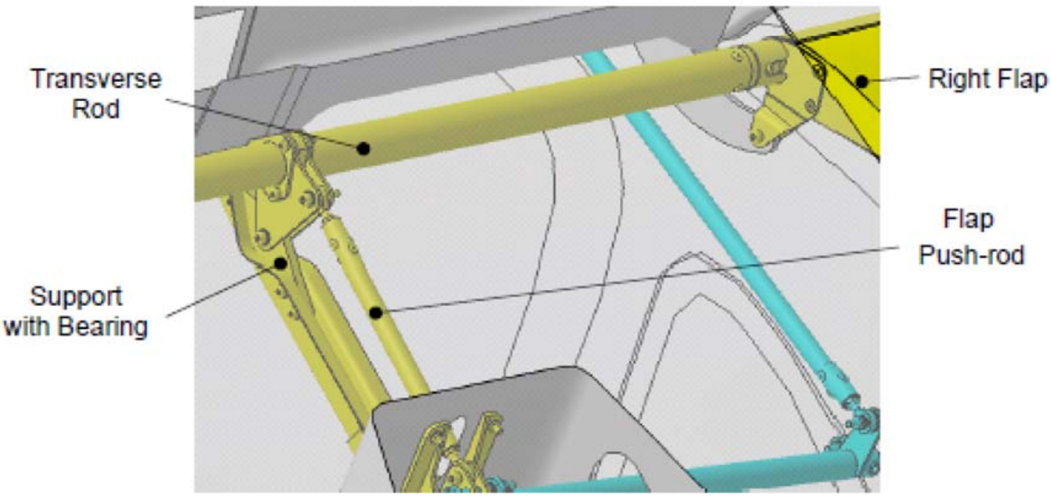


Fig. 27-50-3

The transverse rod is connected to the flaps via tips (Fig. 27-50-4). The flaps tips are set to the transverse rod tips when wings attaching.

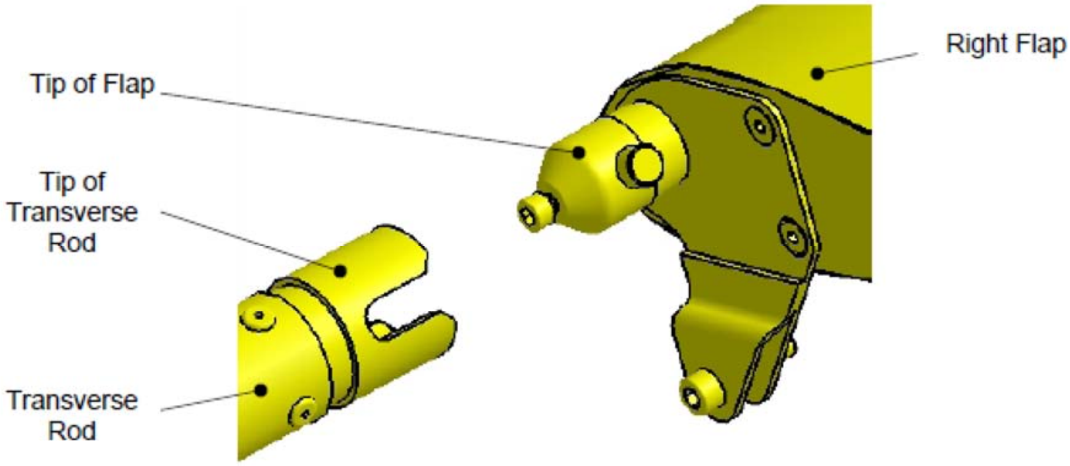


Fig. 27-50-4

The transverse rod mechanically connects left and right flaps. This way the flaps are physically interconnected, left side to right side. This ensures that flaps always move symmetrically.

The transverse rod consists of two tubes (left and right) which are interconnected via adjustable connection (Fig. 27-50-5). This enables to adjust right tube against the left by turning. Finally the tubes are properly locked by three attachment bolts. This way the left and right flaps are set in equal angular position against the wing chord.

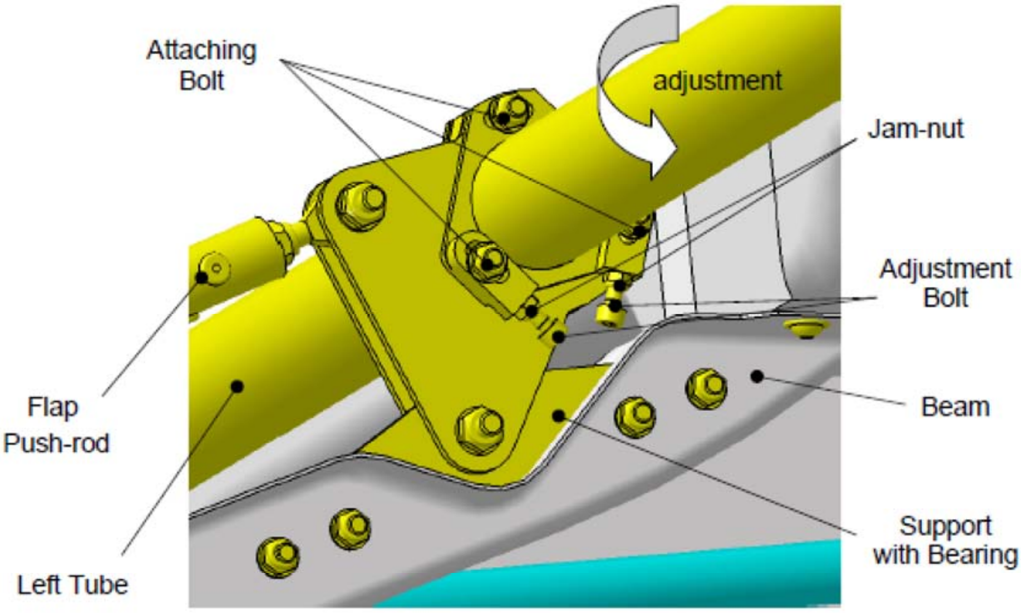


Fig. 27-50-1

The flap control system has an internal load-limiting device which prevents the extension of the flaps at too high airspeeds without causing sustainable damage to the structure. Should the indicator blink constantly when extending the flaps, airspeed should be reduced. If the flaps then extend, the internal load-limiting device was in operation.

The flap control circuit breaker is located directly next to the flap controls. It will pop if the flap servo is continuously over-loaded. As it is a thermal circuit breaker, it can take some time before it can be pushed back in.

Fig. 27-50-6

27-50.3 Maintenance Practices

27-50.3.1 *Rigging of “Zero” Position of the Flaps*

27-50.3.1.1 Type of Maintenance

Line

27-50.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-50.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Rigging of “Zero” Position of the Flaps (Fig. 27-50.7)

“Zero” position is the position of the flaps when the top skin of the flaps is aligned with the top of the fuselage. If the flaps are not synchronous (at the “zero” position one is higher than another), adjust the flap rod KA6030200 (Transverse rod) as follows:

Step	*Action*	*Reference*
1	Unscrew the lock-nut C9996332 (Self-locking nut DIN 985-M4, regular) and release the bolts C9996026 (Bolt DIN 912 M4x20-8.8).	
2	Unscrew the bolts C9996026 (Bolt DIN 912 M4x20-8.8) from the flange of the flap rod KA6030220 (Transverse rod tube, left).	
3	Unscrew the nuts C9996333 (Self-locking nut DIN 985-M5, regular) from the bolts C9996042 (Bolt DIN 912 M5x45-8.8).	

4	Turn KA6030210 (Transverse rod tube, right) and KA6030220 (Transverse rod tube, left) with respect to each other so that both flaps are aligned to the top of the fuselage.	
5	Fix position of the bolts C9996042 Bolt DIN 912 M5x45-8.8 with respect to the KA6030220 (Transverse rod tube, left) by the bolts C9996026 (Bolt DIN 912 M4x20-8.8). The bolts C9996026 (Bolt DIN 912 M4x20-8.8) are to be screwed into the flange of KA6030220 (Transverse rod tube, left).	
6	Tighten the nut C9996333 (Self-locking nut DIN 985-M5, regular) on the bolt C9996042 (Bolt DIN 912 M5x45-8.8). Put the washer C9996503 under the nut C9996333 (Self-locking nut DIN 985-M5). Repeat for all bolts.	
7	Set the flap position indicator to zero.	
8	Check neutral position of the flaps	

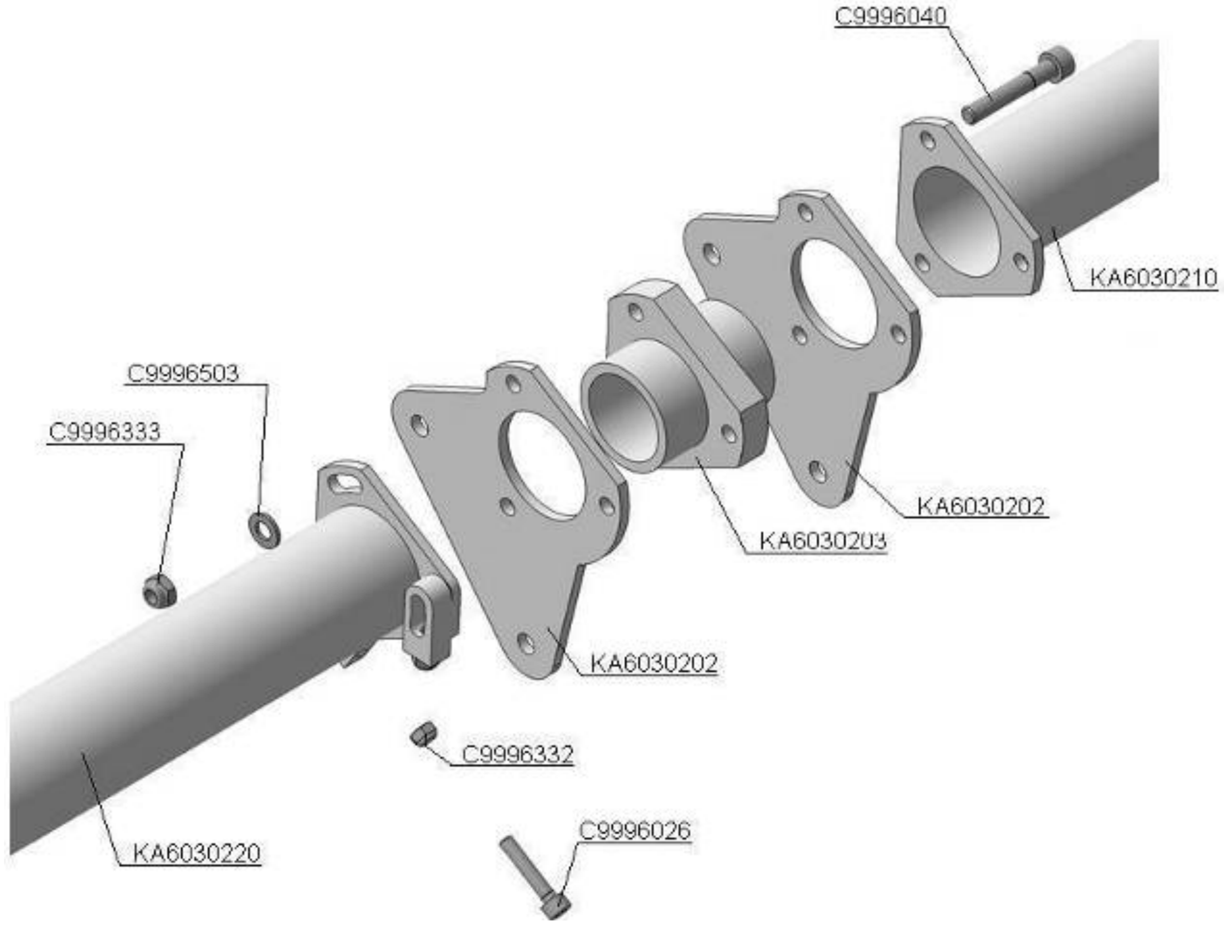


Fig. 27-50-7

27-50.3.2 *Measuring of Flap Deflection*

27-50.3.2.1 Type of Maintenance

Line

27-50.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-50.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
Ruler	1	pcs

B. Measuring Flap Deflection (Fig. 27-50.8)

Step	*Action*	*Reference*
1	Flap deflections are defined in deflection table.	27.3
2	Set flap to negative deflection (Position -12°)	
3	Measure distance between same corners (lowest or topmost) on the rear edge of the flap and on the rear edge on the flap tip on the fuselage (Fig. 27-50.8, a).	
4	Repeat measurement for the second flap.	
5	Repeat steps 2-4 for flap positions “0°”, “15°”, “30°”.	
6	Compare received values with data provided in deflection table	27.3
7	Make sure that difference between deflections of left and right flaps for each position doesn’t exceed 2.5mm. Otherwise adjust flap rod (transverse rod).	27-50.3.1

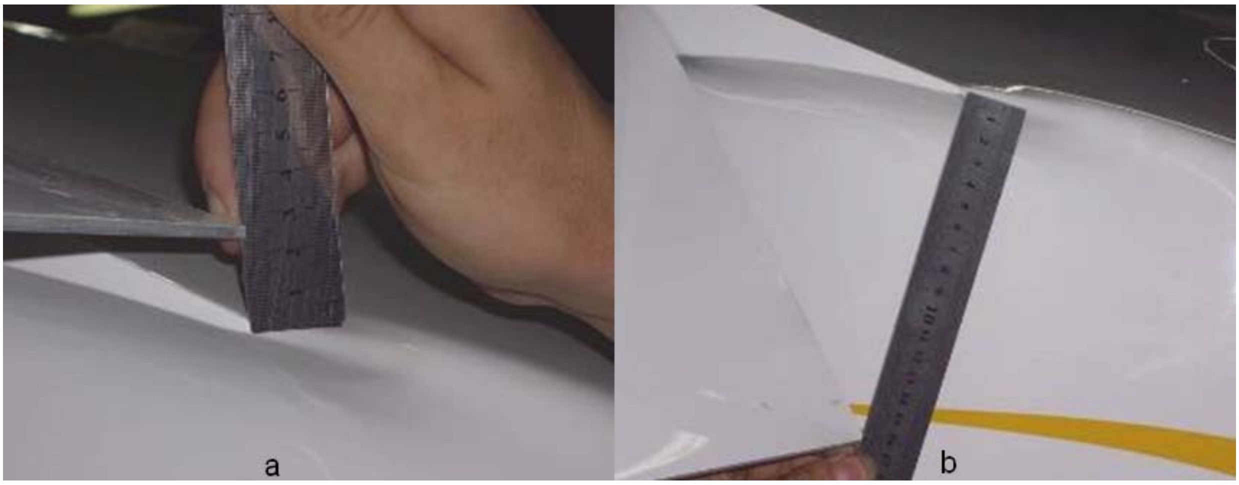


Fig. 27-50-8

27-50.3.3 *Flap Deflection Adjustment*

27-50.3.31 Type of Maintenance

Line

27-50.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-50.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Flap Deflection Adjustment (Fig. 27-50.9)

Flap deflection can be adjusted by the flap control panel. Check flap angle of deflection after each adjustment.

Step	***Action***	***Reference***
1	Connect printed circuit board (PCB) connectors with corresponding headers of the flap actuator control (Control Card MT-10) wiring harness	
2	Connect auxiliary control switches SW1 and SW2 to corresponding connectors at the PCB for programming.	
3	Set the flap into required position by SW2 using a ruler or level. Set the digital screen indication corresponding to the value at the level by SW3.	
4	Press SW1 to input data into the PCB memory. If the operation has been performed correctly the display shows the value set by SW3	
5	Move the flap by SW2 to the next required position using a ruler or level. Change the value at the screen by SW3 according to the value at the level. Press SW1 to save settings into the memory.	
6	Repeat the process for each of the flap positions.	
7	If you cannot adjust (set) max angles of deflection (the rod of the flap actuator takes the end position), this problem could be solved by adjusting the length of the rod of flap control.	20.5
8	After rigging all flap positions turn off the circuit breaker 25A.	
9	Remove the switches SW1 and SW2.	
10	Turn the circuit breaker 25A on.	
11	If the instruction has been performed correctly the flaps will take their predefined positions.	

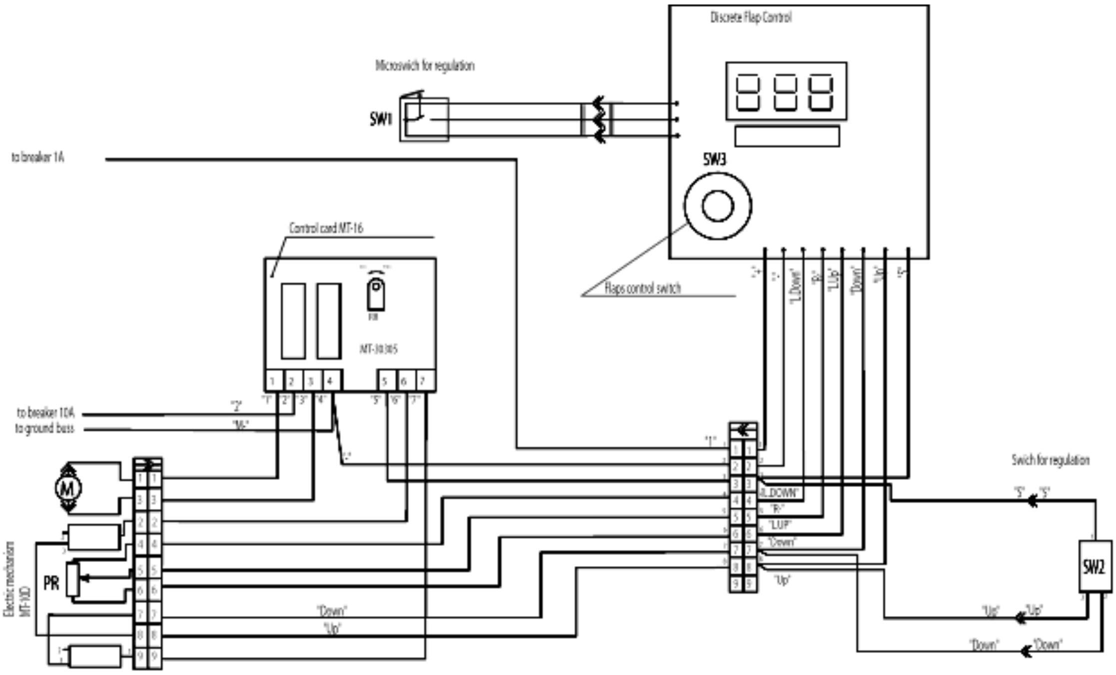


Fig. 27-50-9

27-50.3.4 *Flap Controls Inspections*

27-50.3.4.1 Type of Maintenance

Line

27-50.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

27-50.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Checking for Play

Step	*Action*	*Reference*
1	Slightly shake trailing edges of the flap up and down.	
2	Make sure that the play of the trailing edge doesn't exceed 5mm.	
3	Total play of the trailing edge must not exceed 5 mm.	

C. Inspection of Actuator

Step	*Action*	*Reference*
1	Check flap motor attachment on bronze bushes and shaft rod end to upper lever	Fig. 27-50-2
2	Make sure that sensible play between bronze bushes and actuator pins is not observed. Connection of bronze bushes and actuator pins are lubricated.	Fig. 27-50-2
3	Check potentiometer and microswitches guide tube and guide pin for wear, damages and scratches. Surface of guide pin is properly lubricated with grease.	Fig. 27-50-10
	Microswitches and Potentiometer with link are properly fastened.	Fig. 27-50-10
4	In full actuator travel range actuator shaft and other movable components move smoothly and without jamming unit.	

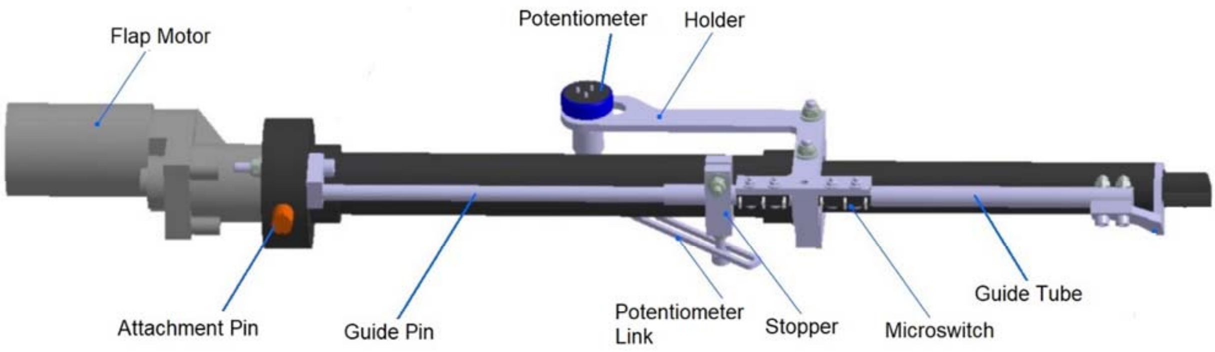


Fig. 27-50-10

C. Inspection of Flap Control Microswitches (Fig. 27-50.11)

Step	Action	Reference
1	Set the flaps in position “30°”	27-00.3
2	Set the flap control switch in the flap position “-12° (-6°)”.	
3	While the actuator is moving press the upper limit switch by a screwdriver. The actuator must stop then.	
4	Release the upper limit switch. The actuator must move up to the flap max up position.	
5	Replace the Micro switch, if it does not work per items 3 and 4.	
6	Set the flaps in the flap position “-12° (-6°)”.	
7	Set the flap control switch in “30°”	
8	While the actuator is moving press the down limit switch by a screwdriver. The actuator must stop then.	
9	Release the down limit switch. The actuator must move down to “30°”	
10	Replace the Micro switch, if it does not work per items 8 and 9.	

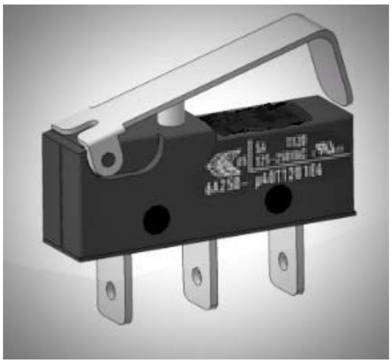


Fig. 27-50-11

C. Troubleshooting

Step	Action	Reference
1	In case when any abnormalities during inspection was found contact with manufacturer for further instructions.	

CHAPTER 28 –
FUEL SYSTEM

Contents

28-00.1 General

This chapter provides description of the Fuel System.

28-00.2 Description

The fuel system consists of:

- integrated in to each wing fuel tank with capacity of 65 l
- fuel lines
- fuel valves and control
- fuel system drainage
- fuel tank venting

Each tank has outlet with integrated coarse screen. The fuel flows from the outlets through the steel fuel lines in the A columns of the cockpit structure. They have a large volume so that even with almost empty tanks, sufficient fuel is available in sideslip to ensure a safe landing.

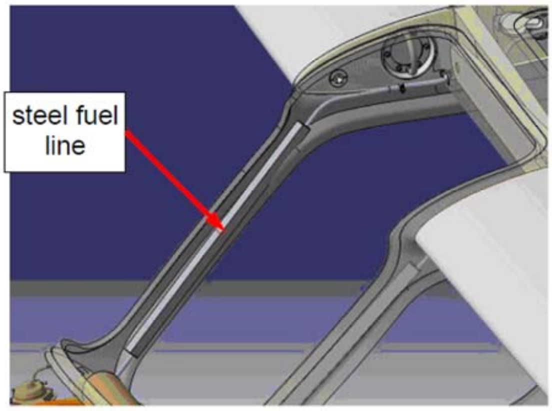


Fig. 28-00-1

The two lines are connected together via Y-connector (Fig. 28-00-7). The fuel shutoff valve is located behind the second fuel filter.

The fuel flows from there to the gascolator which has very fine filter. The gascolator is located at the lowest point of the system. The gascolator is provided with drain valve.

The fuel is fed by gravity from tanks to gascolator.

The engine pump feeds fuel from gascolator to the carburetors.

Excess fuel is pumped back to the gascolator.

The Fuel System is presented schematically on the following diagram (Fig. 28-00-2).

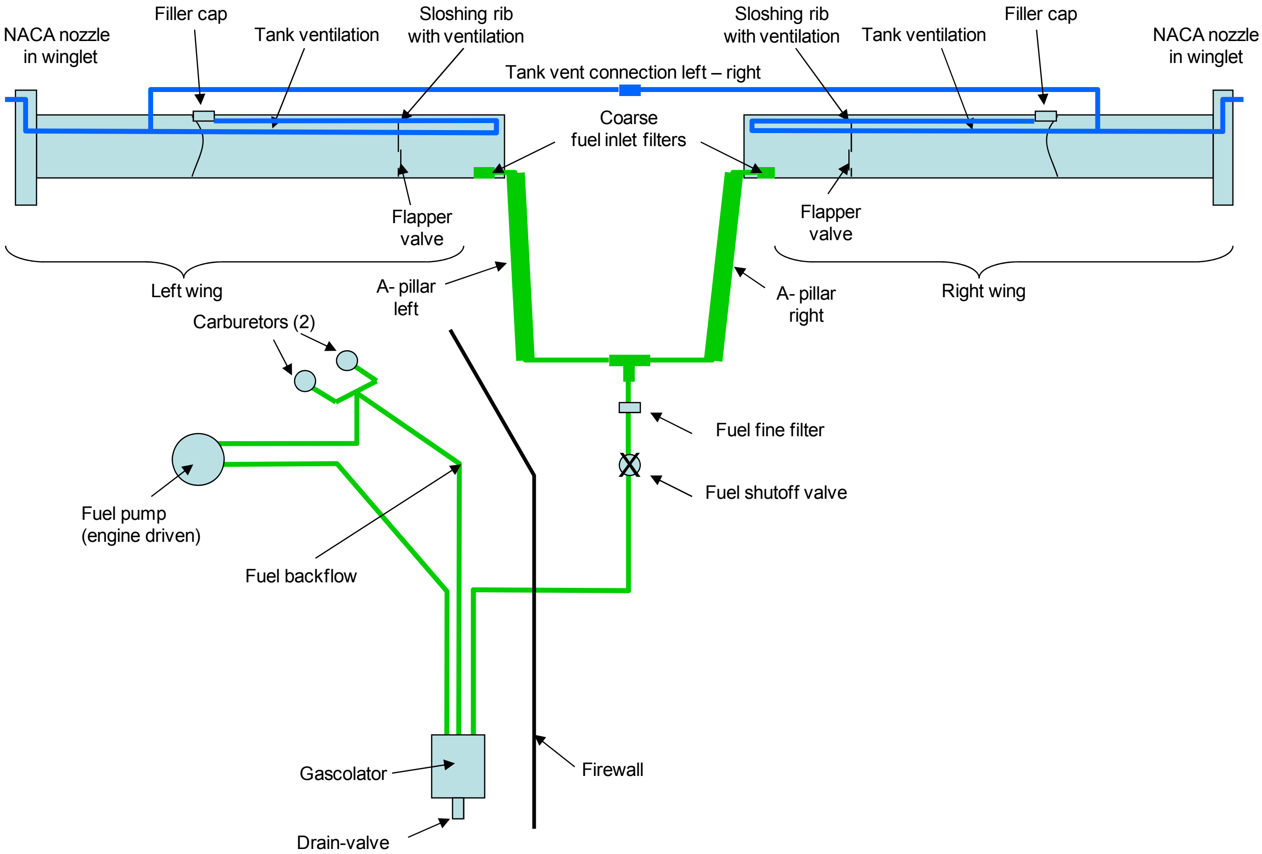


Fig. 28-00-2

A fuel tank is integrated into the leading edge of each wing. The fuel tanks are each divided into two sections by an anti-sloshing rib (Fig. 28-00-3). Fuel is filled into the outer section via a fuel filler opening on the upper side of each wing.

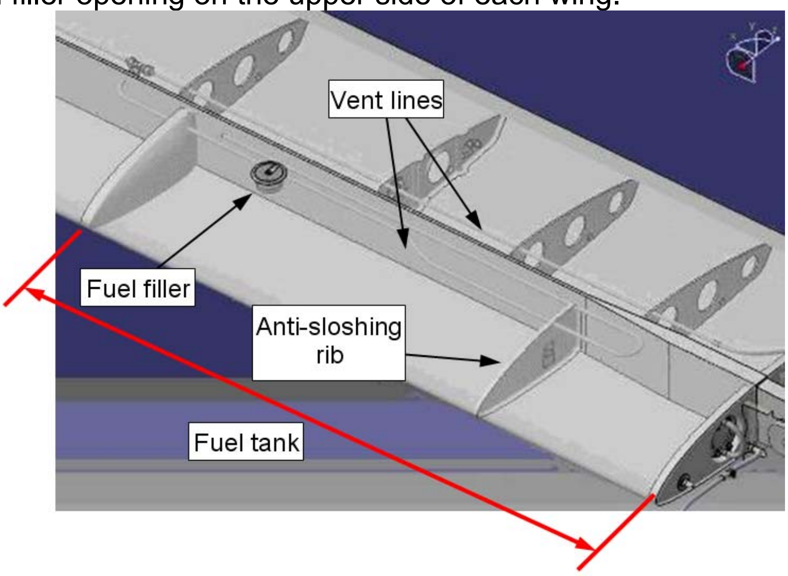
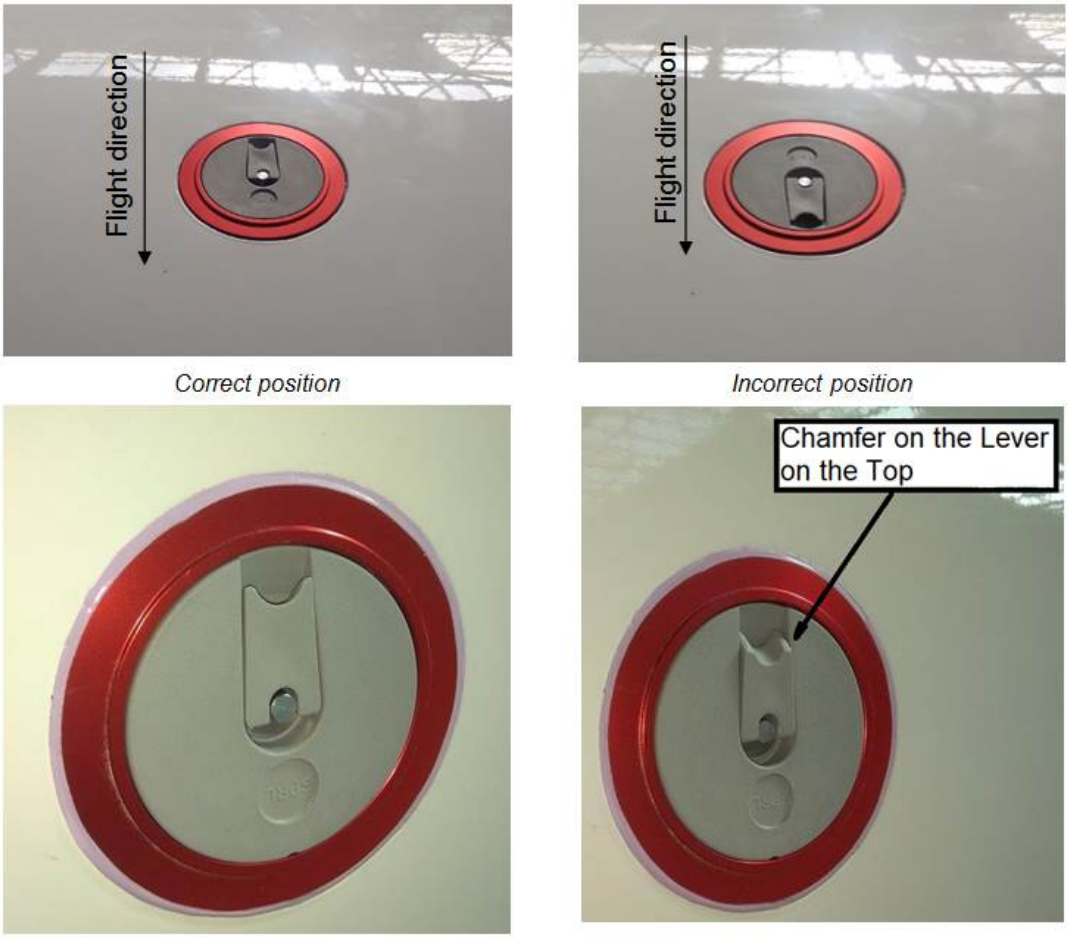


Fig. 28-00-3

To open the fuel filler cap, the lever in the cap must be raised and turned 90° anti-clockwise. The cap can then be removed. The cap is properly shut when the lever is pressed down into position (Fig. 28-00-4).



Correct position *Incorrect position*

Correct position *Incorrect position*

Fig. 28-00-4

Fuel flows via a flapper valve into the inner section of the fuel tank inboard of the anti-sloshing rib. The flapper does not completely seal the inner tank.

It does, however, greatly restrict the return flow of fuel into the outer chamber when one wing is low (sideslip). A sideslip can thus be undertaken even when low on fuel without risking immediate fuel starvation to the engine.

A special epoxy covering is applied to the inner surface of the fuel tank. The covering is resistant to fuel and ethanol and ensures continued leak tightness of the tank.

The outlet with integrated coarse screen in installed in the wing root rib. The outlet can be removed via a maintenance plate in the root rib for visual inspection and cleaning. The maintenance plate is provided with site fuel gage. When wings attached to the fuselage the site gages are visible from cabin for occupants (Fig. 28-00-5).

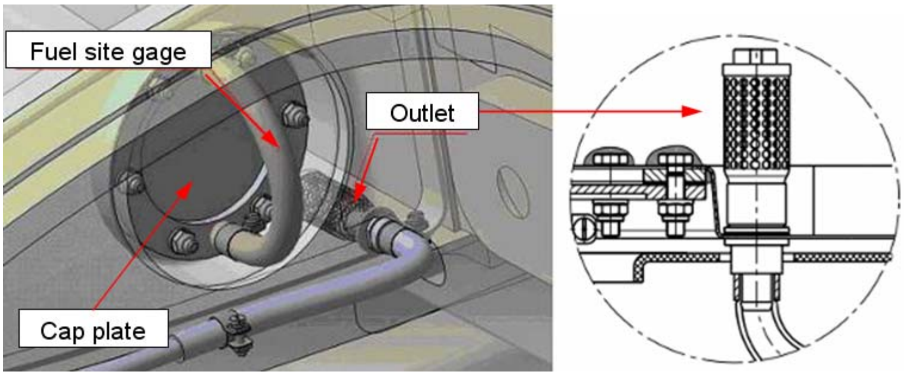


Fig. 28-00-5

The fuel tanks are vented via coupled tubes in the outer tank sections. The air is provided by NACA inlets on the outer side of each upper winglet (Fig. 28-00-6). The NACA located on the lower airfoil side of the upper winglets close to the trailing edge, where accumulation of humidity or ice is almost impossible due to aerodynamics.

The vent tube runs through the outer tank section in a loop (upper side towards the sloshing rib, lower side at the sloshing rib, outwards from sloshing rib to the upper end rib, up again to the highest point of the fuel tank). Thus no fuel can escape into the vent tubes should the aircraft be parked at a slant.

The vent lines of left and right wing are interconnected by another vent line that extends from the connection point just outside the fuel tank, on the rear side of the spar wall, to the root rib. A removable connector is used to couple at this position the vent line interconnection that is routed through the upper side of the wing spar box in the fuselage.

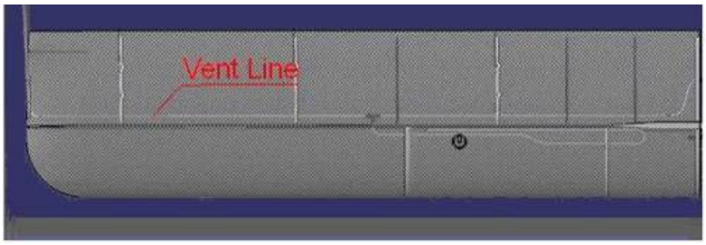


Fig. 28-00-6

The fuel system is provided with common fuel shutoff valve. The valve in installed inside the instrument console in the cabin behind the Y-connector (Fig. 28-00-7).

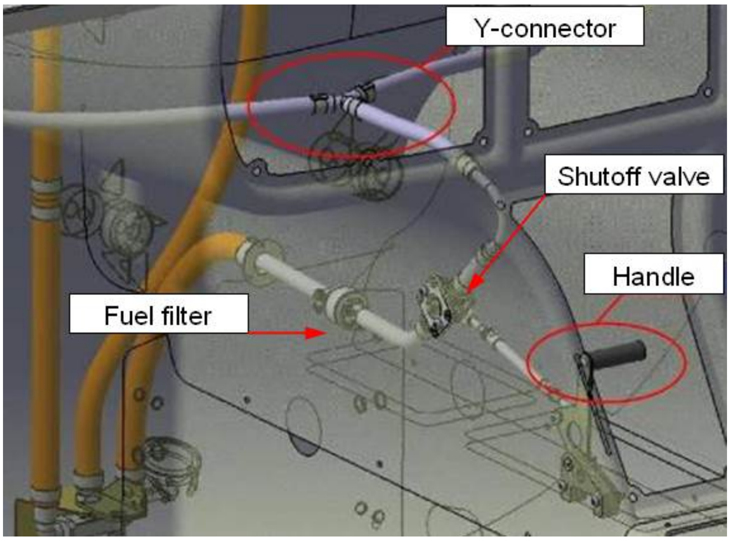


Fig. 28-00-7

The shutoff valve is installed before filter. That enables to close fuel line and perform filter maintenance what does not require fuel draining from the fuel tanks.

The gascolator is installed in the engine compartment in the lowest point of the fuel system. The gascolator is provided with drain valve (Fig. 28-00-8). The fuel system is drained at this point.

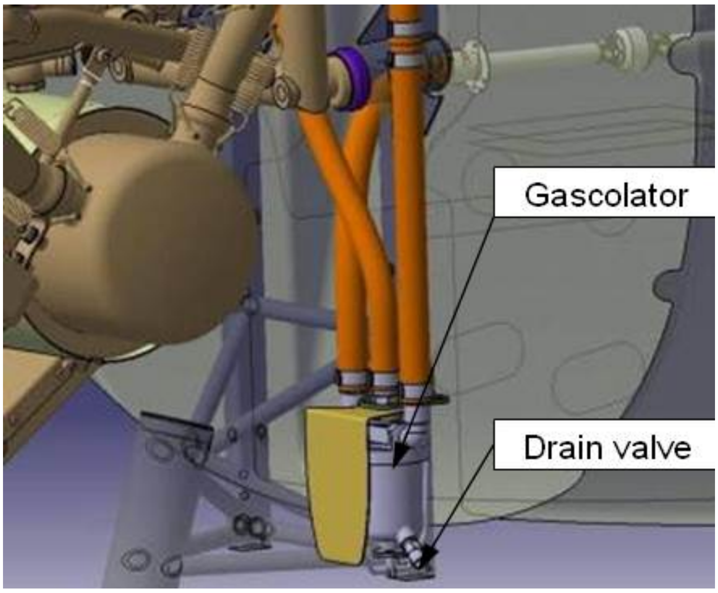


Fig. 28-00-8

28-00.3 Maintenance Practices

28-00.3.1 *Fuel System Inspections*

28-00.3.1.1 Type of Maintenance

Line

28-00.3.1.2 Minimum Level of Certification

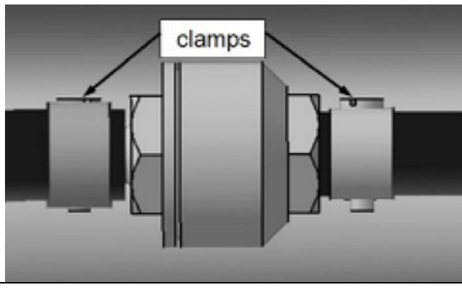
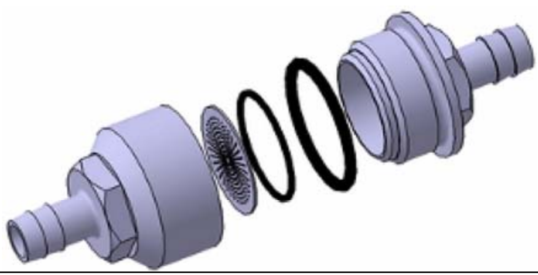
LSA- Mechanic (LSAM)

28-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Fuel Filter Inspection

Step	***Action***	***Reference***
1	Inspect all fuel lines for damages, leakages, connections securing. Verify lines routing for kinks or restricted elbows.	
2	Check fuel hoses fire sleeves in engine compartment for hardening from heat, porosity, connections securing.	
3	Move handle to position OFF to close fuel shutoff valve.	
4	Drain rest of the fuel from fuel lines through gascolator to sufficient container. To drain the fuel push to the gascolator drain valve and turn it.	
5	Loose two screwed clamps  	
6	Detach fuel lines from the filter. Remove filter.	
7	Unscrew halves of filter. Disassemble fuel filter. - male threaded halve - female threaded halve - two Viton O-rings - net 	
8	Clean net with fuel. Inspect O-rings for damage. When necessary replace.	
9	Assemble fuel filter in reversed direction order. When assembling screw halves together. Do not overnight. Tight until halves get contact.	
10	Install fuel filter in reversed direction order.	

C. Gascolator Inspection

1	Remove lock wire from Gascolator and unscrew is lower container. 	
2	Clean gascolator lower container and inspect it for damages, cracks and scuffing marks.	
3	Clean gascolator net if required.	
4	Assemble gascolator in reversed direction order.	

D Shut off valve Inspection

1	Remove lower instrument panel.	31
2	Inspect shut off valve attachment and for leakage. Check that valve engages noticeable into the position ON/OFF.	
3	Check the fuel flow rate.	12-10.2.3
4	Check drained fuel for contamination.	12-10.2.2

E Fuel Tanks Inspection

1	Drain all fuel from the system.	
2	Remove the wings.	57-00.3
3	Inspect external surfaces of fuel tank for leakages and foreign objects.	
4	Inspect for security and presence of fuel leakage, and readable indication. Replace gauges if necessary	
5	Inspect Fuel filler caps for proper locking and leakage. Check that the placards are present and readable.	
6	Unscrew 6 nuts M6, securing the Cap plate. Inspect inner surfaces of fuel tanks condition of sealant and inner structure. Clean if required.	
7	Inspect fuel flap in slosh rib for proper functioning and attachment.	
8	Inspect the outlets for contamination through opening in root rib. Clean if required.	
9	Remove wing Cap.	57-00.3.5
10	Check fuel vent lines and connections for leakage and blockage. Blow through if required.	
11	Install wing Cap and Cap plate in reverse order.	

28-00.3.2 *Fuel Pump Removal and Installation*

28-00.3.2.1 Type of Maintenance

Line

28-00.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

28-00.3.2.3 Procedure

Refer to the ROTAX® Maintenance Manual valid for your individual engine.

28-00.3.3 *Fuel Hoses and Lines Replacement*

28-00.3.3.1 Type of Maintenance

Line

28-00.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

28-00.3.3.3 Procedure

For fuel lines being part of the ROTAX® engine, refer to the ROTAX® Maintenance Manual valid for your individual engine.

For all other fuel lines, contact aircraft manufacturer for further instructions.

CHAPTER 31 –
INSTRUMENT BOARD AND INDICATING SYSTEMS

Contents

31-00.1 General

This section provides description and information concerning maintenance of Instrument Board and indicating systems.

31-00.2 Description

Instrument Console consists of four panels

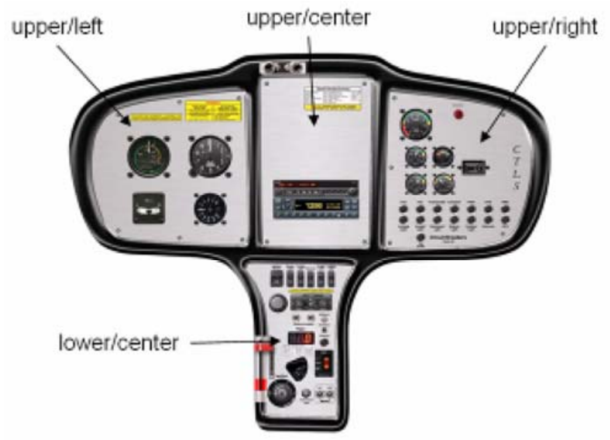


Fig. 31-00-1

Indication of flight and engine data is provided with follow instruments:

- Airspeed indicator (ASI),
- Altimeter (Alt),
- Vertical speed indicator (VSI)
- Slip indicator.

Flight instruments are installed to the left panel section of the instrument console.

The following functionality is provided by the analog engine instruments:

- Tachometer,
- Oil Pressure Indicator,
- Oil Temperature Indicator,
- Cylinder Head Temperature Indicator

Engine instruments are installed to the right panel section of the instrument console.

Fig. 31-00-2 shows the typical arrangement for CTLS-LSA with Analog Instruments:

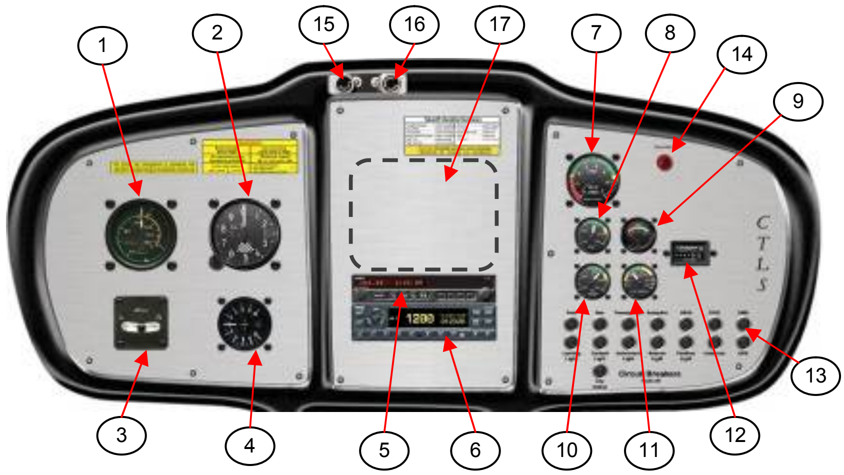


Fig. 31-00-2

Pos.	*Manufacturer*	*Type*	*Description*
1	Winter	6 FMS 4	Analog airspeed indicator 3.25 in, km/h or kt
2	Winter	4 FGH 10	Analog three pointer altimeter, 80 mm
3	Winter	Gr 1	Slip indicator, 58 mm
4	Winter	5 STVM 5	Vertical speed indicator, 58 mm
5	Garmin	SL40	COM radio
6	Garmin	GTX330	Transponder mode S (high power)
n/a	ACK Technologies	A-30	Altitude encoder; installed inside console
7	UMA	19-519-211	Analog tachometer 2.25 in
8	UMA	N12116V150C010 or N12116V300F020	Analog cylinder head temperature gauge 32 mm; units °C … units F
9	UMA	N141100917V060	Analog voltmeter 32 mm
10	UMA	N12113V150C020 or N12113V300F0A0	Analog oil temperature gauge 32 mm, units °C … units F
11	UMA	N04113V010B010 or N04113V130P070	Analog oil pressure gauge 32 mm, units bar … units PSI
12	Honeywell	85094	Hobbs hour meter
13	n/a	n/a	Circuit breaker area
14	n/a	n/a	Generator warning light
15	n/a	n/a	Cabin heat control (round)
16	n/a	n/a	Carburetor heat control (rectangular)
17	n/a	n/a	Location for radio stack enhancements and GPS installation
n/a	Airpath	C-2300-L4-B	Magnetic compass with deviation table with lighting

31-00.3 Maintenance Practices

31-00.3.1 *Instrumental Panel Uninstalling and Installing*

31-00.3.1.1 Type of Maintenance

Line

31-00.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

31-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Instrumental Panel Uninstalling

Step	***Action***	***Reference***
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section (Fig. 31-00-3)	
2	Using hex-head screwdriver 3mm unscrew bolts (marked in red) that hold the panels (Fig. 31-00-4).	
3	During removal the panels pay attention for wiring and tubing	

C. Instrumental Panel Installing

Step	***Action***	***Reference***
1	Using hex-head screwdriver 3mm screw bolts specified above	

Fig. 31-00-3

Fig. 31-00-4

31-00.3.2 *Instruments Inspection*

31-00.3.2.1 Type of Maintenance

Line

31-00.3.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

31-00.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Instruments Inspection

Step	***Action***	***Reference***
1	**Altimeter.** Visually check altimeter for integrity and clean it.	
2	**Analog Airspeed indicator.** A leak test should be performed on condition or as required by applicable regulations. Normally, the instruments remain serviceable and accurate over a long period of time. If test or repair necessary, the instrument is to be sent to the manufacturer or a qualified repair station. The instrument should be packed in shock absorbing material, and the connection fittings should be sealed. The Manufacturer strongly advises against service by unqualified personnel. Manufacturer recommends checking airspeed indicators after 5 years.	
3	**Magnetic Compass with Deviation Table.** Inspect the compass for secure mounting, damages, leaks, and filling by liquid. Air bubbles and clouding are not allowed. Liquid must be transparent. Check for presence of deviation card and seal.	
4	**Flap position indicator.** Inspect annually for operation.	
5	**Radio Garmin SL40 installed with antenna.** The SL40 display lens is coated with a special anti-reflective coating which is very sensitive to skin oils, waxes, and abrasive cleaners. It is very important to clean the lens using an eyeglass cleaner that is specified as safe for anti-reflective coatings (one suitable product is Wal-Mart Lens Cleaner) and a clean, lint-free cloth.	
6	**Transponder Garmin GTX330 mode S.** Other than for regulatory periodic functional checks, maintenance of the GTX 330 is "on condition" only. Refer to the GTX 330 Maintenance Manual. Periodic maintenance of the GTX 330 is not required.	
7	**Intercom PM3000A.** maintenance is on condition only. During normal operation it is checked on to each flight by the pilot. It is a good practice to periodically check the unit to make sure it is securely fastened in its location, and that the wiring harness is not chafed or pinched, and remains secure. All panel jacks should be checked at each periodic inspection to ensure that they are tight and not in contact with other items behind the instrument panel.	
8	**Cylinder Head Temperature (CHT) indicator.** Visually check CHT indicator for integrity and clean it.	
9	**Oil temperature indicator.** Visually check Oil temperature indicator for integrity and clean it.	
10	**Oil pressure indicator.** Visually check Oil pressure indicator for integrity and clean it.	
11	**Voltmeter.** Visually check Voltmeter for integrity and clean it.	
12	**Hobbs Hour Meter.** Maintenance is “on-condition” only.	

31-00.3.3 *Instrument Panels Inspection*

31-00.3.3.1 Type of Maintenance

Line

31-00.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

31-00.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Instruments Inspection

Step	*Action*	*Reference*
1	Check the integrity of the panel (the panel must not be cracked)	
2	Check the bolts tightening that hold the panels (If the bolts are tightened not tight – tighten the bolts)	
3	After panels uninstalling check integrity of the rivet nuts mounting to the flanges of instrument console and thread of the rivet nuts should not be damaged.	
4	If the attachment points of rivet nut or thread of the rivet nut is damaged it is necessary to delete the rivet nut and repair a flange surface and to rivet the new rivet nut to the flange.	

CHAPTER 32 –
LANDING GEAR AND BRAKES

Contents

32-00.1 General

This chapter provides description of the landing gear and brakes.

32-00.2 Description

CT is equipped with conventional tricycle landing gear. The main gear legs made of high strength composite material are attached to the main bulkhead located behind the pilot seats. The nose landing gear is steered via control rods which are attached directly to the pedals.

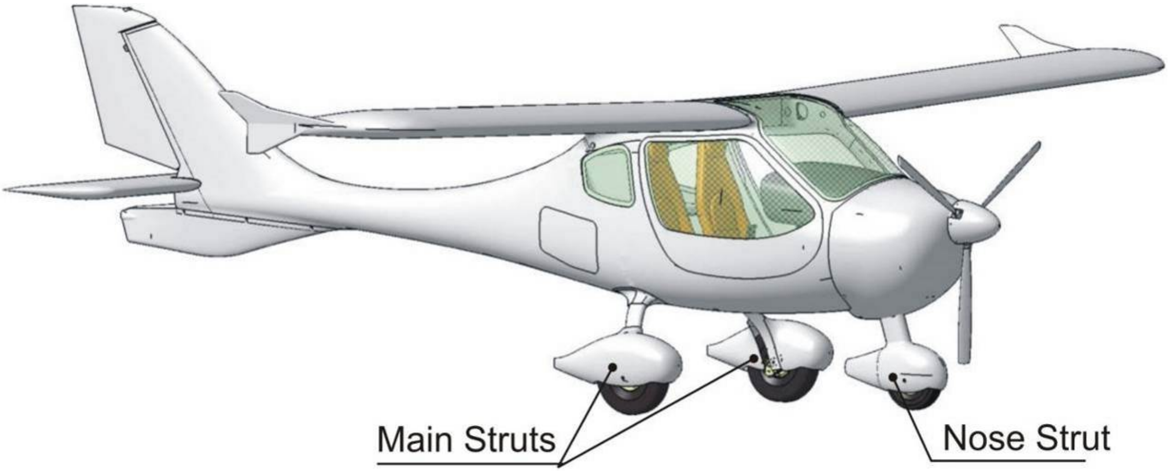


Fig. 32-00-1

SECTION 32-10 –
MAIN LANDING GEAR

32-10.1 General

This section provides description and maintenance procedures for Main Landing Gear.

32-10.2 Description

The main landing gear of the CTLS-LSA consists of two individual gear struts, two main wheels with brakes, wheel fairings and gear leg fairings. The main gear struts are made of composite materials. The gear struts form a cantilever spring with excellent damping characteristic. The struts are mounted in a load bearing attachment in the fuselage (Fig 32-10-1). This attachment is located in the fuselage main bulkhead area and allows perfect load introduction to the fuselage structure.

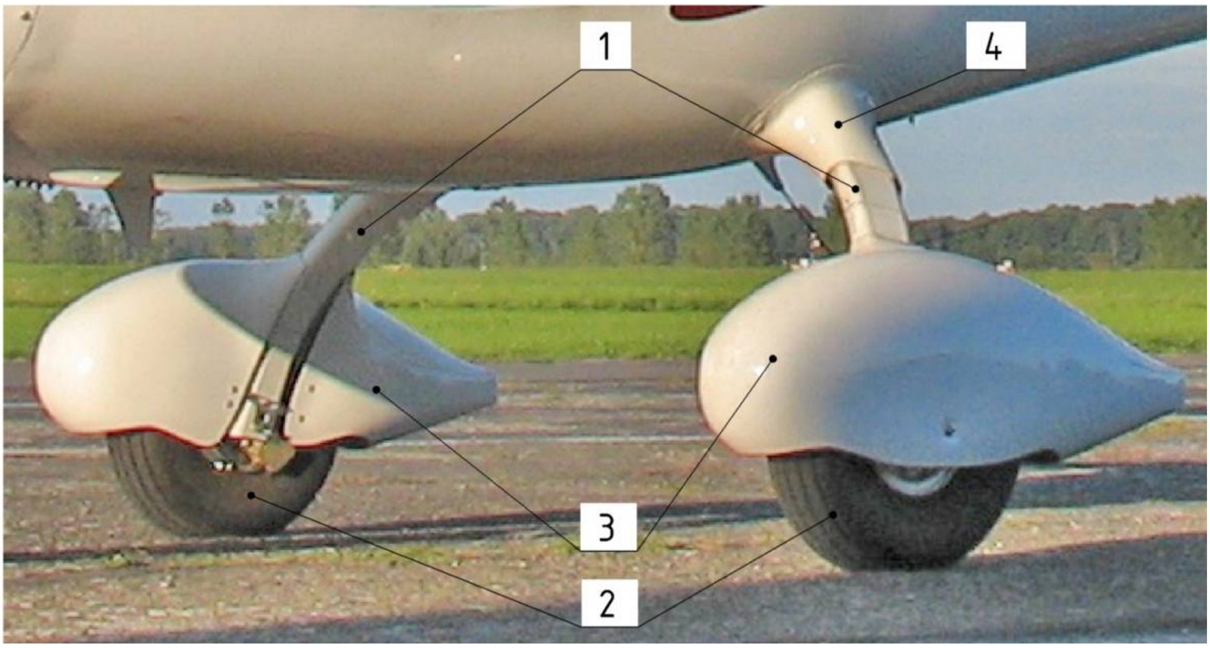


Fig. 32-10-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-10-1	1	Main Strut		KF32100049, KF32100050
	2	Main Wheel		KF32100062
	3	Fairing, Main Wheel		KF32100010, KF32100011
	4	Fairing, Landing Gear		KF32100020, KF32100021

The struts are fixed with two bolts at the upper ends. At the lower connection a clamp cushioned with a thin layer of rubber at the fuselage pass-through supports the gear leg (Fig. 32-10-2, Fig. 32-10-3, and Fig. 32-10-4).

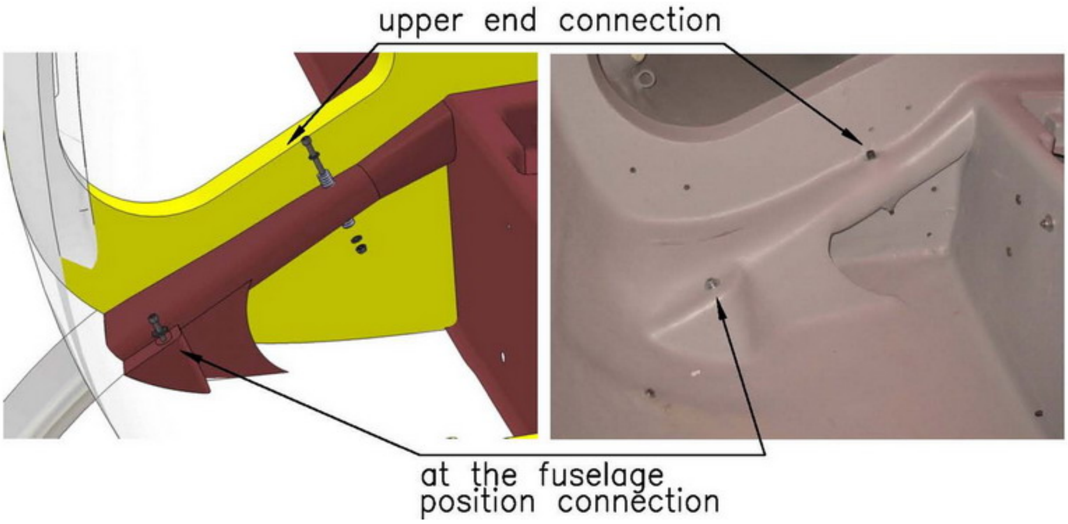


Fig. 32-10-2. View from the cabin side

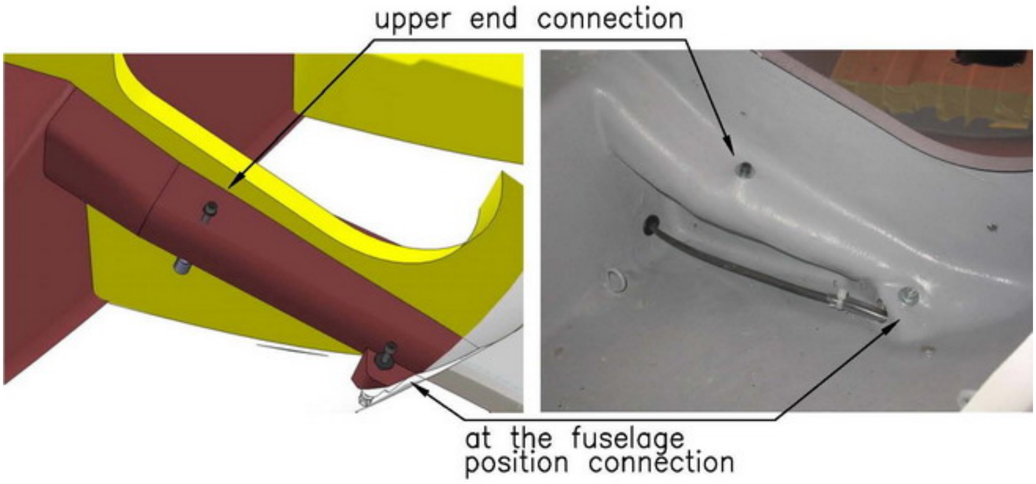


Fig. 32-10-3. View from the cabin side

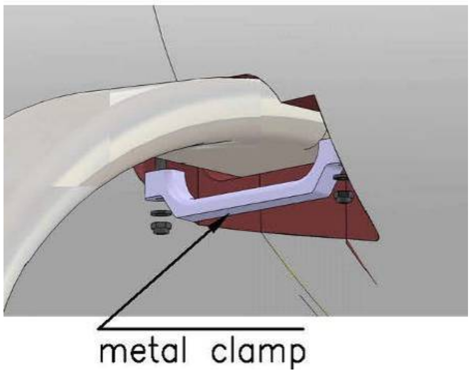


Fig. 32-10-4

The interface between main gear strut and fuselage is covered with a composite fairing to ensure good aerodynamic efficiency. The main wheels axles are attached directly to the main strut. The main wheel assemblies are covered with composite wheel fairings to ensure good aerodynamic efficiency.

32-10.3 Maintenance Practices

32-10.3.1 *Fairing, Main Wheel Uninstalling and Installing*

The fairings of main wheels are attached in three point from the inner side and in one point from the outer side.

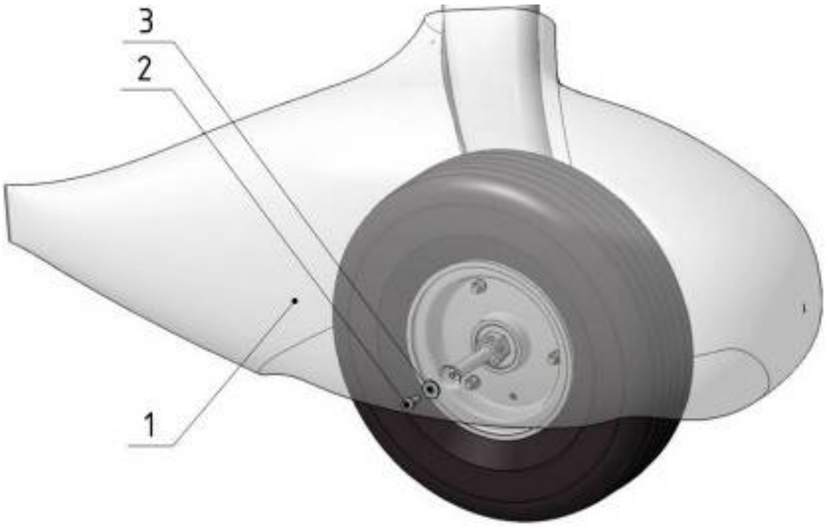


Fig. 32-10-5

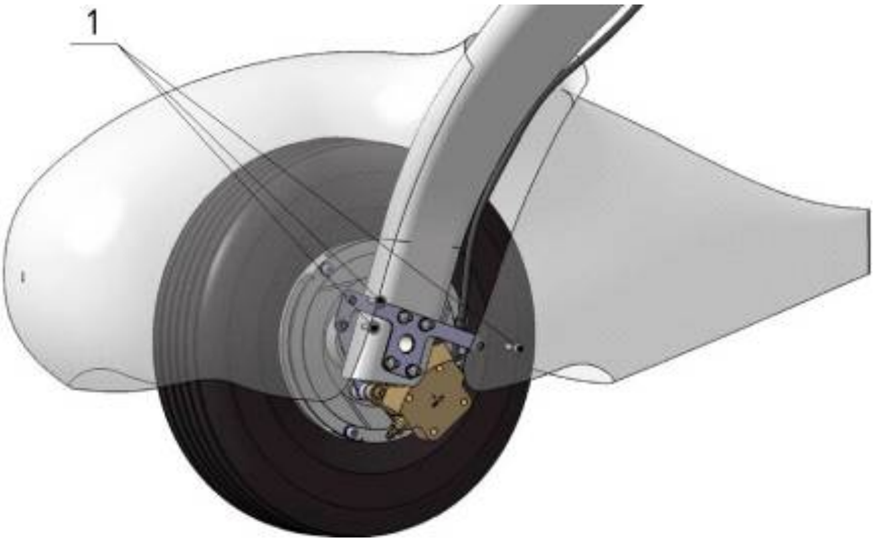


Fig. 32-10-6

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-10-5	1	Fairing, Main Wheel		KF32100010, KF32100011
	2	Bolt M6	80 lb-in 9 Nm	C9996054B
	3	Washer		C9996565A
32-10-6	1	Screw M5	49 lb-in 5.5 Nm	C9996162

32-10.3.1.1 Type of Maintenance

Line

32-10.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

32-10.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Fairing, Main Wheel Uninstalling. Fig. 32-10-5, Fig. 32-10-6.

Step	***Action***	***Reference***
1	Unscrew one bolt item 2. Remove washer item 3.	
2	Unscrew three bolts item 1.	
3	Remove fairing.	

C. Fairing, Main Wheel Installation

Step	***Action***	***Reference***
1	The fairing is installed in reversed direction order. When installing bolt 2, Fig. 32-10-5, apply thread locker middle strength.	

32-10.3.2 *Main Wheel Uninstalling and Installing*

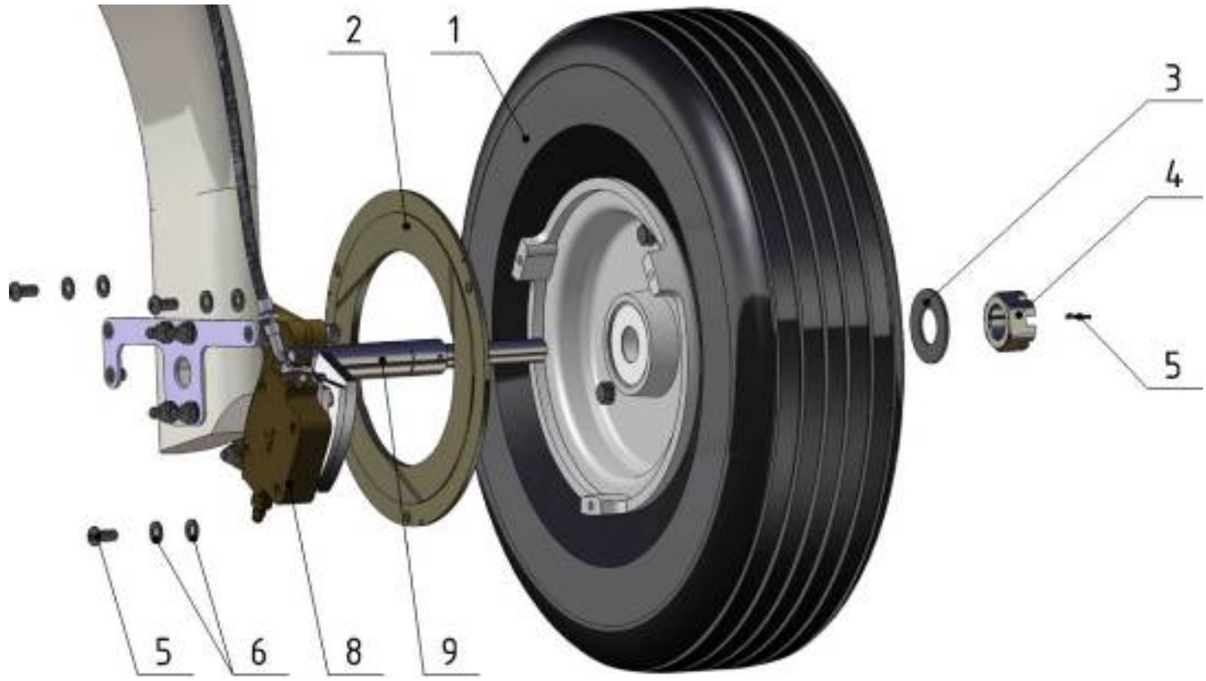


Fig. 32-10-7

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-10-7	1	Main Wheel		KF32100062
	2	Brake disk		part of set C9997204B
	3	Axle Nut		part of set C9997204C
	4	Washer		part of set C9997204C
	5	Cotter Pin		part of set C9997204C
	6	Screw 0.25"	98 lb-in 11Nm	part of set C9997204B
	7	Nordlock washer		part of set C9997204B
	8	Brake Caliper		part of set C9997204B
	9	Axle		part of set C9997204C

32-10.3.2.1 Type of Maintenance

Line

32-10.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-10.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Main Wheel Uninstalling (Fig. 32-10-7)

Step	Action	Reference
1	Remove cotter pin item 5.	
2	Unscrew Axle Nut item 3.	
3	Unscrew 3 Screws item 5.	
4	Detach brake disk item 2 from the wheel rim.	
5	Pull wheel out and remove from the axle item 9	

C. Main Wheel Installing (Fig. 32-10-7)

The tapered roller bearing must be packet with suitable grease.

When screws item 5 installing apply thread locker middle strength.

The main wheel is installed in reversed direction order.

▲**Warning:** When Axle Nut installing tight the Axle nut until all play is out of the assembly. Rotate the Main Wheel back and forth while tightening help seat the Roller Bearings. The Rubber seal on the tapered Roller bearing should remain stationary while the Main Wheel rotates around it. If the Rubber seal is spinning, tight the Axle nut further until the Rubber seal stops spinning with the Main Wheel. If all requirements are assured and Main Wheel rotates freely, tighten Axle nut to the nearest slot and insert Cotter pin.

32-10.3.3 *Tire and Tube Inspection and Replacement*

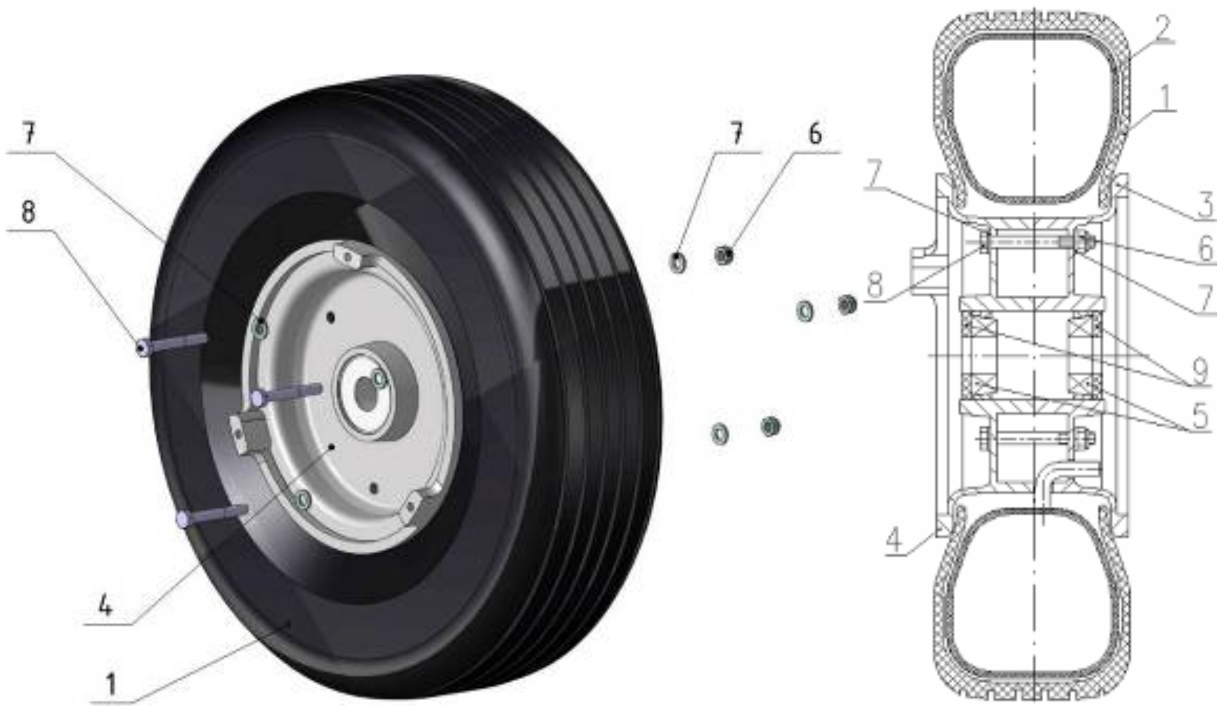


Fig. 32-10-8

Fig.	Item	Part Name	Torque	Reference
32-10-8	1	Tire		C9997212C
	2	Tube		C9997212D
	3	Wheel, Valve Half		part of set C9997204B
	4	Wheel, Brake		part of set C9997204B
	5	Roller Bearing		part of set C9997204B
	6	Lock Nut	98 lb-in 11 Nm	part of set C9997204B
	7	Washer Thick		part of set C9997204B
	8	Bolt, Hex		part of set C9997204B
	9	Rubber seal		part of set C9997204B

32-10.3.3.1 Type of Maintenance

Line

32-10.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-10.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Tire and Tube Inspection and Replacement (Fig. 32-10-8)

Step	Action	Reference
1	Uninstall main wheel	32-10.3.2
2	Unscrew three lock nut item 6	
3	Remove bolts item 8, washers item 7	
4	Disconnect wheel rims item 3, 4	
5	Remove tire and tube items 1, 2	
6	Inspect Tire and Tube. When necessary replace.	
7	Assemble main wheel in reversed direction order	
8	Install main wheel	32-10.3.2

32-10.3.4 *Main Strut Fairing Removal and Installation*

32-10.3.4.1 Type of Maintenance

Line

32-10.3.4.2 Minimum Level of Certification

Pilot/Owner (P/O)

32-10.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Main Strut Fairing Removal and Installation (Fig. 32-10-9)

Step		Reference
1	Detach the Seal Tape from the Fairing, Main Strut and Fuselage.	
2	Unscrew two screws that fix the fairing to fuselage.	
3	Pull the main strut fairing along the main strut.	
4	Installation is done in a reverse order.	

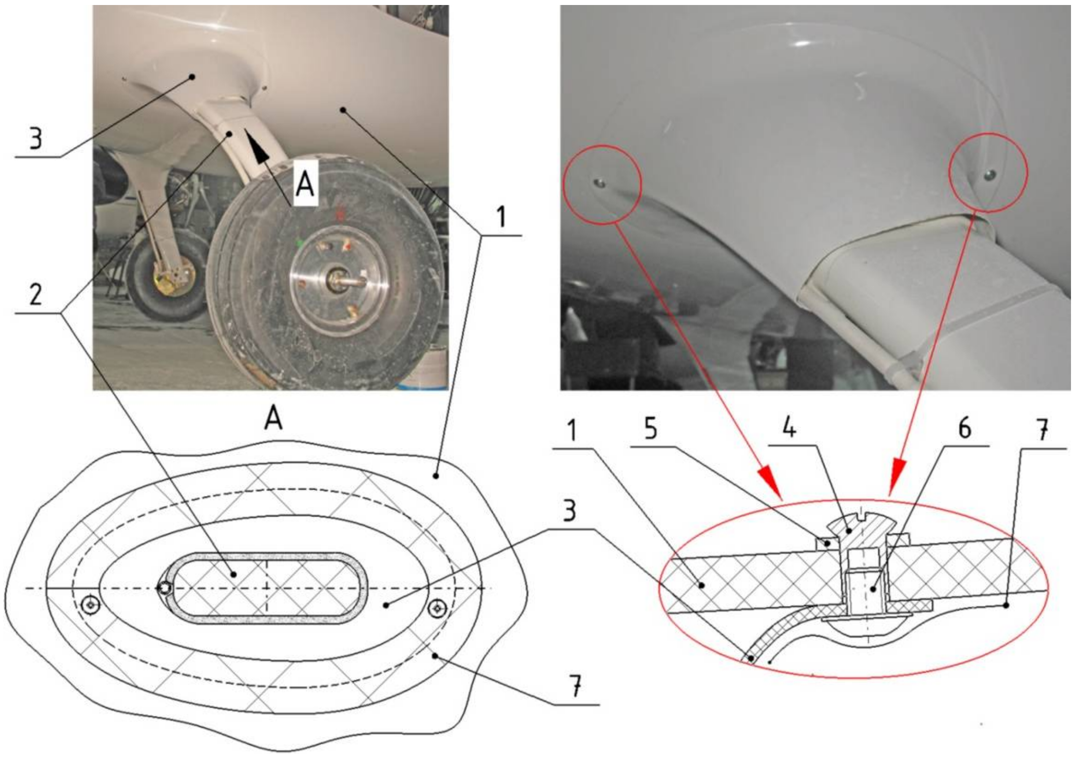


Fig. 32-10-9

Fig.	Item	Part Name	Torque	Reference
32-10-9	1	Fuselage		
	2	Main Strut		KF32100049, KF32100050
	3	Fairing, Main Strut		KF32100020
	4	Blind Nut		KF32100047
	5	Washer		C9996504
	6	Screw	44 lb-in/5Nm	KF32100046
	7	Seal Tape		C9993230O

32-10.3.5 *Main Struts Removal and Installation*

32-10.3.5.1 Type of Maintenance

Line

32-10.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-10.3.5.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Main Struts Removal and Installation (Fig.).

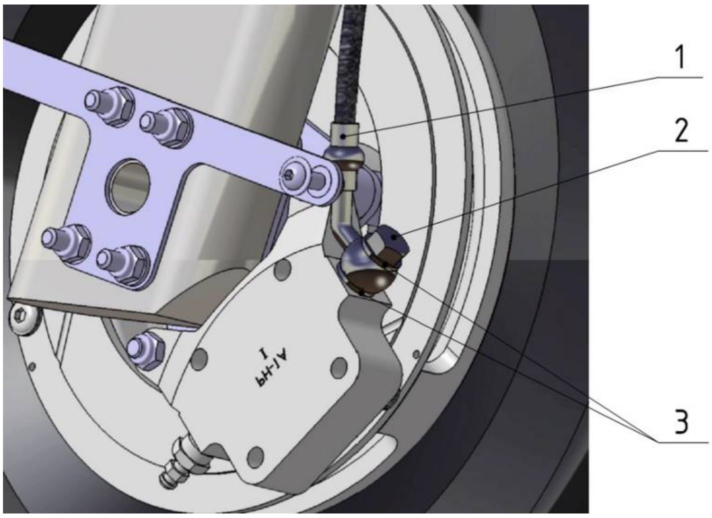
<table>
<tr><th>Step</th><th></th><th>Reference</th></tr>
<tr><td>1</td><td>Remove Main Strut Fairings.</td><td>32-10.3.4</td></tr>
<tr><td>2</td><td>Disconnect wheel brake line (Fig. 32-10-10). Unscrew the Fitting, 1/8", FT0107 (1) from Caliper and disconnect the Brake hose MATCO (2). Prevent draining of brake liquid out of the hose by plugging it up.</td><td></td></tr>
<tr><td colspan="3">

Fig. 32-10-10</td></tr>
<tr><td>3</td><td>Take out the Seats from cockpit. To provide access to lower and upper attachment bolts (Fig. 32-10-11).</td><td>25.2.1</td></tr>
<tr><td colspan="3">
Fig. 32-10-11</td></tr>
</table>

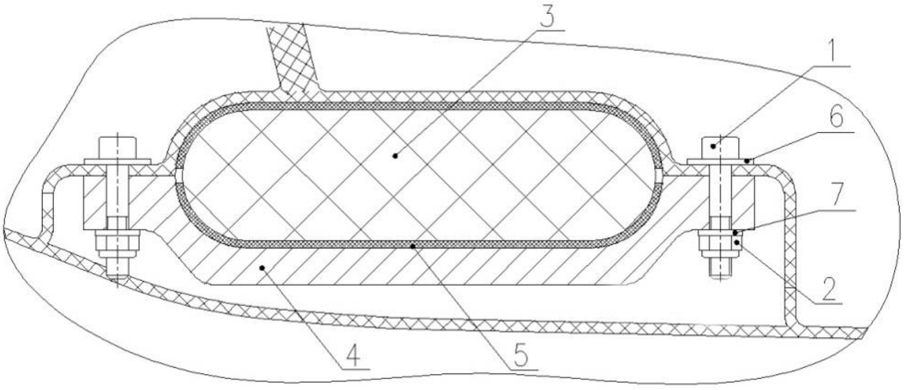
<table>
<tr><td>4</td><td>Set an airplane on a locating block.</td><td>07.2</td></tr>
<tr><td>5</td><td>Lift the tail of the fuselage so that the Main Wheel is at least 10’’ (25 sm.) off the ground.</td><td></td></tr>
<tr><td>6</td><td>Insert the padded support securely just behind the Baggage Door (under the fuselage bottom).</td><td></td></tr>
<tr><td>7</td><td>Unscrew 2 self-locking nuts M6 (2) at lower attachment points and remove bolts (1). Remove clamp (4) and rubber seal (3) (Fig. 32-10-12).</td><td></td></tr>
<tr><td colspan="3">

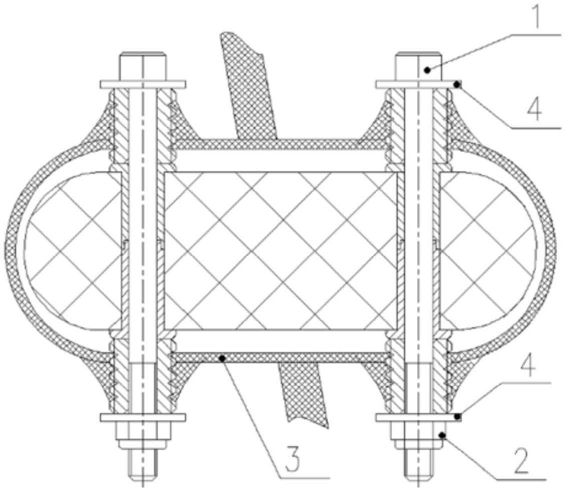
Fig. 32-10-12</td></tr>
<tr><td>8</td><td>Unscrew 2 self-locking nuts M6 (2) at the upper attachment points. Remove bolts (1) (Fig. 32-10-13).</td><td></td></tr>
<tr><td colspan="3">

Fig. 32-10-14</td></tr>
<tr><td>9</td><td>Detach the main strut.</td><td></td></tr>
</table>

32-10.3.6 *Main Gear Inspections*

32-10.3.6.1 Type of Maintenance

Line

32-10.3.6.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-10.3.6.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Main Struts Inspection.

Step		***Reference***
1	Inspect the main struts for bending, damages, dents, cracks, paint peeling on the surface and especially at the mounting holes areas, integrity and circularity of the mounting holes. Check all visible surfaces before flight.	
2	Inspect connecting places (left/right) for damages, dents, cracks, and paint peeling.	
3	Check for presence and correct position of the rubber elements located between the outer landing gear clamps (where the gear leg passes the fuselage) and the gear leg. Missing of these elements leads to lose landing gear fitting with subsequent damages to the landing gear and fuselage in operation.	
4	Check the bulkhead and tunnel for damages, dents, cracks, paint peeling at the areas of landing gear attachments.	
5	Inspect annually for all stated above with removal of all the parts obscuring (strut fairing and so on) the ones being inspected. Inspect the main wheel attachment for damages, dents, cracks on the surface and especially at the mounting holes areas, integrity and circularity of the mounting holes. In case of hard landing inspect immediately after landing.	

C. Wheel Inspection.

Step		***Reference***
1	Inspect the main wheels for run out, play, binding, strange noises while rotating - at least every 100h. Push the wheel so that it makes 6-8 turns and watch rotation up to stop.	
2	Inspect tires for inflation visually before each flight, measure tire pressure as necessary.	12-10.2.7
3	Inspect tires for integrity and height of tread (at least 0.04 inch / 1 mm) – before each flight.	
4	Inspect the Main Wheel and Strut Fairings for integrity, secure attachment and foreign objects in the aft part of the fairing – before each flight.	

SECTION 32-20 –
NOSE LANDING GEAR

32-20.1 General

This section provides description and information concerning maintenance of Nose Landing Gear.

32-20.2 Description

The nose landing gear is attached to the lower section of the big engine mount with bearings, to allow steering. The nose gear strut is designed as telescope with integral urethane spring elements. The excellent damping characteristic of the spring elements ensures smooth touch-down with very low tendency for porpoising.

The nose landing gear is steered via control rods which are attached directly to the pedals.

The nose gear has an aerodynamically optimized composite fairing.

The CTLS-LSA aircraft is equipped with an interface for a hand operated tow bar. There are two protruding pins attached to the nose gear leg. The tow bar is attached to these pins. The tow bar attachment size fits to one of the most common tow bars, that also fits most Cessna aircraft models (Fig. 32-20-2).

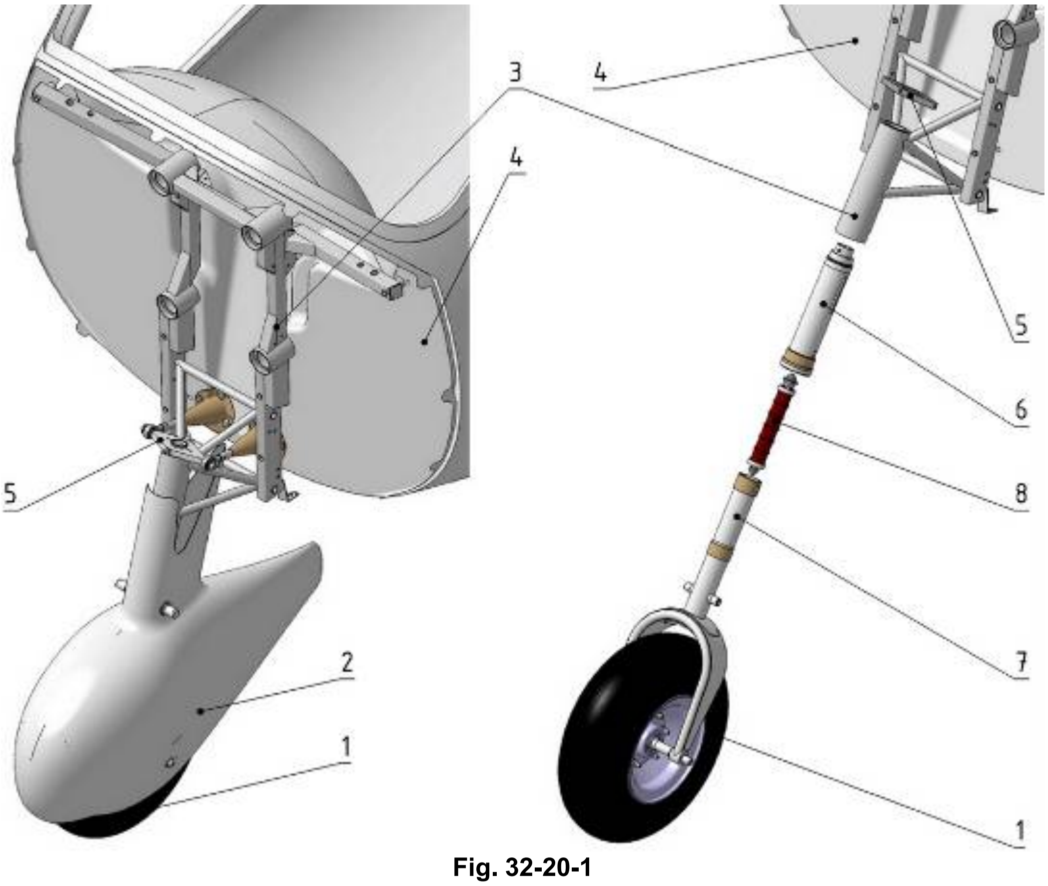


Fig. 32-20-1

Fig.	Item	Part Name	Torque	Reference
32-20-1	1	Nose Wheel		KF32200201
	2	Nose Fairing		KF32200010
	3	Big engine mount		KF71200100
	4	Frame 1		
	5	Rocker		KF32200005
	6	Cylinder, Shock		KF32200110
	7	Fork, Nose Wheel		KF32200150
	8	Polyurethane damper Element		C9999158Z
	9	Rubber seal		KF32200201

Fig. 32-20-2

32-20.3 Maintenance Practices

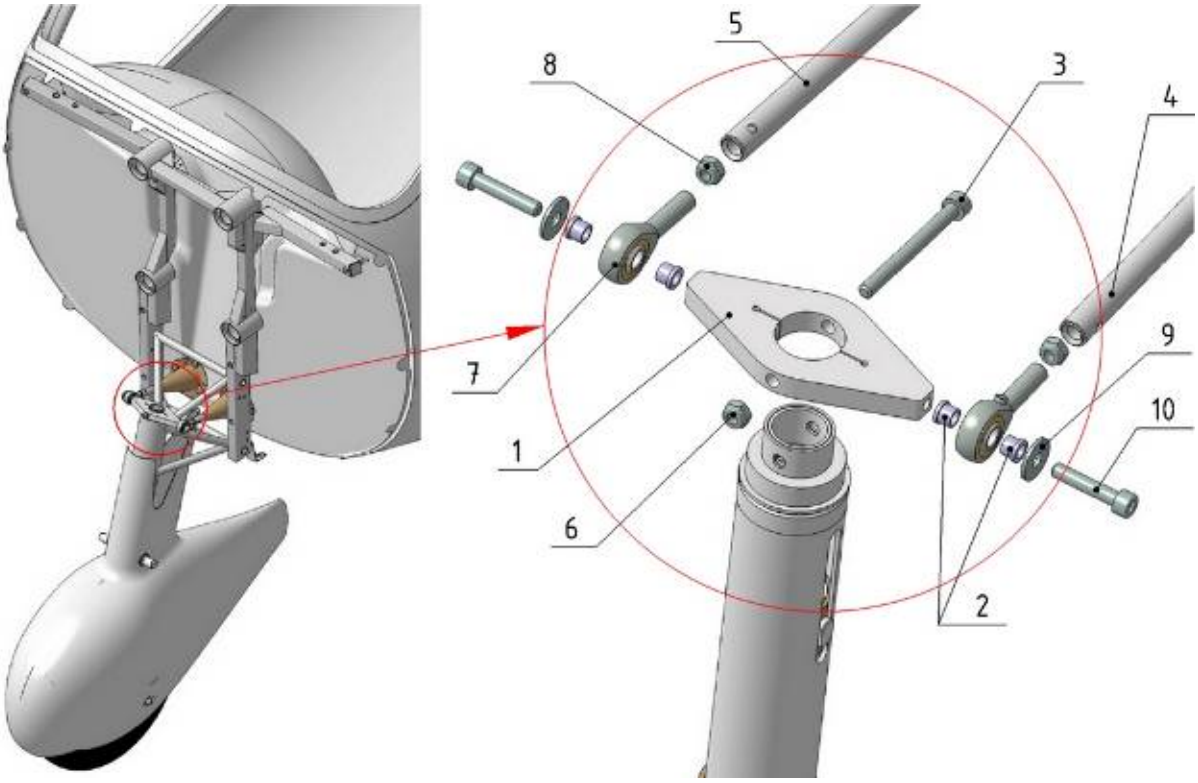


Fig. 32-20-3

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-20-3	1	Rocker		KF32200005
	2	Bush		KF32200006
	3	Bolt M6		KF32200009
	4	Rod, Left		KF32200400
	5	Rod, Right		KF32200401
	6	Self-locking nut M6	80 lb-in 9 Nm	C9996334
	7	Rod End Bearing MM-M8		C999705D
	8	Self-locking nut M8		C9996336
	9	Washer		C9996565
	10	Bolt M6	80 lb-in 9 Nm	C9996059

32-20.3.1 *Nose Gear Uninstalling and Installing*

For nose gear uninstalling and installing the two persons required.

32-20.3.1.1 Type of Maintenance

Heavy

32-20.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-20.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Nose Gear Uninstalling (Fig. 32-20-3)

Step	*Action*	*Reference*
1	Unscrew bolt M6 item 6	
2	Holding rudder pedals slide up the rocker 1 and detach from the nose gear.	
3	Pull gear down and remove gear from the engine mount	

C. Nose Gear Installing (Fig. 32-20-3)

Step	*Action*	*Reference*
1	The nose gear is installed in reversed direction order.	

32-20.3.2 *Nose Wheel Fairing Uninstalling and Installing*

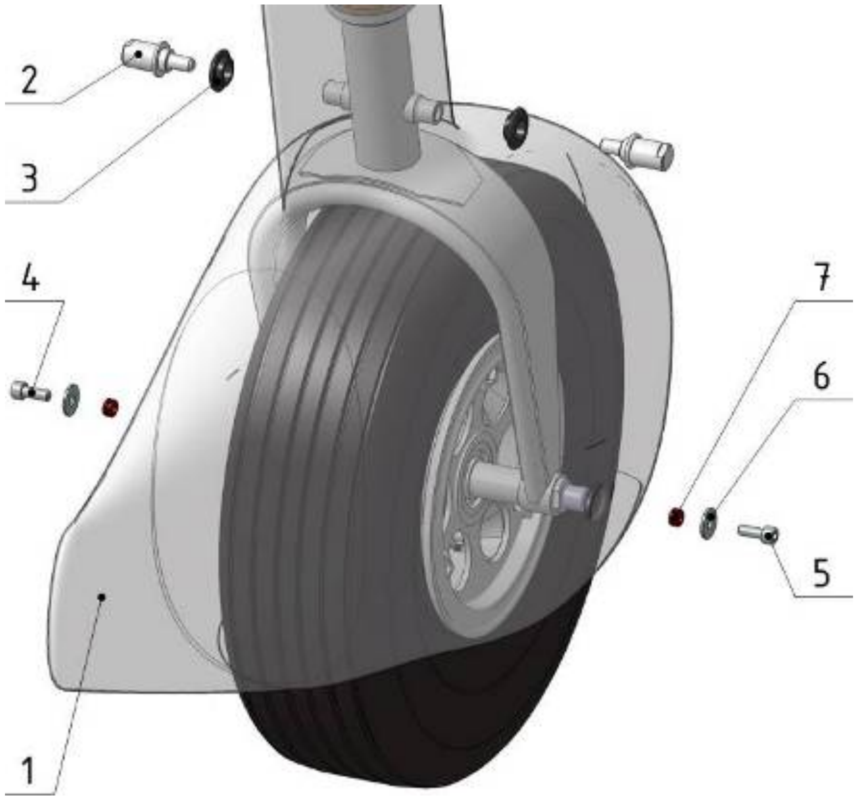


Fig. 32-20-4

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-20-4	1	Nose Fairing		KF32200010
	2	Protruded Pin		KF32200024
	3	Grommet		C9997731G
	4	Bolt M6		at the left side, C9996054
	5	Bolt M6		at the right side, C9996059
	6	Washer		C9996565
	7	Grommet		C9997731D

32-20.3.2.1 Type of Maintenance

Line

32-20.3.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

32-20.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Nose Wheel Fairing Uninstalling (Fig. 32-20-4)

Step	Action	Reference
1	Unscrew two protruded pins item 2. Remove grommets item 3	
2	Unscrew bolts M6 items 4, 5.Remove washers and grommets items 6, 7	
3	Lift up fairing. Remove fairing.	

C. Nose Wheel Fairing Installing (Fig. 32-20-4)

Step	Action	Reference
1	The nose wheel fairing is installed in reversed direction order. When installing bolts items 4, 5 and protruded pins item 2 apply thread locker middle strength.	

32.20.3.3 *Nose Wheel Uninstalling and Installing*

The wheel uninstalling can be done without fairing removal. For this the fairing shall be detached from the nose gear following procedure 32-20-3.2. In this case the type of maintenance is considered as Line.

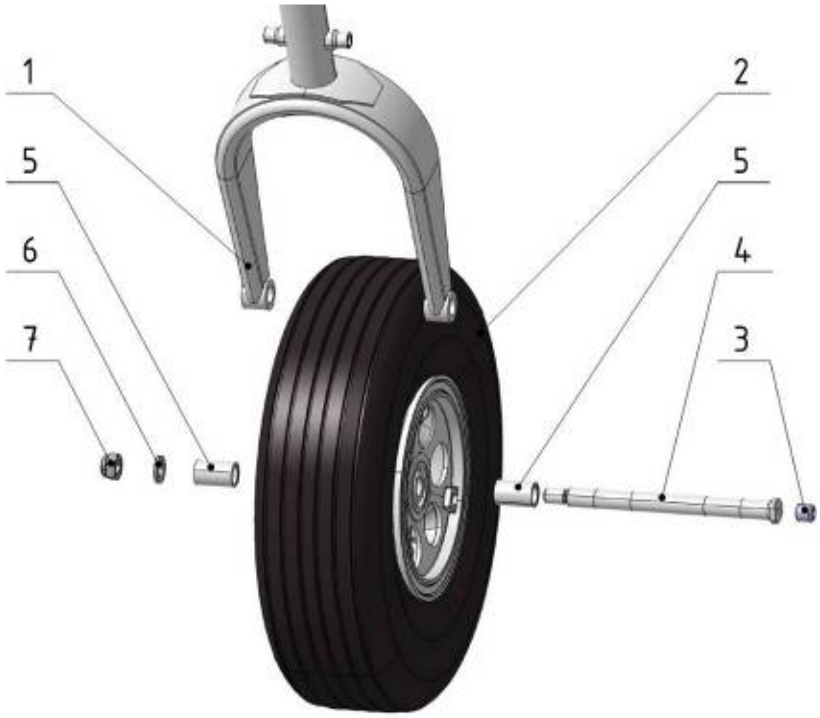


Fig. 32-20-5

Fig.	Item	Part Name	Torque	Reference
32-20-5	1	Strut, Nose Gear		KF32200100
	2	Nose Wheel		KF32200201
	3	Bush		KF32200023
	4	Axle		part of set C9997204E
	5	Spacer		part of set C9997204E
	6	Washer		part of set C9997204E
	7	Self-locking nut M12		part of set C9997204E

32-20.3.3.1 Type of Maintenance

Line

32-20.3.3.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-20.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Nose Wheel Uninstalling (Fig. 32-20-5)

Step	Action	Reference
1	Unscrew self-locking nut M12, item 7	
2	Remove axle, bush, spacers, washer items 4, 3, 5, 6.	
3	Remove wheel	

C. Nose Wheel Installing (Fig. 32-20-5)

Step	Action	Reference
1	The nose wheel is installed in reversed direction order.	

When wheel installing tighten nut M8 until all play is out of the assembly. Rotate the wheel back and forth while tightening help seat the bearings. Do not over torque nut.

32-20.3.4 *Tire and Tube Inspection and Replacement*

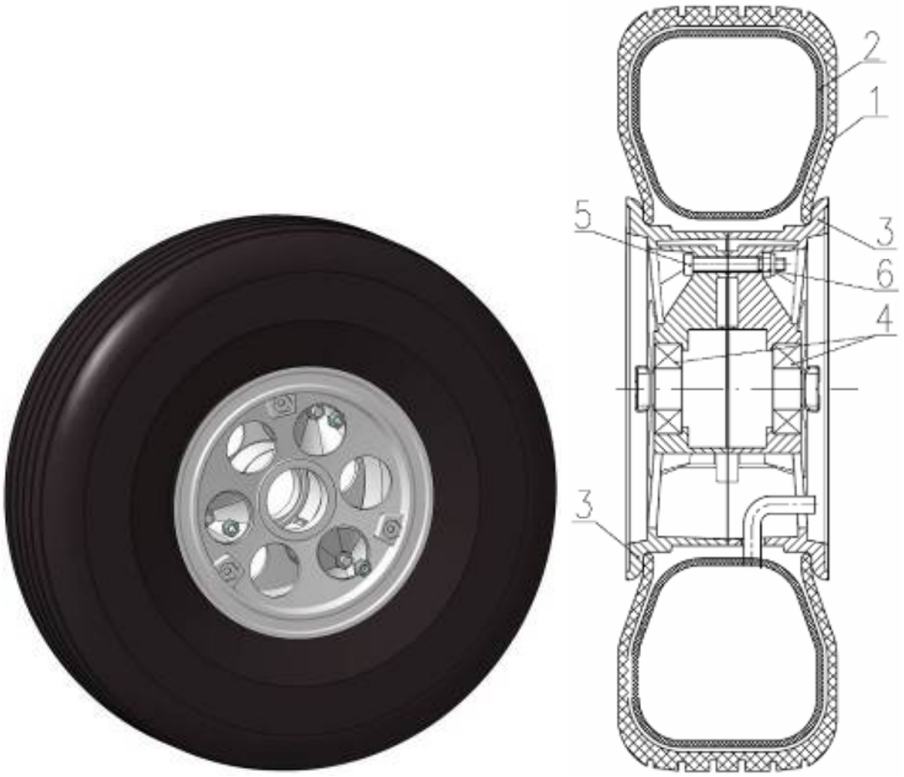


Fig. 32-20-6

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-20-6	1	Tire		7207W
	2	Tube		7207H
	3	Wheel Rim		Left and right, part of set C9997204B
	4	Roller Bearing		part of set C9997204B
	5	Bolt	100lb-in 11Nm	part of set C9997204B
	6	Lock Nut		part of set C9997204B

32-20.3.4.1 Type of Maintenance

Line

32-20.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-20.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Tire and Tube Inspection and Replacement (Fig. 32-20-6)

Step	*Action*	*Reference*
1	Uninstall nose wheel	32-20.3.3
2	Unscrew and remove three bolts item 5.	
3	Remove nuts item 6	
4	Disconnect wheel rims item 3	
5	Remove tire and tube items 1, 2	
6	Inspect Tire and Tube. When necessary replace.	
7	Assemble main wheel in reversed direction order	
8	Install nose wheel	32-20.3.3

32-20.3.5 *Nose Strut Disassembly*

32-20.3.5.1 Type of Maintenance

Line

32-20.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

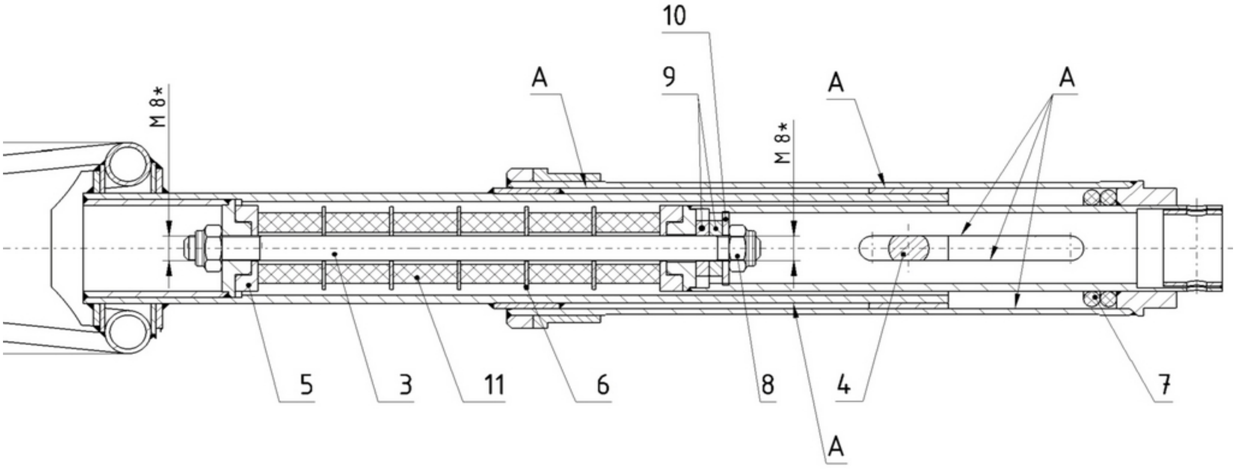
32-20.3.5.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Strut Disassembling (Fig. 32-20-7)

Step	*Action*	*Reference*
1	Uninstall nose gear	32-20.3.1
2	Uninstall Fairing	32-20.3.2
3	Uninstall nose wheel	32-20.3.3
4	Take out pin item 4	
5	Unscrew upper self-locking nut M12 item 8	
6	Disassemble strut	
7	Inspect dampers item 11. When necessary replace.	
8	Inspect O-rings items 7. When necessary replace.	
9	Inspect supports and washers items 5, 6. When necessary replace.	



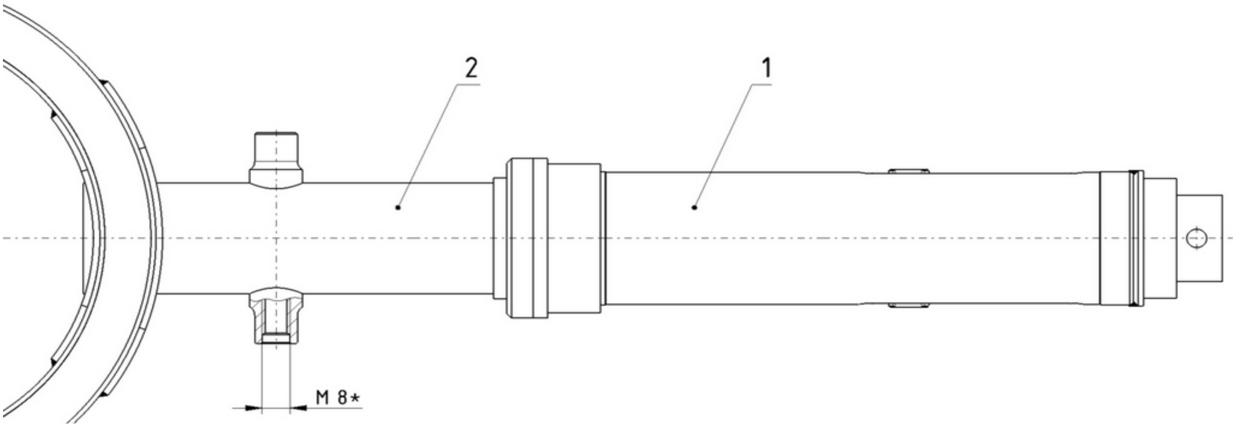


Fig. 32-20-7

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
32-20-7	1	Cylinder, Shock		KF32200110
	2	Fork, Nose Wheel		KF32200150
	3	Threaded Pin		KF32200141
	4	Pin		KF32200101
	5	Support		KF32200171
	6	Washer		KF32200176
	7	O-ring, round		C9997730F
	8	Self-locking nut M8	80 lb-in 9 Nm	C9996336
	9	O-ring, flat		C9997730P
	10	Washer		C9996567
	11	Polyurethane Damper Elements		C9999158Z

32-20.3.6 *Nose Gear Inspections*

32-20.3.6.1 Type of Maintenance

Line

32-20.3.6.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

32-20.3.6.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Visual Inspection

Step	*Action*	*Reference*
1	Inspect the strut and fork for damages, dents, cracks, paint detachment separation. Pay specific attention to the welding seam areas. Check for obvious damage to all visible parts each time the fairing is removed.	
2	Inspect the engine mounts for damage, dents, cracks (Fig. 1, item 3). Pay special attention to welding seam areas. Check all visible surfaces before each flight (inspect engine compartment visually each time the cowlings are removed).	
3	The firewall for damage, dents, cracks, delaminating. Pay special attention to the areas where the engine mount is attached to the firewall. Check all visible surfaces each time the cowlings are removed.	

C. Chock Absorbers Inspection

Step	*Action*	*Reference*
1	Turn the propeller and set it horizontally.	
2	Push down the propeller by both hands as much as possible.	
3	Release sharply. Make sure the plane returned to original position by the shock absorber.	
4	Repeat for 2-3 times.	
4	If operation is suspected wrong then remove and disassembly the strut for further inspection.	32-20.3.5

D. Fork Inspection

Step	*Action*	*Reference*
	Lift up the nose gear and turn the nose gear right by pedals and then release.	
	Turn it to the left and release.	
	Repeat 2-3 times to each side.	
	Inspect the fork for play, binding and unusual sounds while rotating.	
	If operation is suspected wrong than remove and disassembly the strut for further inspection	32-20.3.5

SECTION 32-40 –
BRAKES

32-40.1 General

This section provides description and information concerning maintenance of Brake System.

32-40.2 Description

The main wheels of the CTLS-LSA have hydraulic disc brakes. They are operated with the brake lever that is located in the throttle quadrant. Braking is only possible symmetric on both wheels. As the aircraft has a steerable nose wheel, this ensures easy handling.

The brake lines are reinforced with fiber cloth and connections are crimped tightly on to the lines, thus ensuring high line rigidity and stability at a low installed weight. This results in a very good brake efficiency.

The brakes can be locked in parking position by blocking the backflow line. The locking lever is in the middle console in the cockpit, directly behind the brake lever. It is possible to set the locking lever to the parking position, and then apply brake force to the brake lever. This makes one-hand operation of the parking brake easy.

The brake system schematically is presented in diagram.

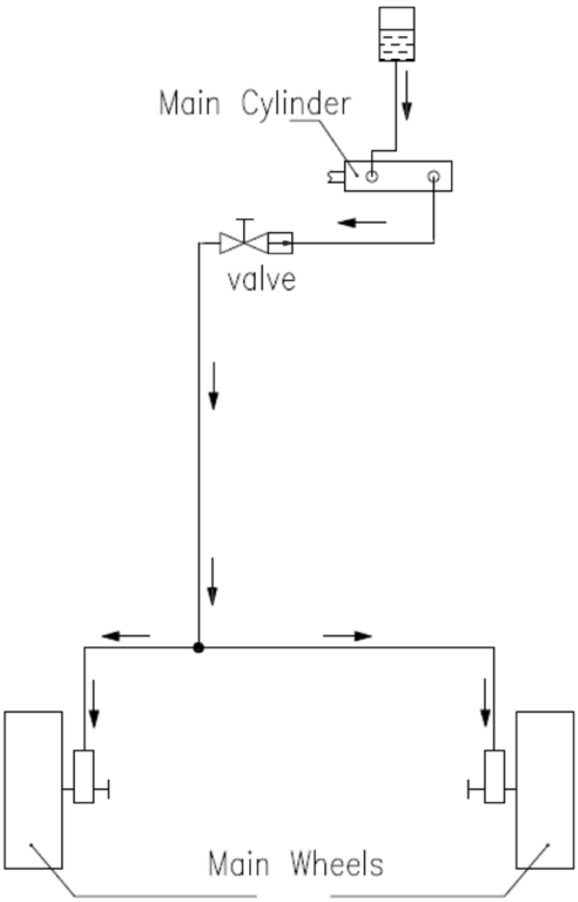


Fig. 32-40-1

Only reinforced brake lines with metal fittings are used in an aircraft.

The main cylinder is installed internally of the tunnel. The parking valve is done as combination of the valve and check valve. The PTFE tube connects main cylinder and header tank.

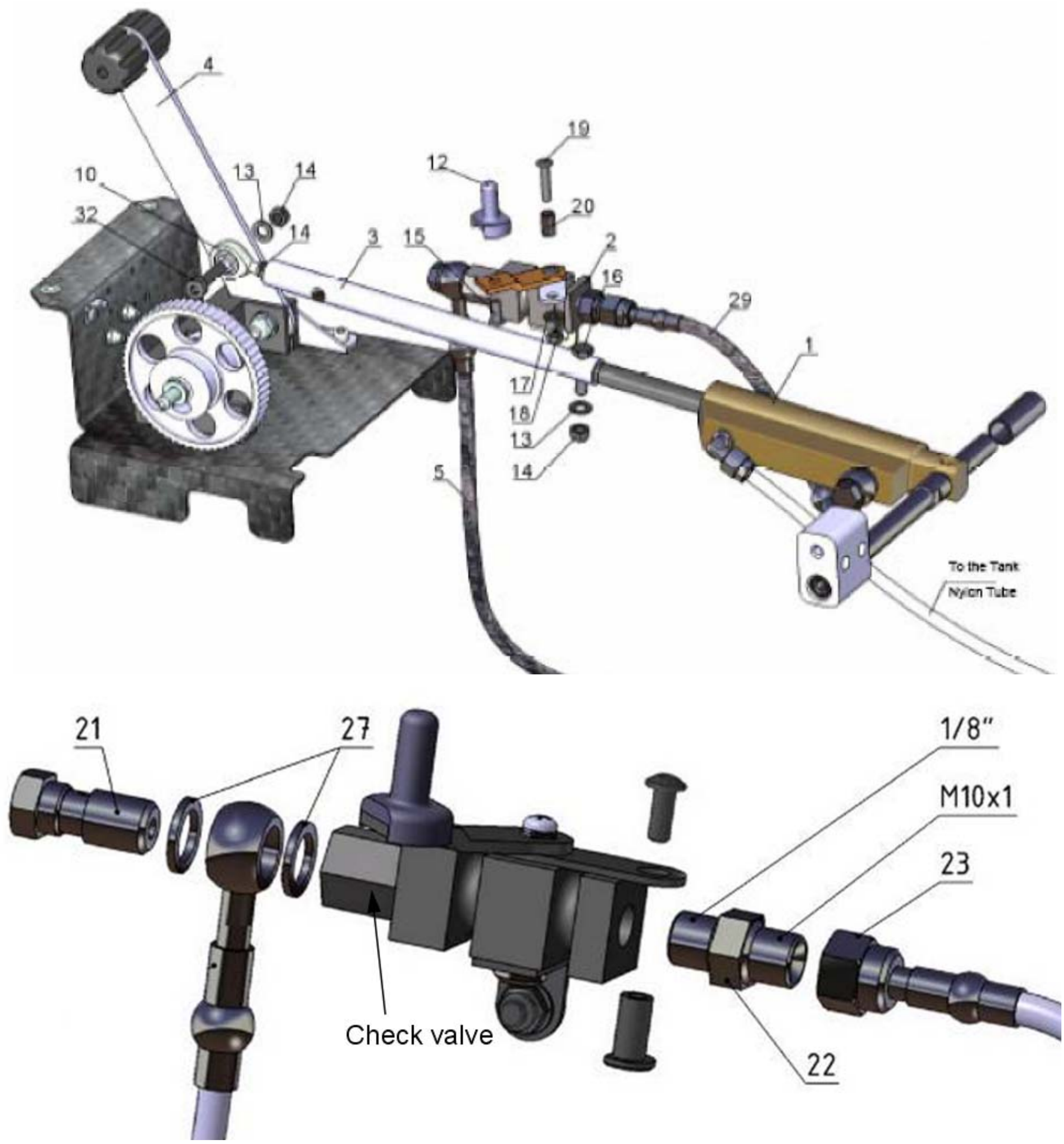


Fig. 32-40-2

The header tank is located in the luggage compartment and is attached to the main bulkhead.

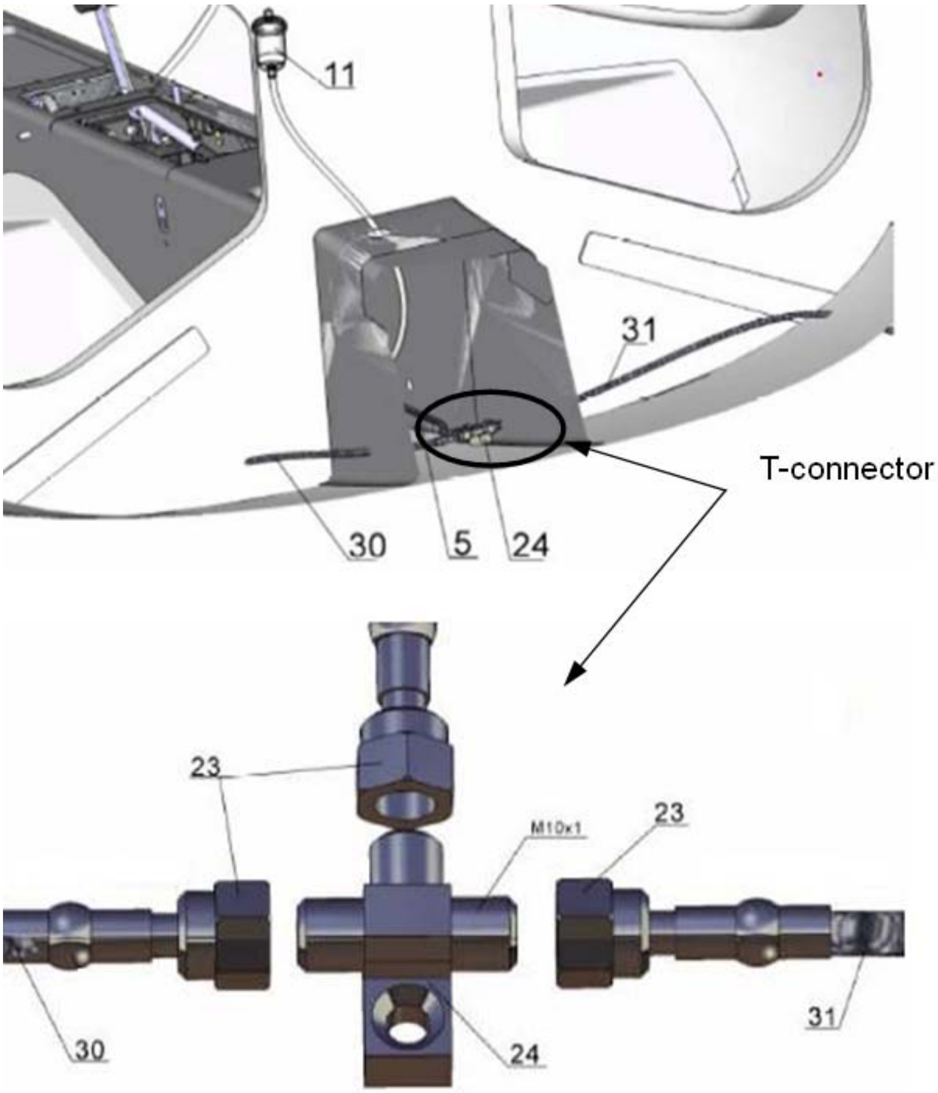


Fig. 32-40-3

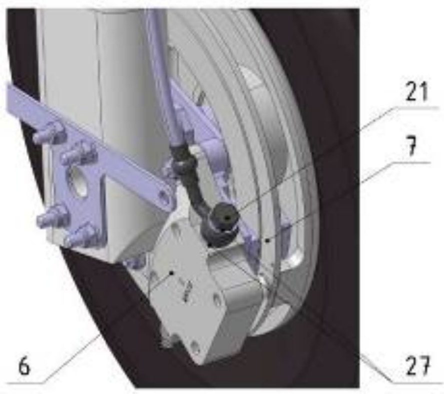


Fig. 32-40-4

The opening in tunnel is covered with composite hatch. The hatch is provided with slot for brake valve. The stickers on the hatch shows valve position.

Fig. 32-40-5

The brake line is connected to the main cylinder via metal fittings.

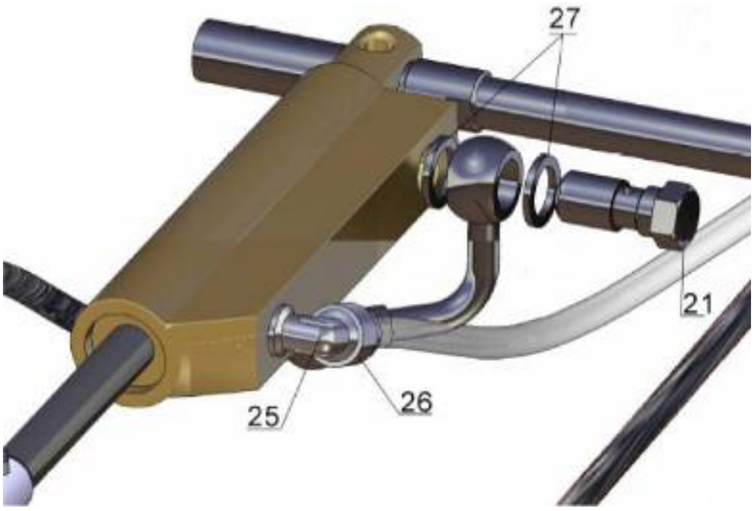


Fig. 32-40-6

For assembling use only new Washers item 27.

Items and tightening torque

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
	1	Main cylinder		C9997204F
	2	Brake Valve		C9997204G
	3	Brake rod		KF32400020
	4	Handle activation		KF32400011
	5	Brake line		part of set C9997209C
	6	Brake (caliper)		part of set C9997204B
	7	Brake disk		part of set C9997204B
	10	Rod end		C9997006C
	11	Fuel filter		C9997793
	12	Grip		KF32400016
	13	Washer 5.3		C9996503
	14	Nut M5	5.5 Nm	C9996333
	15	Bolt M4x10	3.5 Nm	C9996159
	16	Bolt M5x20		C9996283C
	17	Washer 4.3		C9996502
	18	Nut M4	3.5 Nm	C9996332
	19	Screw 0.25’’		part of set C9997204G
	20	Distance bushing		KF32400015
	21	Fitting 1/8”	15 Nm	part of set C9997209C
	22	Fitting M10x1-1/8’’	15 Nm	part of set C9997209C
	23	Nut M10x1	8 Nm	part of set C9997209C
	24	Fitting M10x1		part of set C9997209C
	25	L-adapter		C9997417E
	26	Nut M10x1	10 Nm	part of set C9997417E
	27	Washer		part of set C9997209C
	29	Brake hose		part of set C9997209C
	30	Brake hose		part of set C9997209C
	31	Brake hose		part of set C9997209C
	32	Bolt M5x20		C9996037

32-40.3 Maintenance Practices

32-40.3.1 *Brakes Inspection*

32-40.3.1.1 Type of Maintenance

Line

32-40.3.1.2 Minimum Level of Certification

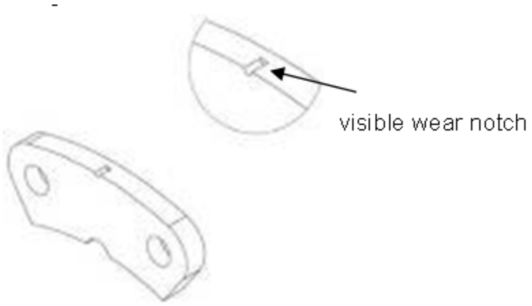
Pilot/Owner (P/O)

32-40.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Brakes Inspection

Step	***Action***	***Reference***
1	Clean and check hydraulic cylinders, activation handle and connections for condition, braking fluid leaks, for cracks and corrosion, securing of components.	
2	Inspect brake fluid carrying hoses at the main landing gear for condition, leakage, securing of attachment, and evidence of attrition	
3	Inspect the protection of brake hoses in the places where they go through the fuselage skin.	
4	Check movement of the pistons and pressure plates.	
5	Inspect brake disks and linings for condition and wear.  The brake lining has a visible wear indicator. The lining should be replaced when the thickness of the remaining wear material reaches 2.54 mm and wear indicator erased.	
6	Inspect the level of fluid in the hydraulic system. Replenish if required.	
7	Inspect all hardware for signs of loss of torque.	
8	Inspect vent tube on top of the reservoir with filter for blockage.	

C. Replacement of Brake Pads and Brake Disks

Step	***Action***	***Reference***
1	Follow requirement and recommendation of Technical Service Guide MATCO mfg	

CHAPTER 33 –
LIGHTS

Contents

33-00.1 General

This chapter provides description and information concerning maintenance of lights.

SECTION 33-40 –
EXTERIOR LIGHTS

33-40.1 General

This section provides description and information concerning maintenance of exterior lights.

33-40.2 Exterior Lights Thiesen

33-40.2.1. Description

Fig. 33-40-1 shows location of the exterior lights.

Fig. 33-40-1

Pos.	Description
1	Left Position Light
2	Right Position Light
3	Rear Position Light
4	Anti Collision Light

The position lights system consists of the three components:

- Position Light Left (red), Fig. 33-40-2;
- Position Light Right (green), Fig. 33-40-2;
- Rear Position Light (white), Fig. 33-40-3;
- Anti Collision Light Fig. 33-40-4;

The Left and Right position lights are installed to the flat surface at the wingtip of the aircraft.

The separate Thiesen rear position white light is installed to the end of the underfin, below and behind the aircraft tail (Fig. 33-40-3).

Fig. 33-40-2

Fig. 33-40-3

Fig. 33-40-4

33-40.2.2 Maintenance Practices

33-40.2.2.1 *Wing Tip Position Lights Uninstalling and Installing*

33-40.2.2.1.1 Type of Maintenance

Line

33-40.2.2.1.2 Minimum Level of Certification

Pilot/Owner

33-40.2.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Left and Right Position Lights Uninstalling

Step	*Action*	*Reference*
1	Using hex-head screwdriver 3mm unscrew bolt item 3 that hold the position light (Fig. 33-40-5).	
2	Disconnect socket item 1 and plug item 2 (Fig. 33-40-6).	

C. Left and Right Position Lights Installing

Step	*Action*	*Reference*
1	Connect socket item 1 and plug item 2 as shown on Fig. 33-40-6.	
2	Put the silicone on the contact surface of the position light with the winglet as shown on Fig. 33-40-7.	
3	Put the Bonding liquid middle strength on the bolt thread item 3 as shown on Fig. 33-40-7.	
4	Install position light in correct position. Using hex-head screwdriver 3mm screw bolt item 3 that hold the position light (Fig. 33-40-5).	
5	Clean the surface around the position light after installation.	

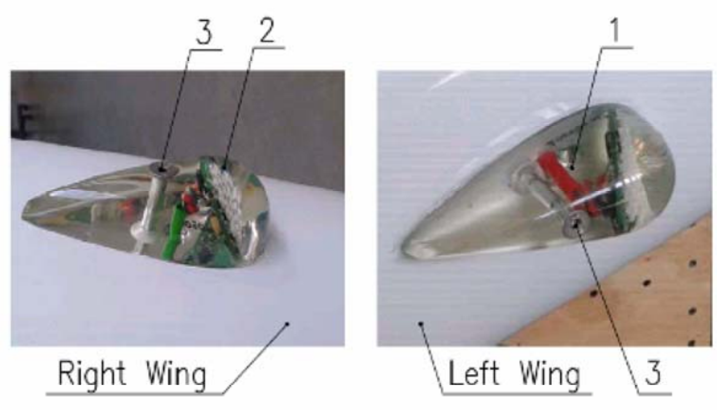


Fig. 33-40-5

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-5	1	Bolt DIN 7991 M5x40 A2 /70		C9996210
	2	Positions Lamp Green		part of set C9997159M
	3	Positions Lamp Red		part of set C9997159M

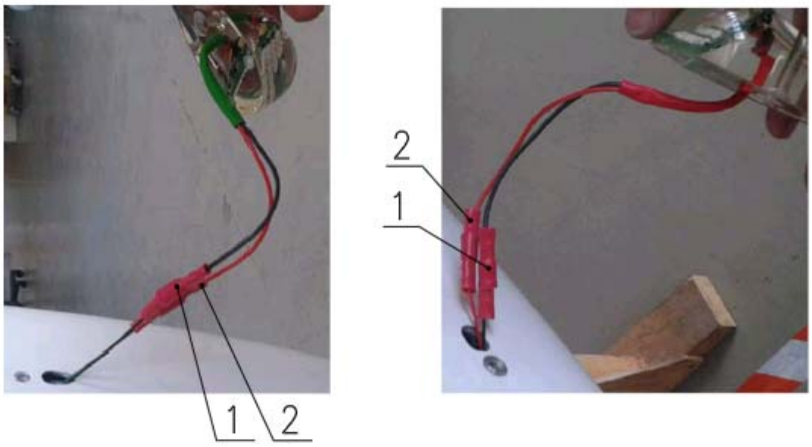


Fig. 33-40-6

Fig.	Item	Part Name	Torque	Reference
33-40-6	1	Socket ball isol. red 4mm 0.25-1sqmm		C9997134
	2	Plug ball isol. red 4mm 0.25-1sqmm		C9997131

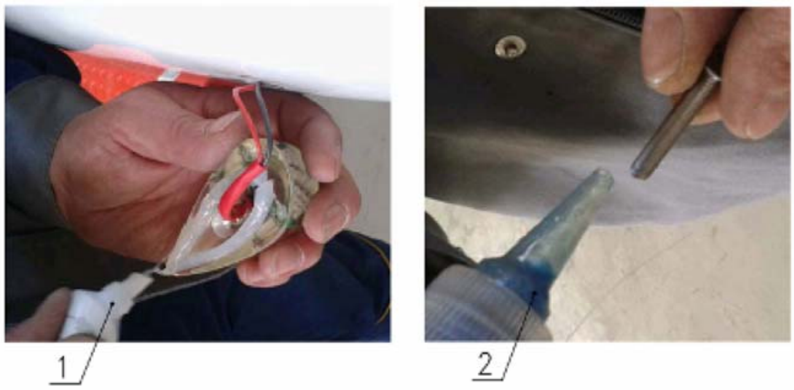


Fig. 33-40-7

33-40.2.2.2 *Rear Position Lights Uninstalling and Installing*

33-40.2.2.2.1 Type of Maintenance
Line

33-40.2.2.2.2 Minimum Level of Certification
Pilot/Owner

33-40.2.2.2.3 Procedure
A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Rear Position Light Uninstalling

Step	*Action*	*Reference*
1	Using hex-head screwdriver 3mm unscrew bolts item 2 that hold the rear position light (Fig. 33-40-8).	
2	Disconnect socket item 1 and plug item 2 (Fig. 33-40-9).	

C. Rear Position Light Installing

Step	*Action*	*Reference*
1	Connect socket item 1 and plug item 2 as shown on Fig. 33-40-9.	
2	Put the silicone on the contact surface of the position light with the underfin as shown on Fig. 33-40-10.	
3	Put the Bonding liquid middle strength on the bolts thread item 2	
4	Install position light in correct position. Using hex-head screwdriver 3mm screw bolts item 2 that hold the position light (Fig. 33-40-8).	
5	Clean the surface around the position light after installation.	

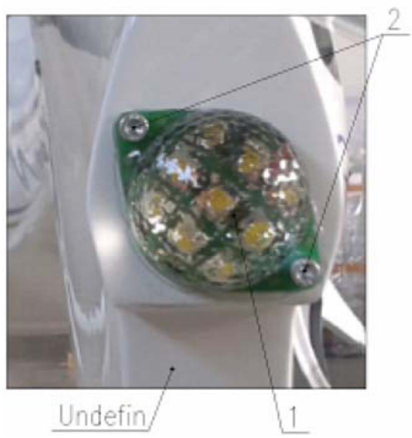


Fig. 33-40-8

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-8	1	Tail Light		C9997159K
	2	Bolt DIN 912 M4x20-8.8		C9996026

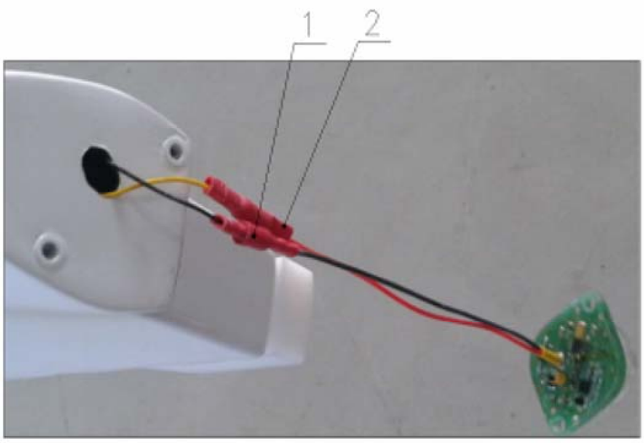


Fig. 33-40-9

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-9	1	Socket ball isol. red 4mm 0.25-1sqmm		C9997134
	2	Plug ball isol. red 4mm 0.25-1sqmm		C9997131

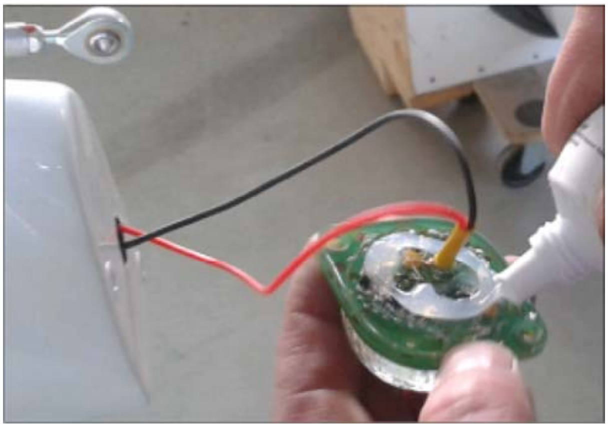


Fig. 33-40-10

33-40.2.2.3 *Anti Collision Light Uninstalling and Installing*

33-40.2.2.3.1 Type of Maintenance

Line

33-40.2.2.3.2 Minimum Level of Certification

Pilot/Owner

33-40.2.2.3.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Anti Collision Light Uninstalling

Step	*Action*	*Reference*
1	Using hex-head screwdriver 3mm unscrew bolts item 2 that hold the anti collision light (Fig. 33-40-11).	
2	Disconnect socket item 1 and plug item 2 (Fig. 33-40-12).	

C. Anti Collision Light Installing

Step	*Action*	*Reference*
1	Connect socket item 1 and plug item 2 as shown on Fig. 33-40-12.	
2	Put the silicone on the contact surface of the anti collision light with the rudder as shown on Fig. 33-40-13.	
3	Put the Bonding liquid middle strength on the bolts thread item 2	
4	Install anti collision light in correct position. Using hex-head screwdriver 3mm screw bolts item 2 that hold the position light (Fig. 33-40-11).	
5	Clean the surface around the position light after installation.	

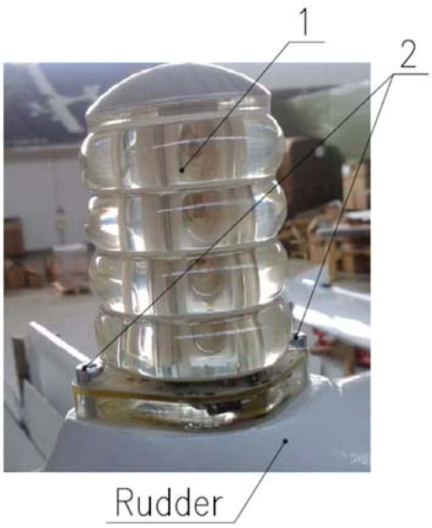


Fig. 33-40-11

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-11	1	ACL-3		C9997159H
	2	Bolt DIN 912 M4x20-8.8		C9996026

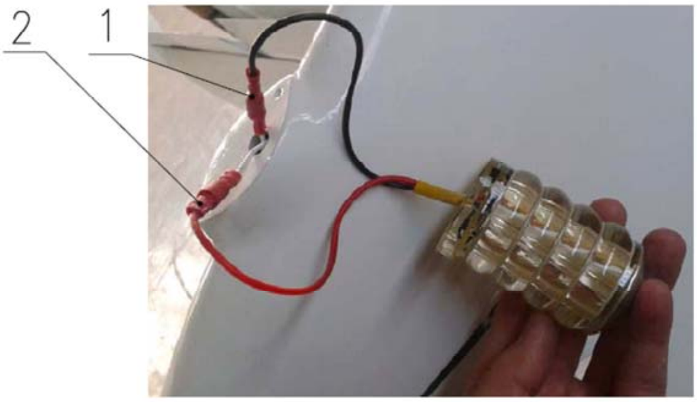


Fig. 33-40-12

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-12	1	Socket ball isol. red 4mm 0.25-1sqmm		C9997134
	2	Plug ball isol. red 4mm 0.25-1sqmm		C9997131

Fig. 33-40-13

33-40.2.2.4 *Position Lights and Anti Collision Light Inspection*

33-40.2.2.4.1 Type of Maintenance

Line

33-40.2.2.4.2 Minimum Level of Certification

Pilot/Owner

33-40.2.2.4.3 Procedure

Visual checking of operating. If any of the LEDs is not operating properly, or does not operate replace it in accordance with procedure described above.

33-40.3 Exterior Lights Whelen (newer models)

33-40.3.1 Description

Fig. 33-40-1 shows location of the exterior lights.

Fig. 33-40-14

Pos.	*Description*
1	Left Position Light
2	Right Position Light

The position lights system consists of the two components:

- Position Light Left, Fig. 33-40-14;
- Position Light Right, Fig. 33-40-14;

The Left and Right position lights are installed to the flat surface at the wingtip of the aircraft, Fig. 33-40-15.

Fig. 33-40-15

33-40.3.2 Maintenance Practices

33-40.3.2.1 *Wing Tip Position Lights Uninstalling and Installing*

33-40.3.2.1.1 Type of Maintenance

Line

33-40.3.2.1.2 Minimum Level of Certification

Pilot/Owner

33-40.3.2.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Left and Right Position Lights Uninstalling and Installing

Step	*Action*	*Reference*
1	Unscrew Screw (2 pcs.) item 6 (Fig. 33-40-16).	
2	Remove Retainer item 5 (Fig. 33-40-16).	
3	Remove Lens item 7 (Fig. 33-40-16).	
4	Unscrew Screw (3 pcs.) item 4 (Fig. 33-40-16).	
5	Remove Assembly LED Light item 2, 3, (Fig. 33-40-16).	
6	Unscrew Screw (3 pcs.) item 8 (Fig. 33-40-16).	
7	Remove Base plate item 1 (Fig. 33-40-16).	
8	Disconnect socket item 1 and plug item 2 (Fig. 33-40-17).	
9	Installation is done in a reverse order.	

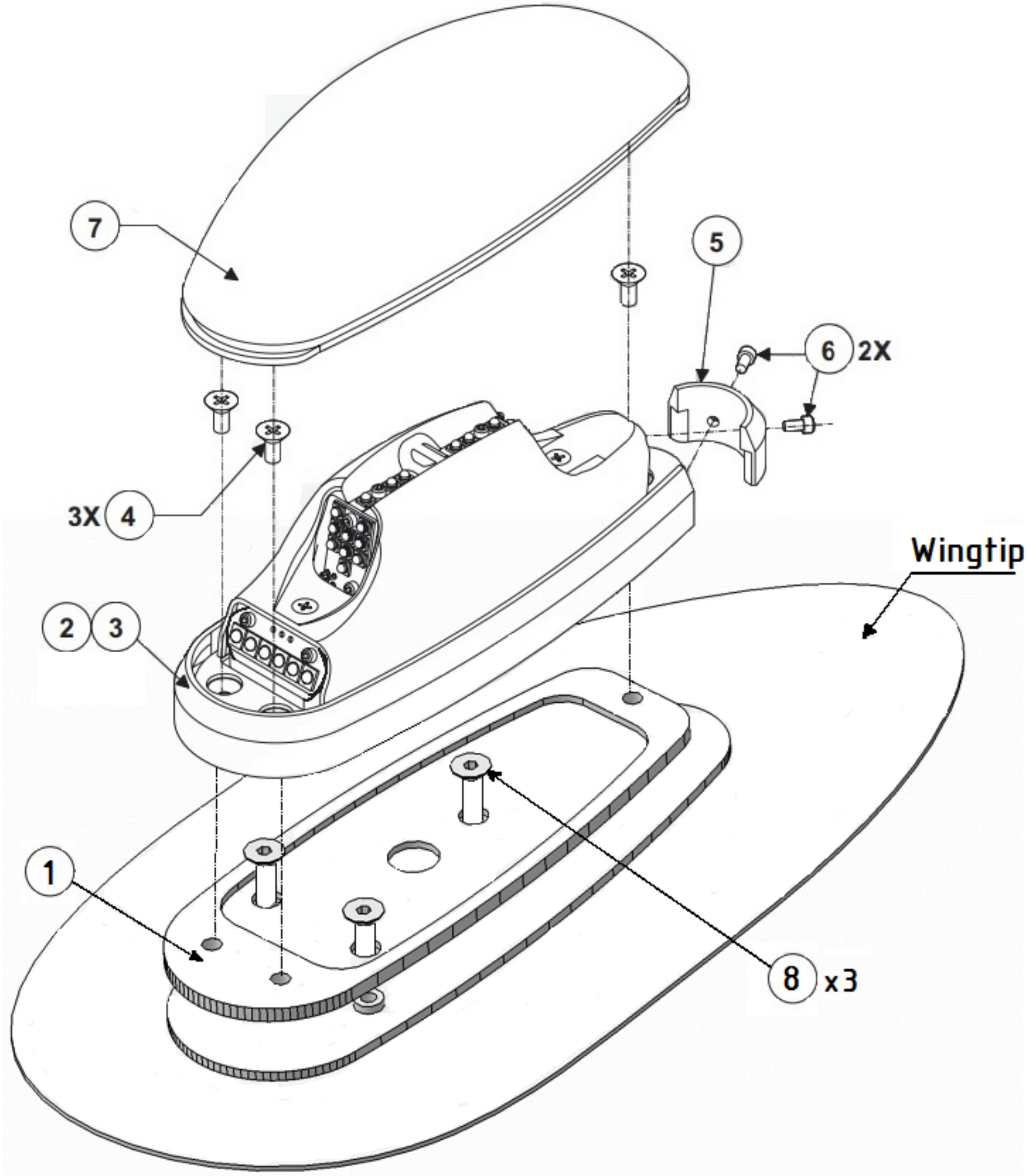


Fig. 33-40-16

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
33-40-16	1	Base plate		part of set 7159Y
	2	Assembly, 12V LED Wingtip Light Green 71733		part of set 7159Y
	3	Assembly, 12V LED Wingtip Light Red 71733		part of set 7159Y
	4	Screw, 4-40 x 5/16 P100FH MS24693-C3		part of set 7159Y
	5	Retainer, Lens Model 71733		part of set 7159Y
	6	Screw, 2-56 X 3/16 SCKT HD HEX W/NYLOK		part of set 7159Y
	7	Lens, Clear Model 71733 Hard Coat		part of set 7159Y
	8	Bolt DIN 7991 M4x16-10.9		C9996204

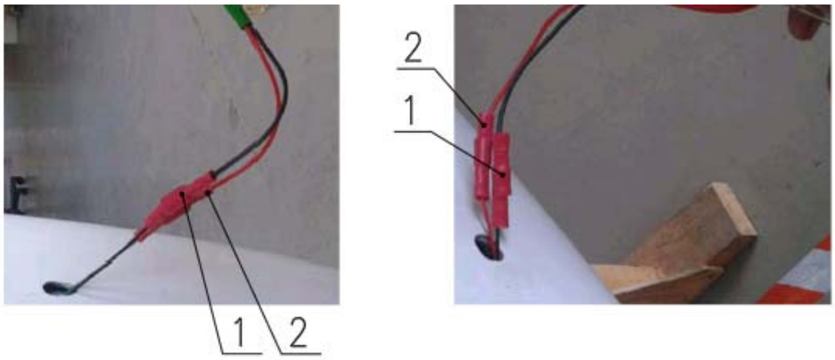


Fig. 33-40-17

33-40.3.2.2 *Position Lights and Anti Collision Light Inspection*

33-40.3.2.2.1 Type of Maintenance

Line

33-40.3.2.2.2 Minimum Level of Certification

Pilot/Owner

33-40.3.2.2.3 Procedure

Visual checking of operating. If any of the LEDs is not operating properly, or does not operate replace it in accordance with procedure described above.

CHAPTER 34 –
AVIONIC

Contents

34-00.1 General

This chapter provides description of the avionic.

34-00.2 Description

The CTLS-LSA is standard equipped with a Garmin SL40 radio, with a Garmin GTX330 Mode S transponder with ACK A-30 altitude encoder. Further equipment may be installed for navigation or comfort acc. to the equipment list. Operation of these units is described in the relevant component manuals. Please refer to Garmin and ACK Technologies for updates and information about continued operational safety.

The aircraft installation provides two sets of connectors for headsets, located on the hat rack of the main bulkhead, behind the seats, in the middle of the fuselage. The connectors on the left side are intended for the pilot headset. The connectors on the right side are intended for the copilot headset.

There is one set of backup headset connectors installed to the lower instrument panel. The backup connectors can be used in case of a total intercom failure. They are directly connected to the radio and allow safe transmission in this case. The connectors can also be used in diagnostics, when a problem with the intercom is suspected.

Each control stick is equipped with a push-to-talk button (PTT). The PTT buttons are wired to recognize if the pilot or copilot intends to transmit, and opens the respective microphone.

34-00.3 Maintenance Practices

34-00.3.1 *Avionic Units Uninstalling and Installing*

34-00.3.1.1 Type of Maintenance

Line

34-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

34-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Radio Garmin SL40/Transponder GTX330 Uninstalling and Installing

Step	***Action***	***Reference***
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section	31.3.1.3
2	To remove Garmin SL 40/GTX330 from the rack, use the 3/32" hex tool, insert it to the hole as shown on Fig. 34-00-1 and on Fig. 34-00-2 and turn the tool counterclockwise. The unit will be pushed out of the frame by the cam lock assembly. No special extraction tools are required.	
3	Using hex-head screwdriver 3mm unscrew 4 bolts that hold the upper middle panel.	31.3.1.3
4	Installation in reverse order.	

Fig. 34-00-1

Fig. 34-00-2

C. GPS Garmin AERA 500 Uninstalling and Installing

Step	*Action*	*Reference*
1	Using hex-head screwdriver 3mm unscrew 4 bolts that hold the upper middle panel.	31.3.1.3
2	To remove the Garmin AERA 500 from the AirGizmos panel dock push upward fixing clamp and pull out the unit (see Fig. 34-00-3). Disconnect Power-Data cable and GPS antenna from Garmin AERA 500 (see Fig. 34-00-4). No special extraction tools are required.	
3	Installation in reverse order.	

Fig. 34-00-3

Fig. 34-00-4

D. GPS Garmin GPSMAP695 Uninstalling and Installing

Step	*Action*	*Reference*
1	Switch off power: turn off all instruments; pull out master breakers (BAT and GEN) on the panel lower section.	31.3.1.3
2	To remove the Garmin GPSMAP 695 from the AirGizmos panel dock roll latch to the down position (see Fig. 34-00-5), rock the top of the GPS from AirGizmos dock and remove the unit (see Fig. 34-00-5). Disconnect external GPS antenna, Power/Data and Audio cables (see Fig. 34-00-6). No special extraction tools are required.	
3	Using hex-head screwdriver 3mm unscrew 4 bolts that hold the upper middle panel.	31.3.1.3
4	Installation in reverse order.	

Fig. 34-00-5

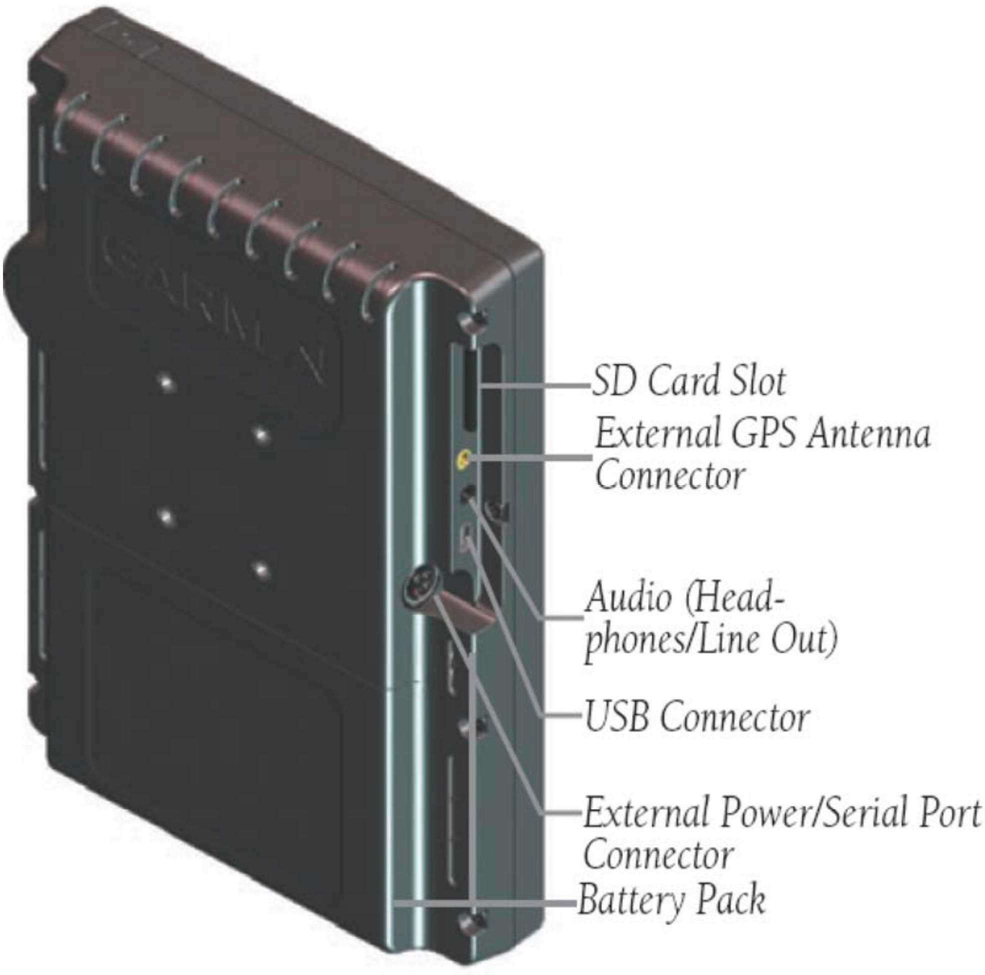


Fig. 34-00-6

E. Dynon Flight Deck LRU Uninstalling and Installing

Step	Action	Reference
1	Follow instructions provided by Dynon.	Relevant Dynon manuals

34-00.3.2 *Avionic Units Inspection*

34-00.3.2.1 Type of Maintenance

Line

34-00.3.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

34-00.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Component Inspection

Step	Action	Reference
1	**Radio Garmin SL40.** The SL40 display lens is coated with a special anti-reflective coating which is very sensitive to skin oils, waxes, and abrasive cleaners. It is very important to clean the lens using an eyeglass cleaner that is specified as safe for anti-reflective coatings (one suitable product is Wal-Mart Lens Cleaner) and a clean, lint-free cloth.	
1	**Transponder Garmin GTX330 mode S.** Other than for regulatory periodic functional checks, maintenance of the GTX 330 is "on condition" only. Refer to the GTX 330 Maintenance Manual. Periodic maintenance of the GTX 330 is not required.	
1	**ACK A-30 altitude encoder.** The model A-30 Altitude Encoder requires no periodical maintenance. Maintenance should be performed on condition.	
1	**GPS Garmin AERA 500.** The AERA 500 does not require periodical maintenance other than cleaning. Clean the outer casing (not the touch screen) using a cloth dampened with a mild detergent solution, and then wipe dry. Avoid chemical or abrasive cleaners and solvents that can damage plastic components. Clean the touch screen with a soft, clean, lint-free cloth. Use water, isopropyl alcohol, or eyeglass cleaner, if needed. Apply the liquid to the cloth, and then gently wipe the touch screen.	
1	**GPS Garmin GPSMAP 695.** The GPSMAP 695 does not require periodical maintenance other than cleaning. The display uses a lens coated with a special anti-reflective coating that is very sensitive to skin oils, waxes, and abrasive cleaners. Cleaners containing ammonia will harm the anti-reflective coating. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.	
1	**Dynon Integrated Glass Cockpit LRU.** The Dynon Screens do not require periodical maintenance other than cleaning. The related LRU components do not require periodical maintenance. In case of malfunction, follow instructions provided by the relevant Dynon manuals.	

SECTION 34-20 –
PITOT/STATIC SYSTEM

34-20.1 General

This section provides description and information concerning maintenance of Pitot/Static system.

34-20.2 Description

The airplane may be configured in different ways:

1. Analog instrumentation

In this case air data is provided to analog instruments (Fig. 34-20-2):

- Airspeed indicator (ASI);
- Vertical speed indicator (VSI);
- Altimeter (ATI);
- Altitude encoder (provide altitude data to transponder Garmin GTX330/328/327).

2. Integrated flight deck instrumentation:

Air data is provided to the air data sensors of the flight deck units. In case of D100 suite inside the console, equivalent to the analog instrument installation (Fig.34-20-3). In case of D1000 SkyView suite to the sensor units installed to the wing. Supported are:

- Airspeed indicator (ASI);
- Vertical speed indicator (VSI);
- Altimeter (ATI);
- Angle of Attack (AOA).
- Altitude encoder (provide altitude data to transponder Garmin GTX330/328/327).

3. Single or dual pitot tubes

In case of a redundant flight deck installation, the aircraft is equipped with two pitot probes, each one feeding an independent portion of the instruments.

A. Old Static Port Installation

The aircraft is equipped with a single static system and a single Pitot system.

The Pitot system is fed by a Pitot tube installed to the right wing leading edge. The Pitot tube provides two total pressure signals. The main pressure is derived from the tip of the probe. The second pressure is derived from an angled surface pointing forward / downward at the probe tip. This second pressure is used to provide signals for an Angle of Attack indication with stall warning.

Pressure lines connect the Pitot tube with a water trap installed inside the right wing, behind the main spar at the span wise Pitot tube position. The water trap is composed of a filter with paper membrane at the lowest point where incoming humidity is trapped and evaporated again from the filter surface, and a bypass line that allows pressure to be transmitted without water influence.

Pressure lines connect the water trap to a pass-through in the rear root rib. The line is connected with the fuselage installed line by a plastic fitting.

Inside the fuselage the line is routed forward along the root rib and down the right “A” pillar into the instrument console. Inside the instrument console the line is split using T connectors, as necessary per installed equipment.

Location of pressure lines is described on Fig. 34-20-1.

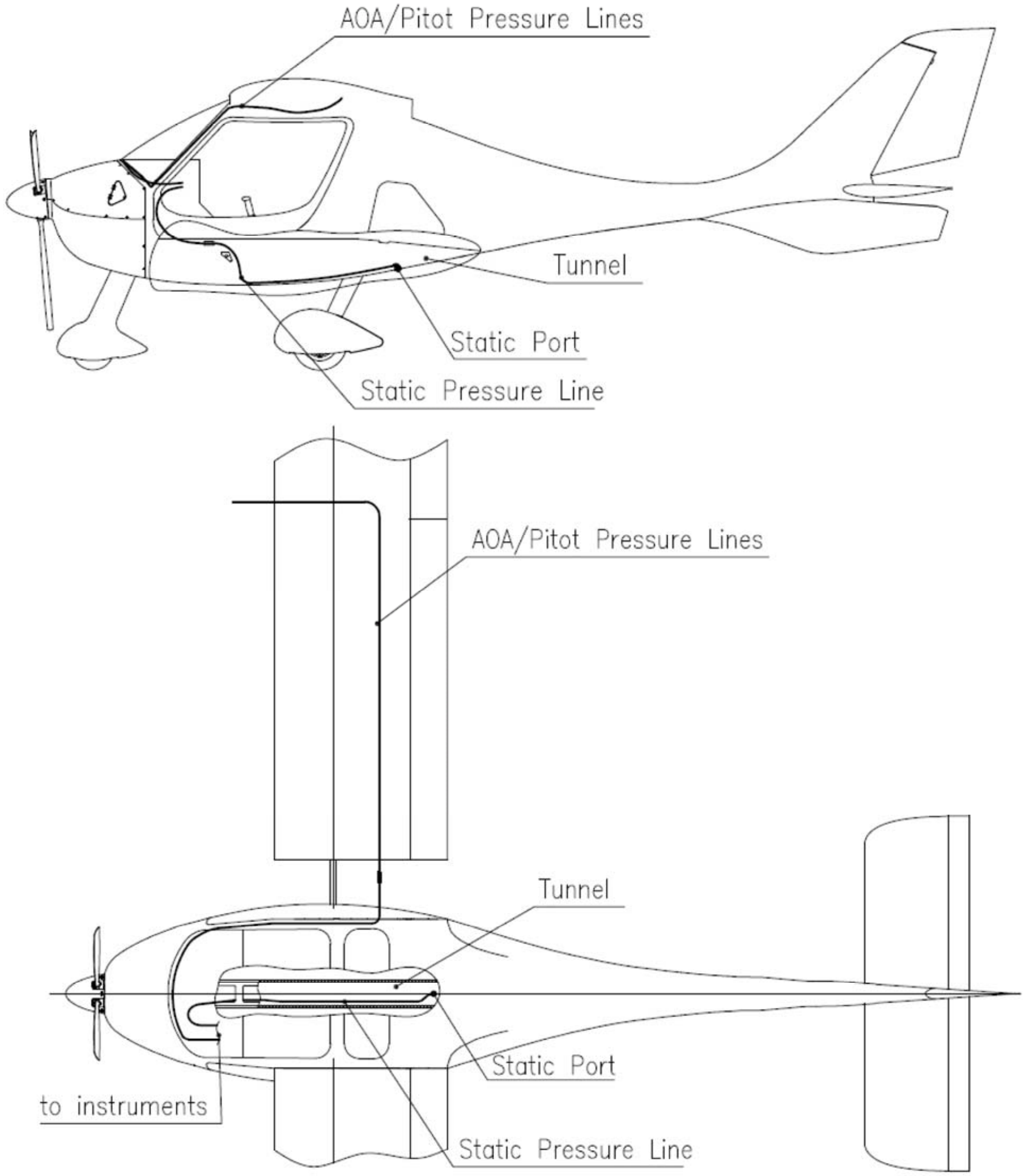


Fig. 34-20-1

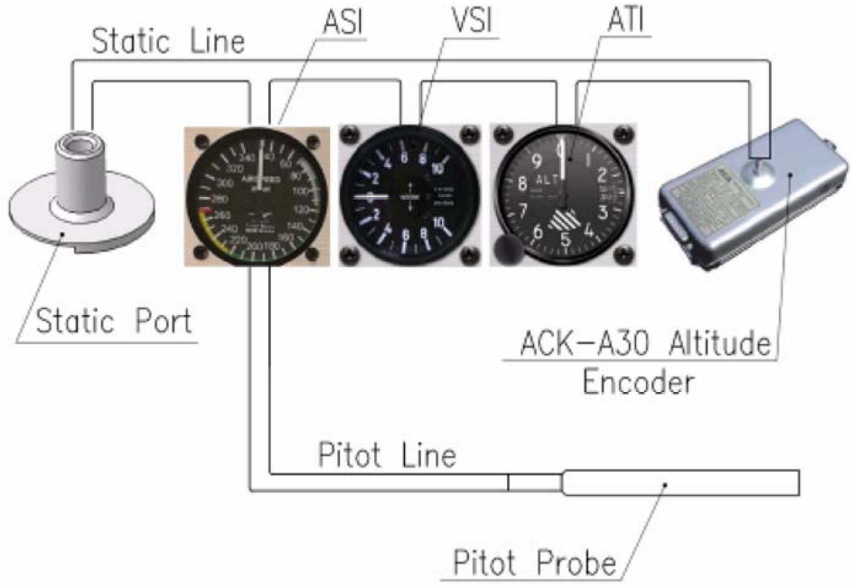


Fig. 34-20-2

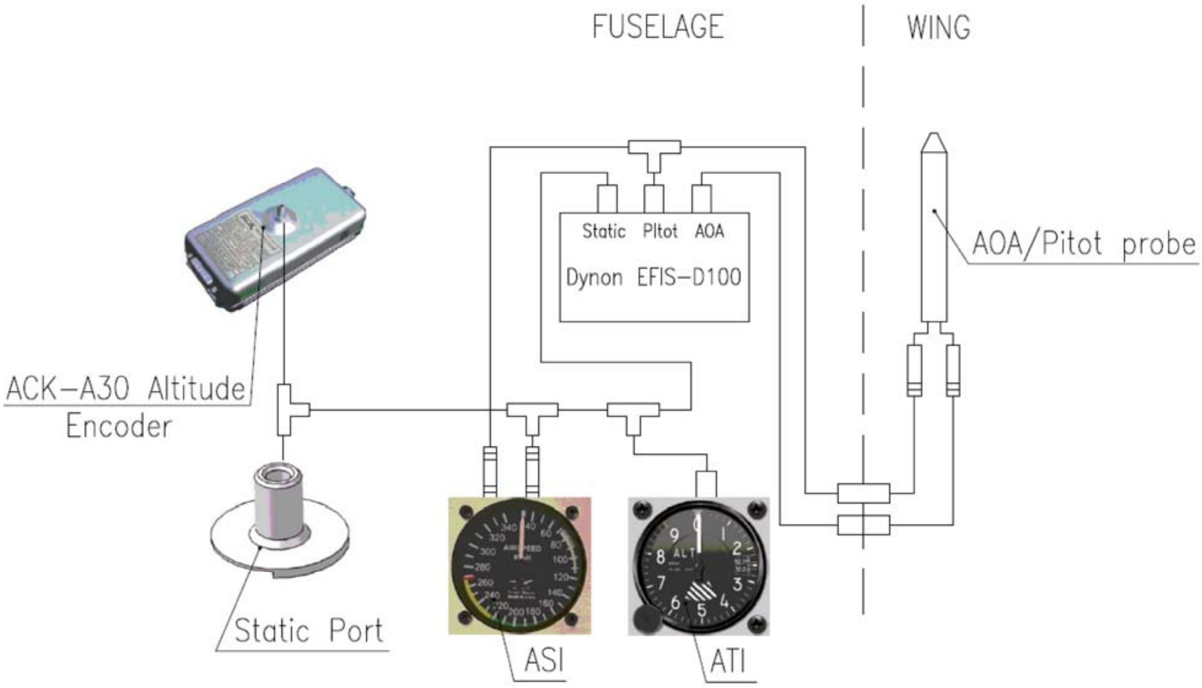


Fig. 34-20-3

B. New Static Port Installation

In the newer installation, the static port on the fuselage belly is removed. Static pressure is provided from a ring of static bores on the pitot probe, installed to the wing. Lines routing is identical to the routing of total pressure, in parallel and just to the relevant ports. In case of dual pitot tubes, the aircraft is equipped with dual static ports in this case. Maintenance instructions valid for the fuselage mounted port do not apply in this case. Maintenance instructions valid for the total pressure ports apply in analogy to the new static port and lining.

31-20.3 Maintenance Practices

34-20.3.1 *Pitot/Static Ports Uninstalling and Installing*

34-20.3.1.1 Type of Maintenance

Line

34-20.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

34-20.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Pitot tube Uninstalling

Step	*Action*	*Reference*
1	Take the Pitot tube out of the wing, Pitot tube is removed by hand pressure ahead from the wing leading edge as shown Fig. 34-20-4.	
2	Disconnect Pitot/AOA pressure lines as shown Fig. 34-20-4.	

B. Static port Uninstalling

Step	*Action*	*Reference*
1	Disconnect Static pressure line by unscrewing captive nut M12 item 6 as shown Fig. 34-20-5.	
2	If needed demount parts as shown Fig. 34-20-5.	
3	For mounting item 1 and 2 use Bonding liquid middle strength.	

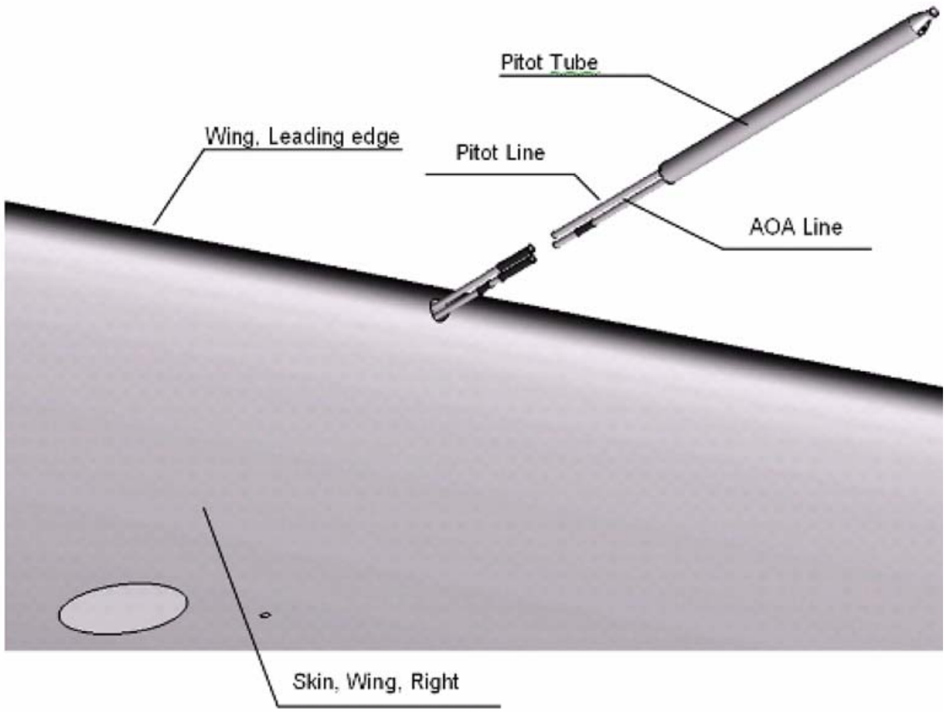


Fig. 34-20-4

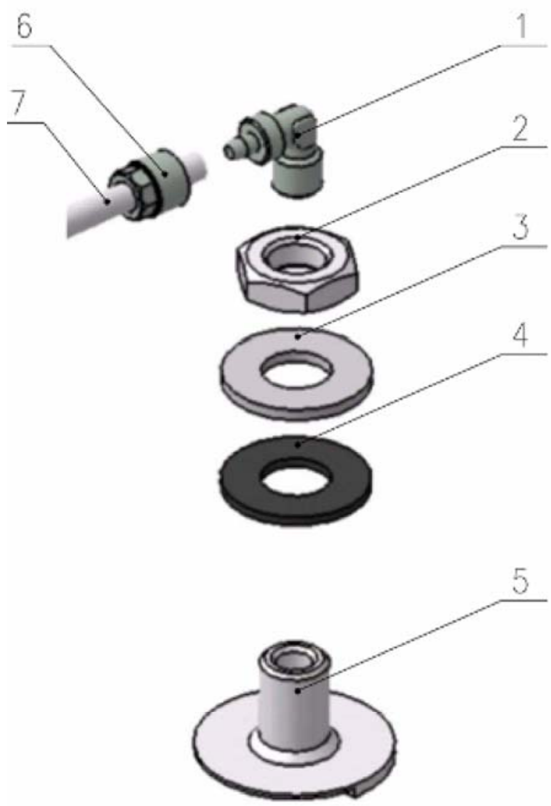


Fig. 34-20-5

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
34-20-5	1	L-adapter, conic A-Wek-6/4-1/8-MSv		C9997417E
	2	Nut		KF31200102
	3	Washer		KF31200103
	4	Sealing washer		KF31200104
	5	Flange (Static port)		KF31200101
	6	Captive nut M12		part of set C9997417E
	7	Static pressure line		

34-20.3.2 *Inspection of Pitot/Static System*

34-20.3.2.1 Type of Maintenance

Line

34-20.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

34-20.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Inspection of Pitot/Static System

Step	Action	Reference
1	Take the Pitot tube out of the wing, Pitot tube is removed by hand pressure ahead from the wing leading edge as shown Fig. 34-20-4. Clean it (remove insect, debris and so on) using a stick. Disconnect Pitot/AOA pressure lines	
2	Disconnect Static pressure line from Static Port by unscrewing captive nut M12 item 6 as shown Fig. 34-20-5	
3	Uninstall Panel Left Section.	31.4.1.3
4	Disconnect Pitot/Static pressure lines from instruments installed on Panel Left Section as shown Fig. 34-20-6	
5	Disconnect Static pressure line from ACK-A30 altitude encoder, installed inside the instrument console in the left side of the firewall.	
6	Attach a tag to each of the ends of tubes to show with instrument the ends are to be connected to. Carefully blow out the systems by compressed air with little pressure.	
7	Carefully blow out the systems by compressed air with little pressure.	
8	Connect Pitot/Static pressure lines to ACK-A30 altitude encoder, instruments, static port, Pitot tube as shown on Fig. 34-20-2, Fig. 34-20-4, Fig. 34-20-5 and Fig. 34-20-6.	

Fig. 34-20-6

CHAPTER 51 –
STANDARD PRACTICES AND STRUCTURES

Contents

51-00.1 General

This chapter provides description and information concerning maintenance of structures.

51-00.2 Description

The airframe is made of high-quality composite materials which permit production of an optimized and smooth shape with excellent aerodynamic characteristics at an efficient structural weight.

All outside surfaces are weather protected with high performance 2-component PUR paint, that is typically used by the car industry. Interior surfaces are protected with a high quality and robust 2-component interior paint system.

The airframe consists of three major components. These are the fuselage (including vertical tail and cowlings), the wings (two pieces, connected by two main bolts in the fuselage area) and the horizontal tail. Even if assembly and disassembly of the aircraft is not complex, this may be only be done by qualified personnel.

Due to the complex nature of composite materials and the necessary knowledge in the lay-up of a specific structure, repair work on the composite airframe may only be undertaken by a qualified facility. Should the aircraft structure be damaged, detailed information must be requested from the manufacturer.

SECTION 51-10 – INVESTIGATION

51-10.1 General

This section provides description of damages classes and types and presents an overview of applicable damage investigation techniques.

51-10.2 Damage Classes

There are following accepted classes of damage:

A. Damage Class 1

Major structural damage that requires the partial replacing of a structural component, or the damage to a large area, or to a highly stressed component are classified as the Class 1 damages. Such damages restrict or void an airworthiness.

B. Damage Class 2

Holes and cracks through both skins of a sandwich are the Class 2 damages. Overlap over the core damage shall be a circle with diameter of 75 mm (3 inches).

C. Damage Class 3

Small holes or cracks in the outer skin without internal damage to the filler material or to the inner skin are considered as the Class 3 damages.

D. Damage Class 4

Minor scratches or abrasions without the skin cracking or punctures are the Class 4 damages.

51-10.3 Types of Damage

There are following main types of damage:

A. Disbonding

Disbonding is the damage of a bond between 2 components, for instance between a composite component and a metal component.

B. Delamination

Delamination is the damage of the bond between the layers of glass or carbon fabric in a component.

C. Cracks

There are also two types of cracks: micro cracks in the surface of the resin, and major cracks with broken fibers. Major cracks do not occur with normal flight loads or normal landing loads. The major cracks shall be repaired.

51-10.4 Inspection Techniques

There are following applicable inspection techniques:

A. Visual Inspection

This method may be used to detect damage to composites of any type. Examine visually the inside of a component with a bright light. Glass fiber fabric must be green or brown. Carbon fabric must be black or brown. White areas may be the signs of a damage. Pay close attention to the areas where components bond to the glass fabric.

Inspect carefully the outer surface of a component. Cracks or bubbles in the paint means that the composite may be damaged. Refer to 51-10.5.

Inspect for dents. Look especially in areas where stones can hit the airplane below the fuselage and the wings and in the areas of the walkways.

B. Light Test

Use the light test to find delaminations on components which do not have rigid foam inside.

■ **Caution:** Do not overheat the composite to prevent its damaging.

Point a very bright light at the surface and look at the other side of the surface. Thus you can see the damage as the dark area.

● **Note:** You can use the light test for thick glass fiber but it is difficult to use for carbon fiber.

C. Coin Tap Test

Use the coin tap test to find delamination and disbonding. Tap a coin on the laminate surface in the test area. The sound of the coin tapping on the surface of the laminate changes when the coin is moving over the damaged area.

Inspect carefully the area around the damage for secondary damage, which can remain undetected.

51-10.5 Further Inspection

Further inspection shall be carried out in case the paint damage is detected. Inspect the inside of a structure or a component. If necessary, remove panels or other components, or use remote viewing equipment.

Remove the paint coating in the area which is suspected to be damaged. Remove the paint coating carefully, you shall prevent damaging the fabric under the paint coating.

Inspect the surface carefully. If there are cracks in the composite you shall repair the structure.

If you did not detect cracks during the visual inspection, then do the following test. Push the middle of the tested area with your thumb. If you can feel the skin hitting the core of a sandwich (or other layer/component), then the skin is disbonded and you must repair the structure.

In some cases you shall cut inspection holes in the structure to perform the test correctly. In this case you shall contact Flight Design for specific instructions.

SECTION 51-20 –
REPAIR PROCESSES

51-20.1 General

This section provides description of damages classes and types and presents an overview of applicable damage investigation techniques.

When further information is needed please contact the aircraft manufacturer for further instructions.

51-20.1 Painting and Coating

Since full strength of the fiber composite structure has only been shown up to a temperature of 54°C (129°F), the outer surface of the airplane must be painted white. Exceptions are registration markings and warning marks, which are subject to the following restrictions (refer to Fig. 51-20-1):

- Area 1: No registration markings or warning markings may be applied here.
- Area 2: This area has the same restrictions as Area 1, except that registration marks may be applied here which comply with the restrictions of Area 3.
- Area 3: Registration markings and warning markings may be applied here. They may be any shape and color, provided that the average absorption coefficient of each area measuring 200 mm by 200 mm (8" by 8") does not exceed 0.5.
- Area 4: Registration markings and warning markings of any shape and color may be applied here without restrictions.

● **Note:** No black stripes are allowed in front of the vertical tail, across the top of the fuselage (indicated on Fig. 51-20-1).

■ **Caution:** you must paint the airplane to the paint color scheme. If you do not paint the airplane to the paint color scheme, you may cause damage to the airplane structure.

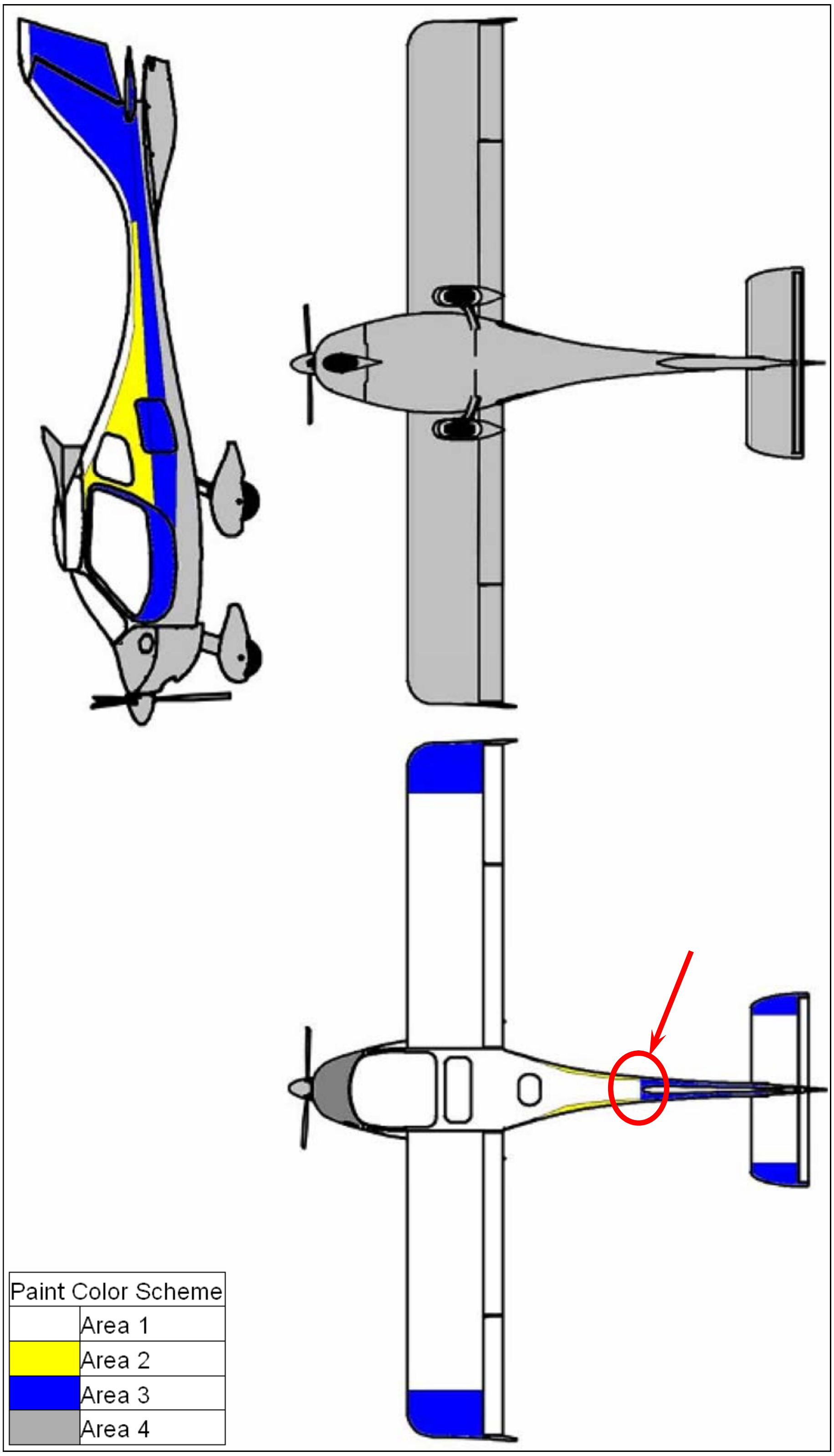


Fig. 51-20-1

SECTION 51-30 –
MATERIALS

When needed please contact the aircraft manufacturer for further instructions.

SECTION 51-70 – REPAIRS

When needed please contact the aircraft manufacturer for further instructions.

CHAPTER 52 –
DOORS

Contents

52-00.1 General

The doors are made of composite material and are not a structural components of an aircrafts

52-00.2 Description

The door hinged at the top and open like gull wing-door. Gas spring is installed that opens and holds the door at open position. The doors are locked with three pins to the fuselage cut-out. The lock device is operated with lever at the door (Fig. 52-00-1). The lever is located close to occupant hand and has good accessibility to operate. The door's design provides good ability for occupants to conduct an emergency escape.

Fig. 52-00-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
52-00-2	1	Door		
	2	Gas spring		
	3	Hinge		
	4	Door seal		
	5	Latching mechanism		
	6	Sliding window vent		

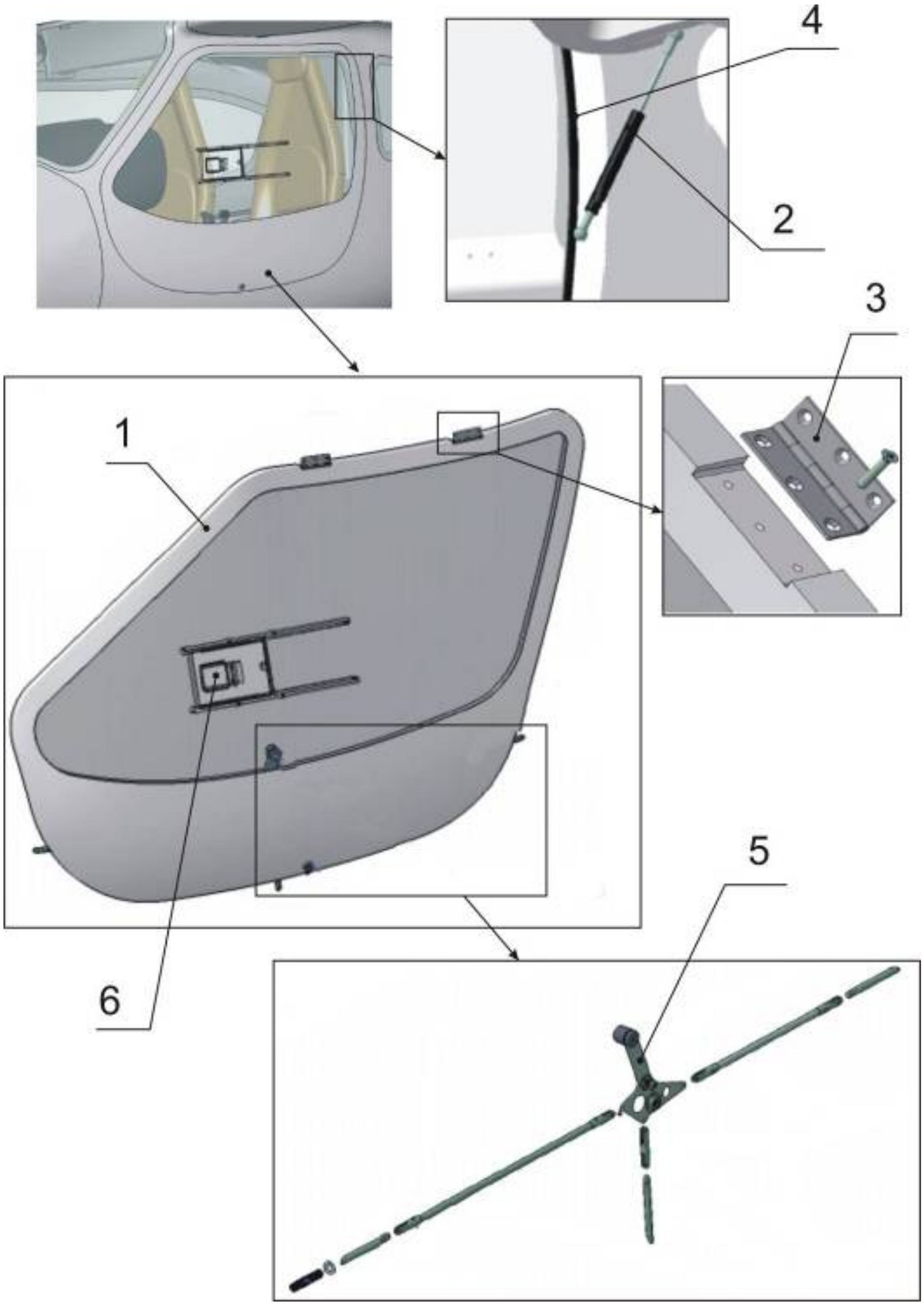


Fig. 52-00-2

52-00.3 Maintenance Practices

52-00.3.1 *Door Inspection*

52-00.3.1.1 Type of Maintenance

Line

52-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

52-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Door Inspection

Step	***Action***	***Reference***
1	Inspect for smooth operation and fit. Inspect the skin, hinges, gas struts, latching	
2	Inspect apertures protection of latching mechanism for integrity operating (Fig. 52-00-3).	

Fig. 52-00-3

Step	***Action***	***Reference***
3	Inspect door structure for cracks and other damages.	
4	Lubricate hinges and all moving parts.	
5	Check sliding window for proper operation.	

SECTION 52-30 –
BAGGAGE DOORS

52-30.1 General

The baggage doors are made of composite material and are not a structural components of an aircrafts

52-30.2 Description

The baggage doors are installed to the baggage compartment access hatches behind the main frame. The lock device consists of the two fixed pins located on the lower flange and latching mechanism on the top. To simplify operating the door is provided with two security ropes connecting lower pins with response holes in the fuselage flange.

Fig. 52-30-0

52-30.3 Maintenance Practices

52-30.3.1 *Door Inspection*

52-30.3.1.1 Type of Maintenance

Line

52-30.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

52-30.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Door Inspection

Step	***Action***	***Reference***
1	Inspect for operation and fit.	
2	Inspect door skin, attachment pins, and latching mechanism. Check condition of security rope (Fig. 52-30-2).	

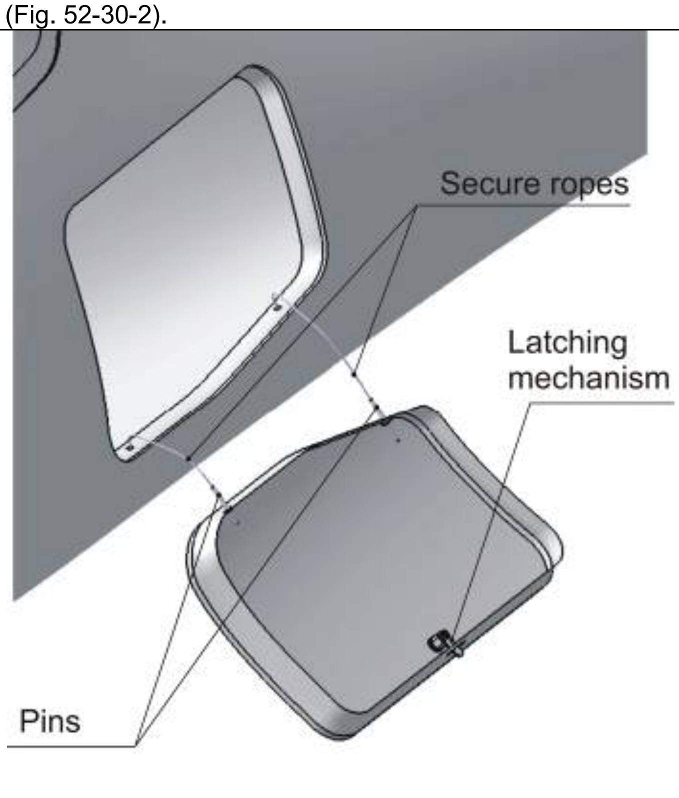


Fig. 52-30-2

CHAPTER 53 –
FUSELAGE

Contents

53-00.1 General

This chapter provides description of fuselage.

53-00.2 Description

The fuselage is built in a stressed skin design, supported by few with frames. The main bulkhead separates pilot's compartment from luggage compartment. The luggage compartment is provided with two independent doors which enable access from each side of aircraft to realize inspection of luggage compartment and all units / systems located there. The luggage compartment doors are made of composite material and are not a structural elements of an aircraft.

The luggage compartment comes to tail boom. The rear fuselage is stiffened with frames as required.

The vertical fin is produced as a part of the fuselage skin.

The fuselage is provided with windshield, top window, door windows and side windows. All windows are made from Plexiglas. The windows are not structural parts.

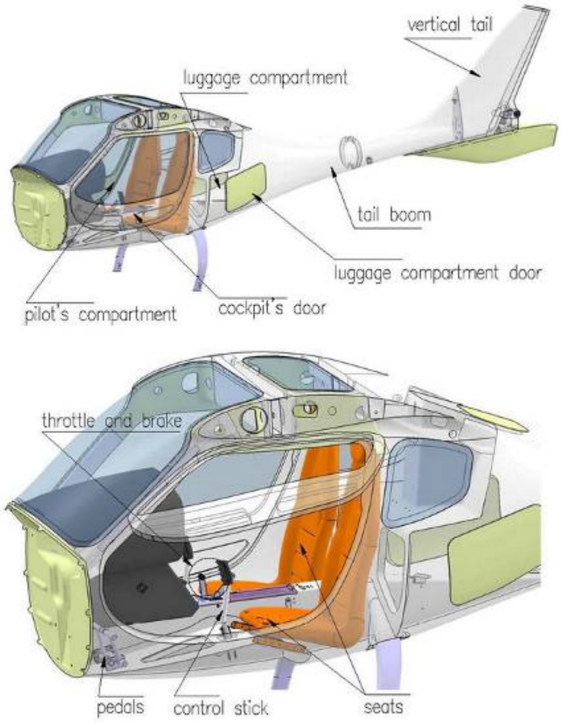


Fig. 53-00-1

The structure of the fuselage is built using composite materials. Mostly sandwich structures are used due to the low weight and high strength capabilities. In some areas monolithic lay-up is used without application of sandwich foam. The composite structure makes use of carbon, aramid and glass fibers materials with uni- and multidirectional fibers. Mostly the fuselage is designed as Carbon fibers sandwich construction using Aramid as inner laminate in the cockpit area. Fig. 53-00-2 illustrates fundamental components of fuselage and show the usage of sandwich and monolithic materials in a generalized view.

The metal bushes are attached to the fuselage root rib. The wings are attached with shear pins to these bushes.

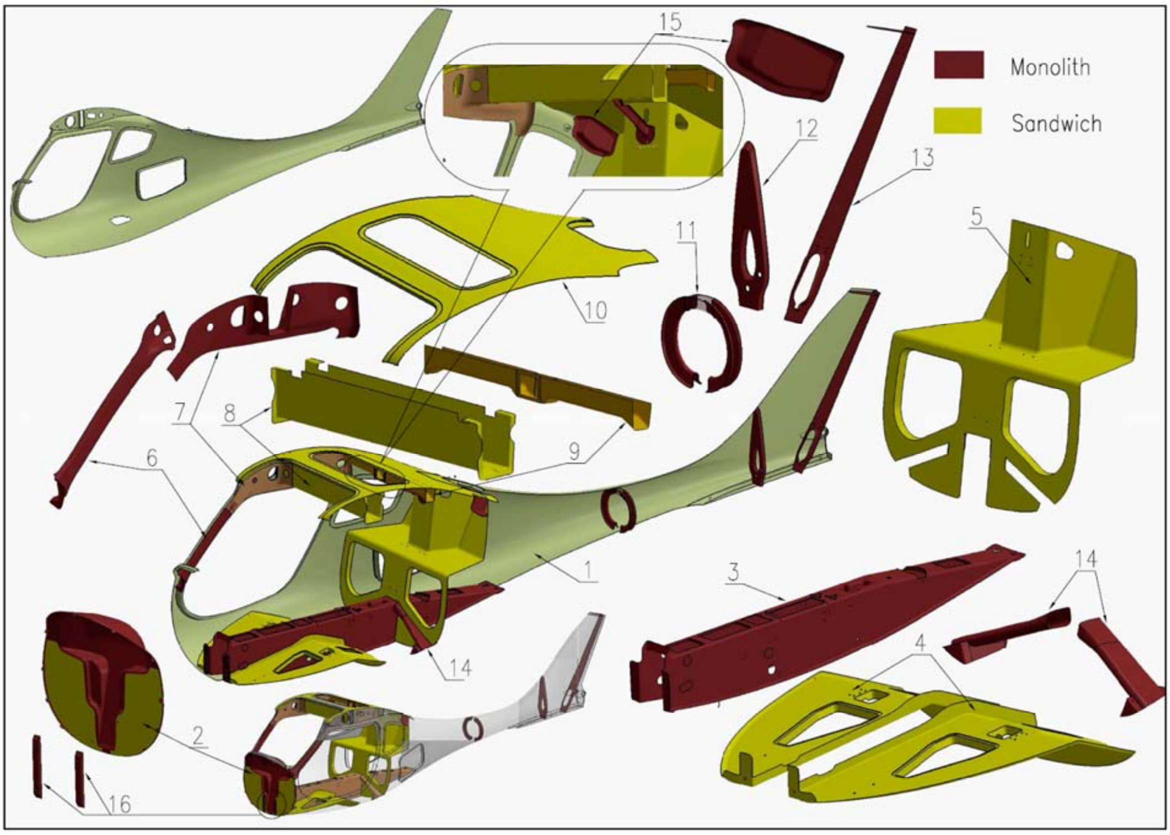


Fig. 53-00-2

Fig.	*Item*	*Part Name*	*Item*	*Part Name*
53-00-2	1	Fuselage skin	9	Box N2
	2	Fire wall	10	Roof
	3	Tunnel	11	Frame N4
	4	Pyramid	12	Frame N3
	5	Main Frame	13	Fin wall
	6	A-pillar	14	Gear box
	7	Fuselage rib box	15	Box
	8	Wing spar box	16	Laminate plate

53-00.3 Maintenance Practices

53-00.3.1 *Fuselage Inspection*

53-00.3.1.1 Type of Maintenance

Line

53-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

53-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Drain Holes Inspection

Step	***Action***	***Reference***
1	Check the drain holes for obstructions (Fig. 53-00-3). Check the paint condition and cleanliness.	

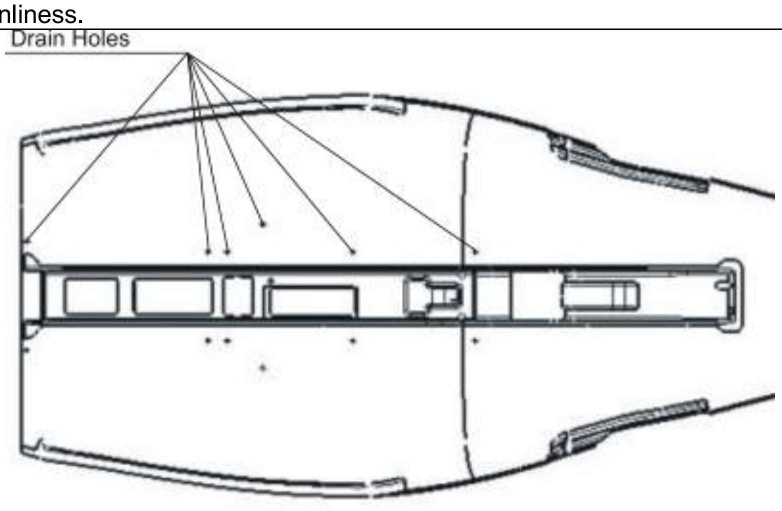


Fig. 53-00-3

C. Control Cables and Push-Pull Guides Inspection

Step	Action	Reference
1	Check the rudder control cable guides for delamination (Fig. 53-00-4)	

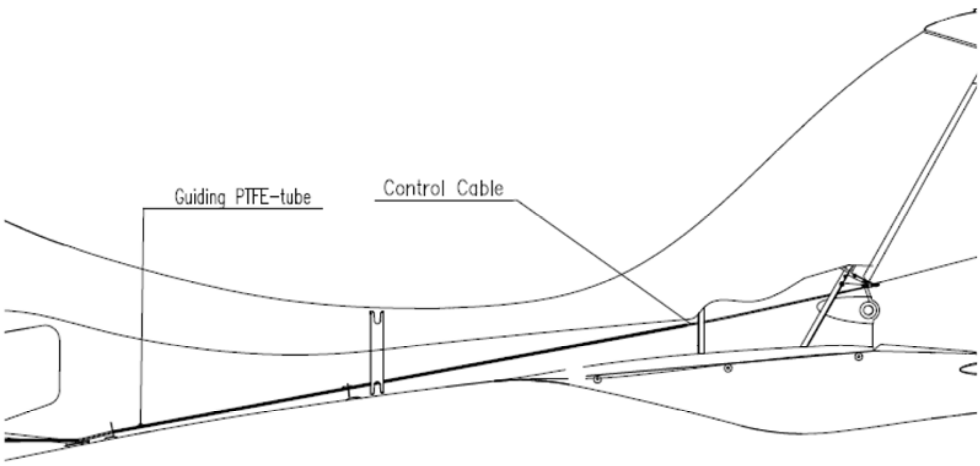


Fig. 53-00-4

Step	Action	Reference
2	Check the push-pull cable guides for delamination (Fig. 53-00-5).	

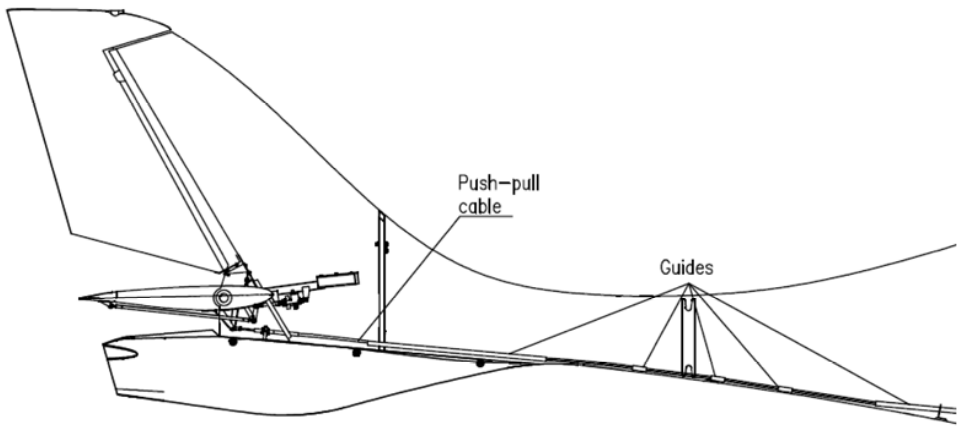


Fig. 53-00-5

C. Troubleshooting

Step	Action	Reference
1	In case when any abnormalities during inspection was found contact manufacturer for further instructions.	

CHAPTER 55 –
STABILIZERS

Contents

55-00.1 General

This chapter provides description of the stabilizers and components.

55-00.2 Description

The structure of the stabilizers units is built using composite materials. The composite structure makes use of carbon and glass uni- or multidirectional fibers material with and without foam application.

There are main components:

- vertical stabilizer
- horizontal stabilizer

The vertical stabilizer consists of fin as a part of fuselage, rudder and underfin.

The horizontal stabilizer consists of all-moving Stabilator.

SECTION 55-10 – STABILATOR

55-10.1 General

This section provides description of the Stabilator

55-10.2 Description

The Stabilator consists of skins and inner structural components.

The skins are made of two halves designed as Carbon fibers sandwich construction. In some areas monolithic lay-up is used without application of sandwich foam.

The inner components are designed as Carbon/Glass fibers structure without sandwich foam application. The spar caps designed as monolithic unidirectional fibers structural parts and integrated with Stabilator skin halves. The Stabilator is built with trim tab as single part and are laminated at the same time.

There are two internally glued steel bushes. The bushes are used for Stabilator mounting.

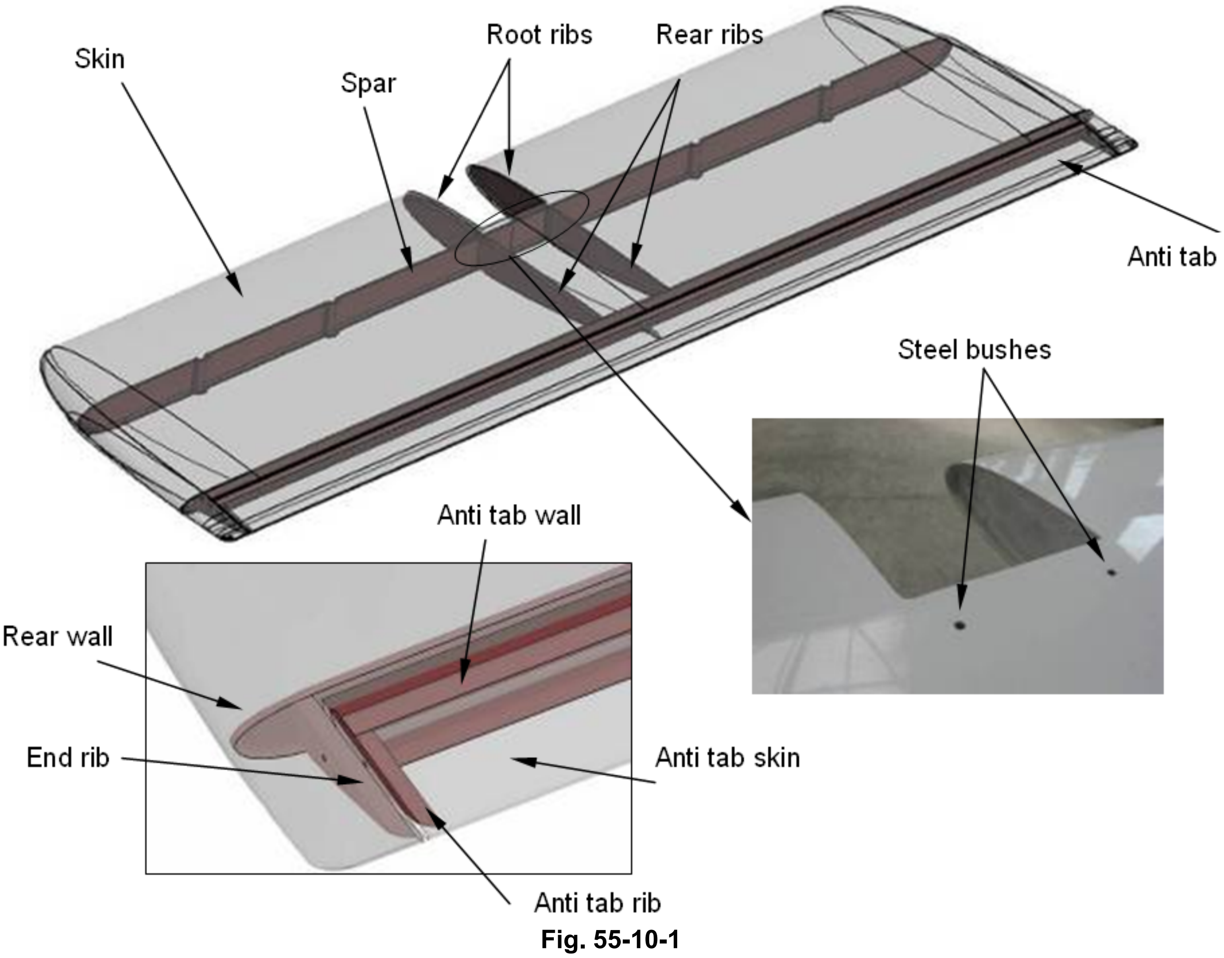


Fig. 55-10-1

The Stabilator is attached to the steel mounting bracket. The bracket is installed to the fuselage by the use axle. The installation principle presented in the Fig. 55-10-2.

Fig. 55-10-2

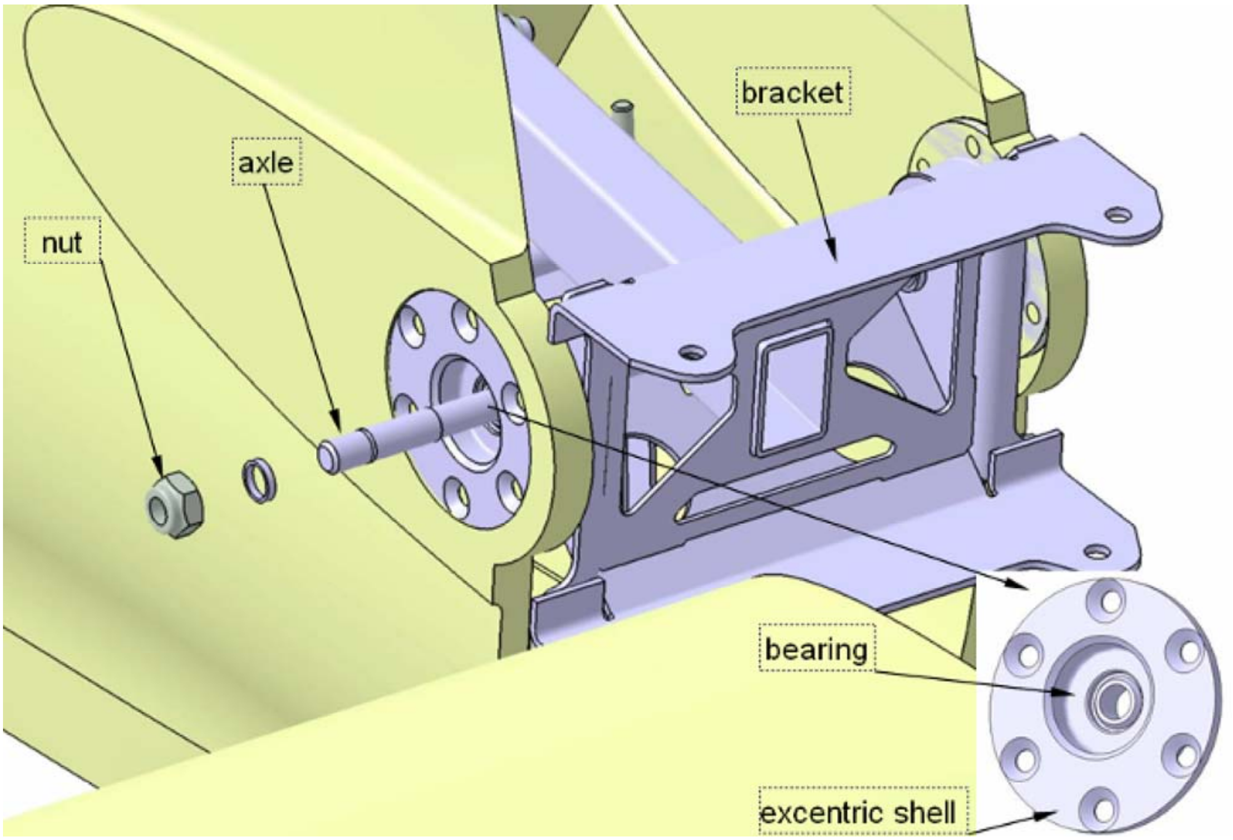


Fig. 55-10-3

55-10.3 Maintenance Practices

55-10.3.1 *Stabilator Installation and Removal*

55-10.3.1.1 Type of Maintenance

Line

55-10.3.1.2 Minimum Level of Certification

Part 145, Part M, Part 66 CS

55-10.3.1.3 Procedure

Aircraft in basic configuration is equipped with mechanically actuated trim tab system. Optionally instead of mechanically actuated system can be installed electrically actuated trim tab system. Kind of trim tab system has influence on the procedure of stabilator installation and removal. Below provided separated procedures of stabilator installation and removal for both kind of trim tab systems.

55-10.3.1.3.1 Configuration with Manual Actuator of Trim

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Checking of Balancing

Prior Stabilator installation, check it for balancing out of fuselage as follows.

This verification strongly recommended in any case when for the system Stabilator – counterweight with bracket – trim tab the changing of any of the following components is possible: the weight of any component or position of the center of gravity for any component.

Step	*Action*	*Reference*
1	Make sure that: - the trim tab is installed on the Stabilator - the control rods are connected to the trim tab. - the Stabilator bracket is equipped with trim tab bell crank and sheave (Fig. 55-10-4).	

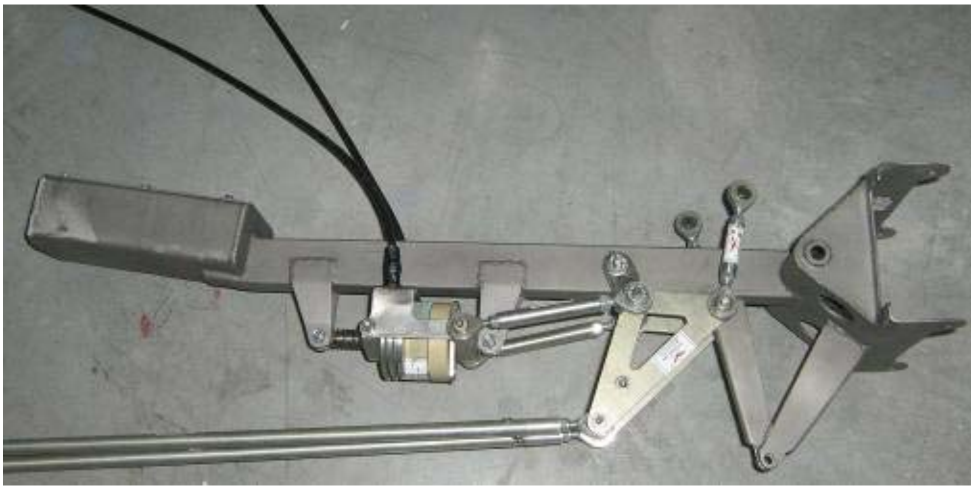


Fig. 55-10-4

2	Attach the bracket to Stabilator matching the holes in the bracket (3) with holes in the upper and the lower skins of the Stabilator (Fig. 55-10-5).	
3	Secure the bracket by bolts C9996259N (Bolt DIN 931 M6x110-8.8).	
4	Check Stabilator balance as follows. Set the Stabilator so that it can revolve on its axis under its own weight. If the upper skin does not align horizontally when stopped, correct balancing.	55-10.3.2
5	Remove the bracket from the Stabilator.	

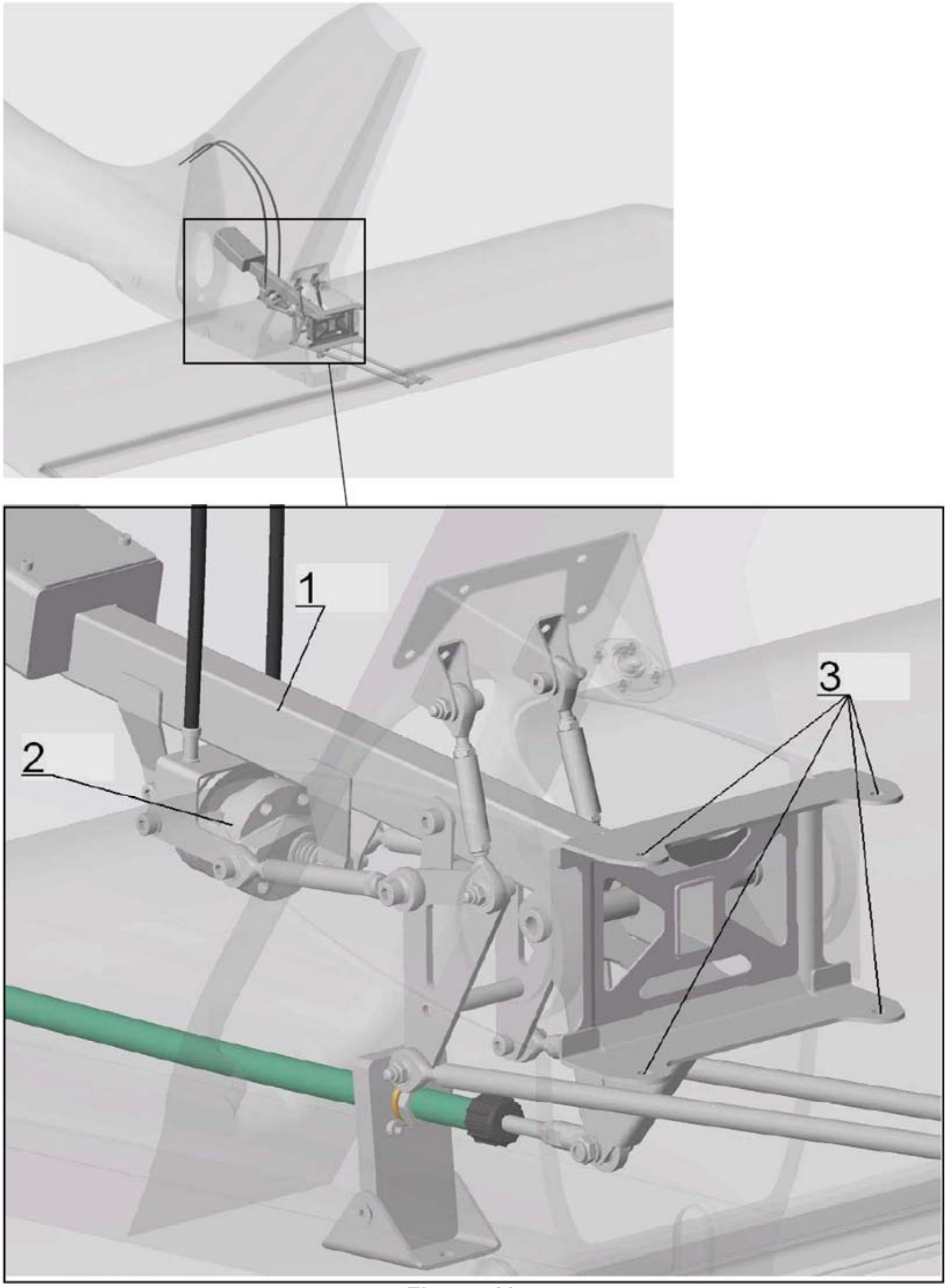


Fig. 55-10-5

C. Installation

Step	Action	Reference
1	Check lock rings (Fig. 55-10-6) that secure the bearings on both sides of the fuselage are present. Check inner cage of the bearings for free rotation. Replace bearings, if necessary.	

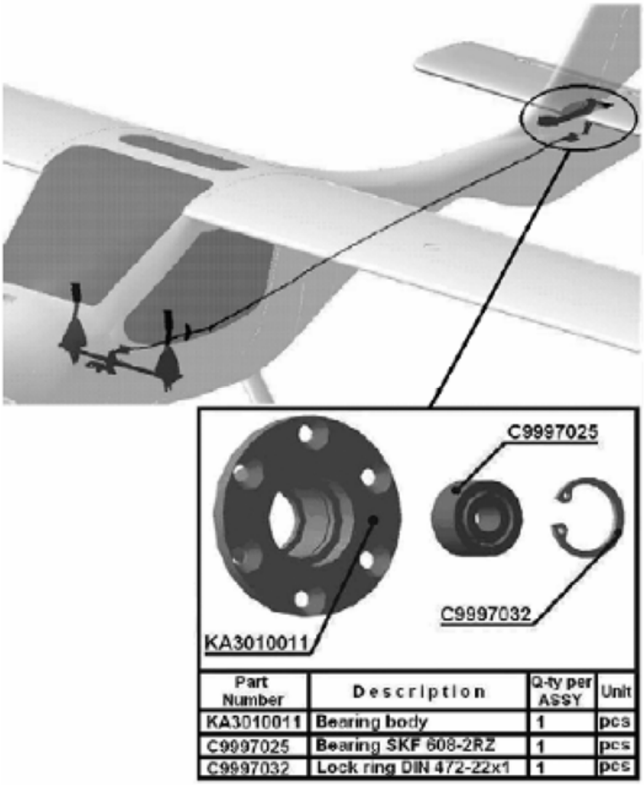


Fig. 55-10-6

2	Lubricate the axle of rotation. Make sure that the threaded parts of the axle are not lubricated.	
3	Install the bracket on the fuselage as follows. Match holes in the bracket with holes in the bearings. Insert the axle through the left hole in the bracket, hole in the left bearing, spacer, right bearing, and right hole in the bracket.	
4	Secure the axle by new self-locking nuts M8 with torque to 200 lb-in / 22.5 Nm.	
5	Install the Stabilator (Fig. 55-10-5) into the bracket by matching holes (3) in the bracket with holes in the top and bottom skins of the Stabilator.	
6	Set the bolts M6x110 through the matched holes in the bracket and Stabilator skins, put washers and tighten them by the self-locking nuts with torque 80 lb-in / 9 Nm. Make sure that the heads of the bolts are on the top of the Stabilator.	
7	Check balancing of the Stabilator, i.e. after some rotation around the axle the Stabilator returns to horizontal position. If the top skin does not stabilize at horizontal position, remove the bracket and correct the balancer.	
8	Inspect Stabilator “cross incidence” with respect to the fuselage roof (set the level across the fuselage first on the Stabilator skin behind the bracket, then on the roof nearby the spars. The difference should not be more then 0.5°. Otherwise do the following: • Remove the Stabilator from the bracket. • Loosen bearing body by taking the bolts out either from one side of the fuselage, or from both, depending on Stabilator angle of “cross incidence”. • Correct Stabilator “cross incidence” using eccentricity of the bearing bodies.	

	• Attach the bearing body by bolts and nuts (during adjustment it is allowable to use non- self-locking nuts, which have to be replace for final installation). • Install the Stabilator into the bracket and check angle of "cross incidence" with respect to the fuselage roof. • Repeat described above operations, if necessary, to get the roof and Stabilator parallel (The difference should not be more than 0.5°) Secure bearing bodies by tightening new self-locking nuts M5 to torque 94 lb-in / 5.5 Nm.	
9	Following Fig. 55-10-7 stretch the safety Bowden cables (1) and press them out by shrinking hose in the places of connection with Stabilator bracket (2).	
10	Find the middle of the trim tab cable (d=1.5 mm, l=8.0 m). Put ends of the cable on the sheaves (4) and turn each end around its slot (5) of the sheave 1.5 times in the opposite directions; then insert them into the safety Bowden cables.	
11	Insert the safety Bowden cables with trim tab cables into the holes of the frame (3).	
12	Mount the Stabilator bracket (3) on the fuselage.	
13	Stretch the trim tab rods in the tail part of the fuselage through one of the miniblocks (6).	
14	Set the thimble (2 mm) on the trim tab rods, connect the free part of the rods with main part by flat clip DUPLEX, 1.4401 for 3 mm cable.	
15	With the help of turnbuckles (7) connect the trim tab rods with the trim tab rods stretching from the throttle box (8).	
16	Tighten the cables by turnbuckles.	
17	Attach two trim tab control rods to two brackets on the rear wall of the fuselage.	
18	Connect trim tab control rods. Tighten the self-locking nuts to torque 49 lb-in / 5.5 Nm. Make sure that rod tips are secured by self-locking nuts M5 49 lb-in / 5.5 Nm.	
19	Using a bolt M6x35 connect rod tip to the Stabilator bracket. Tighten the self-locking nut M6 to torque 80 lb-in / 9 Nm.	
20	Check the proper reaction of the trim tab on the moving of the throttle box steering wheel. Moving the wheel: - forward – trim tab deflects upwards; - backward – trim tab deflects downwards.	
21	Lock turnbuckles with safety wire.	20.4
22	Check Stabilator and trim tab Zero position and deflection	27-40.3.1 27-40.3.3 27.40.3.4

D. Removal

Step	***Action***	***Reference***
1	Removal is done in reverse order of installation.	

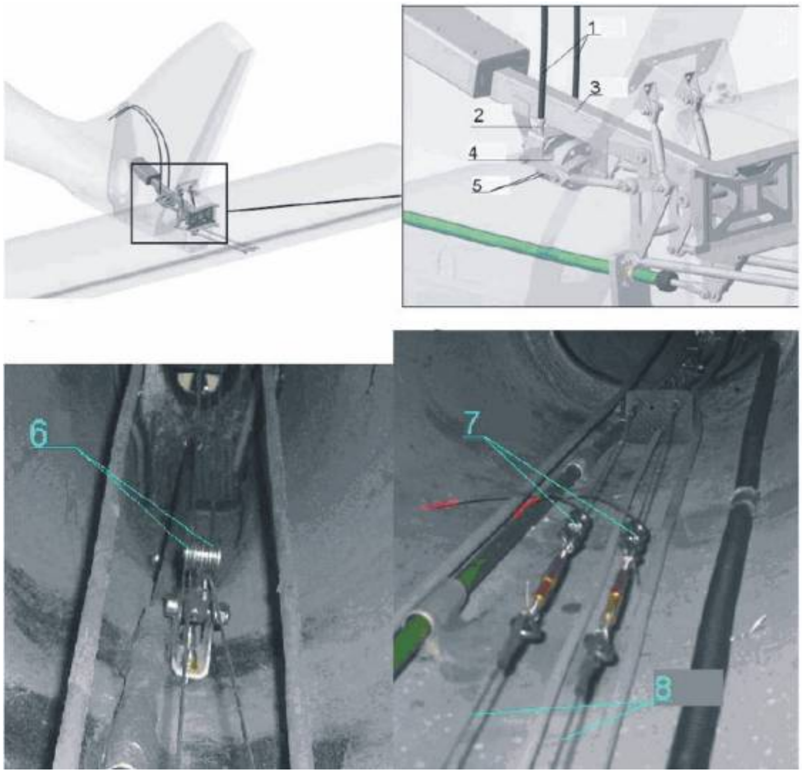


Fig. 55-10-7

55-10.3.1.3.2 Configuration with Electrical Actuator of Trim

A. Checking of Balancing

Prior Stabilator installation, check it for balancing out of fuselage as follows.

This verification strongly recommended in any case when for the system Stabilator – counterweight with bracket – trim tab the changing of any of the following components is possible: the weight of any component or position of the center of gravity for any component.

Step	*Action*	*Reference*
1	Make sure that: - the trim tab is installed on the Stabilator - the control rods are connected to the trim tab. - the Stabilator bracket is equipped with trim tab bell crank and actuator (Fig. 55-10-8).	
 **Fig. 55-10-8**		
2	Attach the bracket to Stabilator matching the holes in the bracket (3) with holes in the	

	upper and the lower skins of the Stabilator (Fig. 55-10-9).	
3	Secure the bracket by bolts C9996259N (Bolt DIN 931 M6x110-8.8).	
4	Check Stabilator balance as follows. Set the Stabilator so that it can revolve on its axis under its own weight. If the upper skin does not align horizontally when stopped, correct balancing.	55-10.3.2
5	Remove the bracket from the Stabilator.	

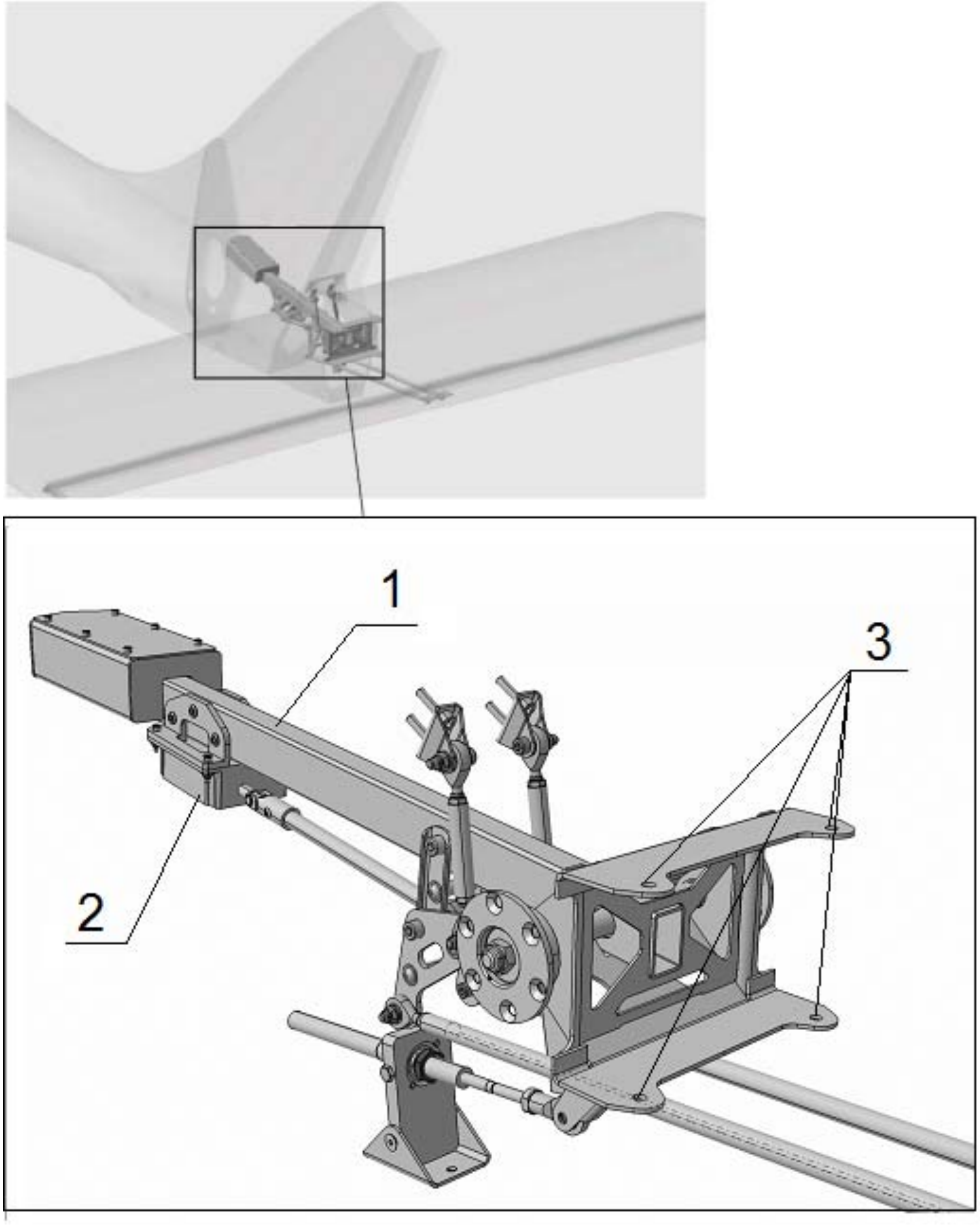


Fig. 55-10-9

B. Installation

Step	Action	Reference
1	Check condition of bearing in stabilator support (Fig. 55-10-10) and forg-roil of housing around bearing. Check inner cage of the bearings for free rotation. Replace bearings ready mounting, if necessary.	

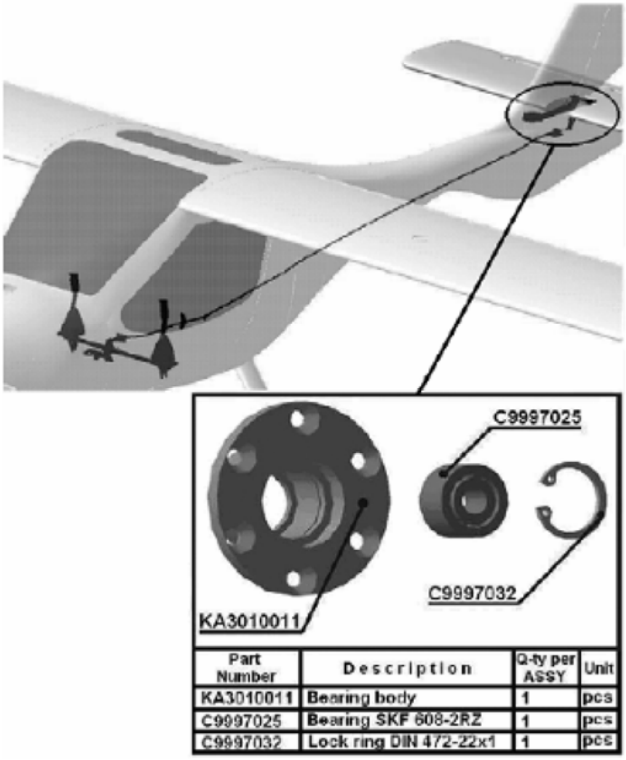


Fig. 55-10-10

Step	Action	Reference
2	Lubricate the axle of rotation. Make sure that the threaded parts of the axle are not lubricated.	
3	Install the bracket on the fuselage as follows. Match holes in the bracket with holes in the bearings. Insert the axle through the left hole in the bracket, hole in the left bearing, spacer, right bearing, and right hole in the bracket.	
4	Secure the axle by new self-locking nuts M8 with torque to 200 lb-in / 22.5 Nm.	
5	Install the Stabilator (Fig. 55-20-9) into the bracket by matching holes (3) in the bracket with holes in the top and bottom skins of the Stabilator.	
6	Set the bolts M6x110 through the matched holes in the bracket and Stabilator skins, put washers and tighten them by the self-locking nuts with torque 80 lb-in / 9 Nm. Make sure that the heads of the bolts are on the top of the Stabilator.	
7	Check balancing of the Stabilator, i.e. after some rotation around the axle the Stabilator returns to horizontal position. If the top skin does not stabilize at horizontal position, remove the bracket and correct the balancer.	
8	Inspect Stabilator "cross incidence" with respect to the fuselage roof (set the level across the fuselage first on the Stabilator skin behind the bracket, then on the roof nearby the spars. The difference should not be more then 0.5°. Otherwise do the following: • Remove the Stabilator from the bracket. • Loosen bearing body by taking the bolts out either from one side of the fuselage, or from both, depending on Stabilator angle of "cross incidence". • Correct Stabilator "cross incidence" using eccentricity of the bearing bodies. • Attach the bearing body by bolts and nuts (during adjustment it is	

	• allowable to use non- self-locking nuts, which have to be replace for final installation). • Install the Stabilator into the bracket and check angle of “cross incidence” with respect to the fuselage roof. • Repeat described above operations, if necessary, to get the roof and Stabilator parallel (The difference should not be more then 0.5°) Secure bearing bodies by tightening new self-locking nuts M5 to torque 94 lb-in / 5.5 Nm.	
9	Mount the Stabilator bracket on the fuselage.	
10	Attach two trim tab control rods to two brackets on the rear wall of the fuselage.	
11	Connect trim tab control rods. Tighten the self-locking nuts to torque 49 lb-in / 5.5 Nm. Make sure that rod tips are secured by self-locking nuts M5 49 lb-in / 5.5 Nm.	
12	Using a bolt M6x35 connect rod tip to the Stabilator bracket. Tighten the self-locking nut M6 to torque 80 lb-in / 9 Nm.	
13	Connect together electrical connectors of trim actuator to wire harness on fuselage. Fasten harness together with connector to the flange of fuselage skin. 	
14	Move stabilator in full deflection range by hand and verify that electrical harness do not touch any movable parts of stabilator and trim tab control system	
15	Check Stabilator and trim tab Zero position and deflection	27-40.3.1 27-40.3.3 27.40.3.4

C. Removal

Step	Action	Reference
1	Removal is done in reverse order of installation.	

55-10.3.2 *Balancing of the Stabilator counter weight*

55-10.3.1.1 Type of Maintenance

Line

55-10.3.1.2 Minimum Level of Certification

Part 145, Part M, Part 66 CS

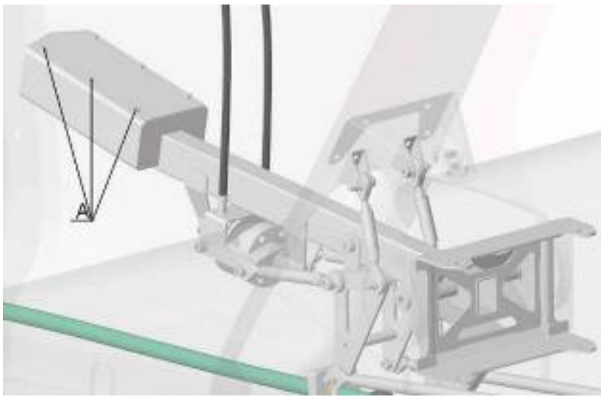
55-10.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Balancing of the Stabilator (Fig. 55-20-11)

Step	*Action*	*Reference*
1	In case if balancing of the Stabilator is necessary (replacement, repairing surface of the Stabilator \ trim tab or changing Stabilator bracket), it should be done by means of change of the balancer weight in small increments continuously checking balance. While checking balance, the 6 bolts (A) have to be screwed in, but not tightened. The Stabilator, bracket and axle are to be set on some supports so, that the Stabilator could freely wobble around the axle of rotation.	
2	• To reduce balancer weight Screw out the 6 bolts (A). Take off the necessary quantity of the lead fraction from the inside of the balancer (pos. B) and check balance with the bracket installed onto the Stabilator. Upon completion tighten the 6 bolts to 200 Ib-in / 22.5 Nm using the lock liquid of middle strength Loctite 243.	
3	• To increase balancer weight Screw out the 6 bolts, (A) Add the necessary quantity of lead fraction inside the balancer (pos. B). After balance is set, put epoxy resin inside the balancer to fill empty space. Tighten the 6 bolts pos. A to 200 Ib-in / 22.5 Nm using the lock liquid of middle strength Loctite 243.	



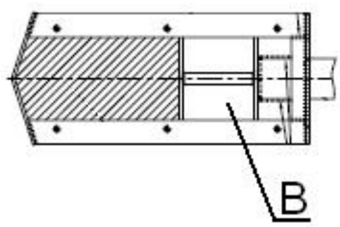


Fig. 55-20-11

55-10.3.3 *Stabilator and Trim Tab Inspection*

55-10.3.3.1 Type of Maintenance

Line

55-10.3.3.2 Minimum Level of Certification

Part 145, Part M, Part 66 CS

55-10.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Checking the Stabilator and Trim Tab Installation for Play (Fig. 55-20-12)

Step	*Action*	*Reference*
1	Shake the Stabilator in accordance with Fig. 55-20-12	
	Total play on Stabilator trailing edge must not exceed 2mm.	
3	Slightly shake the trim tab trailing edge up and down. Make sure that play on trailing edge doesn't exceed 2mm.	

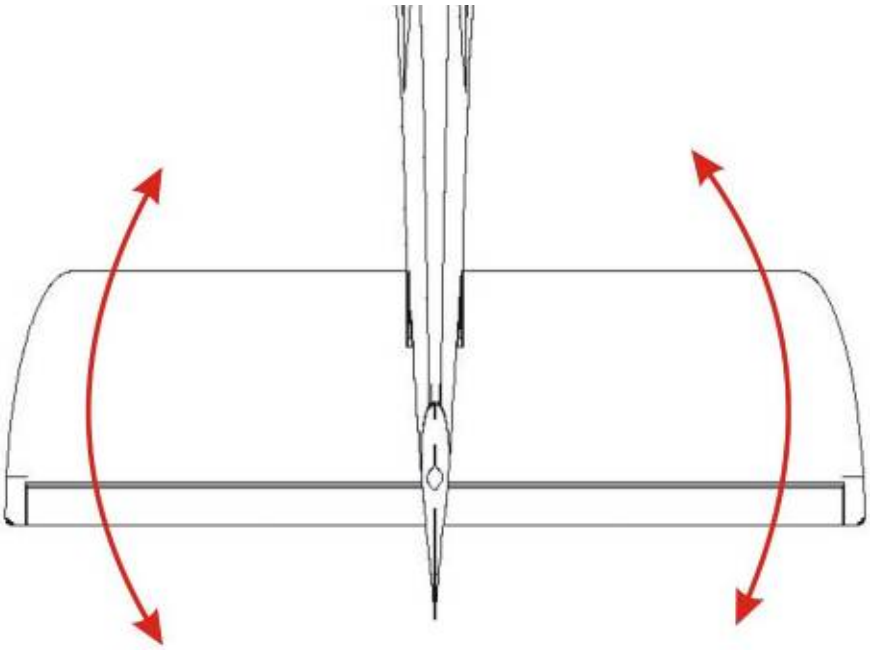


Fig. 55-20-12

C. Drain Holes Inspection (Fig. 55-20-13)

Step	Action	Reference
1	Check the drain holes provided on the lower surface of Stabilator skin for blockage.	

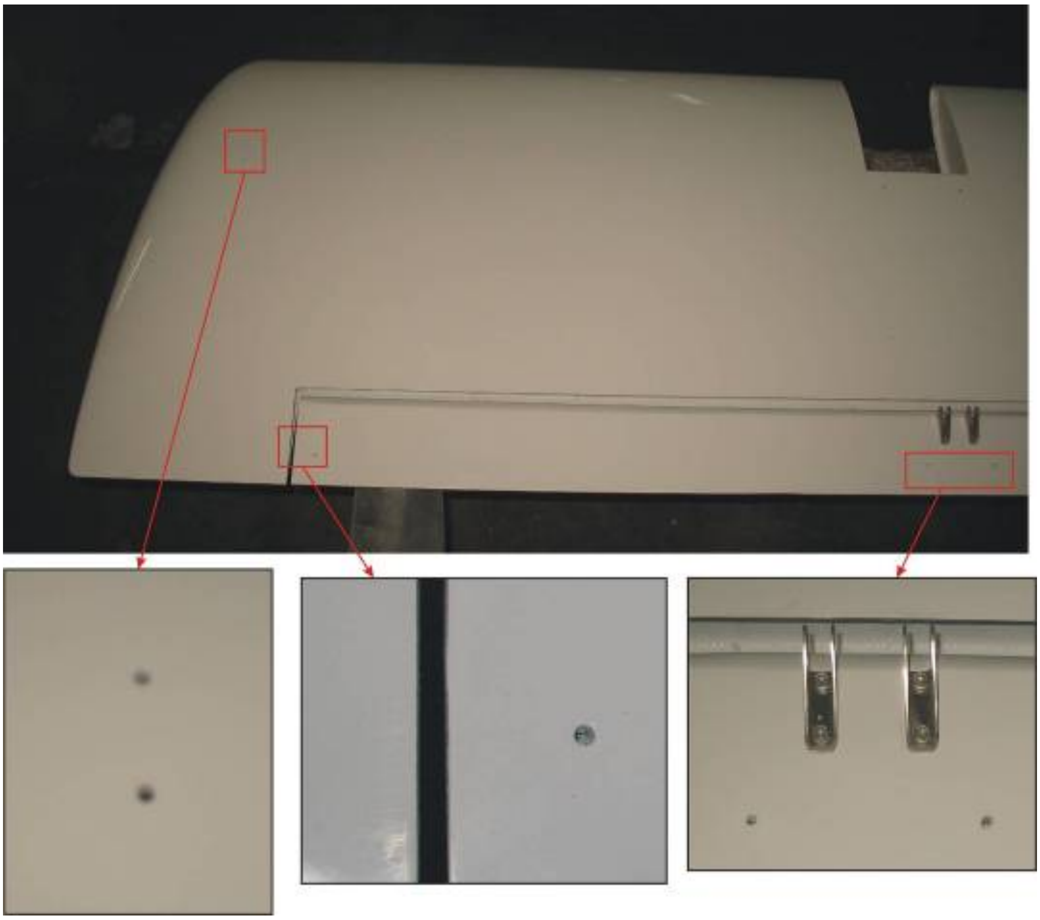


Fig. 55-20-13

SECTION 55-30 – UNDERFIN

55-30.1 General

This section provides description of Underfin.

55-30.2 Description

The underfin designed as Carbon fibers structure without sandwich foam application. The underfin is attached to the fuselage tail boom with bolts. There are 3 attachment points, per side, Fig. 55-30-1.

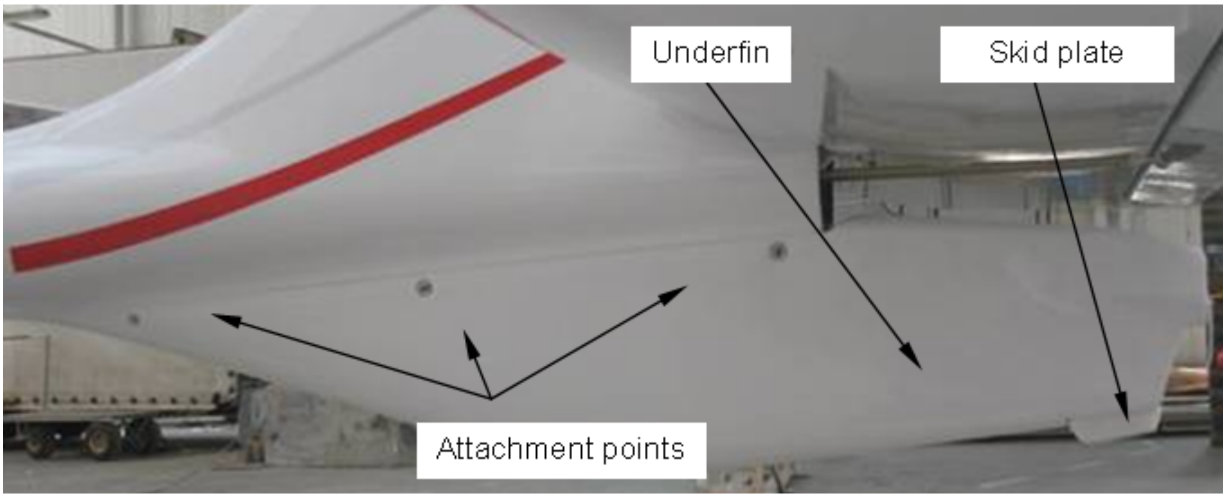


Fig. 55-30-1

55-30.3 Maintenance Practices

55-30.3.1 *Skid Plate Removal and Installation*

55-40.3.1.1 Type of Maintenance

Line

55-40.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

55-40.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Skid Plate Removal (Fig. 55-30-2)

Step	*Action*	*Reference*
1	Unscrew 2 bolts (3) that fix the tail skid (2) to the underfin (1).	
2	Remove the tail skid.	

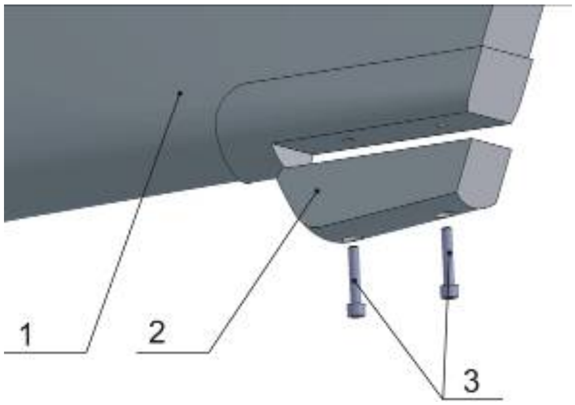


Fig. 55-30-2

B. Installation

Step	Action	Reference
1	Installation is done in a reverse order.	
2	Use bonding liquid middle strength for bolts (3) installation.	

55-30.3.2 *Underfin Inspections*

57-51.3.2.1 Type of Maintenance

Line

57-51.3.2.2 Minimum Level of Certification

Pilot/Owner (P/O)

57-51.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Drain Holes Inspection (Fig. 55-30-3)

Step	Action	Reference
1	Inspect the drain hole provided on the front lower surface of the underfin for the blockage.	

Fig. 55-30-3

SECTION 55-40 –
RUDDER

55-40.1 General

This section provides description of Rudder.

55-40.2 Description

The rudder consists of skins and inner structural components.

The skins are made of two halves designed as Carbon fibers sandwich construction. In some areas monolithic lay-up is used without application of sandwich foam.

The inner components are designed as Carbon/Glass fibers structure without sandwich foam application. The rudder is installed in an aircraft via steel components.

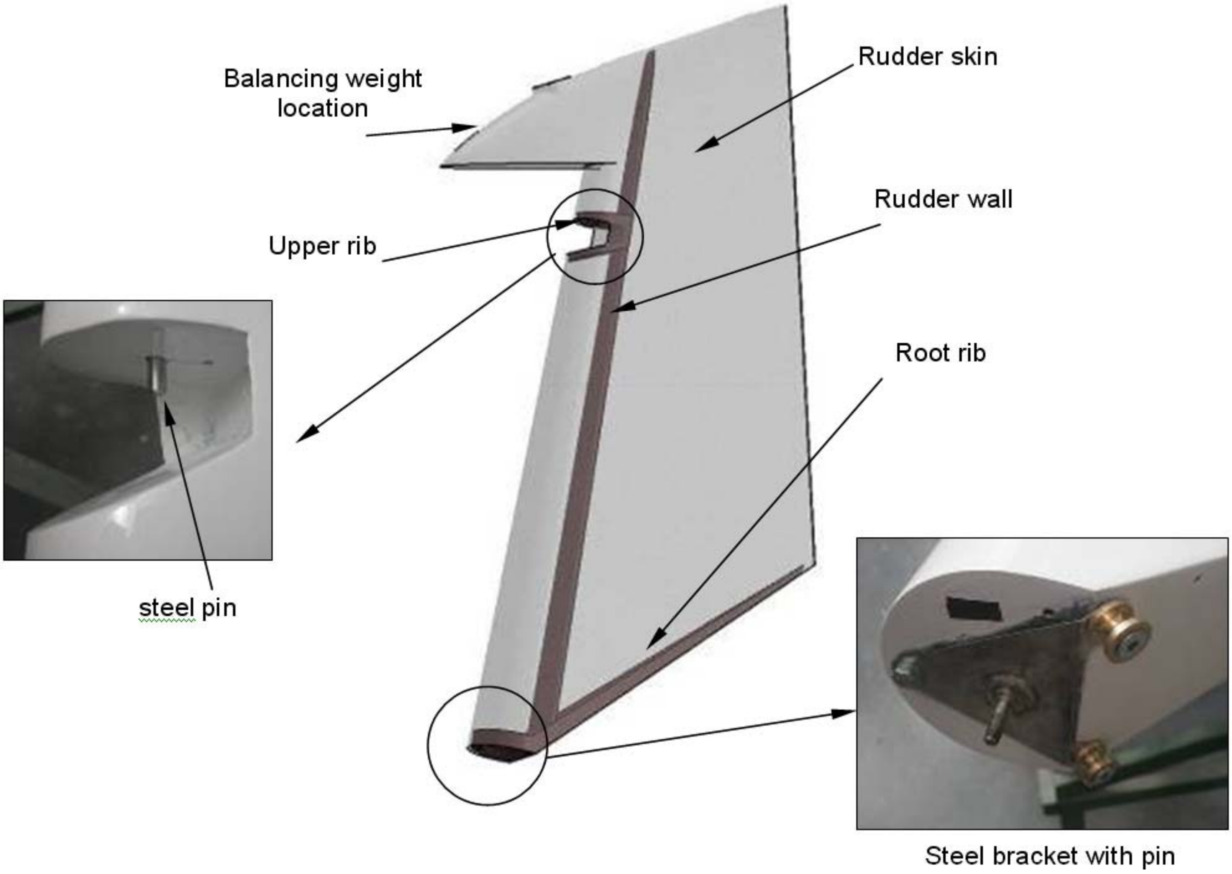


Fig. 55-40-1

When rudder installed the upper pin of rudder is set in bearings of upper fuselage steel bracket. The pin is secured with cotter pin.

The lower pin of rudder is set in bearing of the lower fuselage bracket. The pin of lower bracket is secured with self-locking nut.

Fig 55-40-2

55-40.3 Maintenance Practices

55-40.3.1 *Rudder Installation and Removal*

55-40.3.1.1 Type of Maintenance

Heavy

55-40.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

55-40.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Rudder Installation and Removal

- **Note:** the rudder must be installed to the aircraft prior to Stabilator installation, due to accessibility reasons.

Step	***Action***	***Reference***
1	Set the plane on parking brake. Ensure good access to the rear part of the fuselage.	
2	Match the hole in the bearing of the bracket (1) with the pin (2) of the rudder lower support (3). Match the hole of the slider bearing (4) of the upper bracket (5) with the pin (6), (Fig. 55-40-3).	

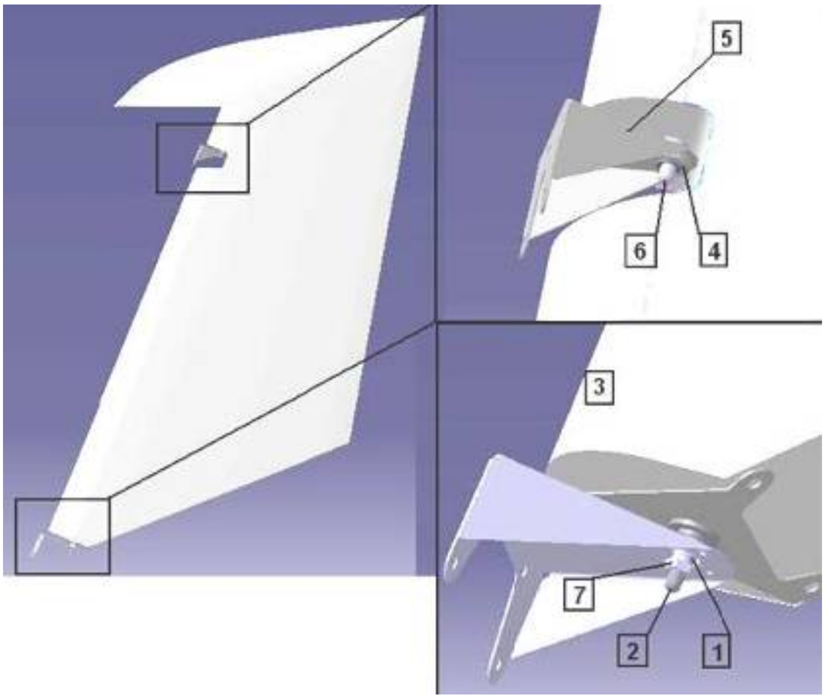


Fig. 55-40-3

3	Let down the rudder along the matched holes ad pins.	
4	Turn the rudder by hand right up to the stop and set the self-locking nut M6 (7) onto the pin (2) (Fig. 55-40-3). Tighten the nut.	
5	Turn the rudder left up to the stop and set the rudder left cable (1) (Fig. 55-40-4).	

	Prior to that the bushings (2) are to be installed from both sides of the thimble and tightened by the screw M6x30 (3) to the rudder lower support (4). Use lock liquid of middle strength Loctite 243 for the screw.	

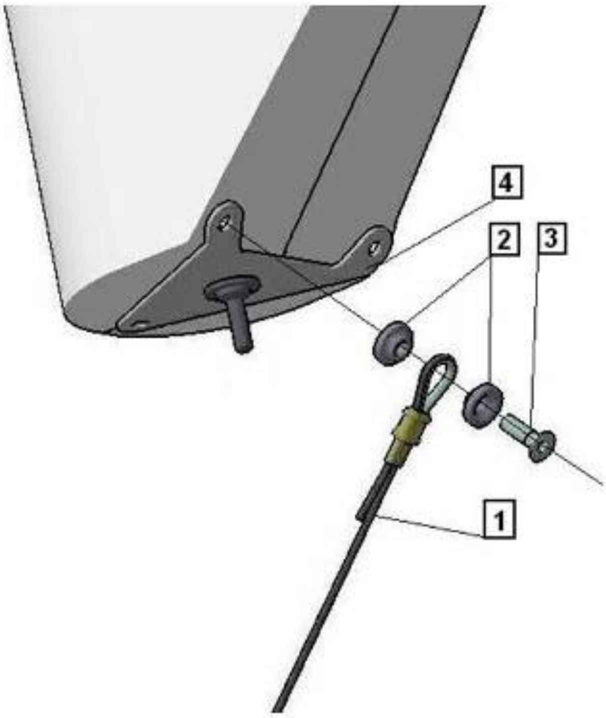


Fig. 55-40-4

6	Turn the rudder right up to the stop and repeat the process for attaching the right cable to the rudder.	
7	Check the cables tension.	27-20.3.4
7	Check rudder deflections and Zero position.	27-20.3.1 27-20.3.2

55-40.3.2 *Rudder Inspections*

55-40.3.1.1 Type of Maintenance

Line

55-40.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

55-40.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Drain Holes Inspection (Fig. 55-40-5)

Step	***Action***	***Reference***
1	Check the drain hole provided on the lower surface of rudder skin for blockage.	

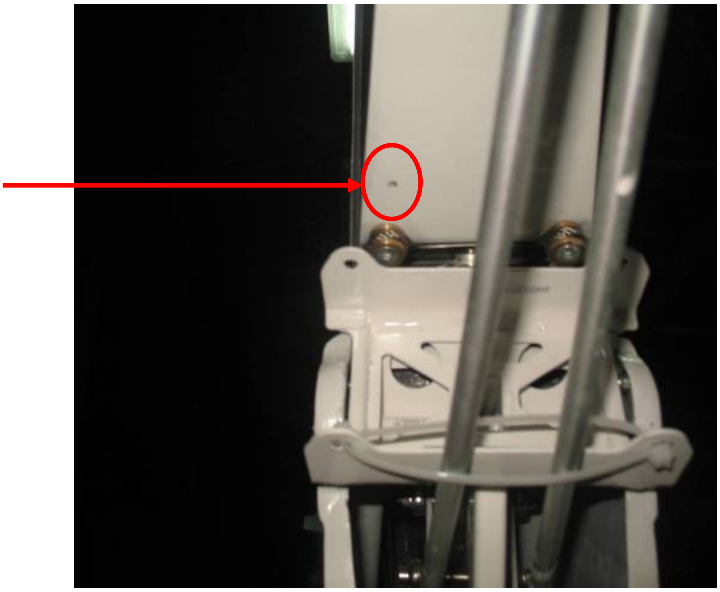


Fig. 55-40-5

CHAPTER 56 –
WINDOWS

Contents

56-00.1 General

This chapter provides description of windows.

56-00.2 Description

All windows are made from contoured Plexiglas. The windows are glues to the composite structure, to allow a smooth aerodynamic shape.

The windows in both doors are equipped with sliding windows. The sliding windows can be opened to provide visibility in the extreme unlikely case when the windows get fogged.

Contact aircraft manufacturer for further instructions.

CHAPTER 57 –
WING

Contents

57-00.1 General

This chapter provides description of wings.

57-00.2 Description

The wing is a cantilevered wing designed in two parts, which are connected like gliders by two spar ends being connected with two main pins. The cantilevers attach with shear pins to bushes at the fuselage root ribs.

The wing has single spar structure. There is integral fuel tank in the inboard leading edge section of the wing.

The wing is equipped with slotted flaps and slotted ailerons.

SECTION 57-00 –
WING STRUCTURE

57-00.1 General

This section provides description of wing structure and maintenance practices.

57-00.2 Description

The structure of the wing is build using composite materials. Mostly sandwich structures are used due to the low weight and high strength capabilities. The composite structure makes use of carbon, aramid and glass fibers materials with uni- and multidirectional fibers.

The wing consists of spar, skin and ribs.

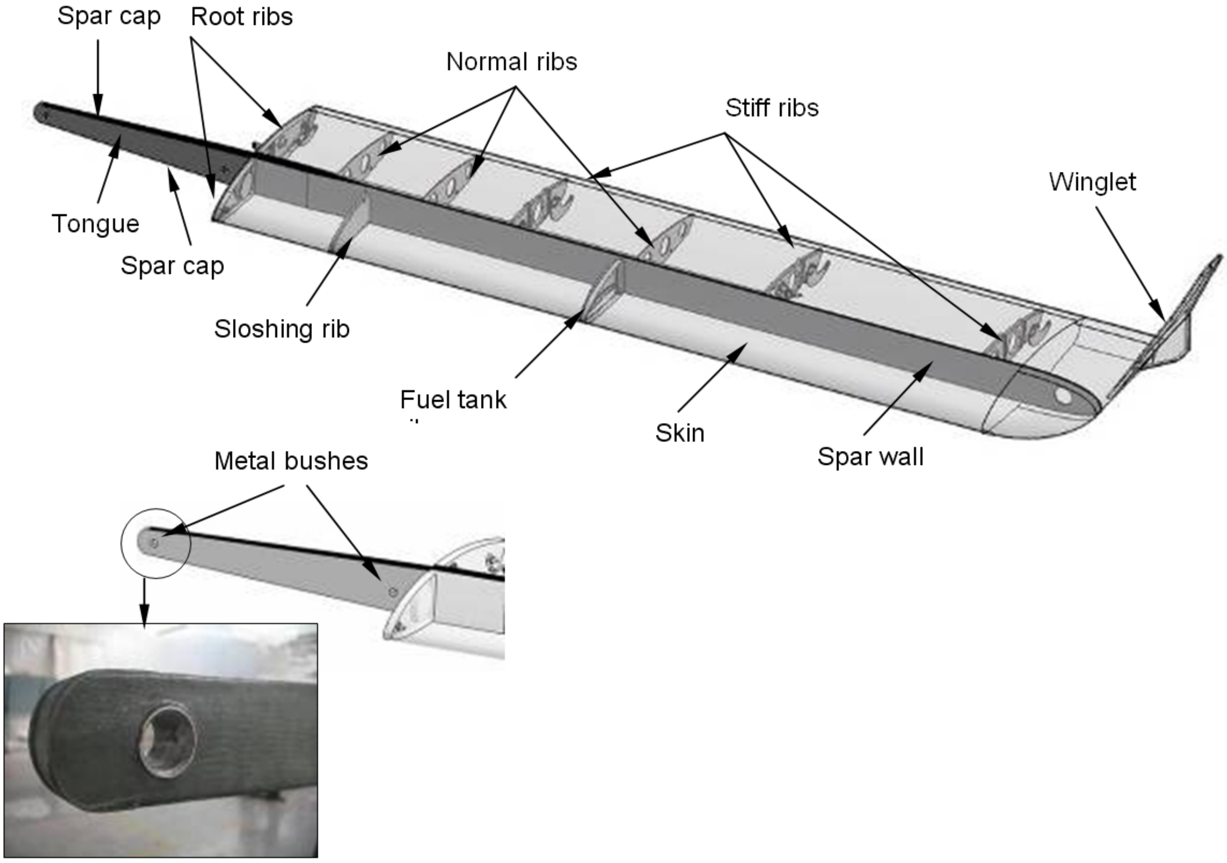


Fig. 57-00-1

There are steel shear pins attached to the root ribs. The wings attach with these pins to bushes at the fuselage root rib.

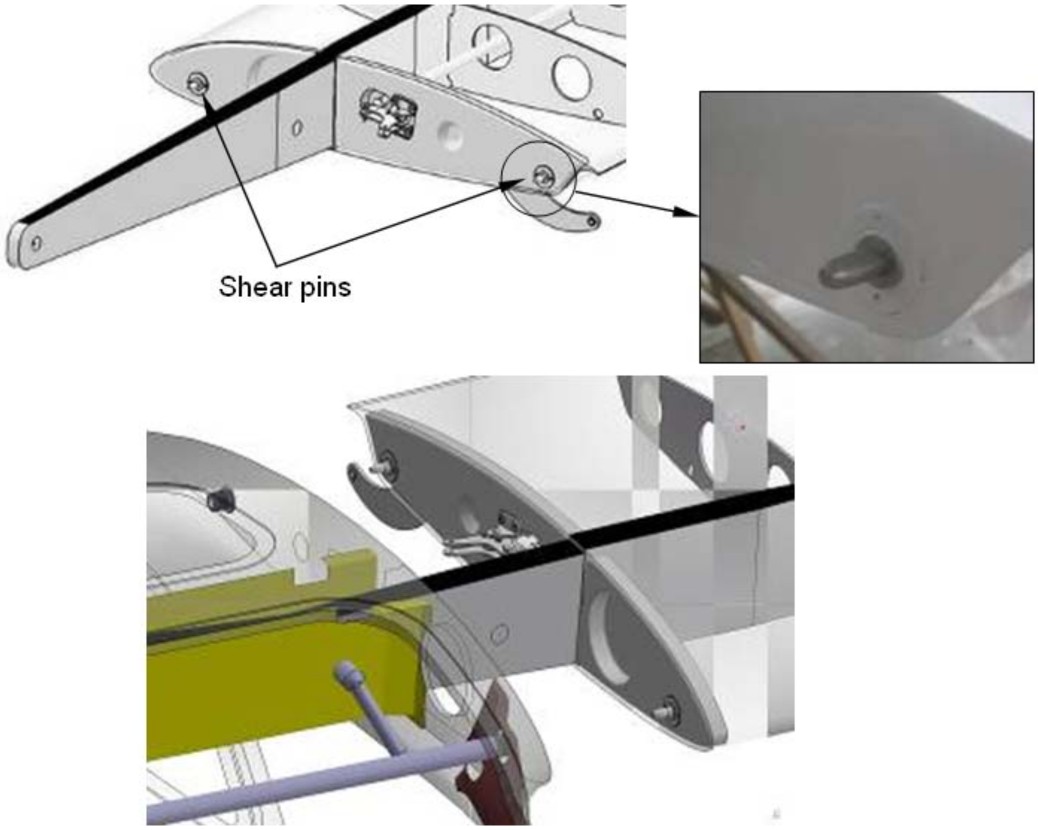


Fig. 57-00-2

The wing spars are fixed inside the fuselage spar box by means of 2 easy-removable main bolts (Fig. 57-00-3).

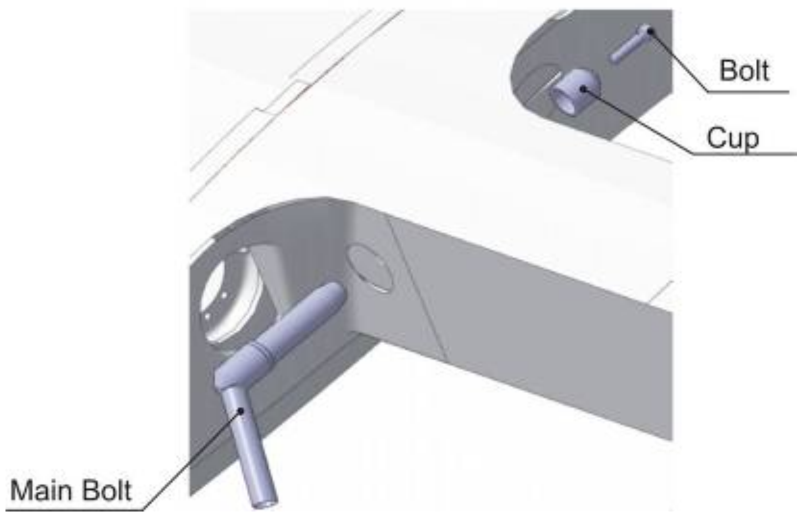


Fig. 57-00-3

The aileron and flap bracket are installed internally in the wing (Fig. 57-00-4). The brackets are attached to the stiffened wing rib. The flap and aileron are attached to these brackets.

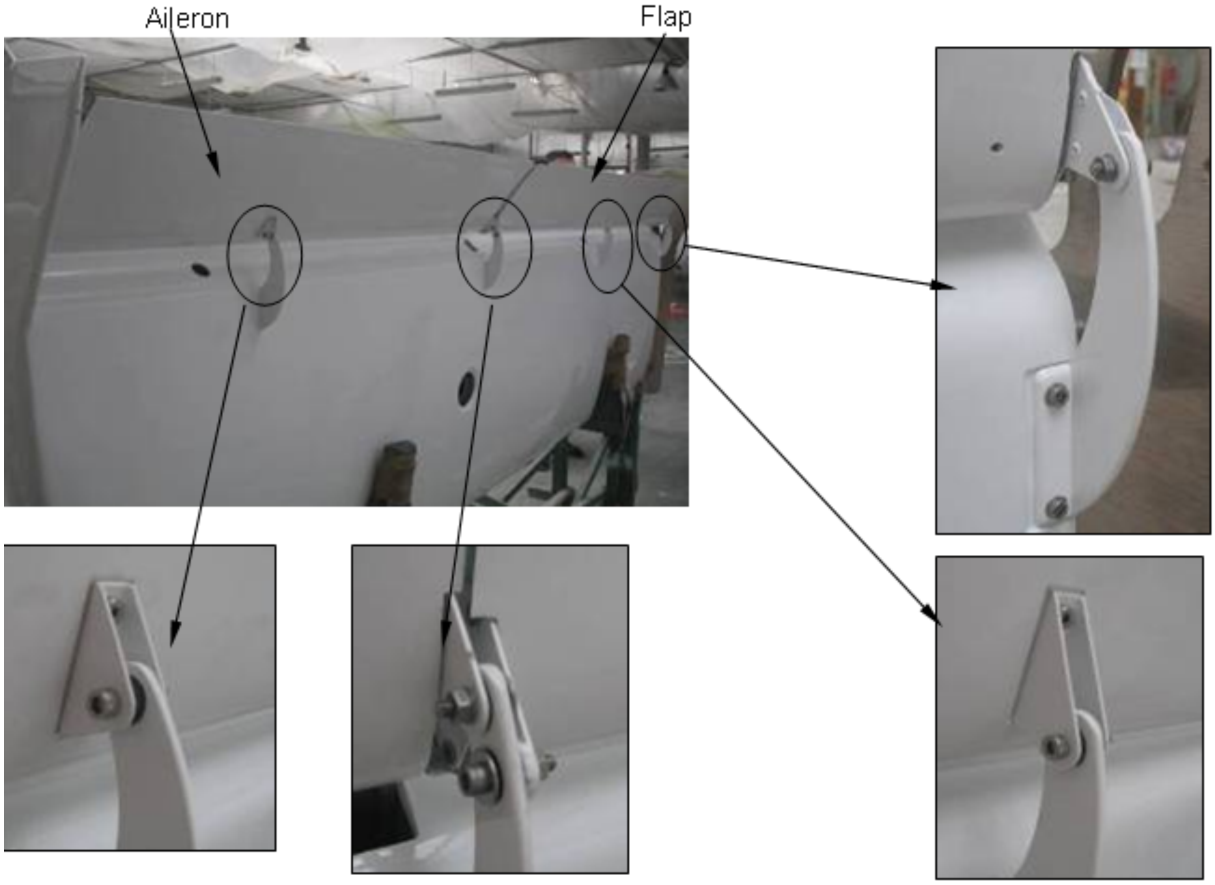


Fig. 57-00-4

The wing skin is provided with inspection hatch (Fig. 57-00-5) covered with transparent cover by means of 4 screws. Use this hatch and cut-outs along the tailing edge to perform inspection in accordance with check list provided in Section 05-20.2.7.

57-00.3 Maintenance Practices

57-00.3.1 *Wing Removal and Installation*

57-00.3.1.1 Type of Maintenance

Line

57-00.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-03.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Wing Installation

Step	*Action*	*Reference*
1	Set the aircraft on the parking brake	

2	Lubricate all metal details before connecting: the flap pin (2) (Fig. 57-00-7); pins on the wing root rib (1) (Fig. 57-00-9, Fig. 57-00-10); the main bolts (1) (Fig. 57-00-14).	
3	Set each wing with the tongue into the spar box with clearance 0.75-1ft between the fuselage and the wing root rib (Fig. 57-00-5); insert the intake fuel line with the connecting pipe (1) to the fuselage.	

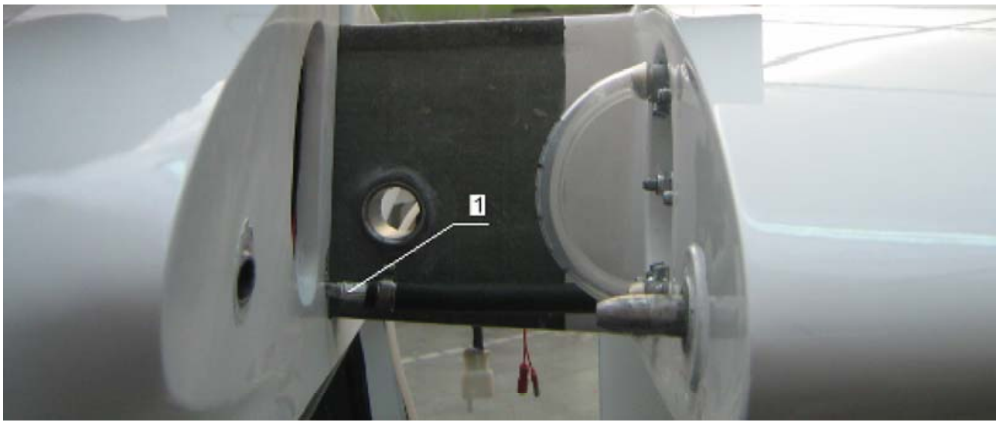


Fig. 57-00-5

4	Connect the pitot line between the wing and the fuselage (for the right wing only).	34-20
5	Connect the fuel tank vent pipes. Pay attention that the line inside the fuselage root rib boxes does not get kinked.	28-
6	Connect all fuselage-to-wing wiring, e.g. connect the position and strobe lights socket and plug (1) (Fig. 57-00-6).	33-40

Fig. 57-00-6

7	Match the groove on the tip (1) with the flap pin (2) (Fig. 57-00-7, Fig. 57-00-8).	

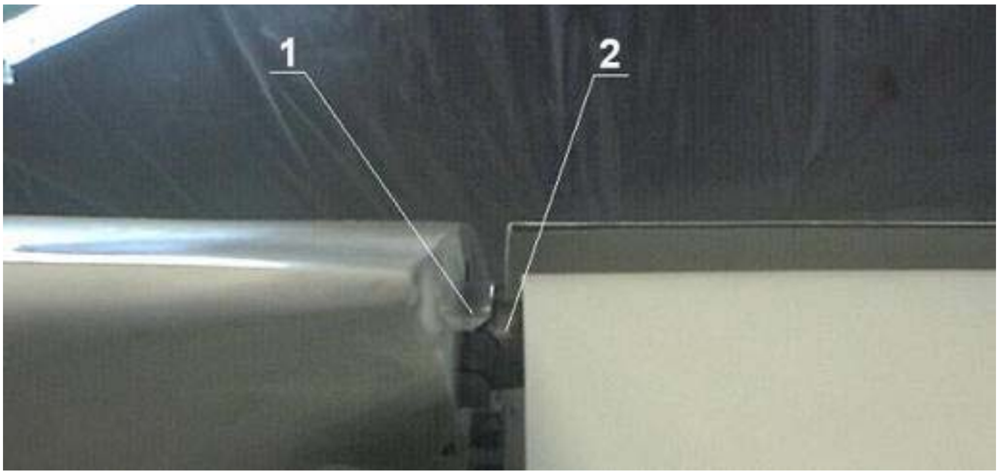


Fig. 57-00-7

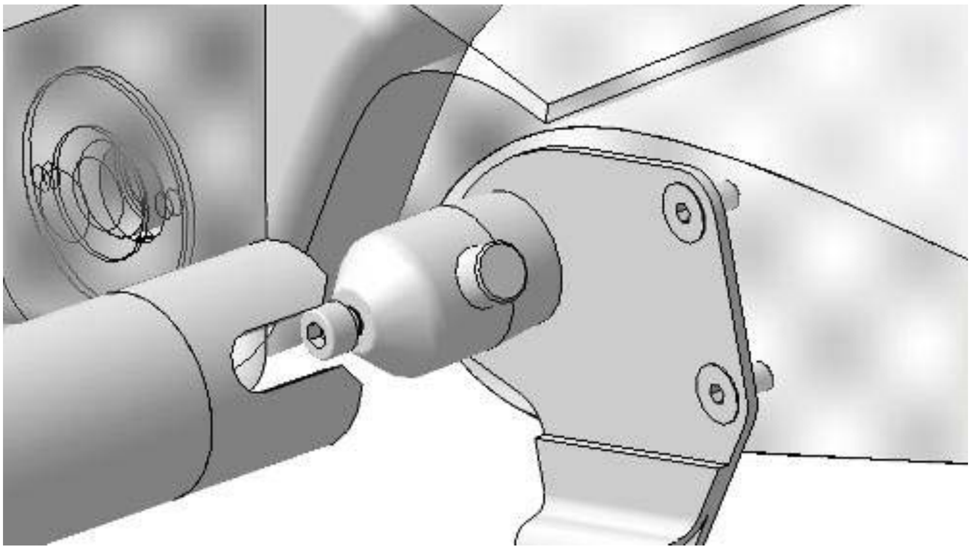


Fig. 57-00-8

8	Match the hole of the aft bushing KA1000101 on the fuselage with the pin on the wing root rib (1) (Fig. 57-00-9).	

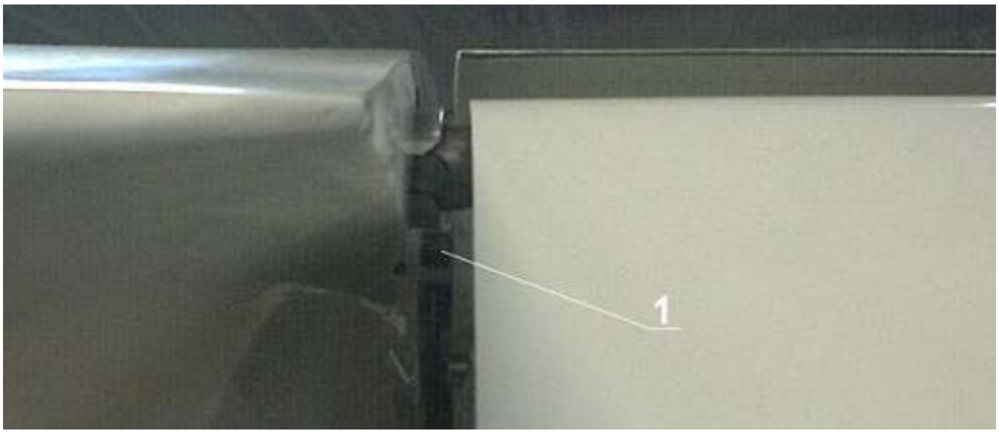


Fig. 57-00-9

9	Match the hole in the forward bushing KA1000110 of the fuselage with the pin of the wing root rib (1) (Fig. 57-00-10).	

Fig. 57-00-10

10	Set the pins of the wing root rib up to the stop into the forward and aft bushings on the fuselage. Take care that the flap pin gets into the groove of the tip (Fig. 57-00-7). Note that the pins can be set properly into the bushings by moving of the wing back and forth (Fig. 57-00-11) and up and down (Fig. 57-00-12).	

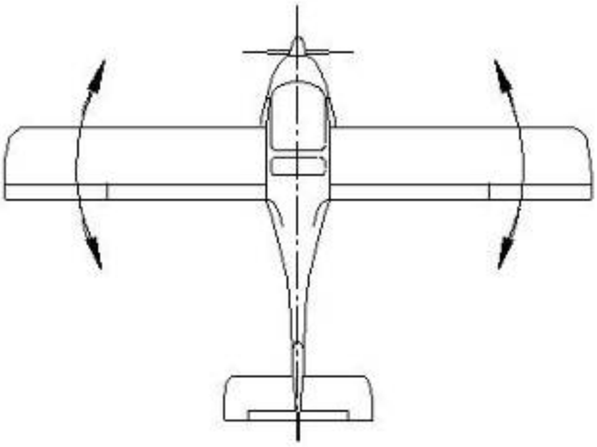


Fig. 57-00-11

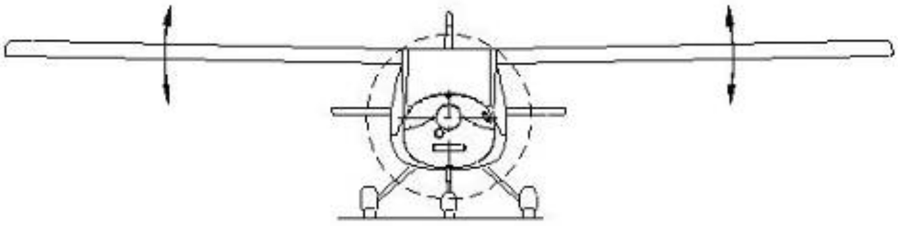


Fig. 57-00-12

11	Support the pre-set wing until both wings are installed and fixed by the main bolts.	
12	Repeat the procedure for the second wing.	
13	Match the hole of the spar bushing of the right wing with the hole of the bushing of the left wing from the right side moving the wing up and down (Fig. 57-00-13)	

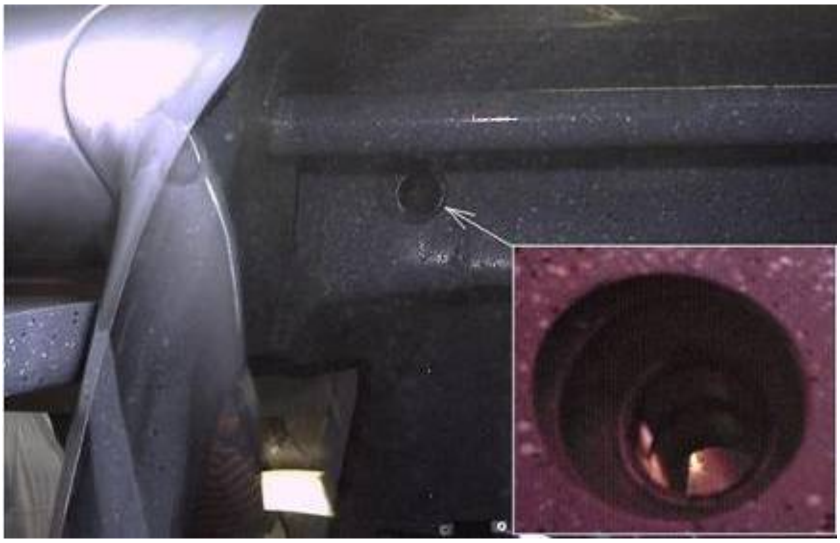


Fig. 57-00-13

14	Push the main bolts fully in, e.g. set the main bolt (1) into the matched holes of the bushings and by moving the wing up and down (Fig. 57-00-14, Fig. 57-00-15)	

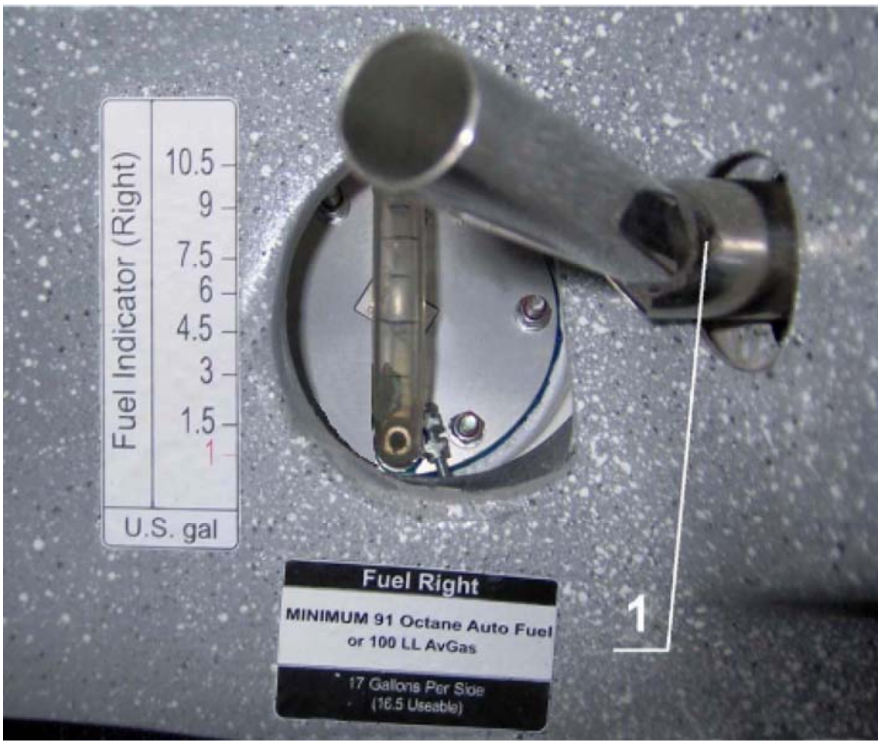


Fig. 57-00-14

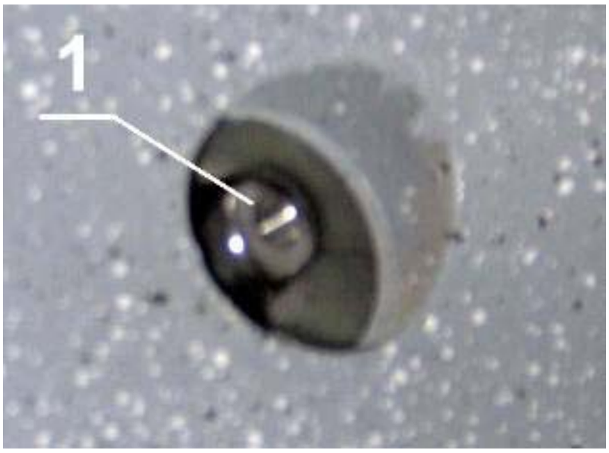


Fig. 57-00-15

15	Repeat steps 13-14 for the second main bolt.	
16	Secure the main bolts with the cap and bolt, e.g. set the caps (1) onto the main bolts and fix them by bolts M8x35 (Fig. 57-00-16). Torque value for the main bolts is 200 lb-in / 22.5 Nm.	

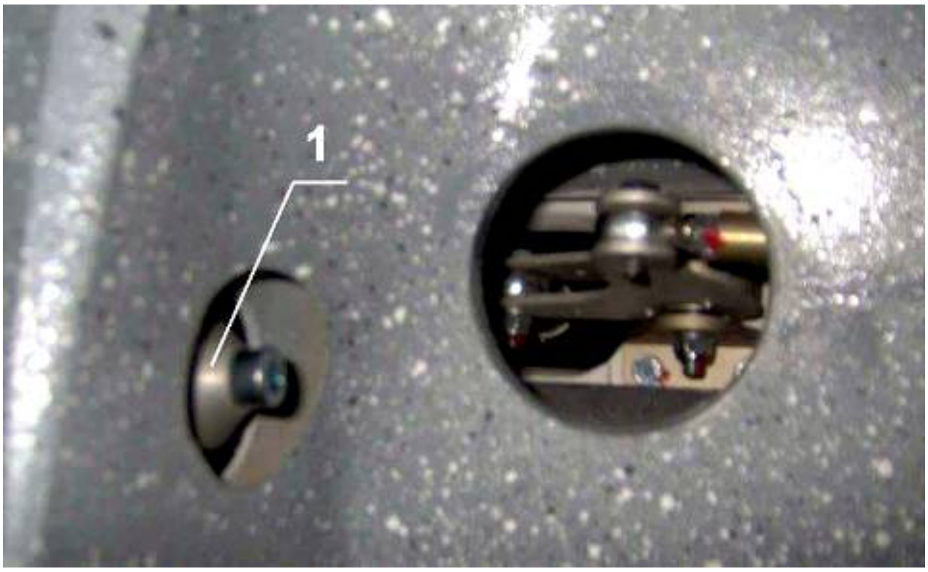


Fig. 57-00-16

17	Match the holes in the tip of the rod (1) with holes of the right wing aileron lever (2) (Fig. 57-00-17).	

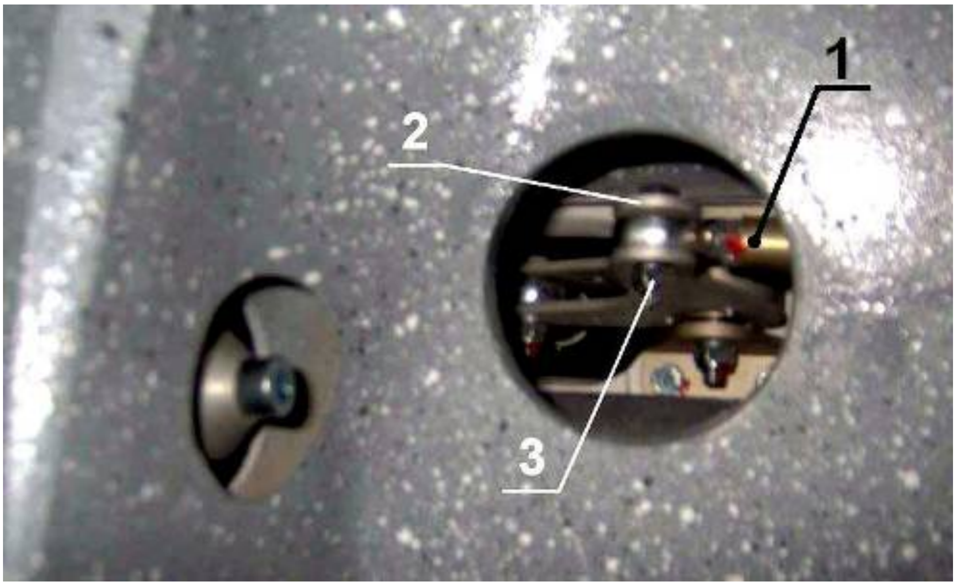


Fig. 57-00-17

	Aileron connection: Fix the rod (1) in the lever (2) with the bolt M6x30 C9996259A (3). Use only new self-locking nuts M6 (Fig. 57-00-17).	
17	Connect the fuel hoses (Fig. 57-00-18).	

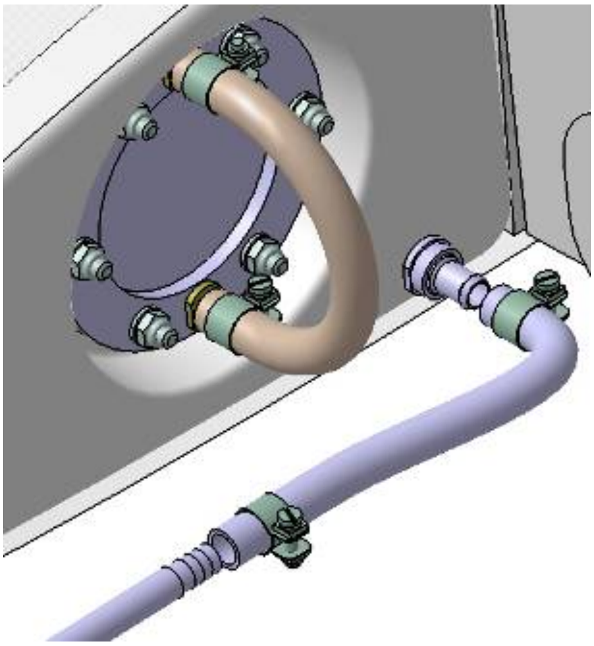


Fig. 57-00-18

18	Verification: -Make sure the main bolts are properly tight, check torque of the screws. -Make sure the control rod bolts are secured and marked with anti-sabotage lacquer -Make sure the fuel lines are properly secured with hose clamps	
19	Check the fuel flow rate.	12-10.2.3
20	Check the flap and aileron zero position and deflection.	27-10.3.1 27-10.3.2 27-50.3.1 27-50.3.2
21	Check position lights and pitot system operating.	

C. Wing Removal

Step	Action	Reference
1	Set the aircraft on the parking brake	
2	Drain all the fuel from the wings, fuel lines, and gascolator	12-10.2.1
3	Remove the wing in a reverse order to the wing installation process.	

57-00.3.2 *Wing Inspection*

57-00.3.2.1 Type of Maintenance

Line

57-00.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-00.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Wing Brackets Inspection

Step	***Action***	***Reference***
2	Inspect the wing brackets for security and play (Fig. 57-00-19). In case of play torque the bolts. Remove the plug covering the hole A to provide access to the aft of the wing lower skin.	

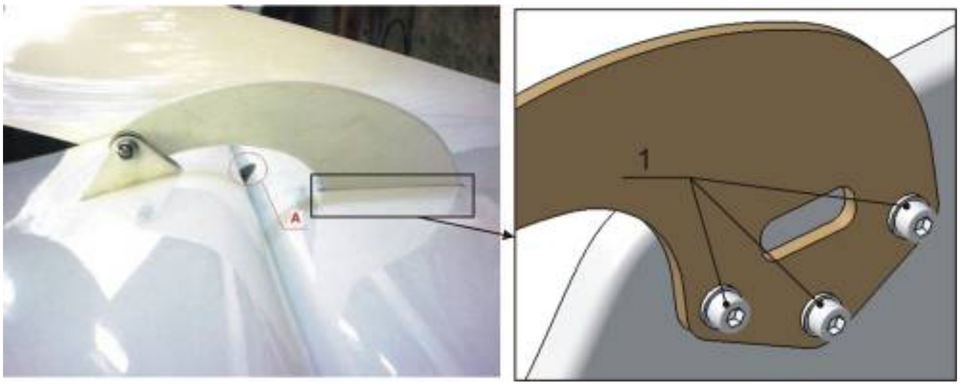


Fig. 57-00-19

Step	***Action***	***Reference***
3	Inspect the aileron and flap brackets for play. In case of play torque the bolts (1) (Fig. 57-00-19).	
4	Inspect the bearings for play (Fig. 57-00-20). Do not lubricate them with anything. If play exceeds $^{5}/_{256}$" / 0.5 mm, replace the bearing. For bearing installation use lock liquid Glue Loctite 480.	

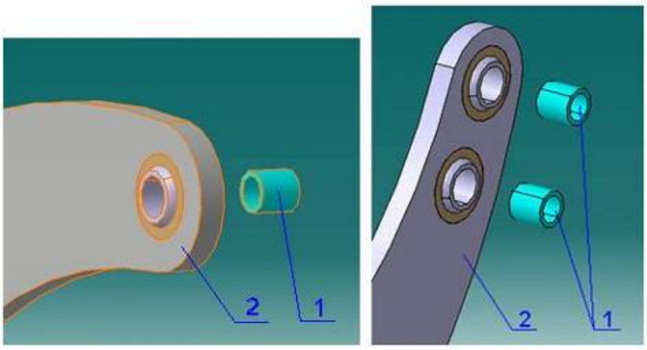


Fig. 57-00-20

Step	***Action***	***Reference***
5	Check if there is bushing (1) in the wing brackets (2) (Fig. 57-00-20).	

B. *Checking Fuselage-Wing Connection for Tangential Play*

Step	Action	Reference
1	Make sure that there is no play while moving the wing in accordance with Fig. 57-00-21.	

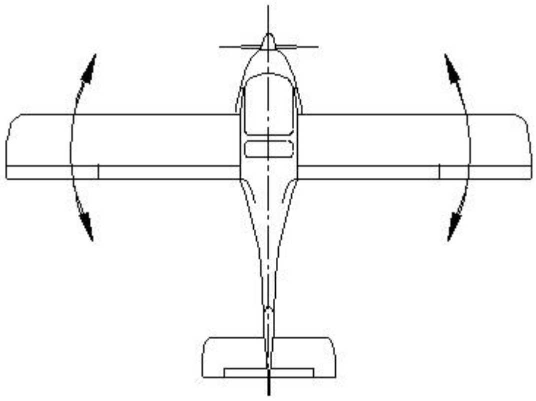


Fig. 57-00-21

C. Drain Holes Inspection

Step	Action	Reference
1	Check the drain holes provided on the lower surface of wing skin for blockage.	

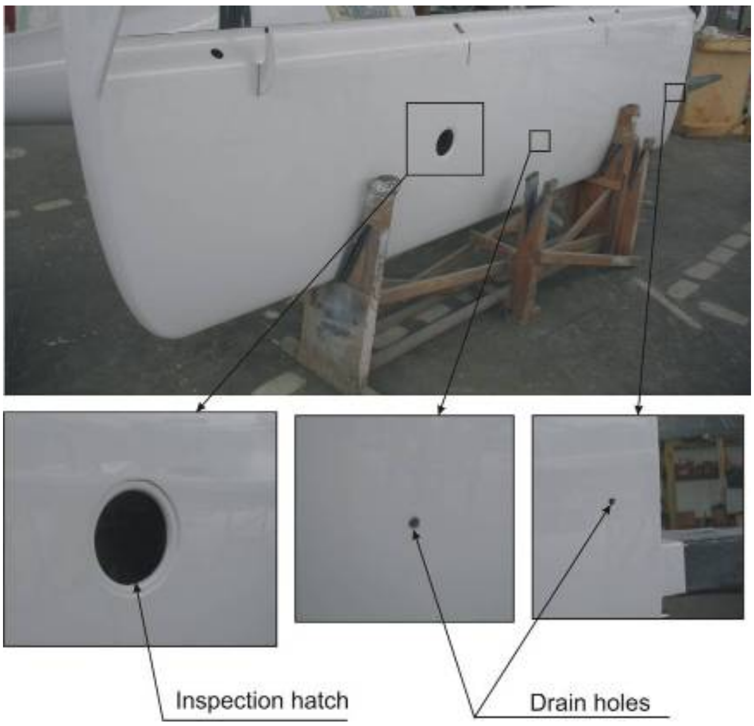


Fig. 57-00-22

Step	Action	Reference
2	Clean, when necessary	

D. Troubleshooting

Step	Action	Reference
1	In case when any abnormalities during inspection was found contact with manufacturer for further instructions.	

57-00.3.3 *Access Panel Removal and Installation*

55-20.3.3.1 Type of Maintenance

Line

55-20.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

55-20.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Access Panel Removal and Installation (Fig. 57-00-23).

Remove the wing hatch to provide access to the inner wing structure and aileron control components.

Step	*Action*	*Reference*
1	Unscrew 4 bolts (4) that fix the inspection hatch (1).	

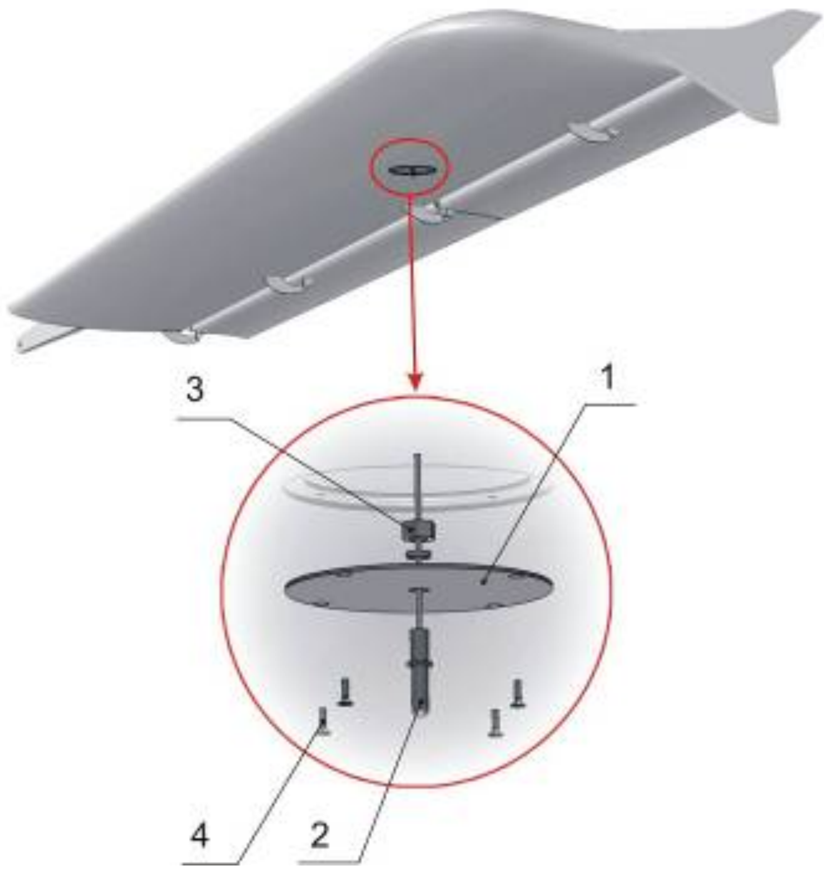


Fig. 57-00-23

Step	*Action*	*Reference*
2	Carefully let the hatch down until it is hanged on the OAT sensor cable (2).	
3	Disconnect the cable plug using access through the hatch opening.	
4	Unscrew the nut (3) from the OAT sensor.	

5	Disconnect the OAT sensor from the hatch (when installed).	
6	Remove plastic plugs that close access holes in the trailing edge (Fig. 57-00-24).	
 **Fig. 57-00-24**		
6	Installation of panels is done in reverse order.	

57-00.3.4 *Tie Down Points Removal and Installation*

57-00.3.4.1 Type of Maintenance

Line

57-00.3.4.2 Minimum Level of Certification

Pilot/Owner (P/O)

57-00.3.4.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Tie Down Points Removal and Installation (Fig. 57-00-24)

Step	*Action*	*Reference*
1	Remove access panel (inspection hatch).	57-00.3.5
2	Using access through the hatch unscrew lock-nut (3), remove washer (2).	
3	Unscrew the tie down loop (1).	
4	Installation is done in a reverse order.	

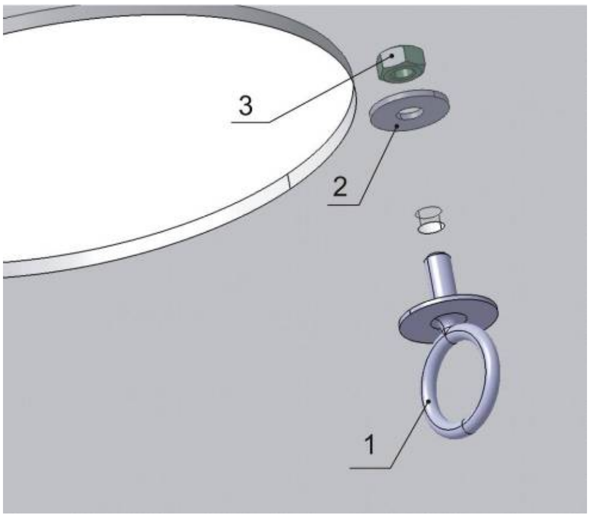


Fig. 57-00-24

SECTION 57-51 – FLAP

57-51.1 General

This section provides description of flap structure and maintenance practices.

57-51.2 Description

The flaps are driven by an electrical spindle motor and are activated via the flap control in the lower section of the instrument panel. The desired flap setting is selected with a torque switch.

The spindle motor is integrated into the mixer behind the main frame in the aircraft baggage compartment. It influences the controls mixer, whence the flaps are activated via push rods. Both flaps are directly attached to a torque tube in the fuselage, thus ensuring that they are always deflected symmetrically.

The flap servo has an internal load-limiting device which prevents the extension of the flaps at too high airspeeds without causing sustainable damage to the structure. Should the indicator blink constantly when extending the flaps, airspeed should be reduced. If the flaps then extend, the internal load-limiting device was in operation. If extension speed is below the maximum speed for flap extension as given in the handbook, the next Flight Design service station should be contacted.

The flap control circuit breaker is to be found directly adjacent to the flap controls. It will pop if the flap servo is continuously over-loaded. As it is a thermal circuit breaker, it can take some time before it can be pushed back in.

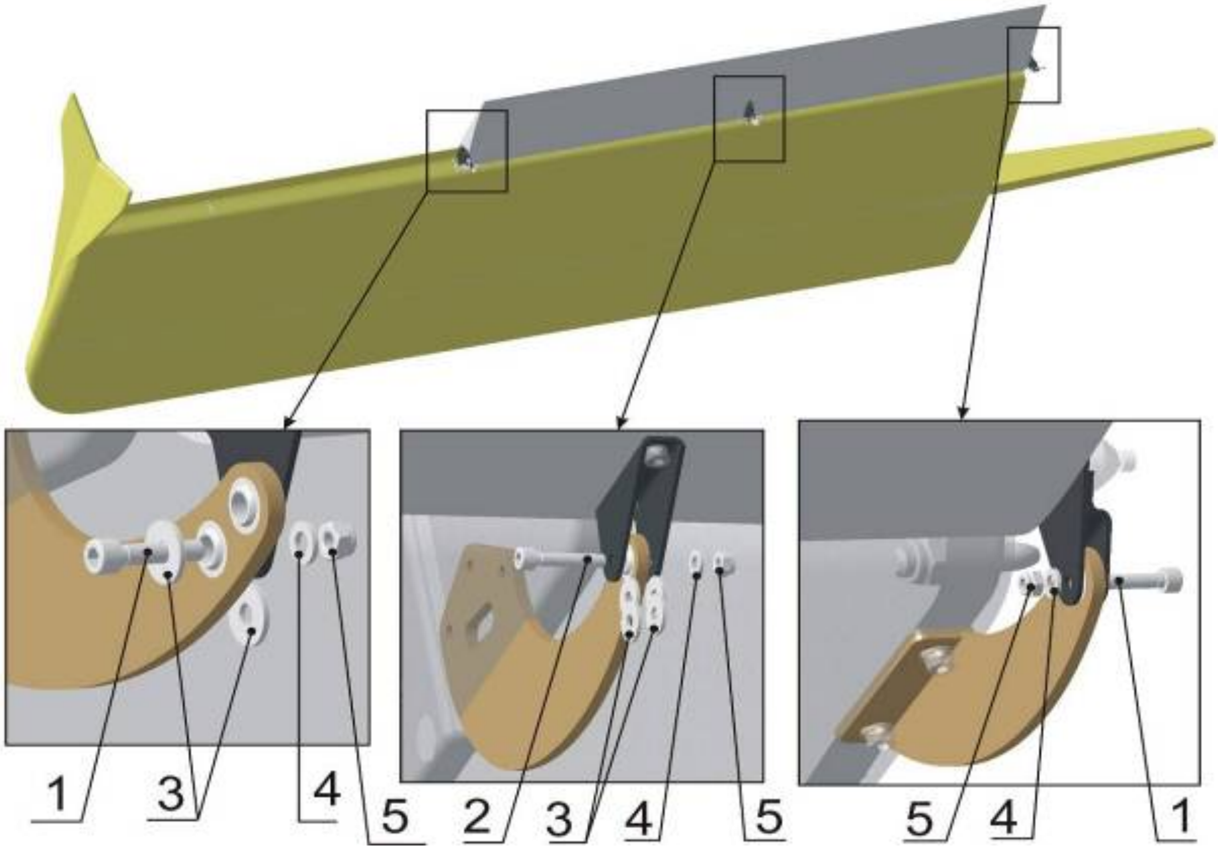


Fig. 57-51-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
57-51-1	1	Bolt DIN 912 M6x25		
	2	Bolt M6x29		
	3	Washer		
	4	Washer		
	5	Self-locking nut M6		

57-51.3 Maintenance Practices

57-51.3.1 *Flap Installation and Removal*

57-51.3.1.1 Type of Maintenance

Heavy

57-51.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-51.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Flap Installation

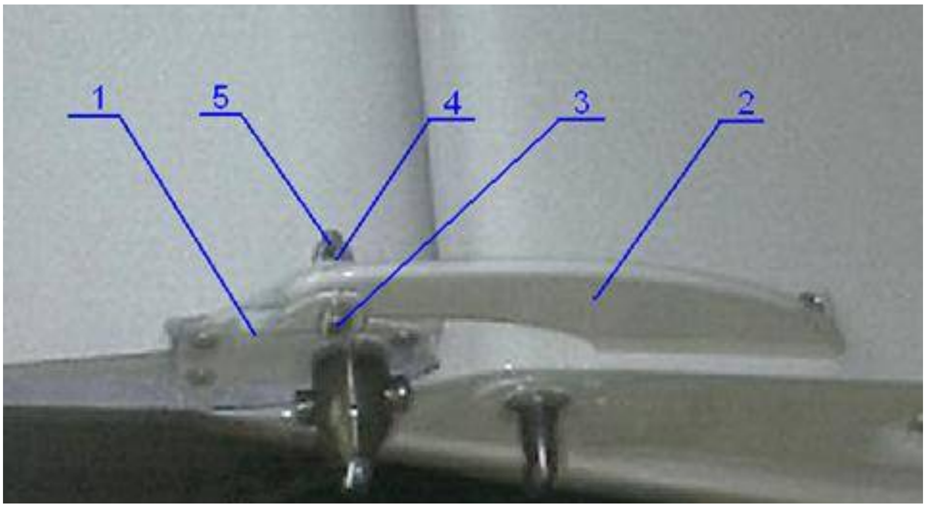
<table>
<tr><th>Step</th><th>Action</th><th>Reference</th></tr>
<tr><td>1</td><td>Match the hole in the root flap bracket (1) (KW2040010R for the right wing, or KW2040010L for the left wing) with the hole in the bushings of the bearing of the wing bracket No.1 (2) (KW2010010 for the right wing, or KW2020010 for the left wing) and connect them by the bolt (3) KA2020006 (but do not fix the bolt by the nut (5) (C9996334, Self-locking nut DIN 985-M6, regular), Fig. 57-51-2.</td><td></td></tr>
<tr><td colspan="3">

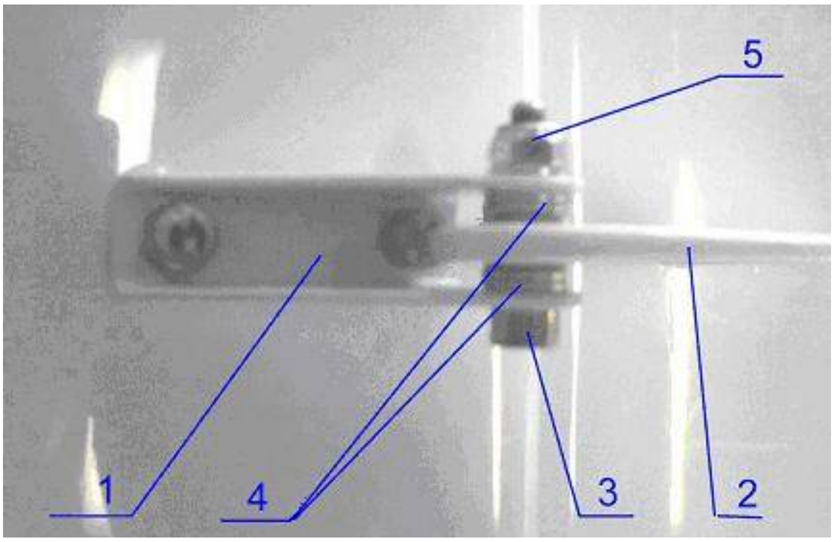
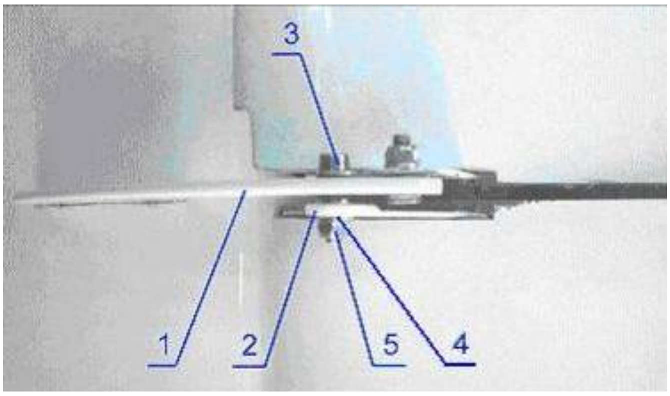
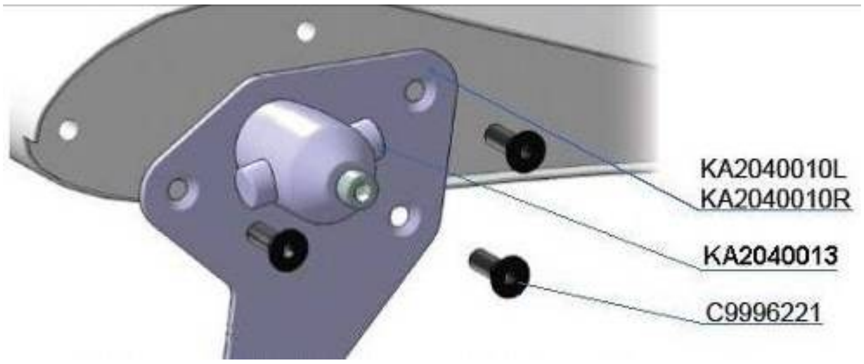
Fig. 57-51-2</td></tr>
<tr><td>2</td><td>Match the holes in the flap mid bracket (1) (KW2040020R for the right wing or KW2040020L for the left one) with the hole in the bushing of the bearing of the bracket No.2 (2) (KW2010020 for the right wing or KW2020020 for the left wing), put four washers (4) (C9996565, Washer DIN 9021-6.4 mm VZ) between the flap bracket and wing bracket (2 from one side of the wing bracket and 2 from other one) and connect them (brackets) by the bolt (3) KA2020007 (but do not fix the bolt by the nut (5) (C9996334, Self-locking nut DIN 985-M6, regular). Fig. 57-51-3.</td><td></td></tr>
<tr><td colspan="3">

Fig. 57-51-3</td></tr>
<tr><td>3</td><td>Match the holes in the outer flap bracket (1) (KW2040030R for the right wing or KW2040030L for the left wing) with the hole in the bushing of the bearing of the wing bracket No.3 (2) (KW2010030 for the right wing or KW2020030 for the left wing) and connect them by the bolt (3) KA2020006 Fig. 57-51-4.</td><td></td></tr>
</table>

	 **Fig. 57-51-4**	
4	Using a washer C99965604 (Washer DIN 125 A2B-6.4 mm) and the nut (5) (C9996334, Self-locking nut DIN 985-M6, regular) fix the bolts.	
5	While installing the wings, make sure that the pin at the root flap bracket (1) (KA2040010L(R)) got into connection with the tip of the flap rod (2) KA6030200 (Transverse rod). Fig. 57-51-5.	
	 Fig. 57-51-5	
6	Check connection between the flap bracket and the tip of the flap rod for play. Play is defined by free movement of the flap trailing edges with respect to each other while the actuator is fixed. The flaps are to be pre-set into “zero” position (aligned with the top of the fuselage). If play exceeds 5/128” / 1 mm, replace the pin KA2040013 (Fig. 57-51-6) on the flap bracket (KA2040010L(R)) to one of bigger diameter.	
	 **Fig. 57-51-6**	
7	Check flap Zero position and deflections.	27-50.3.1 27-50.3.2

B. Removal

Step	***Action***	***Reference***
1	Removal is done in a reverse order.	

57-51.3.2 *Flap Inspections*

57-51.3.2.1 Type of Maintenance

Line

57-51.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-51.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Drain Holes Inspection (Fig. 57-51-7)

Step	*Action*	*Reference*
1	Inspect the drain holes provided on the lower surface of the flap skin for the blockage.	

Fig. 57-51-7

SECTION 57-52 –
AILERON

57-52.1 General

This section provides description of aileron structure and maintenance practices.

57-52.2 Description

The ailerons are made of aramid top and bottom skins, carbon web and three glass fiber composite ribs. The aileron is attached to the wing by two hinged brackets.

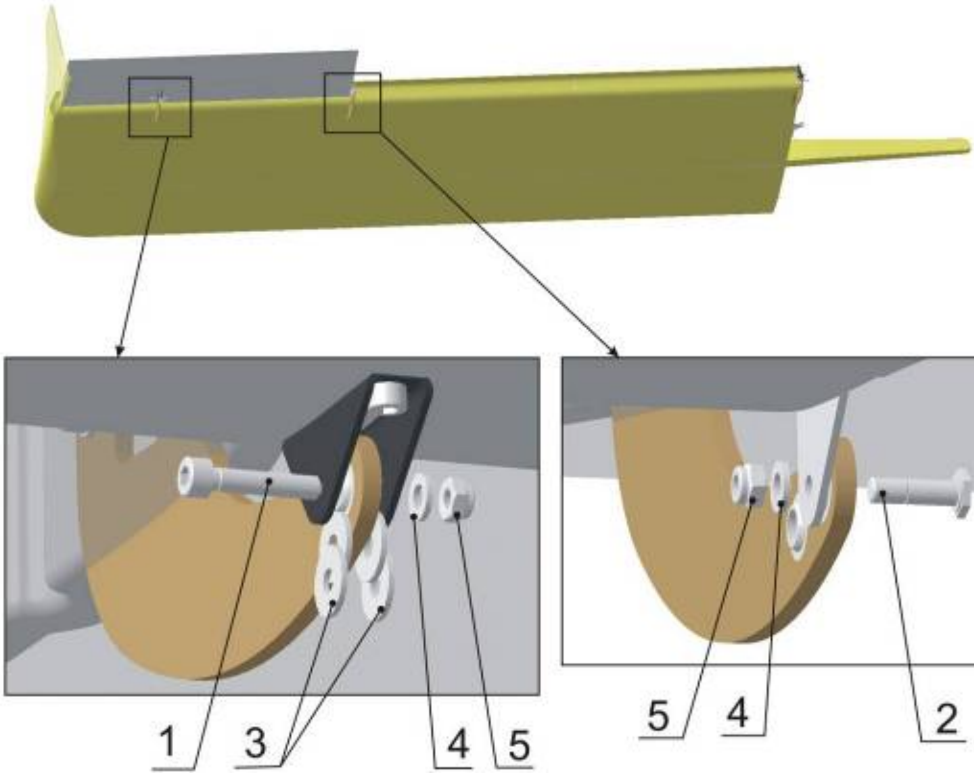


Fig. 57-52-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
57-52-1	1	Bolt M6x29		
	2	Bolt M6x25		
	3	Washer		
	4	Washer		
	5	Nut M6		

57-52.3 Maintenance Practices

57-52.3.1 *Aileron Installation and Removal*

57-52.3.1.1 Type of Maintenance

Line

57-52.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-52.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Aileron Installation

Step	***Action***	***Reference***
1	Match hole on the root aileron bracket (1) with hole in the bushing of the bearing of the wing bracket (2) and connect them by the bolt (3) (do not fix the bolt by the nut (4), Fig. 57-52-2).	

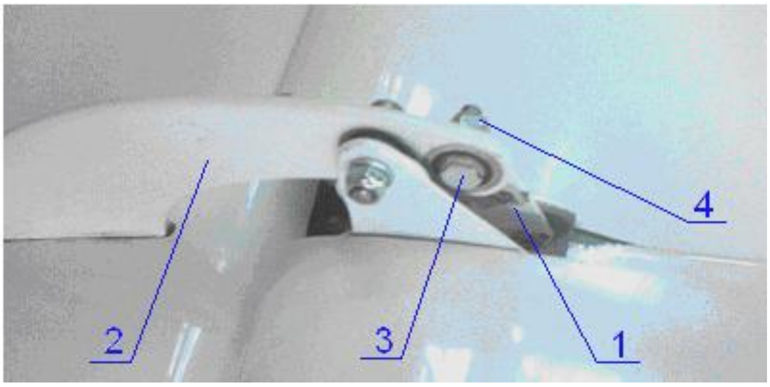


Fig. 57-52-2

● **Note:** The bolt connecting the aileron and the rod tip must not be installed.

Step	***Action***	***Reference***
2	Match hole in the aileron bracket (1) with hole in the bushing of the bearing of the wing bracket (2), put 4 washers (4) between the wing bracket and the aileron bracket and connect them by the bolt (3) (do not fix the bolt by the nut (5), Fig. 57-52-3.	

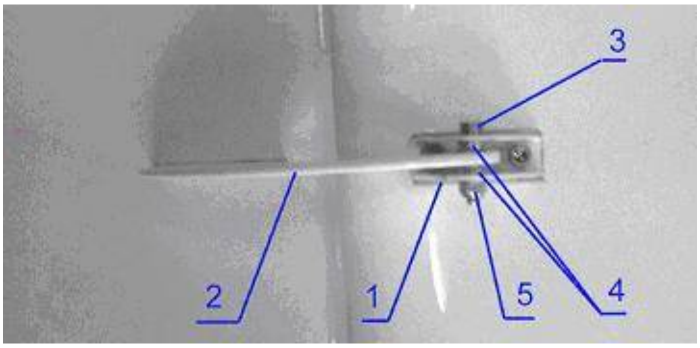


Fig. 57-52-3

Step	***Action***	***Reference***
3	Using a washer and the nut (5) fix the bolts (3). Use new nuts only. (Fig. 57-52-3).	
4	Apply 1 or 2 drops of Bonding liquid, middle strength Loctite 243 onto the threaded part of	

	the bolt C9996219 (Bolt DIN 7991 M6x35). Set the bearing C9997006A (Rod end bearing, ext. thread GA6) by the bolt C9996219 (Bolt DIN 7991 M6x35 A2) onto the aileron root rib. Use washers C9996565 (Washer DIN 9021-6.4 mm VZ) and C9996504 (Washer DIN 125 A2B-6.4 mm) as shown (Fig. 57-52-4).	

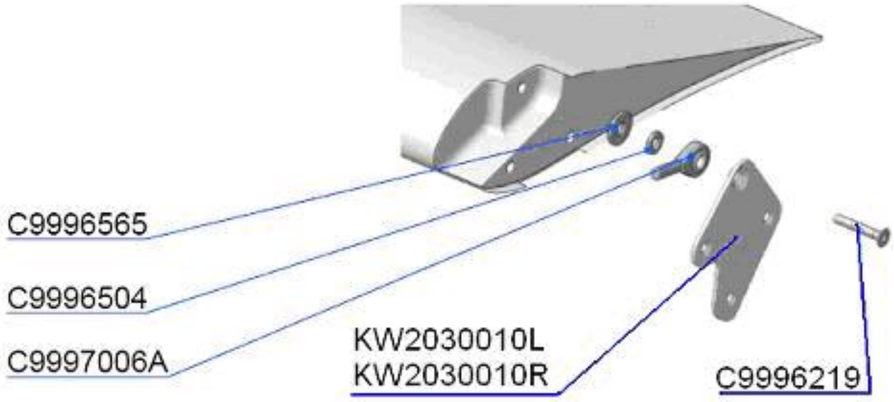


Fig. 57-52-4

5	Unscrew the nut C9996334 (Self-locking nut DIN 985-M6, regular). Disconnect the rod (KA6020030R) from the internal bellcrank. Fig. 57-52-5.	

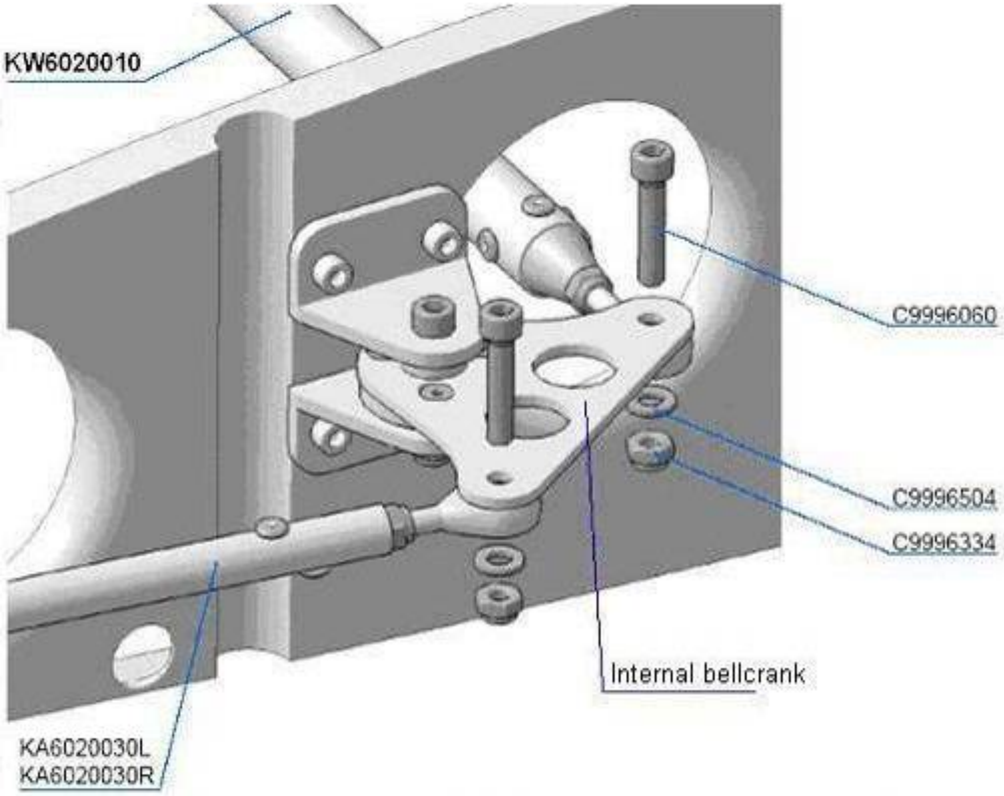
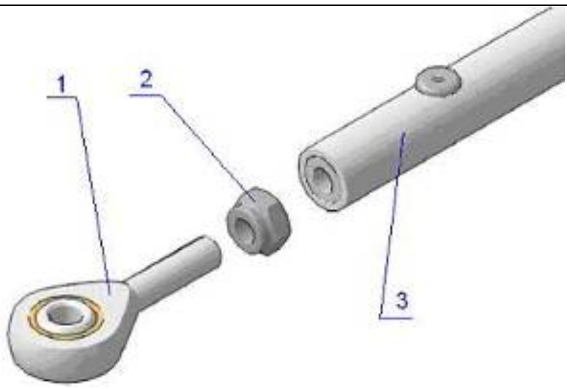
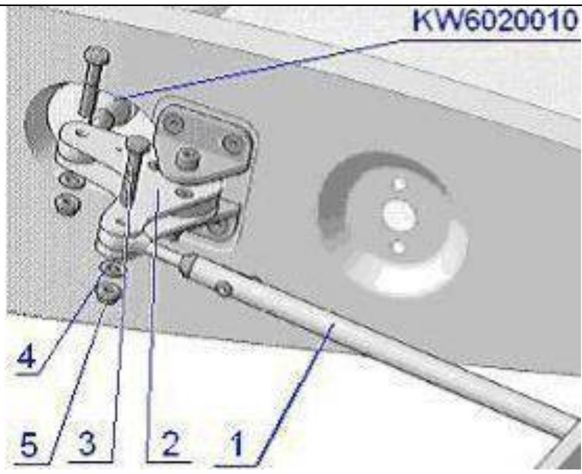


Fig. 57-52-5

6	Connect the rod (3) (KA6020030R) with the bearing (1), that is fixed to the aileron root rib as shown (Fig. 57-52-6).	

 **Fig. 57-52-6**		
7	Connect the aileron rod (1) (KA6020030R) with internal bellcrank (Fig. 57-52-5). Engage, but do not tighten the nut on the bolt.	
8	Set the external bellcrank (2) KA6020040 so that the line between the rod (1) attachment hole and bellcrank axle of rotation is perpendicular to the root rib (Fig. 57-52-7). At the same time the internal bellcrank must be set so that the line between the rod KW6020010 mounting hole and bellcrank axle of rotation is parallel to the rib of the wing.	
 **Fig. 57-52-7**		
9	When necessary correct internal bellcrank positions by adjusting length of the KW6020030R rod; disconnect the rod KW6020030R from internal bellcrank and aileron and adjust length of the rod.	20.5
10	Check aileron Zero position and angles of deflection.	27-10.3.1 27-10.3.2

B. Removal

Step	***Action***	***Reference***
1	Removal is done in a reverse order.	

57-52.3.2 *Aileron Inspections*

57-51.3.2.1 Type of Maintenance

Line

57-51.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

57-51.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Drain Holes Inspection (Fig. 57-52-8)

Step	***Action***	***Reference***
1	Inspect the drain holes provided on the lower surface of the aileron skin for the blockage.	

Fig. 57-52-8

CHAPTER 61 – PROPELLER

Contents

61-00.1 General

This chapter provides description of the propeller.

61-00.2 Description

The CTLS-LSA is available with following propellers:

Neuform	CR3-65-(IP)-47-101.6, 3 blade composite propeller, ground adjustable
Neuform	CR3-V-70-(IP)-R2-ECS, 3 blade composite propeller, variable pitch, with electronic constant speed controller

The instructions for operation and maintenance of this propeller is provided by the propeller manufacturers in separate manuals, see Appendix I of this document.

In case of the ground adjustable propeller, the approved pitch adjustment is 21.5° +/- 1°, measured at 75% propeller blade radius to the lower blade airfoil contour (not to the chord). With this pitch adjustment the propeller reaches 4800 … 5000 static engine rpm and does not exceed 5500 engine rpm in level flight at ISA 0 conditions with full throttle.

61-00.3 Maintenance Practices

For propeller inspection and maintenance instructions refer to the latest issue of maintenance manual provided by the propeller manufacturer.

61-00.3.1 *Spinner Installation and Removal*

61-00.3.1.1 Type of Maintenance

Line

61-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

61-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Spinner Installation and Removal

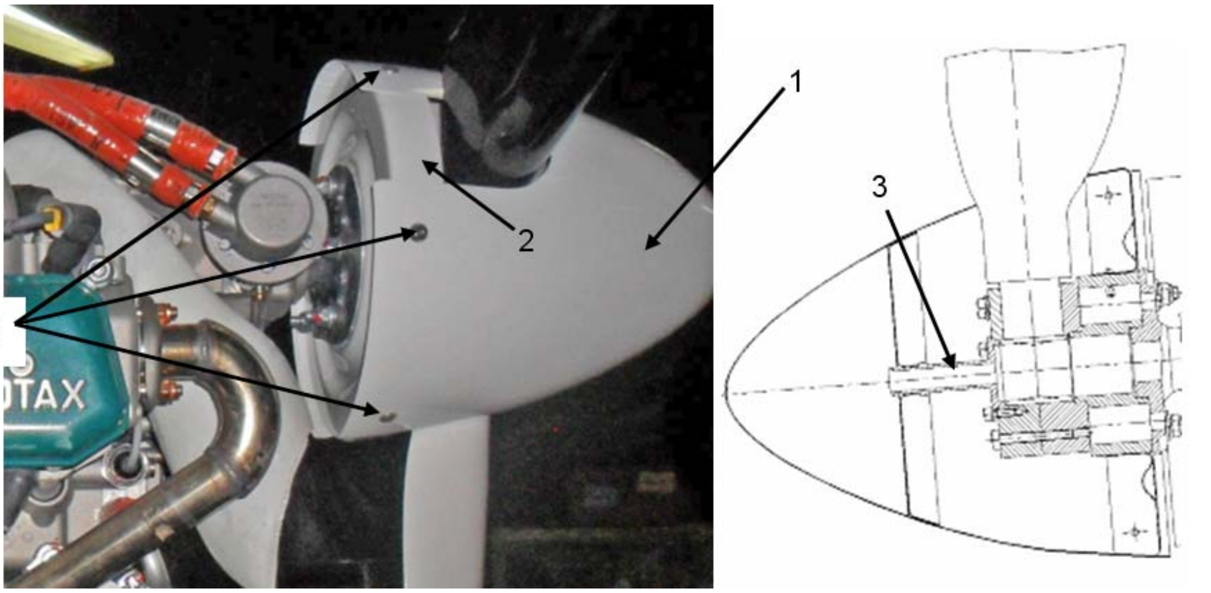


Fig. 61-00-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
61-00-1	1	Three-bladed propeller spinner		KF61000100
	2	Disk, Supporting, Spinner		KF61000200
	3	Spinner axis		KF61000004
	4	Screw M5		C9996161

Step	*Action*	*Reference*
1	Set the aircraft to chokes and switch the ignition OFF.	
2	Check presence of clearance between cowling and Spinner 1.	
2	Remove cowlings.	71.2.1
3	Inspect the Spinner 1 for playing on the Spinner Axis 3.	

4	Unscrew 6 Screws M5, item 4, and move Spinner 1 forward along the Spinner Axis 3 to remove it.	
5	Inspect Spinner Disk 2 and Spinner 1 for damages, paint delaminating.	
6	Inspect the Spinner Axis 3 for playing and screws securing. Inspect for cracks and corrosion.	
7	Install Spinner in reversed direction order.	

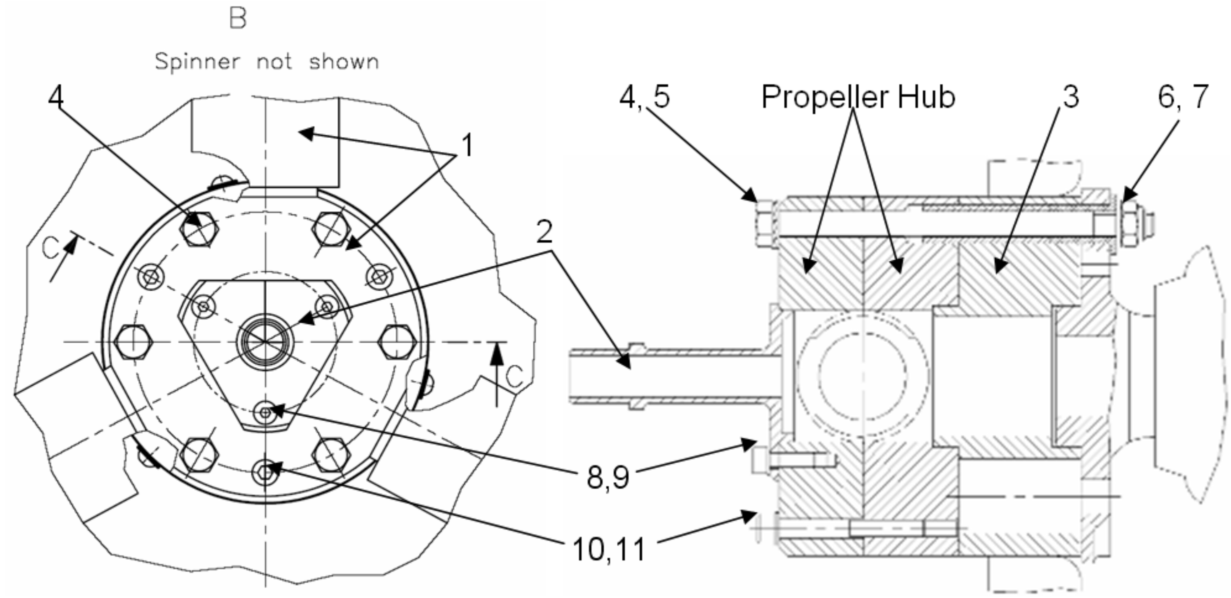


Fig. 61-00-2

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
61-00-2	1	Three bladed Propeller		C9997799C
	2	Spinner axis		KF61000004
	3	Spacer		KF61000001
	4	Bolt M8		C9997800J
	5	Lock Washer 8.4		C9997799C, part of set
	6	Washer 8.4		C9996505
	7	Nut M8	27Nm	C9996336
	8	Bolt M5		C9996035
	9	Washer 5.3		C9996503
	10	Bolt M6		C9996063
	11	Washer 6.4	10Nm	C9996504

C. Propeller Inspection

Step	*Action*	*Reference*
1	Inspect the Propeller hub and blades for damages, cracks, paint delaminating and corrosion.	
2	Inspect blades for play.	
3	Inspect the Propeller according manufacturers maintenance manual.	
4	Check the proper tightening of all propeller connection screws.	

61-00.3.2 *Propeller Removal and Installation*

61-00.3.2.1 Type of Maintenance

Line

61-00.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

61-00.3.2.3 Procedure

Refer to the maintenance manual provided by the propeller manufacturer for the specific propeller.

61-00.3.3 *Further Propeller Maintenance*

For any further maintenance procedures affecting the propeller, propeller blades or propeller hub refer to the maintenance manual provided by the propeller manufacturer for the specific propeller. When additional instruction is required, contact the aircraft manufacturer.

CHAPTER 71 –
ENGINE

Contents

71-00.1 General

This chapter provides description of the engine systems.

71-00.2 Description

The engine of the CTLS-LSA is a standard ROTAX® 912 S engine. It is a horizontally opposed, four cylinders, four stroke engine with central camshaft-push rod-OHV, liquid-cooled cylinder heads and a dry sump, pump-fed lubrication system. The propeller is attached to the engine by an integrated gearbox (2.43:1 reduction) with a mechanical vibration damper. It is also equipped with a Bing constant pressure carburetor. The engine has an electric starter and a capacitive discharge (CDI)-dual ignition.

The engine is equipped with a friction clutch and thermostats for the oil and water-cooling systems.

All details of the engine design are provided in the Operator's Manual OM-912 provided by the engine manufacturer for the installed engine.

71-00.3 Maintenance Practices

71-00.3.1 *Engine Cowlings Removal*

The upper and lower cowlings cover engine compartment. The cowlings are connected together and attached to the fuselage. The cowlings provided with quick fasteners.

The upper cowling provided with an inspection hatch for access to oil and coolant tanks.

The lower cowling provided with air-inlets for engine cooling, air induction, cabin heating and mounting place for landing light (optionally).

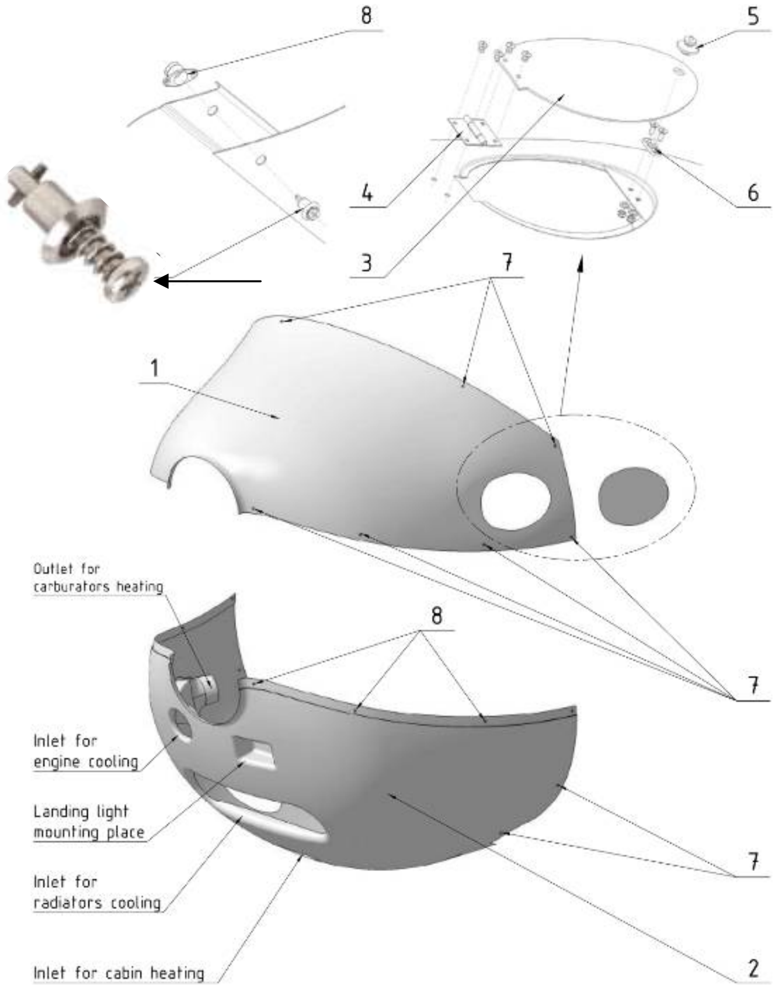


Fig. 71-00-1

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
71-00-1	1	Cowling, Engine, Upper		KF71100100
	2	Cowling, Engine, Lower		KF71100203
	3	Plate, Hatch		KF71100112
	4	Hinge 50x31x1.1mm		C9997732I
	5	Button TENAX 01		C9997541A
	6	Button TENAX 04		C9997541B
	7	Camlock Stud		C9996903Z
	8	Receptacle 212-12ND		C9996911A

71-00.3.1.1 Type of Maintenance

Line

71-00.3.1.2 Minimum Level of Certification

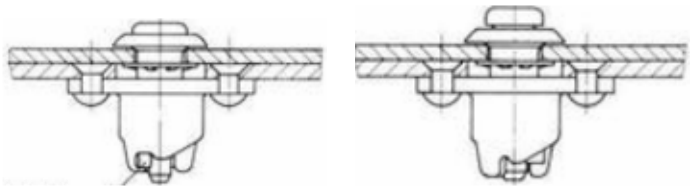
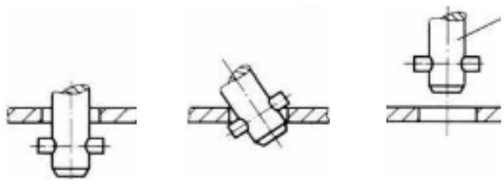
Pilot/Owner (P/O)

71-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Engine Cowlings Removal

Step	*Action*	*Reference*
1	Set the aircraft to chokes and switch the ignition OFF	71.2.1
2	Unscrew 13 Camlock Studs 7: Press and turn with the screwdriver to quarter-turn;  Remove Camlock Studs.  Remove Upper Cowling 1.	
3	Unscrew 6 Camlock Studs 7. Remove Lower Cowling 2.	
4	Inspect the Cowlings and Camlock Studs for damages. Replace Camlock Studs if required	
5	Clean cowlings	
6	Install Cowlings in reversed direction order	

71-00.3.2 *Engine Mount Inspection*

The engine is attached to the primary aircraft structure via strong steel engine mount.

The small engine mount is attached directly to engine. The small engine mount is attached to the Big Engine mount via rubber chock mounts.

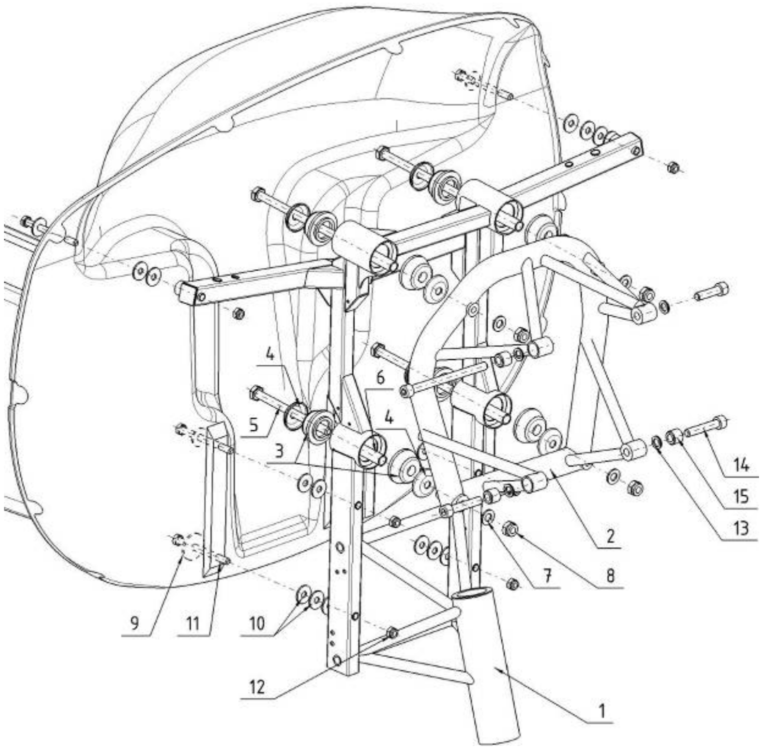


Fig. 71-00-2

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
71-00-2	1	Big Engine Mount		KF71200100
	2	Small Engine Mount		C9997796X
	3	Shock Mount		C9997789L
	4	Shock Mount Washer		Part of set C9997789L
	5	Screw M10		KF71000009, KF71000010, KF71000011, KF71000013
	6	Spacer		KF71000005, KF71000006, KF71000007, KF71000008
	7	Washer		C9996506
	8	Self-Locking Nut M10	35 Nm	C9996337
	9	Washer		KF71000012
	10	Washer		C9996567
	11	Screw M8		C9996259V
	12	Self-Locking Nut M8	22.5 Nm	C9996336
	13	Lock Washer 10.7		C9996570D
	14	Screw M10	35 Nm	KF71200001, KF71200002, KF71200004,
	15	Spacer Bush		KF71000018

71-00.3.2.1 Type of Maintenance
Line

71-00.3.2.2 Minimum Level of Certification
LSA- Mechanic (LSAM)

71-00.3.2.3 Procedure
A. Recommended Special Tools and Parts

Item	*Quantity*	*Unit*
None		

B. Engine Mount Inspection

Step	*Action*	*Reference*
1	Remove upper and lower cowlings	71.2.1
2	Lift the forward fuselage by pushing down the tail at the narrowest part so that the Nose Wheel is at least 10’’ (25 sm.) off the ground.	
3	Insert the padded support securely just behind the firewall (under the fuselage bottom).	
4	Inspect the Engine Mounts 1 and 2 for deformations, cracks, paint delaminating, corrosion, loose hardware, chafing by cables, wires, hoses, etc., and make sure that any flexible item is secured to the engine mount.	
5	Inspect the rubber Shock Mounts for porosity, cuts, damages and deformations.	
6	Inspect the presence of lock wire on engine mounting Screws M10 item 14. Replace safety wire if necessary.	
7	Inspect engine mounting screws for condition and tightening (the red paint marks on the screw-nut connection).	

71-00.3.3 *Air Induction Inspection*
Air is fed into the engine from a NACA inlet at the left side of the lower cowling, through a cylindrical air filter installed in the filter box at the firewall and through an aluminum air box which fills both carburetors with adequate air amount.
The carburetor heating is operated through the control located in the cabin. When the carburetor heat is on, air flow into the aluminum air box changes from fresh air to heated air. The heated air comes from the same exhaust shroud as supplies the cabin heating system. Air for this shroud is supplied from an inlet in the front underside of the lower cowling. As the air flow for heated air is completely separate from the regular air intake, preheated air provides a fully redundant air supply up to the air box.

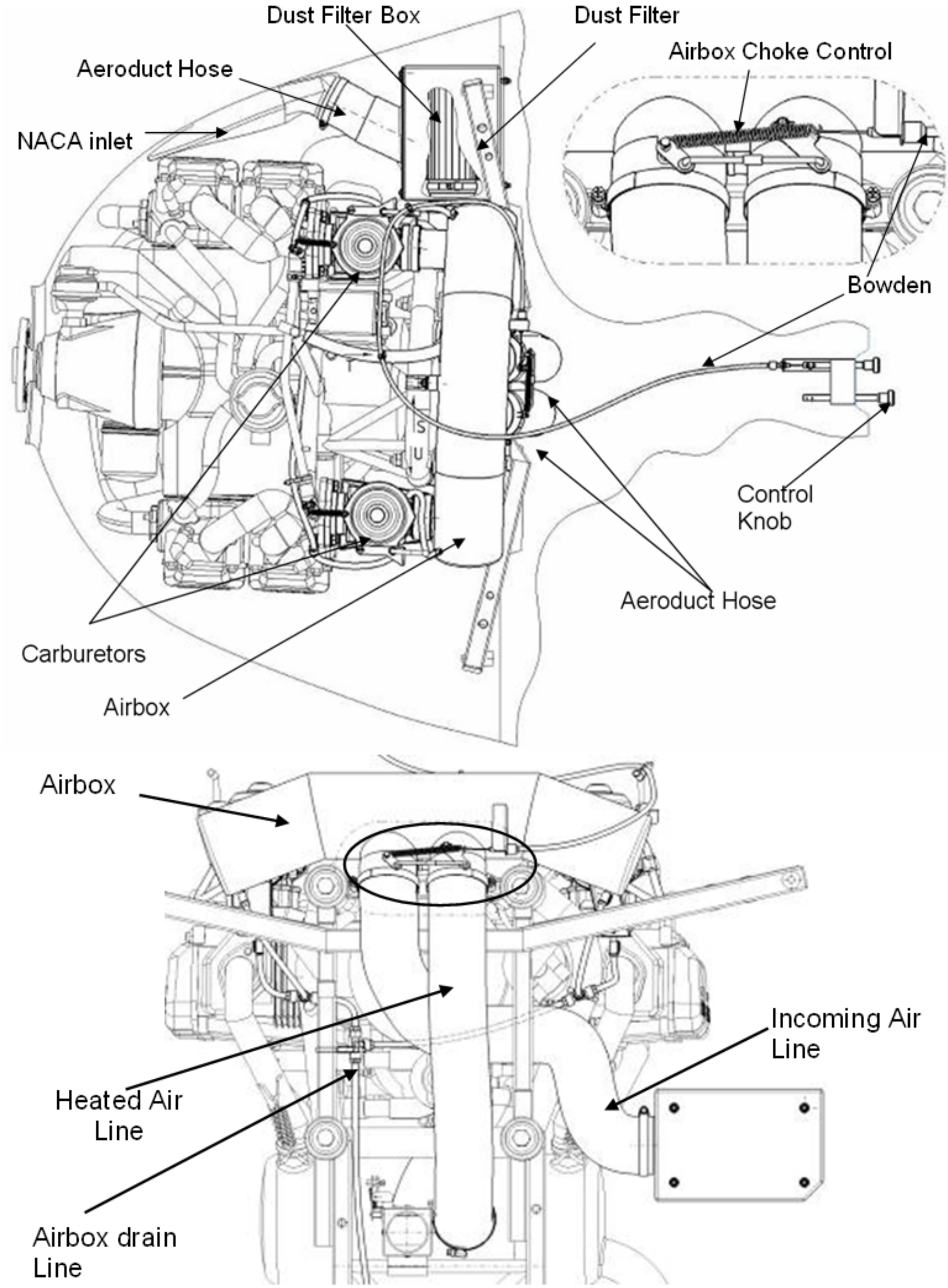


Fig. 71-00-3. Air Induction and Carburetors heating

71-00.3.3.1 Type of Maintenance

Line

71-00.3.3.2 Minimum Level of Certification

Pilot/Owner (P/O)

71-00.3.3.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

A. Carburetors heating system inspection

Step	***Action***	***Reference***
1	Remove upper and lower cowlings	71.2.1
2	Check Aeroduct hoses for damage, security of attachments and condition.	
3	Check the Carburetors and Airbox installation. Inspect tightening of securing clamps.	
4	Inspect carburetors and Airbox drain lines for damages and blockages.	
5	Check Airbox Choke control for proper operation. Pull-push Control Knob and listen choke knocks.	
6	Set parking brake. Run the engine. Set the cruise RPM. Check the engine RPM.	
7	Pull the Control Knob to the end position. The RPM drop must be 100-200 RPM.	

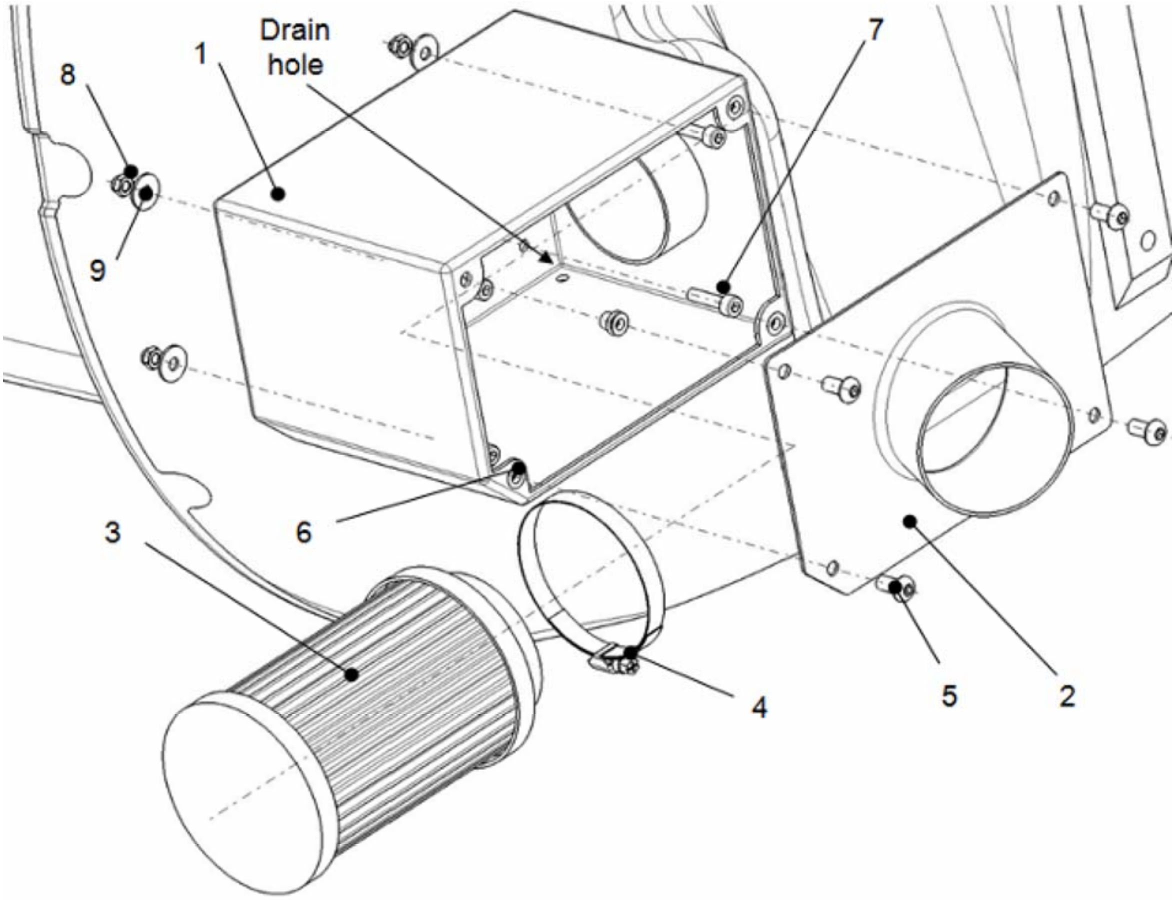


Fig. 71-00-4. Dust Filter installation

Fig.	Item	Part Name	Torque	Reference
71-00-4	1	Dust Filter Box		KF28001020
	2	Cover		KF28001023
	3	Air filter		C9997789N
	4	Clamp		part of set C9997789N
	5	Screw M5		C9996161
	6	Rivet Nut M5		C9996834
	7	Screw M5		C9996035
	8	Self-locking Nut		C9996333
	9	Washer		C9996563

B. Dust Filter Inspection.

Step	Action	Reference
1	Unscrew four screws 5 and remove Cower 2.	
2	Loose Clamp 4.	
3	Check conditions of dust filter. Clean Air Filter 3 and Dust Filter Box 1. Replace Filter if required.	
4	Check the drain hole at the bottom of the box for obstructions or blockage.	
5	Check incoming air line for damage, security of attachments and condition.	
6	Install air filter in reverse order.	

71-00.3.4 *Starter Replacement*

71-00.3.4.1 Type of Maintenance

Line

71-00.3.4.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

71-00.3.4.3 Procedure

Refer to the maintenance manual provided by the engine manufacturer for the specific engine.

71-00.3.5 *Generator Replacement*

71-00.3.5.1 Type of Maintenance

Heavy

71-00.3.5.2 Minimum Level of Certification

LSA- Mechanic (LSAM). Refer to the applicable Rotax eninge maintenance manual for further requirements, also task specific.

71-00.3.5.3 Procedure

Refer to the maintenance manual provided by the engine manufacturer for the specific engine.

71-00.3.6 *Other Engine Maintenance*

This maintenance practice covers all maintenance items that affect the core engine directly, that are not otherwise defined within this AMM and that are appropriately defined within the applicable Rotax engine maintenance manual.

71-00.3.6.1 Type of Maintenance

Heavy

71-00.3.6.2 Minimum Level of Certification

Minimum LSA- Mechanic (LSAM). Refer to the applicable Rotax eninge maintenance manual for further requirements, also task specific.

71-00.3.6.3 Procedure

Refer to the maintenance manual provided by the engine manufacturer for the specific engine.

CHAPTER 73 –
ENGINE FUEL AND CONTROL

Refer to the maintenance manual provided by the engine manufacturer for your engine for description and maintenance instructions on the engine-mounted portion of the fuel system.

CHAPTER 74 –
IGNITION

Refer to the maintenance manual provided by the engine manufacturer for your engine for description and maintenance instructions on the ignition system including spark plugs.

CHAPTER 75 –
COOLING

Contents

75-00.1 General

This chapter provides description and information concerning maintenance of engine cooling.

75-00.2 Description

The engine is provided with liquid cooling. The coupled water and oil radiators are installed in front of the engine just behind the air-inlet. The fresh air flow through the radiators enclosure and cool down coolant liquid and oil. The optionally in cooling system could be included water thermostat to stabilize engine temperature condition.

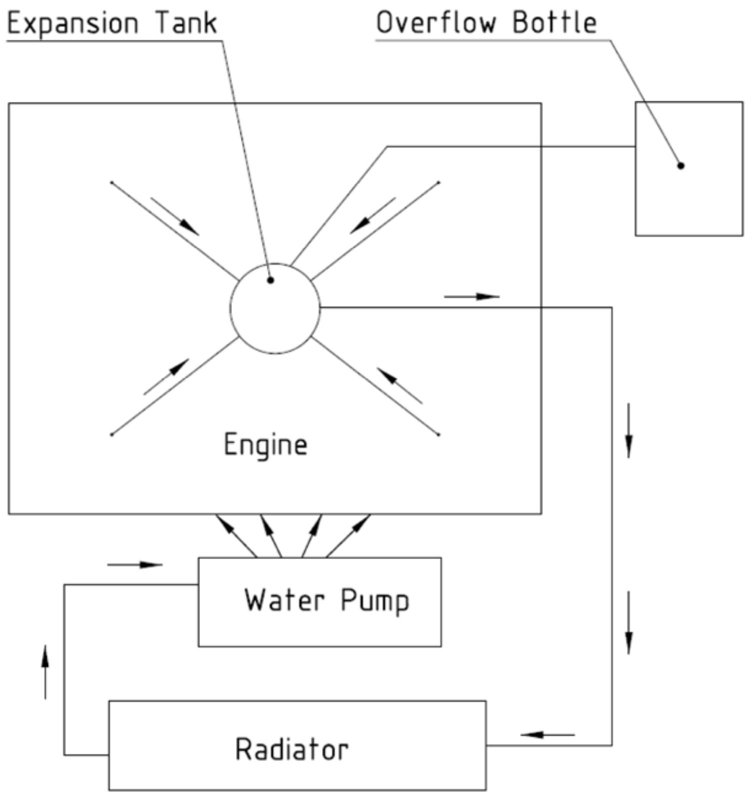


Fig. 75-00-1

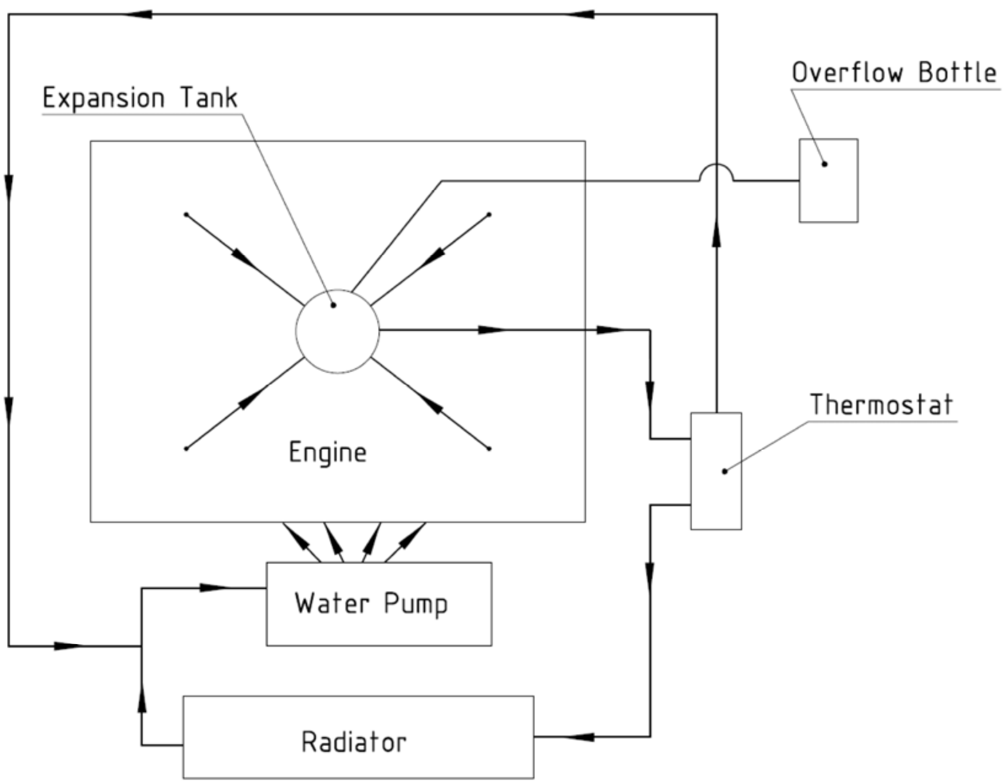


Fig. 75-00-2. Cooling system diagram with thermostat

From the top of the cylinder heads the coolant passes on to the expansion tank. Since the standard location of the radiator is below engine level, the expansion tank located on top of the engine allows for coolant expansion. The expansion tank is closed by a pressure cap (with excess pressure valve and return valve). At temperature rise of the coolant the excess pressure valve opens and the coolant will flow via a hose at atmospheric pressure to the transparent overflow bottle. When cooling down, the coolant will be sucked back into the cooling circuit. The overflow bottle attached to the airframe structure. For cooling system employed components (radiator, extension tank, overflow bottle, thermostat (if use) and the set of connection fittings) supply together with engine by engine manufacturer. Engine manufacturer provided all requirements to cooling system parts. Cylinder head temperatures are measured by means of temperature probes installed in cylinder heads.

Air cooling of cylinders provided by cooling jacket installed on top of crankcase. It directs fresh air from cowling air inlet to all cylinders.

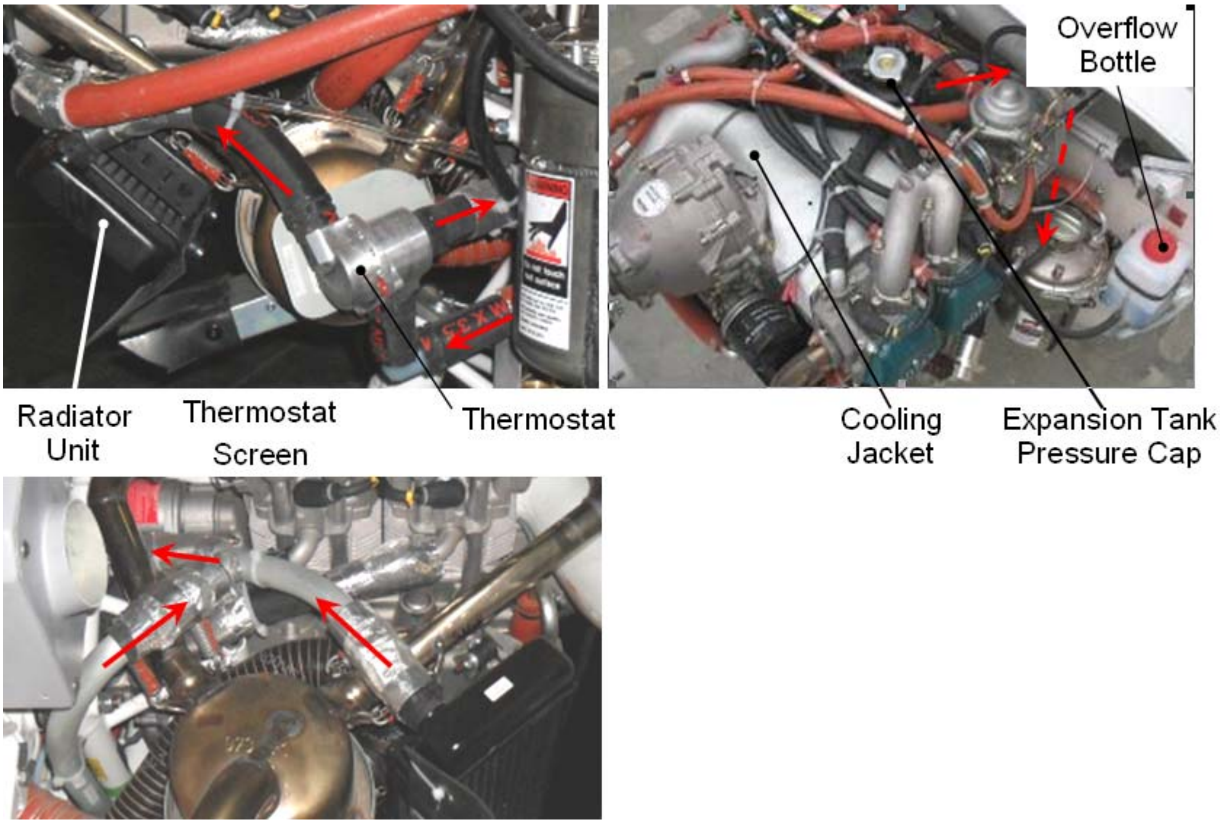


Fig. 75-00-3. Cooling System

75-00.3 Maintenance Practices

75-00.3.1 *Cooling Inspection*

75-00.3.1.1 Type of Maintenance

Line

75-00.3.1.2 Minimum Level of Certification

Pilot/Owner (P/O)

75-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Cooling Inspection

Step	***Action***	***Reference***
1	Inspect connections for leaks.	
2	Check coolant level. Replenish if required.	
3	Inspect cylinders for dents, cracks and cooling jacket for chafing marks and burn spots. If damages observed – replace cooling jacket.	
4	Check the securing and conditions of Cylinder Head Temperature (CHT) sensor. Tighten sensor with torque 10Nm and secured with Loctite 221.	

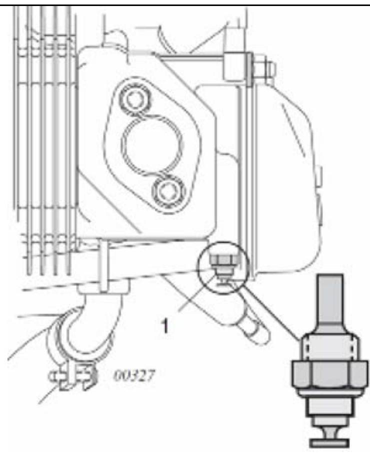


Fig. 75-00-4. Cylinder Head Temperature sensor.

5	Check conditions of cooling lines and connections for leakages. Check cooling lines for damages, overheating marks. Replace cooling line or clamp if required.	
6	Inspect Expansion Tank, Pressure Cap and Overflow Bottle for damage and abnormalities.	
7	Inspect Radiator Unit and its mounting points. Check Shock mounts conditions and connections tightening.	

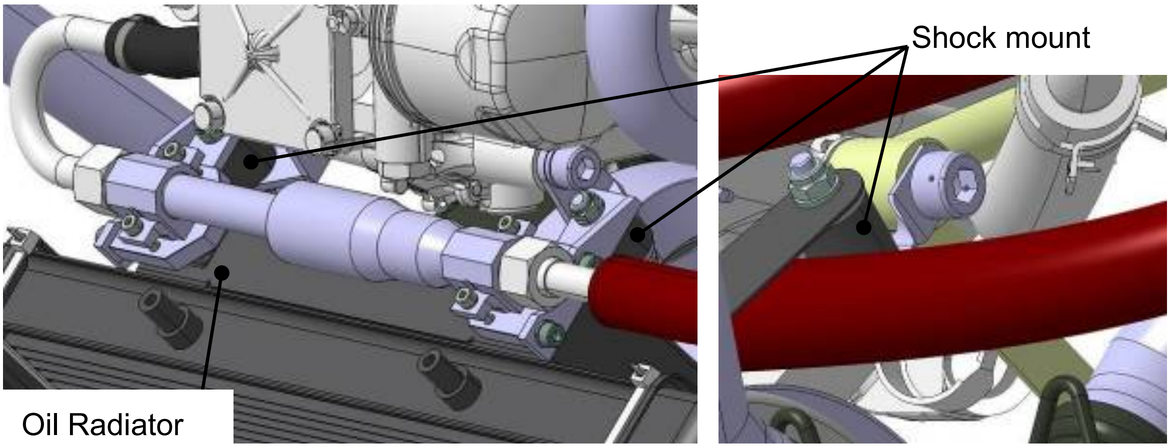
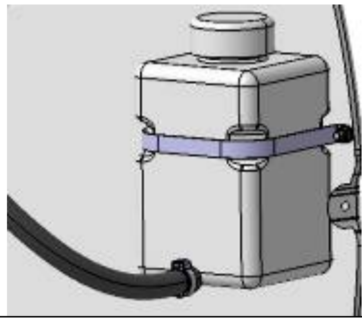


Fig. 75-00-5. Radiators Unit mounting

8	Remove clamp from overflow bottle and disconnect the hose from nipple. Drain coolant in clean container. Connect compression pump to hose free end and provide overpressure 0.2 bar/3 psi for one hour. Check all connection places for leakages. 	
9	Connect and secure cooling hose in reversed direction order.	

75-00.3.2 *Cooling Hoses and Lines Replacement*

Contact manufacturer for further instructions.

CHAPTER 76 –
ENGINE CONTROLS

Contents

76-00.1 General

This chapter provides description and information concerning maintenance of engine controls.

76-00.2 Description

The throttle quadrant is located in the center pedestal, just behind the lower instrument panel. It can be easily operated from both seats, although it is primarily designed to be operated from the left seat, by the pilot-in-command.

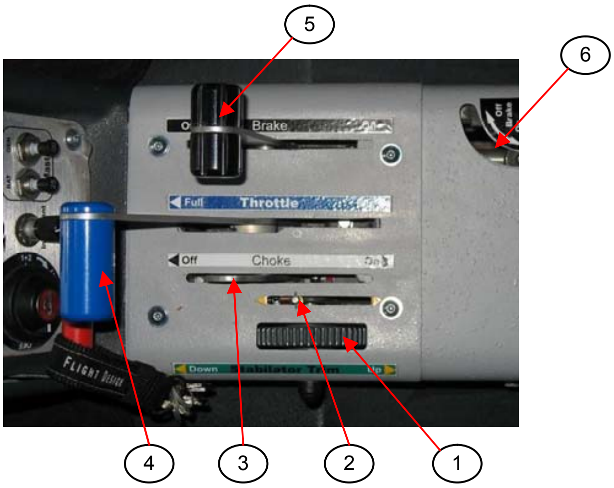


Fig. 76-00-1

Pos.	*Description*
1	Pitch trim control wheel. Move forward to trim nose heavy; backward to trim tail heavy.
2	Pitch trim indication. Indicator moves forward when trimmed nose heavy, backward when trimmed tail heavy.
3	Choke lever. Pull to engage choke, push to disengage. Choke has no effect when throttle is above idle.
4	Throttle lever (blue handle). Pull to idle, push to increase. Throttle lever has a non-adjustable friction brake.
5	Brake lever. Acts simultaneously on both main wheels. Pull to brake, let go to release brake.
6	Parking brake valve. Move to rear position (as on the figure) to set. Brake lever can be held in pulled position when closing the valve, or close valve first and then pull brake lever. Move forward to release.

Detailed view is given in Fig. 76-00-2.

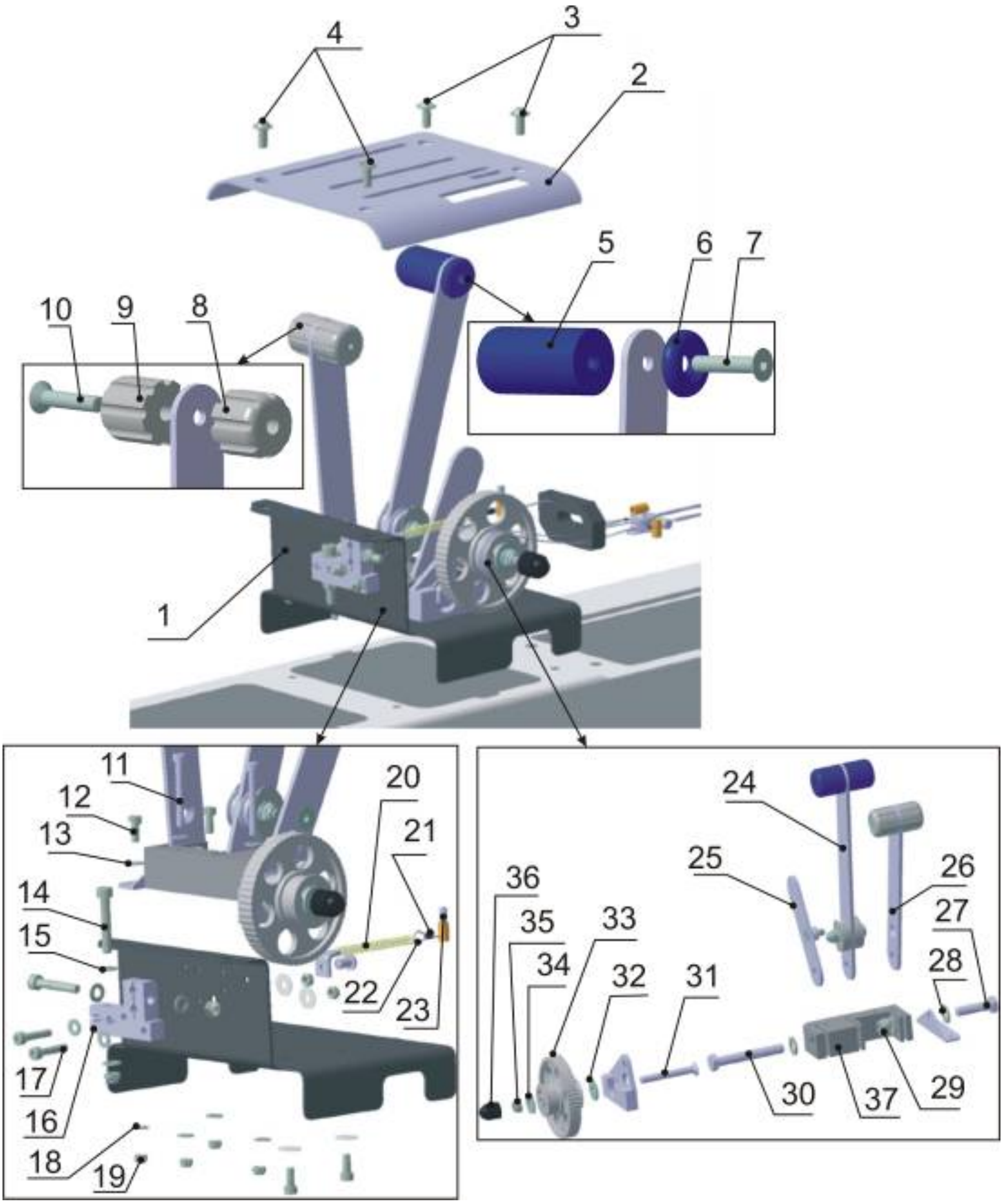

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Fig. 76-00-2

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
76-00-2	1	Main Plate		KF76000151
	2	Covering Plate		KF76000001
	3	Screw ISO 7380 M5x16		C9996162
	4	Screw ISO 7380 M5x12		C9996161
	5	Grip		KF76000132
	6	Grip		KF76000131
	7	Bolt DIN 7991 M6x35 A2-70		C9996219
	8	Grip		KF32400010
	9	Grip		KF32400012
	10	Bolt DIN 7991 M6x30 A4		C9996218A
	11	Bolt DIN 912 M4x35-8.8		C9996029
	12	Bolt DIN 912 M4x12-8.8		C9996164A
	13	Washer DIN 125 A2-4.3mm		C9996502
	14	Bolt DIN 912 M5x30-8.8		C9996039
	15	Washer DIN 125 A2-5.3mm		C9996503
	16	Fixation Plate		KF76000156
	17	Bolt DIN 912 M4x20-8.8		C9996026
	18	Washer DIN 9021-4.3 mm A4		C996562A
	19	Self-locking nut DIN 985-M4, regular		C9996332
	20	Spring 0,5x5,0x25,0		C9997703B
	21	Nicopress stop sleeve 1.5-1.7 mm		C9997056E
	22	Steel rope 7x7 1 mm		C9997065B
	23	Pointer, Trim Tab Position		KF27401057
	24	Throttle Lever		KF76000130
	25	Choke Lever		KF76000110
	26	Brakes Lever		KF32400011
	27	Bolt M8x28		KF76000107
	28	Washer DIN 125 A-8.4mm VZ		C9996505
	29	Self-locking nut DIN 985-M8, regular		C9996336
	30	Bolt M8x60		KF76000108
	31	Bolt M6x57		KF76000124
	32	Washer DIN 9021-6.4mm VZ		C9996565
	33	Steering Wheel		KF76000123
	34	Washer DIN 125 A2B-6.4mm		C9996504
	35	Self-locking nut DIN 985-M6, regular		C9996334
	36	Cap for nut M6		C9996364
	37	Body		KF76000101

76-00.3 Maintenance Practices

76-00.3.1 *Throttle Box Inspection*

76-00.3.1.1 Type of Maintenance

Line

76-00.3.1.2 Minimum Level of Certification

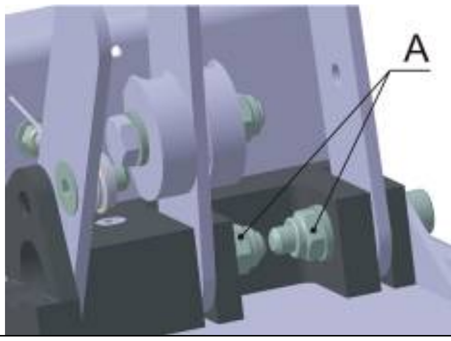
LSA- Mechanic (LSAM)

76-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Throttle Box Inspection (Fig. 76-00-2).

Step	***Action***	***Reference***
1	Unscrew 4 bolt M5 (3, 4) that fix the covering plate (2).	
2	Unscrew bolt M6 (7) that holds the grips (5, 6) of the throttle lever (24).	
3	Remove the grips (5, 6).	
4	Unscrew bolt M6 (10) that holds the grips (8, 9) of the brake lever (26).	
5	Remove the grips (8, 9).	
6	Remove the covering plate (2).	
7	Inspect control ropes for integrity.	
8	Inspect the control levers support (37) for signs of wear.	
9	Check control levers for smooth operation without play or undue friction.	
10	When necessary adjust the friction in levers support by nuts (A)  	

CHAPTER 77 –
ENGINE INDICATING

For maintenance instructions regarding the engine indicating system contact the aircraft manufacturer.

CHAPTER 78 –
EXHAUST

Contents

78-00.1 General

This chapter provides description and information concerning maintenance of engine exhaust.

78-00.2 Description

The powerplant exhaust system consists of the muffler and exhaust pipes. The exhaust gases from cylinders arrive to muffler via exhaust elbows. The muffler has exhaust pipe which aimed for gases withdrawal outside the limits of the engine compartment. The exhaust elbows screwed directly to cylinders with lock nuts. For muffler and exhaust elbows connections used ball joints and springs.

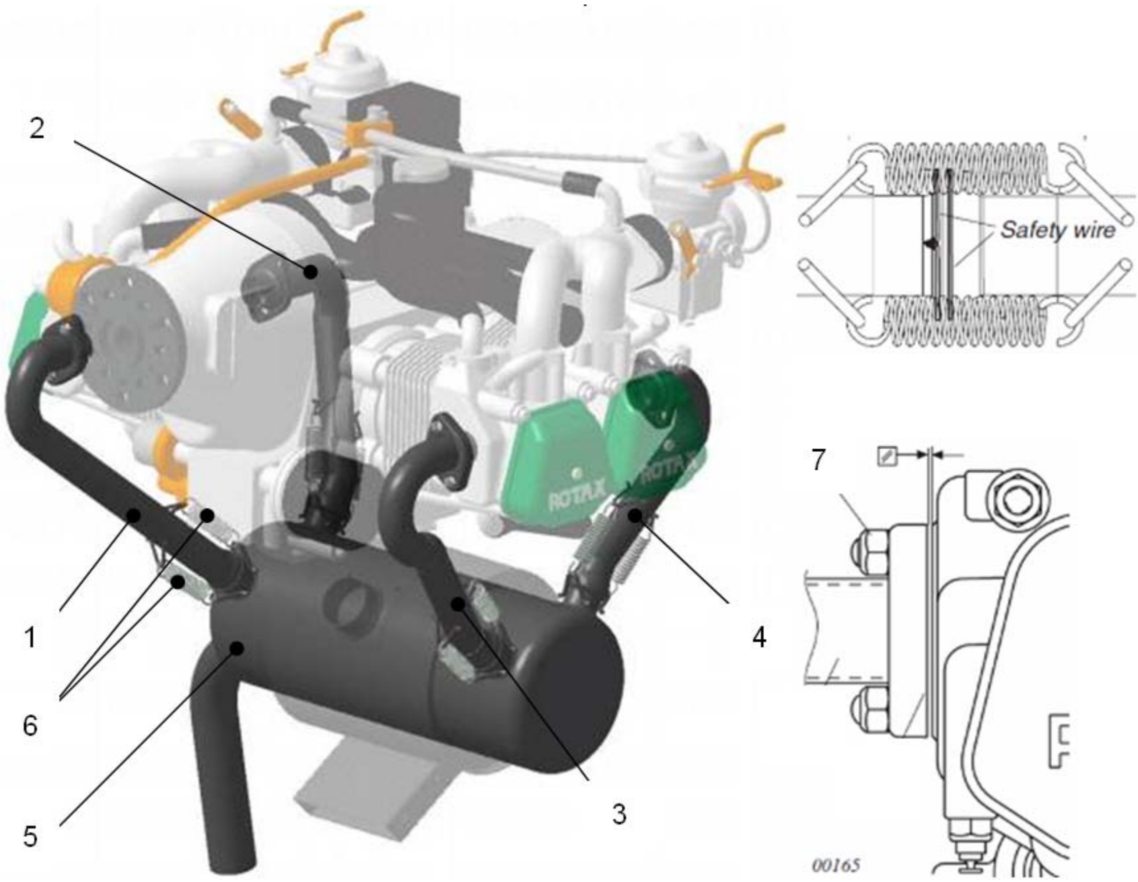


Fig. 78-00-1. Exhaust System

Fig.	Item	Part Name	Torque	Reference
78-00-1	1	Forward exhaust pipe, right		KF78000010
	2	Rear exhaust pipe, right		KF78000020
	3	Forward exhaust pipe, left		KF78000030
	4	Rear exhaust pipe, left		KF78000040
	5	Muffler		KF78000050
	6	Spring		Spring
	7	Nut	12 Nm	C9996035

78-00.3 Maintenance Practices

78-00.3.1 *Exhaust Muffler and Pipes Removal*

78-00.3.1.1 Type of Maintenance

Line

78-00.3.1.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

78-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Exhaust Muffler and Pipes Removal

Step	Action	Reference
1	Cut the safety wire, disconnect Springs (6).	
2	Remove the muffler.	
3	Remove heating shroud from Muffler.	
4	Mount and secure Muffler in reverse order.	

78-00.3.2 *Exhaust Muffler and Pipes Inspection*

78-00.3.2.1 Type of Maintenance

Line

78-00.3.2.2 Minimum Level of Certification

LSA- Mechanic (LSAM)

78-00.3.2.3 Procedure

A. Recommended Special Tools and Parts

Item	Quantity	Unit
None		

B. Exhaust Muffler and Pipes Inspection

Step	*Action*	*Reference*
1	Inspect exhaust system for damages and missing parts.	
2	Checks attachment Nuts 7 and Springs 6 for securing and fit.	
3	Inspect exhaust pipes and mounting flanges for cracks, corrosion and leakages.	
4	Remove muffler with exhaust pipes.	
5	Inspect muffler for cracks, corrosion and leakages.	
6	Mount and secure Muffler in reverse order.	

CHAPTER 79 –
OIL SYSTEM

Contents

79-00.1 General

This chapter provides description and information concerning maintenance of engine oil system.

79-00.2 Description

The oil system is available in two variants:

- with oil thermostat;
- without oil thermostat.

Configuration of oil system with oil thermostat installed is shown in Fig. 79-00-1.

Configuration of oil system without oil thermostat is shown in Fig. 79-00-2.

Both oil system configurations make use of the following components:

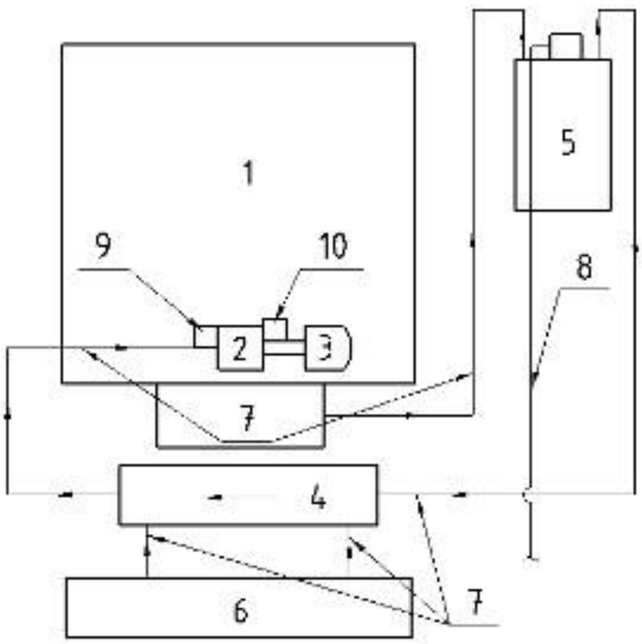


Fig. 79-00-1. Oil System diagram (with thermostat)

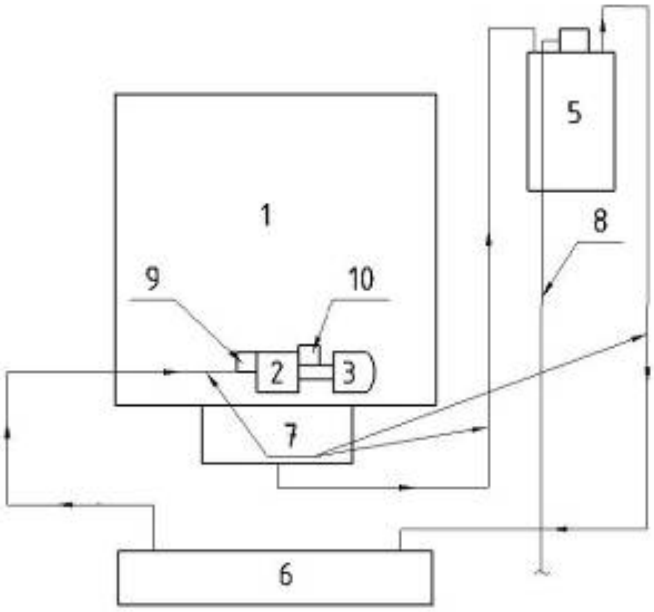


Fig. 79-00-2. Oil System diagram

Fig.	*Item*	*Part Name*	*Torque*	*Reference*
79-00-1 79-00-2	1	Engine ROTAX® 912 S/ULS		C9997789Z/C9997791Y
	2	Oil pump		C9993515J
	3	Oil filter		C9997793R
	4	Oil thermostat		C9997793Y
	5	Oil tank		C9997791I
	6	Radiators Unit		KF79000050
	7	Oil hose		C9997792D
	8	Fuel hose (vent line)		C9993184G
	9	Oil pressure sensor		C9997798O
	10	Sensor for oil temperature		C9997793X

When in operation, the oil pump draws the oil from the oil tank through the thermostat to the oil radiator and forces it through the oil filter to the lubrication points. From here the engine oil is distributed to all lubrication points and flows from there back into the oil tank, driven by piston blow-by gases.

When installed, the thermostat allows to bypass the radiator while the oil temperature is below the normal operating temperature range.

In case of the oil filter mat clogging, an emergency pressure valve will open and unfiltered lube oil will flow to lubrication points.

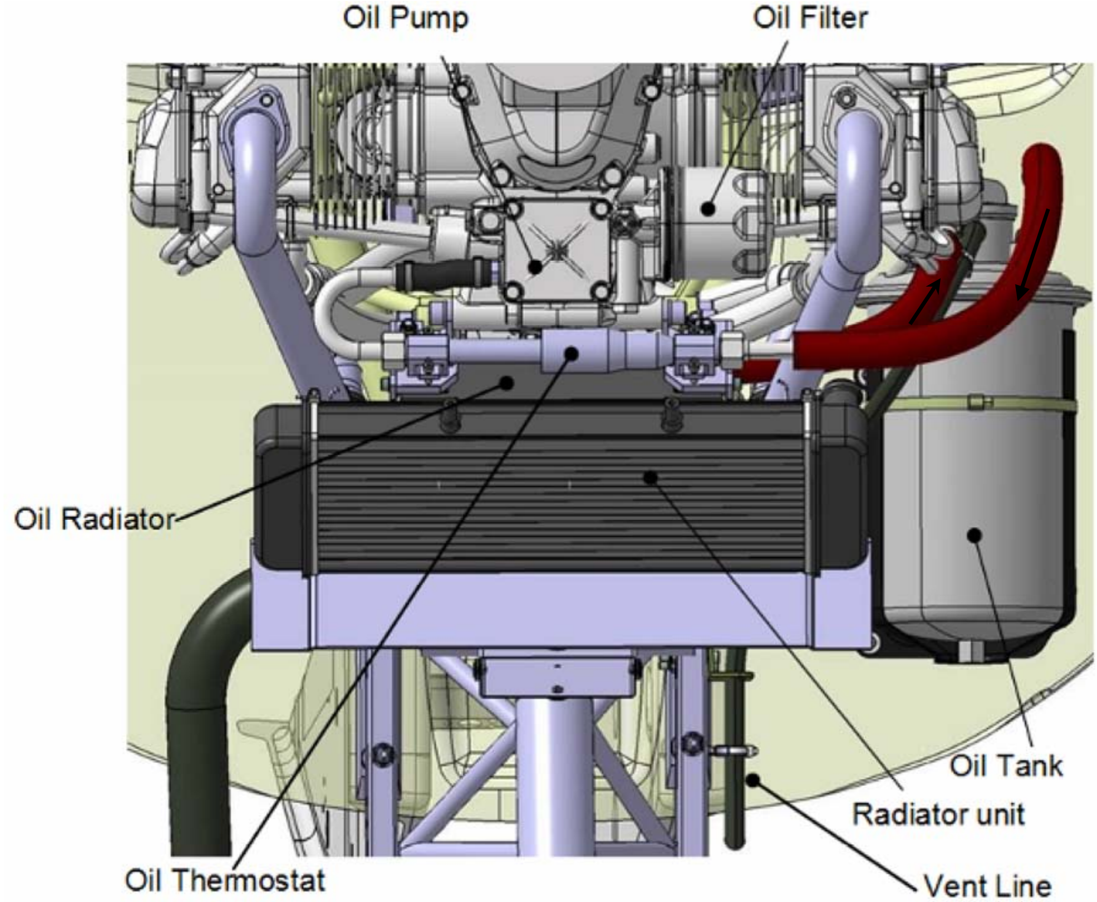


Fig. 79-00-3

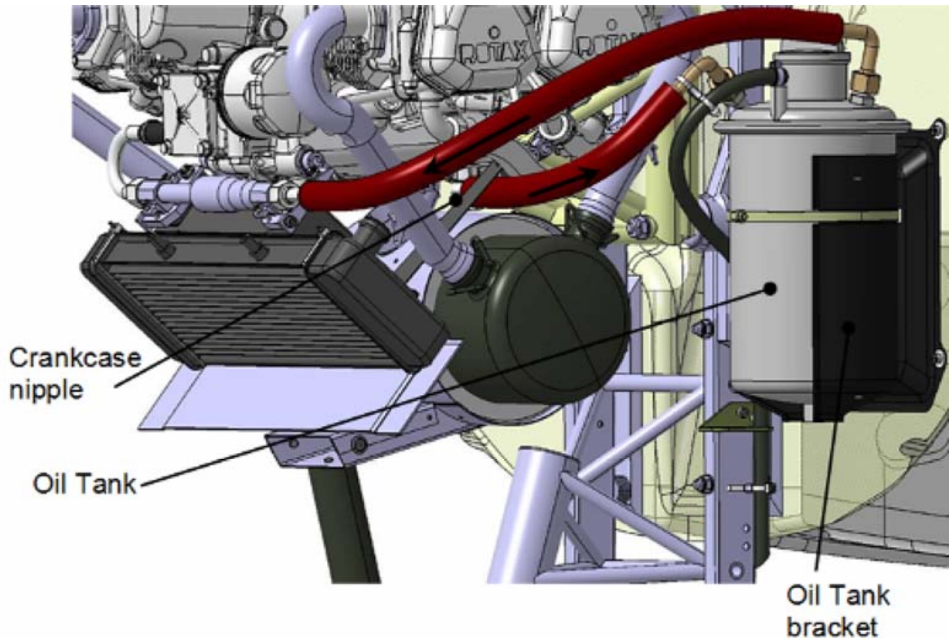


Fig. 79-00-4

79-00.3 Maintenance Practices

79-00.3.1 *Oil System Inspection*

79-00.3.1.1 Type of Maintenance

Line

79-00.3.1.2 Minimum Level of Certification

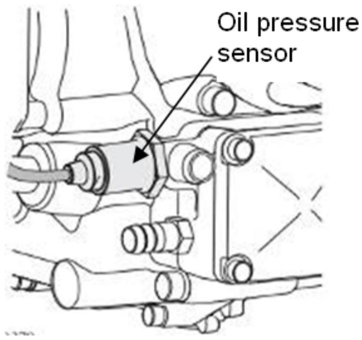
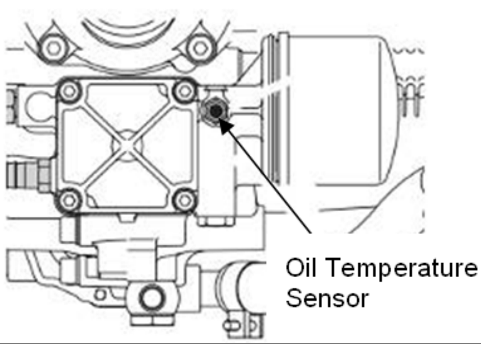
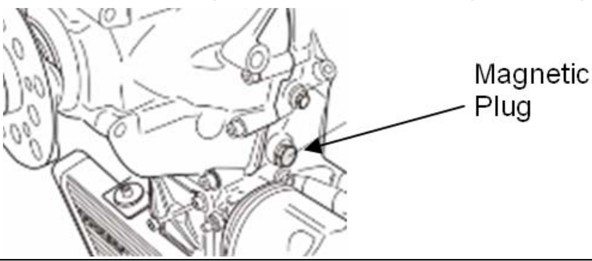
LSA- Mechanic (LSAM)

79-00.3.1.3 Procedure

A. Recommended Special Tools and Parts

Item	***Quantity***	***Unit***
None		

B. Oil System Inspection

Step	***Action***	***Reference***
1	Inspect connections for leaks.	
2	Check oil level. Replenish if required.	
3	Check conditions of oil lines, fire sleeves and connections for leakages. Check oil lines and fire sleeves for damages, overheating marks. Replace line or clamp if required.	
4	Inspect oil tank vent line for damages and blockage. Replace if required.	
5	Inspect oil radiator matrix for dirty/blocked.	
6	Check the securing and conditions of Oil pressure sensor. Tighten sensor with torque 15Nm and secured with Loctite 243.  	
7	Check the securing and conditions of oil temperature and pressure sensors.	
8	Check the securing and conditions of magnetic plug. 	12-20-00 12

79-00.3.2 *Oil Hoses and Lines Replacement*

For maintenance instructions regarding oil hoses and lines replacement contact the aircraft manufacturer.

APPENDIX I –
EQUIPMENT MANUFACTURER INFORMATION

The following equipment manufacturer issued manuals are delivered together with the aircraft, and are valid for the specific aircraft S/N. It is the responsibility of the aircraft operator, to verify the sources identified by the equipment manufacturer for possible updates made available through the equipment manufacturer.

- **Note:** It is permitted to amend the subsequent table with separate sheets, when necessary. In this case those amended sheets shall be permanently attached to this document, marked with aircraft S/N and call sign, and identified in the Record of Manual Revisions at the beginning of this document (Section I).

The table below shall be filled out manually, considering the following explanations:

- Issuing Company — Full name of the company which issues the document, typically the equipment manufacturer;
- Document No. — Document number, part number or order number, as applicable, as issued by the equipment manufacturer;
- Document Title — Correct and full title of the document;
- Rev. — Number (level) of revision of the document as assigned by the equipment manufacturer;
- Name — Name of the person who makes the entry to this section of the this document in legible letters;
- Signature — Signature or short sign of the person who makes the entry to this section of this document.

Aircraft S/N			***Call Sign***		
Issuing Company	***Document No.***	***Document Title***	***Rev.***	***Name***	***Signature***

Aircraft S/N		Call Sign	

Issuing Company	Document No.	Document Title	Rev.	Name	Signature

Aircraft S/N		Call Sign	

Issuing Company	Document No.	Document Title	Rev.	Name	Signature