REMOS AIRCRAFT

REMOS G3 600

Maintenance Manual

July 1st 2008

List of Effective Pages

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Hans Fuchs

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Foreword

This maintenance manual contains factory-recommended procedures and instructions for ground handling, servicing and maintaining Remos G-3 /600 Series aircraft. Besides servicing as a reference for experienced mechanic, this manual also covers step-by-step prodcedures for the less experienced man. This book should be kept in a handy place for ready reference. If properly used, it will better enable the mechanic to maintain Remos G-3 /600 Series aircraft and thereby establish a reputation for reliable service.

All information contained is based on data available at the time of publication and is supplemented and kept current by service letters published by Remos Aircraft Company. These are sent to all Remos Aircraft Dealers so that they have the latest authoritative recommendations for servicing Remos aircraft. Therefore it is recommended that Remos owners utilize the knowledge and experience of the factory-trained Dealer Service.

This manual is designed to meet the standard of maintenance manuals for Light Sport Aircraft as prescribed in the ASTM document F2483-05. According to the ASTM standard each task does contain the type of maintenance "***Level of Maintenance"*** and the minimum level of certification needed to accomplish the task "***Certification Required***".

The REMOS G-3 /600 complies to the rules of the Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.

Common conversions and abbreviations

Unit of length	1 mm =	0.03937 in
	1 in =	25.4 mm
	1 ft =	0.3048 m
Unit of area	1 cm^2 =	0.155 sq in
	1 sq in =	6.4516 cm^2
Unit of volume	1 cm^3 =	0.06102 cu in
	1 cu in =	16.3871 cm^3
	1 gal (US) =	3.7854 l (dm^3)
Unit of mass	1 kg =	2.2046 lb
	1 lb =	0.45359 kg
Unit of force	1 N =	0.224809 lbf
	1 lbf =	4.4482 N
Unit of pressure	1 bar =	1000 hPa
	1 bar =	14.5037 lbf/in2 (psi)
	1 lbf/in2 (psi) =	0.0689 bar
	1 in HG =	33.8638 hPa
Unit of temperature	°C =	(°F – 32) / 1.8
	°F =	(°C x 1.8) + 32
Velocities	1 m/s =	3.6 kph
	1 ft/min =	18.288 m/s
	1 m/s =	0.0555 ft/min
	1 kts =	1.852 kph
	1 kph =	0.53996 kts
	1 mph =	1.609 kph
Torques	1 Nm =	8.848 In.lb.
	1 in.lb. =	0.113 Nm
	1 ft.lb. =	1.356 Nm

Section 1

General Description

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1.1 Aircraft Description

REMOS G-3 Series aircraft, described in this manual, are highwing monoplanes of all composite monocoque construction. These aircraft are equipped with a fixed tricycle landing gear. All models are equipped with composite (glass fiber) main landing gear struts including wheel fairings and a steerable nose gear. Two place seating is standard. Each aircraft is equipped with a 4-stroke, four cylinder, horizontally opposed, water cooled Rotax 912 UL or 912 UL/S aluminum alloy engine, driving a fixed pitch propeller.

1.2 Aircraft Specifications

Primary specifications of the aircraft, with dimensions based on gross weight, are given in figure 1-1. If these dimensions are used for constructing a hangar or computing clearances, remember that such factors as tire pressure or load distributions may result in some dimensions that are somewhat different from those listed.

Figure 1-1.

Gross Weight……..	1320 lb
Fuel Capacity……..	21 gal.
Oil Capacity……..	0.75 gal.
Engine Model (Refer to Section 11 for Engine Data)……	Rotax 912 Series
Propeller (Fixed Pitch)……	66.7" Tonini GT
Main Wheel Tires……	6.00 x 4, 6-Ply Rating
Pressure……...	29 - 34 psi
Nose Wheel Tire……	4.00 x 4, 6 Ply Rating
Pressure……	29 - 34 psi
Aileron Travel	
Up……..	20°, +/- 1°
Down……..	12°, +/- 1°
Wing Flap Travel……..	0° to 40°, +/- 3°
Rudder Travel	
Right……..	27°, +/- 2°
Left……..	27°, +/- 2°
Elevator Travel	
Up……..	25°, +/- 1°
Down……..	19°, +/- 1°
Elevator Trim Tab Travel	
Up……..	19°, +/- 1°
Down……..	19°, +/- 1°
Principal Dimensions	
Wing Span……..	32.3'
Length (Carbon Spinner)……..…	21.4'
Length (Plastic or Aluminum Spinner)……	21.7'
Vertical Stabilizer Height……	7.5'
Track Width..……	6.9'
Tail Span……..	9.1'
Battery Location……..	Firewall

1.3 Torque Values

A Chart of recommended nut torque values is shown in figure 1-2. These torque values are recommended for all installation procedures contained in this manual, except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

Figure 1-2.

M4……..	4 Nm / 35 in.lb.
M5……..	6 Nm / 53 in.lb.
M6……..	10 Nm / 88 in.lb.
M8……..	24 Nm / 212 in.lb.
M10……...	35 Nm / 310 in.lb.

Caution

DO NOT REUSE SELF-LOCKING NUTS.

1.4 Tire Inflation Pressure

Maintain tire pressure at the air pressure specified in figure 1-1. When checking tire pressure, examine tires for wear, cuts, bruises and spillage. Remove oil, grease and mud from tires with soap and water.

1.5 Approved Oils and Capacities

In general we recommend referring to the latest ROTAX 912 Series engine operator's manual to check for a suitable engine oil. Nevertheless, general recommendations about lubricants are shown in figure 1-3.

Caution

If engine is mainly run on AVGAS more frequent oil changes will be required. See ROTAX Service Information SI-18-1997, latest edition. At the selection of suitable lubricants also refer to the ROTAX Service Information SI-18-1997 latest edition. The use of multi-grade oils is recommended. Multi-viscosity grade oils are less sensitive to temperature variations than single-grade oils. They are suitable for use in all seasons, ensure rapid lubrication of all engine components at cold start and multi-viscosity oils get less fluid at higher temperatures.

Figure 1-3.

Oil specification Motorcycle oil of a registered brand with gear additives. No aircraft engine oil should be used.
- Use only oil with API classification "**SF**" or "**SG**" - Due to high stresses in the reduction gears, oils with gear additives such as high performance motorcycle oils are required. - Because of the friction clutch incorporated in the gearbox, oils with friction modifier additives are unsuitable as this could result in a slipping clutch during normal operation. - Heavy duty 4-stroke motorcycle oils meet all the requirements. These oils are normally not mineral oils but semi- or full-synthetic oils. - Oils primarily for Diesel engines are **generally unsuitable due to insufficient high temperature properties and additives which favor clutch slipping.**

Table of lubricants

Since the temperature range of neighboring SAE grades overlap, there is no need for change of oil viscosity for a short duration of ambient temperature fluctuation.

Climatic conditions	**Multi-grade oils**
Tropical……	SAE 20W-50, SAE 20W-40 SAE 15W-50, SAE 15W-40 SAE 10W-40 SAE 5W-50, SAE 5W-40
Temperate……..	SAE 20W-50, SAE 20W-40 SAE 15W-50, SAE 15W-40 SAE 10W-40 SAE 5W-50, SAE 5W-40
Arctic……	SAE 10W-40 SAE 5W-50, SAE 5W-40

1.6 Engine Specifications

The ROTAX 912 Series engines are 4-stroke, 4 cylinder horizontally opposed, spark ignition engines, featuring one central camshaft with push rods – OHV. Cylinder heads are liquid cooled. Lubrication system is a dry sump forced type. It is equipped with dual breakerless capacitor discharge ignition and two constant velocity carburetors. Prop drive is via reduction gear with integrated shock absorber and overload clutch. Specific engine datas are given in figure 1-4.

Figure 1-4.

Description	**912 UL**	**912 UL/S**
Dimensions		
Bore…….	3.13 in	3.31 in
Stroke……..	2.40 in	2.40 in
Displacement…….	73.9 in^3	82.5 in^3
Compression ratio……....	9.0 : 1	10.5 : 1
Weight (without exhaust, radiator, air intake System)….	132 lb	134 lb
Speed		
Takeoff speed……	5800 rpm	5800 rpm
Continuos speed (max.)……...	5500 rpm	5500 rpm
Idle speed (approx.)……..	1700 rpm	1700 rpm
Gear Ratio……..	2.27 : 1	2.43 :1
Performance		
Takeoff performance…….	80 hp	100 hp
Continuos performance…….	77 hp	92 hp
Acceleration		

Max. negative "g" for 5 seconds……	-0.5 g	- 0.5 g
Oil Pressure		
Max. for short period at cold start……	100 psi	100 psi
Min. (below 3500 rpm)……..	12 psi	12 psi
Normal (above 3500 rpm)……	29 - 73 psi	29 - 73 psi
Deviation from Bank Angle max…….	40°	40°
Oil Temperature		
Max……..	285° F	285° F
Min……...	120° F	120° F
Normal…….	190-230° F	190-230° F
Cylinder Head Temperature		
Max. (observation at hottest cylinder, #2 or #3)…	300° F	300° F
Normal…….	167-230° F	167-230°F
Engine Start, Operating Temperature		
Max……..	120° F	120° F
Min……	-13° F	-13° F
Fuel Pressure		
Max……..	5.8 psi	5.8 psi
Min……...	2.2 psi	2.2 psi
Electric Starter……	12V, 0.6 kw	12V, 0.6 kw
Generator……	12V, 20A	12V, 20A

1.7 Equipment List

In figure 1-5 a list of factory installed equipment is provided. Additional installed equipment and alterations have to be considered when performing weight and balance calculation. If a ballistic recovery system is installed from the factory, this is already included in the factory weight and balance calculation form.

Figure 1-5.

Factory Installed Equipment

Airspeed Indicator, Altimeter, Vertical speed indicator, Compass, Slip indicator
RPM gauge (Rotax Flydat)
Oil pressure gauge (Rotax Flydat)
Oil temperature gauge (Rotax Flydat)
CHT gauge (Rotax Flydat)
Exhaust gas temperature gauge (Rotax Flydat)
Manifold temperature
Electric fuel gauge
Position lights
ACL (Anti Collision Light)
Master-, avionics and engine kill (ignition) switch
Electrical system including circuit breakers
4-Point safety belts (pilot and passenger)
Ballistic recovery system (optional factory equipment)

1.8 Weight and Balance Information

To perform a successful weight and balance calculation, the center of gravity "C.G." has to be determined with all installed equipment, including engine oil, cooling liquid, but without fuel. Figure 1-6. shows how to conduct the C.G. determination. All measurements including a listing of all installed equipment have to be noted in the separate weight and balance calculation form (an example is given in figure 1-7.). This form has to be placed in the aircraft, so every pilot will be able to conduct his specific weight and balance calculation prior to each flight.

1.8.1 Center of gravity determination

Required Tools: Weighing scales, flexible clear hose, plummet, pocket-rule.
Parts required: None
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

To get the correct values, it is necessary to put the aircraft on three weighing scales located on a level surface. Before conducting the weighing procedure, it is important to achieve a level wing main chord, outlined as “Reference Line R.L.” in figure 1-6. (use suitable pads between main wheels and scale beneath to hoist aircraft). A check-mark (“Reference Point R.P.” in figure 1-6.) on the leading edge of the left wing, adjacent to the wing root is provided to ease examination that wing main chord is level (check-mark and trailing edge has to be level) - use a flexible clear hose, filled with water as spirit level.
To get the total weight G you have to add weight G1 and G2. The center of gravity has to be calculated using this value. The C.G. is located at the distance (X) behind R.P. (leading edge check-mark) near the fuselage (see figure 1-6.).

1.8.2 CG-Calculation

A specific C.G.-calculation recommendation which has to be carried out prior to each flight is provided in the Pilot Operating Handbook, Section 4.

Figure 1-6.

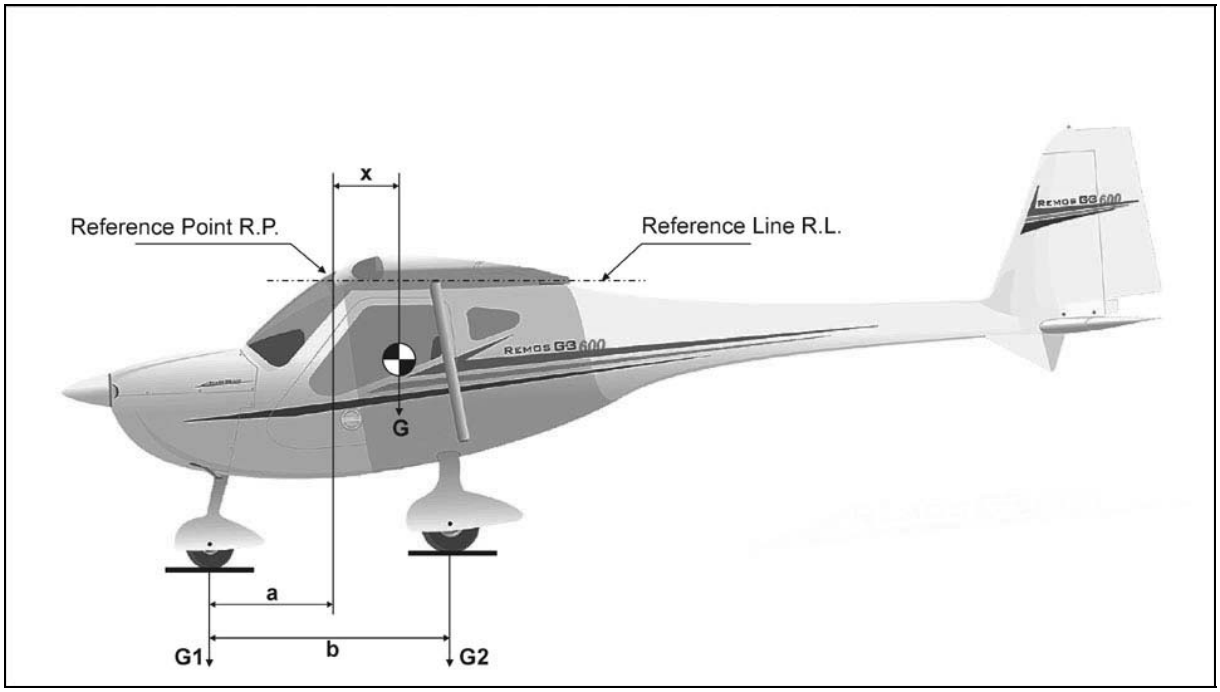


Figure 1-7.

Weight & Balance, Equipment List for SLSA Aircraft — N-xxxx

Type of Aircraft: REMOS G-3 /600

Serial Number: xxx

Technical Data According to SLSA Requirments

1. Reference Point R.P. — Wing Leading Edge Adjacent to Fuselage
2. Reference Line R.L. — Wing Main Chord

Compontent Weights (in lb)

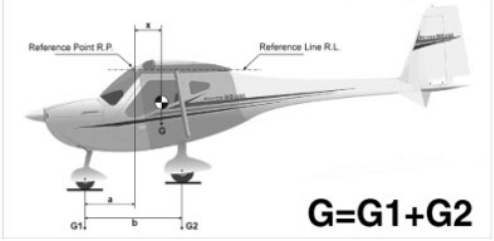
Wing	right	65,6
Wing	left	65,8
Fuselage		512,3
Stabilizer		20,7
Wing Struts		6,1
Total Empty Weight		670,5

Empty Weight	670,5	lb
Payload	649,5	lb
Gross Weight	1.320,0	lb
Certification No.:	xxxxxx	
Issue:	x	

Partial Weight	Total (lb)	Tara (lb)	Net (lb)
Nosegear G 1			165,4
Maingear G 2			505,1
		G =	670,5

Leverarm (inch)

a	30,47
b	55,98



Empty Weight C.G. — $\frac{G2 \times b}{G} - a = x$ — **x= 11,7** inch

C.G. Range from 9.6 inch to 16.3 inch at: **11,7** mm

Signature/Stamp DAR _____ Date _____

Equipment List

Description	Type	Manufacturer
Magnetic Compass	MCDN-2	Falcon Gauge
Airspeed Indicator	ASI300K-3-R	Falcon Gauge
Alitude Indicator	ALT20MBF-3	Falcon Gauge
Vertical Speed Ind.	VSI10MES-3	Falcon Gauge
Slip Indicator	----------	Winter
Rescue System	5 UL 4 SP	BRS
Safety Belts	----------	Remos
Strobe Light	----------	Wheelen
Battery	Genesis	Hawker
Radio	AR 4201	Becker
Intercom	SPA-400	Sigtronics
Engine Gauges	Flydat	Rotax
Fuel Pressure G.	----------	Rotax
Voltage Gauge	----------	VDO
Temp.-Gauge	----------	In-Pro
GPS	Skyforce IIIC	Bendix

Remarks:

1.9 Sources to Purchase Parts

In figure 1-8. sources to purchase spare parts and disposable parts are given. When in doubt, ask your distributor or contact the factory first.

Figure 1-8.

Part Description	**Source to buy**
Airframe and Engine Components……	REMOS Aircraft GmbH Flugzeugbau Franzfelde 31 D-17309 Pasewalk / Germany Phone: (049) 3973 195519-0 e-mail: email@remos.com web: www.remos.com 997 Happy Trails Dr Hangar A1 Rogers AR. 72758 USA Phone: 1-888-796-6540 e-mail: cris.ferguson@remos.com web: www.remos.com
Engine Components……	Refer to ROTAX Engine Operator´s Manual 912 Series, Section 14

1.10 Disposable Replacement Parts

A listing of disposable replacement parts which shall be replaced if necessary at regular servicing intervals is given in figure 1-9. A listing where to purchase replacement parts is shown in figure 1-8. When damage is determined to any part of the aircraft please contact your REMOS distributor when in doubt about replacement or repair. No repairs must be done to any of the listed parts due to flight safety!

Figure 1-9.

Part Description or Location	**Part Description**
Engine Compartment……	Oil Filter Element Gasket for Oil Filter Gasket for Oil Drain Screw Air Cleaner Element All Gaskets in General Exhaust System Retaining Springs Self-Locking Nuts in General Propeller Screws

	Engine Mount Screws Engine Shock Mounts Throttle Control Cables
Other specific Engine Components…….	Refer to ROTAX Engine Maintenance Manual.
Propeller…….	Refer to TONINI Operators Manual
Landing Gear…….	Tires and Tubes Cotter Pins in General Hydraulic Line Fittings Self Locking Nuts in General Brake Pads Brake Discs All Wheel and Landing Gear Components when damaged in General.
Airframe…….	Self Locking Nuts in General Cotter pins in General

1.11 General Safety Information

This aircraft shall never be operated at locations, airspeeds, altitudes or other circumstances from which a successful no-power landing cannot be made, after sudden engine stoppage. This aircraft must only be flown at VFR (daylight) conditions and it is not suitable for acrobatics.
Whether you are a qualified pilot or a novice, complete knowledge of the aircraft, its controls and operation is mandatory before venturing solo. Flying any type of aircraft involves a certain amount of risk. Be informed and prepared for any potentially hazardous situation associated with flying.
A recognized training program and continued education for piloting an aircraft is absolutely necessary for all aircraft pilots. Make sure you also obtain as much information as possible about your aircraft, its maintenance and operation from your dealer.
Respect all government or local rules pertaining to flight operation in your flying area.
Fly only when and where conditions, topography and airspeeds are safest.
Select and use proper aircraft instrumentation -- only approved instrumentation may be installed.
Before flight, ensure that all engine controls are operative. Make sure all controls can be easily reached in case of emergency.
Unless in a run up area, never run the engine with the propeller turning while on the ground. Do not operate engine if bystanders are close.
In the interest of safety, the aircraft must not be left unattended while the engine is running.
Keep an aircraft log and respect engine and aircraft maintenance schedules. Keep the engine in top operating condition at all the times. Do not operate any aircraft which is not properly maintained or has engine operating irregularities which have not been corrected.

Since special tools, equipment and certification may be required, servicing shall only be performed by repairmen specified in this manual.
To eliminate possible injury or damage, ensure any loose equipment or tools are properly secured before starting the engine.
When in storage, protect the engine and fuel system from contamination and exposure.
Certain areas, altitudes and conditions present greater risk than others. The engine may require carburetor recalibration or humidity or dust/sand preventive equipment, or additional maintenance may be required.
Never operate the engine and gearbox without sufficient quantities of lubricating oil. Periodically verify level of coolant.
Never exceed maximum rated rpm. Allow the engine to cool at idle for several minutes before turning off.

1.12 Reporting possible Safety of Flight Concerns During Inspection

If any concerns about safety of flight are determined during inspection or maintenance this must be reported in the inspection form (refer to Section 2). If in doubt about the airworthiness of the aircraft, it is strongly recommended to contact your REMOS distributor. The aircraft must not be flown unless concerns about flight safety are cleared completely.

Section 2

Ground Handling, Servicing, Cleaning, Lubrication and Inspection

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2.1 Ground Handling

2.1.1 Towing

Moving the aircraft by hand is accomplished by using the wing struts and landing gear struts as push points. Since there is no tow bar applicable at the nose gear, you have to press down the tail cone adjacent to the fin to raise the nose wheel off the ground. With the nose wheel clear of ground, the aircraft can be turned by pivoting it about the main wheels.

2.1.2 Hoisting

The aircraft may be lifted with a hoist of at least 1000 lb (0.5 tons) capacity by using suitable slings. To apply the slings, the wings have to be folded back first (refer to Pilot Operating Handbook, chapter 8). Now the wing main bolt brackets at the fuselage are accessible. Using a suitable securing bolt the slings can be hooked in at those brackets.

2.1.3 Jacking

Refer to paragraph 2.3. The aircraft does not feature further jacking points except for changing main wheels. Doing so requires one person to lift the aircraft by pushing up the wing at the wing tip, while a second person has to put a jack beneath the main wheel strut adjacent to the fuselage. A piece of foam must be inserted between jack and fuselage so that no damage will occur to the paint.

2.1.4 Parking

Parking precautions depend principally on local conditions. As a general precaution, set parking brake or chock the wheels and lock the controls. In severe weather and high wind conditions, tie down the aircraft as outlined in paragraph 2.6. if a hangar is not available.

Caution

Do not set parking brakes during cold weather (when accumulated moisture may freeze the brakes) or when brakes are overheated.

2.1.5 Tie-Down

When parking the aircraft in the open, head into the wind if possible. Secure control surfaces by using suitable locks and set brakes.

After completing the preceding, proceed to moor the aircraft as follows:

Tie ropes to the wing tie-down fittings (upper end of each wing strut). Secure the opposite ends of ropes to ground anchors.

Secure a tie-down rope (no chains or cables) to the exposed propeller shaft and secure the opposite end of the rope to a ground anchor.

Secure the middle of a rope to the tail tie-down ring. Pull each end of rope away at a 45-degree angle and secure to ground anchors at each side of tail.

Secure controls to the rearward position by using the seat belts.

2.1.6 Flyable Storage

Flyable storage is defined as a maximum of 30 days non-operational storage and/or the first 20 hours of intermittent engine operation.

During the 30 day non-operational storage or the first 20 hours of intermittent engine operation, every seventh day the propeller shall be rotated through 10 revolutions, without running the engine. If the aircraft is stored outside, tie-down in accordance with paragraph 2.1.5. In addition, the pitot tube, static airvents, air vents, openings in the engine cowling, and or similar openings shall have protective covers installed to prevent entry of foreign material. After 30 days, aircraft should be flown for 30 minutes or ground run-up until oil has reached operating temperature.

2.1.6.1 Returning Aircraft to Service

After flyable storage, returning the aircraft to service is accomplished by performing a thorough pre-flight inspection. At the end of the first 20 hours of engine operation, drain engine oil and replace external oil filter element. Service engine with correct grade and quantity of engine oil. Refer to figure 1-3. and paragraph 1.5 for correct grade of engine oil.

2.1.7 Temporary Storage

Temporary storage is defined as aircraft in a non-operational status for a maximum of 90 days. The aircraft is made from composite materials and epoxy resin. This construction will allow to store the aircraft for long periods without damage to the airframe. Nevertheless we recommend to store the aircraft in a dry hanger to keep paintwork and metal parts in good condition. For storage periods not to exceed 90 days, the following methods of treatment are suggested:

a. Fill fuel tank with correct grade of gasoline.
b. Clean and wax aircraft thoroughly.
c. Clean any oil or grease from tires and coat tires with a tire preservative. Cover tires to protect against grease and oil.
d. Rotate wheels every 30 days to change supporting points and prevent flat spotting the tires.
e. Seal or cover all openings which could allow moisture and/or dust to enter.
f. Remove battery and store in a cool dry place, charge battery as required.
g. Seal all engine openings exposed to the atmosphere using suitable plugs or none-hygroscopic tape. Attach a red streamer at each point that a plug or tape is installed.
h. If the aircraft is to be stored outside, perform the procedures outlined in paragraph 2.1.5. In addition, the pitot tube, static ports, air vents, opening in the
i. engine cowling and other similar openings should have protective covers installed to prevent entry of foreign material.
j. Attach a warning placard to the propeller to the effect that the propeller shall not be moved while the engine is in storage.

2.1.7.1 Inspection During Storage

Remove dust accumulations as frequently as possible, clean and wax as required.

2.1.7.2 Returning Aircraft to Service

After temporary storage, use the following procedures to return aircraft to service:

a. Check tires for proper inflation.
b. Check battery and install.
c. Check the oil sump has proper quantity of engine oil (Refer to Pilot Operating Handbook and/or Rotax Operator´s Manual for instructions).
d. Service induction air filter and remove warning placard from propeller.
e. Remove materials used to cover openings.
f. Check fuel tank and fuel lines for moisture and sediment, drain enough fuel to eliminate moisture and sediment.
g. Perform a thorough pre-flight inspection, then start and warm-up engine.

2.2 Servicing

Servicing requirements are shown in figure 2-2. The following paragraphs supplement this figure by adding details not included in the figure.

2.2.1 Fuel

Fuel tank should be filled immediately after flight to lessen moisture condensation. Tank capacity is listed in Section 1. The recommended fuel grade to be used is given in figure 2-2.

2.2.2 Fuel Drains

A fuel drain is located is located at the bottom of the fuel tank. The drain valve is accessed from beneath the fuselage adjacent to the main landing gear. To activate push up the white plastic tube. To drain all fuel from the tank without holding the valve depressed a lock mechanism is built in. To activate the lock mechanism, push up the white plastic tube and rotate it until it locks.

2.2.3 Engine Oil

Check engine lubrication oil with the oil dipstick located in the oil tank, located on the right hand side of the firewall, immediately after engine has been stopped. To check the oil level, it is important to turn the propeller a few times in operating direction until you can hear some kind of bubbling noise coming out of the oil expansion tank. Please be sure to remove the key from the ignition switch before turning the propeller. This is the only way to check the engine oil level correctly. (Refer also to the ROTAX Engine Operator's Manual).
Engine oil should be drained while the engine is still hot so that more positive draining is obtained. Refer to the inspection charts for required intervals for oil and filter changes. Change oil at least every 12 months even if less than the specified hours have accumulated. Reduce this period for prolonged operation in dusty areas, in cold climates where sludging conditions exist, or where short flights and long idle periods are encountered, which cause sludging conditions.

Caution

Do not operate with less than the minimum engine oil level on dipstick marking.

2.2.4 Engine Induction Air Filter

The induction air filter keeps dust and dirt from entering the induction system. The value of maintaining the air filter in a good clean condition can never be overstressed. More engine wear is caused through the use of dirty or damaged air filter than is generally believed. The frequency with which the filter should be removed, inspected and cleaned will be determined primarily by aircraft operating conditions. A good general rule however, is to remove, inspect and clean the filter at least every 50 hours of engine operating time and more frequently if warranted by operating conditions. Due to reasons of flight safety the filter should be replaced after using 100 hours of engine operation time or one year, whichever should occur first.

Note

The aircraft is equipped with an oiled K&N Pre-Charger Filter Element, which can be cleaned and re-oiled when necessary. Its special design provides extended servicing intervals. For proper cleaning and re-oiling the use of K&N air filter cleaner is recommended and K&N air filter oil is required.

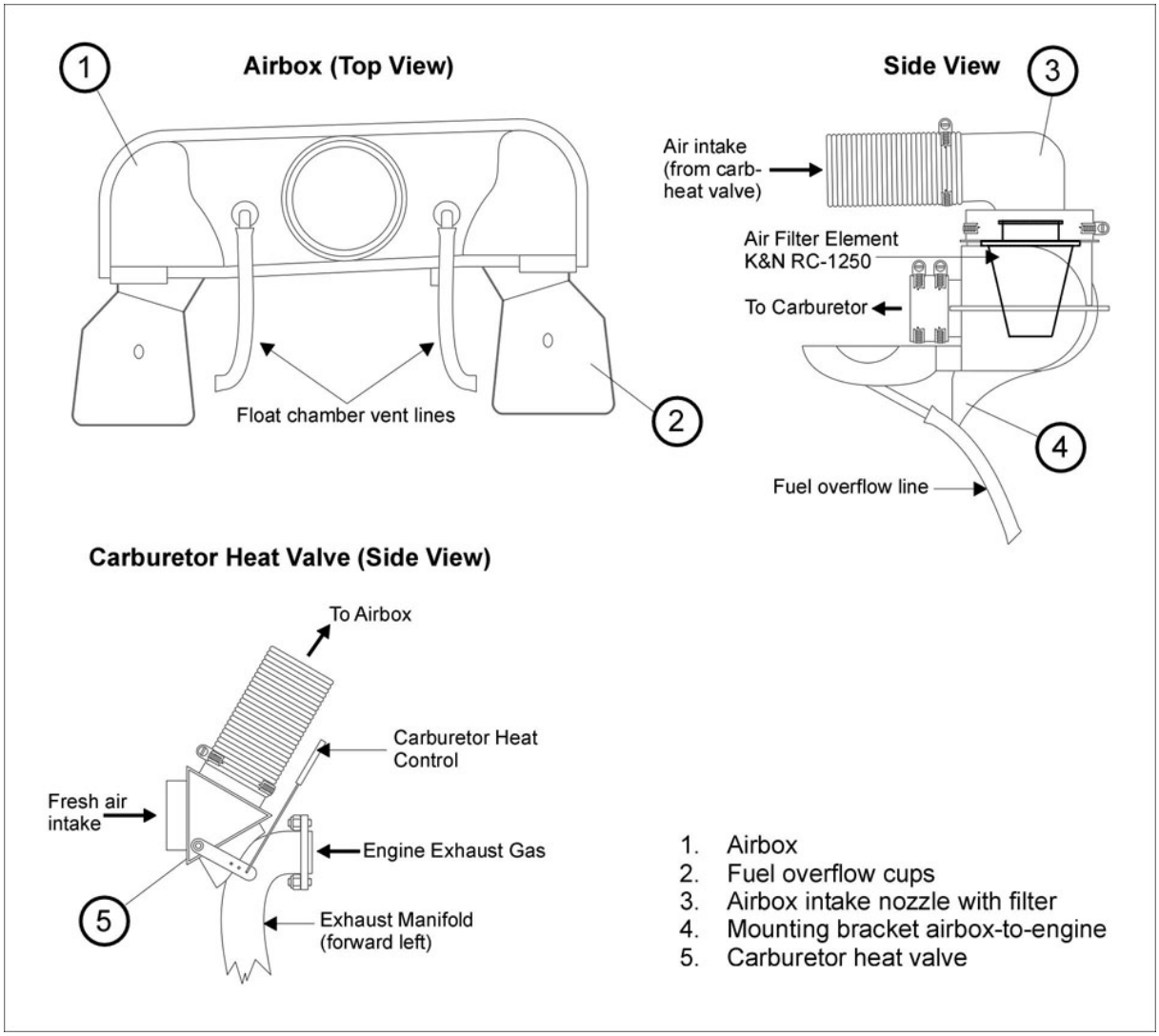
Caution

The filter has to be replaced if damaged, if in doubt filter has to be replaced as a precaution to flight safety. Be sure air box is clean before installing a new filter.

2.2.5 Battery

The installed battery needs no further servicing, except checking cable connections. It is important to check battery voltage when the aircraft is out of service for more than two weeks. Battery voltage has to maintain at least 12.0 volts without engine running and all equipment switched off, master switch in "off" postion (regular voltage 12.5 volts). If voltage does indicate 12.2 volts or less it has to be charged and maintaining charge instructions are found on the battery. If battery voltage is less than 11.8 volts a replacement battery is required.

Figure 2-1.



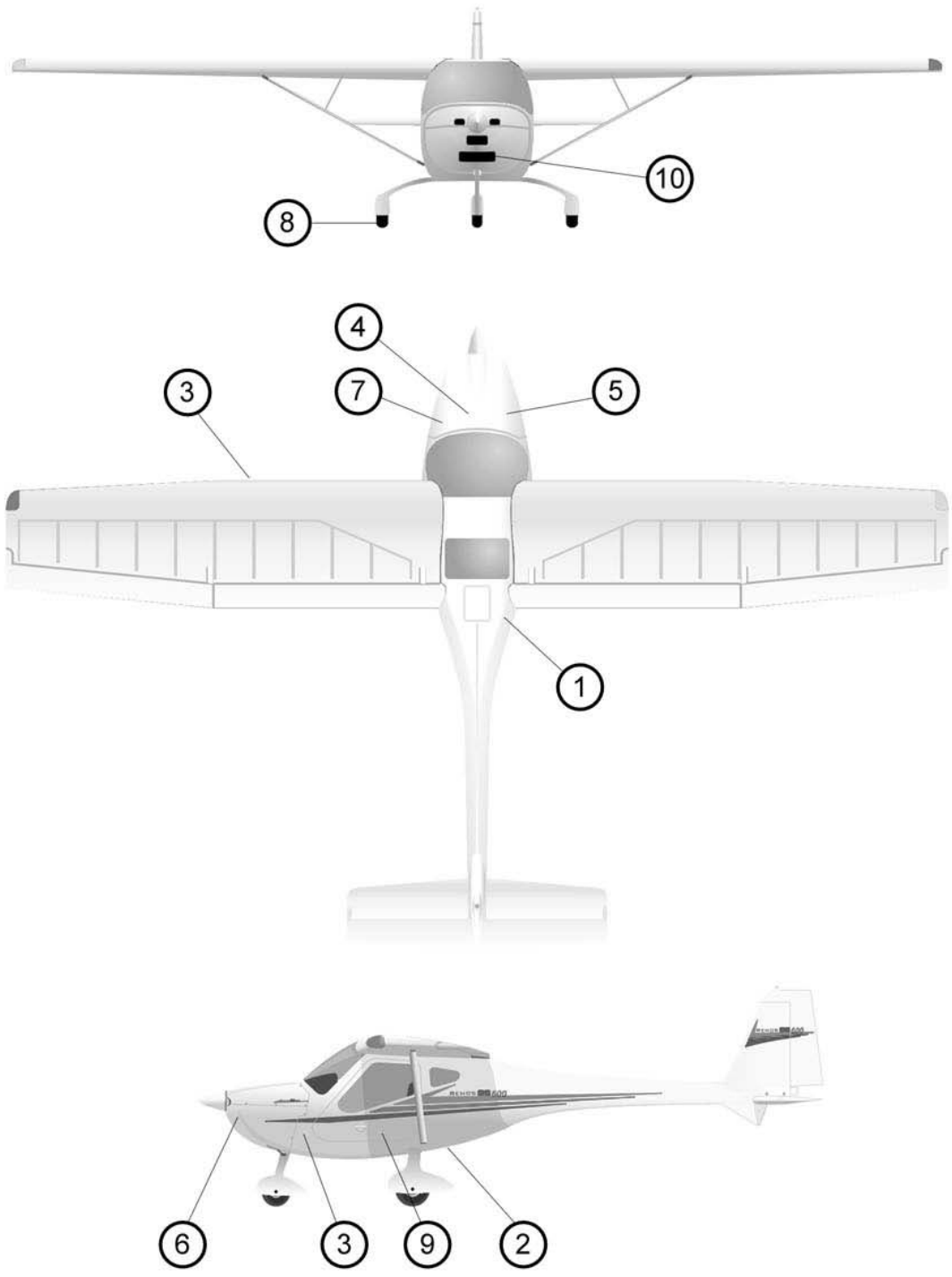
2.2.6 Tires

Maintain tire pressure at the air pressure specified in figure 1-1. When checking tire pressure, examine tires for wear, cuts, bruises and spillage. Remove oil, grease and mud from tires with soap and water.

Note

Recommended tire pressures should be maintained. Especially in cold weather, remember that any drop in temperature of the air inside a tire causes a corresponding drop in air pressure.

Figure 2-2



Recommended Fuel:	ROZ 95/98 unleaded. Refer to the engine manufacturers manual for further information about the useage of avgas and related inspection intervalls.
Recommended Engine Oil:	Refer to figure 1-1.

Figure 2-2.

Daily

1 Fuel Tank Filler
Service after each flight. Keep full to retard condensation. Refer to paragraph 2.2.1.

2 Fuel Tank Sump Drain
Drain off any water and sediment before first flight of the day.

3 Pitot and Static Ports
Check for obstructions before first flight of the day.

4 Induction Air Filter
Inspect and service under dusty conditions. Refer to paragraph 2.2.4 for details.

5 Oil Dipstick and Oil Filler Cap
Check oil on preflight. Add oil as necessary. Refer to paragraph 2.2.3 for details.

10 Engine Cooling System
Check water level on preflight. Add specified coolant as required. Refer to the POH and latest engine manufactureres manual for details.

First 20 hours

6 Engine Oil System
Refill with recommended engine oil, exchange oil filter.

100 hours

4 Induction Air Filter
Clean filter per paragraph 2.2.4, replace as required.

7 Battery
Check for correct voltage level. Charge or replace if required. Refer to paragraph 2.2.5 for details.

8 Tires
Maintain correct tire inflation as listed in figure 1-1. Also refer to paragraph 2.2.6 for details.

200 hours

9 Brake Master Cylinder
Check fluid level and refill as required with DOT 4 automobile hydraulic fluid. Refer to paragraph 2.2.7 for details.

2	**Fuel Tank Sump Drain** Drain off any water and sediment, refer to paragraph 2.2.2 for details.

2.2.7 Hydraulic Brake System

Check brake master cylinder and refill with correct grade of brake fluid. To refill, DOT 4 automobile brake fluid is required, as specified in the inspection chart, and no aircraft hydraulic fluid must ever be used! Bleed the brake system to remove entrapped air whenever there is a spongy response to the brake lever. Refer to paragraph 5.2.5 for filling and bleeding the brake system.

2.3 Cleaning

Keeping the aircraft clean is important. Besides maintaining the appearance of the aircraft, cleaning makes inspection and maintenance easier.

2.3.1 Windshield and Windows

Windows should be cleaned carefully with plenty of fresh water and a mild detergent, using the palm of the hand to feel and dislodge any caked dirt or mud. A sponge, soft cloth, or chamois may be used, but only as a means of carrying water to the acrylic. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the acrylic with a dry cloth as this builds up an electrostatic charge which attracts dust. Oil and grease may be removed by rubbing lightly with a soft cloth moistered with a suitable solvent.

Caution

When cleaning the windshields, do NOT use gasoline, alcohol, benzene, acetone, carbon tetrachloride, fire extinguisher fluid, de-icer fluid, laquer thinner, or glass window cleaning spray. These solvents will soften and craze the acrylic windows.

After washing, the acrylic windshield and windows should be cleaned with an aircraft windshield cleaner. Apply the cleaner with soft cloths and rub with moderate pressure. Allow the cleaner to dry, then wipe it off with soft flannel cloths. A thin, even coat of special acylic window polish will fill-in minor scratches and help prevent further scratching. Do not use a canvas cover on the windshield or windows unless freezing rain or sleet is anticipated since the cover may scratch the acrylic surface.

Caution

Do not use any laquer polish like caranauba wax on the acrylic windows.

2.3.2 Plastic Trim

The instrument panel, plastic trim and control knobs need only do be wiped with a damp cloth. Oil and grease on the control sticks and control knobs can be removed with a cloth moistened with a suitable solvent. Volatile solvents, such as mentioned in paragraph 2.3.1. must never be used since they soften and craze the plastic.

2.3.3 Painted Surfaces

The painted exterior surfaces of the aircraft, under normal conditions, require a minimum of polishing and buffing. Approximately two weeks are required for acrylic paint to cure completely; in most cases, the curing period will have been completed prior to delivery of the aircraft. In the event that polishing or buffing is required within the curing period, it is recommended that the work is done by an experienced painter. Generally, the painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with cloths or chamois. Harsh or abrasive soaps or detergents which could cause scratches should never be used. After the curing period, the aircraft may be waxed with a good automotive wax. A heavier coating of wax on the leading edge of the wing and tail and on the engine nose cap will help reduce the abrasion encountered in these areas.

2.3.4 Aluminum Surfaces

The aluminum surfaces of some parts require a minimum of care due to their anodized coating, but should never be neglected. Many good aluminum cleaners are available from commercial suppliers of aircraft products. Household type detergent soap powders are effective cleaners, but should only be used very cautiously since some of them are strongly alkaline and will cause damage.

2.3.5 Engine and Engine Compartment

The engine should be kept clean since dirty cooling fins may support overheating of the engine. Also, cleaning is essential to minimize any danger of fire and provide for easier inspection of components. The entire engine cowling may be removed to facilitate engine and interior cowl cleaning. Wash down the engine and components with a suitable solvent, then dry thoroughly with compressed air.

Caution

Particular care should be given to electrical equipment before cleaning. Solvent should not be allowed to enter magnetos, starter, alternator, voltage regulator and the like. Hence, these components should be protected before saturating the engine with solvent. Any fuel, oil and air openings should be covered before washing the engine with solvent. Caustic cleaning solutions should not be used. After cleaning engine re-lubricate all control arms and moving parts.

2.3.6 Upholstery and Interior

Keeping the upholstery and interior clean prolongs upholstery fabric and interior trim life. To clean the interior, proceed as follows:

a. Brush or vacuum clean the upholstery and carpet to remove dust and dirt.
b. Clean upholstery with a sponge moistened with fresh water
c. Wipe plastic trim with a damp cloth.
d. Oil spots and stains may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place in the fabric to be cleaned. Never saturate the fabric with volatile solvent; it may damage the padding and backing material. Scrape sticky material from the fabric with a dull knife, then spot clean the area.

2.3.7 Propeller

Wash hub and blades with a soft cloth and suitable cleaning solvent, then dry thoroughly with compressed air.

Caution

Do not use gasoline, alcohol, benzene, acetone, or laquer thinner. These solvents will soften and damage the laquer finish.

2.3.8 Wheels

The wheels should be washed periodically and examined for corrosion, cracks and dents in the wheel halves or hubs. If defects are found, remove and repair in accordance with Section 5. Discard cracked wheel halves, of hubs and install new parts.

2.4 Lubrication

The G-3 /600 is constructed with minimal lubrication point. For these points, lubrication regular grease is used. The following listing shows all points which have to be lubricated frequently.

a. Wing main bolts
b. Wing ball joints (plastic ball) at wing folding mechanism
c. Wing flap push-pull rods connection and hinges
d. Stabilizer mounting bolts
e. All control surface hinges in general

Note

Do not lubricate pulleys and bushings of control surface cables and rods, also the control stick mechanism and rudder pedal mechanism do not require lubrication.

When changing wheels it is recommended to lubricate wheel axles before reassembling to prevent them from corrosion and keep wheel changing easier.

2.5 Inspection

2.5.1 Inspection Requirements

As required by Federal Aviation Regulations, all civil aircraft of U.S. registry must undergo a complete inspection (annual) each twelve calendar months. In addition to the required Annual Inspection, aircraft operated commercially (for hire) must also have a complete aircraft inspection every 100 hours of operation.

2.5.2 Inspection Charts

The following charts show the recommended intervals at which items are to be inspected.
As shown in the charts, there are items to be checked after the first 20 hours of service, each 100 hours and 200 hours.
To conduct these inspections it is mandatory to use the factory inspection form (**REMOS Checklist-B Service/Maintenance**) latest issue.

a. When conducting the after sales 20 hour inspection, all items marked as 20 hour service would be inspected, serviced or otherwise accomplished as necessary to insure continued airworthiness.

b. At each 100 hours, the 20 hour items would be accomplished in addition to the items marked as 100 hour service as necessary to insure continued airworthiness.

c. At each 200 hours, the 100 hour items would be accomplished in addition to the items marked as 100 hour service as necessary to insure continued airworthiness.

d. The numbers appearing in the "special inspection item" (S.i.i.) column refer to data listed at the end of the inspection charts. These items should be checked at each inspection interval to insure that applicable servicing and inspection requirements are accomplished at the specified intervals.

e. A complete aircraft inspection includes all 20, 100 and 200 hour items plus those special inspection items which are due at the time of the inspection.

2.5.3 Inspection Guidelines

a. Moveable Parts for: lubrication, servicing, security of attachment, binding, excessive wear, safetying, proper operation, proper adjustment, correct travel, cracked fittings, security of hinges, defective bearings, cleanliness, corrosion, deformation, sealing and tension.

b. Fluid Lines and Hoses for: leaks, cracks, dents, kinks, chafing, proper radius, security, corrosion, deterioration, obstruction and foreign matter.

c. Metal Parts for: security of attachment, cracks, metal distortion, broken spotwelds, corrosion, condition of paint and any other apparent damage.

d. Composite Parts for: cracks, dents, de-lamination.

e. Wiring for: security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration and corroded terminals.

f. Bolts in Critical Areas for: correct torque in accordance with torque values given in the chart in Section 1, when installed or when visual inspection indicates the

need for a torque check.

Note

Torque values listed in Section 1 are derived from oil-free cadmium-plated threads and are recommended for all installation procedures contained in this manual except where other values are stipulated. They are not to be used for checking thightness of installed parts during service.

g. Filters and Fluids for: cleanliness, contamination and/or replacement at specified intervals.

h. Aircraft File

Miscellaneous data, information and licences are a part of the aircraft file. Check that the following documents are up-to-date and in accordance with current Federal Aviation Regulations. Most of the items listed are required by the United States Federal Aviation Regulations.

To be displayed in the aircaft at all times:

1. Aircraft Airworthiness Certificate.
2. Aircraft Registration Certificate.

To be carried in the aircraft at all times:

1. Weight and Balance and associated papers (latest copy of the Repair and Alteration Form if applicable).
2. Aircraft Equipment List.

To be made available upon request:

1. Aircraft Log Book

i. Engine Run-Up

Before beginning the step-by-step inspection, the pilot should start, run-up and shut down the engine in accordance with instructions in the Pilot Operating Handbook. During run-up, observe the following, making note of any discrepancies or abnormalities. We recommend to use the "static-test-report form" included in the **REMOS Checklist-B Service/Maintenance** form for documentation:

1. Engine temperatures and pressures.
2. Static rpm.
3. Magneto drop.
4. Engine response to changes in power.
5. Any unusual engine noises.
6. Fuel shut-off valve function.
7. Idling speed.
8. Charge control and battery voltage.

After the inspection has been completed, an engine run-up should again be performed to determine that any discrepancies or abnormalities have been corrected.

IMPORTANT

Read all inspection requirements paragraphs prior to using these charts. These charts may only be used accompanied by the special factory inspection form: REMOS Checklist-B Service/Maintenance. A FAR-43 related inspection form (annual/100hr. inspection) is attached to this maintenance manual.

Service / hours				
S.i.i.	20	100	200	Propeller
	●			Spinner
			●	Spinner bulkhead
	●			Blades
	●			Bolts and nuts
			●	Spacer

Service / hours				
S.i.i.	20	100	200	Engine Compartment
				Check for evidence of oil and fuel leaks, then clean entire engine and compartment if needed, prior to inspection.
	●			Engine oil, filler cap, dipstick, drain plug, filter element
	●			Oil cooler
1		●		Induction air filter
		●		Induction air box, doors and controls
	●			Cold and hot air hoses
		●		Cylinders, rocker box covers and push rod housings
		●		Crankcase, oil sump, accessory section and crankshaft seal
		●		Gear drive case and propeller shaft seal
2	●			Hoses, metal lines and fittings
3	●			Intake and exhaust system
		●		Ignition harness
		●		Spark plugs
			●	Compression check
	●			Electrical wiring
4	●			Engine controls and linkage
			●	Engine shock mounts, mount structure and ground straps
			●	Cabin heat doors and controls
		●		Starter, solenoid and electrical connections
		●		Voltage regulator mounting and electrical leads
		●		Carburetors
		●		Firewall
	●			Engine Cowling

Service / hours				
S.i.i.	20	100	200	Fuel System
	●			Fuel drain valve
	●			Fuel tank vent, cap and placards
			●	Fuel tank sump drains
5				Drain fuel and check outlet screen
	●			Fuel shut-off valve and placards

Service / hours				
S.i.i.	20	100	200	Landing Gear
	●			Main gear wheels and fairings
	●			Nose gear wheel and fairing
6				Wheel bearings
	●			Tires
			●	Brake fluid, lines and hoses, linings, discs, brake assembly and master cylinder
			●	Parking brake
			●	Main gear struts

Service / hours				
S.i.i.	20	100	200	Airframe
	●			Aircraft exterior
			●	Aircraft structure
	●			Windows, windshield, doors and seals
	●			Seat belts and shoulder harnesses
			●	Seat structure, mounting and upholstery
			●	Control bearings, pulleys, cables and rod connections
	●			Instruments and markings
5			●	Magnetic compass compensation
			●	Instruments and wiring
			●	Instrument panel, shockmounts, ground straps, covers, decals
	●			Heating and ventilation system
	●			Lights, switches, circuit breakers
	●			Exterior lights
			●	Pitot and static system
	●			Radios and avionics
			●	Antennas and cables
7			●	Battery

Service / hours				
S.i.i.	20	100	200	Control Systems
				In addition to the items listed below, always check for correct direction of movement, correct travel and correct cable tension.
			●	Cables, terminals, pulleys, pulley brackets, cable guards, rods and rod connections, linkage bearings
	●			Trim control switch, indicator
			●	Travel stops
	●			Flap control switch, indicator
			●	Flap motor, linkage and bellcranks
			●	Decals and labeling
	●			Elevator and trim tab hinges and control rods
8			●	Elevator trim tab actuator
			●	Rudder pedal assembly and linkage
	●			Skins of control surfaces

Special Inspection Items (S.i.i. as outlined in chart above)

1. Check filters per paragraph 2.2.4. Replace if required.

2. Replace hoses at engine overhaul or after 5 years, whichever comes first.

3. General inspection every 50 hours, Refer to Section 11 for 100 hour inspection.

4. Each 50 hours for general condition and freedom of movement. These controls are not repairable. Replace as required at each engine overhaul.

5. Each 1000 hours or to coincide with engine overhaul.

6. First 100 hours and each 300 hours thereafter. More often if operated under prevailing wet or dusty conditions.

7. Check battery voltage per paragraph 2.2.5 each 100 hours.

8. Check linkage for cracks and free play, lubricate with regular grease every 50 hours.

Note

A high-time inspection is merely a 100-hour inspection with the addition of an engine overhaul. Rotax recommends engine overhaul at 1500 hours for the 912 Series engine. At the time of overhaul, engine accessories should be overhauled.

Section 3

Structures - Fuselage

Table of Contents Page

3.1 Windshield and Windows

3.1.1 Description

The windshield and windows are single-piece acrylic plastic panels set glued and laminated to the fuselage, to achieve the best possible aerodynamics and eliminate wind noises as much as possible.

3.1.2 Cleaning

Refer to Section 2.

3.1.3 Waxing

Required Tools: fine-grade wax, batting
Parts required: None
Level of Maintenance: Line
Certification required: Owner

Waxing will fill in minor scratches in clear plastic and help protect the surface from further abrasion. Use a good grade of commercial wax applied in a thin, even coat. Bring wax to a high polish by rubbing lightly with a clean, dry flannel cloth.

3.1.4 Repairs

Damaged window panels and windshield may be removed and replaced if damage is extensive. However, certain repairs as prescribed in the following paragraphs can be made successfully without removing the damaged part from aircraft. Three types of temporary repairs for cracked plastic are possible. No repairs of any kind are recommended on highly-stressed or compound curves where repair would be likely to affect pilot's field of vision. Curved areas are more difficult to repair than flat areas and any repaired area is both structurally and optically inferior to the original surface.

3.1.4.1 Scratches

Required Tools: sandpaper, rubber pad, buffing compound, batting, automobile body cleaner or fine-grade wax.
Parts required: None
Level of Maintenance: Line
Certification required: Owner

Scratches on clear plastic surfaces can be removed by hand-sanding operations followed by buffing and polishing, if steps below are followed carefully.

a. Wrap a piece of No. 400 (or finer) sandpaper or abrasive cloth around a rubber pad or wood block. Rub surface around scratch with a circular motion, keeping abrasive constantly wet with clean water to prevent scratching surface further. Use minimum pressure and cover an area large enough to prevent formation of „Bull's eyes" or other optical distortions.

Caution

Do not use a coarse grade of abrasive. No 320 is of maximum coarseness.

b. Continue sanding operation, using progressively finer grade abrasives until scratches disappear. Do not skip one grade of abrasive!

c. When scratches have been removed, wash area thoroughly with clean water to remove all gritty particles. The entire sanded area will be clouded with minute scratches which must be removed to restore transparency.

d. Apply first tallow or buffing compound to a motor-driven buffing wheel. Hold wheel against plastic surface, moving it constantly over damaged area until

cloudy appearance disappears. A 2000-feet-per-minute surface speed is recommended to prevent overheating and distortion. (Example: 750 rpm polishing machine with a 10 inch buffing bonnet)

Note

Polishing can be accomplished by hand but will require a considerably longer period of time to attain the same result as produced by a buffing wheel.

e. When buffing is finished, wash area thoroughly and dry with a soft flannel cloth. Allow surface to cool and inspect area to determine if full transparency has been restored . Apply a thin coat of hard wax and polish surface lightly with a clean flannel cloth.

Note

Rubbing plastic surface with a dry cloth will build up an electrostatic charge which attracts dirt particles and may eventually cause scratching of surface, After wax has hardened, dissipate this charge by rubbing surface with a slightly damp chamois. This will also remove dust particles which have collected while wax is hardening.

f. Minute hairline scratches can often be removed by rubbing with commercial automobile body cleaner or fine-grade rubbing compound. Apply with a soft, clean, dry cloth or imitation chamois.

3.1.4.2 Cracks

Required Tools: 1/8” drill, aircraft dope.
Parts required: Rubber sheet, fabric, wood strips, bolts and nuts.
Level of Maintenance: Line
Certification required: Owner

a. When a crack appears, drill a hole at end of crack to prevent further spreading. Hole should be approximately 1/8 inch in diameter, depending on length of crack and thickness of material.

b. Temporary repairs to flat surfaces can be accomplished by placing a thin strip of wood over each side of surface and inserting small bolts through wood and plastic. A cushion of sheet rubber or aircraft fabric should be placed between wood and plastic on both sides.

c. A temporary repair can be made on a curved surface by placing fabric patches over affected areas. Secure patches with aircraft dope or laquer thinner.

This type of repairs is used as a temporary measure ONLY, and as soon as facilities are available, panel should be replaced.

3.1.5 Replacement

3.1.5.1 Removal

Required Tools: Jig saw, crowbar, power drill, abbrasive paper
Parts required: None
Level of Maintenance: Heavy
Certification required: A&P Mechanic

a. Cut out the old window using a jig saw without causing damage to the fuselage.
b. Remove the remaining border of the window by the use of a crowbar and sand of old glue to get a smooth joining surface at the fuselage.

3.1.5.2 Installation

Required Tools: Jig saw, epoxy resin/hardener, Scotch-Weld adhesive, cotton flakes, abrasive paper (30 & 180 grain size), tape, 92110 fabric, # 3003 rowings, polyester putty, primer, lacquer and appropriate utilities.
Parts required: window as required
Level of Maintenance: Heavy
Certification required: A&P Mechanic

a. Clip and fit the new window to required size.

Caution

Use great care when cutting the window with an jig saw, the temperature of the window must be 65° F at least. Lower temperatures would cause the material to crack or break when sawing.

b. Sand the faying surface of window and fuslage, using abrasive paper of 180 grain size.
c. Sand off all lacquer around the window opening on the fuselage (about 2 inch width).
d. Apply Scotch-Weld adhesive (1:1) soaked with cotton flakes to the density which prevents self-acting flow of the glue to the joining surfaces of window and fuselage.
e. Tap the window to the fuselage opening and wipe away excessive glue, let the glue cure for 24 hours at 65° F.
f. Take off the tap and chamfer the window from the outside with the abrasive paper (30 granulation) about 1/2 inch width.
g. Apply Scotch-Weld adhesive (1:1) to the camfered area of the window and let it cure for at least 16 hours at 65° F.
h. Sand the camfered area beyond the window outline at the fuselage (1/2 inch width) to remove earlier applied glue.
i. Laminate the window and fuselage using one layer of 92110 glas fiber fabric (about 1 inch width).
j. Put earlier impregnated rowings (6 bundles # 3003) along the circuit of the window and fuselage.
k. Cover that area again with one layer of 92110 glas fiber fabric (about 1 inch width) and let the epoxy cure again for 24 hours at 65° F at least.

l. Apply polyester putty, primer and lacquer to finish your work.

3.2 Cabin Doors

3.2.1 Removal and Installation

Required Tools: None
Parts required: None
Level of Maintenance: Line
Certification required: Owner

To remove cabin doors unlock and open the doors, unplug the support gas struts from the door bracket. Do not unplug the gas struts while doors are not in fully open position. Withdraw safety pin from both hinges on top of the doors. Installation is carried out in reverse order.

3.2.2 Cabin Door Latches

The cabin door latch contains three locking bolts operated by a rotary door handle (inside and outside each door). Rotating the handle forward will lock while spinning backward will unlock the doors. It is no adjustment, lubrication or servicing required to the latch system.

3.2.3 Lock

3.2.3.1 Removal and Installation

Required Tools: 2.5 mm allen wrench, needle-nosed pliers, screwdriver.
Parts required: Door handle decal set, Loctite 243 (medium strength) 3 x cotter pin (1.6 x 15 mm), self-locking nut M6.
Level of Maintenance: Line
Certification required: Owner

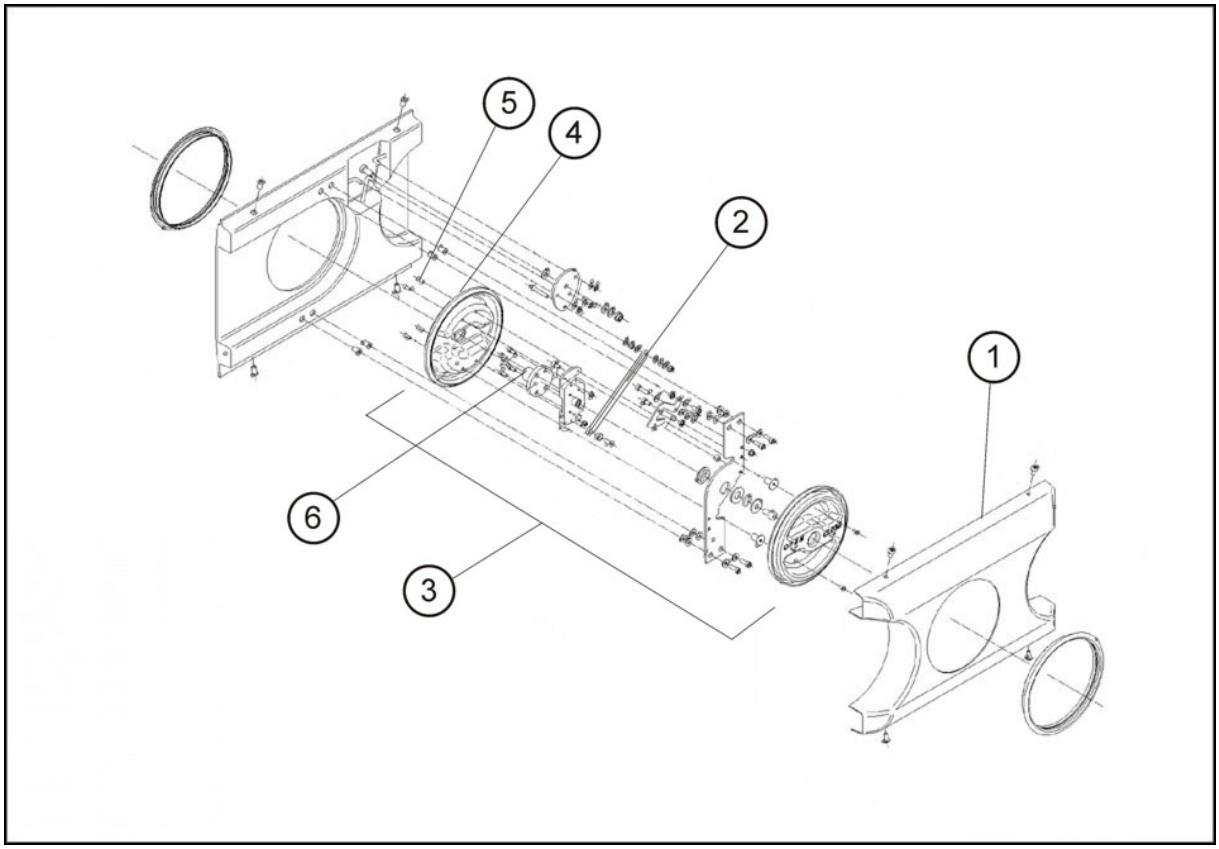
In addition, a cylinder and key type lock is installed in both outside door handles. The procedure to replace the lock is given in the following listing (refer to figure 3-1.):

a. Remove inside door trim panel (1).
b. Disconnect control rod (2).
c. Unscrew complete door lock assembly (3) from outer door shell by removing its four fixing screws.
d. Remove decals from outer door handle (4).
e. Remove outer door handle by unscrewing its four retaining screws (5).
f. Remove lock (6) and remember position for re-installation.
g. Assemble in reverse order.

Note

Use Loctite type 243 to secure retaining screws when installing a new key lock.

Figure 3-1.



3.3 Seats

3.3.1 Description

The standard pilot and co-pilot seat is made from one-piece carbon fiber moncoque, equipped with a 3 position fore and aft adjustment. Seat adjustment is not possible while seated.

3.3.2 Adjustment

To adjust seat position a push button is provided beneath the forward seat bottom of each seat (left side on left seat, right side on right seat).
Push the button while standing beside the aircraft and lift up the seat, engage the seat in the desired postion and release the push button. Ensure that seat is locked in its bracket.

3.3.3 Repair

Required Tools: Epoxy resin/hardener, abrasive paper (30 & 180 grain size), 92110 fabric, primer, lacquer and appropriate utilities.
Parts required: None
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

If cracks are dedictated in the carbon fiber seat shells, they may be repaird using L285 Epoxy Resin or similar (R&G L20), reinforcing with suitable carbon fiber fabrics. Follow the instructions on the container for a successful completion of the repair.

3.3.4 Upholstery

Required Tools: Scissors, dull-bladed putty knife, rubber cement.
Parts required: Fabric as required
Level of Maintenance: Heavy
Certification required: LSA Repairman Maintenance or Owner

Due to the wide selection of fabrics, styles and colors, it is impossible to depict each particular type of upholstery. Major work, if possible, should be accomplished by an experienced mechanic.
Materials and tools will vary with job. Scissors for trimming upholstery to size and a dull-bladed putty knife are the only tools required for most trim work. Use industrial rubber cement to hold mats and fabric edges in place.

3.4 Baggage Compartment

The baggage compartment is located behind the pilot seat. It is a one-piece carbon fiber container and capable to hold a total of 65 lb. It is held in place by 2 screws located on it´s face plate and one screw at the inside bottom. After removing these screws the baggage compartment can be withdrawn from the bulkhead.

3.5 Safety Provisions

3.5.1 Ballistic Recovery System

3.5.1.1 Description

The G-3 /600 is prepared for the installation of a BRS parachute rescue system. A description of the whole system is given in the Pilot Operating Handbook, Section 6.

3.5.1.2 Installation

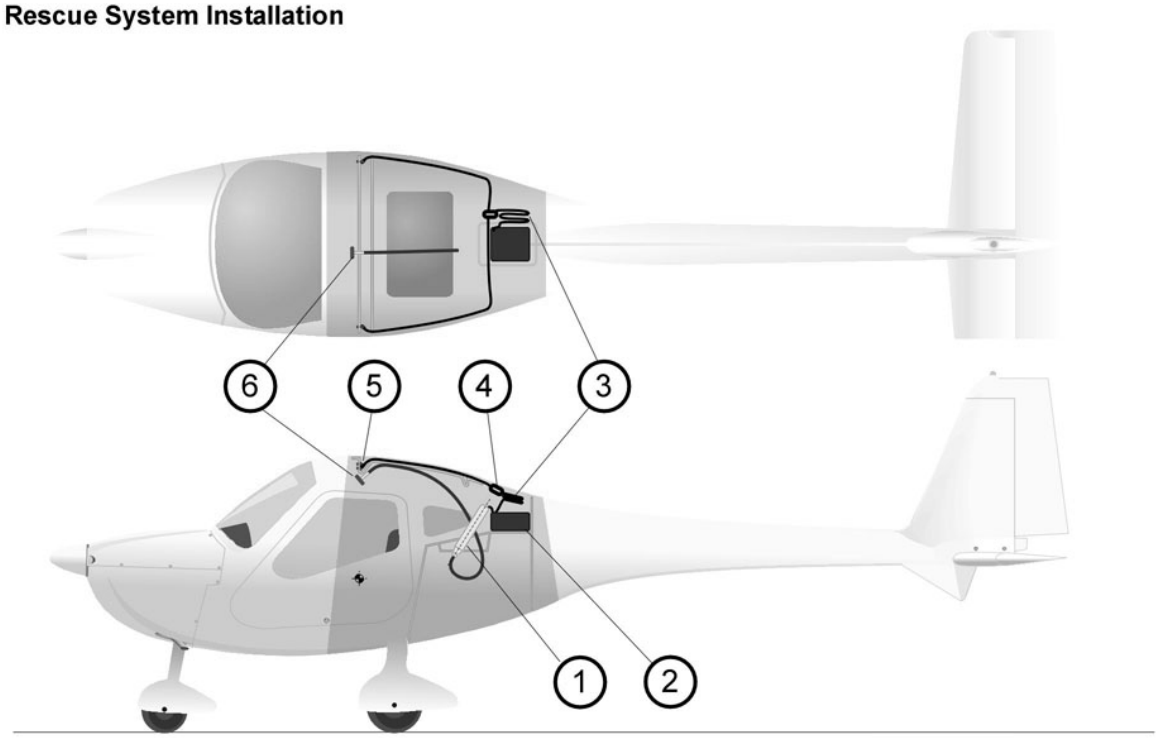
Required Tools: Power drill, 6.5 mm drill, phillips head screwdriver, wire cutting pliers, 4 & 5 mm allen wrench, 8 mm wrench.
Parts required: Bracket for rocket motor incl. screw kit, 50” of 6 mm nylon rope, Loctite 243/242 (medium strength), cable ties, socket screw (M6 x 25 mm) + washer and retainer.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

If the aircraft is to be equipped with the BRS system, follow the instructions in the rescue system installation manual. A special mounting kit, containing the bracket for the rocket motor and some micellaneous parts can be obtained from REMOS Aircraft GmbH or the local distributor. Figure 3-2. illustrates the installation of the rescue system in the aircraft.

Warning

When working on the ballistic parachute system, ensure that the securing pin is installed to the system and always take great care. An unintended launch of the rocket motor could cause serious injury or death.

Figure 3-2.



1. Rocket motor
2. Parachute
3. Kevlar briddle
4. Connecting latch
5. Connection to fuselage main spare (not visible)
6. Activating lever

3.5.2 Safety Belts

Required Tools: None
Parts required: Safety belts and attachment latches as required.
Level of Maintenance: Heavy
Certification required: LSA Repairman Maintenance or Owner

4-point safety belts are installed for pilot and co-pilot seat to provide maximum safety. Safety belts are tied to latches at the cabin structure. Belts should be replaced if frayed or cut, latches are defective or stitching is broken. Attaching parts should be replaced if excessively worn or defective.

3.5.3 Baggage Pocket Nets

Required Tools: 3 mm allen wrench
Parts required: Pocket Nets, Allen screws M4x20 as required.
Level of Maintenance: Heavy
Certification required: LSA Repairman Maintenance or Owner

Behind each seat, a mold for lightweight baggage is provided covered by a pocket net. The maximum weight capacity must not exceed 5 lb each. Nets should be replaced when frayed or cut or frame is broken.

Section 4

Structures – Wings and Empennage

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4.1 Wings

4.1.1 Description

Each all composite wing is a semimonocoque type, made from glass fiber sandwitch components. Each wing contains one main spar and suitalbe ribs for the attachment of the skin. A Ceconite fabric covers the area between main spar and trailing edge while the leading section is coverd by a glass fiber sandwitch compound. Each wing assembly provides full composite ailerons and flaps constructed from carbon fiber sandwich materials. A colored navigation light is installed to each non removable carbon fiber wing tip.
Both wings provide a special mechansim to fold them back for storing or transportation of the aircraft. Refer to the G-3 /600 Pilot Operating Handbook, Section 8, for instructions about folding and re-installing wings.

4.1.2 Removal

Required Tools: 10/12/13/14 mm wrench, screwdriver and phillips head screwdriver, needle-nosed pliers. REMOS Bolt-Removal-Tool.
Parts required: None
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Wing removal is most easily accomplished if three men are available to handle the wing. Otherwise, the wing should be supported with a sling when the fastenings are loosened. When using a sling, great care has to be taken not to damage the wing´s surface. If too much pressure is applied to the surface due to unsuitable slings, dents may result. Details of the strut connections are given in figure 4-1. and figure 4-2.

a. Disconnect aileron connection inside the cabin (quick release connector).
b. Remove support strut from wing and main strut.
c. Support wing at outboard end and disconnect strut at wing fitting.
d. Disconnect strut at fuselage connection and remove.
e. Remove cowl pin and withdraw wing main bolt.
f. Withdraw the wing from the fuselage as much as possible, it may be required to lower the wing outboard end for a small amount (1-2 inches).
g. Spin the wing 90° so that the leading edge is pointing downward while moving the outboard end backwards till the wing is aligned with the fuselage tail cone.
h. Support wing at the root.
i. Disconnect the wing from the fuselage at the ball and socket joint (Remove white plastic ball from the pivot on the fuselage).
j. Disconnect navigation light terminal at wing root.
k. Disconnect pitot line at fuselage (only on left wing).
l. Remove wing and lay on padded stand.

Note

Remember position of the plastic ball for re-installation of the wing. Plastic balls of right and left wing are different, a marking on the balls and brackets indicates the correct position.

4.1.3 Repair

A damaged wing panel may be repaired in accordance with instructions outlined in Section 18. If main spar is damaged or alignment of the wing panel is concerned we recommend to replace the whole wing panel or return it for repair to the factory. Damaged fabric cover may be repaired following the instructions given by the fabric manufacturer (Ceconite USA).

4.1.4 Installation

Required Tools: Similar to removal.
Parts required: 4 x cotter pin (2 x 25 mm), 4 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Wing installation in general has to be carried out in reverse order to removal but we strongly recommend to read the following instructions prior to start installation:

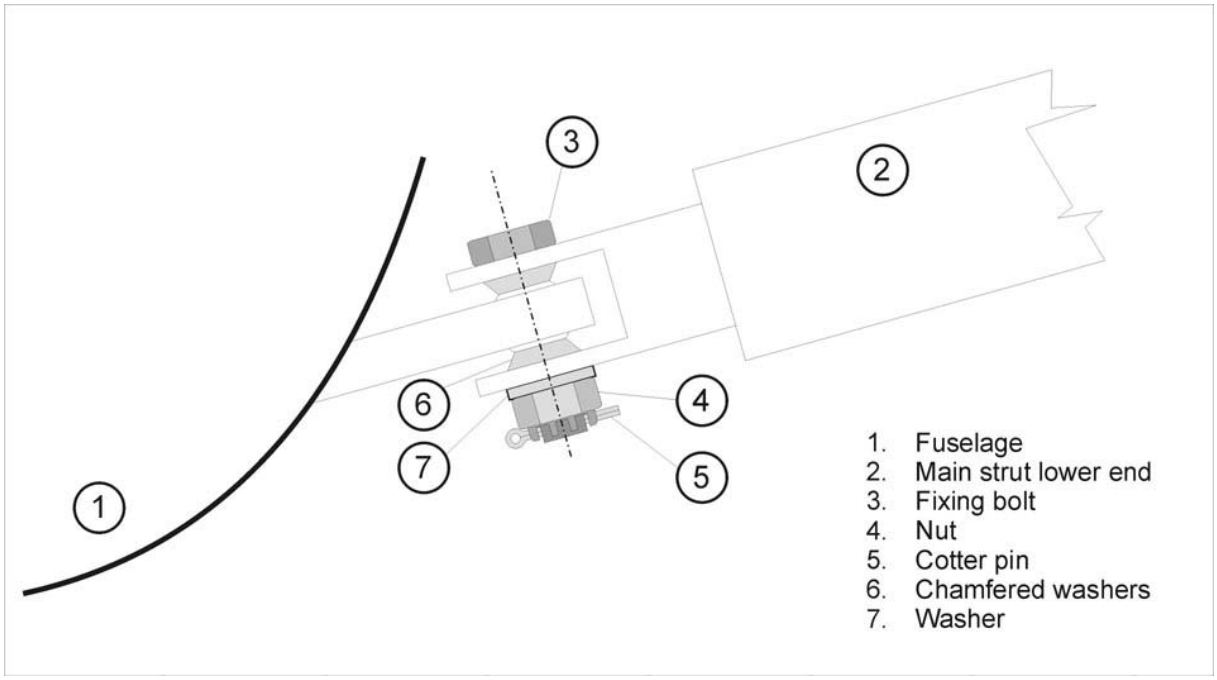
4.1.4.1 Installing Strut to Fuselage

Note

All struts are providing a "Top" marking, which has to point upward when installed, while leading edge (rounded edge) has to point forward.

Connect main strut first to the fuselage and support as suitable, so that no damage occures to the attachment and strut bearing. In figure 4-1. the correct installation of the strut-fuselage conncection is given. Take care that leading edge of the profiled main strut is pointing forward. It may be helpful to apply a small amount of grease to both champfered washer prior to installation. Take also care for the right orientation of those washers, otherwise the folding mechanism of the wings will not operate properly and damage to the strut could be caused.

Figure 4-1.



Caution

Watch for the correct installation of the champfered washers as shown in illustration 4-1. Damage to the struts may occure and folding of the wings will not be possible if those washers are installed in a wrong way!
Thighten fixing bolt to max. torque of 24 Nm / 212 inlb.

4.1.4.2 Installing Wing to Fuselage

To install the wing to the fuselage two persons are required at least!

a. Insert the plastic ball into the guide cage at the wing root (left and right ball joints are different, each plastic ball provides a marking matching with the appropriate bracket at the fuselage).

b. Hold wing in a position to be aligned with the fuselage, leading edge pointing to the ground (wing root pointing forward), so that ball bearing guide cage and ball bracket at the fuselage are side by side.

c. Apply the plastic ball into the guide cage at the wing root, so that it is possible to push it over the bracket at the fuselage and insert it´s fixation screw. Do not overtighten this screw. While doing so a second person has to support the wing at the outboard end, so that no part of the wing skin will touch the fuselage.

d. Now the wing outboard end can be moved forward slowly, securing that the wing will not spin arround it´s axis. If the wing has reached it´s forward position one person at the wing root has to spin it till the connection latches has aligned with the fuselage latches.
Great care has to be taken, that no damage will occur to the wing surfaces during spinning of the wing!

e. Take care that flap drive engages to the fuselage and apply pressure to the wing tip, so that the latches on the wing root and fuselage engage and the wing mainbolt could be pushed thrue it´s guide tube. Ensure that the wing mainbolt has engaged completely and secure it with a cowl pin.

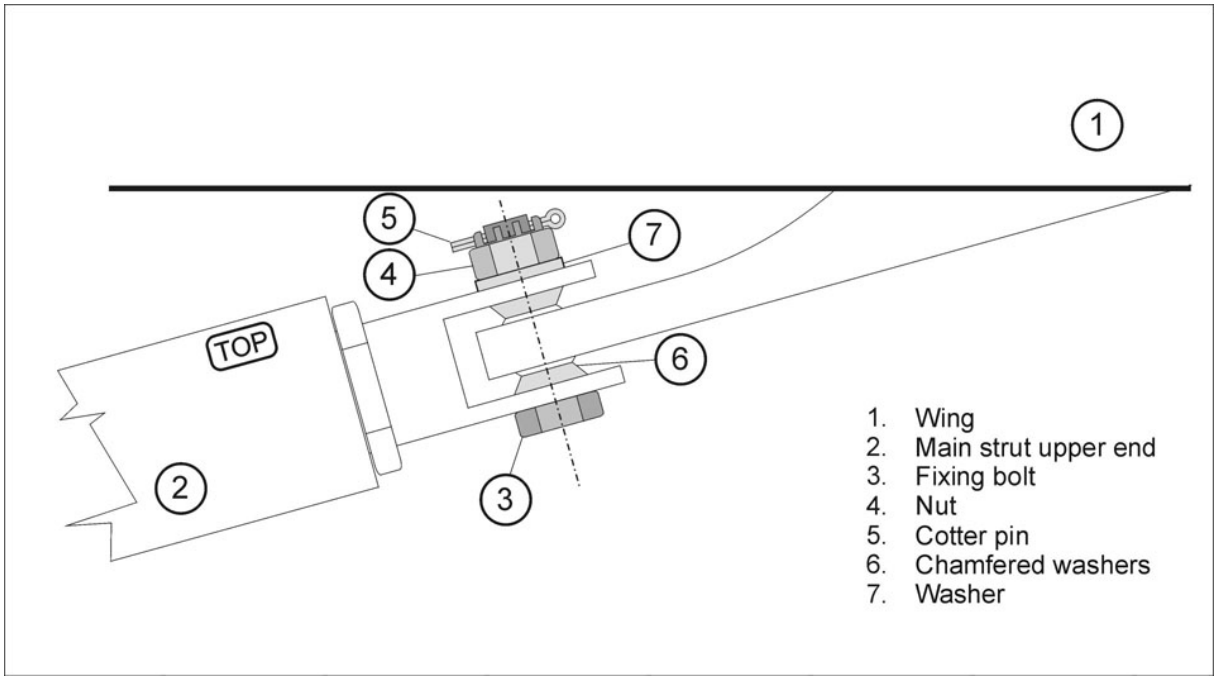
Note

Support of the wing ouboard end is required till the strut has been connected to the wing attachment.

4.1.4.3 Connecting Strut to Wing

Figure 4-2. is showing how to apply the connection bolts at the strut-wing attachment. Notice, that the fixing bolt has to be applied from beneath the strut (nut is located on top). It may be helpful for installation to apply grease to both champfered washers prior to installation. After establishing this connection, no more support of the wing tip is necessary.

Figure 4-2.



4.1.4.4 Installing Support Strut

After installing both main struts, the support struts have to be installed in a way, that "Top" marking ist pointing upward and leading edge of the profiled strut is pointing forward.
The support struts are connected to main strut and wing attachment, using self locking nuts.
Thighten fixing bolts to max. torque of 10 Nm / 88 inlb.

Caution

DO NOT REUSE SELF-LOCKING NUTS!

4.2 Wing Struts

4.2.1 Description

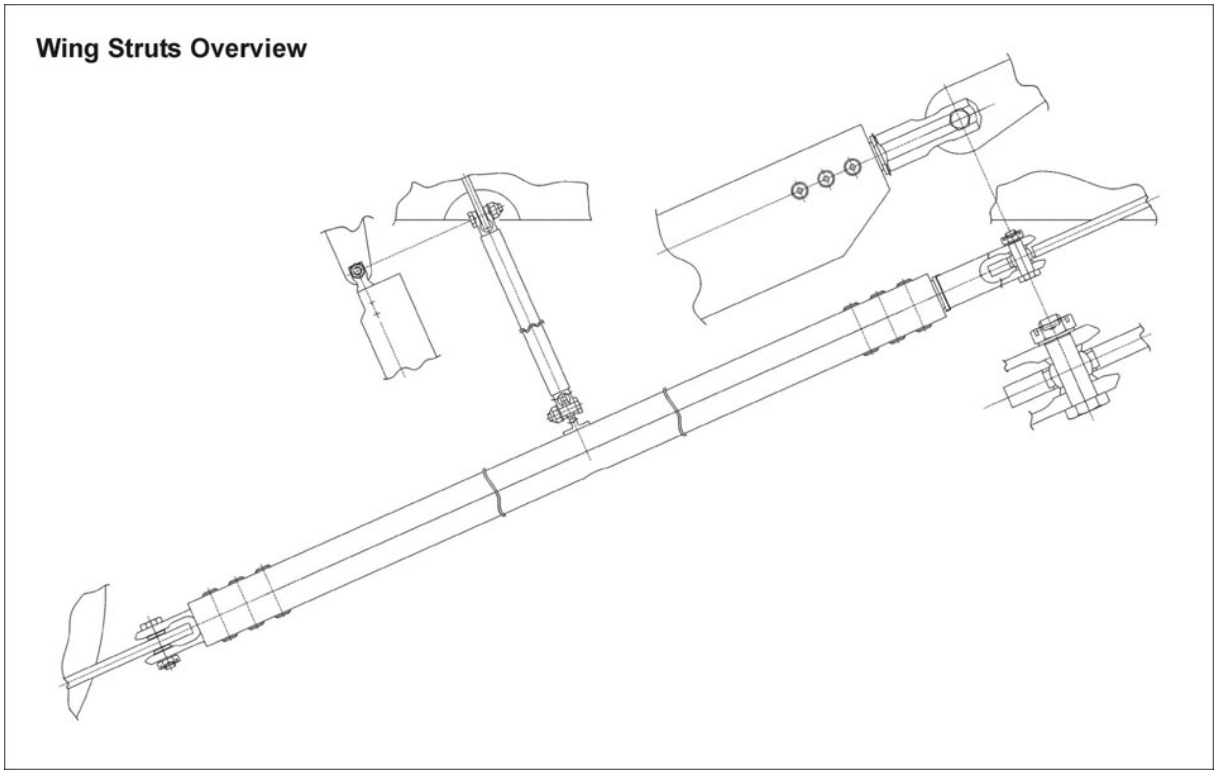
Each wing has a single lift strut assembled together with a support strut which transmitts a part of the wing load to the lower portion of the fuselage. Each strut consists of streamlined aluminum tube riveted to two end fittings for attachment at the fuselage and wing.

4.2.2 Removal and Installation (Refer to paragraph 4.1.2 and 4.1.4)

4.2.3 Repair

Wing strut repair is not permitted, if any damage to the strut is dedicated, the complete strut assembly has to be replaced.

Figure 4-3.



4.3 Horizontal Stabilizer

4.3.1 Description

The horizontal stabilizer is primarily of all composite monocoque construction, consisting of outer shell and ribs, no spar is included. Hinges are located on the trailing edge to support the elevator.

4.3.2 Removal and Installation

Required Tools: Phillips head screwdriver, Remos Bolt-Removal Tool.
Parts required: None
Level of Maintenance: Line
Certification required: Owner

Removal and installation of the stabilizier is quite easy, but needs two persons to perform:

a. Remove the tail cover.
b. Disconnect the trim actuator terminal.
c. Disconnect the elevator control rod by opening the quick-release connector (push button and slide back the riffled securing tube).
d. Support stabilizer by a second person.
e. Withdraw cowl pins and remove both stabilizer bolts to the left.
f. Remove stabilizer.
g. Install horizontal stabilizer by reversing preceding steps and check operation of trim system.

Note

Stabilizer bolts are different in length, therefor each bolt provide a marking for installation: "V" means forward bolt, "H" means backward bolt.

Caution

Ensure, that both cowl pins are engaged to the stabilizer bolts.

4.3.3 Repair

Horizontal stabilizer repair should be accomplished in accordance with applicable instructions outlined in Section 18.

4.4 Vertical Stabilzer

4.4.1 Description

The vertical stabilizer is part of the fuselage structure, refer to Section 3.

4.4.2 Removal and Installation

The vertical stabilizer is a non removable part of the fuselage.

4.4.3 Repair

Refer to Section 3.

Section 5

Structures – Landing Gear and Brakes

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5.1 Landing Gear, General Description

Hollow composite main landing gear struts are installed on all model G-3 /600 aircraft. This installation is illustrated in figure 5-1. All models are equipped with steerable nose gear. Wheels with disc-type brakes and tube-type tires are installed. Brake discs are attached to the wheel with by a separate torque plate. The nose gear provides shock absorbing rubber elements. The nose wheel is steerable with the rudder pedals up to a maximum pedal deflection. Nose and main wheel speed fairings are part of the system, they are none detachable.

5.1.1 Trouble Shooting

Trouble	Probable Cause	Remedy
Aircraft leans to one side	Incorrect tire inflation	Inflate to pressure specified in figure 1-1.
Tires wears excessively	Incorrect tire inflation	Inflate to pressure specified in figure 1-1.
	Dragging brakes	Refer to paragraph 5.2.2.
	Wheel bearing damaged	Install new part (s)
	Wheels out of balance	Correct in accordance with paragraph 5.1.3.4.
Wheel bounce evident on smooth surface	Out of balance condition	Correct in accordance with paragraph 5.1.3.4.

5.1.2 Main Gear

Figure 5-1. illustrates the main landing gear. The illustrations should be used in conjunction with the following procedures during removal and installation of component parts. Disassembly, inspection and repair, and reassembly of the main wheel configurations are described in separate paragraphs for each configuration. The webbed wheels having two aluminum flanges and a hub are manufactured by REMOS Aircraft GmbH. The flanges are attached to the wheel hub by thru-bolts and nuts as shown in figure 5-2. During assembly of the main wheel the thru-bold nuts or capscrews, as applicable, shall be tightened evenly and torqued to the value specified in figure 5-2.

5.1.2.1 Removal and Installation

Required Tools: 10/11/17 mm wrench, phillips head screwdriver, wire cutting pliers, bleed kit.
Parts required: 2 x cotter pin (2 x 25 mm).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

The following procedural steps remove the landing gear as a complete assembly. Refer to applicable paragraphs for removal of the individual components.

a. Remove main gear fairing from the bottom of the fuselage.
b. Remove pilot seat (refer to Section 3).
c. Remove baggage compartment (refer to Section 3).

d. Remove cable ties securing the brake line distributor to the fuselage (accessible when baggage compartment is removed).
e. Drain hydraulic brake fluid from brake lines.
f. Disconnect hydraulic brake line at the brake line distributor.
g. Hoist or jack aircraft in accordance with Section 2.
h. Remove both bolts attaching main gear to fuselage.
i. Remove main gear assembly.

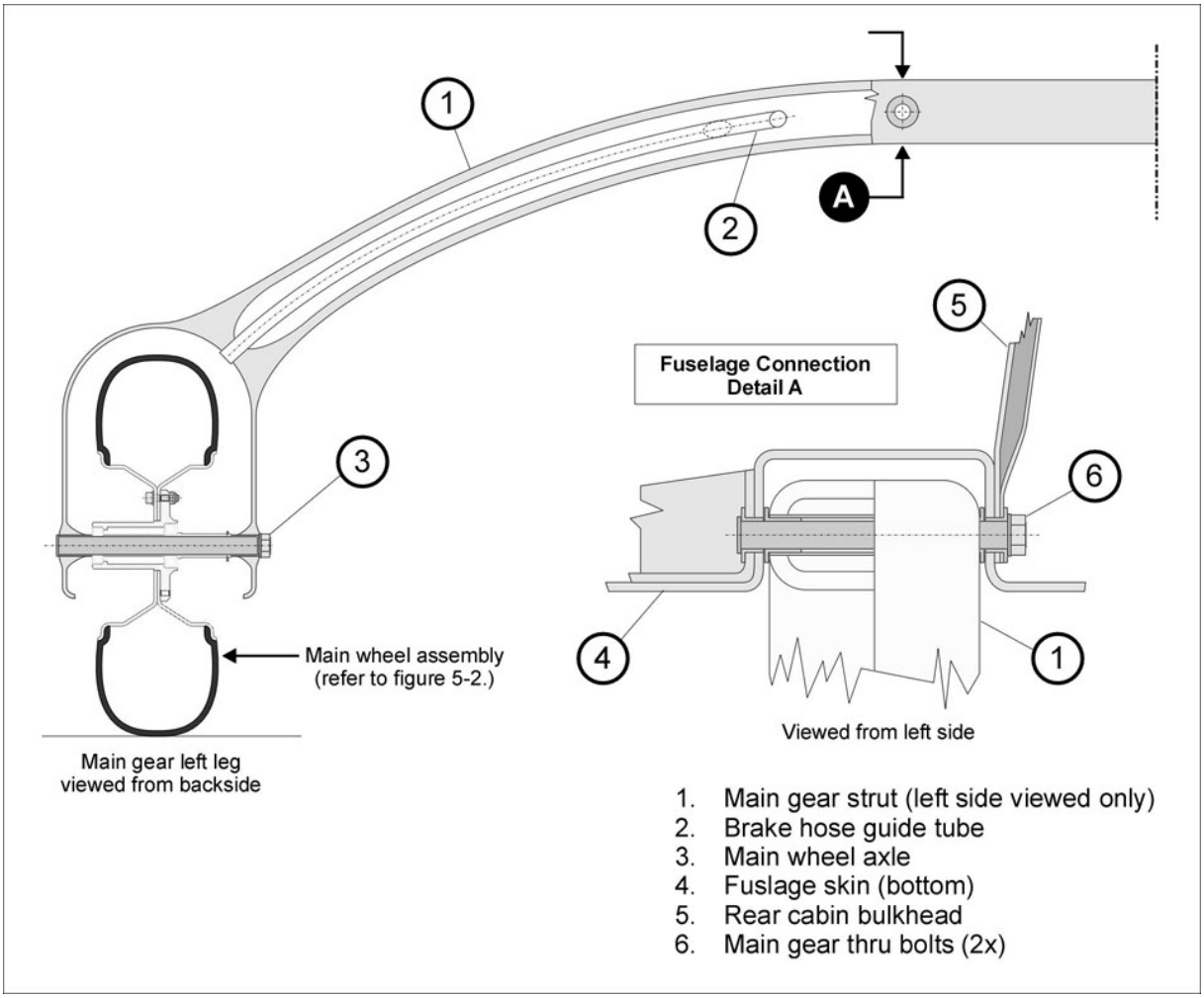
Installation of the main gear has to be carried out in reversed order to removal.

5.1.2.2 Repair

Required Tools: As required
Parts required: Epoxy Resin, carbon fiber tape, rovings, fabrics.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Repair of main gear is limited to the repair of the wheel fairings. If cracks are dedictated in the glass fiber fairings, they may be repaired using L285 Epoxy Resin or similar (R&G L20), reinforcing with suitable carbon fiber fabrics. Follow the instructions on the container for a successful completion of the repair. If cracks in the struts are present, the main gear has to be replaced, except if cracks are only concerning the paint finish. If in doubt, always replace the main gear.

Figure 5-1.



5.1.2.3 Main Wheel Removal

Required Tools: 11/17/19 mm wrench, wire cutting pliers, plastic hose.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To remove main wheel follow steps **a** to **d**, outlined in paragraph 5.1.2.1 and then proceed as described below (refer to figure 5-1.):

a. Hoist or jack aircraft in accordance with Section 2.
b. Remove wheel axis from the wheel fairing.
c. Withdraw main wheel assembly from the wheel fairing.
d. Drain hydraulic brake fluid from brake line.
e. Disconnect hydraulic brake line at the brake cylinder.

Note

If tire, brake pads or brake disc have to be replaced, it is not necessary to drain and disconnect the brake line.

5.1.2.3.1 Main Wheel Disassembly (Matco Brakes)

Required Tools: 4 & 5 mm allen wrench, 6 mm wrench.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance

a. Unscrew brake disc and withdraw complete brake assembly from wheel hub.
b. Remove valve core and deflate tire. Break tire beads loose from wheel rims.

WARNING

Injury can result from attempting to separate wheel halves with the tire inflated. Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge, or nick may cause wheel failure.

c. Remove thru-bolts and separate wheel halves, removing tire, tube, hub and torque plate.
d. Remove wheel bearings from wheel hub.

5.1.2.3.2 Main Wheel Inspection and Repair (Matco Brakes)

Required Tools: Depending on condition
Parts required: Depending on condition
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Clean all metal parts in solvent and dry thoroughly.
b. Inspect wheel halves for cracks. Cracked wheel halves shall be discarded and new parts used. Sand out nicks, gouges, and corroded areas. When the protective coating has been removed, the area should be cleaned thoroughly, primed with zinc chromate and painted with aluminum lacquer.
c. If excessively warped or scored, or worn to a thickness of 0.160-inch, brake disc should be replaced with a new part. Sand smooth small nicks and scratches.
d. Carefully inspect bearings for damage and discoloration or noises when rotating.

Note

Do not try to re-lubricate the sealed bearings. If in doubt about bearing condition, replace bearings.

5.1.2.3.3 Main Wheel Reassembly (Matco Brakes)

Required Tools: 4 & 5 mm allen wrench, 6 mm wrench.
Parts required: Loctite 243 (medium strength), 6 x self-locking nut (M6), safety wire (1.0 mm).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance

a. Insert wheel bearing to the wheel hub.
b. Insert thru-bolts through wheel hub, torque plate in the inner wheel half.
c. Position tire and tube on outboard wheel half with the tube inflation valve through hole in wheel half.
d. Place the outboard wheel half to position on inboard wheel half. Apply a light force to bring wheel halves together.
e. While maintaining the light force assemble a washer and nut on one thru-bolt and tighten snugly.
f. Assemble the remaining washers and nuts on the thru-bolts and torque to 88 in. lb. (10 Nm). Use Loctite 243 to secure nuts.
g. Place brake assembly into the inboard wheel half and insert brake disc retaining screws and troque to 53 in. lb. (6 Nm), secure them by safety-wire.

Note

Brake assemblies of right and left side are different, When installed to the wheel, brake cylinder must be located behind wheel axis, while bleed valve is pointing downward. Refer to figure 5-2 for a detailed illustration.

Caution

Uneven or improper torque of thru-bolt nuts can cause failure of bolts, with resultant wheel failure.

5.1.2.3.4 Main Wheel Disassembly (REMOS Brakes)

Required Tools: 5 mm allen wrench, 6 mm wrench.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance

a. Withdraw brake assembly and brake disc from wheel hub.
b. Remove valve core and deflate tire. Break tire beads loose from wheel rims.

WARNING

Injury can result from attempting to separate wheel halves with the tier inflated. Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge, or nick may cause wheel failure.

c. Remove thru-bolts and separate wheel halves, removing tire, tube, hub and torque plate.
d. Remove wheel bearings from wheel hub.

5.1.2.3.5 Main Wheel Inspection and Repair (REMOS Brakes)

Refer to paragraph 5.1.2.3.2

5.1.2.3.6 Main Wheel Reassembly (REMOS Brakes)

Refer to paragraph 5.1.2.3.3

5.1.2.4 Main Wheel Installation

Required Tools: 11/17/19 mm wrench.
Parts required: DOT 4 hydraulic fluid, cable ties, cotter pin (2 x 25 mm), bleed-kit.
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

Main Wheel Installation is prinizpal done in reverse order to removal. When installing wheel assembly to wheel fairing, ensure that the troque lever of the brake assembly has engaged to the retaining pivot located at the inboard side of the wheel fairing. Refer to figure 5-1.
After completing installation, fill and bleed hydraulic lines and attach hose distributor to it´s bracket inside the fuselage and secure with cable ties.

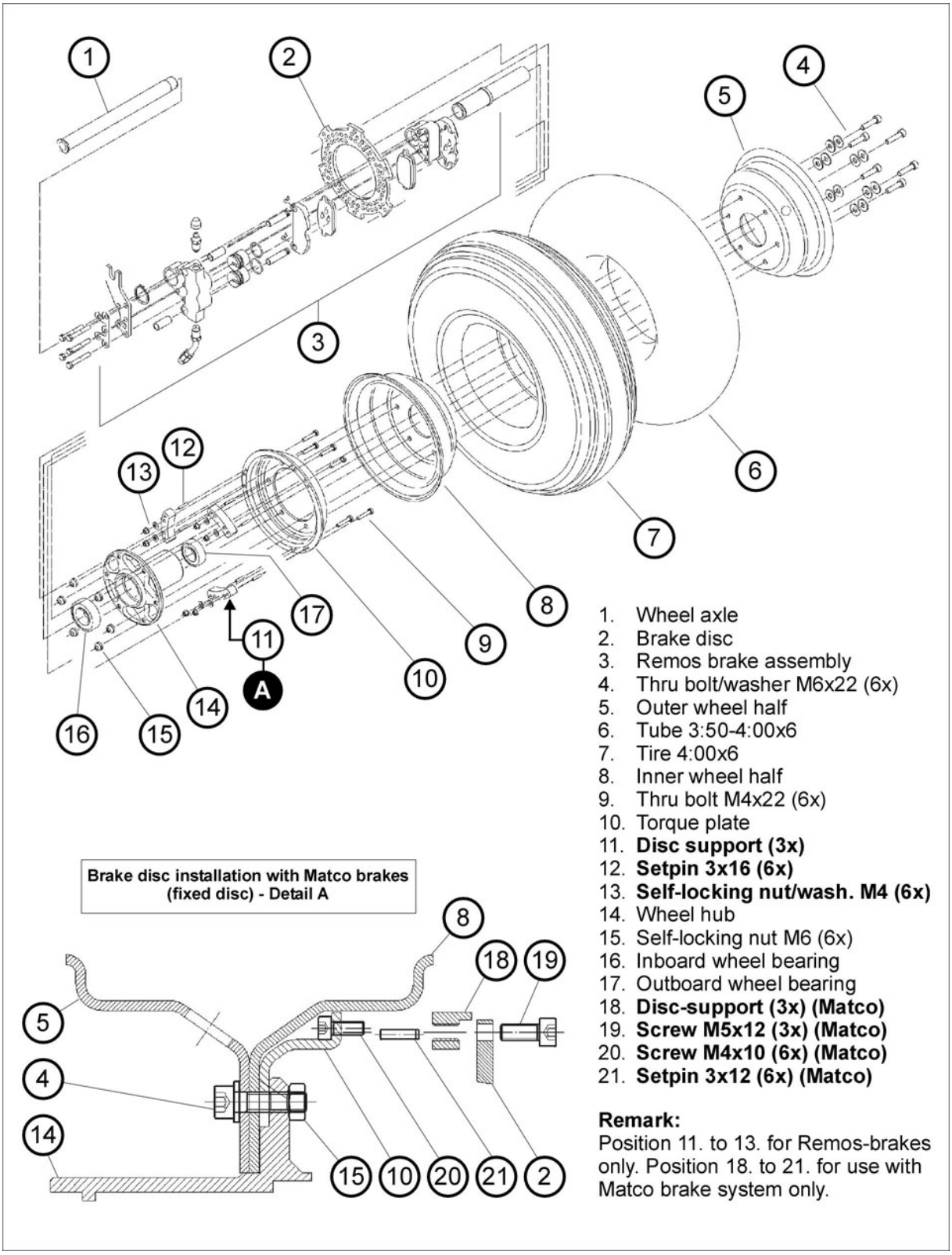
Note

It may be helpful for bleeding all air off the hydraulic system, to lower the aircrafts tail.

Caution

Do not use aircraft hydraulic fluid, doing so will cause damage to the cylinder seals. DOT 4 automobile brake fluid must be used only.

Figure 5-2.



1. Wheel axle
2. Brake disc
3. Remos brake assembly
4. Thru bolt/washer M6x22 (6x)
5. Outer wheel half
6. Tube 3:50-4:00x6
7. Tire 4:00x6
8. Inner wheel half
9. Thru bolt M4x22 (6x)
10. Torque plate
11. **Disc support (3x)**
12. **Setpin 3x16 (6x)**
13. **Self-locking nut/wash. M4 (6x)**
14. Wheel hub
15. Self-locking nut M6 (6x)
16. Inboard wheel bearing
17. Outboard wheel bearing
18. **Disc-support (3x) (Matco)**
19. **Screw M5x12 (3x) (Matco)**
20. **Screw M4x10 (6x) (Matco)**
21. **Setpin 3x12 (6x) (Matco)**

Remark:
Position 11. to 13. for Remos-brakes only. Position 18. to 21. for use with Matco brake system only.

5.1.3 Nose Gear

5.1.3.1 Removal and Installation

Required Tools: Screwdriver, 8/10/17 mm wrench.
Parts required: Self-locking nut (M6), 2 x self-locking nut (M5), and safety-wire (1.0 mm).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove engine cowling for access.
b. Weight or tie-down tail of aircraft to raise nose wheel off the floor.
c. Remove nose gear fairing including nose wheel (withdraw downwards after removing its retaining thru-bolt located on the tubing section of the fairing).
d. Disconnect rudder pedals from nose gear strut by removing its retaining thru-bolt inside the cabin.

Note

Inside the nose gear strut a sliding translator is provided, after removing the rudder pedal - nose gear strut thru-bolt, this sliding translator may fall down into the strut tube. Pick it up for reuse at installation of the nose gear.

e. Remove both retaining screws on top of the nose gear strut.
f. Withdraw nose gear strut from the bottom of the fuselage.
Remove rubber spring elements from strut, remember the location of different parts for reassembly. Refer to figure 5-3.

Installation of nose gear is done in reversed order to removal. Apply grease to the sliding translator and strut prior to installation, this will ease the reassembly.

5.1.3.2 Repair

If damage to any of the nose gear parts is detected then replace these parts, no part of the nose gear assembly must be repaired.

5.1.3.3 Nose Wheel Removal and Installation

5.1.3.3.1 Disassembly

Required Tools: 5 mm allen wrench, 10 & 17 mm wrench.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Remove nose wheel axle from wheel fairing and withdraw wheel from fairing.

Note

Remember position of spacers for reassembly.

b. Remove valve core and deflate tire. Break tire beads loose from wheel rims.

WARNING

Injury can result from attempting to separate wheel halves with the tire inflated. Avoid damaging wheel flanges when breaking tire beads loose. A scratch, gouge, or nick may cause wheel failure.

c. Remove thru-bolts and separate wheel halves, removing tire, tube and hub.
d. Remove wheel bearings from wheel hub.

5.1.3.3.2 Inspection and Repair

Required Tools: Depending on condition
Parts required: Depending on condition
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Clean all metal parts in solvent and dry thoroughly.
b. Inspect wheel halves for cracks. Cracked wheel halves shall be discarded and new parts used. Sand out nicks, gouges, and corroded areas. When the protective coating has been removed, the area should be cleaned thoroughly, primed with zinc chromate and painted with aluminum lacquer.
c. Carefully inspect bearings for damage and discoloration or noises when rotating. Do not try to re-lubricate the sealed bearings. If in doubt about bearing condition, replace bearings.

5.1.3.3.3 Reassembly

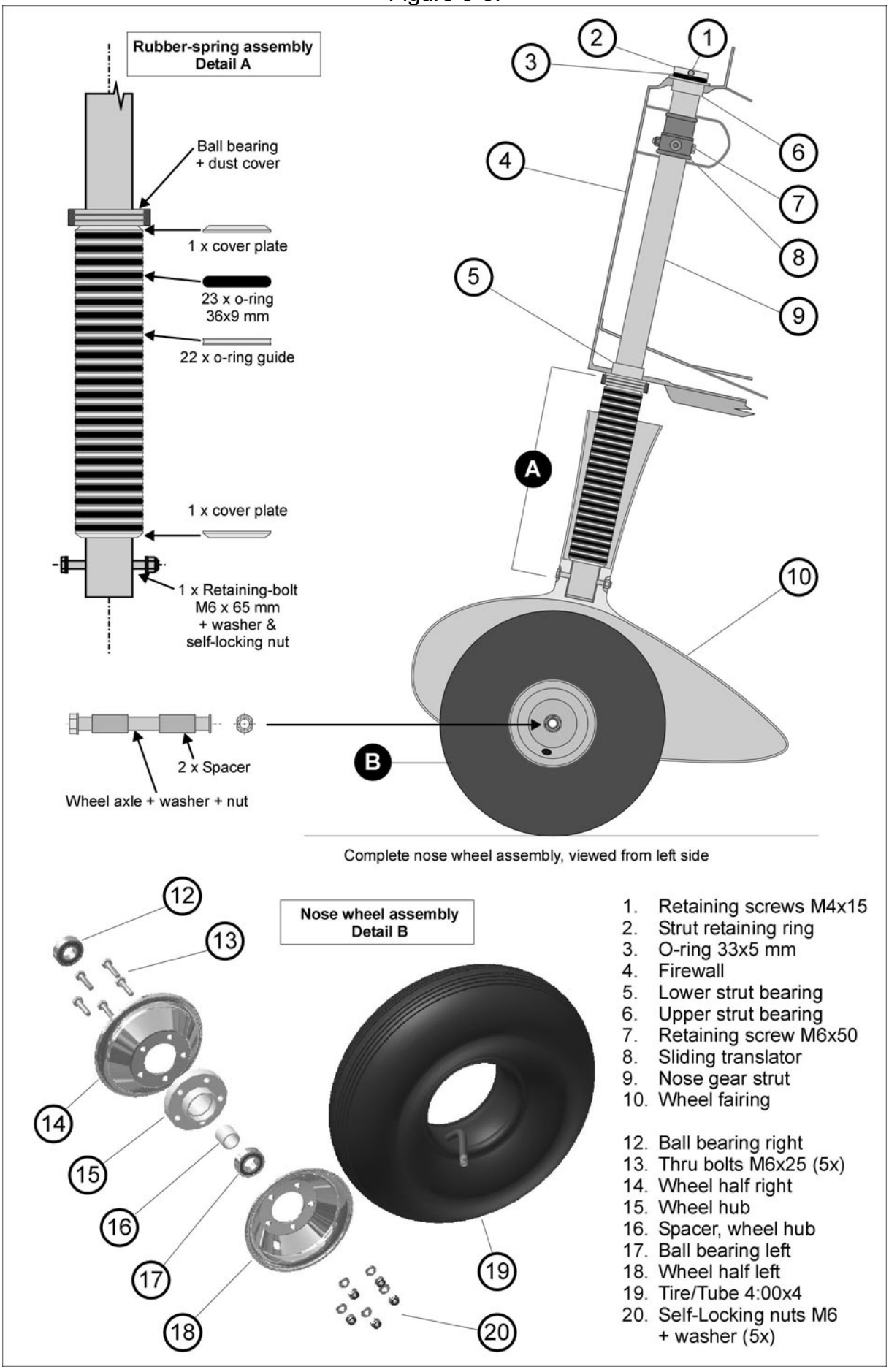
Required Tools: 5 mm allen wrench, 10 & 17 mm wrench.
Parts required: Loctite 243 (medium strength), 5 x self-locking nut (M6), cotter pin (2 x 25 mm).
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Insert wheel bearing to the wheel hub.
b. Insert thru-bolts through wheel half and wheel hub.
c. Position tire and tube on second wheel half with the tube inflation valve through hole in wheel half.
d. Place one wheel half to position on other wheel half. Apply a light force to bring wheel halves together.
e. While maintaining the light force assemble a washer and nut on one thru-bolt and tighten snugly.
f. Assemble the remaining washers and nuts on the thru-bolts and torque to 88 in. lb. (10 Nm). Use Loctite 243 to secure nuts.
g. Press one wheel bearing into wheel hub, ensure to place spacer into the wheel hub before installing the second bearing to the hub.

Caution

Uneven or improper torque of thru-bolt nuts can cause failure of bolts, with resultant wheel failure.

Figure 5-3.


Rubber-spring assembly
Detail A
Ball bearing
+ dust cover
1 x cover plate
23 x o-ring
36x9 mm
22 x o-ring guide
1 x cover plate
1 x Retaining-bolt
M6 x 65 mm
+ washer &
self-locking nut
2 x Spacer
Wheel axle + washer + nut
A
B
Complete nose wheel assembly, viewed from left side
Nose wheel assembly
Detail B
1. Retaining screws M4x15
2. Strut retaining ring
3. O-ring 33x5 mm
4. Firewall
5. Lower strut bearing
6. Upper strut bearing
7. Retaining screw M6x50
8. Sliding translator
9. Nose gear strut
10. Wheel fairing
12. Ball bearing right
13. Thru bolts M6x25 (5x)
14. Wheel half right
15. Wheel hub
16. Spacer, wheel hub
17. Ball bearing left
18. Wheel half left
19. Tire/Tube 4:00x4
20. Self-Locking nuts M6
+ washer (5x)

5.1.3.4 Nose Wheel Steering System

Nose wheel steering is accomplished through the use of the rudder pedals. Steering rod assemblies connect the nose gear steering.

5.1.3.4.1 Steering Adjustment

Since the nose wheel steering and rudder system are interconnected, adjustment to one system may affect the other system. Section 10 of this manual contains rigging instructions for the rudder system as well as the nose wheel steering system.

5.1.3.5 Wheel Balancing

Since uneven tire wear is usually the cause of wheel unbalance, replacing the tire probably will correct this condition. Tire and tube manufacturing tolerances permit a specified amount of static unbalance. If a wheel shows evidence of unbalance during service, it may be statically balanced.

5.2 Brake System, General Description

The hydraulic brake system consists of a master cylinder including reservoir, located between both seats. A brake hose connects the master cylinder to a distributor, located behind the cabin bulkhead. Two brake hoses run from the distributor to each wheel brake cylinder.

5.2.1 Trouble Shooting

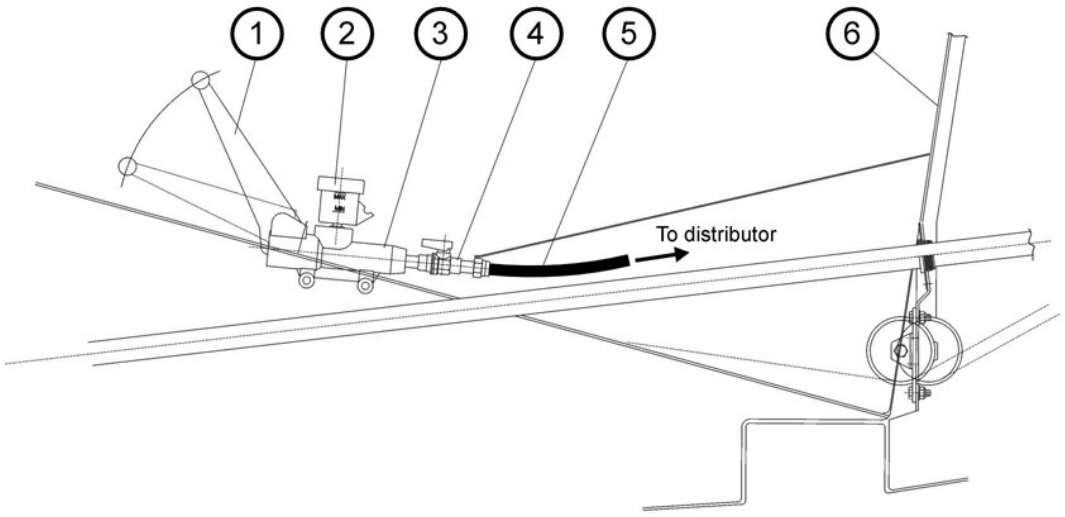
Trouble	Probable Cause	Remedy
Dragging Brakes	Brake lever binding.	Check and adjust properly.
	Worn or broken pistion return spring (in master cylinder).	Install a new cylinder.
	Restrictions in hydraulic lines or restriction in master cylinder valve.	Drain brake lines and clean inside of the brake line with filtered compressed air.
	Worn, scored or warped brake disc.	Install new disc and brake linings.
	Damaged or accumulated dirt restricting free movement of wheel brake parts.	Clean and repair or install new parts as necessary.
Brakes Fail to Operate	Leak in system.	Install new parts.
	Air in system.	Bleed system.
	Lack of fluid in master cylinder.	Fill and bleed system.
	Master cylinder defective.	Install a new cylinder.

5.2.2 Brake Master Cylinder (refer to figure 5-4.)

The brake master cylinder, located between seats, is actuated by applying pressure at the top of the brake lever. A small reservoir is incorporated onto the master cylinder for the fluid supply.

Figure 5-4.

Brake Master Cylinder Assembly



1. Brake lever
2. Brake fluid reservoir (DOT 4 brake fluid)
3. Brake master cylinder
4. parking brake valve
5. Hydraulic fluid brake hose
6. Rear cabin bulkhead

5.2.2.1 Removal and Installation

Required Tools: Phillips head screwdriver, 10 & 11 mm wrench.
Parts required: Bleed kit
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove bleeder screws at wheel brake assemblies and drain hydraulic fluid from brake cylinder.
b. Remove seats, parking brake lever, master cylinder filler cap and center panel cover for access to the brake master cylinders.
c. Disconnect brake hose from master cylinder assembly and remove master cylinder from its bracket.
d. Unscrew parking brake valve and brake lever from master cylinder.
e. Reverse the preceding steps to install brake master cylinders, then fill and bleed brake system in accordance with paragraph 5.2.5.

5.2.2.2 Repair

Master cylinder is limited to cleaning, always install a new master cylinder if any defects are determind. Use automobile clean hydraulic fluid or new DOT 4 brake fluid.

Caution

Do not use aircraft hydraulic fluid because this will damage the master cylinder sealings.

5.2.3 Hydraulic Brake Hoses

All hydraulic hoses used for the brake system are flexible plastic hoses covered by a metal shielding. All hoses provide appropriate connectors to provide an easy replacement.

5.2.4 Wheel Brake Assemblies

The wheel brake assemblies use a disc which is attached to the main wheel with a troque plate fixed by the thru-bolts and a floating brake assembly, if the aircraft is equipped with the standard Matco brakes.
When equipped with the REMOS Hydraulic Brakes, the disc is floating, while the brake assembly is a fixed type, featuring a double piston system.

5.2.4.1 Removal

To remove brake system from the wheel, refer to paragraph 5.1.2.3 and 5.1.2.3.1 when the aircraft is equipped with Matco brakes and paragraph 5.1.2.3.4 when the aircraft is equipped with REMOS Hydraulic Brakes. Drain hydraulic fluid from brake hoses prior to disconnecting the brake assembly.
After the brake assembly is disconnected you could remove disc and brake linings from the assembly.

5.2.4.2 Inspection and Repair

Required Tools: Depending on condition
Parts required: Depending on condition
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Clean all parts except brake linings and O-rings in dry cleaning solvent and dry thoroughly.
b. New O-rings are usually installed at each time they are removed. If O-ring re-use is necessary, they should be wiped with a clean cloth saturated in new automobile hydraulic fluid (DOT 4) and inspected for damage.

NOTE

Thorough cleaning is important. Dirt and chips are the greatest single cause of malfunctions in the hydraulic brake system.

c. Check brake lining for deterioration and maximum permissible wear. See paragraph 5.2.4.5.
d. Inspect brake cylinder bore for scoring. A scored cylinder will leak or cause repid O-ring wear. Install new brake cylinder.
e. If the anchor bolts on the brake assmebly are nicked or gouged, they shall be sanded smooth to prevent binding with the pressure plate or torque plate.
f. Inspect wheel brake disc for a minimum thickness of 0.160-inch. If brake disc is below minimum thickness, install a new part.

5.2.4.3 Reassembly

Lubricate parts with clean DOT 4 automobile hydraulic fluid and assemble components with clean automobile DOT 4 hydraulic fluid and assemble components with care to prevent damage to O-rings.

5.2.4.4 Installation

Installation of wheel brake assembly is done in reversed order to removal, refer to paragraph 5.2.4.1.

5.2.4.5 Check Brake Lining Wear

New brake lining should be installed when they are worn to a minimum thickness of 0.08 inch. Visually compare 3/32-inch strip of material held adjacent to each lining to measure the thickness of the lining.

5.2.4.6 Brake Lining Installation (Matco Brakes)

Required Tools: 2/32” punch, hammer, 4 & 5 mm allen wrench, 10 mm wrench.
Parts required: Linings & rivet kit
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove bolts securing back plate and remove back plate.
b. Slide pressure plate off anchor bolts.
c. Place back plate on a table with lining side down flat. Center a 3/32-inch (or slightly smaller) punch in the rolled rivet, and hit the punch sharply with a hammer. Punch out all rivets securing the linings to the back plate and pressure plate in the same manner.

NOTE

New rivets kit is provided with every brake lining set.

d. Clamp the flat side of the anvil in a vise.
e. Align new lining on back plate and place brake rivet in hole with rivet head in the lining. Place head against the anvil.
f. Center the rivet setting punch on the lips of the rivet. While holding the back plate down firmly against the lining, hit punch with a hammer to set the rivet.

g. Repeat blows on the punch with a hammer to set the rivet. Repeat blows on the punch until lining is firmly against back plate.
h. Realign the lining on the back plate and install and set rivets in the remaining holes.
i. Install a new lining on pressure plate in the same manner.
j. Position pressure plate on anchor bolts and place cylinder in position so that anchor bolts slide into the torque plate.
k. Install back plate with bolts and washers.

5.2.4.7 Brake Lining Installation (REMOS Brakes)

Required Tools: None
Parts required: Brake Linings, Copper Grease
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Pull out back plate.
b. Apply copper grease to back plate and piston, replace brake linings.

5.2.5 Brake System Bleeding

Required Tools: 11 mm wrench, bleed kit.
Parts required: DOT 4 hydraulic brake fluid
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance

Bleeding with a clean hydraulic pressure source connected to the wheel cylinder bleeder is recommended.

a. Remove brake master cylinder filler plug and screw flexible hose with appropriate fitting into the filler hole at top of the master cylinder.
b. Immerse the free end of the flexible hose in a container with enough hydraulic fluid to cover the end of the hose.
c. Connect a clean hydraulic pressure source, such as a hydraulic hand pump or Hydro Fill unit, to the bleeder valve in the wheel cylinder.
d. As fluid is pumped into the system, observe the immersed end of the hose at the master brake cylinder for evidence of air bubbles being forced from the brake system. When bubbling has ceased, remove bleeder source from wheel cylinder and tighten the bleeder valve.

NOTE

Ensure that the free end of the hose from the master cylinder remains immersed during the entire bleeding process.

Caution

Do not use aircraft hydraulic fluid because this will damage the master cylinder sealings. DOT 4 automobile brake fluid must be used only.

5.2.6 **Parking Brake System** (refer to figure 5-4.)

The parking brake system consists of a control lever behind the master brake cylinder. To engage the parking brake, depress the brake lever and rotate the parking brake control lever to the right. To release the parking brake, rotate the control lever counter clockwise.

Section 6

Structures – Aileron Control System

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6.1 Aileron Control System, Description

The aileron control system is comprised of push-pull rods and bellcranks, which link the control sticks to the ailerons.

6.1.1 Trouble Shooting

Note

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, and if so then refer to paragraph 6.1.6.

Trouble	Probable Cause	Remedy
Lost motion in control sticks.	Broken brackets or worn rod end bearings.	Replace worn or broken parts.
	Sprung bellcranks.	Replace bellcrank.
Resistance to control stick movement.	Bellcranks distorted or damaged.	Replace bellcrank.
Control stick not centered with aileron neutral.	Improper adjustment of aileron push-pull rods.	Adjust in accordance with paragraph 6.1.6.
Incorrect aileron travel	Push-pull rods not adjusted properly.	Adjust in accordance with paragraph 6.1.6.
	Control stick adjustment-screws are not adjusted properly.	Adjust in accordance with paragraph 6.1.6.

6.1.2 Control Stick Linkage, Description

Both control sticks are linked together by a control rod system to ensure synchron movement. The linkage is located beneath two fiberglass-panels on the floor of the cabin right in front of the seats. A translator connects the control stick linkage to the aileron linkage, which uses several bellcranks to establish the connection to the control surfaces. An illustration of the aileron system is given in figure 6-1.

6.1.2.1 Removal and Installation

Required Tools: 3/32 allen wrench, 10 mm wrench, wire cutting pliers, soldering iron.
Parts required: Cable ties, solder, 3 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

In general the control stick linkage needs no regular servicing, due to replacement of other parts of the aileron control system, it may be required to readjust the correct travel of the ailerons and access to the linkage will be required.

a. Remove both seats from the cabin.
b. Remove fabric stick cover from the stick linkage cover panels and remove cover panels itself.
c. Remove stick grips and disconnect wiring from stick switches.
d. Remove wiring from stick tubes and linkage (remember position of stick wiring
e. and cable ties, for reinstallation).

Caution

If stick wiring is not installed correctly, binding of sticks and cracking or chafing of wiring will occur and may cause fire.

f. Remove sticks and linkage from their brackets on the bottom of the aircraft.

Reassembly is done in reverse order to steps outlined above. Tigthen screws and bolts to a torque in accordance to the values given in Section 1.

Caution

DO NOT REUSE SELF-LOCKING NUTS.

6.1.3 Aileron Control Rods, Description

Aileron control rods are running from the control stick linkage joint through the fuselage to the aileron control surfaces providing several bellcranks. The whole aileron control rod system needs no regular servicing.

6.1.3.1 Removal and Installation

Required Tools: 10 mm wrench
Parts required: self-locking nuts as required.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

To get access to the aileron control rods, both wings provide two access flaps. Routing of the control rods within the fuselage will be visible, if baggage compartment is removed (refer to Section 3). Additionally, the center cover (located between both seats) and the control stick floor covers can be removed if required. When necessary to replace parts of the control rod system, always use new self-locking nuts and torque to the values given in Section 1.

6.1.4 Bellcranks, Description

The aileron control rod system provides various bellcranks, located in the fuselage and into the wings, refer to figure 6-1. for detailed illustration. Bellcranks need no regular servicing.

6.1.4.1 Removal and Installation

Refer to paragraph 6.1.3.1.

6.1.5 Ailerons, Description

Ailerons are made from carbon fiber composite material, hinged to the outer trailing edge of the wings.

6.1.5.1 Removal and Installation

Required Tools: 10 mm wrench
Parts required: 4 x self-locking nut (M6)
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Disconnect push-pull at aileron.
b. Remove screws and nuts attaching aileron hinges to trailing edge of wing.
c. Using care, pull aileron out and down to slide hinges from under wing skin and auxiliary spar reinforcements.
d. Install aileron in reverse order to the preceding steps.
e. Secure outboard hinge screw with safety-wire.
f. If rigging was correct and push-pull rod adjustment was not disturbed, it should not be necessary to rig system. Otherwise rig aileron system in accordance with paragraph 6.17.

Note

Use new self-locking nuts and torque to the values given in Section 1.

6.1.5.2 Repair

Repair is limited to replace copper bushings or hinge bolts and restoring dents or smaller cracks on edges. Since ailerons are designed as sandwich construction parts, it is strongly recommended to replace or return to factory for repair, if larger deterioration of the skin is detected.

6.1.6 Rigging

Required Tools: 10 & 14 mm wrench, phillips head screwdriver.
Parts required: Safteying wire, self-locking nuts as required.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

To achieve a correct aileron setting it is required that flaps have been set to the "up" position correctly first (refer to Section 7).

a. Disconnect push-pull lever at aileron.
b. Adjust aileron push-pull lever to achieve alignment of ailerons and wing flaps and reconnect to aileron.

Note

Do not reuse self-locking nuts.

c. Align ailerons and wing flaps and hold in that position (i.e. secure with tape).
d. Check or adjust center position of control stick (adjustment can be done at the top end of the vertical rod, routed behind the left (pilot) seat.
e. Check the maximum permissible travel of the ailerons as outlined in Section 1. If required set to correct travel, using the adjustment-screws located on the control stick linkage adjacent to each stick hub.

Note

Secure adjustment-screws with safety-wire after conducting aileron travel adjustment.

f. Finally check ailerons for correct travel, using an inclinometer.

Figure 6-1.

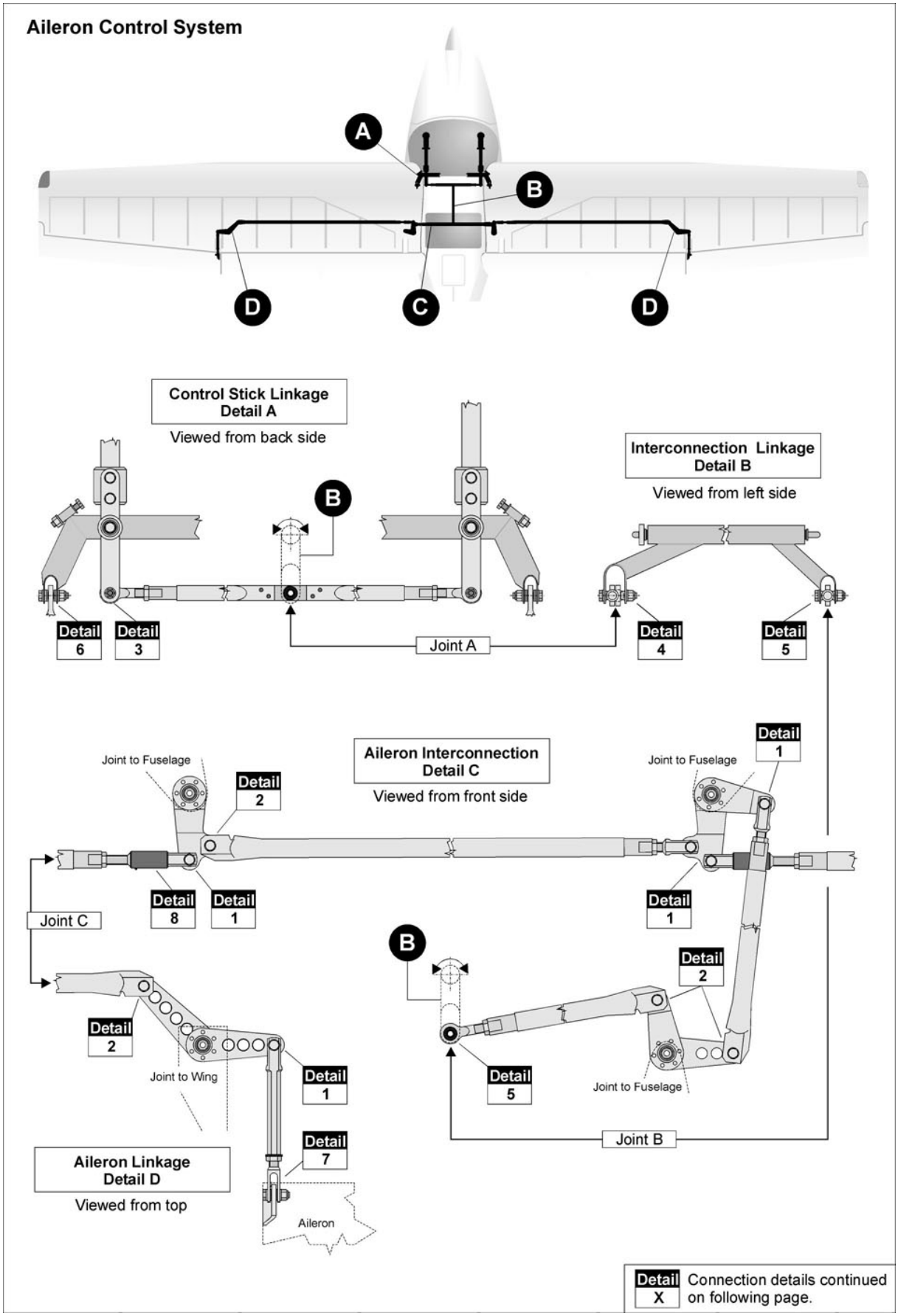
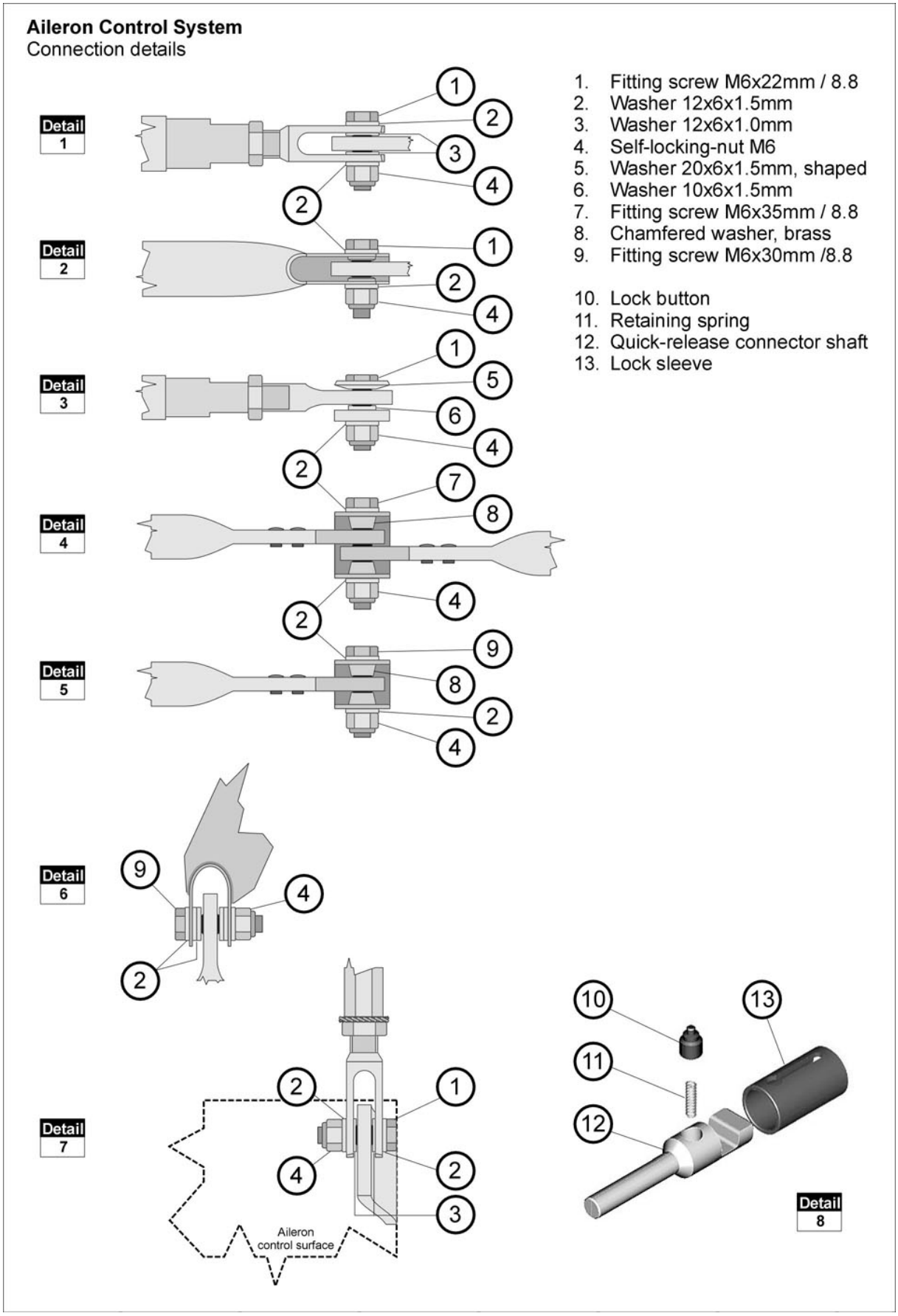

Aileron Control System
A
B
D
C
D
Control Stick Linkage
Detail A
Viewed from back side
B
Detail 6
Detail 3
Joint A
Interconnection Linkage
Detail B
Viewed from left side
Detail 4
Detail 5
Aileron Interconnection
Detail C
Viewed from front side
Joint to Fuselage
Detail 2
Detail 8
Detail 1
Joint C
Joint to Fuselage
Detail 1
Detail 1
B
Detail 2
Detail 5
Joint to Fuselage
Joint B
Detail 2
Joint to Wing
Detail 1
Detail 7
Aileron
Aileron Linkage
Detail D
Viewed from top
Detail X
Connection details continued on following page.

Figure 6-1. (continued)



Section 7

Structures – Wing Flap Control System

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7.1 Wing Flap Control System, Description

The wing flap control system is comprised of an electric motor and transmission assembly, push-pull rods, a bellcrank and a flap position indicator. Power from the motor assembly is transmitted to the flaps by push-pull rods and a bellcrank. A single piece aluminum drive shaft with an attached actuation lever for the connection to the flap motor is located inside the cabin. Both ends of the shaft are providing slots to engage into the bellcrank drive shaft at each wing. A push-pull rod is attached to the bellcrank to connect wing flap. Electrical power to the motor is controlled by a 3-position switch mounted on the instrument panel. The flap position indicator is calibrated to show degrees of extension.

7.1.1 Operational Check

a. Operate flaps through their full range of travel, observing for uneven or jumpy motion, binding and lost motion in system. Ensure flaps are moving together through their full range of travel.
b. Attempt to overrun travel extremes and check up- and down-limit switch actuation at flaps retracted and extended position. FLAP MOTOR MUST STOP OR DAMAGE WILL RESULT.
c. Check flaps for sluggishness in operation. In flight at 65 kts, indicated airspeed, flaps should fully extend in approximately 8-9 seconds and retract in approximately 6-7 seconds. On the ground, with engine running, the flaps should extend or extract in approximately 7 seconds.

d. With flaps full UP, mount an inclinometer on one flap and set to 0°. Lower flaps to full DOWN position and check flap angle as specified in figure 1-1. Check approximate mid-range percentage setting against degrees as indicated on inclinometer.
e. Inspect flap hinges for free play or binding (if necessary disconnect motor assembly from actuator lever inside the cabin).

7.1.2 Trouble Shooting

NOTE

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 7.1.6.3.

Trouble	Probable Cause	Remedy
Flaps fail to move.	Blown fuse/circuit breaker.	Replace fuse or reset circuit breaker.
	Defective switch.	Replace switch.
	Defective motor.	Remove and bench test motor. Replace if defective.
	Broken or disconnected wires.	Run a continuity check. Connect or repair wiring.
	Defective Transmission.	Replace motor assembly.
	Defective limit switch.	Replace motor assembly.
Incorrect flap travel.	Incorrect rigging.	Refer to paragraph 7-1.6.3.
	Defective limit switch.	Replace motor assembly.
Flaps fail to retract.	Defective switch.	Replace switch
	Defective limit switch	Replace motor assembly.
	Defective motor	Replace motor assembly.
Flaps fail to extend.	Defective switch.	Replace switch
	Defective limit switch	Replace motor assembly.
	Defective motor	Replace motor assembly.
Flap position indicator failure.	Broken or disconnected wires.	Run a continuity check. Connect or repair wiring.
	Defective indicator.	Replace indicator.
	Defective position sensor.	Replace motor assembly.

Note

Limit switches, transmission and indicator position sensor are part of the motor assembly. If limit switches (sealed reed type) or position sensor is determined to be defective, they may be replaced within the motor assembly. Due to flight safety concerns we strongly recommend to replace complete motor assembly.

7.1.3 Flap Motor and Transmission Assembly

7.1.3.1 Removal and Installation

Required Tools: 5 mm allen wrench, 10 & 13 mm wrench, phillips head screwdriver.
Parts required: 3 x self-locking nut (M6).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance

An illustration of the flap motor assembly is given in figure 7-2.

a. Run flaps to full DOWN position.
b. Support flaps from outside the aircraft in that position by a second person.
c. Disconnect motor push-pull rod from flap actuation lever (**7**) inside the cabin.
d. Disconnect battery cables at the battery and insulate cable terminals as a safety precaution.
e. Push up flaps till they lock at full UP position.
f. Remove locking plate (**12**) from flap motor bracket.
g. Unscrew eccentric bolt (**11**) and remove motor.

Note

Mark adjustment of eccentric bolt before removing it, this setting is required for reinstallation. The locking plate allows adjustment of the eccentric bolt in 15° steps, to achieve correct flap travel adjustment (refer to parapgraph 7.1.6.3).

h. Disconnect wiring from motor.
i. Reverse the preceding steps for reinstallation.

Note

In general, no rigging is required if motor has to be replaced, but is essential to check correct rigging in accordance with paragraph 7.1.6.3.

7.1.3.2 Repair

Repair is limited to the replacement of motor and associated hardware, although some parts within the motor assembly may be replaced, we strongly recommend, always to replace the complete motor assembly as safety precaution.

7.1.4 Flap Control System

7.1.4.1 Removal and Installation

Required Tools: 4 mm allen wrench, 8/10/13 mm wrench.
Parts required: Loctite 641
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Prior to removing the flap control linkage, the motor assembly has to be removed (see paragraph 7.1.3.1) and the wings have to be folded back (refer to Pilot

Operating Handbook, Section 8). Refer to figure 7-2. for details on removal and installation.

a. Unscrew the drive-shaft support bearing (**10**).
b. Withdraw the drive-shaft (**9**) from the fuselage.
c. Unscrew actuation lever clamping screws (**8**).

Note

To remove the actuation lever from the drive shaft, the whole assembly has to heated up to 300°F. Do not partially heat up the assembly, because this would cause deterioration to the drive-shaft.

d. Disconnect push-pull rods from wing flaps and remove bellcrank assembly from wing.
e. Reverse the preceding steps for installation.

Caution

The actuation lever is installed to the drive shaft by clamping, secured with Loctite 641. Due to safety precautions we recommend to always to install a new lever when it needs to be disassembled. After applying Loctite to assemble the actuation lever to the drive-shaft, you will have **30 minutes** to rig the flap control system until the Loctite will cure, therefore refer to paragraph 7.1.6.3. prior to installation of the lever.

f. After assembling and rigging is completed, tighten all bolts and nuts as outlined in Section 1.

7.1.4.2 Repair

Repair consists of the replacement of defective parts only.

7.1.5 Indicating System, Description

Indication of flap position is provided by an LED-array gauge located on the switch panel. A position sensor is part of the flap motor, and provides an appropriate voltage to the indicator gauge depended on the flap position.

7.1.5.1 Repair

Repair is limited to the replacement of LED-Indicator, wiring and flap motor assembly (refer to paragraph 7.1.3.1).

7.1.6 Flaps

7.1.6.1 Removal and Installation (refer to figure 7-1.)

Required Tools: 10 mm wrench
Parts required: 4 x cotter pin (1.6 x 20 mm), self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

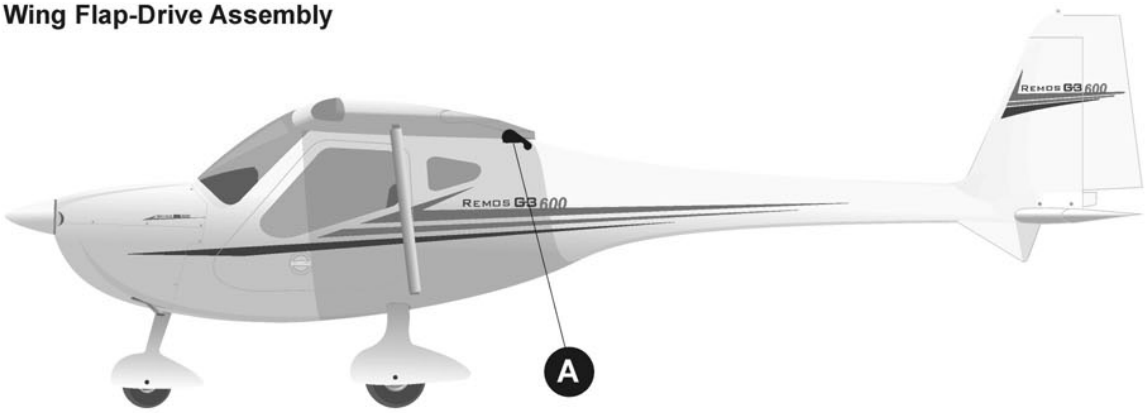
a. Run flaps to full DOWN position.
b. Disconnect push-pull rod (**7**) at wing flap bracket.
c. Remove cotter pins and hinge bolts flap hinges.
d. Remove flap.
e. As flap is removed from wing, all washers and bushings will fall free. Retain these for reinstallation.
f. Reverse the preceding steps for reinstallation. If push-pull rod (**7**) adjustment is not disturbed, re-rigging of system should not be necessary.
g. Check flap travel and rig in accordance with paragraph 7.1.6.3, if necessary.

Note

Always use new cotter pins for securing the hinge bolts.

Figure 7-1.

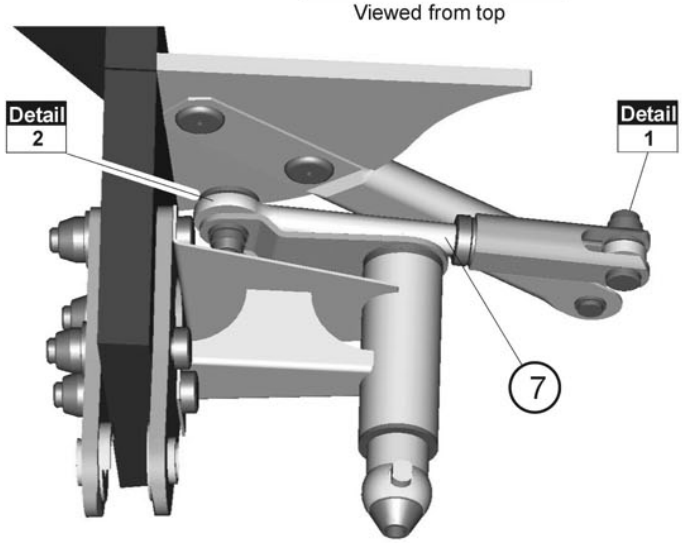
Wing Flap-Drive Assembly

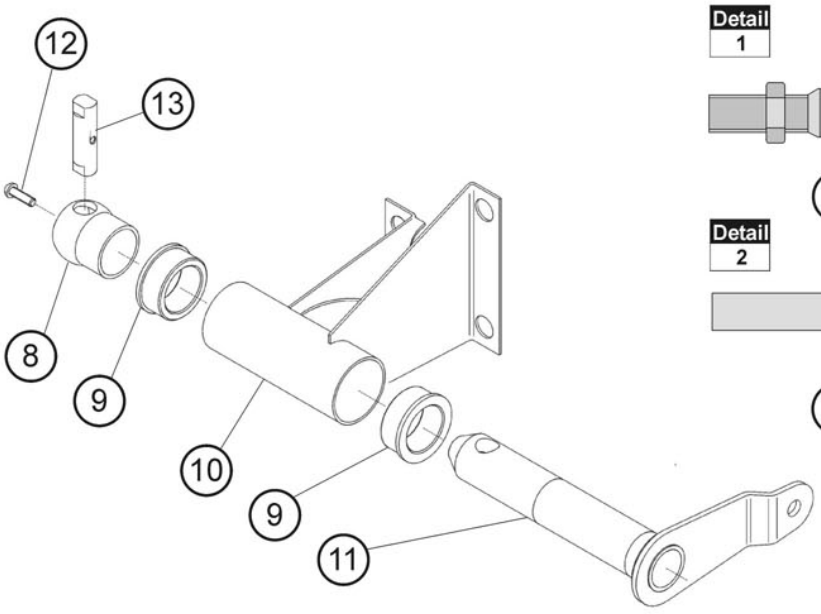


Wing Flap-Drive Assy. Detail A

Viewed from top

1. Fitting screw M6x22mm / 8.8
2. Washer 12x6x1.5mm
3. Washer 12x6x1.0mm
4. Self-locking-nut M6
5. Washer 20x6x1.5mm, shaped
6. Washer 10x6x1.5mm
7. Push-pull rod
8. Ball joint
9. collar bush/bearing
10. bracket
11. Dirve shaft
12. Socket head screw M4x8
13. clutch shaft





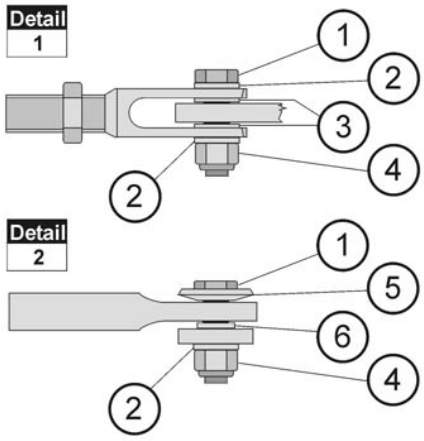
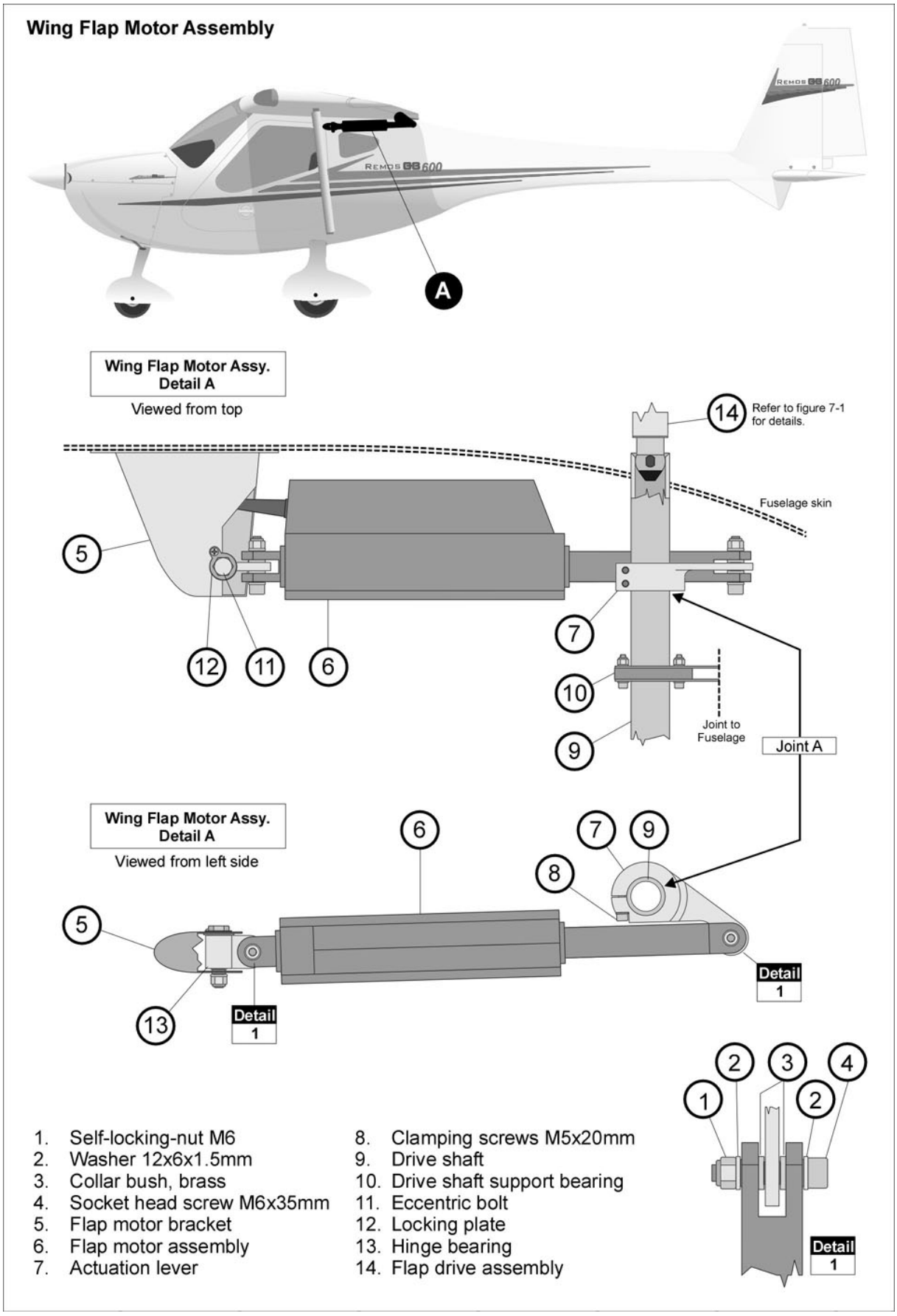


Figure 7-2.


Wing Flap Motor Assembly
A
Wing Flap Motor Assy.
Detail A
Viewed from top
14
Refer to figure 7-1
for details.
Fuselage skin
5
12
11
6
7
10
9
Joint to
Fuselage
Joint A
Wing Flap Motor Assy.
Detail A
Viewed from left side
6
7
9
8
5
13
Detail
1
Detail
1
2
3
4
1
2
Detail
1
1. Self-locking-nut M6
2. Washer 12x6x1.5mm
3. Collar bush, brass
4. Socket head screw M6x35mm
5. Flap motor bracket
6. Flap motor assembly
7. Actuation lever
8. Clamping screws M5x20mm
9. Drive shaft
10. Drive shaft support bearing
11. Eccentric bolt
12. Locking plate
13. Hinge bearing
14. Flap drive assembly

7.1.6.2 Repair

Repair is limited to replace copper bushings or hinge bolts and restoring dents or smaller cracks on edges. Since flaps are designed as carbon fiber sandwich components, it is strongly recommended to replace or return to factory for repair, if larger damage or deterioration of the skin is dedicated.

7.1.6.3 Rigging

Required Tools: 4 & 5 mm allen wrench, 10 & 13 mm wrench, inclinometer.
Parts required: Loctite 641 & 243
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

The following description has to be maintained if flap control system was reassembled completely, including installing a new actuater lever to the drive shaft inside the cabin. If only wing flaps has been replaced, check correct flap travel as outlined in Section 1 and perform steps p.-r.

a. Operate flaps to full UP position.
b. Loosen clamping of actuater lever inside the cabin.
c. Check that flaps are locked in upper position, by pressing firmly on the upper side of the flap surface. If required push flaps up till they are locked, adjust push-pull rods (7, figure 7-1.) when necessary to ensure that flaps are locking in upper position.

Note

It is essential that flaps are locked in upper position. Check that bellcrank does override the locking postion for a short disctance only. If bellcrank does override the locking position too far, you will not be able to get the full flap travel as required.

d. Temporarily tighten clamp of actuator lever inside the cabin.
e. Install an inclinometer to one of the flaps and set to 0°.
f. Run flaps to full DOWN position and check flap angle as specified in figure 1-1.
g. If required adjust eccentric bolt at the motor-bracket connection to achieve more or less of flap angle. The eccentric bolt (11, figure 7-2.) could be adjusted in 15° steps to match with locking plate (12, figure 7-2.). The motor assembly can be moved forward and backward, causing 2° difference in full flap angle.
h. Run flaps to full UP position and repeat step **c** to **g** as long as travel of flaps is within the limits outlined in figure 1-1.
i. Run flaps to full UP position, mark position of actuater lever on drive shaft and loosen both clamp-screws and slide lever to the right (viewed from front).
j. Apply **Loctite 641** to the position on the drive shaft where the actuater lever has to be clamped.
k. Slide back the lever in its marked position and tighten one clamp screw temporarily again.
l. Operate flaps to full DOWN position and check flap angle again.
m. Run flaps to 15° position and tighten both clamp screws to a torque value given

in figure 1-2. (Secure clamp screws, using **Loctite 243**).

Note

After applying **Loctite 641** to the actuator lever clamp, you have **30 minutes** until the Loctite will cure, further correction to the adjustment can only be done within this time.

n. Perform a check flight and ensure that aircraft maintains heading at full payload, with both seats occupied.
o. If pressure to the control stick is required during normal flight, to keep wings level, adjustment of push-pull rods at flap connection is required (i.e. if pressure to the right is required, turn rod connection end on the left wing flap ½ revolution to the left (ccw, extend length of push-pull rod) and rod connection end on right wing flap ½ revolution to the right (cw, reduce length of push-pull rod).
p. Check again level flight and repeat step q. if necessary.

Note

Remember position of washers used on the push-pull rod connecting the wing flap bracket. Do not reuse self-locking nuts. Tighten rod connecting bolt to the torque value outlined in figure 1-2.

Section 8

Structures – Elevator Control System

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8.1 Elevator Control System, Description

The elevator is operated by the pullling/pushing power transmitted from the control stick through a bellcrank and a push-pull tube. An elevator trim tab is installed on the elevator and is described in Section 9.

8.1.1 Trouble Shooting

Note

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system; if so, refer to paragraph 8.1.4.

Trouble	Probable Cause	Remedy
No response to control stick fore-and-aft movement.	Quick release connector at aft end of push-pull tube disconnected.	Join quick release connector properly.
	Forward end of push-pull tube disconnected.	Attach push-pull tube correctly.
	Connection between bellcrank and push-pull tube disconnected.	Attach push-pull tube correctly.
Binding or jumpy motion felt in movement of elevator.	Defective bellcrank pivot bearing.	Replace bellcrank bearing.
	Nylon grommet bearings binding.	Replace grommet.
	Defective elevator hinges or lubrication needed.	Replace defective hinges or lubricate per Section 2.
Elevator fails to attain prescribed travel.	Interference beneath center cover or behind rear cabin bulkhead.	Rig system in accordance with paragraph 8.1.4.

8.1.2 Elevator

8.1.2.1 Removal and Installation (refer to figure 8-1.)

Required Tools: 10 mm wrench
Parts required: self-locking nut (M6)
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Disconnect quick release connector at the aft end of push-pull tube (**x**).
b. Disconnect trim wiring at terminal on fuselage tail.
c. Unscrew the securing nut at the center of the leading edge on elevator, adjacent to actuator bracket (**y**).
d. Move elevator to full DOWN position.
e. Slide elevator to the right side, to disengage hinges.
f. Using care, remove elevator.
g. Reverse preceding steps for installation.
h. Rig system in accordance with applicable paragraph in this section if necessary.

Note

If push-pull tube screw is not turned, rigging of trim system should not be necessary after installation of elevator.

8.1.2.2 Repair

Repair may be accomplished as outlined in Section 18. Hinge bushings may be replaced as necessary. Further repair is limited to restoring dents or smaller cracks on edges. Since the elevator is designed as carbon fiber sandwich component, it is strongly recommended to replace or return to factory for repair, if larger damage or deterioration of the skin is detected.

8.1.3 Bellcrank

8.1.3.1 Removal and Installation (refer to figure 8-1.)

Required Tools: Phillips head screwdriver, 10 mm wrench.
Parts required: 3 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

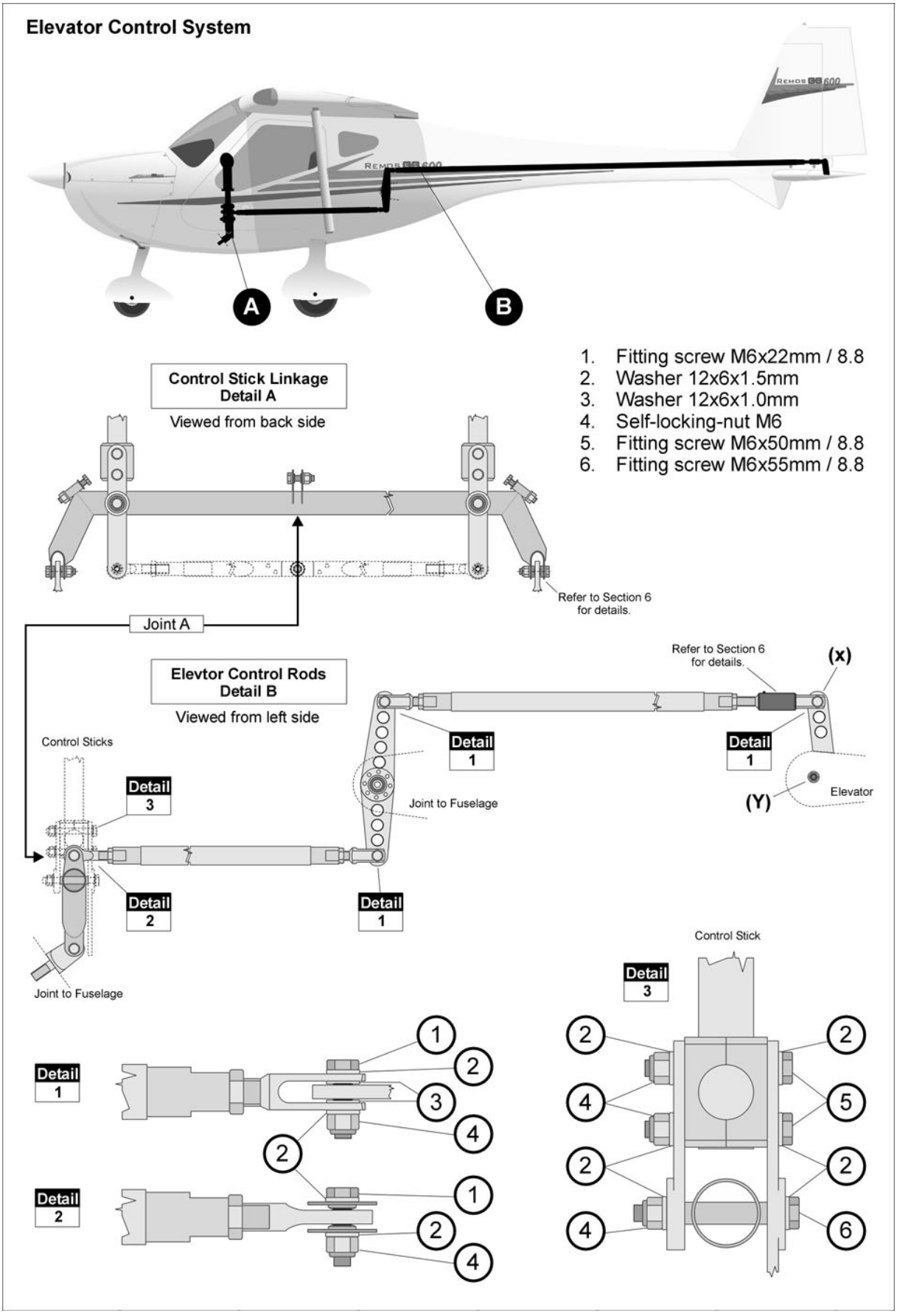
a. Remove pilot seat and baggage compartment (refer to Section 3).
b. Disconnect forward and aft push-pull tube from bellcrank.
c. Remove pivot bolt and remove bellcrank.
d. Reverse preceding steps for installation.
e. Check for free play of push-pull tubes and bellcrank.

8.1.4 Rigging

Required Tools: 14 mm open-end wrench
Parts required: Loctite 243 (medium strength)
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Locate neutral position of elevators by streamlining elevators with stabilizer.
b. Place an inclinometer on the elevator and set to zero.
c. Check for centered positon of control stick.
d. If required, adjust stick center position at the aft end of push-pull tube and secure with **Loctite 243**.
e. Check elevator travel as outlined in figure 1-1.

Figure 8-1.


Elevator Control System
A
B
1. Fitting screw M6x22mm / 8.8
2. Washer 12x6x1.5mm
3. Washer 12x6x1.0mm
4. Self-locking-nut M6
5. Fitting screw M6x50mm / 8.8
6. Fitting screw M6x55mm / 8.8
Control Stick Linkage
Detail A
Viewed from back side
Refer to Section 6
for details.
Joint A
Elevtor Control Rods
Detail B
Viewed from left side
Refer to Section 6
for details.
(x)
Control Sticks
Detail
1
Detail
1
Detail
3
Joint to Fuselage
(Y)
Elevator
Detail
2
Detail
1
Joint to Fuselage
Control Stick
Detail
3
Detail
1
Detail
2

Section 9

Structures – Elevator Trim Control System

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9.1 Elevator Trim Control System, Description

The elevator trim tab, located on the left elevator, is controlled by a trim switch mounted on the pilot side control stick (optional on the co-pilot stick additional). Power to operate the tab is transmitted from the trim control button(s) by wire. An LED-array indicator, located on the left side of the switch panel indicates tab position. A “nose-up” setting results in a tab-down position.

9.1.1 Trouble Shooting

Note

Due to remedy procedures in the following troubleshooting chart it may be necessary to re-rig system, refer to paragraph 9.1.6.

Trouble	Probable Cause	Remedy
Trim tab fails to move.	Blown fuse/circuit breaker	Replace fuse or reset circuit breaker.
	Defective trim switch.	Replace trim switch.
	Defective trim servo.	Replace trim servo.
	Broken or disconnected wiring.	Run a continuity check. Connect or repair wiring.
	Broken trim tab linkage	Replace linkage.
Trim indicator fails to indicate correct trim position.	Defective position sensor.	Replace trim servo.
	Broken or disconnected wiring.	Run a continuity check. Connect or repair wiring.
	Defective trim inidcator.	Replace trim indicator.
Incorrect trim tab travel.	Incorrect push-pull rod adjustment.	Refer to paragraph 9.1.6.
	Defective trim servo.	Replace trim servo.

9.1.2 Trim Tab
9.1.2.1 Inspection and Repair

The trim tab panel is attached to the elevator by a flexible composite hinge, therefore it can not be removed from the elevator. The flexible hinge should be inspected due to cracks during regular service intervals. It may be find that cracks in the paint of the hinge will occur which are not structural and does not need any servicing. If cracks are concerning the hinge structure itself, refer to Section 18 for repair.

9.1.3 Trim Tab Servo
9.1.3.1 Removal and installation

Required Tools: Phillips head screwdriver
Parts required: Cotter pin (1.6 x 20 mm)
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

Prior to removal of the trim servo, removal of the elevator is necessary, refer to Section 8.

a. Disconnect push-pull rod end from actuator bracket on trim tab.
b. Remove securing cable tie of trim servo wiring.
c. Unscrew and remove trim servo from elevator.
d. Reverse preceding steps for reinstallation and use a new cotter pin to secure push-pull connection at trim tab bracket.
e. Re-rig the system in accordance with paragraph 9.1.6.

Note

If push-pull rod is not turned, rigging of trim system should not be necessary after installation of the new trim servo.

Caution

Check for correct movement of trim tab after reconnecting terminal wiring. A “nose-up” setting results in a tab-down position.

9.1.4 Trim Control System
9.1.4.1 Removal and installation

The trim control system consists of a trim servo located in the elevator (refer to paragraph 9.1.3) and a control switch on the control stick(s). To remove or install a new switch, unscrew the stick grip. Take care about the wiring within the stick grips when installing a new trim switch.

9.1.5 Indicating system

To indicate the position of trim tab, an LED-indicator is installed in the switch panel. Power to the indicator is supplied by the trim tab servo.

9.1.5.1 Removal and Installation

Required Tools: 2.5 & 3 mm allen wrench, 5.5 & 10 mm wrench, edge-cutter.
Parts required: Insulating tape, cable ties, 2 x self-locking nut (M3).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew throttle lever knob, clamp nut, friction knob and ignition key retaining ring.
c. Unscrew and withdraw switch panel.
d. Unplug and remove LED trim tab position indicator.
e. Reverse preceding steps for reinstallation.
f. Check for correct indication of trim tab position and re-rig as required.

Note

Rigging of trim system should not be necessary after installation of a new trim indicator.

9.1.6 Rigging

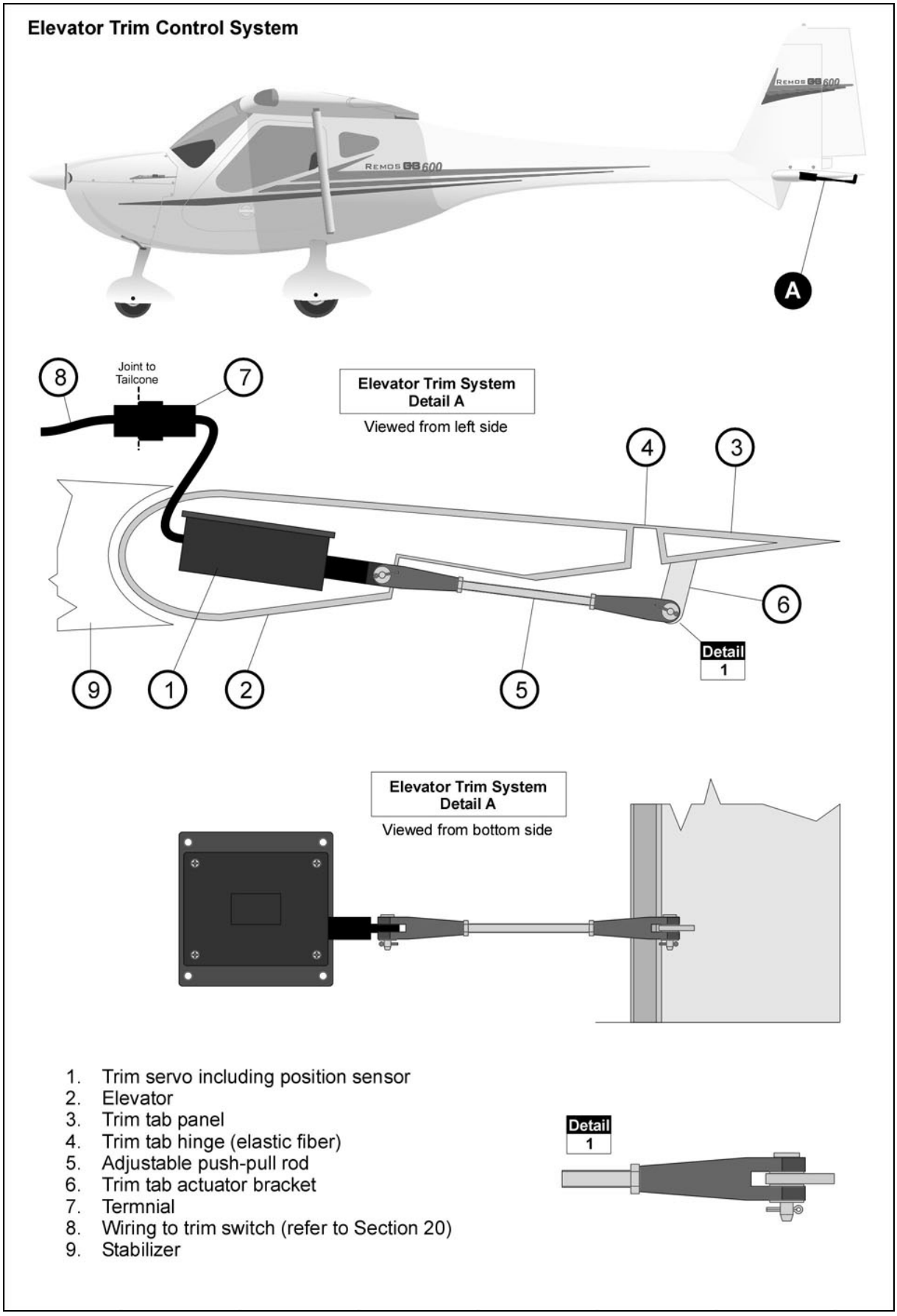
Required Tools: ¼" allen wrench
Parts required: Cotter pin (1.6 x 20 mm)
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Move trim indicator needle-pointer to center position.
b. Adjust push-pull rod end at trim tab connection to achieve a neutral setting of
c. trim tab.
d. Check for correct movement of trim tab. Pushing the control button to "up" position (downward) must result in a "up" reading on the indicator and a tab-down movement.

Note

Always use a new cotter pin when reestablishing the connection of push-pull rod at the trim tab bracket.

Figure 9-1.


Elevator Trim Control System
A
Joint to Tailcone
Elevator Trim System Detail A
Viewed from left side
Detail 1
Elevator Trim System Detail A
Viewed from bottom side
1. Trim servo including position sensor
2. Elevator
3. Trim tab panel
4. Trim tab hinge (elastic fiber)
5. Adjustable push-pull rod
6. Trim tab actuator bracket
7. Termnial
8. Wiring to trim switch (refer to Section 20)
9. Stabilizer
Detail 1

Section 10

Structures – Rudder Control System

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10.1 Rudder Control System, Description

Rudder control is maintained through use of conventional rudder pedals which also control nose wheel steering. The system is comprised of rudder pedals, a bellcrank, cables and pulleys, all of which link the pedals to the rudder and nose wheel steering.

10.1.1 Trouble Shooting

Note

Due to remedy procedures in the following trouble shooting chart it may be necessary to re-rig system, refer to paragraph 10.1.5.

Trouble	Probable Cause	Remedy
Rudder does not respond to pedal movement.	Broken or disconnected cables.	Connect or replace cables.
Binding or jumpy movement of rudder pedals.	Cables too tight.	Adjust cable tension in accordance with paragraph 10.1.5.
	Cables not riding properly on pulleys.	Route cables correctely over pulleys.
	Binding, broken or defective pulleys or cable guards.	Replace defective pulleys and install guards properly.
	Defective pedal bar bearings.	Replace bearings.
	Nose gear strut needs lubrication.	Lubricate copper bushings of nose gear strut.

Lost motion between rudder pedals and rudder.	Insufficient cable tension.	Adjust cable tension in accordance with paragraph 10.1.5.
Incorrect rudder travel.	Incorrect rigging.	Rig system in accordance with paragraph 10.1.5.

10.1.2 Rudder Pedal Assembly (refer to figure 10-1.)

10.1.2.1 Removal and Installation

Required Tools: 8/10/17 mm wrench.
Parts required: 10 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Disconnect cables from rudder pedals.
b. Disconnect bellcrank from rudder pedals.
c. Unscrew brackets from fuselage and remove pedal linkage assemblies.
d. Reverse preceding steps for reinstallation.
e. Rig system in accordance with applicable paragraph in this section, safety clevises and reinstall all items removed in step **a**.

Note

Rudder bar assemblies should be checked for excessive wear before installation. The bearing require no lubrication unless binding occurs. A few drops of general purpose oil should eliminate such binding.

10.1.3 Rudder

10.1.3.1 Removal and Installation

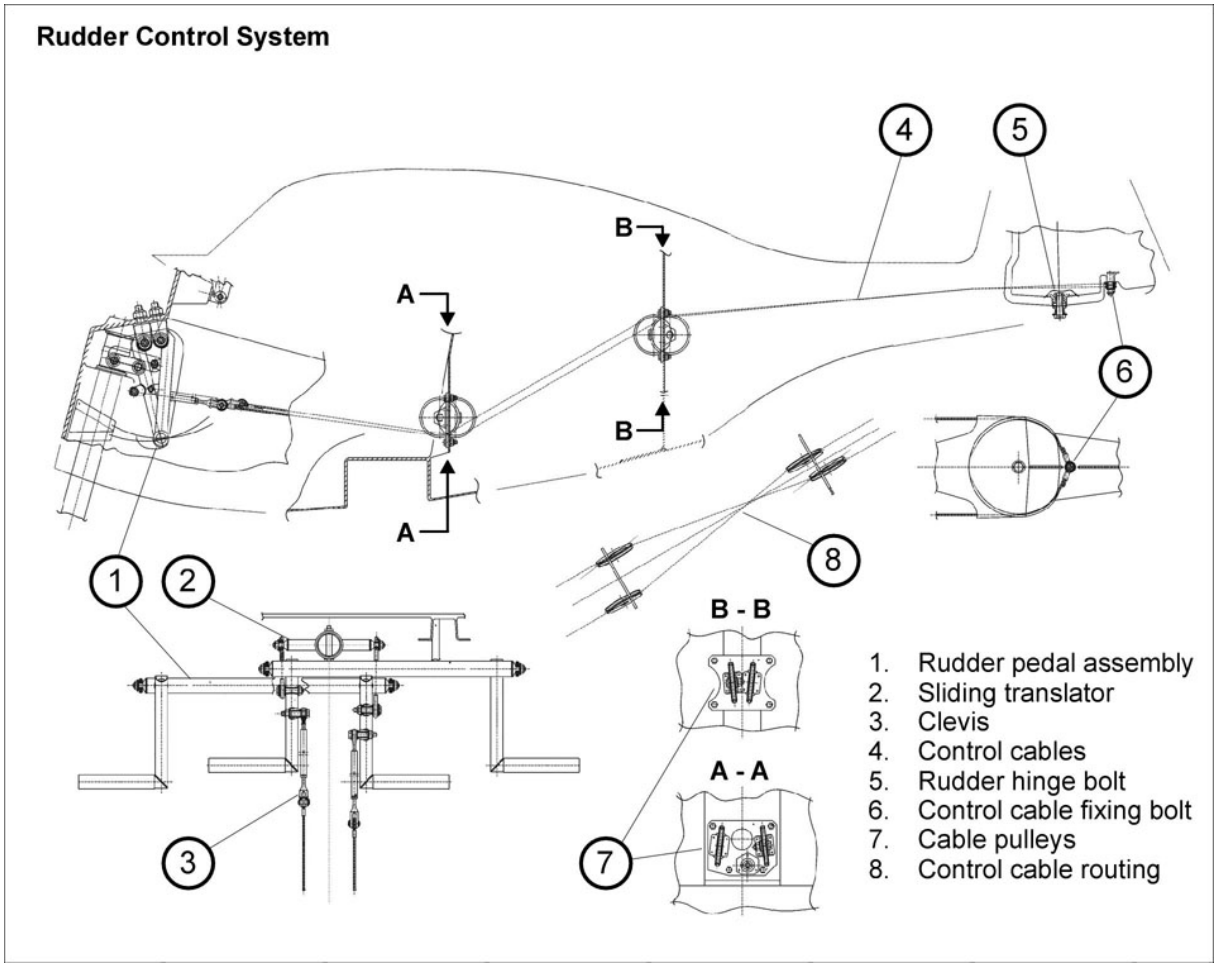
Required Tools: 8/10/13 mm wrench.
Parts required: Self-locking nut (M6), safetying wire (1.0 mm).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Disconnect tail navigation light quick-disconnect.
b. Relieve cable tension at clevises (figure 10-1).
c. Disconnect cables from rudder.
d. Remove lower hinge bolt and slide rudder upward to disengage upper hinge bolt.
e. Reverse preceding steps for installation.
f. Rig system in accordance with applicable paragraph in this section and safety clevises, secure hinge bolt by wire.

10.1.3.2 Repair

Repair may be accomplished as outlines in Section 18. Further repair is limited to restoring dents or smaller cracks on edges. Since the elevator is designed as carbon fiber sandwich component, it is strongly recommended to replace or return to factory for repair, if larger damage or deterioration of the skin is dedicated.

Figure 10-1.



10.1.4 Cables and Pulleys

10.1.4.1 Removal and Installation

Required Tools: 8 & 10 mm wrench, phillips head screwdriver.
Parts required: 4 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove seats and baggage compartment (refer to Section 3).
b. Disconnect cables at rudder pedals.
c. Remove cable guards, pulleys and fairleads as necessary to work cables free
d. of aircraft.

Note

To ease routing of cables, a length of wire may be attached to end of cable before being withdrawn from aircraft. Leave wire in place, routed through structure, attach cable being installed and pull cable into position.

After cable is routed in position, install pulleys fairleads and cable guards.
e. Ensure cable is positioned in pulley groove before installing guard.
Rig system in accordance with applicable paragraph in this section, safety
f. clevises and reinstall all items removed in step “a”.

10.1.5 Rigging

Required Tools: 8 mm wrench
Parts required: Safetying wire
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Align rudder with fin to neutral position.
b. Adjust cables at clevis to achieve a neutral pedal setting.
c. Adjust cable tension for proper operation and pedal motion without binding.
d. Safety clevises by the use of new cotter pins and self-locking nuts.

WARNING

Be sure rudder moves in correct direction when operated by pedals.

Section 11

Engine

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11.1 Engine Cowling, Description

The engine cowling is comprised of an upper and lower cowl segment. A small access door on the upper cowl provides access to the oil filler cap, and oil dipstick, as well as to check cooling fluid level. Quick-release fasteners are used at the cowling-fuselage mount attach points to facilitate detachment of the cowling at the firewall. Quick-release fasteners are used along the side parting surfaces to hold cowling segments together. Both cowl segments are constructed from carbon fiber composites.

11.1.3 Removal and Installation

Required Tools: Screwdriver
Parts required: None
Level of Maintenance: Line
Certification required: Owner

Removal and installation of engine cowling is accomplished by releasing the quick-release fasteners at side parting surfaces. Disconnect electrical wiring to landing light in lower cowling (if installed). First remove the upper cowling by disengaging it from the lower cowling at the nose of the cowling, then lift up upper cowling segment. Loosen quick-release fasteners of the lower cowling segment and remove to the front. When installing the cowling, be sure to connect landing light, disconnected during removal.

11.1.4 Cleaning and Inspection

Wipe the inner surfaces of the cowling segments with a cloth saturated with cleaning solvent. If the inside surface of the cowling is coated heavily with oil and dirt, allow solvent to soak until foreign material can be removed. Wash painted surfaces of cowling with a solution of mild soap and water and rinse thoroughly. After washing, a coat of wax applied to painted surface is recommended to prolong paint life. After cleaning, inspect cowling for cracks. Repair all defects to prevent spread of damage.

11.1.5 Repair

Required Tools: As required
Parts required: Epoxy Resin, carbon fibre tape, rowings, fabrics.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

If cowling skins are extensively damaged, new complete sections of the cowling should be installed. If cracks are detected in the carbon fiber cowl segments, they may be repaired using L285 Epoxy Resin or similar (R&G L20), reinforcing with suitable carbon fiber fabrics. Follow the instructions on the container for a successful completion of the repair.

11.2 Engine, Description

The ROTAX 912 Series engines are 4-stroke, 4 cylinder horizontally opposed, spark ignition engines, featuring one central camshaft with push rods and OHV (overhead valves). Cylinder heads are liquid cooled. Lubrication system is a dry sump forced type. It is equipped with dual breakerless capacitor discharge ignition and two constant velocity carburetors. Prop drive is via reduction gear with integrated shock absorber and overload clutch. Specific engine datas are given in figure 11-1.

11.2.1 Engine Data

Figure 11-1.

Descpription	**912 UL**	**912 UL/S**
Dimensions		
Bore…….	3.13 in	3.31 in
Stroke……..	2.40 in	2.40 in
Displacement…….	73.9 in^3	82.5 in^3
Compression ratio……...	9.0 : 1	10.5 : 1
Weight (without exhaust, radiator, air intake System)….	132 lb	134 lb
Speed		
Takeoff speed (maximum)……	5800 rpm	5800 rpm
Continuos speed (maximum)……...	5500 rpm	5500 rpm
Idle speed (approx.)……..	1700 rpm	1700 rpm
Gear Ratio……..	2.27 : 1	2.43 :1
Performance		
Takeoff performance…….	80 hp	100 hp
Continuos performance…….	77 hp	92 hp
Acceleration		
Max. negative "g" for 5 seconds…….	-0.5 g	- 0.5 g
Oil Pressure		
Max. for short period at cold start……	100 psi	100 psi
Min. (below 3500 rpm)……..	12 psi	12 psi
Normal (above 3500 rpm)……	29 - 73 psi	29 - 73 psi
Deviation from Bank Angle max…….	40°	40°
Oil Temperature		

Max……..	285° F	285° F
Min……...	120° F	120° F
Normal…….	190-230° F	190-230° F
Cylinder Head Temperature		
Max. (observation at hottest cylinder, #2 or #3)…	300° F	300° F
Normal…….	167-230° F	167-230°F
Engine Start, Operating Temperature		
Max……..	120° F	120° F
Min…….	-13° F	-13° F
Fuel Pressure		
Max……..	5.8 psi	5.8 psi
Min……...	2.2 psi	2.2 psi
Electric Starter…….	12V, 0.6 kw	12V, 0.6 kw
Generator…….	12V, 20A	12V, 20A
Spark plugs, NGK.....	DCPR7E	DCPR8E
Spark Plug Gap……..	0.027 in	0.027 in
Torque.....	176 inlb	176 inlb

11.2.2 Trouble Shooting

Refer to Rotax 912/912S Maintenance Manual, latest issue. This table should be understand as ageneral guide to locate engine failures.

Trouble	Probable Cause	Remedy
Engine will not start.	Fuel tank empty.	Fill with proper grade of gasoline.
	Improper use of starting procedure.	Review starting procedure.
	Fuel shut-off valve closed.	Set shut-off valve “Open”.
	Tank screen, or fuel lines plugged.	Remove and clean thoroughly. Remove moisture.
	Engine flooded.	Refer to paragraph 11.11.2
	Defective ignition system.	Refer to paragraph 11.7.1
	Excessive induction air leaks.	Correct the cause of leaks.
	Defective magneto switch or grounded magneto leads.	Check continuity. Repair or replace switch or wiring.
	Defective carburetor.	Repair or replace carburetor.
	Spark plugs fouled or improperly gapped.	Remove and clean: Check gaps and insulators. Check cables to persistently fouled plugs. Replace defective plugs.
	Defective magnetos or ignition amplifiers.	Replace defective parts in accordance with Rotax maintenance manual.
	Spark plugs loose.	Tighten to specified torque.

	Water in fuel system.	Drain fuel tank sump, fuel lines and carburetors.
	Excessive starter slippage.	Replace starter motor.
Engine will not run at idling speed.	Idle speed incorrectly adjusted.	Refer to paragraph 11.5.2
	Carburetor idling jet plugged.	Clean carburetor.
	Air leak in intake manifold.	Tighten loose connections or replace damaged parts.
	Spark plugs fouled by oil escaping past piston rings.	Top overhaul engine.
Rough idling.	Idle speed incorrectly adjusted.	Refer to paragraph 11.5.2
	Fouled spark plugs.	Remove and clean, adjust gaps. Test harness cables. If persistent perform top overhaul.
	Small air leak into induction system.	Tighten connections or replace damaged parts.
	Defective engine.	Check compression and listen for unusual engine noises. Engine repair is required.
Engine does not accelerate properly.	Cold engine.	Warm up longer.
	Restriction in carburetor air intake.	Remove restriction and clean filter.
	Restriction in carubretor jets, low float level.	Clean and repair carburetor.
	Incorrect carburetor synchronizing.	Synchronize carburetors in accordance to Rotax maintenance manual.
	Incorrect idle setting.	Refer to paragraph 11.5.2
Engine does not shut off with ignition key in off-position.	Broken wiring or defective magneto switch.	Repair wiring or replace magneto switch.
Engine runs rough at high speed.	Loose mounting bolts or rubber pads defective.	Tighten bolts or replace mounting pads.
	Propeller out of balance.	Remove and balance.
	Spark plug gap too large or insulator damaged.	Replace damaged parts.
	Ignition cable insulation damaged.	Test for leakage at high voltage and replace damaged ignition lead.
	Float chamber bleed hoses disconnected or broken.	Connect or replace bleed hoses.
Sluggish operation and low power.	Throttle not opening completely.	Rig per paragraph 11.8.1.1
	Spark plugs fouled or improperly gapped.	Remove, clean and regap or install new plugs.

	Incorrect carburetor synchronizing.	Synchronize carburetors in accordance to Rotax maintenance manual.
	Incorrect carburetor mixture setting.	Adjust carburetors in accordance with Rotax maintenance manual.
High cylinder head temperature.	Low grade fuel.	Drain and fill with correct grade of fuel. Refer to Section 2.
	Excessive carbon deposits in cylinder head and on pistons.	Install new cylinders and piston rings or new engine.
	Low water level in cooling system.	Refill with suitable coolant and check for leaks.
	Dirt between cylinder fins.	Clean thoroughly.
High oil temperature.	Low oil supply.	Replenish.
	Oil viscosity too high.	Refer to Section 2 for seasonal grades.
	Oil regulator flap closed.	Set oil regulator flap to open position.
	Prolonged high speed operation on ground.	Hold ground running above 2500 rpm to a minimum.
Low oil pressure.	Low oil supply.	Replenish.
	Oil viscosity too low.	Drain and refill with correct seasonal grade. Refer to Section 2.
	Foam in oil due to emulsification of alkaline solids.	Drain and refill with fresh oil. Refer to Section 2 for seasonal grade.
	Defective pressure sensor.	Replace pressure sensor.
	Oil pump defective.	Remove and inspect. Examine engine. Metal particles from damaged pump may have entered engine oil passages.
	Oil pressure line broken, disconnected or pinched.	Inspect, replace or connect line.
	Internal leak, burned bearings, or damaged gasket.	Major overhaul.
Oil leak at propeller shaft.	Damaged propeller driveshaft seal.	Replace in accordance with Rotax maintenance manual.
Low compression.	Cylinder wall-coating worn.	Replace cylinder and rings.
	Intake valves guides worn.	Top overhaul.
	Valves seats and faces worn.	Top overhaul.
	Piston rings excessively worn.	Top overhaul.
	Valves sticking in guides.	Top overhaul.

11.2.3 Removal

Required Tools: Screwdriver, phillips head screwdriver, edge cutter, gripper, 4-10 mm allen wrench, 8-17 mm wrench.
Parts required: Insulating tape
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

If the engine is to be placed in storage or returned to the manufacturer for overhaul, proper preparatory steps should be taken prior to beginning the removal procedure. Refer to Temporary Storage in Section 2 for preparation of the engine for storage. The following engine removal procedure is based upon the engine being removed from the aircraft with the engine mount attached to the engine and all engine hose and lines being disconnected at the firewall. The reason for engine removal will determine where components are to be disconnected.

Note

Tag each item disconnected to aid in identifying wires, hoses, lines and control cables when engine is being installed. Protect openings, exposed as a result of removing or disconnecting units, against entry of foreign material by installing covers or sealing with tape.

a. Place all cabin switches and fuel valves in the OFF position.
b. Remove engine cowlings. (See paragraph 11.1.1)
c. Open battery circuit by disconnecting battery cable(s) at the battery. Insulate cable terminal(s) as a safety precaution.
d. Disconnect all wiring at the terminals on the firewall (located in the REMOS Connector-Box on the left-hand side of the firewall).
e. Disconnect wiring at voltage regulator terminal (located on lower left-hand side of the firewall) and remove cable ties and clamps as required.
f. Disconnect ground wiring from center of firewall.
g. Drain oil from engine (refer to G-3 /600 Pilot Operating Handbook, Section 8).
h. Remove propeller and spinner (see Section 13).
i. Drain water from the engine cooling system by disconnecting one water radiator hose and opening the expansion tank cap.
j. Disconnect hose connection to overflow bottle at upper right side of the firewall.

Note

During the following procedures, remove any clamps or cable ties which secure controls, wires, hose, or lines to the engine, engine mount, or attached brackets, so that they will not interfere with removal of the engine. Omit any of the items which are not present on a particular engine installation.

k. Disconnect throttle and choke control at carburetor and oil-temperature control from regulation flap assembly at oil cooler. Pull these controls free of engine and engine mount, using care not to damage them by bending too sharply.

l. Disconnect carburetor heat control from arm on carburetor heat air intake housing assembly. Remove cable ties and pull control aft clear of the engine and disconnect cabin heat hose from heater shell at exhaust system.

WARNING

Residual fuel and oil draining from disconnected lines and hose is a fire hazard. Use care to prevent accumulation of such fuel and oil when lines or hose are disconnected.

m. Disconnect oil hoses from oil tank (located on the right-hand side of the firewall.
n. Disconnect fuel-, fuel-return- and fuel pressure (if installed) hose from firewall.

Caution

Attach a tail stand to the tail before removing the engine. The loss of engine weight will allow the tail to drop. Do not raise engine higher than necessary when removing mount-to-firewall bolts. Raising the engine too high places a strain on the attach bolts and hinders their removal.

o. Attach a hoist to the inlet manifolds on top of the engine and take up engine weight on hoist.
p. Remove bolts attaching mount-to-firewall. Note direction of bolt installation and position and numbers of washers. Balance the engine by hand as the last of the bolts are removed.

Caution

Hoist engine slowly and ascertain that all items attaching engine and accessories to airframe are disconnected.

q. Disengage exhaust retaining springs and remove exhaust system.
r. Remove exhaust downpipes from cylinder head (mark each downpipe location for reinstallation.
s. Unscrew engine-to-mount screws and remove engine mount.
t. Carefully guide disconnected components out of engine assembly.

11.2.4 Cleaning

The engine may be cleaned with a suitable solvent, then dried thoroughly.

Caution

Particular care should be given to electrical equipment before cleaning. Solvent should not be allowed to enter magnetos, starter, alternator and the like. Hence, protect these components before saturating the engine with solvent. Cover any fuel, oil and air openings on the engine and accessories before washing the engine with solvent. Caustic cleaning solutions should be used cautiously and should always be properly neutralized after their use.

11.2.5 Accessories Removal

Removal of engine accessories for overhaul or for engine replacement involves stripping the engine of parts, accessories, and components to reduce the engine assembly to the bare engine. During removal, carefully examine removed items and tag defective parts for repair or replacement by a new part.

Note

Items easily confused with similar items should be tagged to provide a means of identification when being installed on a new engine. All openings exposed by the removal of an item should be closed by installing a suitable cover or cap over the opening. This will prevent entry of foreign particles. If suitable covers are not available, tape may be used to cover the opening.

11.2.6 Inspection

For specific items to be inspected refer to engine manufacturer's manual.

a. Visually inspect the engine for loose nuts, bolts, cracks and fin damage.
b. Inspect brackets for cracks, deterioration and breakage.
c. Inspect all hoses for internal swelling, chafing through protective plys, cuts, breaks, stiffness, damaged threads and loose connections. Excessive heat on hoses will cause them to become brittle and easily broken. Hoses and lines are most likely to crack or break near the end fittings and support points.
d. Inspect for color bleaching of the end fittings or severe discoloration of the hoses.

Note

Avoid excessive flexing and sharp bends when examining hoses for stiffness.

e. All flexible fluid carrying hoses in the engine compartment should be replaced at engine overhaul or every five years, whichever occurs first.
f. For major engine repairs, refer to the manufacturer's overhaul and repair manual.

11.2.7 Engine Build-Up

Engine build-up consists of installation of parts, accessories and components to the basic engine to build-up an engine unit ready for installation on the aircraft. All safety wire, lockwashers, palnuts, elastic stop nuts, gaskets and rubber connections should be new parts.

11.2.8 Installation (refer to figure 11-2.)

Required Tools: Refer to paragraph 11.2.3
Parts required: Various self-locking nuts, cable ties, hose clamps, safetying wire (1.0 mm).
Level of Maintenance: Heavy
Certification required: A&P Mechanic / LSA Repairman Maintencance

Before installing the engine on the aircraft, install any items that were removed from the engine after it was removed from the aircraft.

Note

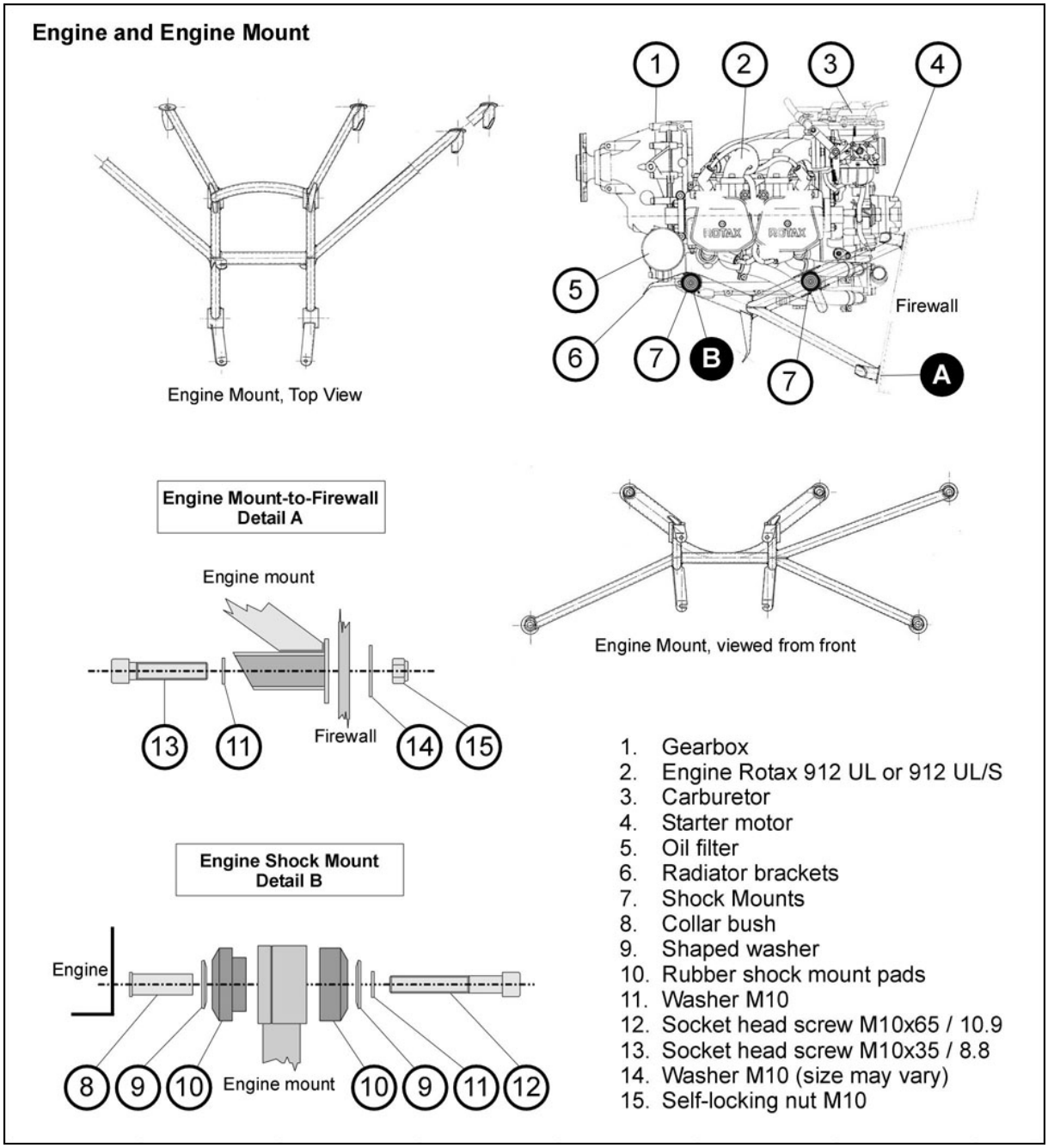
Remove all protective covers, plugs, caps and identification tags as each item is connected or installed.

a. Hoist engine assembly at the inlet manifold on top of the engine.
b. Install new shock mounts to the engine mount (refer to figure 11-2.)
c. Place engine mount to the engine brackets and tighten engine-to-mount bolts to a torque value of 40 Nm/350 in.lb. Secure screws by wire, refer to figure 11-2 for installation details.
d. Install exhaust downpipes and exhaust system, do not tighten retaining screws at that time.
e. Move complete assembly to firewall and align srew holes of the engine mount-to-firewall.
f. Install engine-to-firewall screws and tighten to a torque value of 40Nm/350 in.lb.
g. Remove hoist and stand placed under the tail.
h. Connect carburetor heat control to arm on carburetor heat air intake housing assembly and secure by cable tie to air intake hose.
i. Connect oil temperature control to oil regulator flap assembly and secure by cable tie to air intake hose (if fitted).
j. Route throttle and mixture controls to the carburetor and connect as noted in step “k” of paragraph 11.2.3.
k. Connect lines and hoses as follows:
    1. Fuel- and fuel-return hose at firewall.
    2. Fuel pressure hose at firewall (if fitted).
    3. Oil hoses to oil tank.
    4. Cooling fluid hose from overflow bottle to expansion tank.
    5. Cabin heat hose to heater shell on exhaust system.
    6. Install all clamps attaching lines and hoses to engine, engine mount, or attached brackets.
l. Connect wires and cables as follows:
    1. Ground wiring to firewall.
    2. Wiring to voltage regulator at firewall.
    3. Engine wiring to terminal at Remos Connector-Box on firewall.
m. Install all clamps attaching wires and cables to engine, engine mount, or attached brackets.
n. Install propeller and spinner (refer to Section 13).
o. Make sure that routing of exhaust pipes does not interfere with surrounding components and tighten retaining screws on cylinder heads to a maximum torque value of 26 Nm/230 in.lb.
p. Service engine with proper grade and quantity of engine oil. Refer to engine manufacturers manual or G-3 /600 Pilot Operating Handbook.
q. Make sure all switches are in the OFF position, and connect battery cable(s) to battery.
r. Rig throttle, choke and carburetor heat controls in accordance with paragraph 11.8.1 through 11.8.1.4.
s. Check engine installation for security, correct routing of controls, lines, hoses

and tightness of all components.

t. Bleed engine oil sysem in accordance with engine manufacturer maintenance manual.
u. Clean and install carburetor air filter. Be sure all hot and cold air ducts are installed and connected.
v. Perform engine run-up and make final adjustments on engine controls.
w. Install engine cowling.

Figure 11-2.



11.2.9 Flexible Fluid Hoses

11.2.9.1 Leak Test

After each 100 hours of engine operation, all flexible fluid hoses in the engine compartment should be checked for leaks as follows:

a. Examine the exterior of hoses for evidence of leakage or wetness.
b. Hoses found leaking should be replaced.
c. Refer to paragraph 11.2.6 for detailed inspection procedures for flexible hoses.

11.2.9.2 Replacement

a. Hoses should not be twisted on installation. Pressure applied to a twisted hose may cause failure or loosening of the nut.
b. Provide as large a bend radius as possible.
c. Hoses should have a minimum of one-half inch clearance from other lines, ducts, hoses or surrounding objects or be butterfly clamped to them.
d. Rubber hoses will take a permanent set during extended use in service.
e. Straightening a hose with a bend having a permanent set will result in hose cracking. Care should be taken during removal so that hose is not bent excessively, and during reinstallation to assure hose is returned to its original position.

11.2.10 Static Run-Up Procedure

In a case of suspected low engine power, a static RPM run-up should be conducted as follows:

a. Run-up engine, using take-off power, with the aircraft facing 90° right and then left to the wind direction.
b. Record the RPM obtained in each run-up position.

Note

Daily changes in atmospheric pressure, temperature and humidity will have a slight effect on static run-up.

c. Average the result of the RPM obtained. At all models it should be within 100 RPM of 5000 RPM.
d. If the average results of the RPM obtained are lower than stated above, the following recommended checks may be performed to determine a possible deficiency:
    1. Check carburetor heat control for proper rigging. If partially open it would cause a slight power loss.
    2. Check choke control for proper rigging.
    3. Check spark plugs and ignition harness for settings and conditions.
    4. Check both magnetos are working properly.
    5. Check condition of induction air filter. Clean if necessary.
    6. Perform an engine compression check. (Refer to engine Manufacturer's Manual.)

11.3 Engine Mount, Description (refer to figure 11-2.)

The engine mount is composed of sections of tubing welded together and reinforced with welded gussets. The purpose of the engine mount, is to support the engine and attach the engine to the airframe. The engine is attached to the mount with shock-mount assemblies which absorb engine vibrations.

11.3.1 Removal and Installation

Required Tools: 8 mm allen wrench
Parts required: Safetying wire (1.0 mm)
Level of Maintenance: Heavy
Certification required: A&P Mechanic / LSA Repairman Maintencance

Removal of the engine mount necessitates removal of the engine, followed by removal of the bolts attaching the engine-to-mount. The engine and engine mount may be removed from the aircraft and then engine removed from the mount. Refer to paragraph 11.2.8 for detailed information.

11.3.2 Repair

Perform engine mount repair as outlined in Section 18. The mount should be painted with heat-resistant grey enamel after welding or whenever original finish has been removed.

11.3.3 Shock-Mount Pads

The rubber shock-mounts are designed to reduce transmission of engine vibrations to the airframe. The rubber parts should be wiped with a clean dry cloth. Inspect rubber parts for swelling, cracking, or pronounced set of the part. Replace with new parts all parts that show evidence of wear or damage.

11.4 Engine Oil System, Description

The Rotax 912 Series engine is provided with a dry sump forced lubrication system with a main oil pump with integrated pressure regulator and oil pressure sensor. The oil pump is driven by the camshaft. The oil pump sucks the motor oil from the oil tank via the oil cooler and forces it through the oil filter to the points of lubrication in the engine. The surplus oil emerging from the points of lubrication accumulates on the bottom of crankcase and is forced back to the oil tank by the blow-by gases. A vent line on the oil tank provides venting of the circuit. An oil temperature sensor for reading of the oil inlet temperature is located on the oil pump housing. Refer also to the engine Operators Manual for detailed information.

11.4.1 Trouble Shooting

The following listing should be understood as quick reference guide to locate particular trouble which may occur to the engine oil system. For detailed information refer to the engine manufacturers Maintenance Manual.

Trouble	Probable Cause	Remedy
No oil pressure.	No oil in system.	Fill system with proper grade and quantity of oil. Refer to Section 1.
	Oil pressure line broken, disconnected or pinched.	Replace or connect.
	Defective oil pressure sensor.	Replace oil pressure sensor.
	Wiring of oil pressure sensor broken or disconnected.	Connect or repair wiring.
	Oil pump defective.	Remove and inspect in accordance with the Rotax Maintenance Manual.
Low oil pressure.	Defective oil pressure sensor.	Replace oil pressure sensor.
	Defective oil pressure gauge.	Replace or repair Rotax Flydat.
	Low viscosity oil.	Drain oil and refill with proper grade and quantity of oil.
	Oil pump defective.	Remove and inspect in accordance with the Rotax Maintenance Manual.
	Oil pump suction tube screen plugged or internal oil leak.	Engine overhaul required.
	Secondary result of high oil temperature.	Observe oil temperature gauge for high indication. Determine and correct reason for high oil temperature.
	Oil system not bled correctly.	Bleed oil system in accordance with Rotax Maintenance Manual.
	Oil filter element not tight.	Tighten oil filter in accordance with Rotax Operators Manual.
High oil pressure.	Defective oil pressure sensor.	Replace oil pressure sensor.
	Defective oil pressure gauge.	Replace or repair Rotax Flydat.
	High viscosity oil.	Drain oil and refill with proper grade and quantity of oil
Low oil temperature.	Defective oil temperature sensor.	Replace oil temperature sensor.
	Defectiv oil temperature gauge.	Replace or Repair Rotax Flydat.

High oil temperature.	Excessive rate of climb.	Avoid low airspeed.
	Closed oil cooler flap.	Move flap to "open" position.
	Defective oil temperature sensor.	Replace oil temperature sensor.
	Defectiv oil temperature gauge.	Replace or Repair Rotax Flydat.
	Low oil supply.	Refer to Rotax Maintenance Manual.
	Oil viscosity too high. Dirty oil.	Drain oil and refill with proper grade and quantity of oil.
	Prolonged high speed operation on the ground.	Hold ground running above 2500 rpm to a minimum.

11.4.2 Filter Element Removal and Installation

Required Tools: Phillips head screwdriver, edge cutter.
Parts required: Aircleaner element (RC-1250), cable ties.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Remove engine cowling as necessary for access.
b. Unscrew oil filter from oil pump at the front of the engine. Oil will drain from oil filter filter as it is removed from engine.
c. Inspect engine gasket seat for gouges, deep scratches, wrench marks, and mutilation.
d. Lubricate gasket of the new filter and screw to engine, do not overtighten filter element.
e. Install parts removed for access, and service the engine with proper grade and quantity of engine oil.
f. Start engine and check for proper oil pressure. Check for oil leaks after warming up engine.
g. Again check for oil leakage after engine has been run at a high power setting (preferably a flight around the field).

Note

Before discarding removed filter element, cut the outer skin and check inside for evidence of internal engine damage such as chips or particles from bearings. In new or newly overhauled engines, some small particles or metallic shavings might be found, these are generally of no consequence and should not be confused with particles produced by impacting, abrasion, or pressure. Evidence of internal engine damage found in the oil filter element justifies further examination to determine the cause.

Note

When installing a new filter element, it is important that the gasket is clean, lubricated and positioned properly, and that the correct amount of torque is applied to the filter.

If the filter is under-torqued, oil leakage will occur. If the filter is over-torqued, the filter can possibly be deformed, again causing oil leakage.

Lubricate rubber gasket of new filter element with clean engine oil. A dry gasket can cause a false torque value, again resulting in oil leakage.

11.5 Engine Fuel System, Description

The engine is equipped with two carburetors mounted at the upper side of the engine. The carburetors are of the constant velocity type, installed to each manifold of the engine. For overhaul and repair of the carburetors refer to the manufacturer´s maintenance and repair manual.

11.5.1 Carburetor Removal and Installation

Required Tools: Screwdriver, phillips head screwdriver, 8/10/13 mm wrench, 13 mm socket wrench.
Parts required: Self-locking nut (M6), cable ties, lock screw.
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Place fuel shut-off valve in the OFF position.
b. Remove engine cowling.
c. Disconnect flexible hose from intake airbox.
d. Remove manifold temperature sensor from top of the airbox.
e. Disconnect throttle and choke controls from arms on carburetor. Note EXACT position and size of bushings for reference on reinstallation.
f. Disconnect and plug the fuel and air lines at carburetors.
g. Remove screws and clamps that attach the airbox to carburetors and engine bracket and remove airbox.
h. Loosen bolts and clamps attaching carburetor to intake manifold. Remove carburetors.
i. Reverse the preceding steps for reinstallation.
j. Rig controls in accordance with applicable paragraph in this Section.
k. Check carburetor throttle arm to idle stop arm attachment for security and proper safetying at each normal engine inspection.

11.5.2 Idle Speed Adjustment

Required Tools: Screwdriver
Parts required: Lock screw
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Note

Idle speed adjustment should be accomplished after the engine has been warmed up.Engine idle speed may vary among different engines. An engine should idle smoothly, without excessive vibration, and the idle speed should be high enough to maintain idling oil pressure and to preclude any possibility of engine stoppage in flight when the throttle is closed.

a. Set the throttle stop screws to obtain between 1700 and 1800 rpm, with throttle control pulled full out against idle stop.
b. Check that both idle stop screws contact its idle stop brackets at the same time and readjust if necessary.
c. Apply laquer to each idle stop screw to secure proper safteying.

11.5.3 Carburetor Synchronizing

Synchronizing the carburetors is essential to achieve a smooth engine operation, free from vibrations. Refer to Rotax maintenance manual for advisory about correct synchronization of carburetors.

11.6 Induction Air System, Description

Ram air to the engine enters the induction airbox through an opening in the forward part of the upper engine cowling nose. The air is filtered through a filter which is located at the inlet of the airbox. From the induction airbox the filtered air is directed to the inlet of each carburetor, mounted on the upper side of the engine, and through the carburetor, where fuel is mixed with the air, to the intake manifold. From the intake manifold, the fuel-air mixture is distributed to each cylinder by separate intake pipes. The intake pipes are attached to the cylinders with a two bolt flange which is sealed with a gasket. A distributor box on the air intake contains a valve, operated by a carb heat control in the cabin, which permits air from an exhaust heated source to be selected in the event carburetor icing or filter icing should be encountered.

11.6.1 Removal and Installation

Remove and install induction airbox system as outlined in paragraph 11.5.1.

11.7 Ignition System, Description

The Rotax 912 Series engines are equipped with a dual ignition unit of a breakerless, capacitor discharge design, with an integrated generator. The ignition unit is completely free of maintenance and needs no external power supply. Two independent charging coils located on the generator stator supply one ignition circuit each. The energy is stored in capacitors of the electronic modules. At the moment of ignition 2 each of the 4 external trigger coils actuate the discharge of the capacitors via the primary circuit of the dual ignition coils.

Note

The 5th trigger coil is used for revolution counter signal.

11.7.1 Magneto Removal and Installation

Magnetos are located at the back side of the engine, and to replace them it is necessary to remove the induction airbox first (refer to paragraph 11.5.1). After removing the protection cover on the engine back, access to the magnetos is enabled. Replace Magnetos in accordance to the engine manufacturer's maintenance manual. Install all items removed for access to the magnetos again.

11.7.2 Magneto Check

Because the whole ignition system is designed to need no servicing, it is not possible to adjust timing of the ignition system. Therefore checking proper operation of the system is reduced to the drop in engine speed at specified rpm using each magneto separate.

a. Start and run engine until the oil and cylinder head temperatures are in the normal operating ranges.
b. Advance engine speed to 4000 rpm.
c. Turn the ignition switch to the “R” position and note the rpm drop, then return the switch to the “BOTH” position to clear the opposite set of plugs.
d. Turn the switch to the “L” position and note the rpm drop, then return the switch to the “BOTH” position.
e. The rpm drop should not exceed 300 rpm on either magneto.

For more detailed information refer to the engine manufacturer´s maintenance manual.

11.7.3 Spark Plugs

Two spark plugs are installed in each cylinder. The spark plugs are shielded to prevent spark plug noise in the radio and the spark plugs have an internal resistor to provide longer terminal life. Spark plug life will vary with operating conditions. A spark plug that is kept clean and properly gapped will give better and longer service than one that is allowed to collect lead deposits and is improperly gapped. The correct spark plug and gap setting is given in paragraph 11.1.

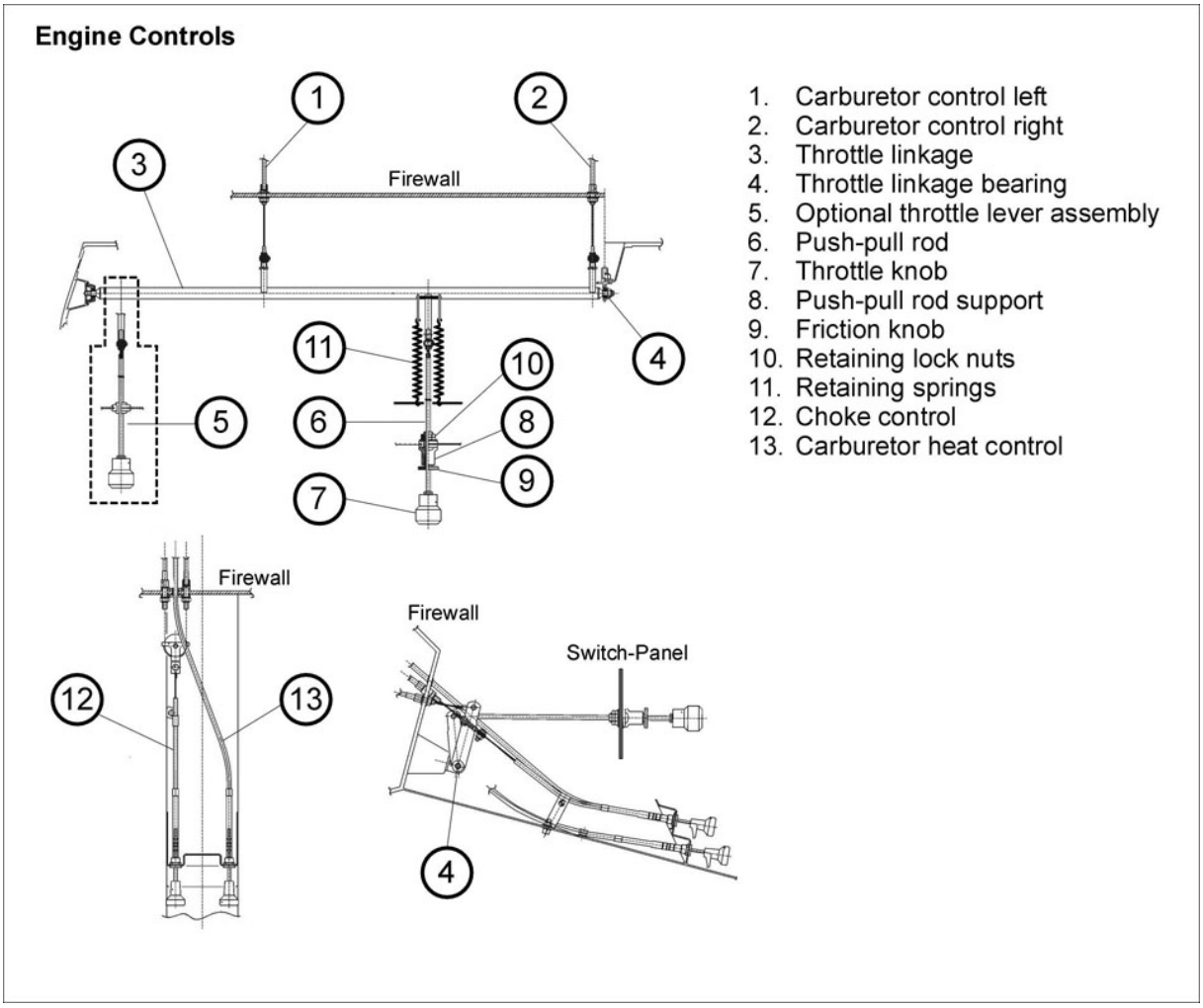
Note

At each 100-hour inspection, remove, clean, inspect, and regap all spark plugs. Install lower spark plugs in upper portion of cylinder and install upper spark plugs in lower portion of cylinder at each 100-hour inspection. Since deterioration of lower spark plugs is usually more rapid that that of the upper spark plugs, rotating them helps prolong spark plug life.

11.8 Engine Controls, Description

Engine controls of the push-pull type include the throttle, choke, oil temperature regulator and carburetor heat controls. The engine controls are equipped with position-locking devices which prevent vibration-induced “creeping” of the controls.

Figure 11-3.



11.8.1 Rigging

When adjusting any engine control, it is important to check that the control slides smoothly throughout its full range of travel, that it locks securely if equipped with a locking device, and the arm or lever which it operates moves through its full arc of travel.

Caution

Whenever engine controls are being disconnected, pay particular attention to the exact position, size, and number of attaching washers, spacers or bushings. Be sure to install attaching parts as noted when connecting controls.

11.8.1.1 Throttle Control

Required Tools: 8 & 10 mm open-end wrench
Parts required: Lock screw
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

Note

Before rigging throttle control ensure that control cable are in proper condition.

a. Push throttle to full throttle position and check that both actuator arms on carburetor achieve maximum position.
b. Adjust locknut at carburetor end of control as required to achieve the maximum travel of each actuator lever.
c. Pull throttle control to idle position.
d. Check that both idle stop screws contact its idle lock and adjust if required.
e. Check idle speed in accordance with paragraph 11.5.2.
f. Check carburetor synchronizing in accordance with paragraph 11.5.3.
g. Tighten rod end locknuts at carburetor end of control. Be sure to maintain sufficient thread engagement between rod end and control.

Note

Refer to the inspection chart in Section 2 for inspection and / or replacement interval for the throttle control.

11.8.1.2 Choke Control

Note

Before rigging choke control ensure that control cable are in proper condition.

a. Push choke control to off-position.
b. Check cable tension for proper setting on carburetor end of control, adjust if required (choke arms on each carburetor must touch to its locks in the off-position).
c. Pull choke control to on-position.
d. Check that both arms on carburetor achieve their maximum travel at the same time. If required readjust controls at the locknut on carburetor arm.
e. Tighten rod end locknuts at carburetor end of control. Be sure to maintain sufficient thread engagement between rod end and control.

Note

Refer to the inspection chart in Section 2 for inspection and / or replacement interval for the choke control.

11.8.1.3 Carburetor Heat Control

Note

Rigging the carburetor heat control is only possible, if a new control is installed to the aircraft. To replace, cut off the controle wire at the carburetor heat housing end and pull out the control knob with the attached control wire from it´s cover tube.

a. Insert a new control wire to the carburetor heat conduit.
b. Push the carburetor heat control full in, then pull it out approximately 1/8 inch from panel for cushion.
c. Bend and engage end of control wire at carburetor heat lever, to fix the full open position of the air intake control flap.

Note

Minor adjustments could be done, by loosening the conduit fixing at the carburetor heat housing bracket. Cable ties and a shrink hose is used to reconnect. Refer to the inspection chart in Section 2 for inspection and / or replacement interval for the choke control.

11.8.1.4 Oil Temperature Regulator Control

Note

Before rigging oil temperature regulator control ensure that control cable is in proper condition.

a. Loosen clamp securing the control to the bracket on the flap assembly.
b. Push control full in, then pull it out approximately 1/8 inch from panel for cushion.
c. Shift the control conduit in its clamp so that flap will come to its most downward position and fix the clamp.
d. Adjust friction of the flap at it´s hinge bolt to achieve binding-free operation.

Note

Refer to the inspection chart in Section 2 for inspection and / or replacement interval for the choke control.

11.9 Starting System, Description

The automatically engaged starting system employs an electric starter motor mounted at the rear of the engine housing. A starter solenoid is activated by the ignition key on the instrument panel. When the solenoid is activated, its contacts close and electrical current energizes the starter motor.

11.9.1 Trouble Shooting

Trouble	Probable Cause	Remedy
Starter will not operate.	Defective master switch or circuit.	Install new switch or wires.
	Defective starter switch or switch circuit.	Install new switch or wires.
	Defective starter motor.	Remove, repair or install new starter motor.
Starter motor runs, but does not turn crankshaft.	Starter motor shaft broken.	Install a new starter motor.
Starter motor drags.	Low battery.	Charge or install a new battery.
	Starter switch or relay contacts burned or dirty.	Install serviceable unit.
	Defective starter motor power cable.	Install new cable.
	Loose or dirty connections.	Remove, clean and tighten all terminal connections.
	Defective starter motor.	Repair or install a new starter motor.

11.9.2 Removal and Installation

Required Tools: Screwdriver, 10 mm wrench.
Parts required: Self-locking nut (M6), insulating tape.
Level of Maintenance: Line
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove cowling as required for access.
b. Disconnect starter power cable at starter. Insulate terminal on power cable to prevent accidental shorting.
c. Remove bolts, attaching starter to crankcase.
d. Withdraw starter motor from engine housing.
e. Reverse preceding steps for reinstallation.
f. Torque starter motor retaing bolts to a torque value in accordance to the engine manufacturer´s maintenance manual.

11.10 Exhaust System, Description

The exhaust system consists of a muffler with an exhaust pipe from each cylinder to the muffler. The muffler assemblies are enclosed in shrouds which captures ram air to be heated by the exhaust gases in the muffler. This heated air is used to heat the aircraft cabin. A tail pipe from the muffler routes exhaust gases overboard through the lower cowling. The complete exhaust system is manufactured from stainless steel.

11.10.1 Removal

11.45.1 Required Tools: Screwdriver, gripper, 12 & 13 mm wrench
11.45.2 Parts required: Heat resistant silicone, 8 x self-locking copper nut (M8).
11.45.3 Level of Maintenance: Line
11.45.4 Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Remove engine cowling as required for access.
b. Disconnect flexible hose from heater shell on muffler assembly.
c. Disengage retaining springs from muffler and remove muffler.
d. Remove nuts securing the downpipes to the cylinders.
e. Carefully remove downpipes and and unscrew exhaust probes from each of the downpipes.

11.10.2 Inspection

Inspection of the exhaust system must be very thorough because the cabin heating system uses air heated by the heat exchangers of the exhaust system. Since exhaust system of this type are subject to burning, cracking, and general deterioration from alternate thermal stresses and vibration, inspection is very important and should be accomplished every 100-hour of operation. In addition, an inspection of the exhaust system shall be performed anytime exhaust fumes are detected in the cabin area.

a. Remove engine cowling, and remove muffler and heater shell so that ALL surfaces of the exhaust system can be visually inspected. Especially check areas adjacent to welds. Look for exhaust gas deposits in surrounding areas, indicating that exhaust gas is escaping through a crack or hole.
b. For a more thorough inspection, or if fumes have been detected in the cabin, the following inspection is recommended.
    1. Remove exhaust pipe and mufflers.
    2. Use rubber expansion plugs to seal openings.
    3. Using a manometer or gauge, apply approximately 1-1/2 psi air pressure while the mufflers and each exhaust pipe is submerged in water. All leaks will appear as bubbles and can be readily detected.
c. It is recommended that any exhaust pipe or muffler found defective be replaced with a new part before the next flight.

11.10.3 Installation

Reverse procedure outlined in paragraph 11.10.1 to install exhaust system. Apply high-temperature copper grease to each connection of the exhaust system.

11.11 Extreme Weather Maintenance

11.11.1 Cold Weather

Generally, an engine service should be carried out before the start of the cold season. For selection of coolant and mixing ratio refer to the Rotax operator manual. For selection of oil refer to Section 1.
Start engine with throttle closed and choke activated (open throttle renders starting carb ineffective). As performance of electric starter is greatly reduced when cold, limit

starting to periods not longer than 10 seconds and with a well charged battery (adding a second battery will not improve cold starts).

11.11.2 Hot Weather

Engine mis-starts characterized by weak, intermittent explosions followed by puffs of black smoke from the exhaust are caused by flooding. This situation is more apt to develop in hot weather or when the engine is hot. If it occurs, repeat the starting routine with the throttle full OPEN. As the engine fires, decrease the throttle setting to desired idling speed.

Caution

Never operate the starting motor more that 10 seconds at a time. Allow starter motor to cool between cranking periods to avoid shortening the life of the starter.

11.11.3 Dusty Conditions

Dust inducted into the intake system of the engine is probably the greatest single cause of early engine wear. When operating under high dust conditions, the induction air filter should be serviced daily as outlined in paragraph 2.2.4.

11.11.4 Seacost and Humid Areas

In salt water areas, special care should be taken to keep the engine and accessories clean to prevent oxidation. In humid areas, fuel and oil should be checked frequently and drained of condensed moisture.

Section 12

Fuel System

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12.1 Fuel System Description

The fuel flows from the tank via a coarse filter, a fine filter through the electric fuel pump to the fuel shut-off valve. From there it is routed via the mechanical fuel pump to the fuel distributor and passes on to both carburetors. Via a return line, surplus fuel flows back to the fuel tank. An additional line is routed from the distributor block to the fuel pressure gauge inside the cabin. The return line provides a compensating jet to ensure required fuel pressure, which is fitted at the connection return line-to-distributor.
An advanced layout may be installed, containing a fuel flow sensor and a fuel pressure sensor to provide information for a mulitfunctional display. Refer to figure 12-1 as a general overview.

12.1.1 Precautions

Note

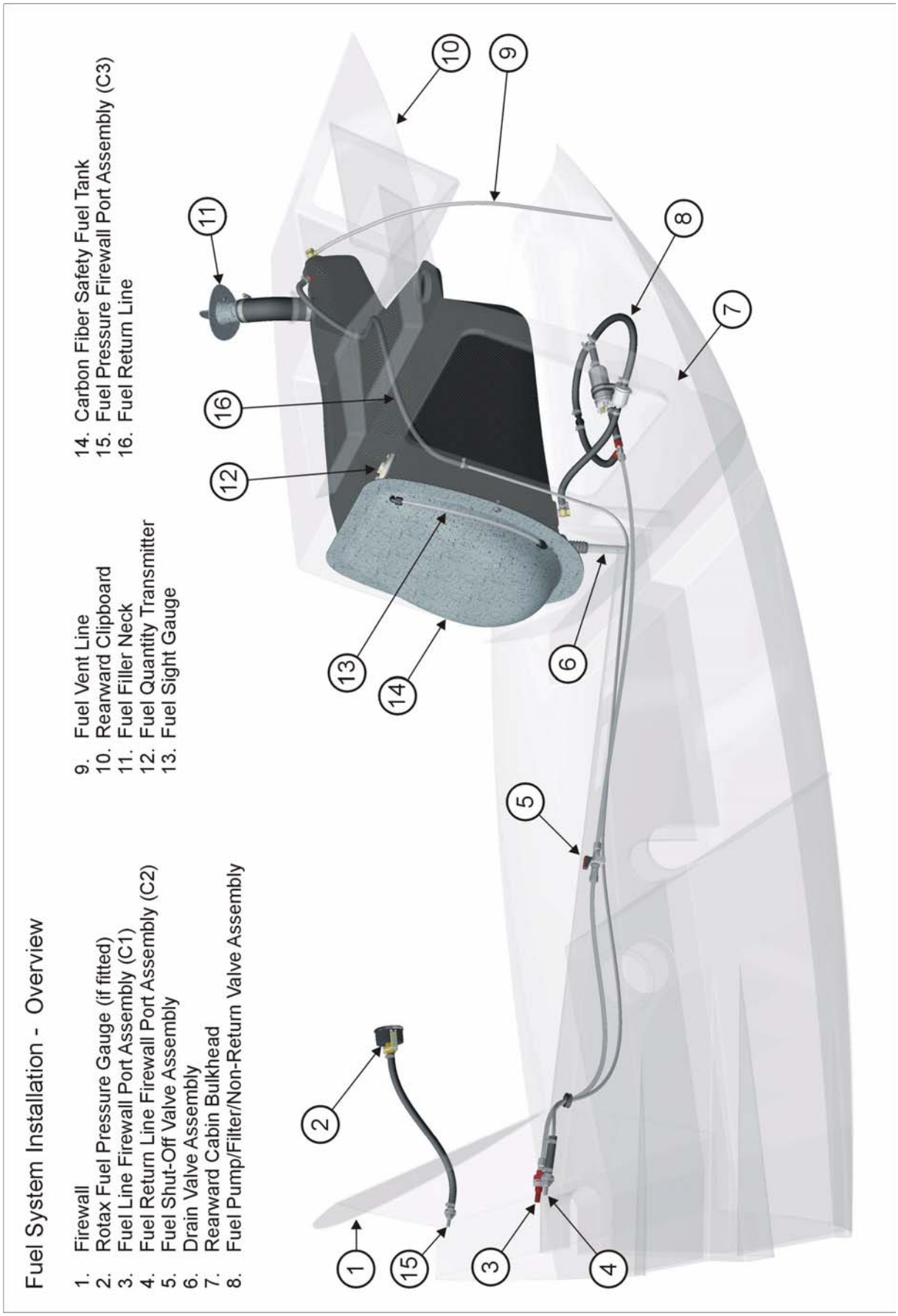
There are certain general precautions and rules concerning the fuel system which should be observed when performing the operations and procedures in this section. These are as follows:

1. During all fueling, defueling, tank purging, and tank repairing or disassembly, ground the aircraft to a suitable ground stake. Use the engine or negative battery terminal grounding.
2. Residual fuel draining from lines and hose constitutes a fire hazard. Use caution to prevent the accumulation of fuel when lines or hoses are disconnected.
3. Cap open lines and cover connections to prevent thread damage and the entrance of foreign matter.

12.1.2 Trouble Shooting

Trouble	Probable Cause	Remedy
No fuel to Carburetor.	Fuel shut-off valve not turned on.	Turn valve on.
	Fuel tanks empty.	Service with proper grade and amount of fuel.
	Fuel line disconnected or broken.	Connect or repair fuel lines.
	Fuel tank outlet screen plugged.	Drain fuel, remove outlet screen and clean thoroughly.
	Fuel filter plugged.	Replace fuel filter.
	Defective shut-off valve.	Replace shut-off valve.
	Fuel line plugged.	Clean out or replace fuel line.
	Defective mechanical fuel pump.	Replace fuel pump.
Fuel starvation after starting.	Partial fuel flow from the preceding causes.	Use the preceding remedies.
	Plugged fuel vent.	See paragraph 12.1.7.1.
	Water in fuel.	Drain fuel tank sumps, fuel lines and carburetors.
No fuel quantity indication.	Fuel tanks empty.	Service with proper grade and amount of fuel.
	Blown fuse / circuit breaker.	Replace fuse / reset circuit breaker.
	Loose connection or open circuit.	Tighten connections, repair or replace wiring. Refer to Section 20.
	Defective fuel quantity indicator or transmitter.	Refer to Section 15.
Fuel overflow from carburetor.	Binding float valve or dirt in floater chamber.	Clean and repair carburetor.
	Plugged fuel distributor or fuel return line jet.	Clean fuel distributor thoroughly.
Pressurized fuel tank.	Plugged fuel vent.	See paragraph 12.1.7.1.

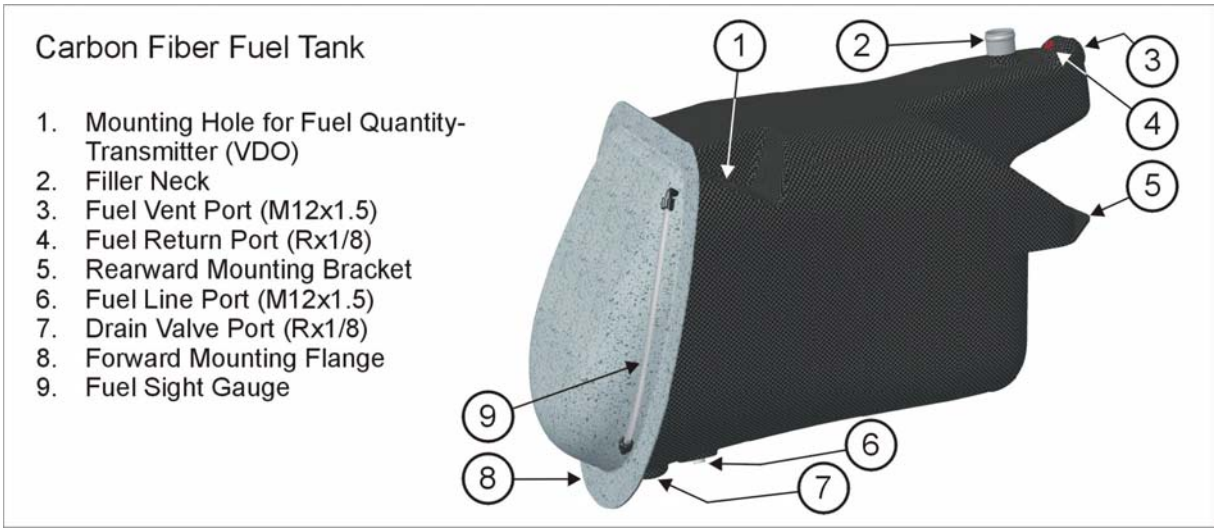
Figure 12-1.


Fuel System Installation - Overview
1. Firewall
2. Rotax Fuel Pressure Gauge (if fitted)
3. Fuel Line Firewall Port Assembly (C1)
4. Fuel Return Line Firewall Port Assembly (C2)
5. Fuel Shut-Off Valve Assembly
6. Drain Valve Assembly
7. Rearward Cabin Bulkhead
8. Fuel Pump/Filter/Non-Return Valve Assembly
9. Fuel Vent Line
10. Rearward Clipboard
11. Fuel Filler Neck
12. Fuel Quantity Transmitter
13. Fuel Sight Gauge
14. Carbon Fiber Safety Fuel Tank
15. Fuel Pressure Firewall Port Assembly (C3)
16. Fuel Return Line

12.1.3 **Fuel Tank Description** (refer to figure 12-2)

A rigid carbon fiber tank is installed behind the right side of the cabin bulkhead inside the fuselage. A fuel tank sump drain valve is provided for draining trapped water and sediment.

Figure 12-2.



12.1.3.1 **Removal and Installation** (refer to figure 12-3)

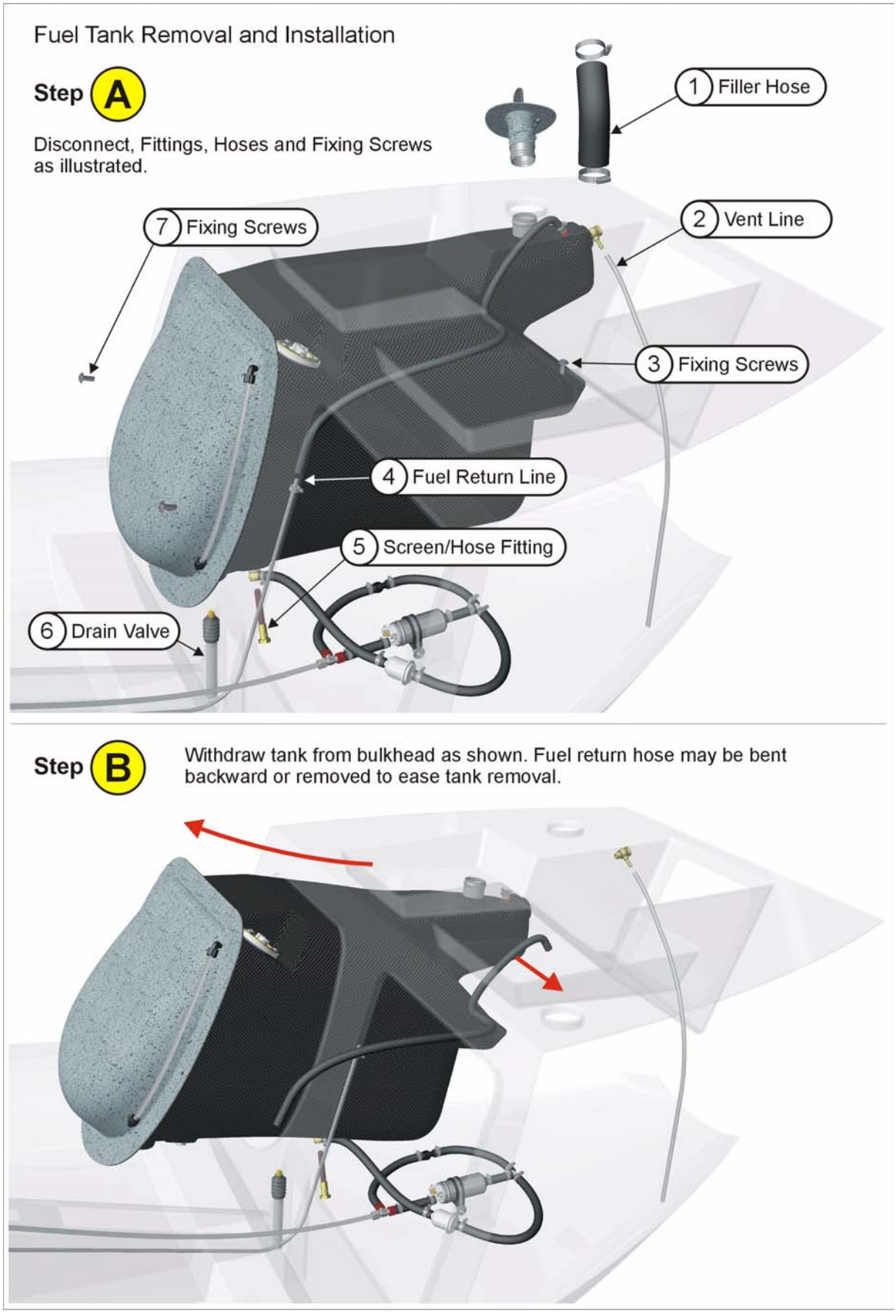
Required Tools: 6 mm allen wrench,10/13/17 mm wrench, screwdriver, phillips head screwdriver, pliers.
Parts required: Fuel resistant sealant fluid, safetying wire (0.8 mm)
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Push up sump drain valve and rotate 90° to lock, to drain fuel completely from the tank. (Observe precautions outlined in paragraph 12.1.1)
b. Remove seats and baggage compartment as outlined in Section 3.
c. Disconnect electrical leads and ground strap from fuel quantity transmitter.
d. Disconnect fuel vent from tank.
e. Disconnect fuel filler hose from fuel filler neck at the fuselage.
f. Remove plastic adapter tube and rubber sealing from drain valve and unscrew drain valve from the bottom of the tank.
g. Unscrew and remove fuel line and fuel hose fitting/screen from the bottom of the fuel tank.
h. Remove all tank retaining screws from the tank and withdraw the tank to the front.
i. To install tank, reverse the preceding steps. Be sure grounding is secure in accordance with paragraph 12.1.1.

Note

Apply appropriate liquid sealant to the threads of drain valve and fuel line connector at reassembling.

Figure 12-3.


Fuel Tank Removal and Installation
Step A
Disconnect, Fittings, Hoses and Fixing Screws as illustrated.
1 Filler Hose
2 Vent Line
3 Fixing Screws
4 Fuel Return Line
5 Screen/Hose Fitting
6 Drain Valve
7 Fixing Screws
Step B
Withdraw tank from bulkhead as shown. Fuel return hose may be bent backward or removed to ease tank removal.

12.1.4 Fuel Quantity Transmitter

A fuel quantity transmitter is installed in the top of the fuel tank. A complete description, along with procedures for calibration and troubleshooting are contained in Section 15.

12.1.4.1 Removal and Installation (refer to figure 12-4 and 12-5)

Required Tools: Screwdriver
Parts required: Cable ties
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

To remove the fuel quantity transmitter, the fuel tank has to be removed first, refer to paragrpah 12.1.3.1 for detailed information. Remove screws attaching transmitter and carefully work transmitter from tank. Do not bend float arm!
Install transmitter by reversing preceding steps. Service fuel tank and check for leaks and correct quantity indication.

Figure 12-4.

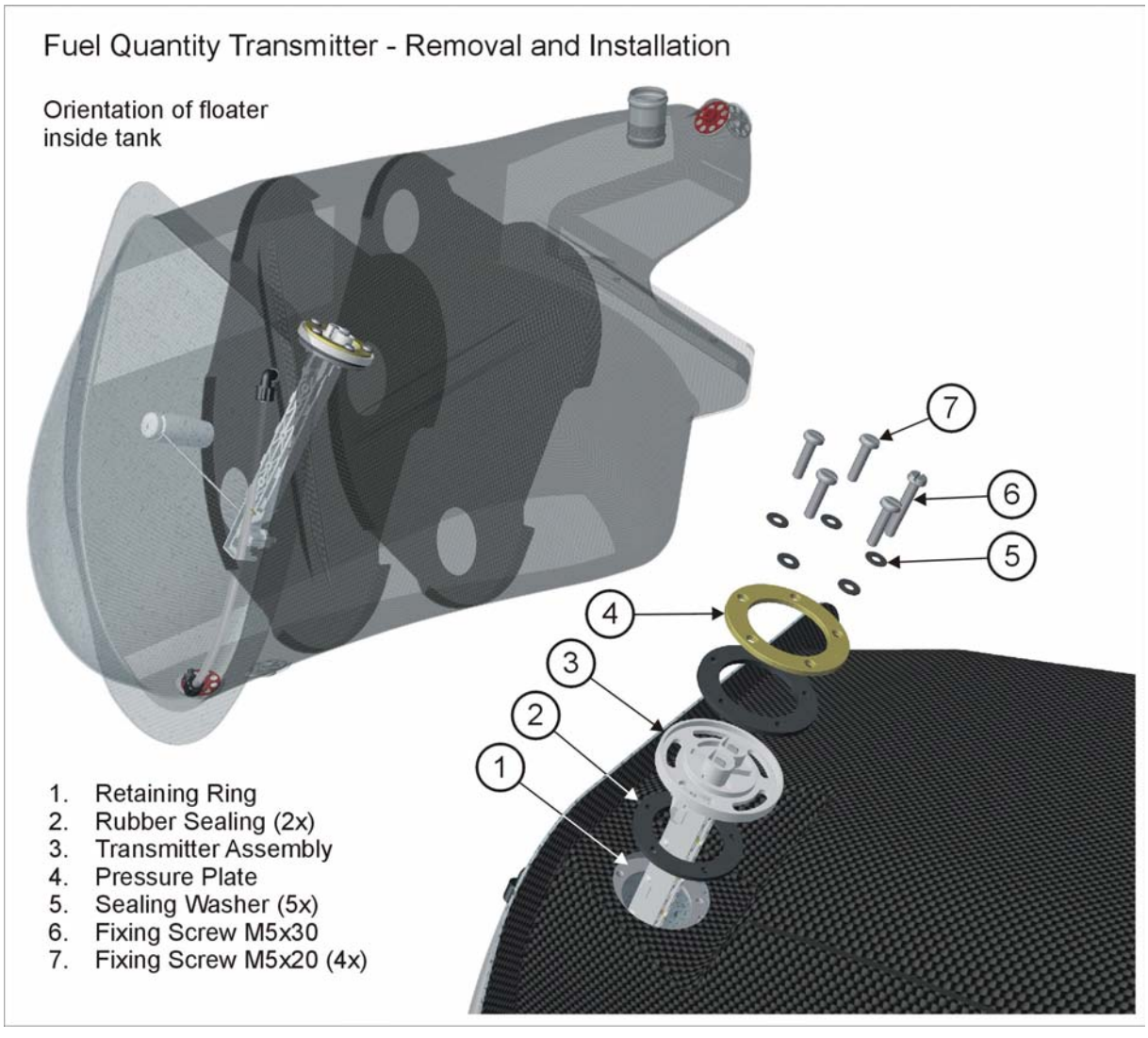
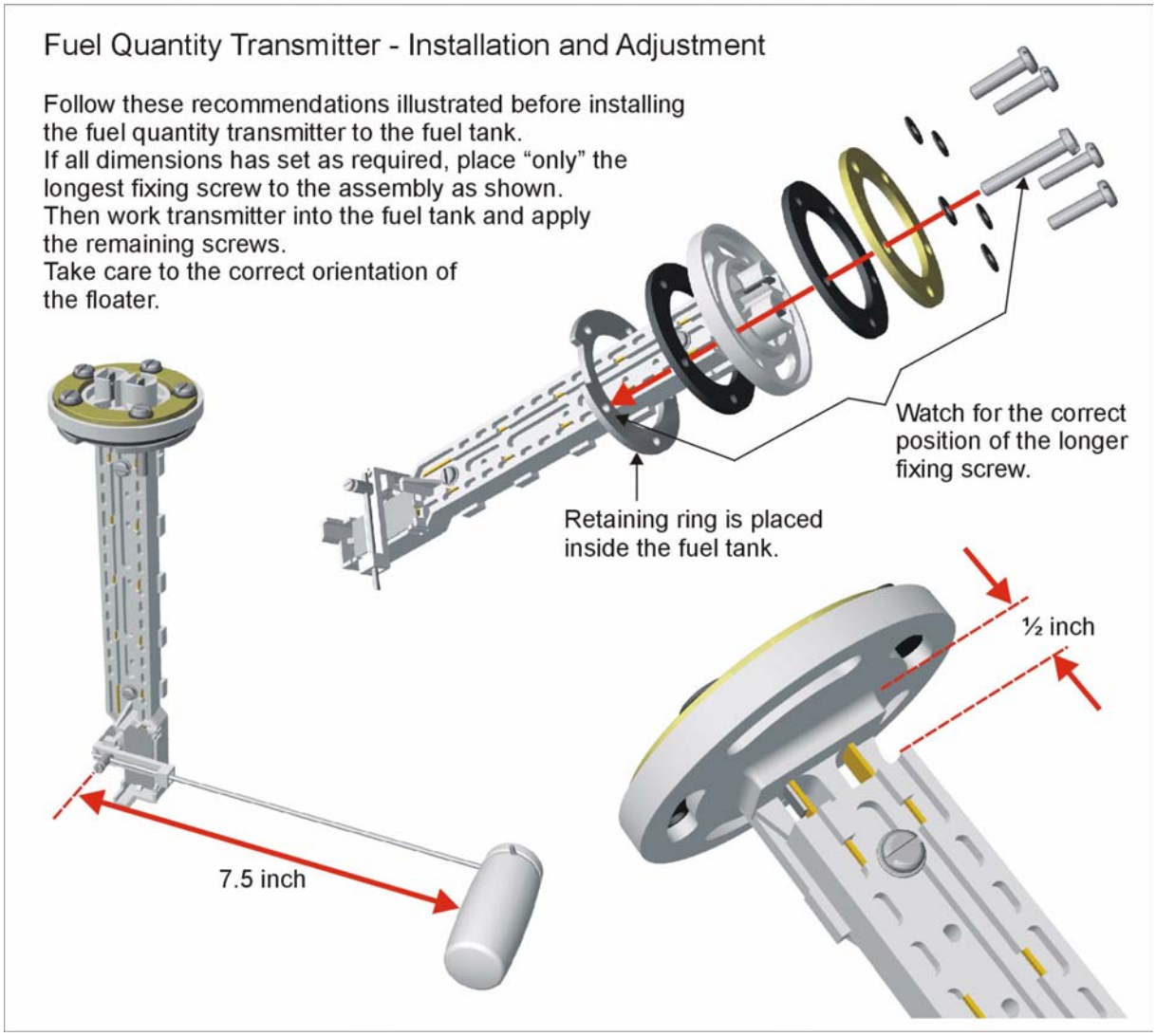


Figure 12-5.



12.1.5 Electrical Fuel Pump

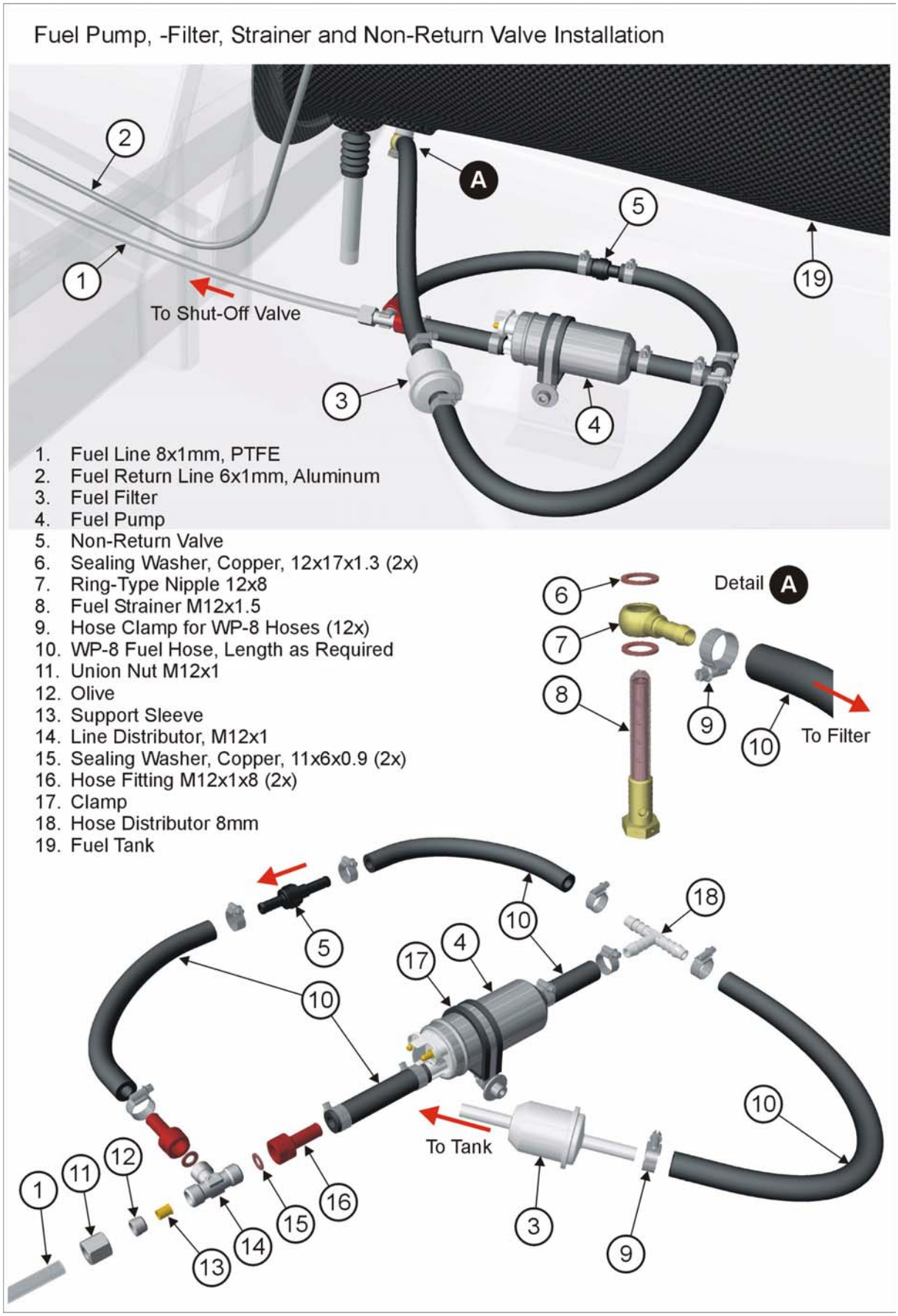
An electrical fuel pump is installed to the fuel line, located adjacent to the fuel tank. Power to the pump is provided by a switch at the switch panel.

12.1.5.1 Removal and Installation (refer to figure 12-6)

Required Tools: Phillips head screwdriver, 6mm allen wrench, 10 mm wrench.
Parts required: Hose clamps
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Plug fuel hoses connected to the pump by the use of two hose clamps.
b. Disconnect fuel hoses from the pump.
c. Disconnect electrical leads and ground strap from fuel pump.
d. Loosen the retaining clamp and remove fuel pump.
e. To install fuel pump, reverse the preceding steps. Be sure grounding is secure in accordance with paragraph 12.1.1.

Figure 12-6.


Fuel Pump, -Filter, Strainer and Non-Return Valve Installation
To Shut-Off Valve
1. Fuel Line 8x1mm, PTFE
2. Fuel Return Line 6x1mm, Aluminum
3. Fuel Filter
4. Fuel Pump
5. Non-Return Valve
6. Sealing Washer, Copper, 12x17x1.3 (2x)
7. Ring-Type Nipple 12x8
8. Fuel Strainer M12x1.5
9. Hose Clamp for WP-8 Hoses (12x)
10. WP-8 Fuel Hose, Length as Required
11. Union Nut M12x1
12. Olive
13. Support Sleeve
14. Line Distributor, M12x1
15. Sealing Washer, Copper, 11x6x0.9 (2x)
16. Hose Fitting M12x1x8 (2x)
17. Clamp
18. Hose Distributor 8mm
19. Fuel Tank
Detail A
To Filter
To Tank

12.1.6 Fuel Filter

An additional screen type fuel filter is attached to the fuel hose at the inlet of the electrical fuel pump. Refer to Section 2 for replacement intervals of the fuel filter.

12.1.6.1 Removal and Installation (refer to figure 12-6)

Required Tools: Phillips head screwdriver, clamp tongs.
Parts required: Hose clamps, fuel filter.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Plug fuel hoses connected to the filter by the use of two hose clamps.
b. Disconnect fuel hoses from the filter.
c. Replace filter.
d. To install filter, reverse the preceding steps. Be sure grounding is secure in accordance with paragraph 12.1.1.

12.1.7 Fuel Vent and Fuel Return Line

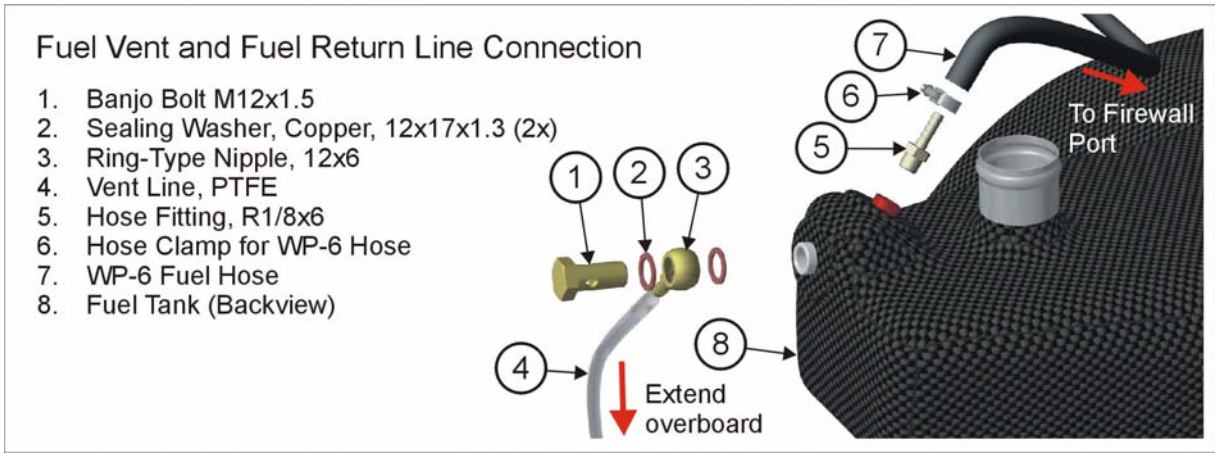
A vent line is installed to the fuel tank and extends overboard down through the lower fuselage skin. A fuel return line provides a steady fuel flow to avoid vaporisation.

12.1.7.1 Checking

Dirt may cause the fuel vent to become plugged, with possible fuel starvation of the engine or collapse of the fuel tank. The following procedure may be used to check the vent line.

a. Attach a rubber tube to the end of vent line beneath the fuselage.
b. Blow into tube to slightly pressurize the tank. If air can be blown into tank, vent line is open.
c. After tank is slightly pressurized, insert end of rubber tube into a container of
d. water and watch for a continuous stream of bubbles, which indicates the vent line is clear from obstucles..

Figure 12-7.



12.1.8 Fuel Shut-Off Valve

The fuel shut-off valve is a two-position ON-OFF valve, located in the center section of the cabin in front of the brake lever. It is recommended that the valve be replaced and not repaired.

12.1.8.1 Removal and Installation (refer to figure 12-8)

Required Tools: 10-13 mm wrench, edge cutter, phillips head screwdriver.
Parts required: Fuel line fittings, cable ties.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

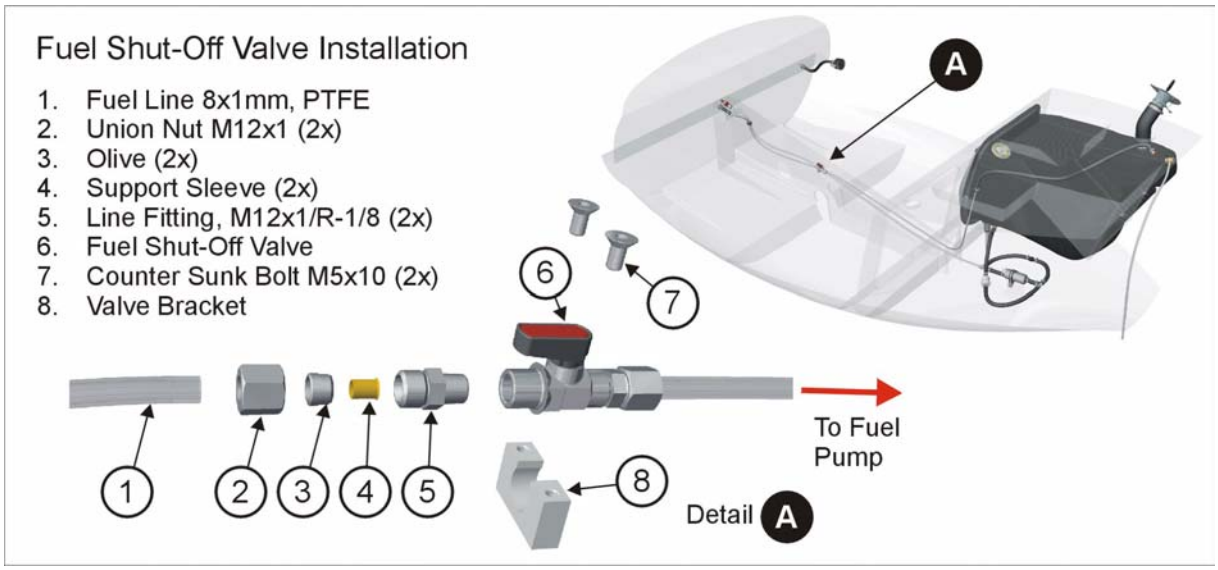
a. Completely drain all fuel from tank and fuel lines (Observe the precautions in paragraph 12.1.1).
b. Remove seats and baggage compartment (refer to Section 3)
c. Remove shut-off valve handle, parking brake valve handle and brake reservoir filler cap. Take care that no brake fluid will get contact with painted surfaces.
d. Disconnect fuel line at the firewall and at the rear end hose connection.

Caution

For reconnection of fuel line to firewall a new fuel line fitting has to be used, to avoid leakage.

e. Remove access flaps and center cover panel as far as the forward (located beneath the cockpit) side covers of the center tunnel.
f. Remove screws attaching shut-off valve.
g. Remove securing cable ties as required from the fuel line located inside the center tunnel.
h. Withdraw shut-off valve assembly from the center tunnel.
i. Disconnect fuel lines from shut-off valve.
j. Reverse the preceding steps for installation.

Figure 12-8.



12.1.9 Fuel Drain Valve

A fuel drain valve is installed to the bottom of the fuel tank. Access is possible from beneath the fuselage adjacent to the main gear. To drain fuel, push up the white plastic tube. If draining of the whole system is required, push up the plastic tube and rotate 90° to lock the open position of the drain valve.

12.1.9.1 Removal and Installation (refer to figure 12-9)

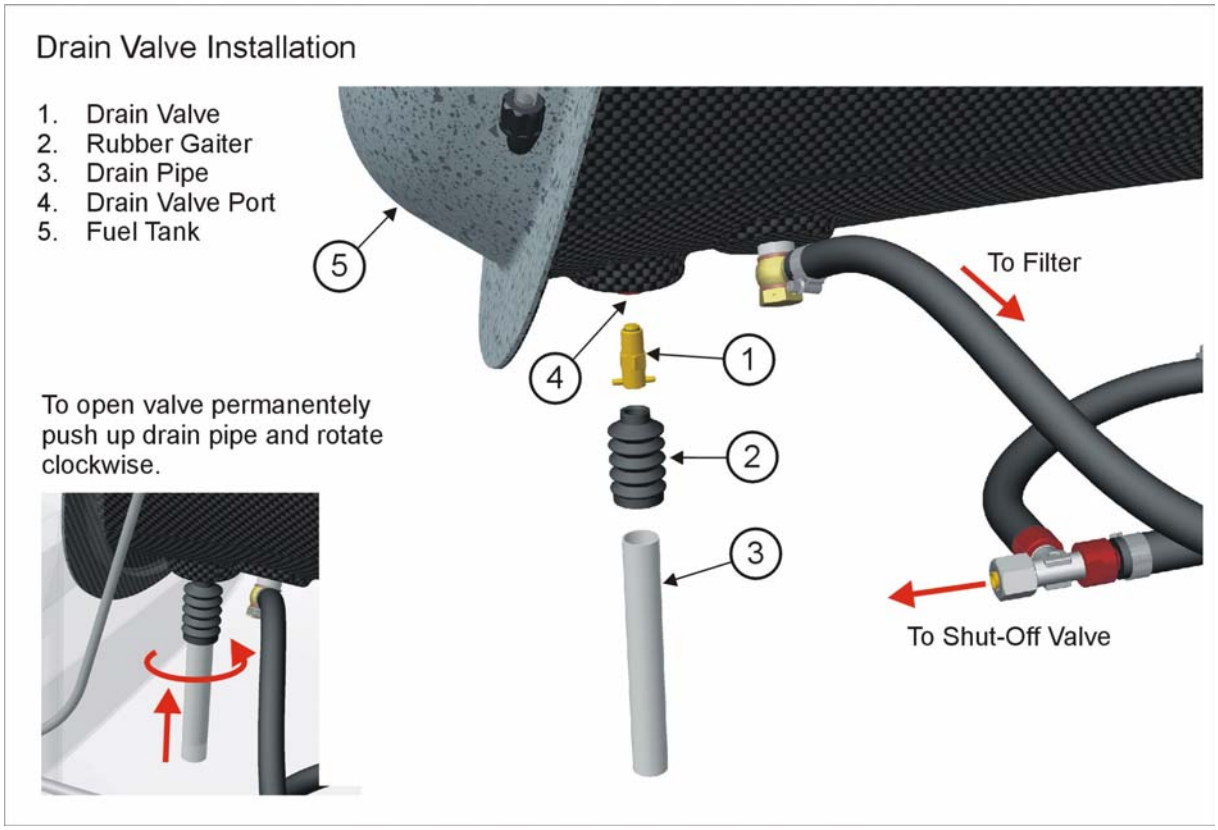
Required Tools: 10 & 11 mm wrench, phillips head screwdriver.
Parts required: Fuel resistant sealant fluid.
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

a. Push up sump drain valve and rotate 90° to lock, to drain fuel completely from the tank (Observe precautions outlined in paragraph 12.1.1).
b. Remove seats and baggage compartment as outlined in Section 3.
c. Remove plastic adapter tube and rubber sealing from drain valve and unscrew drain valve from the bottom of the tank.
d. Reverse the preceding steps for installation. Be sure grounding is secure in accordance with paragraph 12.1.1.

Note

Apply appropriate liquid sealant to the threads of drain valve at reassembling.

Figure 12-9.



12.1.10 Fuel Distributor System, Description (refer to figure 12-10 and 12-11.)

A fuel distributor is installed to provide fuel for both carburetors. The fuel distributor is located on top of the engine. Pressurized fuel from the fuel pump is routed to both carburetors while surplus of fuel flows back to the fuel tank through a return hose. A 0.02 inch compensating jet is built into each rearward side-ports of the distributor to ensure the required fuel pressure. A fuel pressure gauge may be connected to check fuel pressure at the opposite side of the return hose connection.

12.1.10.1 Removal and Installation

Required Tools: 3 & 5 mm allen wrench, 12-14 mm wrench, wire-cutting pliers, phillips head screwdriver.
Parts required: Lock screw, copper sealings, hose clamps.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Drain fuel from fuel lines (Observe precautions outlined in paragraph 12.1.1).
b. Disconnect hoses from fuel distributor block.
c. Remove clamp securing distributor block to engine.
d. Unscrew hose fittings from distributor.

Caution

Remember position of return hose fitting for reinstallation.

e. Reverse preceding steps for reinstallation (Observe precautions outlined in paragraph 12.1.1).

Caution

Always use new copper sealing for reinstallation of hose fittings and new hose clamps for hose connections.

12.1.10.2 Inspection

Inspect fuel distributor for clean condition, especially check jet drillings for return hose and fuel pressure gauge connection to be unplugged. Clean thoroughly before reassembling with hose fittings. Check also the jet provided in the return hose fitting for clean and unplugged condition.

Figure 12-10.

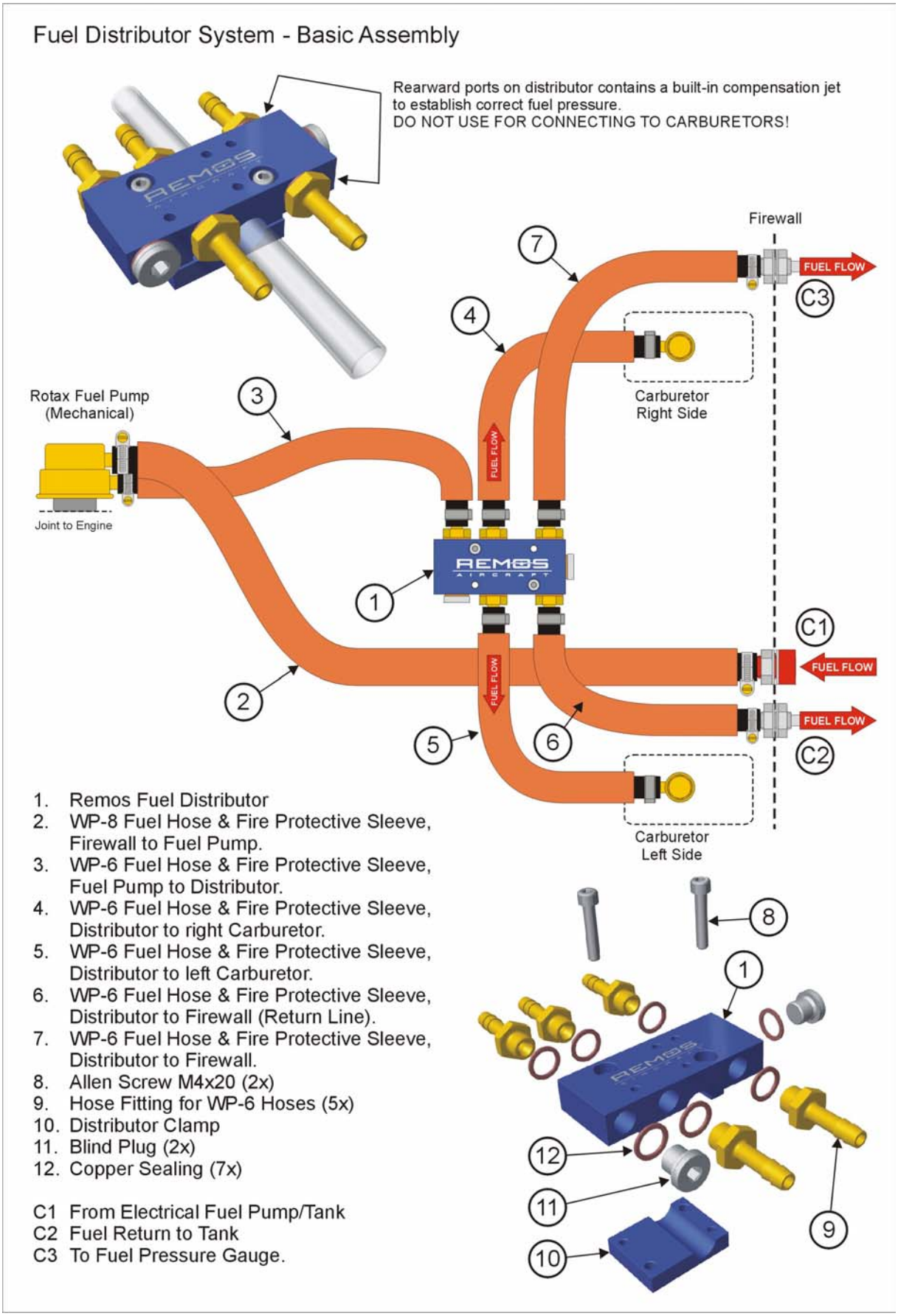
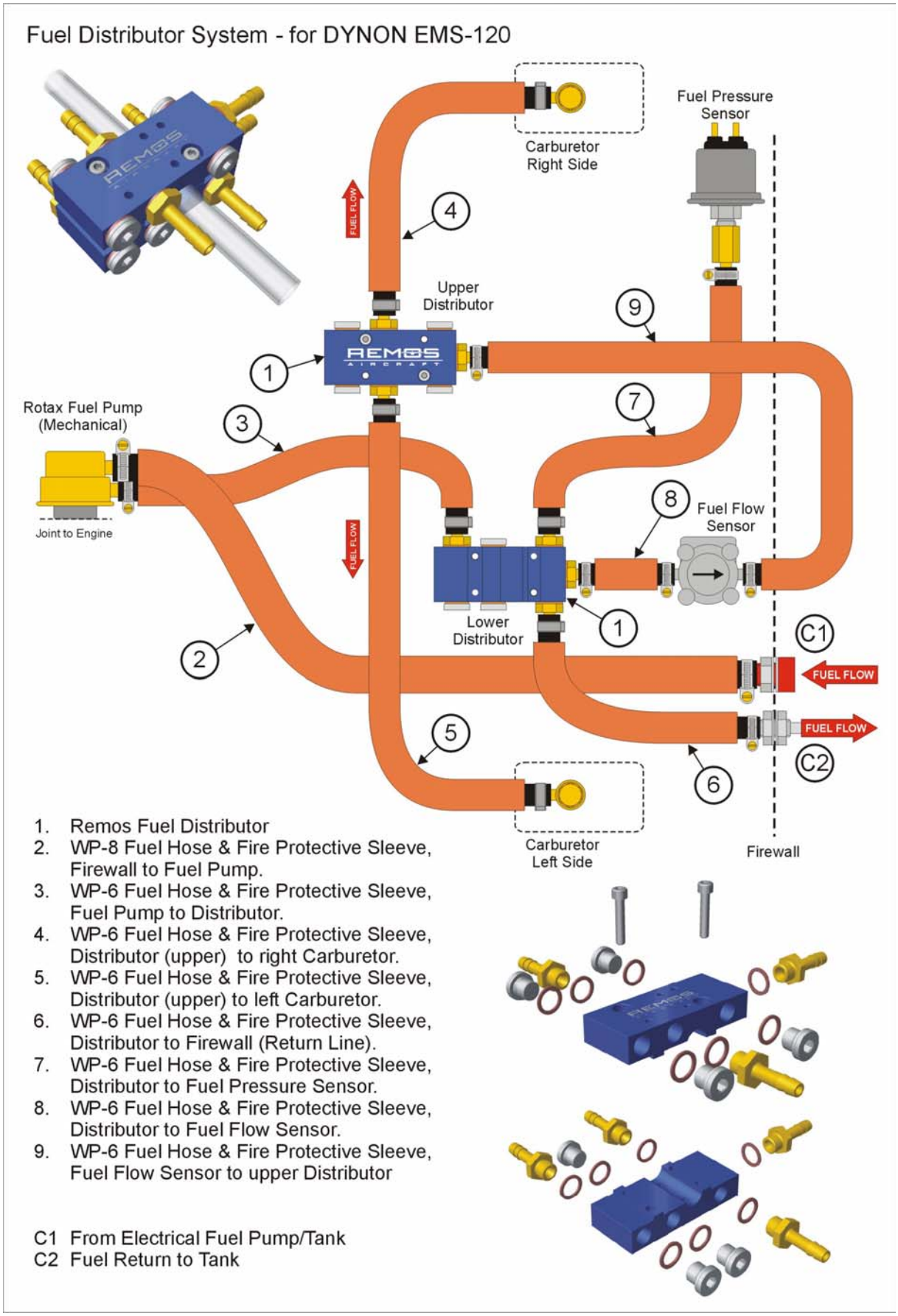

Fuel Distributor System - Basic Assembly
Rearward ports on distributor contains a built-in compensation jet to establish correct fuel pressure.
DO NOT USE FOR CONNECTING TO CARBURETORS!
Firewall
FUEL FLOW
C3
C1
C2
Rotax Fuel Pump (Mechanical)
Joint to Engine
Carburetor Right Side
Carburetor Left Side
REMOS
1. Remos Fuel Distributor
2. WP-8 Fuel Hose & Fire Protective Sleeve, Firewall to Fuel Pump.
3. WP-6 Fuel Hose & Fire Protective Sleeve, Fuel Pump to Distributor.
4. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to right Carburetor.
5. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to left Carburetor.
6. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to Firewall (Return Line).
7. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to Firewall.
8. Allen Screw M4x20 (2x)
9. Hose Fitting for WP-6 Hoses (5x)
10. Distributor Clamp
11. Blind Plug (2x)
12. Copper Sealing (7x)
C1 From Electrical Fuel Pump/Tank
C2 Fuel Return to Tank
C3 To Fuel Pressure Gauge.

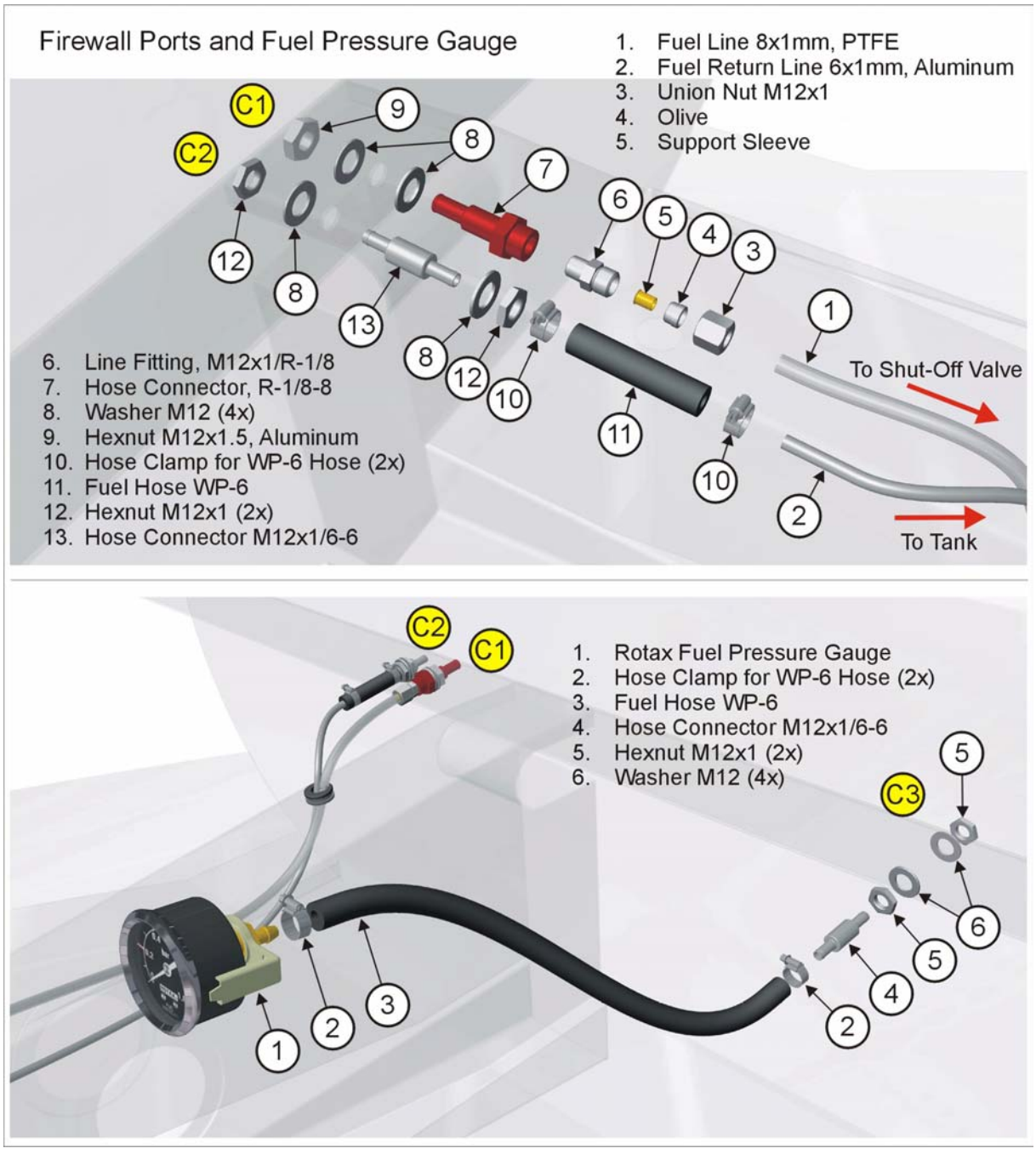
Figure 12-11.


Fuel Distributor System - for DYNON EMS-120
Carburetor Right Side
Fuel Pressure Sensor
Upper Distributor
Rotax Fuel Pump (Mechanical)
Joint to Engine
Fuel Flow Sensor
Lower Distributor
FUEL FLOW
C1
C2
Carburetor Left Side
Firewall
1. Remos Fuel Distributor
2. WP-8 Fuel Hose & Fire Protective Sleeve, Firewall to Fuel Pump.
3. WP-6 Fuel Hose & Fire Protective Sleeve, Fuel Pump to Distributor.
4. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor (upper) to right Carburetor.
5. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor (upper) to left Carburetor.
6. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to Firewall (Return Line).
7. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to Fuel Pressure Sensor.
8. WP-6 Fuel Hose & Fire Protective Sleeve, Distributor to Fuel Flow Sensor.
9. WP-6 Fuel Hose & Fire Protective Sleeve, Fuel Flow Sensor to upper Distributor
C1 From Electrical Fuel Pump/Tank
C2 Fuel Return to Tank

12.1.11 **Firewall Ports and Fuel Pressure Gauge** (refer to figure 12-12.)

The fuel distributor system is connected to fuel lines routed inside the cabin using the ports C1 and C2 (see paragraph 12.1.10). With the basic installation of the aircraft a fuel pressure gauge is provided, connected to port C3.

Figure 12-12.



Section 13

Propeller

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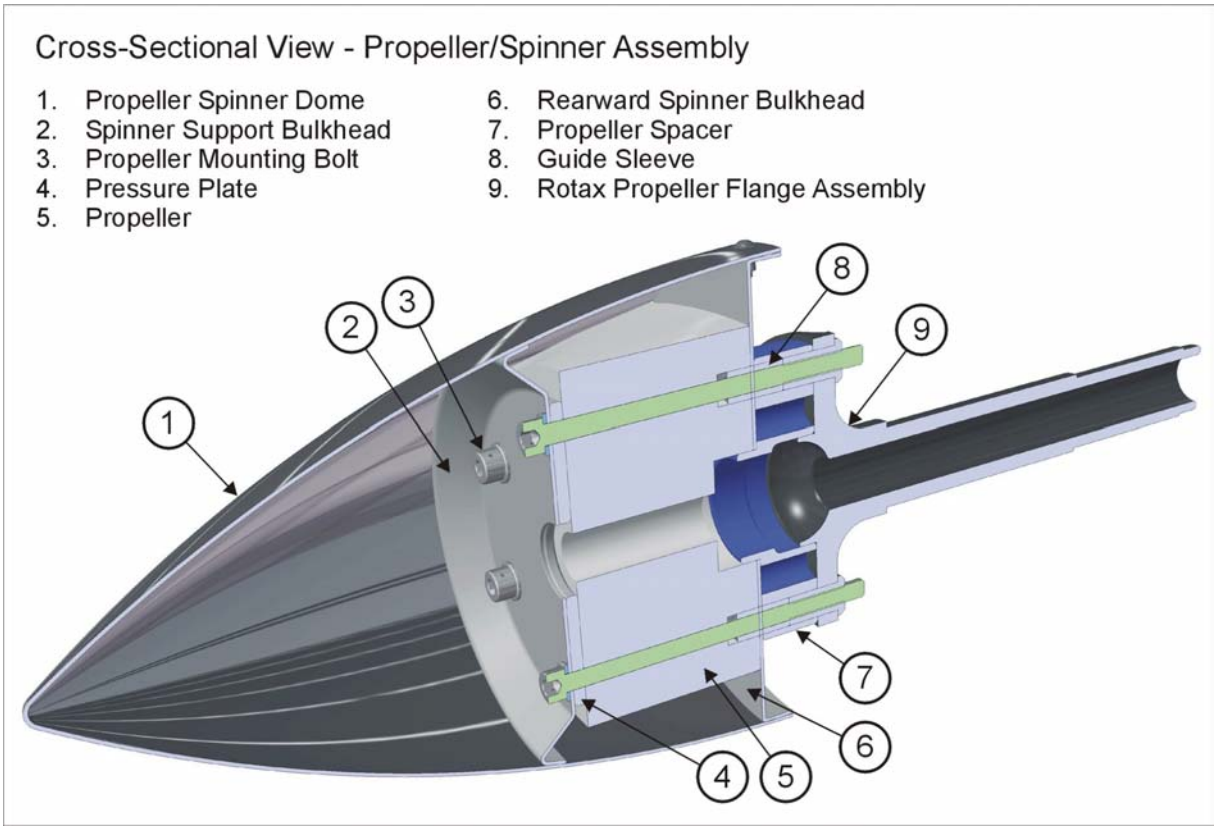
13.1 Propeller Fixed Pitch

A composite-wood, fixed-pitch propeller, equipped with either an aluminum or a plastic spinner, is used on the REMOS G3 aircraft.

Figure 13-1.



13.1.1 Repair

Repair of a wood propeller first involves evaluating the damage and determining whether the repair is to be a major or minor one. In general all damages except

defective paint or small dents has to be rated as major repair. Refer also to propeller manufacturers manual for further instruction.
We strongly recommend to replace propeller if any cracks, deteriorations of the skin or extended dents are determind.

13.1.2 Removal (refer to figure 13-2.)

Required Tools: 3 & 6 mm allen wrench, 7 mm wrench, torque wrench.
Parts required: Safetying wire (1.0 mm), silicone compound,
8 x self-locking nut (M4).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Warning

Be sure master switch is in OFF position and key removed from starter switch before turning propeller.

a. Remove spinner by unscrewing its retaining screws.

Note

The spinner (**1**) is attached to the rear bulkhead with a forward supporting bulkhead. These bulkheads are secured by the propeller mounting bolts (**2**) and will be free by removal of the bolts as the propeller is removed. A pressure plate (**5**) is used between the forward support bulkhead and the propeller.

b. Remove safety wire from mounting bolt heads (**2**).
c. Remove bolts and pull propeller forward to remove. Use care to avoid damage to bulkheads as propeller is removed.

13.1.3 Installation (refer to figure 13-2.)

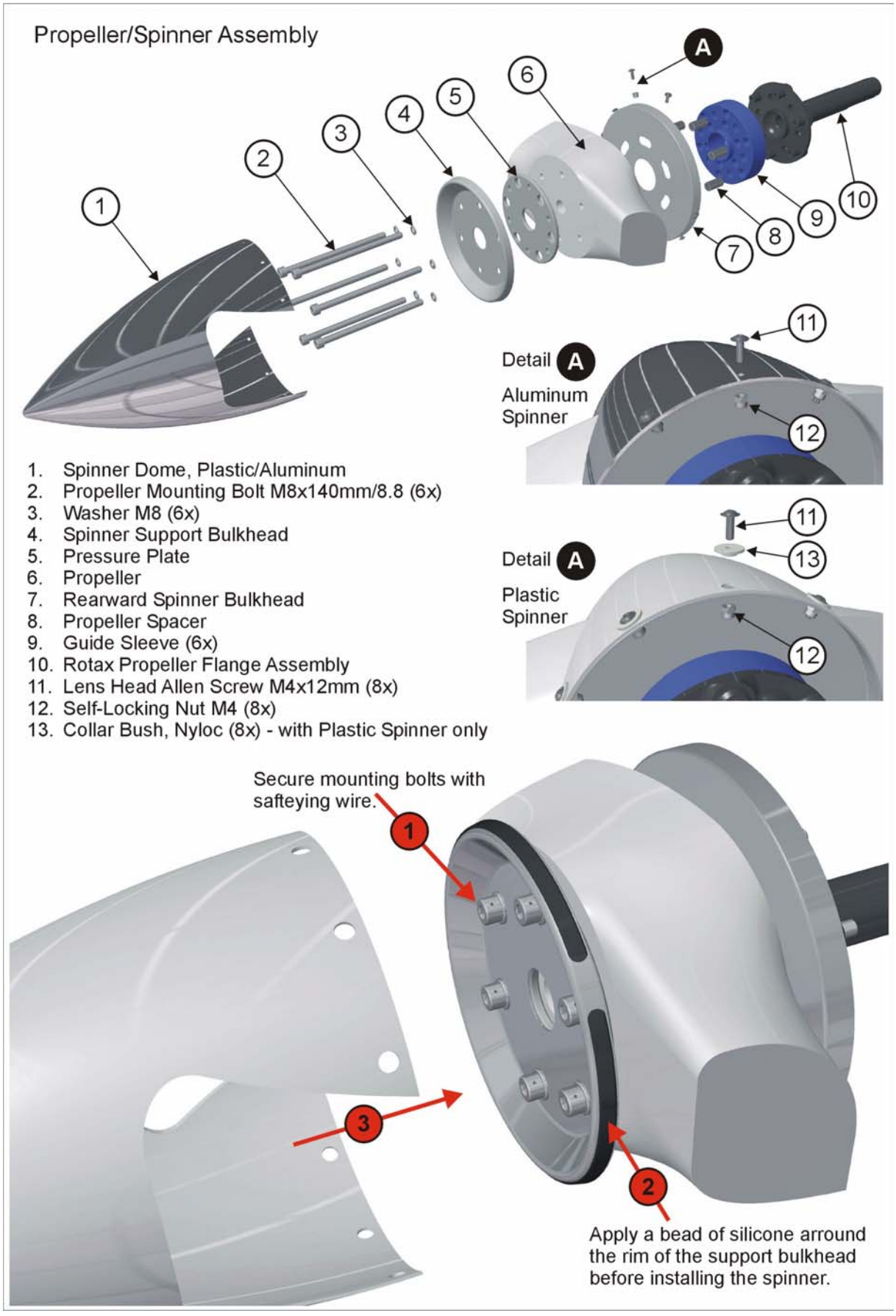
Clean mating surfaces of propeller, gearbox flange and spinner bulkheads.

Warning

Be sure master switch is in OFF position and key removed from starter switch before turning propeller.

a. Install propeller and spinner bulkheads. The spinner bulkheads must be positioned so propeller blades will emerge from the spinner with ample clearance.
b. Tighten the mounting bolts (**2**) evenly to a torque value of 20 Nm/176 in.lb.
c. Safety wire propeller mounting bolts (**2**).
d. Apply a bead of silicone compound on the rim of the support bulkhead (**4**).
e. Install spinner.
   When installing the plastic (ABS) type spinner, add a collar bush (**13**) to each of the fixing screws, to prevent the spinner from cracking around it´s fixing holes. Do not overtighten the fixing screws.

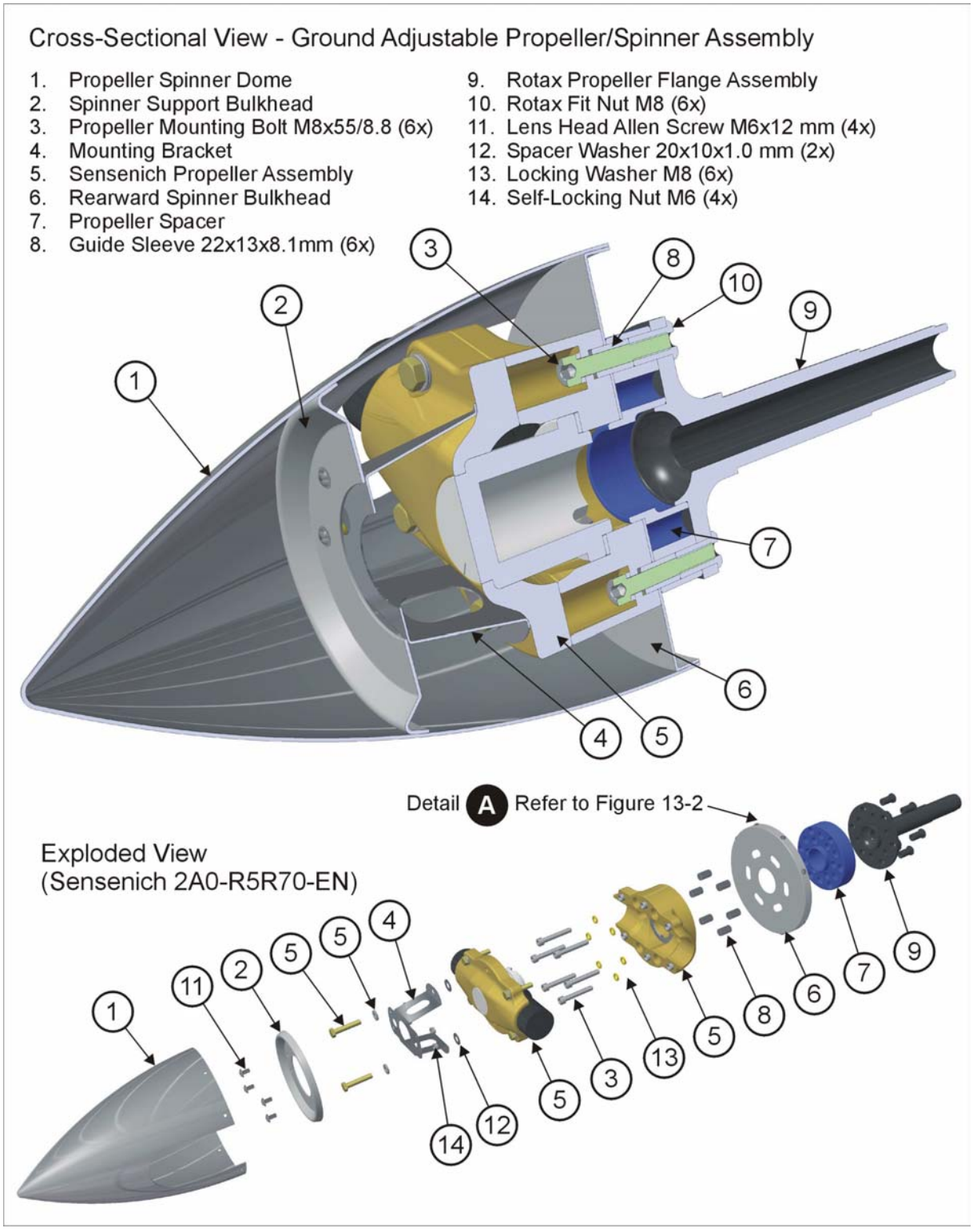
Figure 13-2.


Propeller/Spinner Assembly
A
1
2
3
4
5
6
7
8
9
10
11
12
13
Detail A
Aluminum Spinner
Detail A
Plastic Spinner
1. Spinner Dome, Plastic/Aluminum
2. Propeller Mounting Bolt M8x140mm/8.8 (6x)
3. Washer M8 (6x)
4. Spinner Support Bulkhead
5. Pressure Plate
6. Propeller
7. Rearward Spinner Bulkhead
8. Propeller Spacer
9. Guide Sleeve (6x)
10. Rotax Propeller Flange Assembly
11. Lens Head Allen Screw M4x12mm (8x)
12. Self-Locking Nut M4 (8x)
13. Collar Bush, Nyloc (8x) - with Plastic Spinner only
Secure mounting bolts with safteying wire.
1
3
2
Apply a bead of silicone arround the rim of the support bulkhead before installing the spinner.

13.2 Propeller Ground Adjustable (Sensenich 2A0-R5R70-EN)

A carbon fiber, ground adjustable Sensenich propeller, equipped with either an aluminum or a plastic spinner, is used on the REMOS G3 aircraft as option. It is mandatory to maintain the servicing intervalls given in the propeller manufacturers manual. Figure 13-3 give a general overview of the propeller installation.

Figure 13-3.



13.2.1 Repair

Repair of a carbon fiber propeller first involves evaluating the damage and determining whether the repair is to be a major or minor one. In general all damages except defective paint or small dents has to be rated as major repair. Refer also to propeller manufacturers manual for further instruction.
We strongly recommend to replace propeller blades if any cracks, deteriorations of the skin or extended dents are determind.

13.2.2 Removal (refer to figure 13-3.)

Required Tools: 3 & 6 mm allen wrench, 7/13 mm wrench.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Warning

Be sure master switch is in OFF position and key removed from starter switch before turning propeller.

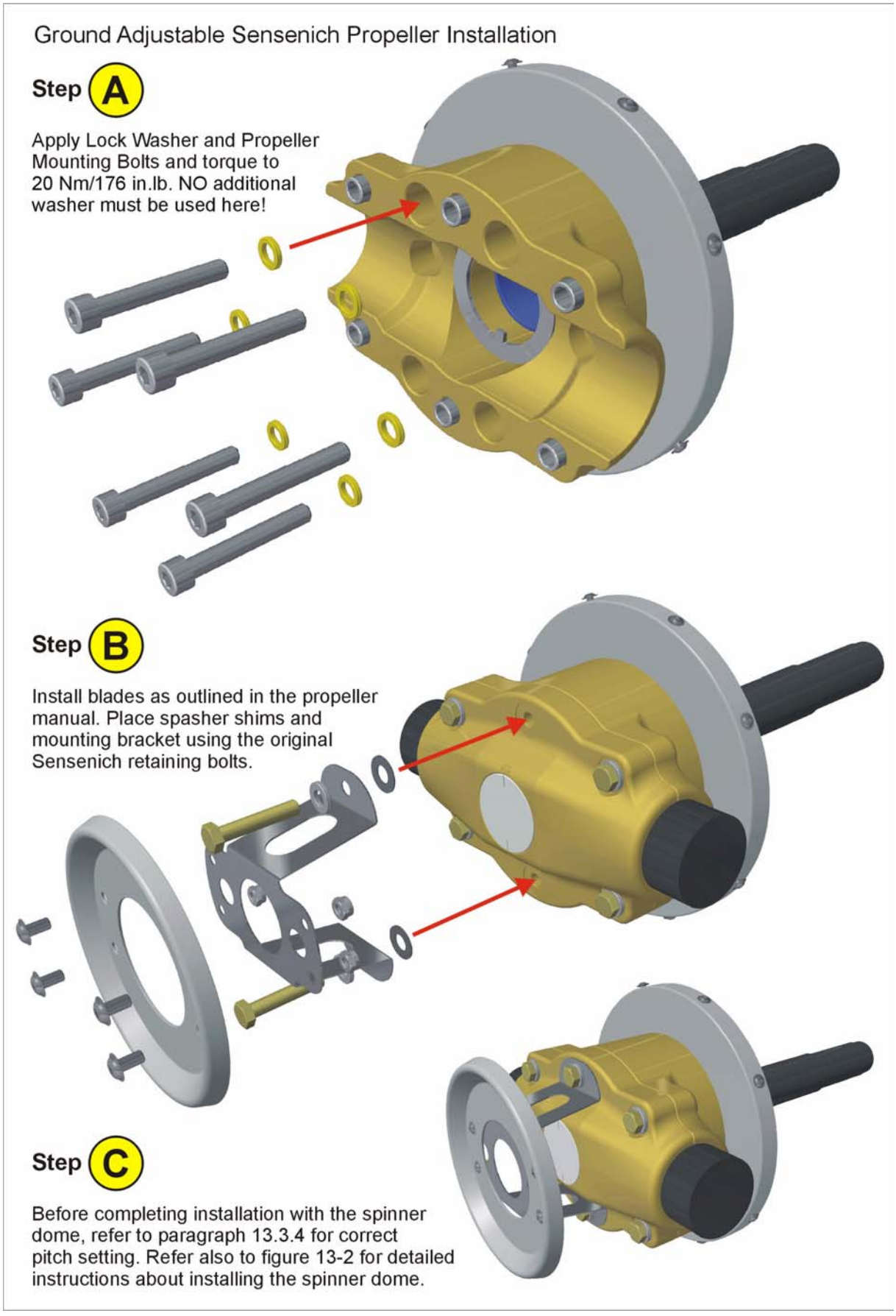
a. Remove spinner by unscrewing its retaining screws.

Note

The spinner (**1**) is attached to the rear bulkhead with a forward supporting bulkhead. These bulkheads are secured by the propeller mounting bolts (**3**) and retaining screws (**11**) and will be free by removal of the bolts as the propeller is removed. A mounting bracket (**4**) is used between propeller hub and the forward support bulkhead which is fixed to the hub by the original Sensenich fixing bolts.

b. Remove all bolts on propeller hub and remove hub and blades.
c. Remove mounting bolts (**3**) and pull propeller hub forward to remove. Use care to avoid damage to bulkheads as propeller is removed.

Figure 13-4.


Ground Adjustable Sensenich Propeller Installation
Step A
Apply Lock Washer and Propeller Mounting Bolts and torque to 20 Nm/176 in.lb. NO additional washer must be used here!
Step B
Install blades as outlined in the propeller manual. Place spasher shims and mounting bracket using the original Sensenich retaining bolts.
Step C
Before completing installation with the spinner dome, refer to paragraph 13.3.4 for correct pitch setting. Refer also to figure 13-2 for detailed instructions about installing the spinner dome.

13.3.3 Installation (refer to figure 13-4.)

Required Tools: 3 & 6 mm allen wrench, 7/13 mm wrench, torque wrench.
Parts required: Silicone compound, Loctite 243 medium strength
8 x self-locking nut (M4).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Clean mating surfaces of propeller, gearbox flange and spinner bulkheads.

Warning

Be sure master switch is in OFF position and key removed from starter switch before turning propeller.

a. Install propeller spacer, guide sleeves and rearward spinner bulkhead. The spinner bulkheads must be positioned so propeller blades will emerge from the spinner with ample clearance.
b. Install lock washer and propeller mounting bolts as shown in figure 13-4.
c. Tighten the mounting bolts evenly to a torque value of 20 Nm/176 in.lb.
d. Apply propeller blades and pitch cylinder as outlined in the propeller manufacturers manual and install the hub cover half. Do not apply both center clamp bolts yet.
e. Install the mounting bracket as described in figure 13-4. and tigthen clamp bolts to a torque value of 20 Nm/176 in.lb.

Warning

Special lock washers are required for all bolts on the propeller hub, in no case additional washers must used!

Note

Before proceeding with the next steps, refer to paragraph 13.3.4 for correct pitch setting of the propeller blades.

f. Apply a bead of silicone compound on the rim of the support bulkhead.
g. Install spinner.
When installing the plastic (ABS) type spinner, add a collar bush to each of the fixing screws, to prevent the spinner from cracking around it´s fixing holes. Do not overtighten the fixing screws.

13.3.4 Rigging (refer to figure 13-5.)

Required Tools: 3 & 6 mm allen wrench, 7/13 mm wrench, torque wrench.
Parts required: Silicone compound, Loctite 243 medium strength
8 x self-locking nut (M4).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

.

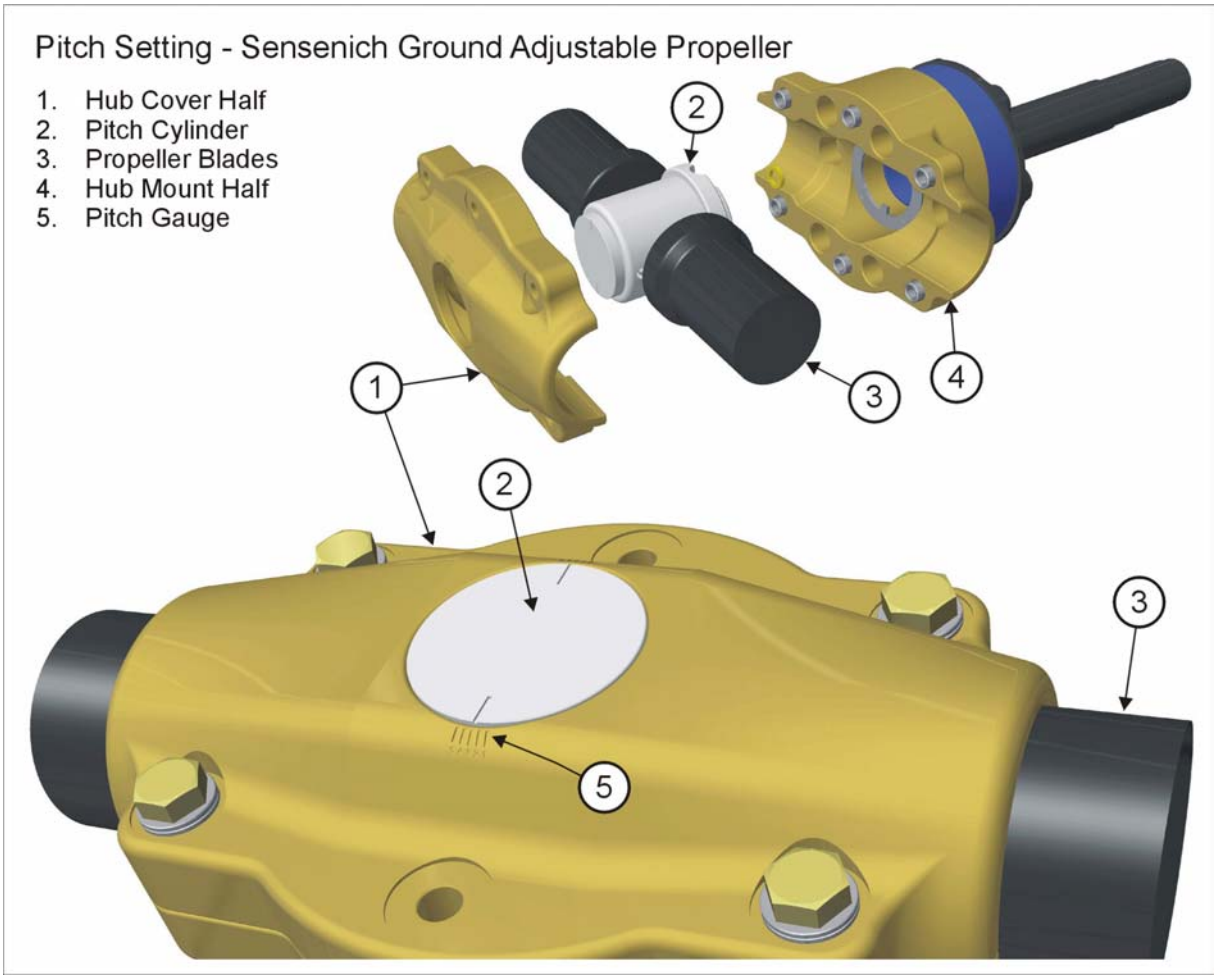
Warning

Be sure master switch is in OFF position and key removed from starter switch before turning propeller.

If rigging is not done as step of the propeller installation process, propeller spinner dome has to be removed first (refer to paragraph 13.2.2).

a. Set propeller pitch using the pitch gauge (**5**) provided on the pitch cylinder (**2**) and hub cover half (**1**). Set pitch to “number 4” position and temporarily torque all 6 clamp bolts to recommended value.
b. Run the engine without moving the aircraft, applying full throttle position (warm up the engine to normal operation temperature before conducting that procedure). Check that engine speed does not exceed 5.300 to 5.400 RPM.
c. Repeat pitch setting procedure as necessary to achieve a satisfying RPM setting.
d. Perform a check flight and ensure that engine speed does not exceed 5.800 RPM during take-off run and climb.
e. Proceed with installing the spinner dome like described in paragraph 13.3.3.

Figure 13-5.



Section 14

Utility Systems

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14.1 Heating System, Description (refer to figure 14-1)

The heating system is comprised of the heat exchange section of the exhaust muffler, a shut-off valve, mounted on the right forward side of the firewall, a push-pull control on the instrument panel, outlets, and flexible ducting connecting the system.

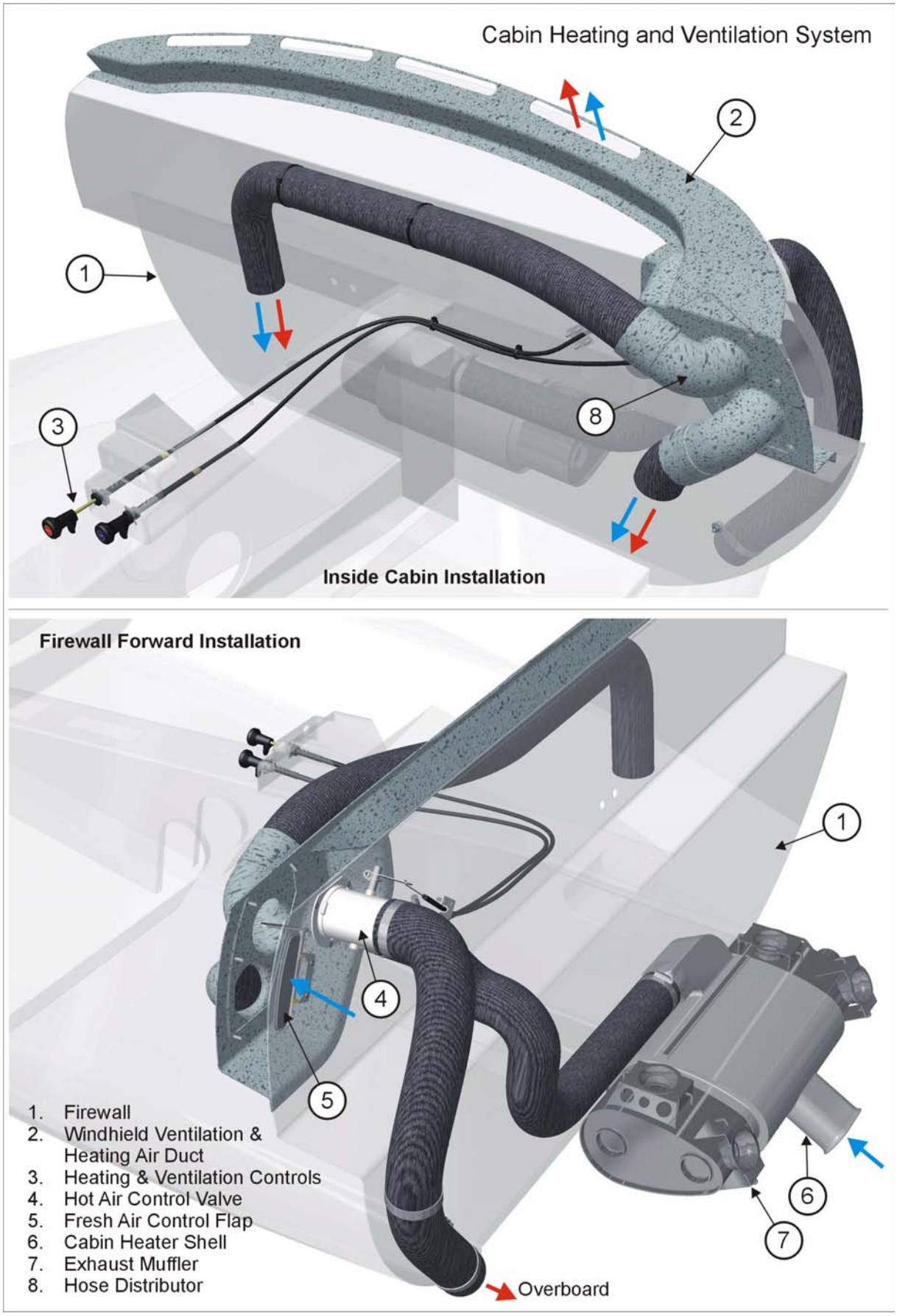
14.1.1 Operation

Ram air is ducted through an heat exchange section of the exhaust muffler, to the shut-off valve into a chamber on the aft side of the firewall, where it is distributed into the cabin. The shut-off valve operated by a push-pull control marked “Warm”, located beneath the switch panel, regulates the volume of heated air entering the system. Pulling the control full out supplies maximum flow, and pushing control in gradually decreases flow, shutting off flow completely when the control is pushed full in.

14.1.2 Trouble Shooting

Most of the operational troubles in the heating and ventilating systems are caused by a sticking or binding air valve and it´s control, damaged air ducting, or defects in the exhaust muffler. In most cases, the valve or control can be freed by proper lubrication. Damaged or broken parts must be repaired or replaced. When checking control, ensure valve respond freely to control movement, that they move in the correct direction, and that they move through their full range of travel and seal properly. Check that hose are properly secured, and replace hose that are burned, frayed or crushed. If fumes are detected in the cabin, a thorough inspection of the exhaust system should be accomplished. Refer to applicable paragraph in Section 11 for this inspection. Since any holes or cracks may permit exhaust fumes to enter the cabin, replacement of defective parts is imperative because fumes constitute an extreme danger.

Figure 14-1.

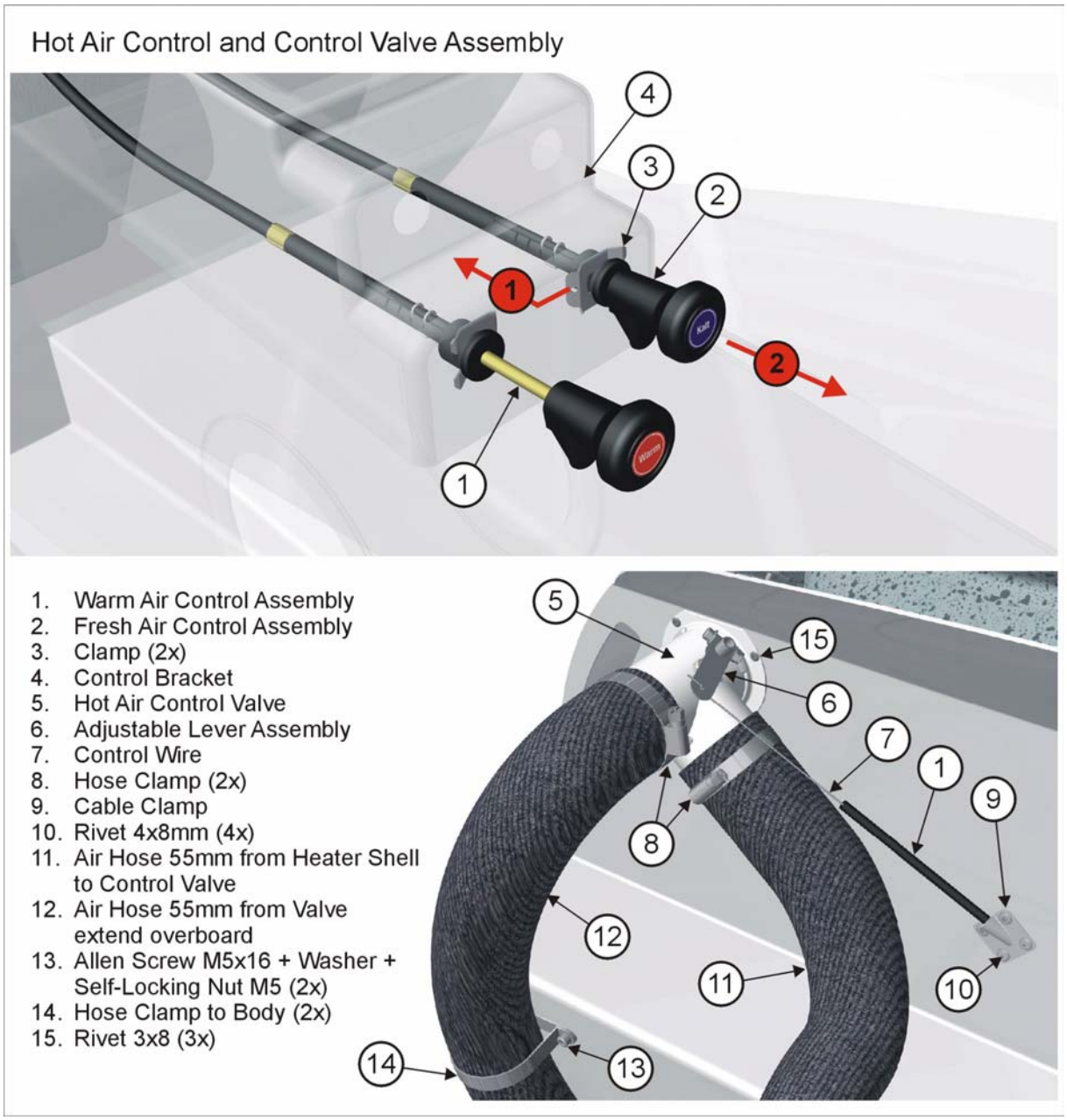

Cabin Heating and Ventilation System
1
2
3
8
Inside Cabin Installation
Firewall Forward Installation
1
4
5
6
7
1. Firewall
2. Windhield Ventilation & Heating Air Duct
3. Heating & Ventilation Controls
4. Hot Air Control Valve
5. Fresh Air Control Flap
6. Cabin Heater Shell
7. Exhaust Muffler
8. Hose Distributor
Overboard

14.1.3 Removal, Installation and Repair

Required Tools: Phillips head screwdriver, riveting pliers
Parts required: Hoses and hose clamps as required, rivets 3x8mm (3x).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Figure 14-1 and 14-2 illustrates the heating and ventilating systems, and may be used as a guide during removal, installation and repair of heating system components. Burned, frayed, or crushed hoses must be replaced with new hoses, cut to length and installed in the original routing. Trim hose winding shorter than the hose to allow clamps to be fitted. A defective air valve must be repaired or replaced. Check for proper operation of valve and its control after repair or replacement.

Figure 14-2.



14.2 Ventilating System, Description

The ventilating system is comprised of a naca-style fresh air-scoop mounted in the right side of the upper cowling. A shut-off valve is located on the right side of the firewall, operated by a push-pull control marked “Cold”, located beneath the switch panel, regulates the volume of fresh air entering the system.

14.2.1 Operation

Air received from the scoop mounted in the right side of the upper cowling is routed through a distributor located on the aft right side of the firewall to the windshield and bottom of the cabin. As long as the “Warm” control is pushed in, no heated air can enter the firewall duct; therefore, when the “Cold” control is pulled out, only fresh air from the scoop will flow through the distributor into the cabin. As the “Warm” control is gradually pulled out, more and more heated air will blend with the fresh air from the scoop and be distributed into the cabin. Either one, or both of the controls may be set at any position from pull open to full closed.

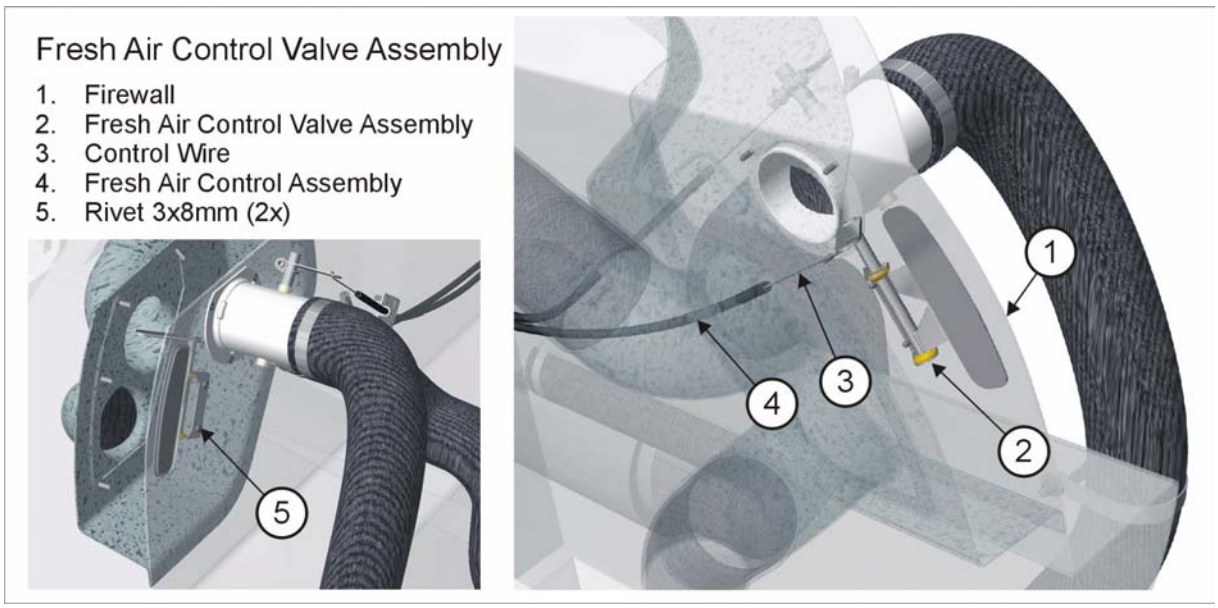
14.2.2 Trouble Shooting

Most of the operational troubles in the ventilating system are caused by sticking or binding of the shut-off valve or it’s control. In most cases, valve or control can be freed by proper lubrication. Damaged or broken parts must be repaired or replaced. When checking control, ensure valve respond freely to control movement and that it move through its full range of travel and seal properly.

14.2.3 Removal, Installation and Repair

Required Tools: Phillips head screwdriver, riveting pliers
Parts required: Rivets 3x8mm (2x); cable ties as required.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Figure 14-3.



Section 15

Instruments and Instrument System

Table of Contents Page

15.1 Instrument and Instrument Systems, General

This section describes typical instrument installations and their respective operating systems. Emphasis is placed on trouble shooting and corrective measures only. It does not deal with specific instrument repairs since this usually requires special equipment and data and should be handled by instrument specialists. Federal Aviation Regulations require malfunctioning instruments be sent to an approved instrument overhaul and repair station or returned to manufacturer for servicing. Our concern here is with preventive maintenance on various instrument systems and correction of system faults which result in instrument malfunctions.

The descriptive material, maintenance and trouble shooting information in this section is intended to help the mechanic determine malfunctions and correct them, up to the defective instrument itself, at which point an instrument technician should be called in. Some instruments, such as fuel quantity and oil pressure gages, are so simple and inexpensive, repairs usually will be more costly than a new instrument. On the other hand, aneroid and gyro instruments usually are well worth repairing. The word “replace instrument” in the text, therefore, should be taken only in the sense of physical replacement in aircraft. Whether replacement is to be with a new instrument, an exchange one, or original instrument is to be repaired must be decided on basis of individual circumstances.

15.2 Instrument Panel, Description (refer to figure 15-1 & 15-2)

The instrument panel assembly consists of stationary and shock-mounted panels. The stationary panels are containing switches and LED-gauges, which are not sensitive to vibration. The shock-mounted panels are containing major flight instruments such as airspeed indicator, altitude indicator, EFIS-Systems, avionics components, and horizontal and directional gyros which are affected by vibration. Most of the instruments are screw-mounted on the aluminum frame backs.

15.2.1 Removal and Installation

Required Tools: 3 mm allen wrench, 10 mm wrench.
Parts required: Cable ties, insulating tape.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

15.2.1.1 Stationary Panel

The stationary switch panel is located at the lower center section of the cockpit frame. It consistes of an aluminum support frame and a decorative ABS cover. To remove the stationary panel proceed as follows:

a. Disconnect battery leads and insulate as safety precaution.
b. Loosen and unscrew throttle lever knob, clamp nut, friction knob and ignition key union nut.
c. Unscrew and withdraw switch panel from cockpit frame.
d. Unplug switch and LED-Indicator wiring.
e. Reverse preceding steps for reinstallation.

Note

Do not overtighten panel fixing screws at reinstallation, because this would cause the ABS decorative cover to crack.

15.2.1.2 Shock Mount Panel (refer to figure 15-2)

The shock mounted panels consist of an aluminum support frame and a decorative ABS cover attached to the cockpit main-frame via rubber shock mounts. To remove a shock-mount panel proceed as follows:

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew retaining screws and remove decorative ABS cover.
c. Remove shock-mount screws in both upper corners of the aluminum frame.
d. Pull out upper edge of the frame and lift up to disengage the lower shock-mounts from cockpit main-frame.
e. Disconnect wiring and hoses and remove panel.
f. Reverse preceding steps for reinstallation.

Note

Do not overtighten panel fixing screws at reinstallation, because this would cause the ABS decorative cover to crack.

15.2.2 Shock Mounts

Service life of instruments is directly related to adequate shock-mounting of panel. If removal of panel is necessary, check mounts for deterioration.

15.2.3 Instruments and Avionics (refer to figure 15-3 to 15-7)
15.2.3.1 Removal

Required Tools: 2.5 & 3 mm allen wrench, 5.5/6/7/8 mm wrench, wire cutting pliers.
Parts required: Cable ties, self-locking nuts (M4) as required for reinstallation.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Most instruments are secured to panel with screws inserted through panel face. To remove an instrument, remove decorative cover, disconnect wiring or plumbing to instrument, remove mounting screws and take instrument out from behind, or in some cases, from front of panel.

15.2.3.2 Installation

Generally, installation procedure is the reverse of removal procedure. Ensure mounting screw nuts are tightened firmly, but do not over-tighten, particularly on instruments having plastic cases. The same rule applies to connecting plumbing and wiring.

Figure 15-1.

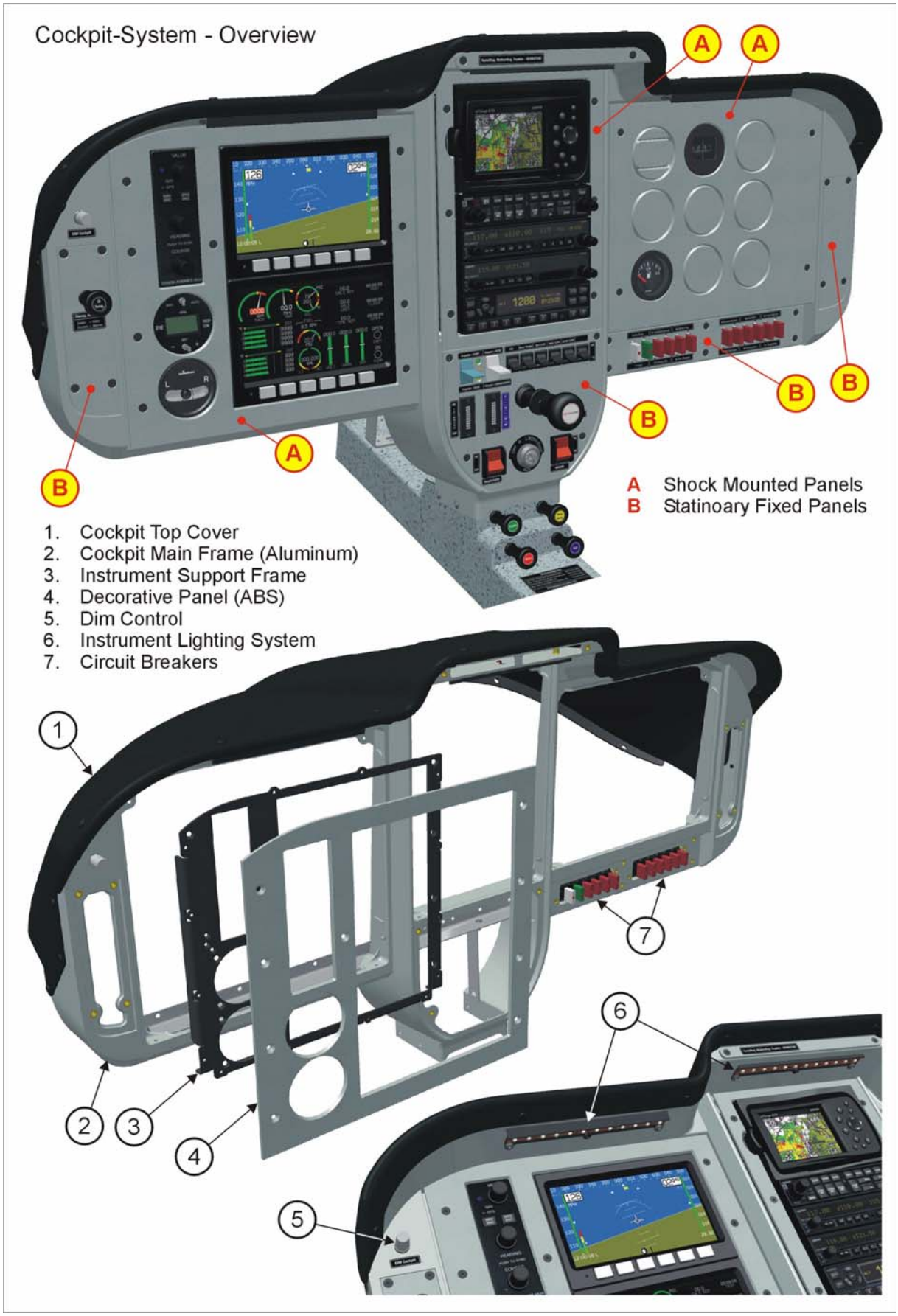
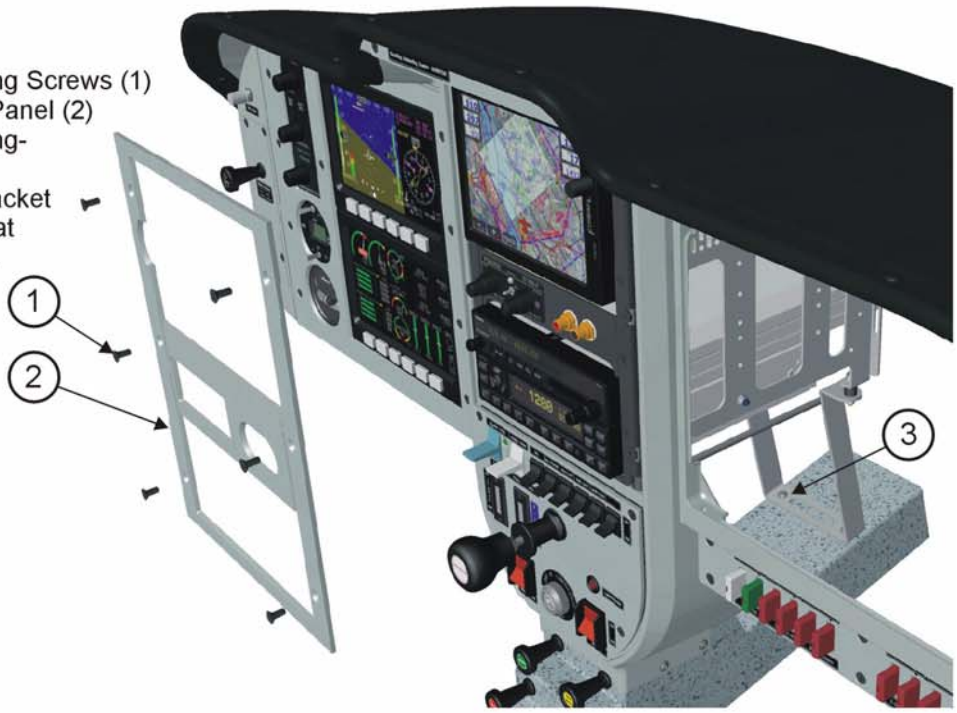

Cockpit-System - Overview
A
A
B
B
B
A
B
A Shock Mounted Panels
B Statinoary Fixed Panels
1. Cockpit Top Cover
2. Cockpit Main Frame (Aluminum)
3. Instrument Support Frame
4. Decorative Panel (ABS)
5. Dim Control
6. Instrument Lighting System
7. Circuit Breakers
1
2
3
4
5
6
7

Figure 15-2.

Instrument System - Removal and Installation

Step A

Remove Retaining Screws (1) and Decorative Panel (2)
Remove Retaining-Screws (3) from Support Bracket (only applicable at Avionics Frame).



Step B

Remove Support Frame Retaining Screws (4)

Step C

The whole Rack can be swung out of the Cockpit Main Frame.
Pull out the Rack and Disconnect all Harnesses from the installed Devices.

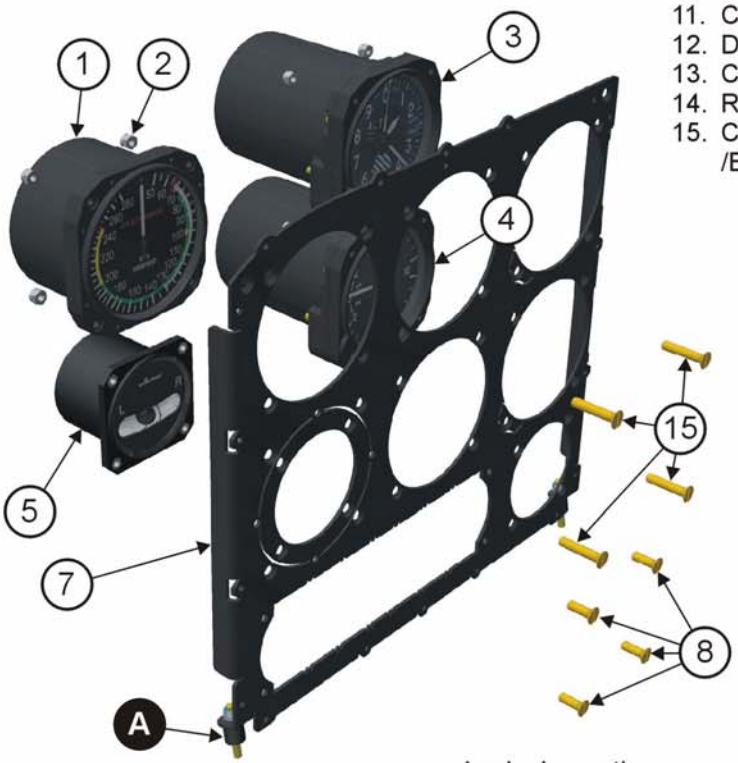
5. Upper Shock Mounts

Figure 15-3.

Cockpit System - Primary Flight Instruments - Standard Indicator Installation

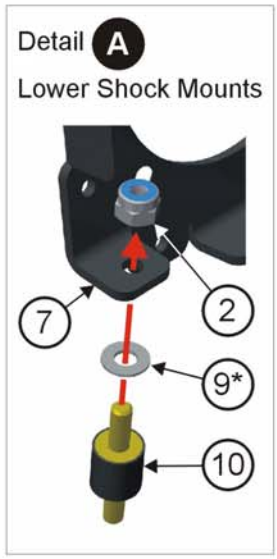
1. Airspeed Indicator
2. Self-Locking Nut M4 (17x)
3. Altimeter
4. Vertical Speed Indicator
5. Slip Indicator
6. Counter Sunk Bolt M4x25 mm/Brass (6x)
7. Instrument Support Frame
8. Counter Sunk Bolt M4x12 mm/Brass (4x)
9. Washer M4 - Ouantity as Required *
10. Shock Mount 10x10xM4 (2x)

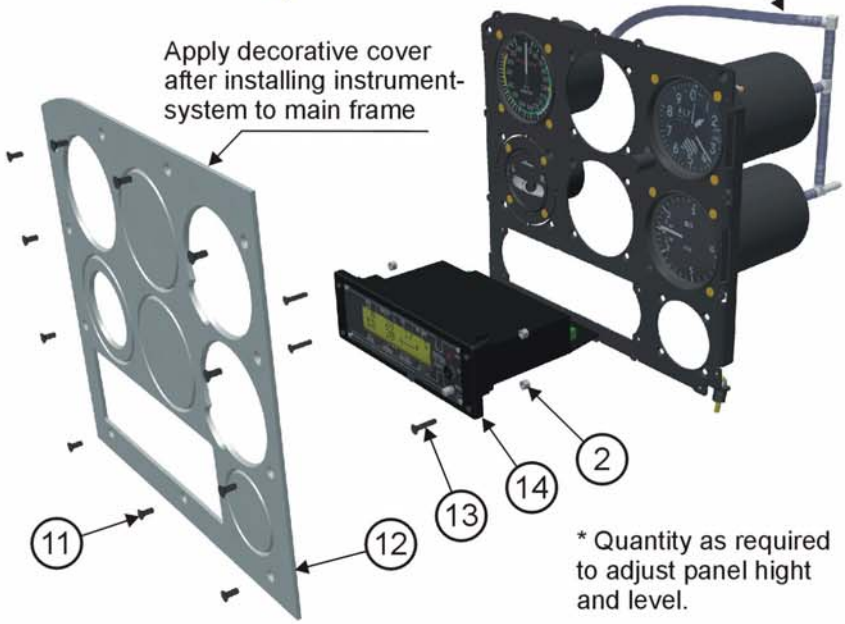
11. Counter Sunk Bolt M4x10 mm (11x)
12. Decorative Panel
13. Counter Sunk Bolt M4x20 mm(4x)
14. Rotax FlyDat
15. Counter Sunk Bolt M4x20 mm /Brass (4x)



Refer to "Pitot System" for detailed information about air hoses.

Apply decorative cover after installing instrument-system to main frame





* Quantity as required to adjust panel hight and level.

Figure 15-4.

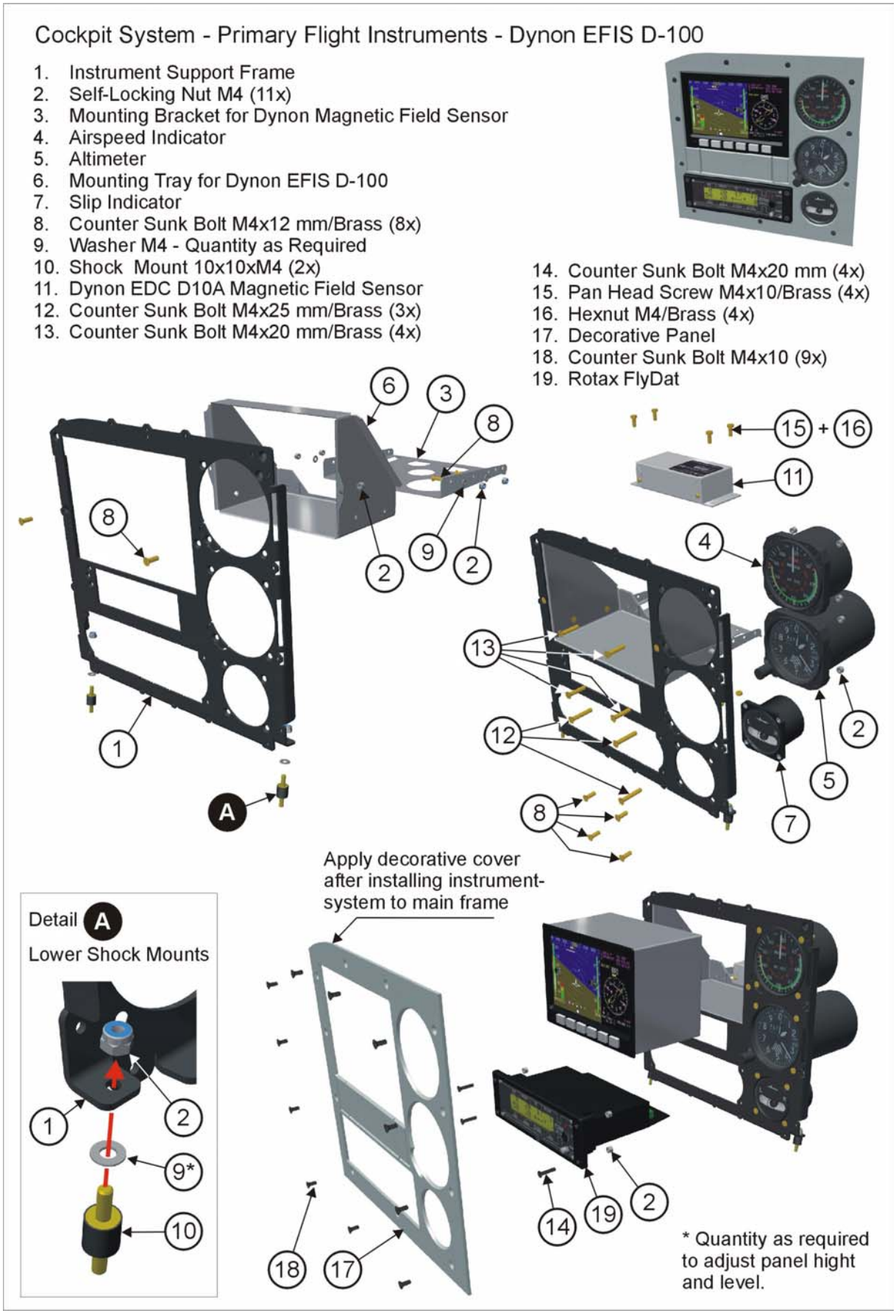

Cockpit System - Primary Flight Instruments - Dynon EFIS D-100
1. Instrument Support Frame
2. Self-Locking Nut M4 (11x)
3. Mounting Bracket for Dynon Magnetic Field Sensor
4. Airspeed Indicator
5. Altimeter
6. Mounting Tray for Dynon EFIS D-100
7. Slip Indicator
8. Counter Sunk Bolt M4x12 mm/Brass (8x)
9. Washer M4 - Quantity as Required
10. Shock Mount 10x10xM4 (2x)
11. Dynon EDC D10A Magnetic Field Sensor
12. Counter Sunk Bolt M4x25 mm/Brass (3x)
13. Counter Sunk Bolt M4x20 mm/Brass (4x)
14. Counter Sunk Bolt M4x20 mm (4x)
15. Pan Head Screw M4x10/Brass (4x)
16. Hexnut M4/Brass (4x)
17. Decorative Panel
18. Counter Sunk Bolt M4x10 (9x)
19. Rotax FlyDat
15 + 16
Detail A
Lower Shock Mounts
Apply decorative cover after installing instrument-system to main frame
* Quantity as required to adjust panel hight and level.

Figure 15-5.

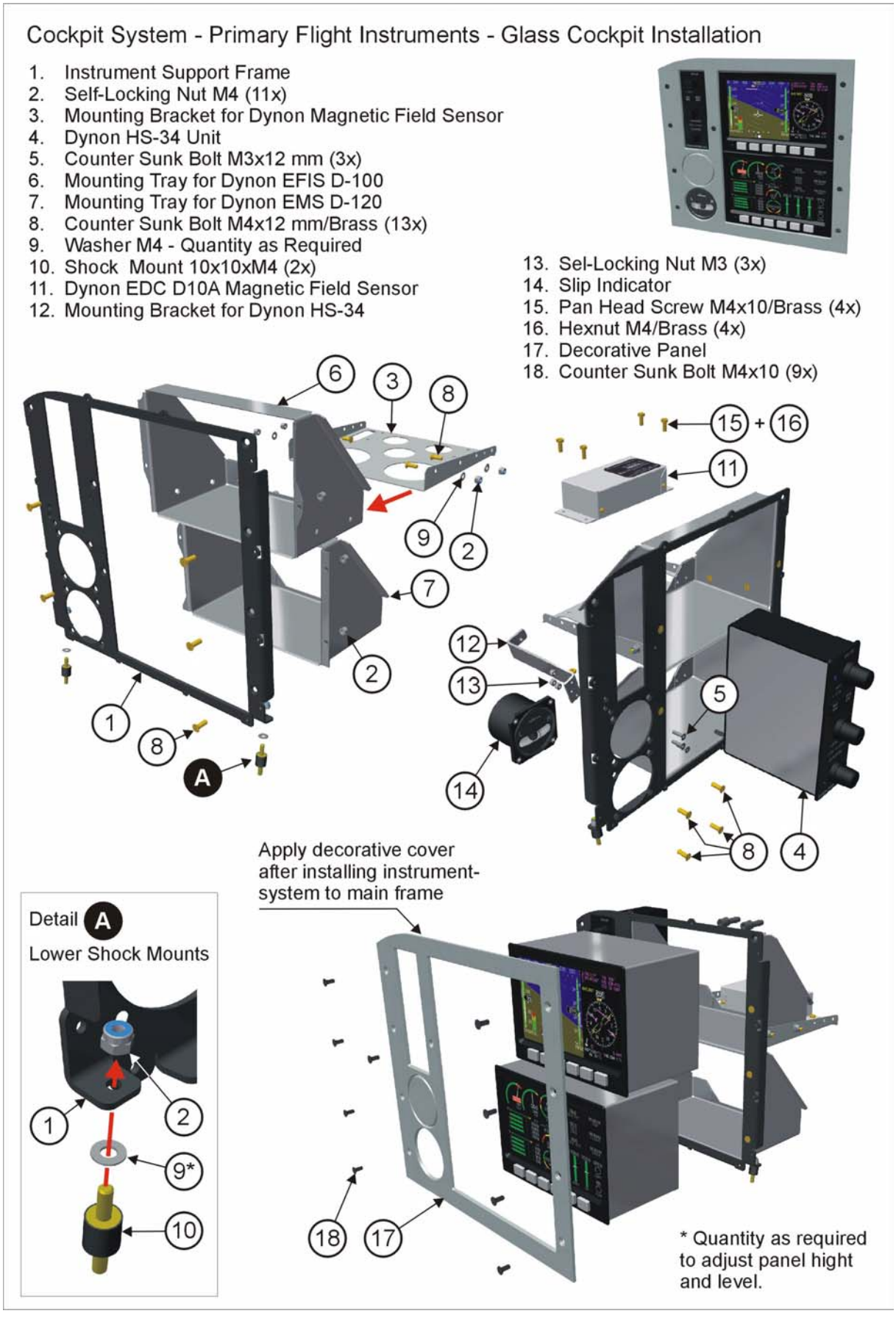

Cockpit System - Primary Flight Instruments - Glass Cockpit Installation
1. Instrument Support Frame
2. Self-Locking Nut M4 (11x)
3. Mounting Bracket for Dynon Magnetic Field Sensor
4. Dynon HS-34 Unit
5. Counter Sunk Bolt M3x12 mm (3x)
6. Mounting Tray for Dynon EFIS D-100
7. Mounting Tray for Dynon EMS D-120
8. Counter Sunk Bolt M4x12 mm/Brass (13x)
9. Washer M4 - Quantity as Required
10. Shock Mount 10x10xM4 (2x)
11. Dynon EDC D10A Magnetic Field Sensor
12. Mounting Bracket for Dynon HS-34
13. Sel-Locking Nut M3 (3x)
14. Slip Indicator
15. Pan Head Screw M4x10/Brass (4x)
16. Hexnut M4/Brass (4x)
17. Decorative Panel
18. Counter Sunk Bolt M4x10 (9x)
15 + 16
Apply decorative cover after installing instrument-system to main frame
Detail A
Lower Shock Mounts
* Quantity as required to adjust panel hight and level.

Figure 15-6.

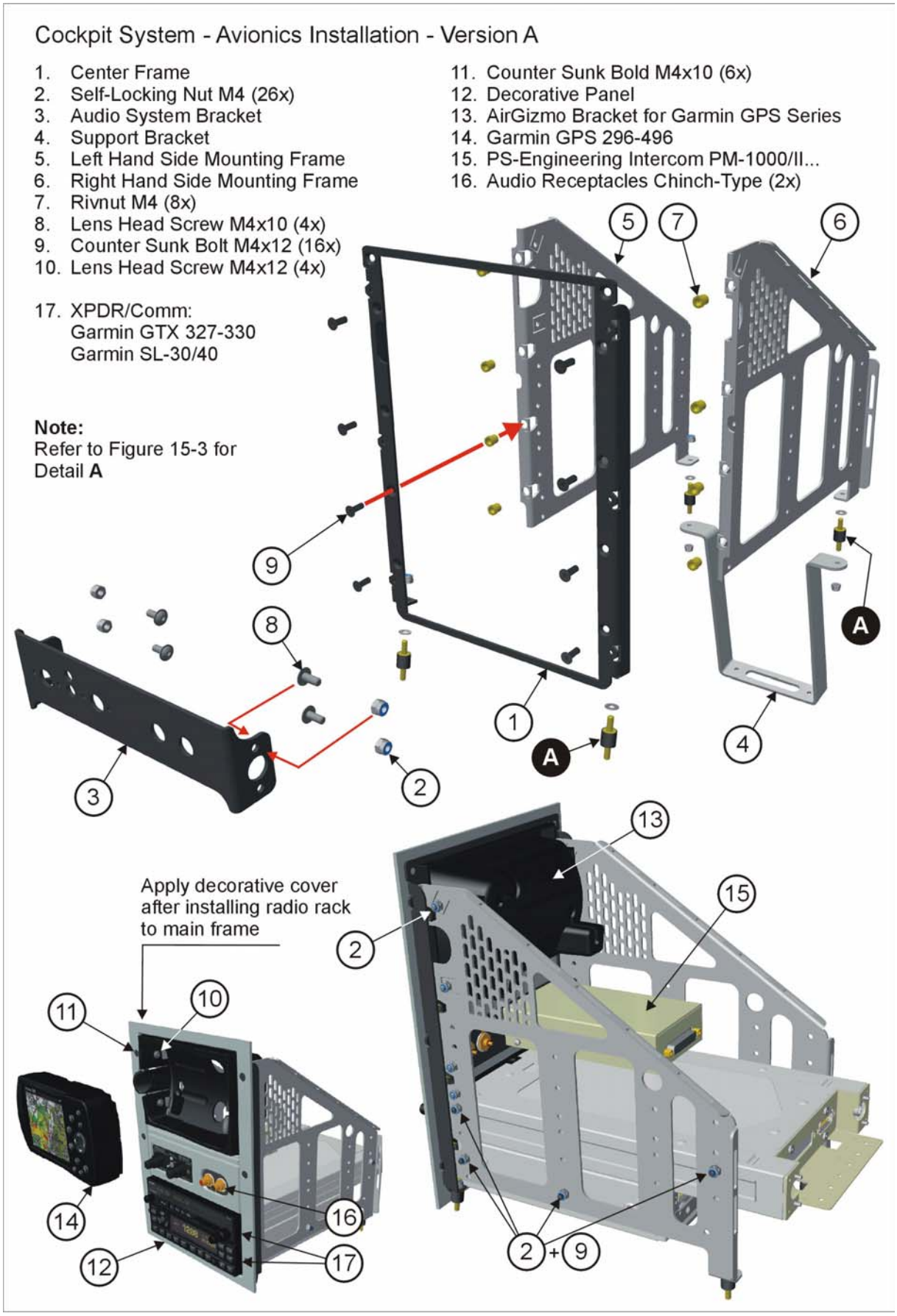

Cockpit System - Avionics Installation - Version A
1. Center Frame
2. Self-Locking Nut M4 (26x)
3. Audio System Bracket
4. Support Bracket
5. Left Hand Side Mounting Frame
6. Right Hand Side Mounting Frame
7. Rivnut M4 (8x)
8. Lens Head Screw M4x10 (4x)
9. Counter Sunk Bolt M4x12 (16x)
10. Lens Head Screw M4x12 (4x)
11. Counter Sunk Bold M4x10 (6x)
12. Decorative Panel
13. AirGizmo Bracket for Garmin GPS Series
14. Garmin GPS 296-496
15. PS-Engineering Intercom PM-1000/II...
16. Audio Receptacles Chinch-Type (2x)
17. XPDR/Comm:
Garmin GTX 327-330
Garmin SL-30/40
Note:
Refer to Figure 15-3 for
Detail A
Apply decorative cover
after installing radio rack
to main frame

Figure 15-7.

Cockpit System - Avionics Installation - Version B (IFR)

Refer to Figure 15-6 for detailed assembling information.

Avionics:
Garmin GPS 296-496
Garmin XPDR GTX 327-330
Garmin Comm SL-40, Nav/Comm SL-30
Garmin Audio Panel GMA-340

15.3 Pitot and Static System, Description (refer to figure 15-8 to 15-12)

The pitot system conveys ram air pressure to the airspeed indicator. The static system vents vertical speed indicator, altimeter and airspeed indicator to atmospheric pressure through plastic hoses connected to a static port on each side of the fuselage.

15.3.1 Maintenance

Proper maintenance of pitot and static system is essential for proper operation of altimeter, vertical speed and airspeed indicator. Leaks, moisture and obstructions in pitot system will result in false airspeed indications, while static system malfunctions will affect readings of all three instruments. Cleanliness and security are the principal rules for system maintenance. The pitot tube and static ports MUST be kept clean and unobstructed.

15.3.2 Static Pressure System Inspection, Leakage Test

The following procedure outlines inspection and testing of static pressure system, assuming the altimeter has been tested and inspected in accordance with current Federal Aviation Regulations.

a. Ensure static system is free from entrapped moisture and restrictions.
b. Ensure no alterations or deformations of airframe surface have been made which would affect the relationship between air pressure in static pressure system and true ambient static air pressure for any flight configuration.
c. Attach a source of suction to one static pressure source opening while covering the static pressure vent on the opposite side of the fuselage.
d. Slowly apply suction until altimeter indicates a 1000-foot increase in altitude.

Caution

When applying or releasing suction, do not exceed range of vertical speed indicator or airspeed indicator.

e. Cut off suction source to maintain a “closed” system for one minute. Leakage shall not exceed 100 feet of altitude lose as indicated on altimeter.
f. If leakage rate is within tolerance, slowly release suction source.

Note

If leakage rate exceeds maximum allowable, first check all connections, then repeat leakage test. If leakage rate still exceeds maximum allowable, use following procedure.

g. Disconnect static pressure line from airspeed indicator and vertical speed indicator. Use suitable fittings to connect hoses together so altimeter is the only instrument still connected into static pressure system.
h. Repeat leakage test to check whether static pressure system or the bypassed instruments are cause of leakage. If instruments are at fault, they must be

repaired by an “appropriated rated repair station” or replaced. If static pressure system is at fault, use following procedure to locate leakage.

i. Attach a source of positive pressure to static source opening.

Caution

Do not apply positive pressure with airspeed indicator or vertical speed indicator connected to static pressure system.

j. Slowly apply positive pressure until altimeter indicates a 500-fot decrease in altitude and maintain this altimeter indication while checking for leaks. Coat line and static source connections with solution of mild soap and water, watching for bubbles to locate leaks.

k. Repair or replace parts found defective.

l. Reconnect airspeed and vertical speed indicators into static pressure system and repeat leakage test per steps **c** thru **f**.

15.3.3 Pitot System Inspection, Leakage Test

To check pitot system for leaks, fasten a piece of rubber or plastic tubing over pitot tube, close opposite end of tubing and slowly roll up tube until airspeed indicator registers in cruise range. Secure tube and after a few minutes recheck airspeed indicator. Any leakage will have reduced the pressure in system, resulting in a lower airspeed indication. Slowly unroll tubing before removing it, so pressure is reduced gradually. Otherwise instrument may be damaged. If test reveals a leak in system, check all connections.

15.3.4 Blowing out Lines

Condensation may collect in the system and produce a partial obstruction. To clear hose, disconnect at airspeed indicator. Using low pressure air, blow from indicator end of line toward pitot tube.

Caution

Never blow through pitot or static lines towards instruments.

Like pitot lines, static pressure lines must be kept clear and connected safely. When necessary, disconnect static line at first instrument to which it is connected, then blow line clear with low-pressure air. Check all static pressure line connections. If hose or hose connections are used, check for general condition and security. Replace any hose which has cracked, hardened or show other signs of deterioration.

Figure 15-8.

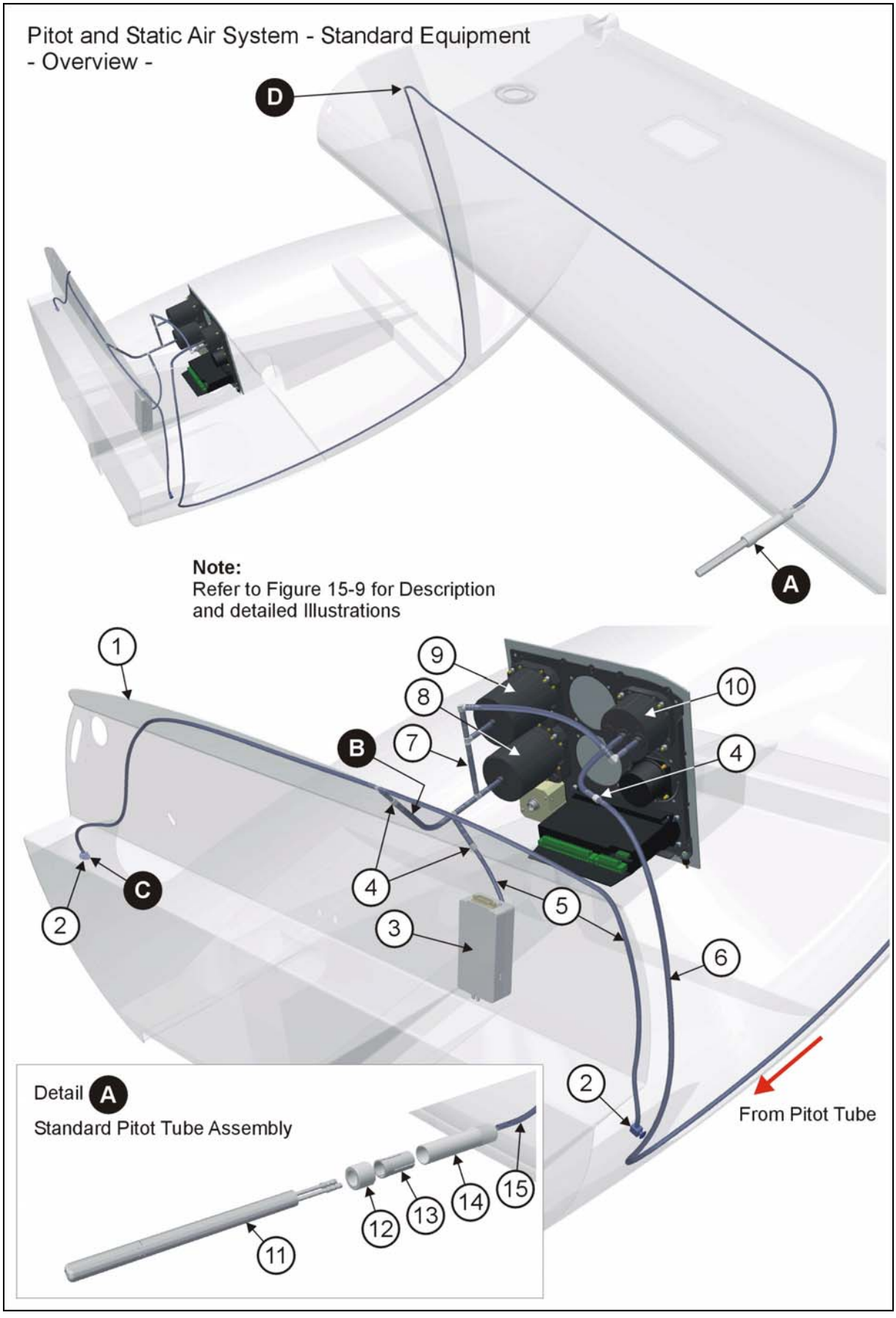
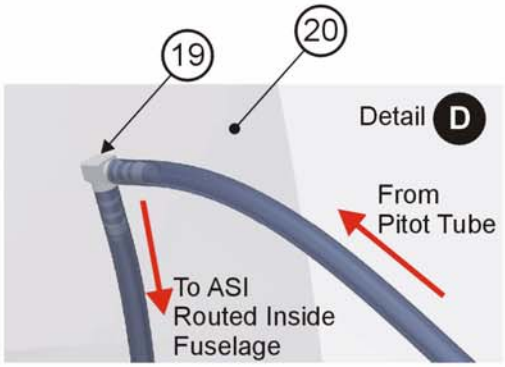
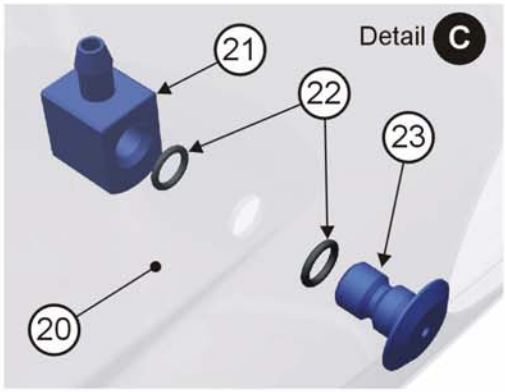

Pitot and Static Air System - Standard Equipment
- Overview -
D
A
Note:
Refer to Figure 15-9 for Description
and detailed Illustrations
1
9
8
10
B
7
4
C
2
4
5
3
6
2
From Pitot Tube
Detail A
Standard Pitot Tube Assembly
11
12
13
14
15

Figure 15-9.

Pitot and Static Air System - Standard Equipment (Continued)
- Details -

1. Firewall
2. Static Port
3. Blind Encoder (ACK-A30)
4. Hose Adapter 6 to 4 mm (3x)
5. Static Air PVC-Hoses, 6x1 mm,(As Required)
6. Pitot Air PVC-Hose, 7x1 mm, (As Required)
7. Indicator Air PVC-Hoses, 8x1 mm, (As Required)
8. Vertical Speed Indicator (VSI)
9. Altimeter
10. Airspeed Indicator (ASI)
11. Pitot Tube (Standard Equipment)
12. Union Nut
13. Clamp Sleeve, Nylon
14. Pitot Bracket Tube (Fixed to Wing)
15. Pitot Air PVC-Hose, 7x1 mm, (As Required)
16. Compensating Jet (0.5 mm)
17. One-Quarter Hose Connector 6 mm (2x)
18. T-Piece Hose Connector 6 mm (3x)
19. One-Quarter Hose Connector 5 mm
20. Fuselage, Outer Skin
21. Static Port, Hose Fitting (Inside Fuselage)
22. O-Ring, 4.5x1 mm (2x)
23. Static Port Jet
24. T-Piece Hose Connector 4 mm
25. Hose Fitting 6xR1/8, Nylon (4x)





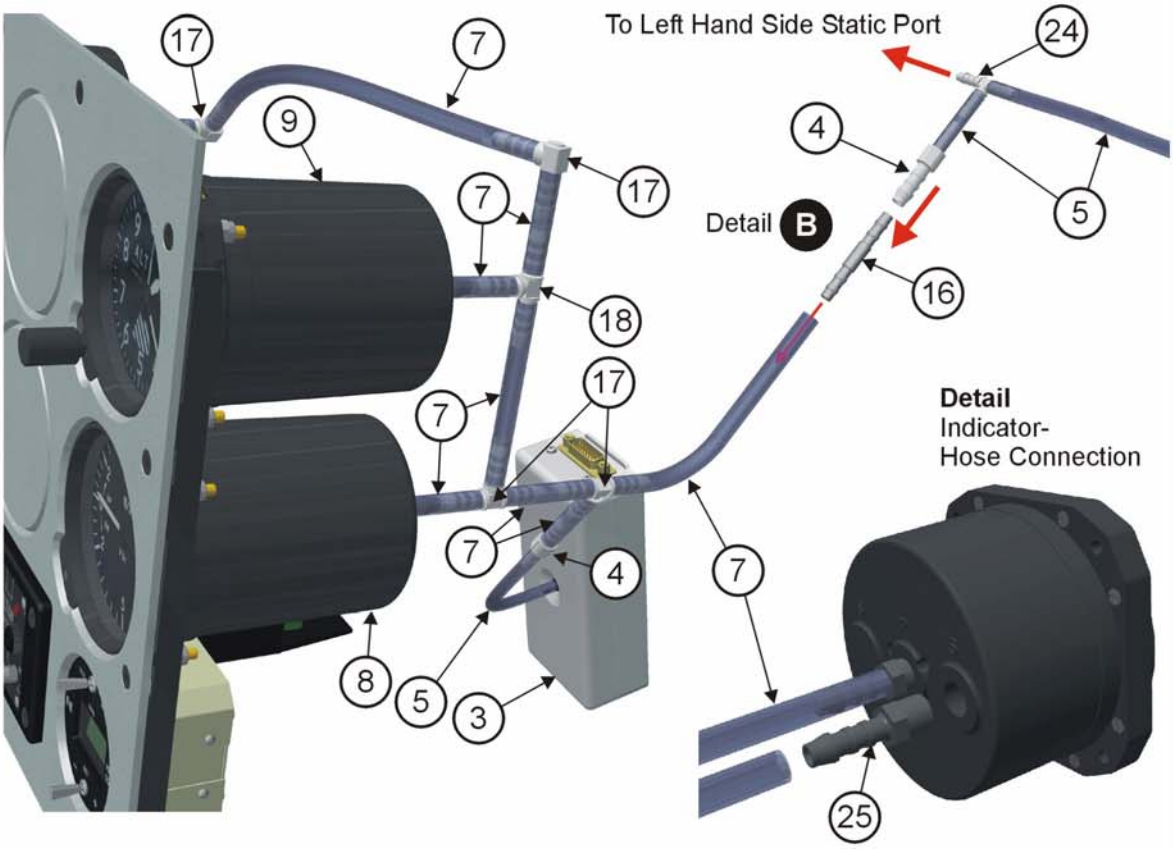


Figure 15-10.

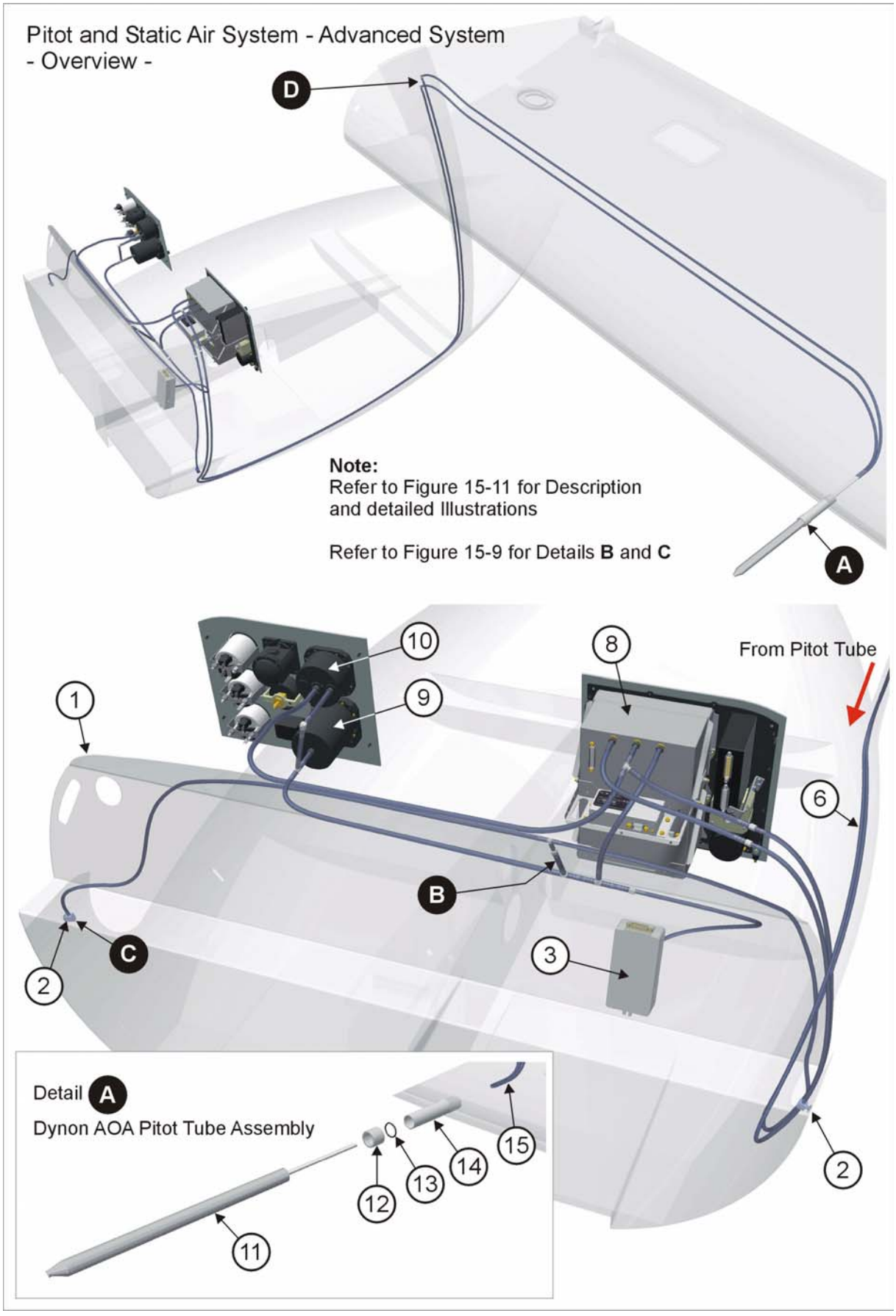

Pitot and Static Air System - Advanced System
- Overview -
D
Note:
Refer to Figure 15-11 for Description
and detailed Illustrations
Refer to Figure 15-9 for Details B and C
A
10
8
From Pitot Tube
1
9
6
B
C
3
2
Detail A
Dynon AOA Pitot Tube Assembly
15
14
13
12
11
2

Figure 15-11.

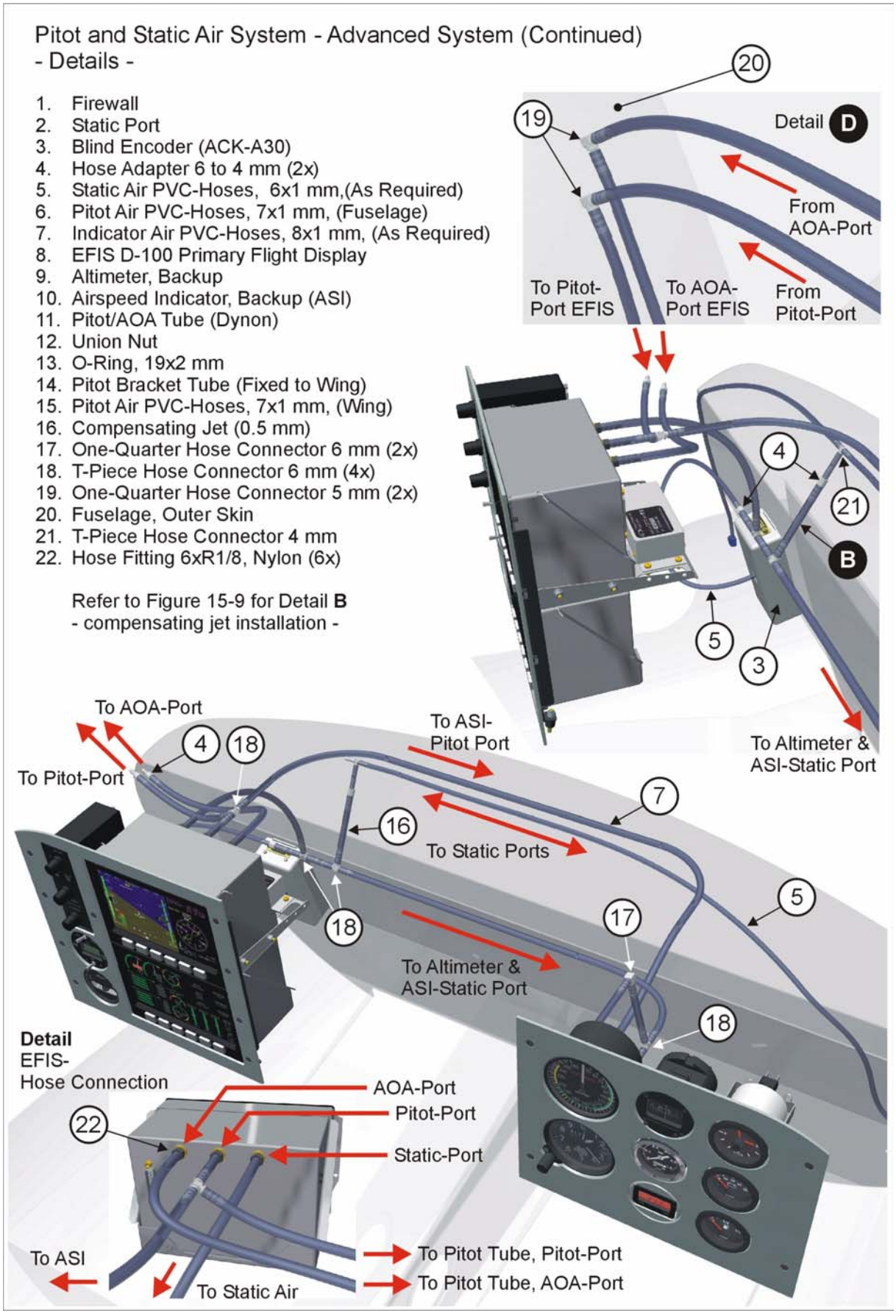
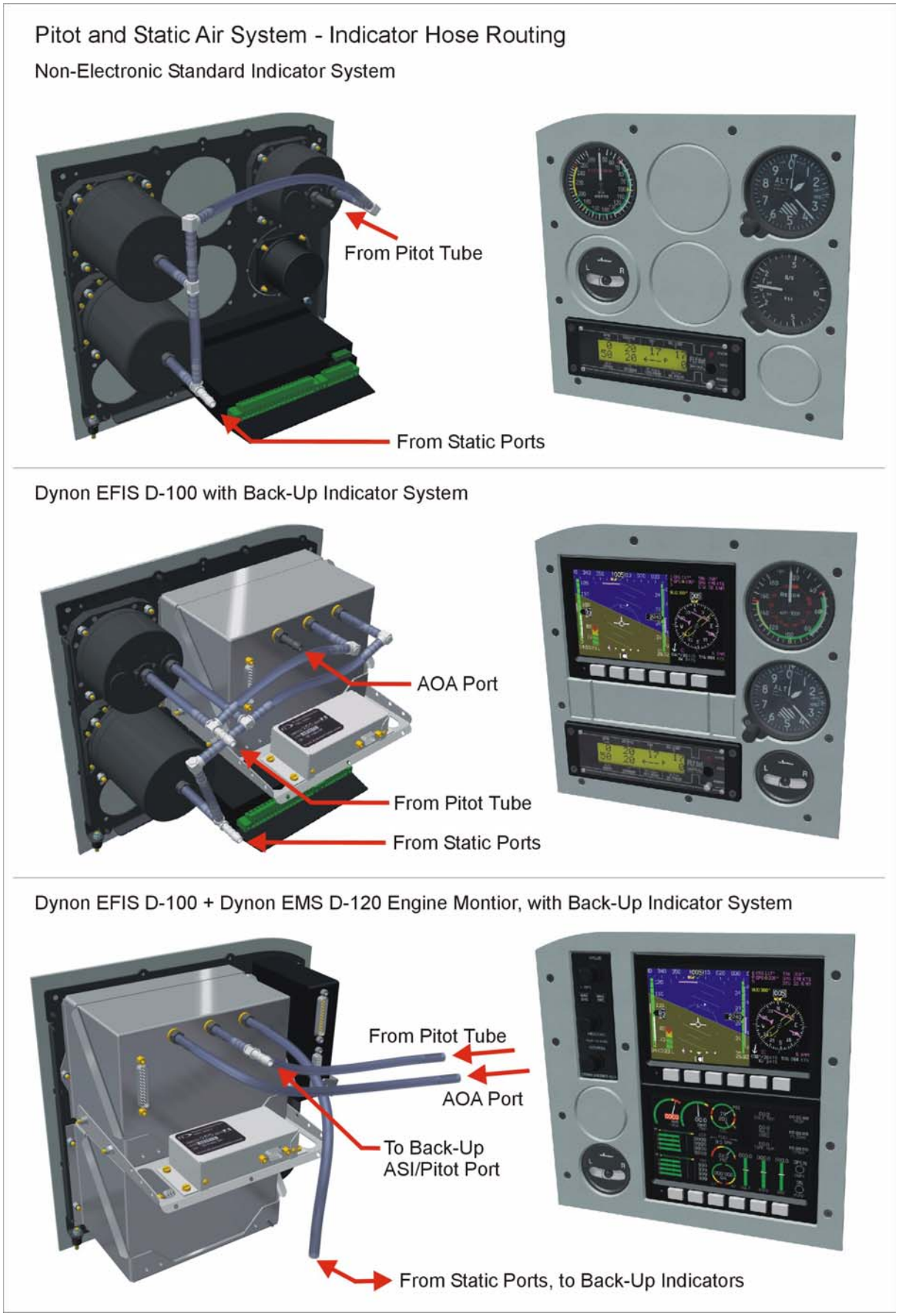

Pitot and Static Air System - Advanced System (Continued)
- Details -
1. Firewall
2. Static Port
3. Blind Encoder (ACK-A30)
4. Hose Adapter 6 to 4 mm (2x)
5. Static Air PVC-Hoses, 6x1 mm,(As Required)
6. Pitot Air PVC-Hoses, 7x1 mm, (Fuselage)
7. Indicator Air PVC-Hoses, 8x1 mm, (As Required)
8. EFIS D-100 Primary Flight Display
9. Altimeter, Backup
10. Airspeed Indicator, Backup (ASI)
11. Pitot/AOA Tube (Dynon)
12. Union Nut
13. O-Ring, 19x2 mm
14. Pitot Bracket Tube (Fixed to Wing)
15. Pitot Air PVC-Hoses, 7x1 mm, (Wing)
16. Compensating Jet (0.5 mm)
17. One-Quarter Hose Connector 6 mm (2x)
18. T-Piece Hose Connector 6 mm (4x)
19. One-Quarter Hose Connector 5 mm (2x)
20. Fuselage, Outer Skin
21. T-Piece Hose Connector 4 mm
22. Hose Fitting 6xR1/8, Nylon (6x)
Refer to Figure 15-9 for Detail B
- compensating jet installation -
Detail D
From AOA-Port
To Pitot-Port EFIS
To AOA-Port EFIS
From Pitot-Port
To AOA-Port
To Pitot-Port
To ASI-Pitot Port
To Altimeter & ASI-Static Port
To Static Ports
Detail
EFIS-Hose Connection
AOA-Port
Pitot-Port
Static-Port
To ASI
To Static Air
To Pitot Tube, Pitot-Port
To Pitot Tube, AOA-Port

Figure 15-12.


Pitot and Static Air System - Indicator Hose Routing
Non-Electronic Standard Indicator System
From Pitot Tube
From Static Ports
Dynon EFIS D-100 with Back-Up Indicator System
AOA Port
From Pitot Tube
From Static Ports
Dynon EFIS D-100 + Dynon EMS D-120 Engine Montior, with Back-Up Indicator System
From Pitot Tube
AOA Port
To Back-Up
ASI/Pitot Port
From Static Ports, to Back-Up Indicators

15.3.5 Removing and Installation of Components (refer to figure 15-8 to 15-12)

Required Tools: Edge cutter
Parts required: Cable ties, hoses as required.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To remove pitot tube, unscrew union nut and withdraw tube from support tube. A pitot line running within the left wing is fixed inside the wing and can not be removed. A backup line is routed along the pitot line, which may be used if damage to the original pitot line inside the wing is detected. The pitot line is connected to the fuselage adjacent to the root rib, access is possible when the left wing is folded back (refer to Pilot Operating Handbook, Section 8). The unused line is secured by a cable tie inside the wing, access is possible thru a hole in the wing root, while the opposite end of this line is connected to the "static-air" port at the pitot tube (the "static-air" port on the pitot tube is not used in the system). If an advanced instrument system is installed (Dynon Glass Cockpit), the second line is used for the AOA (angle of attack) port with the Dynon AOA pitot tube (refer to figure 15-10).

15.3.6 Trouble Shooting-Pitot Static System

Trouble	Probable Cause	Remedy
Low or sluggish airspeed indication (normal altimeter and vertical speed).	Pitot tube obstructed, leak or obstruction in pitot line.	Test pitot tube and line for leaks or obstructions. Blow out tube and line, repair or replace damaged line.
Incorrect or sluggish response (all three instruments).	Leaks or obstructions in static line.	Test line for leaks and obstructions. Repair or replace line, blow out obstructed line.

15.3.7 Trouble Shooting Airspeed Indicator

Trouble	Probable Cause	Remedy
Pointer fails to respond.	Pitot pressure connection not properly connected to pressure line from pitot tube.	Test line and connection for leaks. Repair or replace damaged line.
	Pitot or static lines clogged.	Check line for obstructions. Blow out lines.
Incorrect indication or pointer oscillates.	Leak in pitot or static lines.	Test lines and connections for leaks. Repair or replace damaged lines.
	Defective mechanism or leaking diaphragm.	Substitute known-good indicator and check reading. Replace indicator.
Pointer vibrates.	Excessive vibration.	Check panel shock mounts and replace if required.

	Excessive tubing vibration.	Check clamps, cable ties and line connections for security.

15.3.8 Trouble Shooting Altimeter

Trouble	Probable Cause	Remedy
Instrument fails to operate.	Static line plugged.	Check line for obstructions. Blow out lines.
	Defective mechanism.	Substitute known-good altimeter and check reading. Replace indicator.
Incorrect indication.	Pointer not carefully set.	Reset hands with knob.
	Leaking diaphragm.	Substitute known-good altimeter and check reading. Replace indicator.
	Pointers out of calibration.	Compare reading with known-good altimeter. Replace indicator.
Pointer oscillates.	Static pressure irregular.	Check lines for obstruction or leaks. Blow out lines.
	Leak in airspeed or vertical speed indicator installations.	Check other instruments and system plumbing for leaks. Blow out lines.

15.3.9 Trouble Shooting Vertical Speed Indicator

Trouble	Probable Cause	Remedy
Instrument fails to operate.	Static line plugged.	Check line for obstructions. Blow out lines.
	Static line broken	Check line for damage, connections for security. Repair or replace damaged line.
Incorrect indication.	Partially plugged static line.	Check line for obstructions. Blow out line.
	Ruptured diaphragm.	Substitute known-good indicator and check reading. Replace indicator.
	Pointer off zero.	Reset pointer to zero.
Pointer oscillates.	Partially plugged static line.	Check line for obstructions. Blow out lines.

15.4 Engine Indicators

15.4.1 Rotax Flydat System

The Flydat represents an instrument specially developed for Rotax Aircraft engines for the indication and acquisitation of engine operating data readily accessible for the pilot. The Flydat provides the following indicators:
Engine speed, cylinder head temperature, oil temperature, oil pressure, exhaust gas temperatures, operation hours.
The operating data is being permanently compared with the specific engine operating limit. If the signalled operating data exceeds the stored operating limits, the Flydat will warn the pilot.

15.4.1.1 Removal and Installation (refer to figure 15-3 &15-4)

Required Tools: 3 mm allen wrench, screwdriver, wire-cutting pliers.
Parts required: Cable ties, 4 x self-locking nut (M4).
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew retaining screws and remove decorative ABS cover.
c. Remove shock-mount screws in both upper corners of the aluminum frame.
d. Pull out upper edge of the frame and lift up to disengage the lower shock-mounts from cockpit main-frame.
e. Disconnect wiring and hoses and remove panel.
f. Unscrew and remove Flydat.
g. Reverse preceding steps for reinstallation.

Note

Do not overtighten cover fixing screws at reinstallation, because this would cause the ABS decorative cover to crack.

15.4.1.2 Trouble Shooting

Trouble	Probable Cause	Remedy
Flydat fails to operate.	Low battery voltage.	Check, recharge or replace battery. Refer to Section 2.
	Blown fuse or circuit breaker.	Replace fuse or reset circuit breaker.
	Defective Flydat.	Substitute known-good Flydat and check operation. Replace Flydat.
Incorrect Indication	Defective sensor.	Replace Sensor.
	Improper connection.	Check terminals, repair or replace defective parts.
No reading / dashes	Broken wiring or damaged connectors.	Check wiring and connections, repair or replace defective parts.

	Defective Flydat.	Substitute known-good Flydat and check operation. Replace Flydat.

15.4.2 Fuel Quantity Indicating System, Description

The electric type fuel quantity indicator is used in conjunction with a float – operated variable – resistance transmitter in the fuel tank. The full position of float produces a maximum resistance (~180 ohms) through transmitter, permitting maximum pointer deflection. As fuel level is lowered, resistance in transmitter is decreased, producing a smaller pointer deflection. The transmitter provides a resistance of ~3 ohms in it´s lower position (fuel empty).

15.4.2.1 Removal and Installation (refer to Section 12, figure 12-3 & 12-4)

Required Tools: Screwdriver
Parts required: Cable ties
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

To remove the fuel quantity transmitter, the fuel tank has to be removed first, refer to Section 12 for detailed information. Remove screws attaching transmitter and carefully work transmitter from tank. Do not bend float arm!
Install transmitter by reversing preceding steps. Service fuel tank and check for leaks and correct quantity indication.

Note

Ensure transmitter is properly grounded in accordance with Section 12.

15.4.2.2 Trouble Shooting

Trouble	Probable Cause	Remedy
Failure to indicate.	No power to indicator (pointer stays below 0).	Check fuse/circuit breaker and inspect for open circuit. Repair or replace defective wire.
	Grounded wire (pointer stays below 0).	Check for partial ground between transmitter and gauge. Repair or replace defective wire.
	Disconnected or broken wire (pointer stays above 1/1).	Inspect wire for partial damage. Inspect terminal connection on gauge and transmitter.
	Defective indicator.	Substitute known-good indicator. Replace indicator.

	Defective transmitter.	Check resistance of transmitter as outlined in paragraph 15.4.2.
Off calibration.	Defective indicator.	Substitute known-good indicator. Replace indicator.
	Defective transmitter.	Substitute known-good indicator. Recalibrate or replace.
Sluggish indicator operation.	Defective indicator.	Substitute known-good indicator. Replace indicator.
Erratic readings.	Loose or broken wiring.	Inspect circuit wiring. Repair or replace defective wire.
	Defective indicator or transmitter.	Substitute known-good device. Replace indicator or transmitter.

15.4.2.3 Transmitter Calibration

Warning

Use extreme caution while working with electrical components of fuel system. The possibility of electrical sparks around an “empty” fuel tank creates a hazardous situation.

Before installing transmitter, attach electrical wires and place master switch in “ON” position. Allow float arm to rest against lower float arm stop and read indicator. The pointer should be on 0 (empty) position. Raise float until arm is against upper stop and permit indicator pointer to be on 1/1 (full). If any other reading is dedicated, replace transmitter. Check that floater arm moves without friction.
Adjust float arm to a length of 7.5 inch (measured between floater and float arm fixing screw). Note floater orientation before adjusting arm length.

15.4.3 Manifold Temperature Gauge, Description

An electronic type manifold/outside temperature gauge, featuring a LCD-display is installed on the right cockpit panel. Temperatures are measured by two sensors installed to the airbox (manifold temperature) and beneath the maingear-fairing at the bottom of the fuselage (outside temperature). Pressing the "in/out" button will alternate the display between outside and manifold temperature. Refer to the manufacturer´s user manual for detailed information.
If the aircraft is equipped with an electronic primary flight display system (Dynon Glass Cokpit System), the temperature gauge is contained within the EMS D-120.

15.4.3.1 Removal and Installation

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew retaining screws and remove decorative ABS cover.
c. Remove shock-mount screws in both upper corners of the aluminum frame.
d. Pull out upper edge of the frame and lift up to disengage the lower shock-

mounts from cockpit main-frame.

e. Disconnect wiring and hoses and remove panel.
f. Remove manifold temperature indicator.
g. Reverse preceding steps for reinstallation.

Note

Do not overtighten cover fixing screws at reinstallation, because this would cause the ABS decorative cover to crack.

15.4.3.2 Trouble Shooting

Trouble	Probable Cause	Remedy
Instrument fails to operate.	No power to indicator.	Check fuse/circuit breaker and inspect for open circuit. Repair or replace defective wire.
Failure to indicate.	Defective sensor.	Replace indicator.
	Defective indicator.	Replace indicator.

15.5 Magnetic Compass, Description

The magnetic compass is liquid-filled, with expansion provisions to compensate for temperature changes. It is equipped with compensating magnets adjustable from front of case. No maintenance is required on compass except on occasional check on a compass rose for adjustment of compensation.

15.6 Slip Indicator

A slip indicator is provided on the left panel. The slip indicator needs no servicing at all.

Section 16

Electrical Systems

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16.1 Electrical System, General

This section contains service information necessary to maintain the Aircraft Electrical Power Supply System, Battery, Alternator Power System, Aircraft Lighting System and Electrical Load Analysis.

16.2 Electrical Power Supply System, Description

Electrical energy for the aircraft is supplied by a 14-volt, direct-current, single-wire, negative ground electrical system. A 12-volt battery supplies power for starting and furnishes a reserve source of power in the event of alternator failure. An engine-driven alternator is the normal source of power during flight and maintains a battery charge controlled by a voltage regulator.

16.2.1 Master Wiring System

The aircraft is equipped with a master wiring system, featuring various terminal connectors to provide an easy installation of additional electric equipment. The master wiring also provides a master power bus and an avionics power bus system. Refer to Section 19 for detailed wiring diagrams.

16.2.2 Switch Panel

A switch panel is located at the lower center section of the cockpit frame. The switch panel provides all switches including master and avionic master switch, flap drive switch, as long as the indicators for flap- and trim tab postion, ignition key, charge tell-tale and throttle lever.

16.2.3 Master Switch

The operation of the battery and alternator system is controlled by a master switch. The switch, when operated, connects the battery to the master wiring system, activating the power systems.

16.2.4 Avionics Master Switch

When the avionics master switch is operated, power to the avionics bus system is enabled. The avionics bus system provides power to all electronic devices like radio, intercom, transponder, GPS, attitude indicator, directional indicator, EFIS system (if fitted).

16.2.5 Flap Drive Switch

A 3-postion switch located on the switch panel provides power to the flap drive motor. Push down the switch will extend the flaps continously to the desired angle, indicated on the gauge below. The switch will engage if pushed to upper positon, while flaps will be retracted fully.

16.2.6 Device Switches

The switch panel also provides six 2-position switches, to control ACL, fuel pump, position lights, instrument lighting and landing light. The right switch is not used with basic equipment.

16.2.7 Ignition and Magneto Switch

A key type switch installed in the switch panel controls the starter motor and both magnetos. Starting the engine is only possible after the master switch is switched on.

Warning

Switching of the master switch while engine running will damage the voltage regulater with serious damage to all installed electronic equipment.

16.2.8 Automatic Circuit Breakers Panel

On the lower edge of the right panel a circuit breaker panel is installed. The panel provides 12 automatic circuit breakers for the master- and avionics bus system.

16.2.9 Optional Equipment

16.2.9.1 Connecting Optional Instruments

The master wiring system of the aircraft provides terminal connectors for various extensions like: Voltage indicator, exhaust gas indicators, oil temperature gauge, oil pressure gauge, rpm gauge, clock and more. Extension wiring systems are available for most instruments (refer to Section 20).

16.2.9.2 Connecting Avionics Devices

The avionics wiring system of the aircraft provides terminal connectors for various extensions like: Radio, intercom, transponder, GPS, attitude-gyro, directional-gyro, EFIS-display system, turn indicator. Extension wiring systems are available for most instruments (refer to Section 20).

16.3 Battery Power System

16.3.1 Battery, Description

The battery is 12 volts and is approximately 12 ampere-hour capacity. The battery is mounted on left the forward side of the firewall. The factory installed battery is of a sealed type and requires no maintenance.

16.3.2 Removal and Installation

Required Tools: Screwdriver, 10 mm wrench.
Parts required: None
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Remove top half of cowl.
b. Remove the battery retaining strap.
c. Disconnect the ground cable from the negative battery terminal.

Caution

When installing or removing battery, always observe the proper polarity with the aircraft electrical system (negative to ground). Reversing the polarity, even momentarily, may result in failure of semiconductor devices (regulator diodes, radio protection diodes and radio transistors).

a. Disconnect the cable from the positive terminal of the battery.
b. Lift the battery out of the battery box.
c. To replace the battery, reverse preceding steps.

16.3.3 Trouble Shooting Battery Power System

Trouble	Probable Cause	Remedy
Battery will not supply power to electrical system or crank engine.	Battery discharged.	1. Measure voltage at battery terminal with master switch and suitable load turned on. Normal battery will indicate 11.5 – 12.0 volts. If voltage is low, proceed to step 2. If voltage is normal, proceed to step 3.
	Battery faulty.	2. Charge battery in accordance with charging information found on the battery. If battery voltage drops below 11.5 volts 12 hours after charging, when connected to the aircraft with master switch turned on, replace battery.

	Faulty wiring.	3. Check voltage on master fuse/circuit breaker. Voltage shall not indicate more then 0.3 volts below battery voltage. Replace defective wiring, master switch or connectors.

16.3.4 Cleaning the Battery

For maximum efficiency the battery and connections should be kept clean at all times.

a. Remove the battery and connections in accordance with the preceding paragraph.
b. Wipe the battery cable ends, battery terminals and the entire surface of the
c. battery with a clean cloth moistened with a solution of bicarbonate of soda (baking soda) and water.
d. Rinse with clear water, wipe off excess water and allow battery to dry.
e. Brighten up cable ends and battery terminals with emery cloth or a wire brush.
f. Install the battery according to the preceding paragraphs.
g. Coat the battery terminals with an ignition spray product to reduce corrosion.

16.3.5 Testing the Battery

When battery is disconnected from the electrical system of the aircraft, voltage measuring should indicate 12.2 volts or above (regular 12.5 volts). If battery voltage is below 12.2 volts, battery needs to be charged. When battery voltage is below 11.8 volts battery has to be replaced.

16.3.6 Charging the Battery

Battery shall be charged only when disconnected from the aircraft. Charge battery in accordance to the charging instructions found on the battery.

16. 4 Alternator Power System, Description

The alternator is an integral part of the engine, rated at 14 volts at 20 amperes continuous output. The output signal is fed to an external rectifier regulater to be provided to the aircraft electrical system.

16.4.1 Removal and Installation

Refer to the Rotax maintenance manual for information about removal and installation of the engine alternator system.

16.4.2 Trouble Shooting

Refer to the Rotax maintenance manual for information about trouble shooting of the engine alternator system.

16.5 Voltage Rectifier Regulater, Description

The rectifier regulater is located on the left forward side of the firewall. Feeding wires from the alternator (left side of ignition housing on the engine) are routed directly to the regulator. The resulting dc output is applied to the aircraft battery and master wiring system. To protect the rectifier regulator a 30A slow blowing fuse is used in the regulator-to-battery wiring located adjacent to the regulator case.

16.5.1 Removal and Installation

Required Tools: 4 mm allen wrench, 8 & 10 mm wrench, screwdriver.
Parts required: 2 x self-locking nut (M5), insulating tape.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

a. Remove cowl.
b. Disconnect battery leads and insulate as safety precaution.
c. Unplug terminal connector on regulater case.
d. Unscrew regulater from firewall and remove.
e. Reverse preceding steps for reinstallation.

16.5.2 Testing the Voltage Regulator

Measure system voltage on master fuse/circuit breaker (farthest left on fuse panel), and voltage should indicate 14.0 +/- 0.3 volts with engine running.

16.5.3 Trouble Shooting

Refer to the Rotax maintenance manual for information about trouble shooting of the engine alternator system.

16.6 Aircraft Lighting System, Description

The aircraft lighting system consists of navigation lights, a landing light (if fitted), anti-collision strobe lights and instrument lights. All electrical switches to control the lighting system are located on the switch panel as outlined in paragraph 16.2.2.

16.6.1 Trouble Shooting

Trouble	Probable Cause	Remedy
Landing light out.	Short circuit in wiring.	1. Inspect fuse/circuit breaker. If open, proceed to step 2. If OK, proceed to step 3.
	Defective wiring.	2. Test each circuit separately until short is located. Repair or replace wiring.

	Defective switch.	3. Check voltage at light with master switch and landing light switch ON. Should read battery voltage. Replace switch.
All nav lights out.	Short circuit in wiring.	1. Inspect fuse/circuit breaker. If open, proceed to step 2. If OK, proceed to step 3.
	Defective wiring.	2. Test each circuit separately until short is located. Repair or replace wiring.
	Defective switch.	3. Check voltage at nav lights with master switch and nav light switch ON. Should read battery voltage. Replace switch.
One nav light out.	Lamp burned out.	Inspect lamp, replace lamp.
	Open circuit in wiring.	Test wiring for continuity. Repair or replace wiring.
Anti-collision strobe light out.	Flash tube burned out.	Test with new tube, Replace tube.
	Faulty wiring.	Test for continuity, Repair or replace.
	Faulty power supply.	Test with new power supply, Replace power supply.
	Circuit breaker open or fuse blown.	Inspect, reset.
	Faulty switch.	Test for continuity, Repair or replace.
Instrument lights will not light.	Short circuit in wiring.	1. Inspect fuse/circuit breaker. If open, proceed to step 2. If OK, proceed to step 3.
	Defective wiring.	2. Test each circuit separately until short is located. Repair or replace wiring.
	Defective switch.	3. Check voltage at lights with master switch and instrument light switch ON. Should read battery voltage. Replace switch.
	Lamps burned out.	Inspect lamps, replace lamps.

16.6.2 Navigation Lights, Description

The navigation lights are located on each wing tip. The lights are controlled by a rocker type switch located on the switch panel.

16.6.2.1 Removal and Installation

Required Tools: Phillips head screwdriver
Parts required: None
Level of Maintenance: Line
Certification required: Owner

a. Unscrew and remove colored protective cover.
b. Withdraw and unpug lamp.
c. Reverse preceding steps for reinstallation.

Note

Do not overtighten cover fixing screws at reinstallation, to prevent the cover from cracking.

16.6.3 Anti Collision Strobe Light, Description

A white strobe light is installed on top of the rudder and light is vibration resistant and operates on the principle of a capacitor discharge into a xenon tube, producing an extremely high intensity flash. Energy is supplied to the strobe light from a power supply mounted below the strobe light in the top of the rudder.

16.6.3.1 Removal and Installation

To replace flash tube, unscrew light from top of the rudder and disconnect from power supply. To replace power supply, removal of the rudder is required first (refer to Section 10.), then follow the description below:

a. Unscrew access plate from rudder.
b. Unscrew, disconnect and remove power supply.
c. Reverse preceding steps for reinstallation.

16.6.4 Instrument/Avionics Lighting, Description

All installed instruments, which are equipped with internal lights, are connected to the lighting system of the aircraft. Power to the instrument and avionics lights is provided by a rocker-type switch on the switch panel.

16.6.4.1 Removal and Installation

Refer to the appropriate user manuals provided with the instruments and avionics devices for instructions about replacement of instuments and avionics lights.

16.7 External Receptacle, Description

A receptacle for connecting external equipment like GPS is installed on top of the rear cabin bulkhead, between both seats. The receptacle provides 12 volt (positive lead on center terminal). A special adapter to connect a cigar lighter plug can be obtained from the factory or at most automobile parts suppliers.

16.7.1 Removal and Installation

Required Tools: 10 & 19 mm wrench, soldering iron.
Parts required: Cable ties, insulating tape, solder.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To remove the external receptable, removal of the baggage compartment is required first (refer to Section 3.), then proceed as oulined below.

a. Disconnect battery leads and insulate as safety precaution.
b. Disconnect wiring from the receptacle, note wiring for reinstallation.
c. Unscrew and remove receptacle
   Reverse preceding steps for reinstallation.

16.8 Alterations

16.8.1 Emergency Locater Transmitter, Description

The ELT is a self-contained, solid state unit, with its own power supply, with an externally mounted antenna. The ACK-E01 transmitter is designed to transmit a frequency of 121.5 Megahertz. Power is supplied to the transmitter by a battery-pack which has the service life of the batteries placarded on the batteries. The ELT is equipped with a battery-pack containing 8 alkaline “D” size dry cell batteries wired in series. A rocker type switch at the forward side of the ELT is provided to arm or manually operate the system (in example for testing purposes).

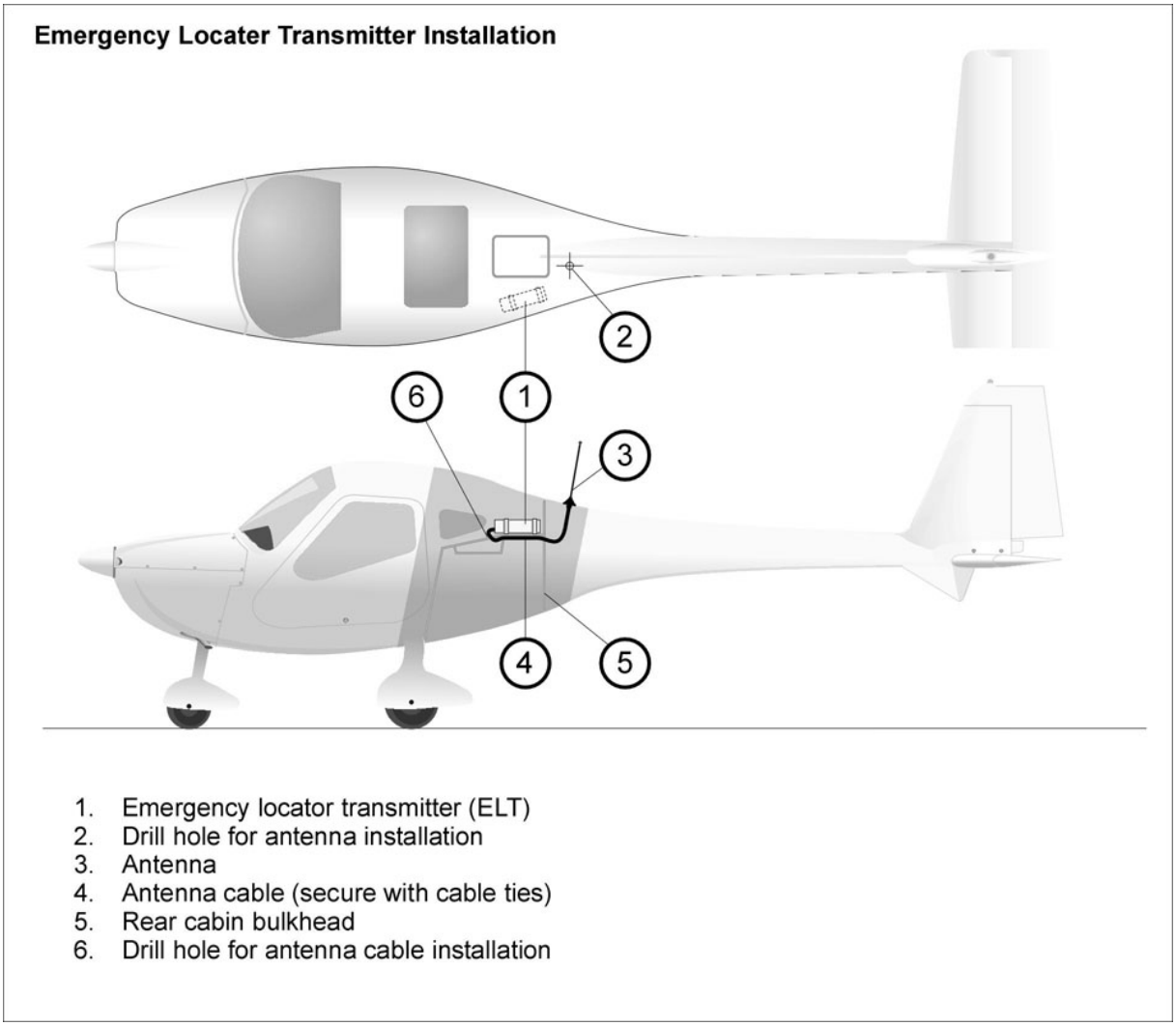
16.8.1.1 Installation

The ELT comes with installation bracket which has to screwed to the top of the rear cabin bulkhead. Refer to figure 16-1. for detailed information

16.8.1.2 Antenna Installation

Refer to figure 16-1. for detailed information of antenna installation.

Figure 16-1.



16.8.2 Landing Light, Description

The landing light is mounted to the bottom of the lower engine cowling. This position facilitates the use of one lamp as both a landing and taxi light. A light cover provides weather protection for the lamp. The landing and taxi light is controlled by a rocker type switch located on the switch panel.

16.8.2.1 Installation

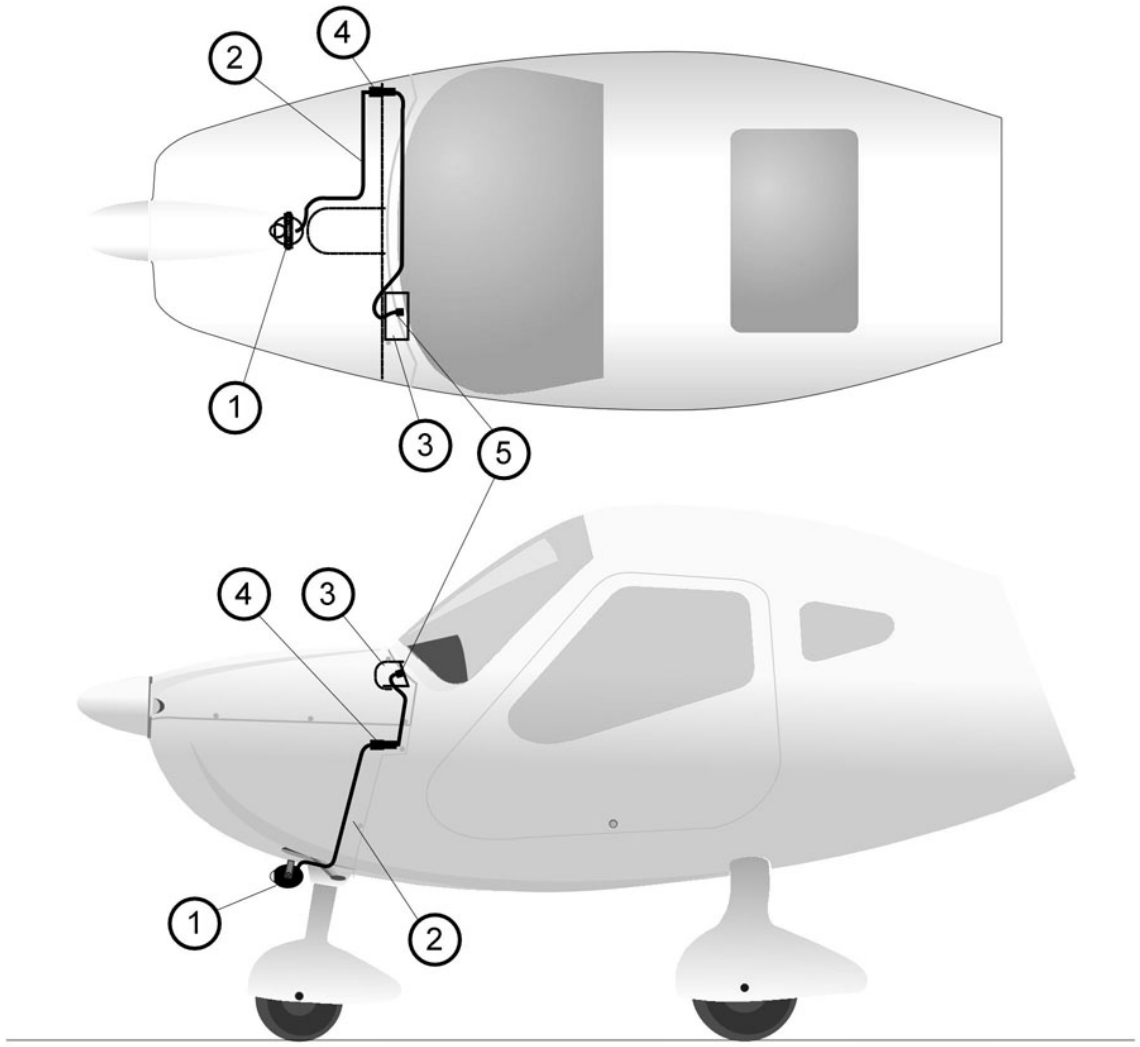
Required Tools: 4 mm drill bit, power drill, 3 mm allen wrench, 7 mm wrench.
Parts required: Landing light kit including wiring, terminals and cable clamps.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

For installation of the landing light, refer to figure 16-2. The basic equipment of the aircraft already contains the electrical wiring including switch, inside the cabin. Therefore installation is limited to run appropriate wiring from the connector box

located forward the firewall to the lamp position on the lower cowling. The position light set contains required wiring, including connectors, terminals, lamp assembly and fasteners. The complete lamp set can be obtained from the factory.

Figure 16-2.

Landing Light Installation



1. Landing light (screwed to lower part of cowling)
2. Wiring
3. Connector box at firewall
4. Quick connect
5. Terminal inside Connector-Box

Note

Run wiring inside cowling as shown in illustration above. Secure wires at the inside of cowling and watch for appropriate distance to hot parts of exhaust system.

16.8.3 Night VFR Lighting System, Description

For Night-VFR use the REMOS G-3/600 has to be equipped with the REMOS Night-VFR Kit, consisting of landing light, navigation lights, anti-collision-lights, tail light and a cockpit lighting system. All systems are advanced LED-type devices matching with the ASTM requirements.

16.8.3.1 Landing Light – LED-Type, Description

The landing light is a LED type lighting system, providing a multiple lens system to facilitate landing and taxiing light contained in one unit. The landing and taxi light is controlled by a rocker type switch located on the switch panel.

16.8.3.1.1 Installation

Required Tools: 4 mm drill bit, power drill, 3 mm allen wrench, 7 mm wrench.
Parts required: LED-landing light kit including wiring, terminals and cable clamps.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

Refer to paragraph 16.8.2 for detailed installation instructions. Installation of the LED-type device is similar to the standard landing light device.

16.8.3.2 Anti-Collision Lights – LED-Type, Description

A red LED strobe light is installed on top of the rudder and light is vibration resistant, producing an extremely high intensity flash. A second LED-type strobe light has to be installed at the bottom of the fuselage, behind the main gear to meet ASTM requirements.

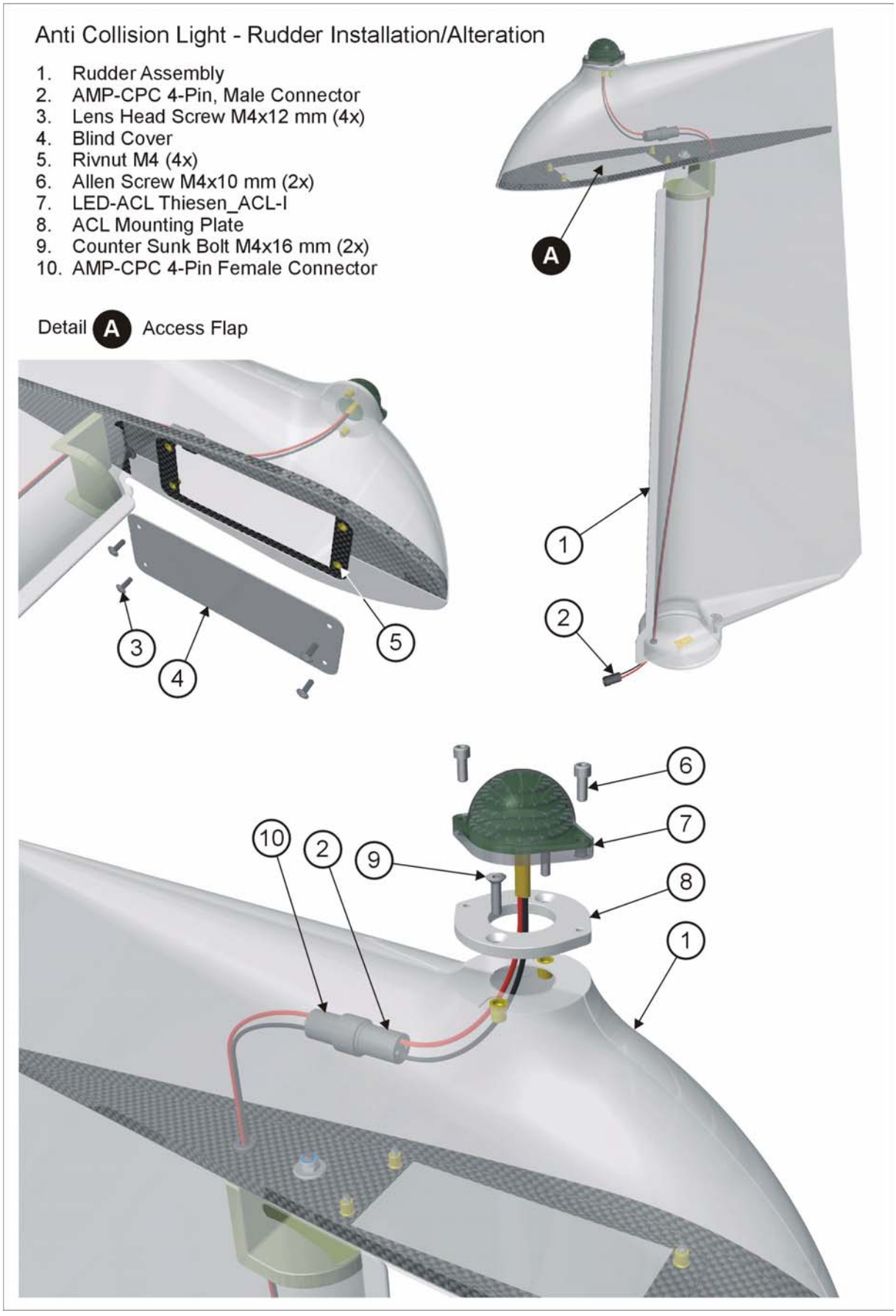
16.8.3.2.1 Installation (refer to figure 16-3 & 16-4)

Required Tools: 4/7 mm drill bit, conical drill bit, power drill, 2.5/3 mm allen wrench, 7 mm wrench, crimper, rivet pliers.
Parts required: REMOS ACL LED-light kit including wiring, rivnuts, terminals and cable clamps, cable ties as required.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To replace flash light at the rudder, follow the description below and refer to figure 16-3.

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew and disconnect ACL buld from rudder.
c. Remove access flap (4) from rudder, unscrew and remove ACL control unit.
d. Apply appropriate plug connector (10) to wiring harness inside the rudder.
e. Install LED-type ACL (7), using the ACL-mounting plate (8) and connect to wiring harness.
f. Apply rivnuts (5) to rudder (1), (enlarge holes to 7 mm diameter before).
g. Secure harnesses with cable ties as required and attach access flap (4).

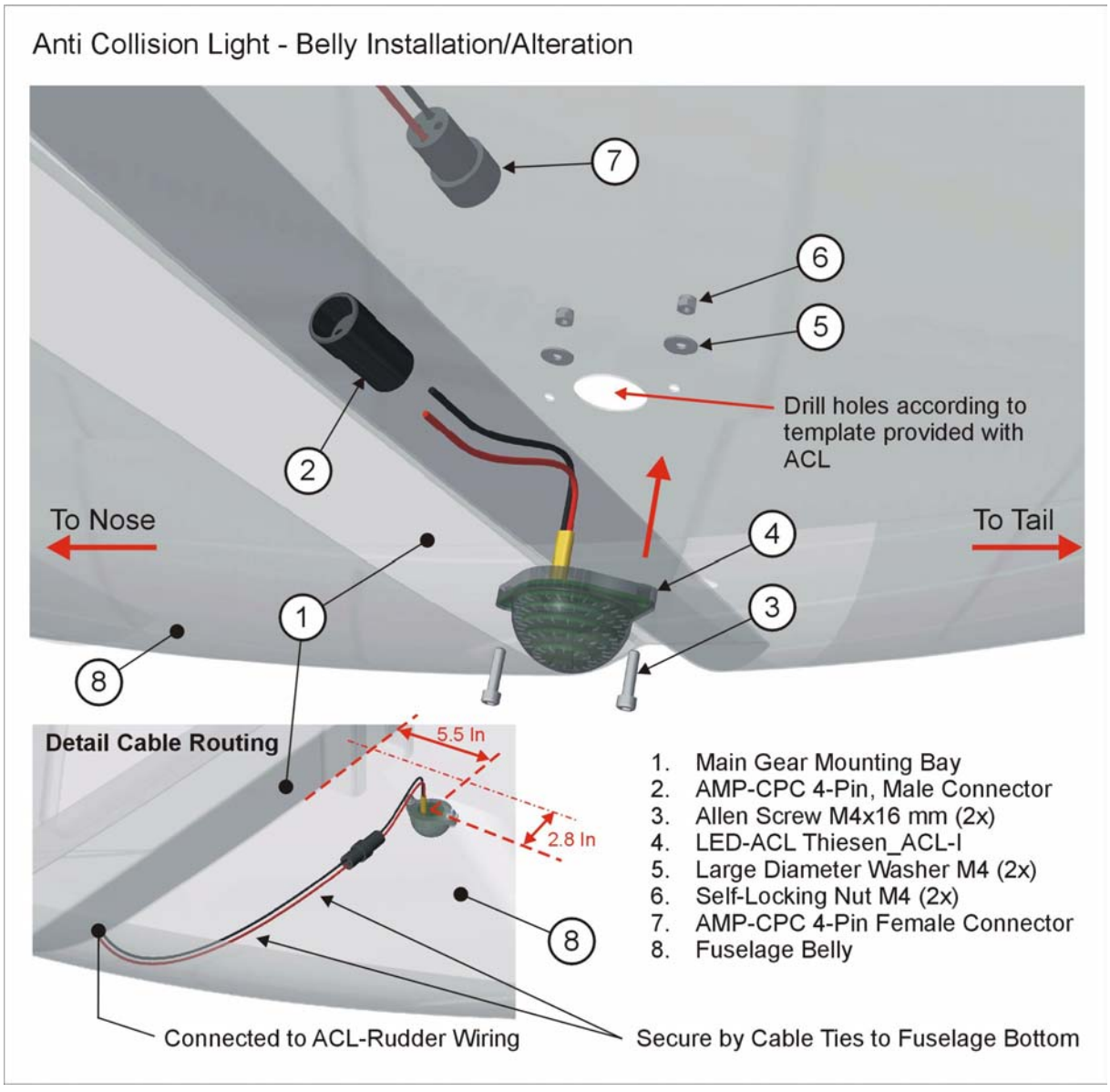
Figure 16-3.


Anti Collision Light - Rudder Installation/Alteration
1. Rudder Assembly
2. AMP-CPC 4-Pin, Male Connector
3. Lens Head Screw M4x12 mm (4x)
4. Blind Cover
5. Rivnut M4 (4x)
6. Allen Screw M4x10 mm (2x)
7. LED-ACL Thiesen_ACL-I
8. ACL Mounting Plate
9. Counter Sunk Bolt M4x16 mm (2x)
10. AMP-CPC 4-Pin Female Connector
Detail A Access Flap
A
1
2
3
4
5
6
7
8
9
10

To install ACL flash light to the belly, follow the description below and refer to figure 16-4.

a. Disconnect battery leads and insulate as safety precaution.
b. Remove baggage compartment (refer to Section 3).
c. Drill holes for ACL installation according to template provided with ACL-light and measures illustrated in figure 16-4.
d. Connect provided wiring harness with female connector (7) to wiring routed at the left side of the fuselage as illustrated.
e. Install ACL light (4) to fuselage belly as illustrated, using the male connector (2) provided.
f. Secure harnesses with cable ties as required and reassemble baggage compartment as outlined in Section 3.

Figure 16-4.



16.8.3.3 Navigation Lights – LED-Type, Description

The LED-type navigation lights are designed to be installed to each wing tip, replacing the bulb type lights. The lights are controlled by a rocker type switch located on the switch panel.

16.8.3.3.1 Installation (refer to figure 16-5)

Required Tools: 7 mm drill bit, power drill, 3 mm allen wrench, crimper, rivet pliers.
Parts required: REMOS Nav-light kit including wiring, rivnuts, and cable clamps, cable ties as required.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To replace navigation lights follow the description below, refer to figure 16-5 as installation guide.

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew nav-light protective cover, remove and unplug nav light.
c. Drill holes to tip rib as illustrated (1) and apply rivnuts.
d. Connect REMOS LED position light assembly (4) to wiring harness inside wing and install as illustrated.
e. Secure harnesses with cable ties as required and attach access flap (4).
f. Install nav-light protective cover.

16.8.3.4 Tail Light – LED-Type, Description

The tail light is fixed to a removable tail cover, attached to the tail cone by two retaining screws. The tail light is a LED type lighting system, providing an 140° angle of reflected beam. The tail light is controlled by a rocker type switch located on the switch panel (labled NAV-Light).

16.8.3.4.1 Installation (refer to figure 16-6)

Required Tools: 7 mm drill bit, power drill, 2.5/3 mm allen wrench, 5.5 mm wrench.
Parts required: Tail light kit including wiring, tail cover, terminals and cable clamps.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To install the tail light proceed as oulined below.

a. Disconnect battery leads and insulate as safety precaution.
b. Unscrew the tail cover from the tail cone.
c. Install Tail light (2) to tail cover (3) as illustrated in figure 16-6.
d. Attach tail cover assembly to tail cone.

Figure 16-5.

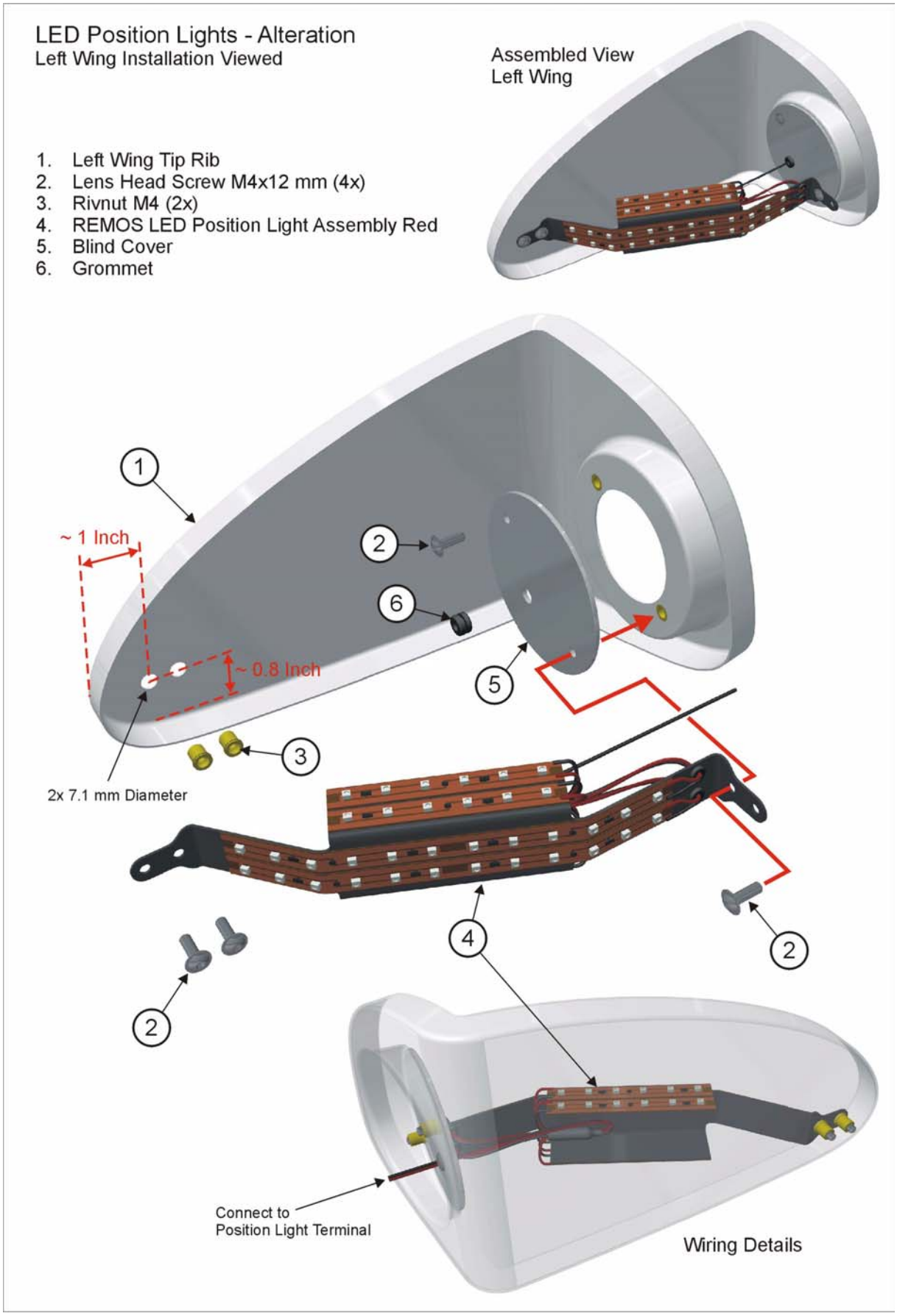
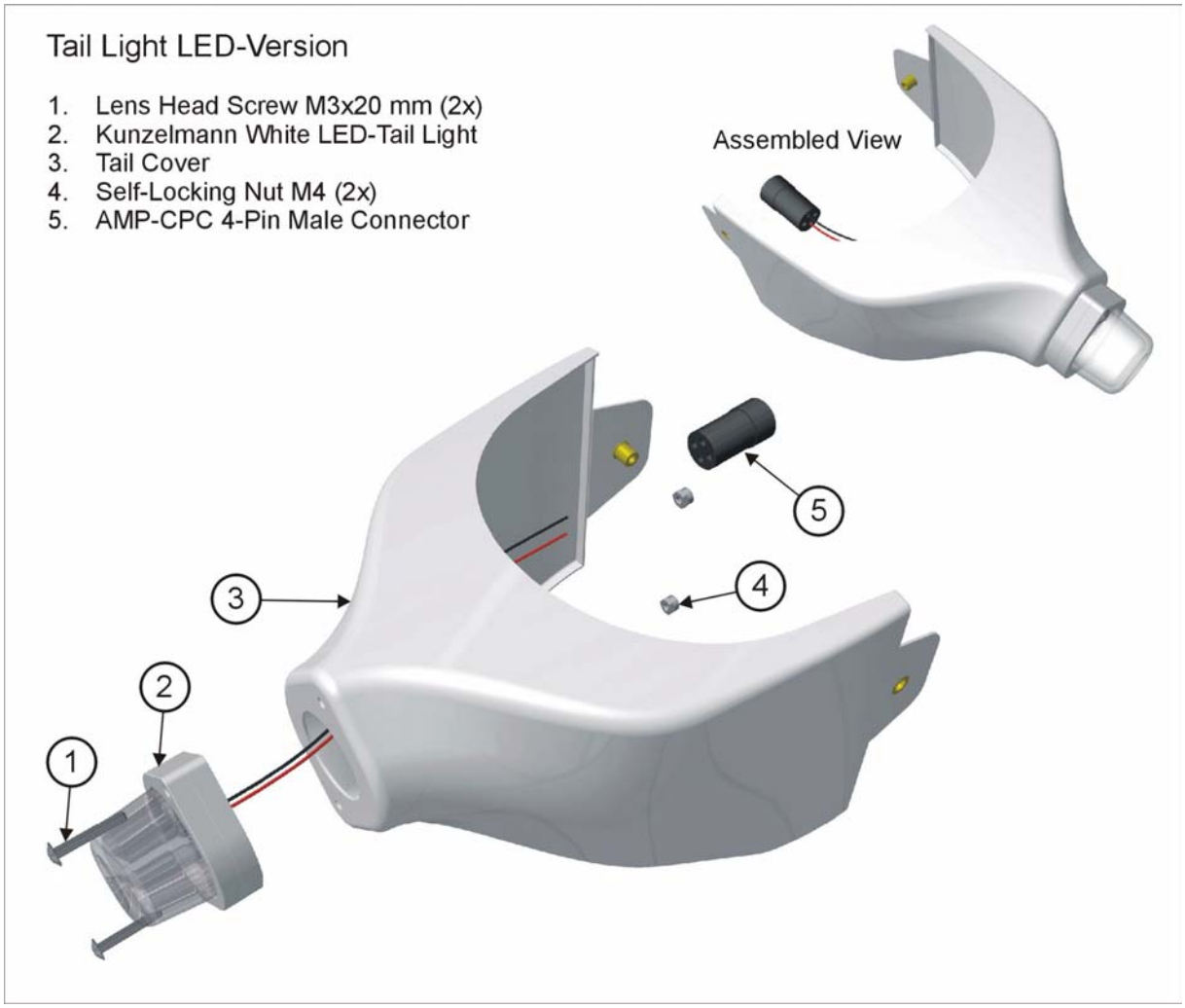

LED Position Lights - Alteration
Left Wing Installation Viewed
1. Left Wing Tip Rib
2. Lens Head Screw M4x12 mm (4x)
3. Rivnut M4 (2x)
4. REMOS LED Position Light Assembly Red
5. Blind Cover
6. Grommet
Assembled View
Left Wing
~ 1 Inch
~ 0.8 Inch
2x 7.1 mm Diameter
Connect to
Position Light Terminal
Wiring Details

Figure 16-6.



16.8.3.5 Cockpit Lighting System – LED-Type, Description

The cockpit lighting system consists from three LED-arrays mounted below the top border of the cokcpit main frame. At the left border of the cockpit frame a dim control is located. The system is controled by the instrument lighting switch on the switch panel.

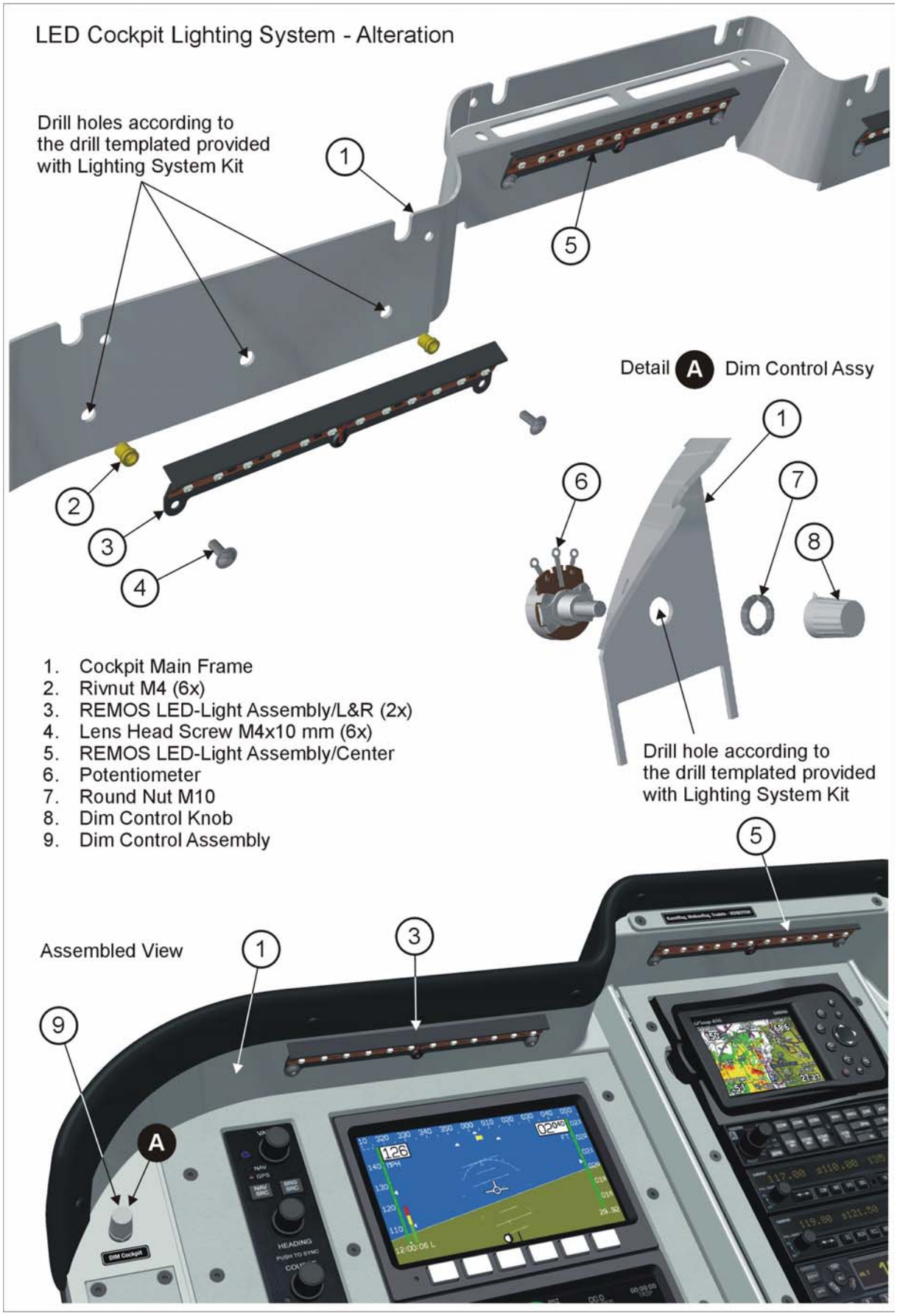
16.8.3.5.1 Installation (refer to figure 16-7)

Required Tools: 7/8/10 mm drill bit, power drill, 3 mm allen wrench.
Parts required: Cockpit Lighting Kit, terminals and cable clamps.
Level of Maintenance: Line
Certification required: LSA Repairman Maintenance or Owner

To install the cockpit lighting system proceed as oulined below.

a. Disconnect battery leads and insulate as safety precaution.
b. Drill holes according to the drill template provided with lighting kit.
c. Apply rivnuts (2) and install LED-arrays (3&5) and dim control potentiometer (6).
d. Connect lighting system to aircraft main bus (refer to Section 20).

Figure 16-7.


LED Cockpit Lighting System - Alteration
Drill holes according to the drill templated provided with Lighting System Kit
1
2
3
4
5
Detail A Dim Control Assy
1
6
7
8
Drill hole according to the drill templated provided with Lighting System Kit
1. Cockpit Main Frame
2. Rivnut M4 (6x)
3. REMOS LED-Light Assembly/L&R (2x)
4. Lens Head Screw M4x10 mm (6x)
5. REMOS LED-Light Assembly/Center
6. Potentiometer
7. Round Nut M10
8. Dim Control Knob
9. Dim Control Assembly
Assembled View
5
1
3
9
A
DIM Cockpit
HEADING

16.9 Electrical Load Analysis Chart

16.9.1 **Standard Equipment** (none Night VFR)

The following table does show the load analyis for the REMOS G-3/600, without Night-VFR package.

Standard Equipment (running load)	Amps
Fuel indicator……	*
Fuel pump……..	1.4
Anti collision strobe light……..	3.0
Navigation lights……	3.4
Rotax Flydat ..……..	0.3
Dynon Avionics EFIS D-100…….……	0.6
Dynon Avionics EMS D-120 ……..…….	1.0
Dynon Avionics HS-34……..……..	0.2
Optional Equipment (running load)	
Bendix King KT-76A transponder……..	1.3
Bendix King KT-76C transponder……..	1.4
Bendix King KY-97 radio.....	0.7 – 6.0
Bendix King KX-125 nav/com……	1.0 - 6.0
Bendix King Skyforce IIIC GPS……..	1.0
Falcon Gauge GH02E-3 attitude gyro……...	0.4
Falcon Gauge DG02E-3 directional gyro……..	0.4
Falcon Gauge TC02E-3-1 turn indicator……...	0.4
Garmin SL-40 radio……..	0.3 – 3.4
Garmin SL-30 radio……..	0.8 – 4.2
Garmin GMA-340 audio panel……..…….	0.5
Garmin GTX 320 transponder…….	0.7 – 1.2
Garmin GTX 327 transponder…….	0.5 – 1.2
Garmin GPS Map 296 - 496 GPS……..……	0.2
Garmin GPS Map 196 GPS……	1.0
Microair M-760 radio…….	0.5 - 2.5
PS Engineering PM-1000II intercom……..	0.2
PS Engineering PM 501 intercom……..……...	0.2
Sigtronic SPA-400 intercom……	0.2
Items not considered as part of running load	
External receptacle……...	max. 1.0
Clock……	*
Instrument lights (depending on installed equipment)……	0.4 - 0.7
Flap motor……..	1.0
Trim motor……..	1.2
Landing light……..	4.6

* Negligible

16.9.2 Night VFR Equipment

The following table does show the load analyis for the REMOS G-3/600, equipped with REMOS Night-VFR package.

Standard Equipment (running load)	Amps
Fuel indicator…….	*
Fuel pump……..	1.4
Anti collision strobe lights (LED-type)……	3.4
Navigation lights (LED-type)……...	1.2
Rotax Flydat ..……...	0.3
Dynon Avionics EFIS D-100……..……	0.6
Dynon Avionics EMS D-120 ……..…….	1.0
Dynon Avionics HS-34……..……..	0.2
Optional Equipment (running load)	
Bendix King KT-76A transponder……..	1.3
Bendix King KT-76C transponder……..	1.4
Bendix King KY-97 radio.....	0.7 – 6.0
Bendix King KX-125 nav/com…….	1.0 - 6.0
Bendix King Skyforce IIIC GPS……..	1.0
Falcon Gauge GH02E-3 attitude gyro……...	0.4
Falcon Gauge DG02E-3 directional gyro……..	0.4
Falcon Gauge TC02E-3-1 turn indicator……...	0.4
Garmin SL-40 radio……..	0.3 – 3.4
Garmin SL-30 radio……..	0.8 – 4.2
Garmin GMA-340 audio panel……..…….	0.5
Garmin GTX 320 transponder…….	0.7 – 1.2
Garmin GTX 327 transponder…….	0.5 – 1.2
Garmin GPS Map 296 - 496 GPS……..……	0.2
Garmin GPS Map 196 GPS……	1.0
Microair M-760 radio…….	0.5 - 2.5
PS Engineering PM-1000II intercom……..	0.2
PS Engineering PM 501 intercom……..……...	0.2
Sigtronic SPA-400 intercom……	0.2
Items not considered as part of running load	
External receptacle……...	max. 1.0
Clock…….	*
Instrument lighting system (LED-type)……..	0.5
Flap motor……..	1.0
Trim motor……..	1.2
Landing light (LED-type)……..	2.0

* Negligible

Section 18

Structural Repair

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18.1 Structural Repair Criteria

Although this section outlines repair permissible on structure of the aircraft, the decision of whether to repair or replace a major unit of structure will be influenced by such factors as time and labor available, and by a comparison of labor costs with the price of replacement assemblies. Past experience indicates that replacement, in many cases, is less costly than major repair. Certainly, when the aircraft must be restored to its airworthy condition in a limited length of time, replacement is preferable. Restoration of a damaged aircraft to its original design strength, shape, and alignment involves careful evaluation of the damage, followed by exacting workmanship in performing the repairs. This section suggests the extent of structural repair practicable on the aircraft, and supplements Federal Aviation Regulation, Part 43. Consult the factory when in doubt about a repair not specifically mentioned here.

18.1.1 General Consideration for Composite Repair

All major and structural components of the aircraft are carbon-fiber or glass-fiber construction. We strongly recommend the replacement of components when structural damage is detected or return to factory for repair. Repair to non-structural components may be accomplished using factory specified materials. Observe the resin manufacturer's recommendations concerning mixing and application of the resin. Epoxy resin is mandatory for making repairs, since epoxy compounds are usually more stable and predictable than polyester and, in addition, give better adhesion.

18.1.2 Equipment and Tools

18.1.2.1 Support Stands

Padded, reinforced sawhorse or tripod type support stands, sturdy enough to support any assembly placed upon them, must be used to store a removed wing or stabilizer. The fuselage, must NOT be supported from the underside, since the skin is not designed for this purpose. Adapt support stands to fasten to the wing-attach points or landing gear attach-points when supporting a fuselage.

18.1.2.2 Fuselage Repair Jigs

Since repair to the fuselage is limited to repair of minor cracks and scratches, there are no jigs available for fuselage repair. In general all major damage to the fuselage has to be rated as structural due to it´s monocoque construction and return to factory is mandatory.

18.1.2.3 Wing Jigs

Since repair to the wing is limited to repair of minor cracks, dents and scratches, there are no jigs available for wing repair. In general all major damage to the wing has to be rated as structural due to it´s monocoque construction and return to factory is mandatory.

18.1.3 Wing, Stabilizer Angle of Incidence

The following chart lists wing angle-of-incidence and horizontal stabilizer angle-of-incidence. Wing and stabilizers do not have twist. Wings have a constant angle from the wing root to the tip rib.

Wing	
Angle-of-incidence…….	0°
Twist (washout)……..	0°
Stabilizer	
Angle-of-incidence…….	-5°
Twist (washout)……..	0°

18.1.4 Repair Materials

For all repairs to the composite components, carbon fabric of 180-200 gr./m^2 has to be used in combination with L285 Epoxy resin or similar (R&G L20). Observe the resin manufacturer's recommendations concerning mixing and application of the resin.

18.2 Wing, Description

The wing assemblies are a semimonocoque type of structure. Basically, the internal structure consists of built-up front and rear spar assemblies, a formed composite nose and intermediate ribs. All parts are constructed as composite sandwich parts. A ceconite fabric glued to the rib section completes the rigid structure. Access openings (hand holes with removable cover plates) are located in the underside of the wing between the wing root and tip section. These openings afford access to aileron bellcranks and control disconnect points.

18.2.1 Wing Skin

18.2.1.1 Negligible Damage

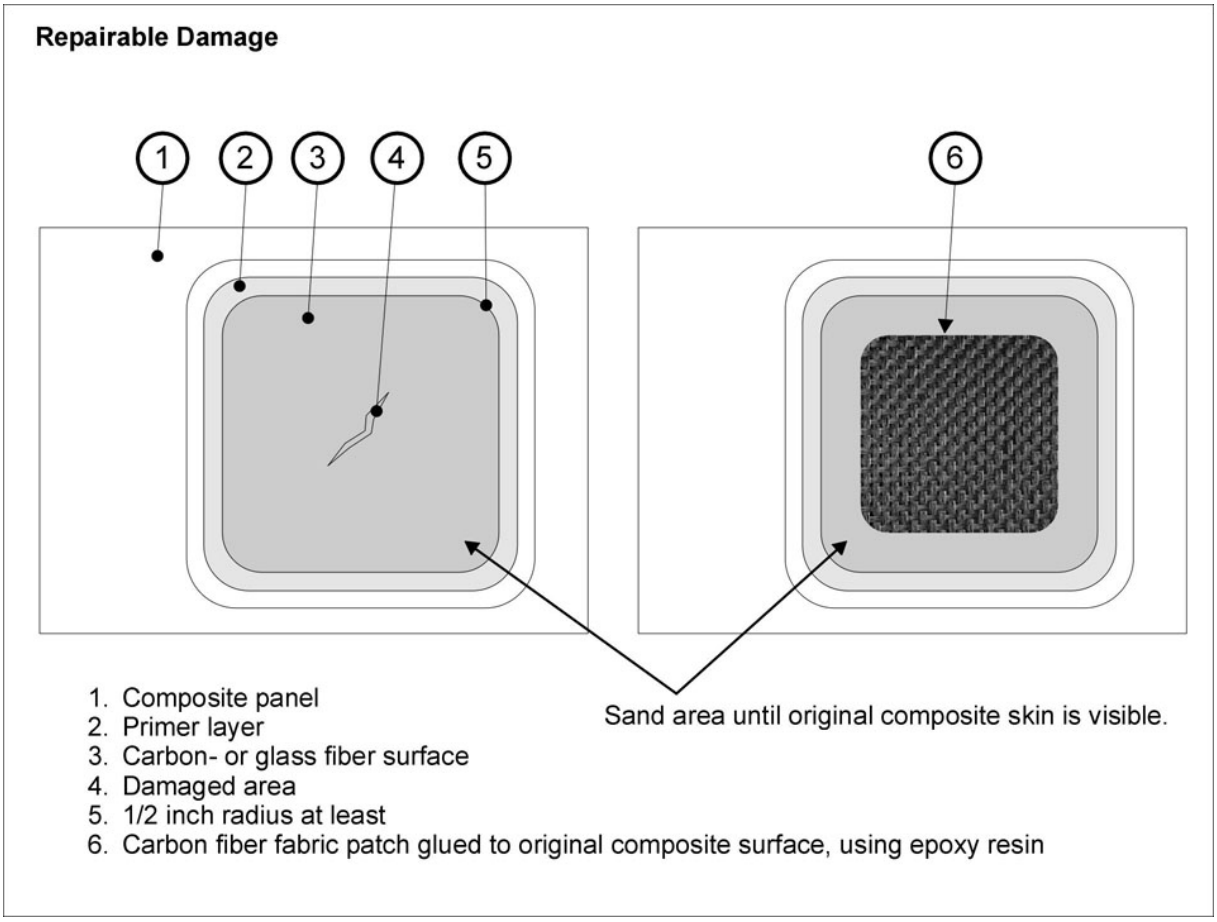
Any smooth dents in the wing skin that are free from cracks, abrasions and sharp corners, which are not stress wrinkles and do not interfere with any internal structure

or mechanism, may be considered as negligible damage. In areas of low stress intensity, cracks, deep scratches, or deep, sharp dents, which after trimming can be enclosed by a two-inch circle, can be considered negligible (i.e. wing tips).

18.2.1.2 Repairable Damage

Figure 18-1. outlines typical repair to be employed in patching composite skin. Before glueing a carbon fabric patch, trim the damaged area to form a rectangular pattern, leaving at least a one-half inch radius at each corner, and sand area. Clean area thoroughly, using appropriate cleaning solvent before applying epoxy resin. A circular patch of carbon fabric may also be used. Observe the resin manufacturer's recommendations concerning mixing and application of the resin and maintain recommended temperature and curing time before applying filler and paint. A 2-component acrylic type paint is preferable.
Refer to the Ceconite instruction manual for repair advices for the ceconite covered sections on the wing.

Figure 18-1.



18.2.1.3 Damage Necessitating Replacement Parts

If a skin is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole wing.

18.3 Wing Ribs, Description

All wing ribs are constructed as glass fiber composite sandwich components. Ribs are an integral part of the wing semimonocoque. Replacement can only be accomplished by the aircraft manufacturer.

18.4 Wing Spar, Description

The wing spar is constructed from glass fiber composite sandwitch material as central part of the wing structure. Repair or Replacement of the wing spar is not possible. Damage of the wing spar requires a replacement of the wing.

18.5 Ailerons

18.5.1 Negligible Damage Refer to Paragraph 18.2.1.1.

18.5.2 Repairable Damage

Figure 18-1. may be used as a guide to repair damage to aileron skins. Repair should extend from the leading edge to the trailing edge. Altough refer to paragraph 18.2.1.2.

18.5.3 Damage Necessitating Replacement Parts

If a skin is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole aileron.

18.6 Wing Flaps

18.6.1 Negligible Damage Refer to Paragraph 18.2.1.1.

18.6.2 Repairable Damage

Figure 18-1. may be used as a guide to repair damage to aileron skins. Repair should extend from the leading edge to the trailing edge. Altough refer to paragraph 18.2.1.2.

18.6.3 Damage Necessitating Replacement Parts

If a skin is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole wing flap.

18.7 Wing Leading Edge

18.7.1 Negligible Damage Refer to Paragraph 18.2.1.1.

18.7.2 Repairable Damage Refer to Paragraph 18.2.1.2.

18.7.3 Damage Necessitating Replacement Parts

If the skin of the leading edge is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole wing.

18.8 Elevators and Rudder

18.8.1 Negligible Damage Refer to Paragraph 18.2.1.1.

The exception to negligible damage on the elevator surfaces is the front spar, where a crack appearing in the web at the hinge fittings or in the structure which supports the overhanging balance weight is not considered negligible. Cracks in the overhanging tip rip, in the area at the front spar intersection with the web of the rib, also cannot be considered negligible.

18.8.2 Repairable Damage Refer to Paragraph 18.2.1.2.

18.8.3 Damage Necessitating Replacement Parts

If the skin of a panel is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole panel.

18.9 Stabilizer

18.9.1 Negligible Damage Refer to Paragraph 18.2.1.1.

The exception to negligible damage on the elevator surfaces is the front spar, where a crack appearing in the web at the hinge fittings or in the structure which supports the overhanging balance weight is not considered negligible. Cracks in the overhanging tip rip, in the area at the front spar intersection with the web of the rib, also cannot be considered negligible.

18.9.2 Repairable Damage Refer to Paragraph 18.2.1.2.

18.9.3 Damage Necessitating Replacement Parts

If the skin of the rudder is badly damaged, repair must be made by replacing an entire skin section. Due to the semimonocoque sandwich construction, damage of this kind always has to be rated as structural and needs to be factory repaired or replacement of the whole panel.

18.10 Fuselage, Description

The fuselage is of monocoque construction, consisting from molded fuselage halves glued together, molded bulkheads, longitudinal stringers, reinforcing channels, and skin doublers. Fuselage halves and doublers are made from carbon-fiber, bulkheads are constructed as glass-fiber sandwich components glued to the fuselage halves.

18.10.1 Negligible Damage Refer to Paragraph 18.2.1.1.

The exception to negligible damage are the areas arround the engine mounting frame attachment points, wing attachment brackets, and landing gear bulkhead (rear cabin bulkhead). Cracks in these areas cannot be considered as negligible and needs to be inspected thoroughly.

18.10.2 Repairable Damage

Fuselage skin repairs may be accomplished in the same manner as wing skin repairs outlined in paragraph 18.2.1.2.

18.10.3 Damage Necessitating Replacement Parts

Whenever a repair is to be made which is classified to be structural, the fuselage has to be returned to factory. Repair to the fuselage is limited to repair of minor cracks or scratches. In general all major damage to the fuselage has to be rated as structural due to its monocoque construction. If in doubt ask your authorized dealer or contact the manufacturer.

18.11 Firewall Damage, Description

The firewall is an integral part of the fuselage monocoque structure and cannot be replaced separately. The firewall is contructed from carbon- glass- and kevlar – materials, covered by a heat resistant ceramic at the forward side. The ceramic heat and fire protection layer is sealed by an aluminum protection skin.
Damage to the firewall has to be rated as structural to the whole fuselage necessitating a factory repair of the fuselage.

18.11.1 Negligible Damage

Damage to the aluminum skin of the firewall can be rated as negligible. A damaged aluminum protection skin should be replaced as soon as possible to prevent the ceramic fire protection layer beneath from damage.

18.12 Engine Mount, Description

The mount for the aircraft engine is constructed of 4130 chrome-molybdenum steel tubing, fastened to the firewall at five points. The mounting frame provides four lugs, equipped with rubber shock mounts to hold the engine.

18.12.1 General Considerations

All welding on the engine mount must be of the highest quality since the tendency of vibration is to accentuate any minor defect present and cause fatigue cracks. Engine mount members are preferably repaired by using a larger diameter replacement tube, telescoped over the stub of the original member using fishmouth and rosette type welds. However, reinforced 30- degree scarf welds in place of the fishmouth welds are considered satisfactory for engine mount repair work.

18.12.2 Damage Involving Engine Mounting Lugs and Engine Mount to Fuselage Attach Fittings

Engine mounting lugs and engine mount-to-fuselage attaching fittings should not be repaired but must be replaced.

18.13 Engine Cowling

18.13.1 Repair of Cowling Skins Refer to Paragraph 18.2.1.2.

If extensively damage, complete sections of cowling must be replaced.

Section 19

Exterior Painting

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19.1 General

The exterior painting of the aircraft consists of 2-components acrylic lacquer system from PPG, Defleet 350, paint code: 00225.

Note

Do not paint Pitot Tube, Gas Caps or Antenna covers which were not painted at the factory.

Caution

Avoid thinner coming in contact with ABS parts or windows. These areas should be cleaned with soap and water and / or Naphtha. Do not use strong solvents such as Xylol, Toluol, or Lacquer Thinners.

19.2 Paint Procedures

19.2.1 Preparing Surfaces

Clean surface with appropriate cleaing agents thorougly to remove all wax and silicone residues. Sand areas to be repainted with abrasive paper as required to remove damaged paint, **do not grind true the factory applied primer layer**. After sanding clean again to remove all dust and ensure that no silicone residues are left.

19.2.2 Primer Application

After preparing surface related to paragraph 19.2.1, apply resin prime/filler coat and let cure at least for 2 hour at 65°F. Sand area using plenty of water and 600 grain size abrasive paper as long as a smooth surface is achieved. Allow area to dry thoroughly and clean again to prepare for lacquer application.

19.2.3 Paint Finish

Use 2-component acrylic lacquer to paint prepared surface, following lacquer manufacturers recommendations. **Do not** cure paint finish on composite structures at temperatures **above 100°F**.

Appendix 1

Wiring Diagrams

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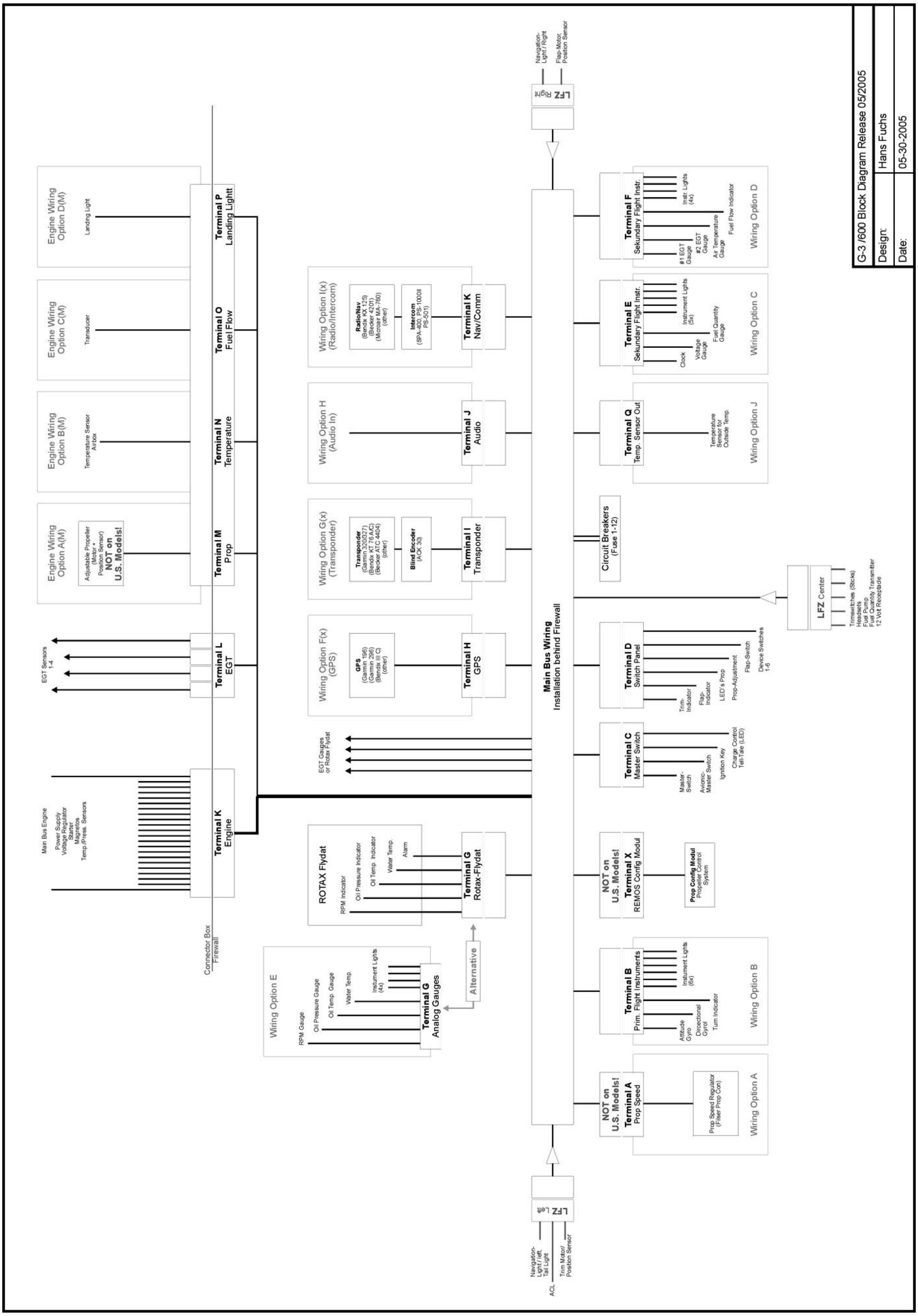
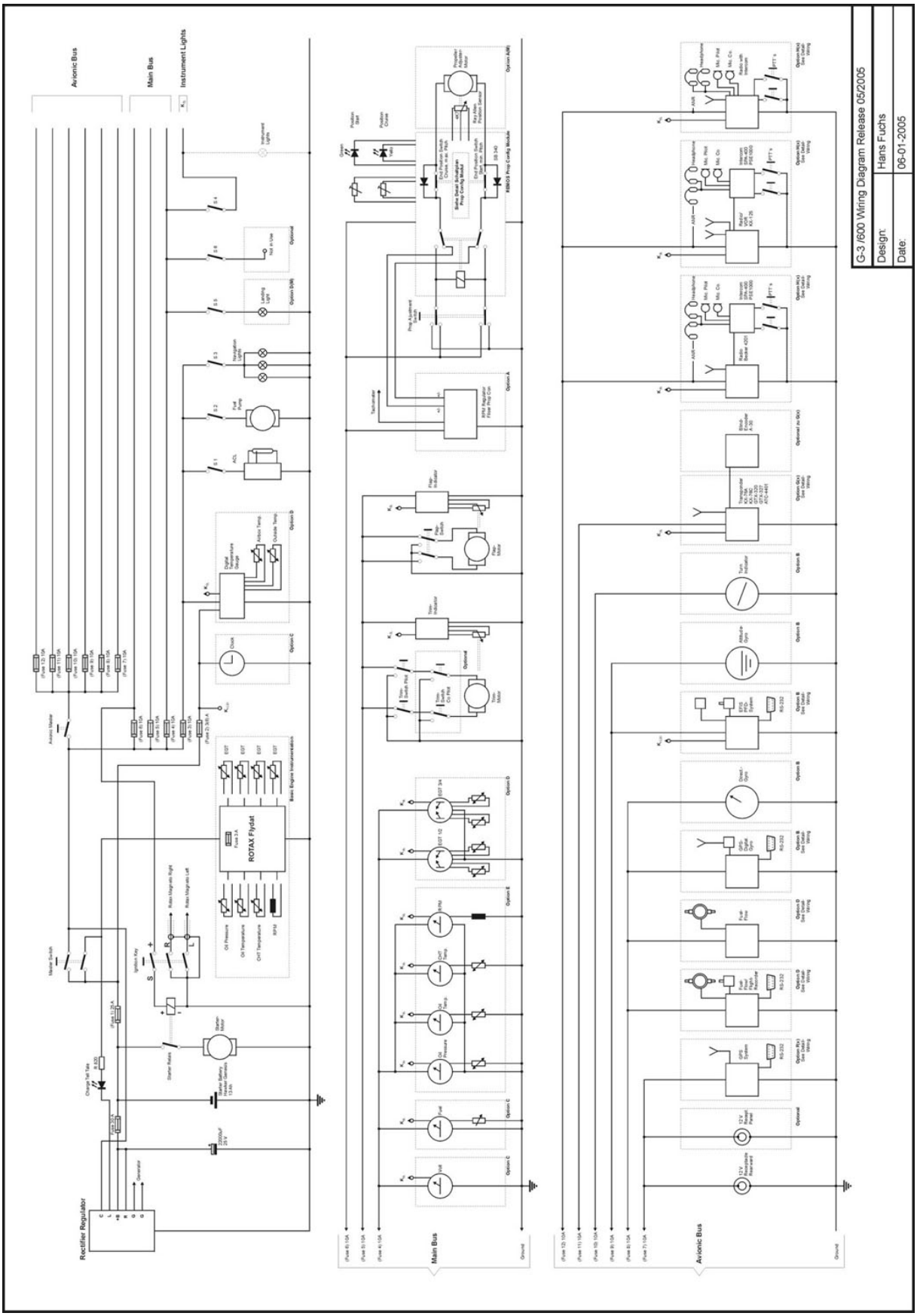
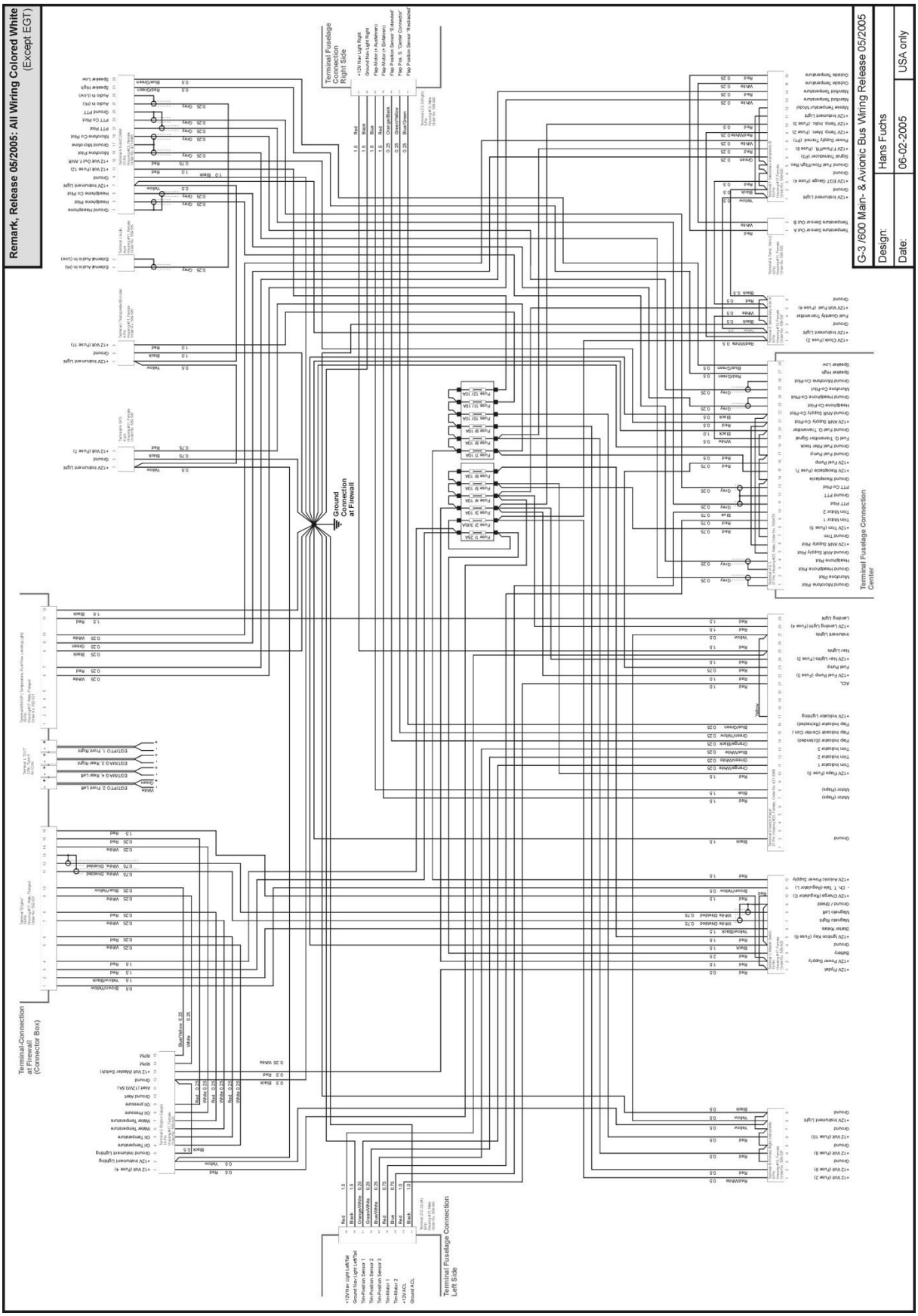
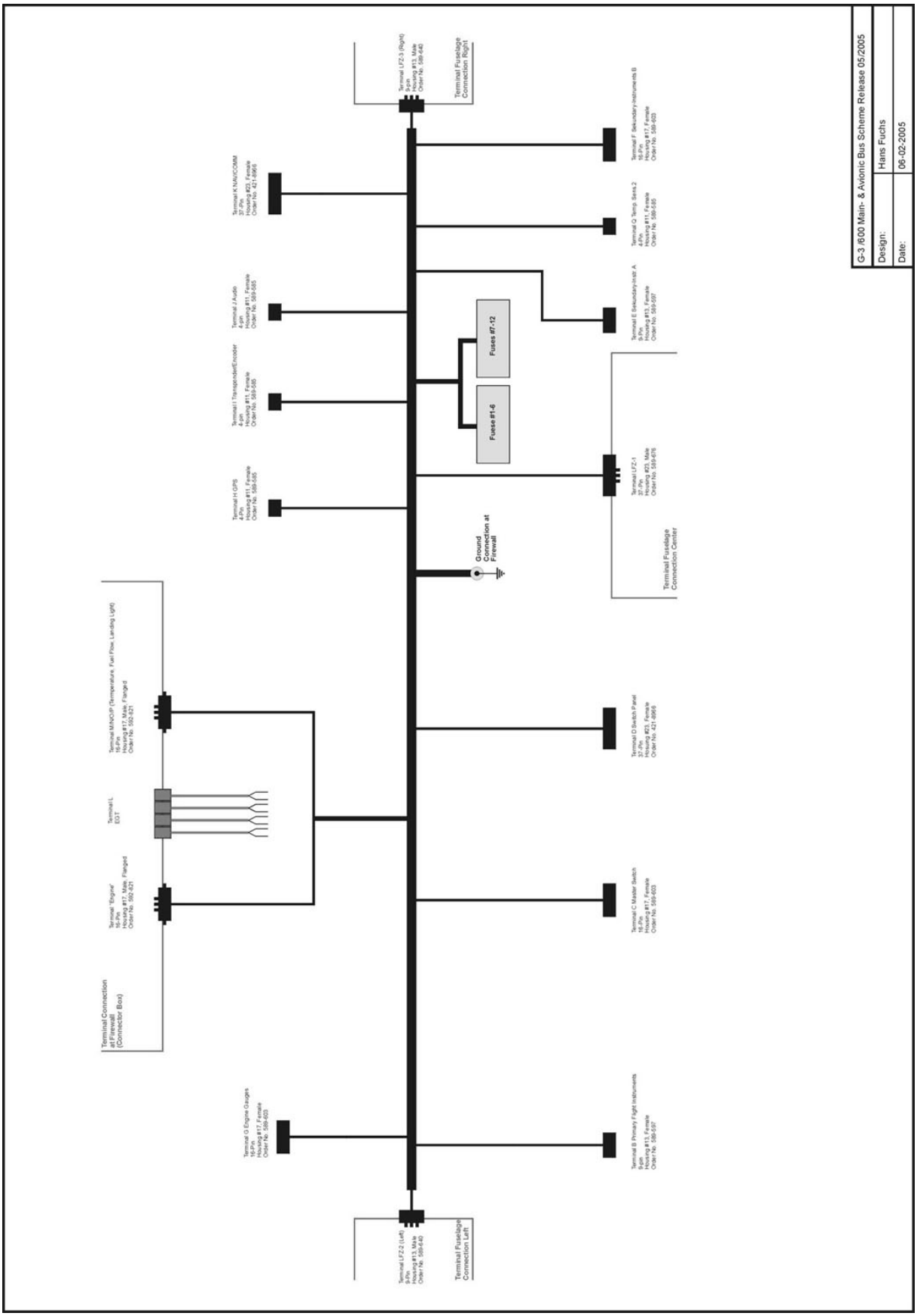
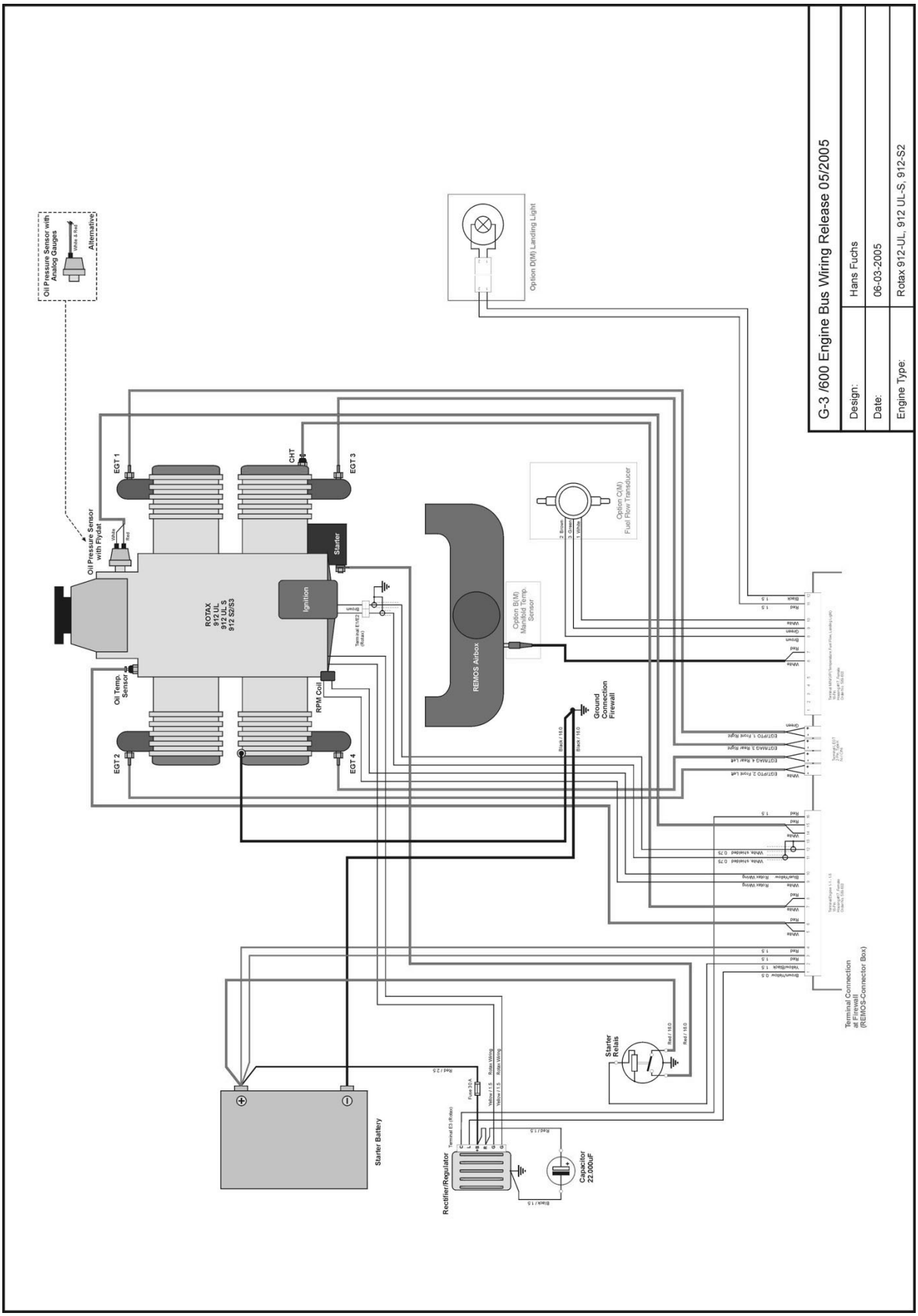
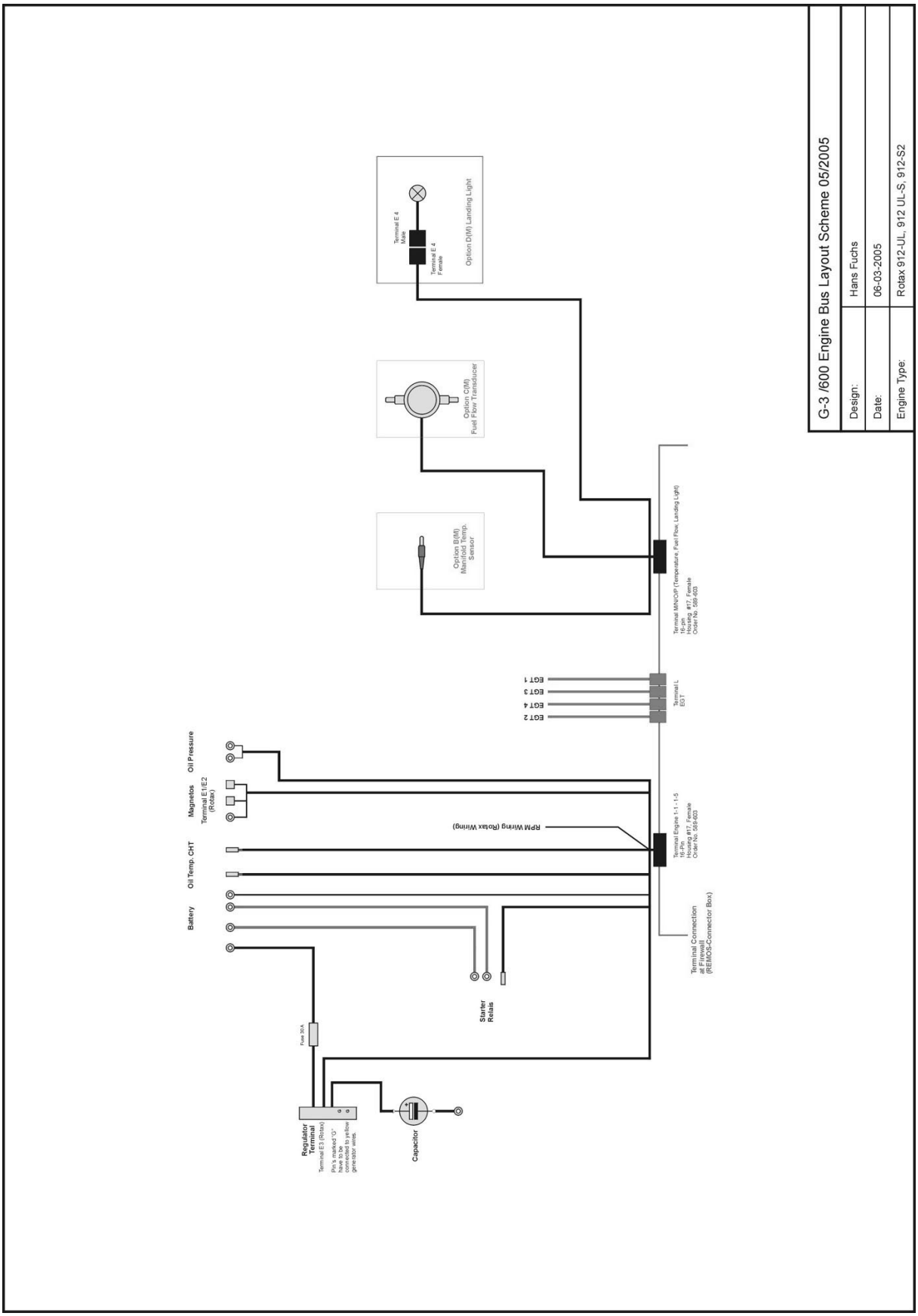

G-3 /600 Block Diagram Release 05/2005
Design: Hans Fuchs
Date: 05-30-2005
Main Bus Wiring
Installation behind Firewall
Terminal K Engine
Main Bus Engine
Power Supply
Voltage Regulator
Starter
Magnetos
Temp./Press. Sensors
Terminal L EGT
EGT Sensors 1-4
Terminal M Prop
Engine Wiring Option A(M)
Adjustable Propeller (Motor + Position Sensor)
NOT on U.S. Models!
Terminal N Temperature
Engine Wiring Option B(M)
Temperature Sensor Airbox
Terminal O Fuel Flow
Engine Wiring Option C(M)
Transducer
Terminal P Landing Lightt
Engine Wiring Option D(M)
Landing Light
Connector Box Firewall
Wiring Option E
Terminal G Analog Gauges
RPM Gauge
Oil Pressure Gauge
Oil Temp. Gauge
Water Temp.
Instrument Lights (4x)
Alternative
ROTAX Flydat
Terminal G Rotax-Flydat
RPM Indicator
Oil Pressure Indicator
Oil Temp. Indicator
Water Temp.
Alarm
EGT Gauges or Rotax Flydat
Wiring Option F(x) (GPS)
Terminal H GPS
GPS (Garmin 196) (Garmin 296) (Bendix III C) (other)
Wiring Option G(x) (Transponder)
Terminal I Transponder
Transponder (Garmin 320/327) (Bendix KT 76 A,C) (Becker ATC 4404) (other)
Blind Encoder (ACK 30)
Wiring Option H (Audio In)
Terminal J Audio
Wiring Option I(x) (Radio/Intercom)
Terminal K Nav/Comm
Radio/Nav (Bendix KX 125) (Becker 4201) (Microair MA-760) (other)
Intercom (SPA-400, PS-1000II PS-501)
LFZ Right
Navigation-Light / Right
Flap-Motor, Position Sensor
LFZ Left
Navigation-Light / left, Tail Light
ACL
Trim Motor/ Position Sensor
LFZ Center
Trimswitches (Sticks)
Headsets
Fuel Pump
Fuel Quantity Transmitter
12 Volt Receptacle
Circuit Breakers (Fuse 1-12)
NOT on U.S. Models!
Terminal A Prop Speed
Prop Speed Regulator (Flaser Prop Con)
Wiring Option A
Terminal B Prim. Flight Instruments
Attitude Gyro
Directional Gyro
Turn Indicator
Instrument Lights (6x)
Wiring Option B
NOT on U.S. Models!
Terminal X REMOS Config Modul
Prop Config Modul Propeller Control System
Terminal C Master Switch
Master-Switch
Avionic-Master Switch
Ignition Key
Charge Control Tell-Tale (LED)
Terminal D Switch Panel
Trim-Indicator
Flap-Indicator
LED's Prop
Prop-Adjustment
Flap-Switch
Device Switches 1-6
Terminal Q Temp. Sensor Out
Temperature Sensor for Outside Temp.
Wiring Option J
Terminal E Sekundary Flight Instr.
Clock
Voltage Gauge
Fuel Quantity Gauge
Instrument Lights (5x)
Wiring Option C
Terminal F Sekundary Flight Instr.
#1 EGT Gauge
#2 EGT Gauge
Air Temperature Gauge
Fuel Flow Indicator
Instr. Lights (4x)
Wiring Option D

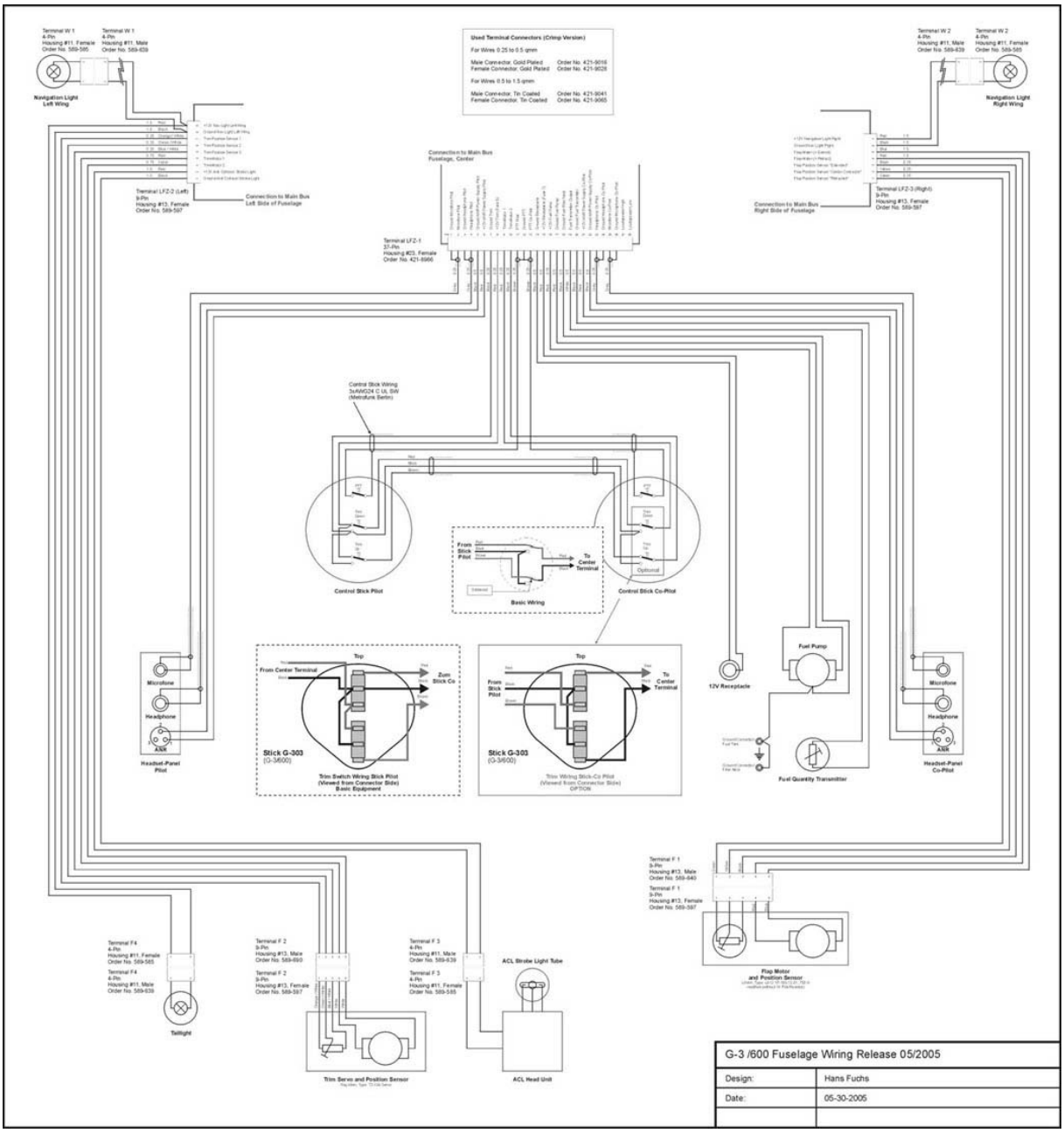

G-3 /600 Wiring Diagram Release 05/2005
Design:
Hans Fuchs
Date:
06-01-2005
Avionic Bus
Main Bus
Instrument Lights
ROTAX Flydat
Rectifier Regulator
Main Bus
Avionic Bus

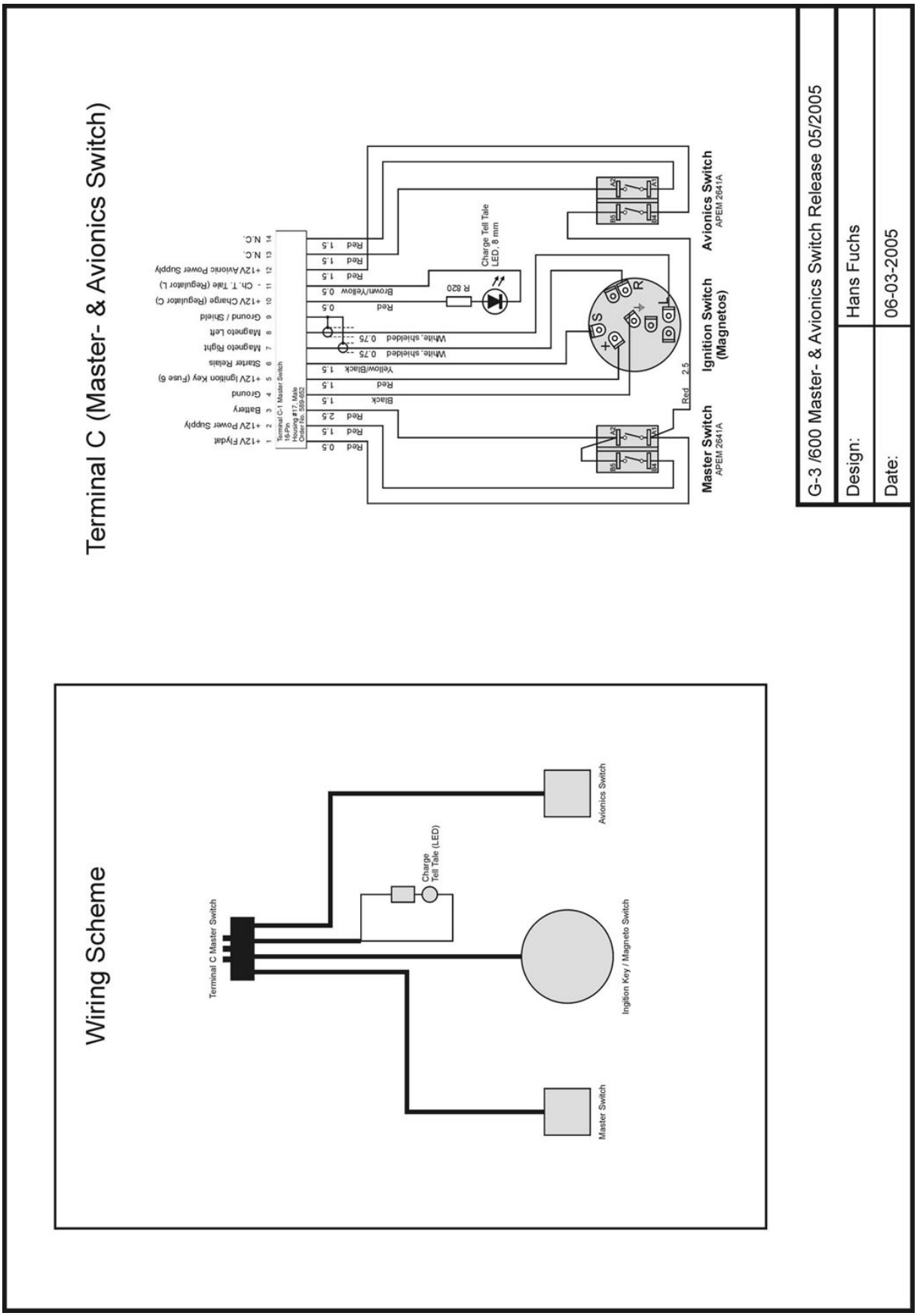

Remark, Release 05/2005: All Wiring Colored White (Except EGT)
G-3 /600 Main- & Avionic Bus Wiring Release 05/2005
Design: Hans Fuchs
Date: 06-02-2005
USA only
Terminal Fuselage Connection Right Side
Terminal Fuselage Connection Left Side
Terminal Fuselage Connection Center
Terminal-Connection at Firewall (Connector Box)
Ground Connection at Firewall

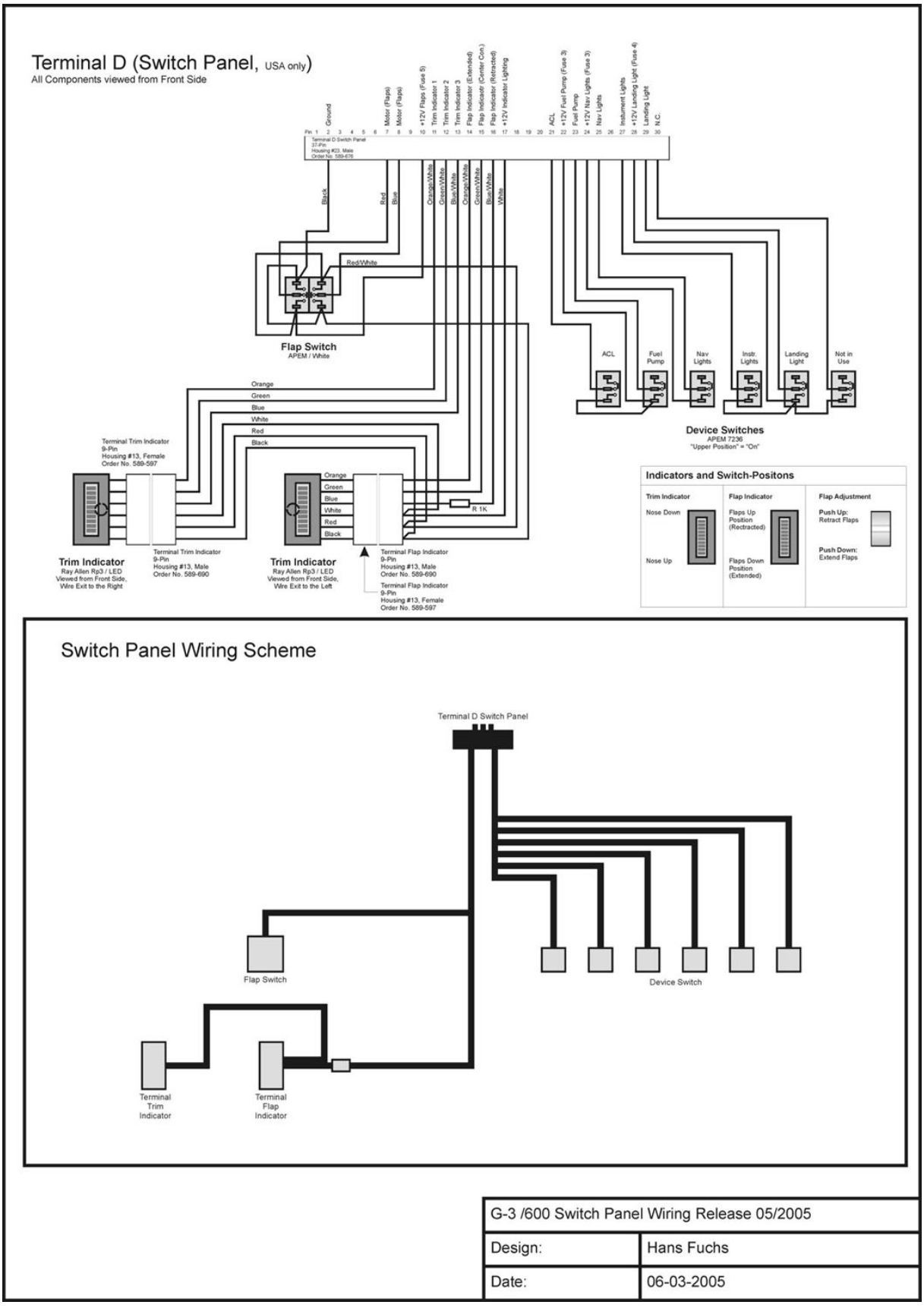

G-3 /600 Main- & Avionic Bus Scheme Release 05/2005
Design:
Hans Fuchs
Date:
06-02-2005
Terminal LF2-3 (Right) 37-Pin Housing #13, Male Order No. 589-640
Terminal Fuselage Connection Right
Terminal F Sekundary-Instruments B 37-Pin Housing #17, Female Order No. 589-603
Terminal G Temp Sens 2 4-Pin Housing #11, Female Order No. 589-585
Terminal E Sekundary-Instr A 37-Pin Housing #13, Female Order No. 589-597
Terminal K NAV/COMM 37-Pin Housing #23, Female Order No. 421-8966
Terminal J Audio 4-Pin Housing #11, Female Order No. 589-585
Terminal I Transponder/Encoder 4-Pin Housing #11, Female Order No. 589-585
Terminal H GPS 4-Pin Housing #11, Female Order No. 589-585
Fuses #7-12
Fuses #1-6
Terminal LF2-1 37-Pin Housing #23, Male Order No. 589-616
Terminal Fuselage Connection Center
Ground Connection at Firewall
Terminal MAP/OP (Temperature, Fuel Flow, Landing Light) 16-Pin Housing #17, Male, Flanged Order No. 552-621
Terminal I, EGT
Terminal 'Engine' 16-Pin Housing #17, Male, Flanged Order No. 552-621
Terminal Connection at Firewall (Connector Box)
Terminal D Switch Panel 37-Pin Housing #23, Female Order No. 421-8966
Terminal C Master Switch 37-Pin Housing #17, Female Order No. 589-603
Terminal G Engine Gauges 16-Pin Housing #17, Female Order No. 589-603
Terminal B Primary Flight Instruments 37-Pin Housing #13, Female Order No. 589-597
Terminal LF2-2 (Left) 37-Pin Housing #13, Male Order No. 589-640
Terminal Fuselage Connection Left


G-3 /600 Engine Bus Wiring Release 05/2005
Design: Hans Fuchs
Date: 06-03-2005
Engine Type: Rotax 912-UL, 912 UL-S, 912-S2
Oil Pressure Sensor with Analog Gauges
Alternative
Option D(M) Landing Light
Oil Pressure Sensor with Flydat
EGT 1
CHT
EGT 3
Starter
ROTAX 912 UL 912 UL S 912 S2/S3
Ignition
Option O(M) Fuel Flow Transducer
Option B(M) Manifold Temp. Sensor
REMOS Airbox
Oil Temp. Sensor
RPM Coil
Ground Connection Firewall
EGT 2
EGT 4
Terminal Connection at Firewall (REMOS-Connector Box)
Starter Relais
Starter Battery
Rectifier/Regulator
Capacitor 22.000uF


G-3 /600 Engine Bus Layout Scheme 05/2005
Design: Hans Fuchs
Date: 06-03-2005
Engine Type: Rotax 912-UL, 912 UL-S, 912-S2
Terminal E 4 Male
Terminal E 4 Female
Option D(M) Landing Light
Option C(M) Fuel Flow Transducer
Option B(M) Manifold Temp. Sensor
Terminal MAN/OFF (Temperature, Fuel Flow, Landing Light) Housing #17, Female Order No. 368-403
EGT 1
EGT 3
EGT 4
EGT 2
Terminal L EGT
Terminal Engine I-1 - I-5 Housing #17, Female Order No. 368-403
RPM Wiring (Rotax Wiring)
Terminal Connection at Firewall (REMOS-Connector Box)
Oil Pressure
Magnetos Terminal E1/E2 (Rotax)
Oil Temp. CHT
Battery
Starter Relais
Fuse 30A
Regulator Terminal
Terminal E3 (Rotax)
Pin's marked "G" have to be connected to yellow generator wires.
Capacitor

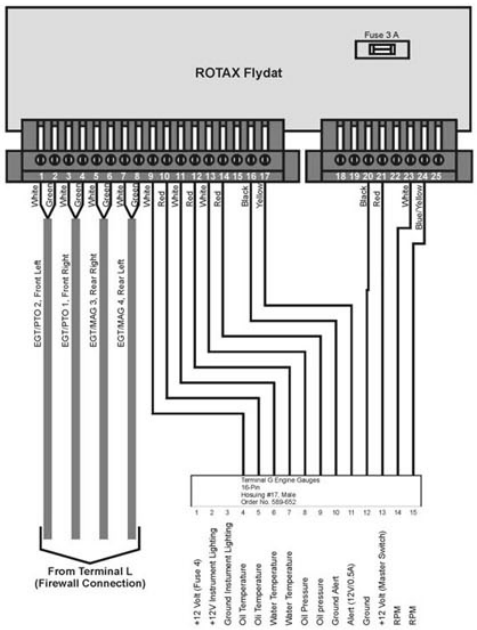

Used Terminal Connectors (Crimp Version)
For Wires 0.25 to 0.5 qmm
Male Connector, Gold Plated Order No. 421-9016
Female Connector, Gold Plated Order No. 421-9028
For Wires 0.5 to 1.5 qmm
Male Connector, Tin Coated Order No. 421-9041
Female Connector, Tin Coated Order No. 421-9065
Navigation Light Left Wing
Navigation Light Right Wing
Connection to Main Bus Fuselage, Center
Terminal LFZ-1 37-Pin Housing #23, Female Order No. 421-9966
Terminal LFZ-2 (Left) 9-Pin Housing #13, Female Order No. 589-597
Connection to Main Bus Left Side of Fuselage
Terminal LFZ-3 (Right) 9-Pin Housing #13, Female Order No. 589-597
Connection to Main Bus Right Side of Fuselage
Control Stick Wiring 3xAWG24 C UL SW (Metrofunk Berlin)
Control Stick Pilot
Control Stick Co-Pilot
Optional
From Stick Pilot
To Center Terminal
Basic Wiring
Microfone
Headphone
ANR
Headset-Panel Pilot
Headset-Panel Co-Pilot
From Center Terminal
Zum Stick Co
Stick G-303
(G-3/600)
Trim Switch Wiring Stick Pilot (Viewed from Connector Side) Basic Equipment
From Stick Pilot
To Center Terminal
Trim Wiring Stick-Co Pilot (Viewed from Connector Side) OPTION
12V Receptacle
Fuel Pump
Fuel Quantity Transmitter
Terminal F 1 9-Pin Housing #13, Male Order No. 589-640
Terminal F 1 9-Pin Housing #13, Female Order No. 589-597
Flap Motor and Position Sensor
Terminal F 4 4-Pin Housing #11, Female Order No. 589-585
Terminal F 4 4-Pin Housing #11, Male Order No. 589-639
Twilight
Terminal F 2 9-Pin Housing #13, Male Order No. 589-640
Terminal F 2 9-Pin Housing #13, Female Order No. 589-597
Trim Servo and Position Sensor
Terminal F 3 4-Pin Housing #11, Male Order No. 589-639
Terminal F 3 4-Pin Housing #11, Female Order No. 589-585
ACL Strobe Light Tube
ACL Head Unit
G-3 /600 Fuselage Wiring Release 05/2005
Design: Hans Fuchs
Date: 05-30-2005


Wiring Scheme
Terminal C Master Switch
Charge Tell Tale (LED)
Avionics Switch
Ingition Key / Magneto Switch
Master Switch
Terminal C (Master- & Avionics Switch)
Terminal C-1 Master Switch
16-Pin
Housing #17 Molex
Contact 50-0492
+12V Flydat
+12V Power Supply
Battery
Ground
+12V Ignition Key (Fuse 6)
Starter Relais
Magneto Right
Magneto Left
Ground / Shield
+12V Charge (Regulator C)
- Ch. T. Tale (Regulator L)
+12V Avionic Power Supply
N.C.
N.C.
Red 0.5
Red 2.5
Red 1.5
Black 1.5
Red 1.5
Yellow/Black 1.5
White, shielded 0.75
White, shielded 0.75
Red 0.5
Brown/Yellow 0.5
Red 1.5
Red 1.5
Red 1.5
R 820
Charge Tell Tale LED, 8 mm
Red 2.5
Master Switch APEM 2641A
Ignition Switch (Magnetos)
Avionics Switch APEM 2641A
G-3 /600 Master- & Avionics Switch Release 05/2005
Design: Hans Fuchs
Date: 06-03-2005

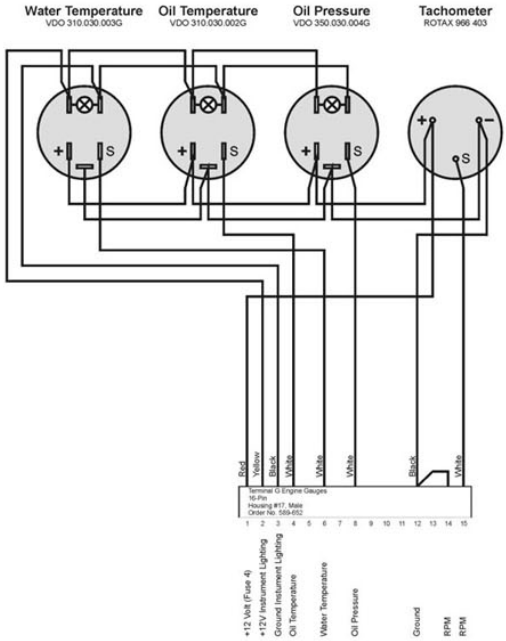


G-3 /600 Switch Panel Wiring Release 05/2005	
Design:	Hans Fuchs
Date:	06-03-2005

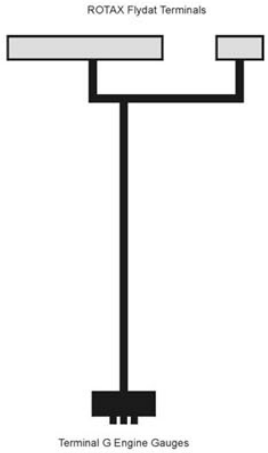
Terminal E (ROTAX Flydat)



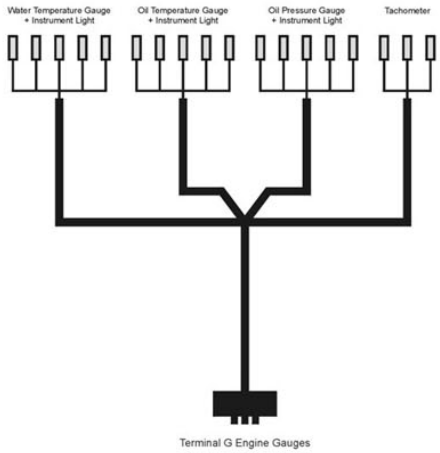
Option E (Analog Engine Gauges)



Flydat Wiring Scheme

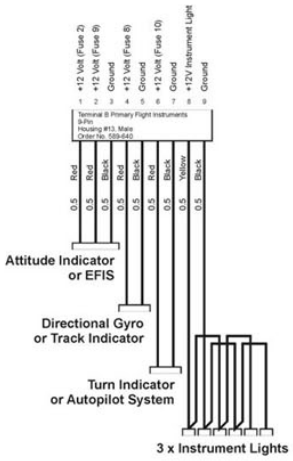


Analog Engine Gauges Wiring Scheme

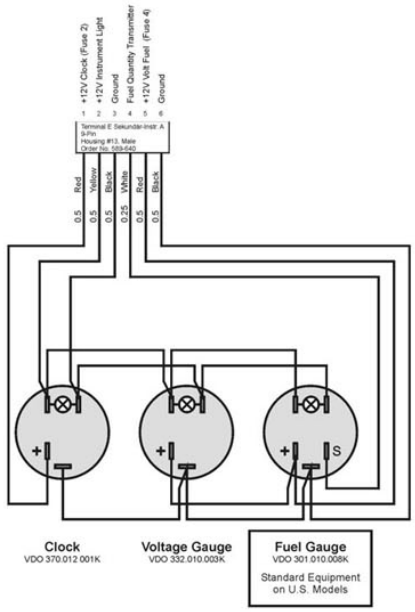


G-3 /600 Flydat, Engine Gauges Wiring Release 05/2005	
Design:	Hans Fuchs
Date:	06-03-2005

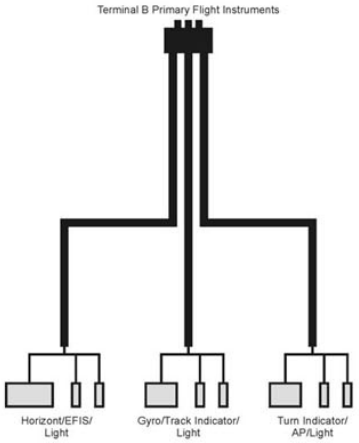
Option B (Primary Flight Instruments)



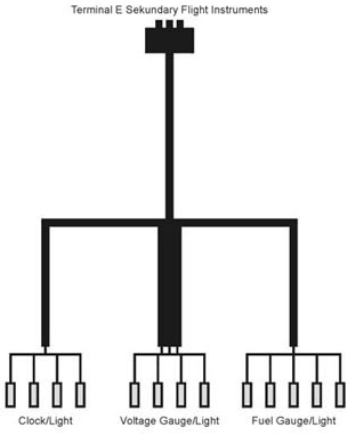
Option C (Sekundary Flight Instruments A)



Option B Wiring Scheme

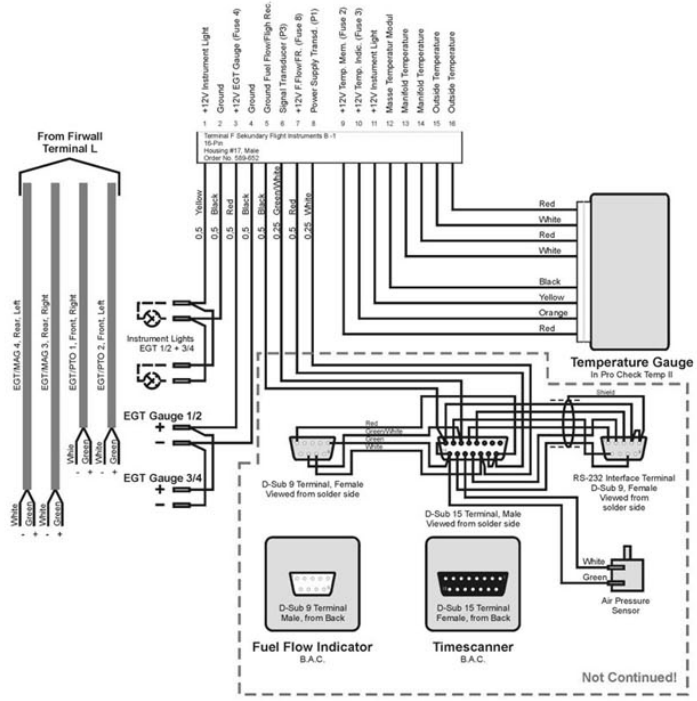


Option C Wiring Scheme

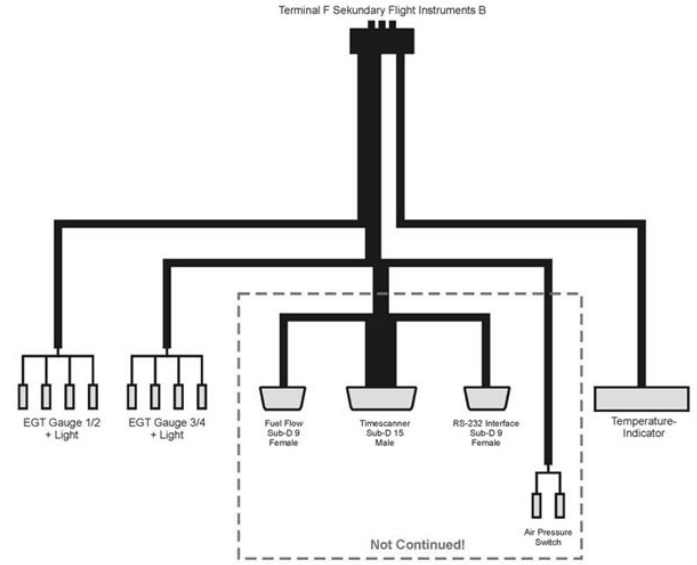


G-3 /600 Optional Instruments_A Release 05/2005	
Design:	Hans Fuchs
Date:	06-06-2005

Option D (Sekundary Flight Instruments B)

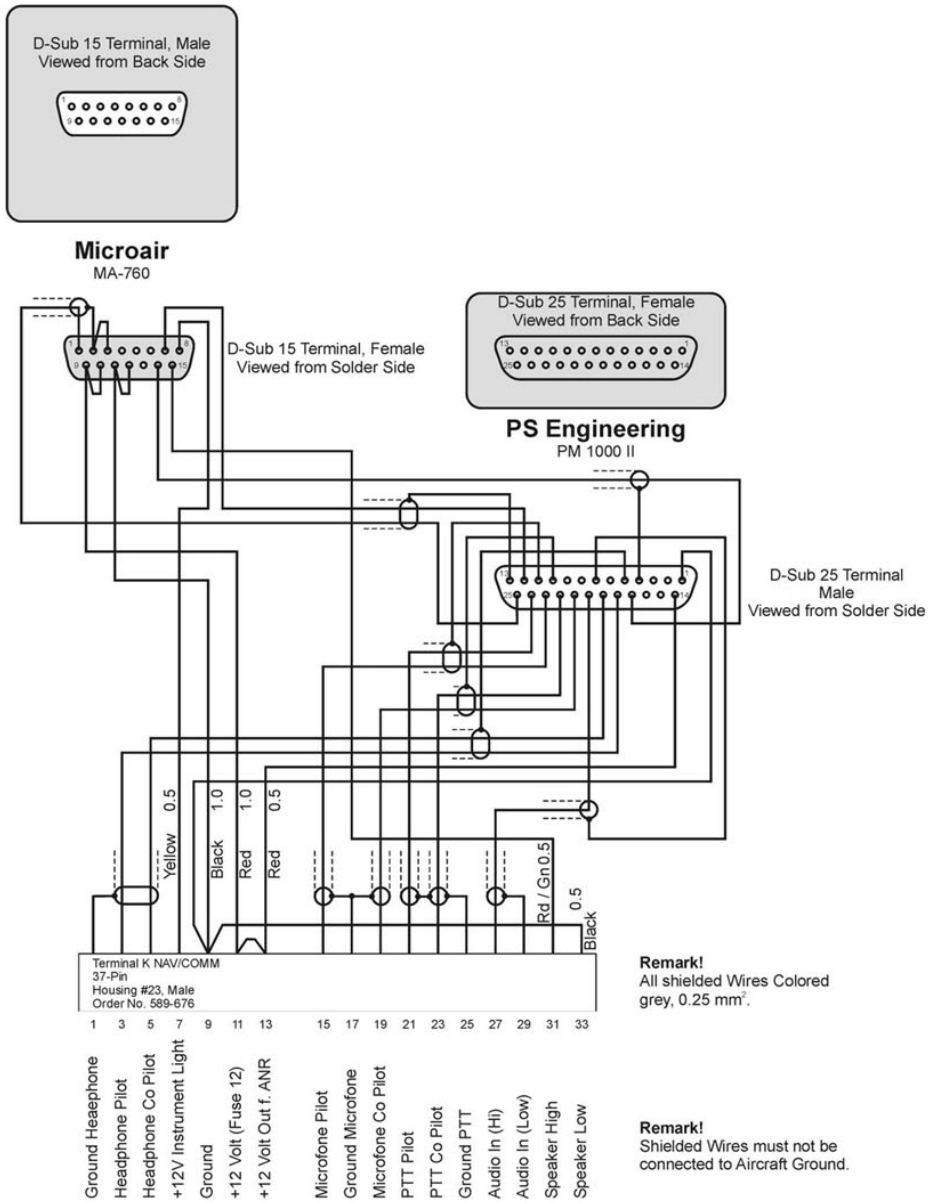


Option D Wiring Scheme



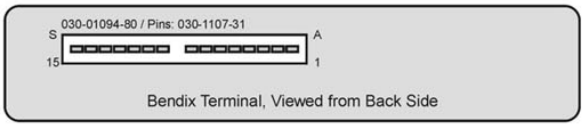
G-3 /600 Optional Instruments_B Release 05/2005	
Design:	Hans Fuchs
Date:	06-06-2005

Option I (Microair MA-760/PM-1000 II) (Radio/Intercom)

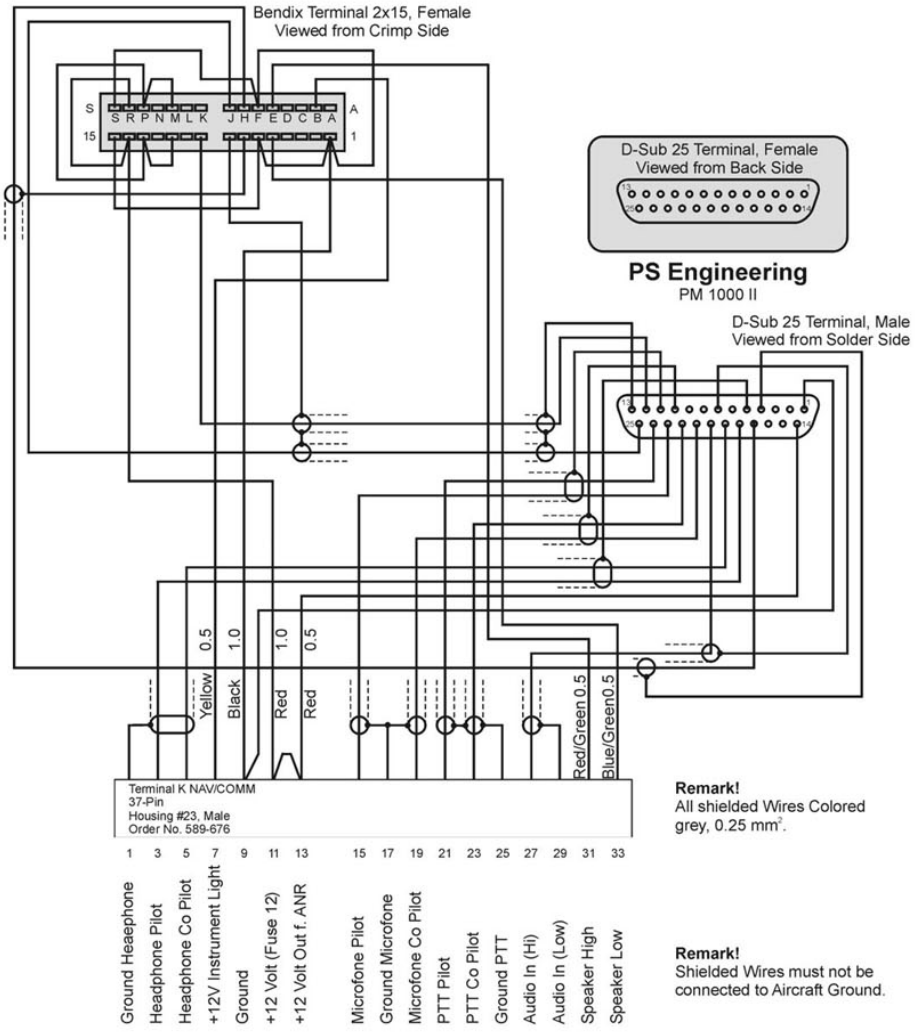


G-3 /600 Options, Radio Wiring, PM-1000 Release 05/2005	
Radio Type: MA-760	
Design:	Hans Fuchs
Date:	06-07-2005

Option I (Bendix KY-97/PM-1000 II) (Radio/Intercom)



Bendix King
KY-97A

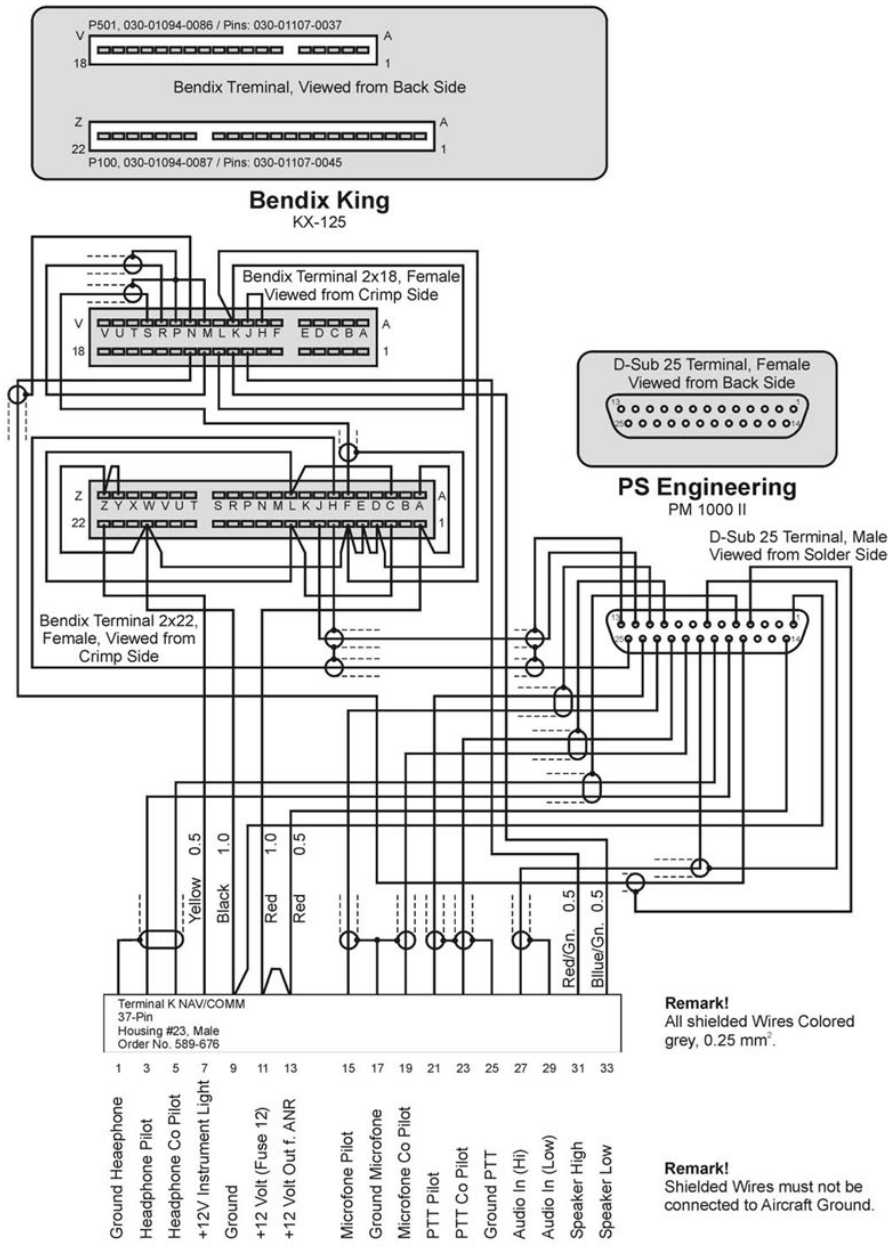


Remark!
All shielded Wires Colored grey, 0.25 mm².

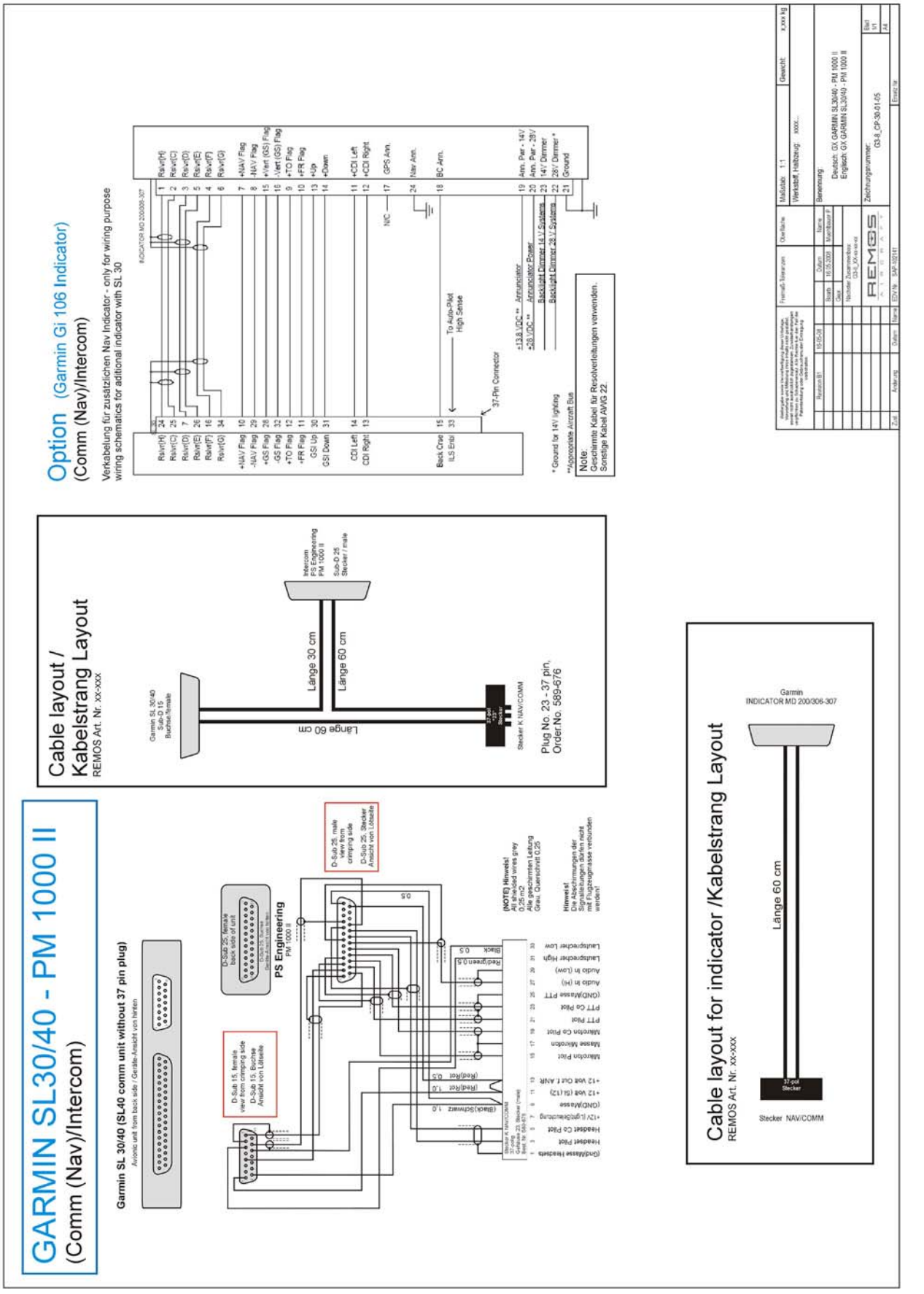
Remark!
Shielded Wires must not be connected to Aircraft Ground.

G-3 /600 Options, Radio Wiring, PM-1000 Release 05/2005	
Radio Type: KY-97	
Design:	Hans Fuchs
Date:	06-07-2005

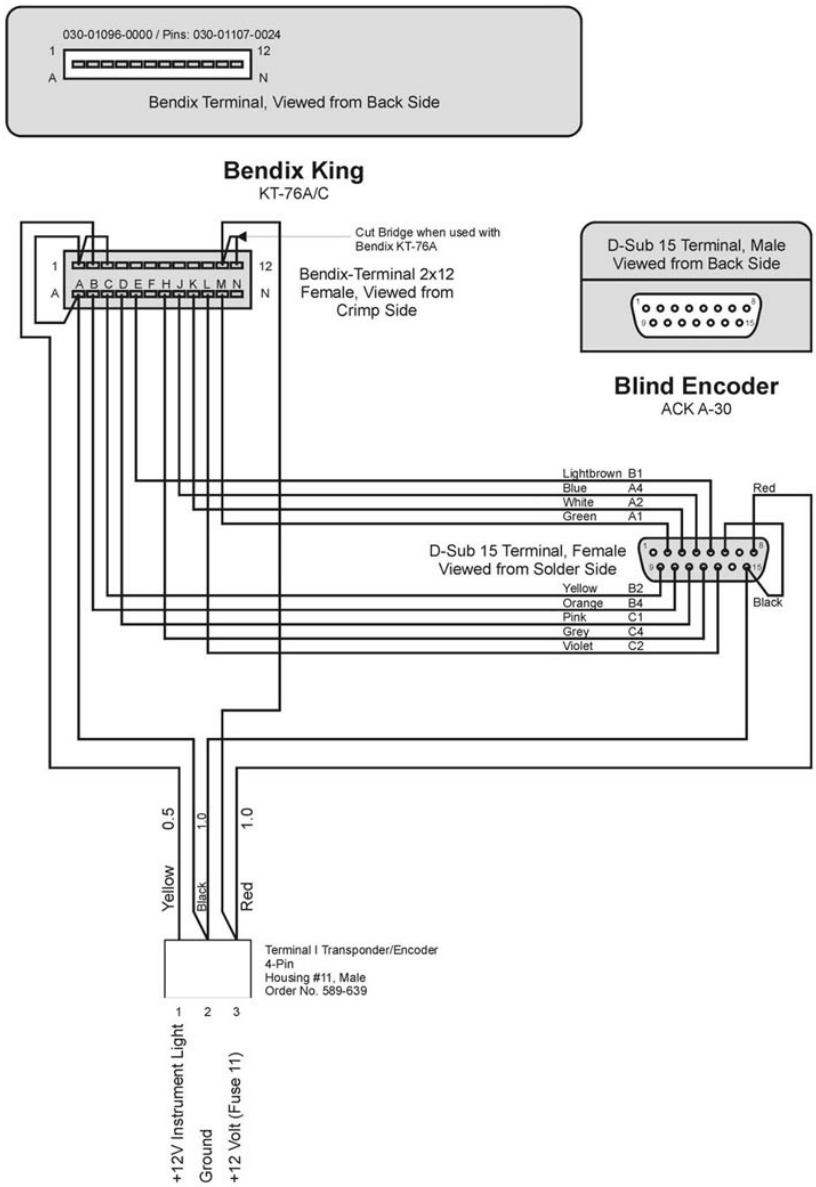
Option I (Bendix KX-125/PM-1000 II) (Radio/Intercom)



G-3 /600 Options, Radio Wiring, PM-1000 Release 05/2005	
Radio Type: KX-125	
Design:	Hans Fuchs
Date:	06-07-2005

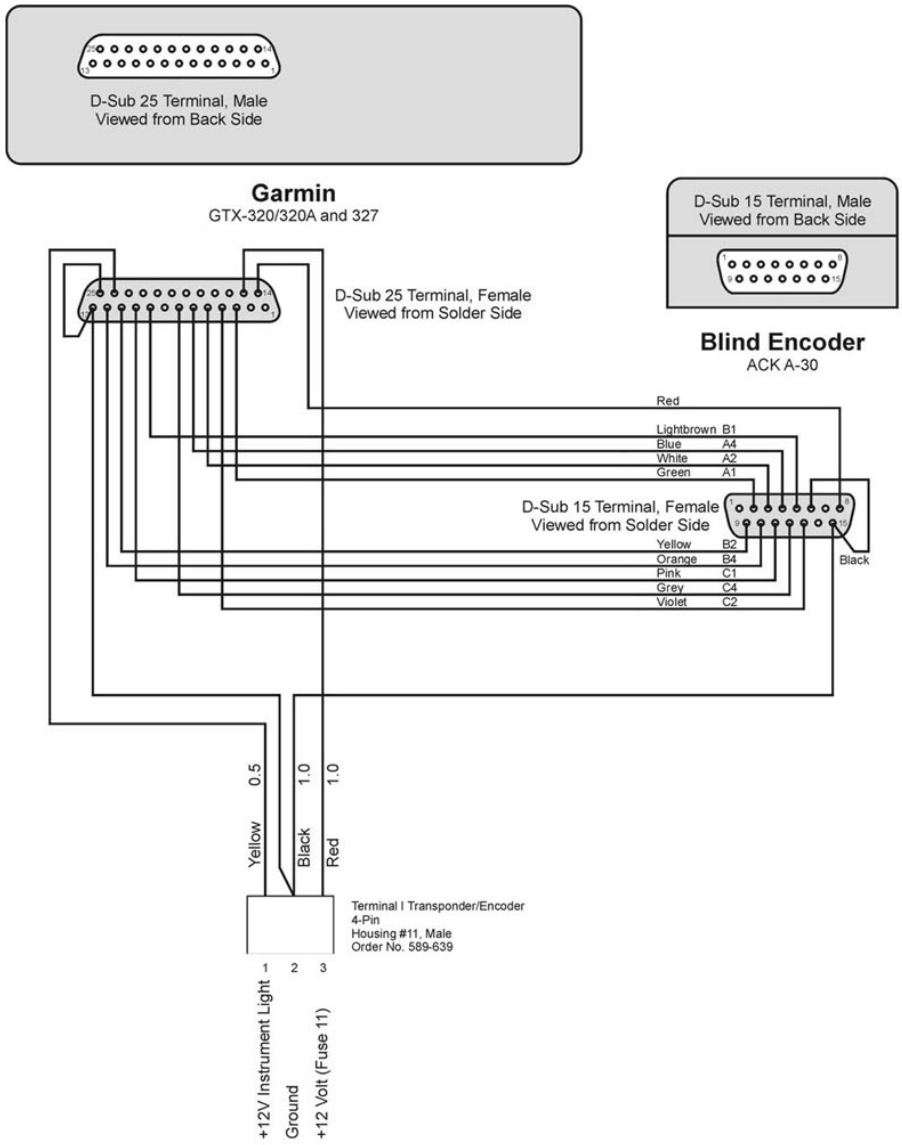

GARMIN SL30/40 - PM 1000 II
(Comm (Nav)/Intercom)
Garmin SL 30/40 (SL40 comm unit without 37 pin plug)
Avionic unit from back side / Geräte-Ansicht von hinten
D-Sub 15, female
view from crimping side
D-Sub 15, Buchse
Ansicht von Lötseite
D-Sub 25, female
back side of unit
PS Engineering
PM 1000 II
D-Sub 25, male
view from
crimping side
D-Sub 25, Stecker
Ansicht von Lötseite
(NOTE) Hinweis!
All shielded wires grey
0,25 m2
Alle geschirmten Leitung
Grau Querschnitt 0,25
Hinweis!
Die Abschirmungen der
Signalleitungen dürfen nicht
mit Flugzeugmasse verbunden
werden!
Cable layout /
Kabelstrang Layout
REMOS Art. Nr. XX-XXX
Garmin SL 30/40
Sub-D 15
Buchse / female
Länge 30 cm
Länge 60 cm
Länge 60 cm
Intercom
PS Engineering
PM 1000 II
Sub-D 25
Stecker / male
Stecker NAV/COMM
Plug No. 23 - 37 pin,
Order.No. 589-676
Option (Garmin Gi 106 Indicator)
(Comm (Nav)/Intercom)
Verkabelung für zusätzlichen Nav Indicator - only for wiring purpose
wiring schematics for additonal indicator with SL 30
INDICATOR MD 200/306-307
37-Pin Connector
To Auto-Pilot
High Sense
N/C
Annunciator Power
Backlight Dimmer 14 V Systems
Backlight Dimmer 28 V Systems
* Ground for 14V lighting
** Appropriate Aircraft Bus
Note:
Geschirmte Kabel für Resolverleitungen verwenden.
Sonstige Kabel AWG 22
Cable layout for indicator /Kabelstrang Layout
REMOS Art. Nr. XX-XXX
Garmin
INDICATOR MD 200/306-307
Länge 60 cm
37-pol
Stecker
Stecker NAV/COMM
REMOS
Maßstab 1:1
Gewicht
Werkstoff, Halbzeug
Benennung
Deutsch: GX GARMIN SL30/40 - PM 1000 II
Englisch: GX GARMIN SL30/40 - PM 1000 II
Zeichnungsnummer:
G3-8_CP-30-01-05

Option G (Bendix KT-76A/C/ACK A-30) (Transp./Encoder))



G-3 /600: Transponder KT-76 A/C Wiring Release 05/2005	
Design:	Hans Fuchs
Rate:	06-06-2005

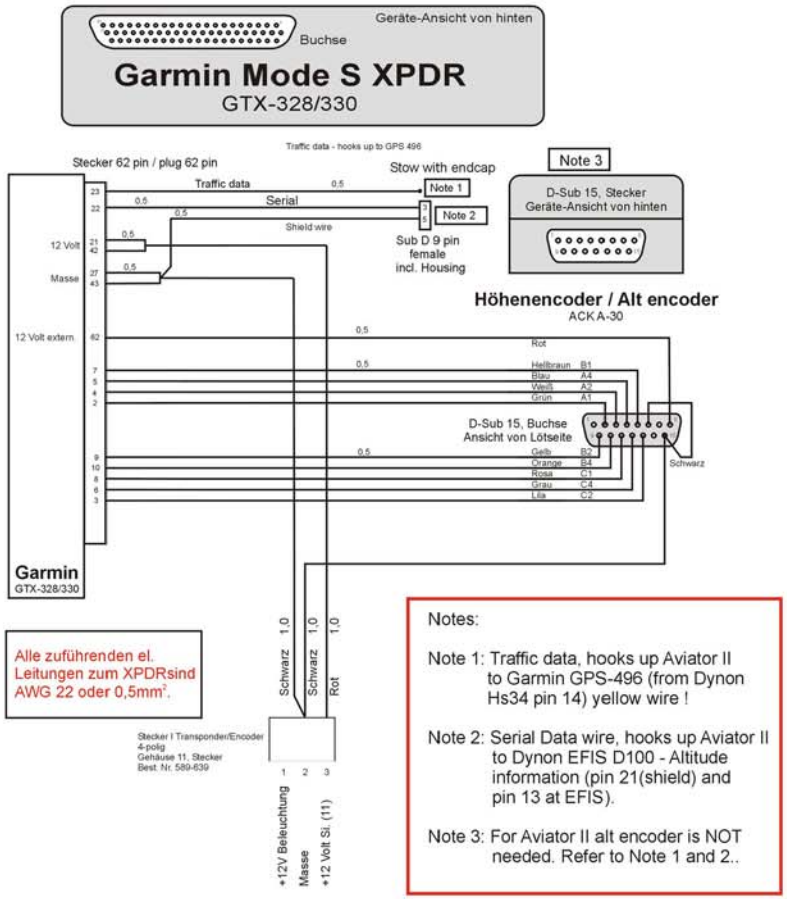
Option G (Garmin 320/327 / ACK-A30) (Transponder/Encoder)



G-3 /600: Transponder GTX-320/-7 Wiring Release 05/2005	
Design:	Hans Fuchs
Rate:	06-06-2005

GARMIN XPDR GTX 328/330 incl. Alt-Encoder

Att: Read all Notes on plan first !



Notes:

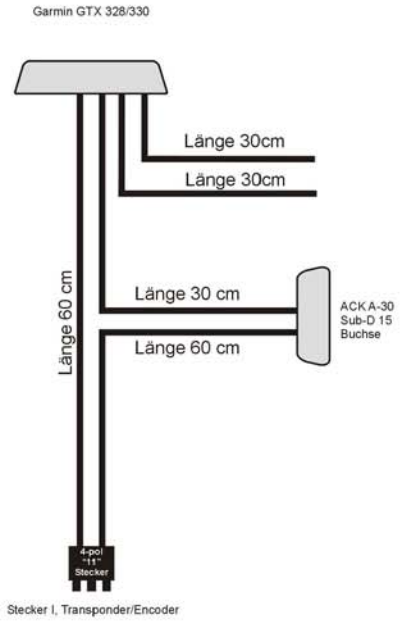
Note 1: Traffic data, hooks up Aviator II to Garmin GPS-496 (from Dynon Hs34 pin 14) yellow wire !

Note 2: Serial Data wire, hooks up Aviator II to Dynon EFIS D100 - Altitude information (pin 21(shield) and pin 13 at EFIS).

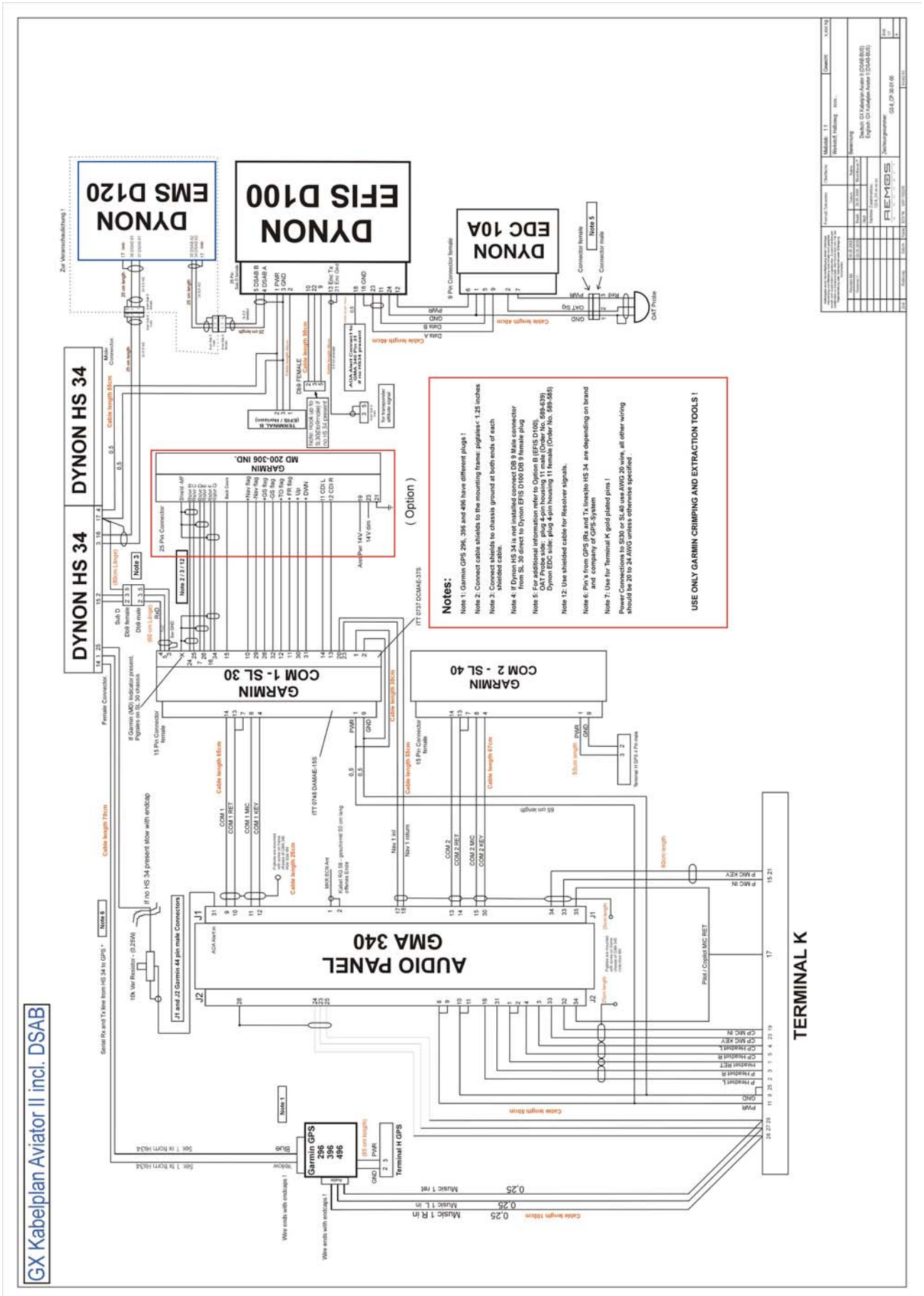
Note 3: For Aviator II alt encoder is NOT needed. Refer to Note 1 and 2..

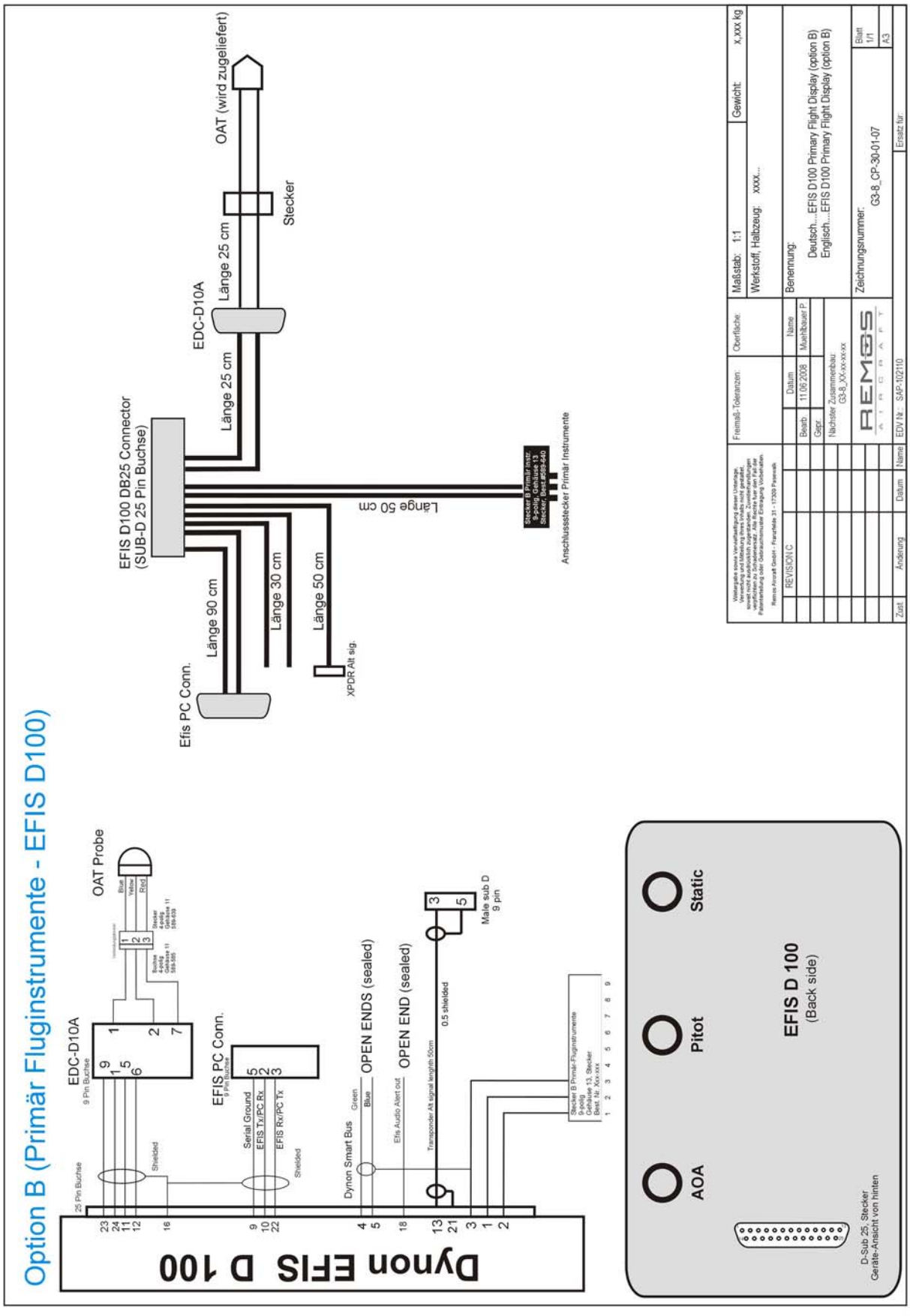
Kabelstrang Layout/wire layout

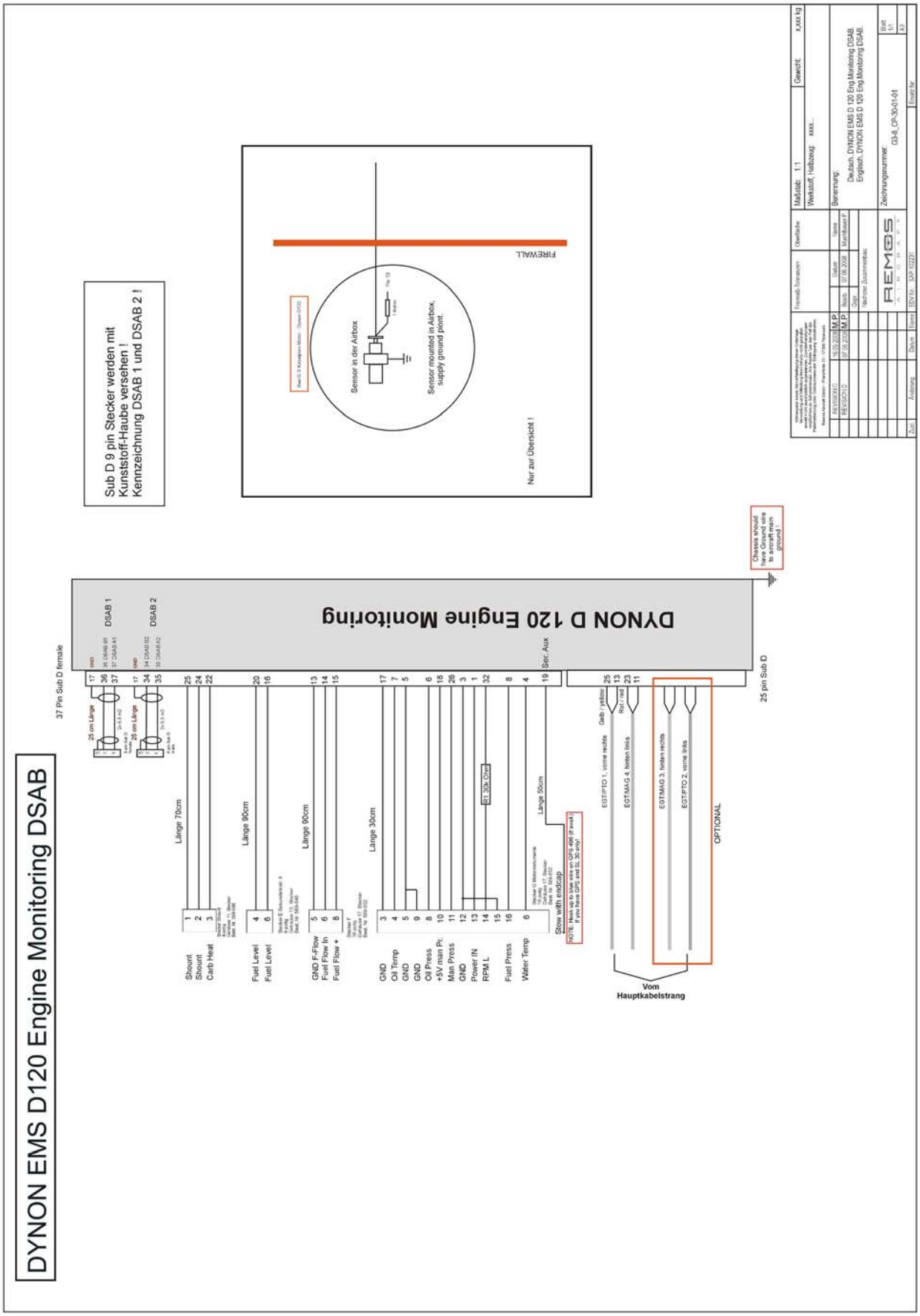
REMOS Art. Nr. xx-xxx

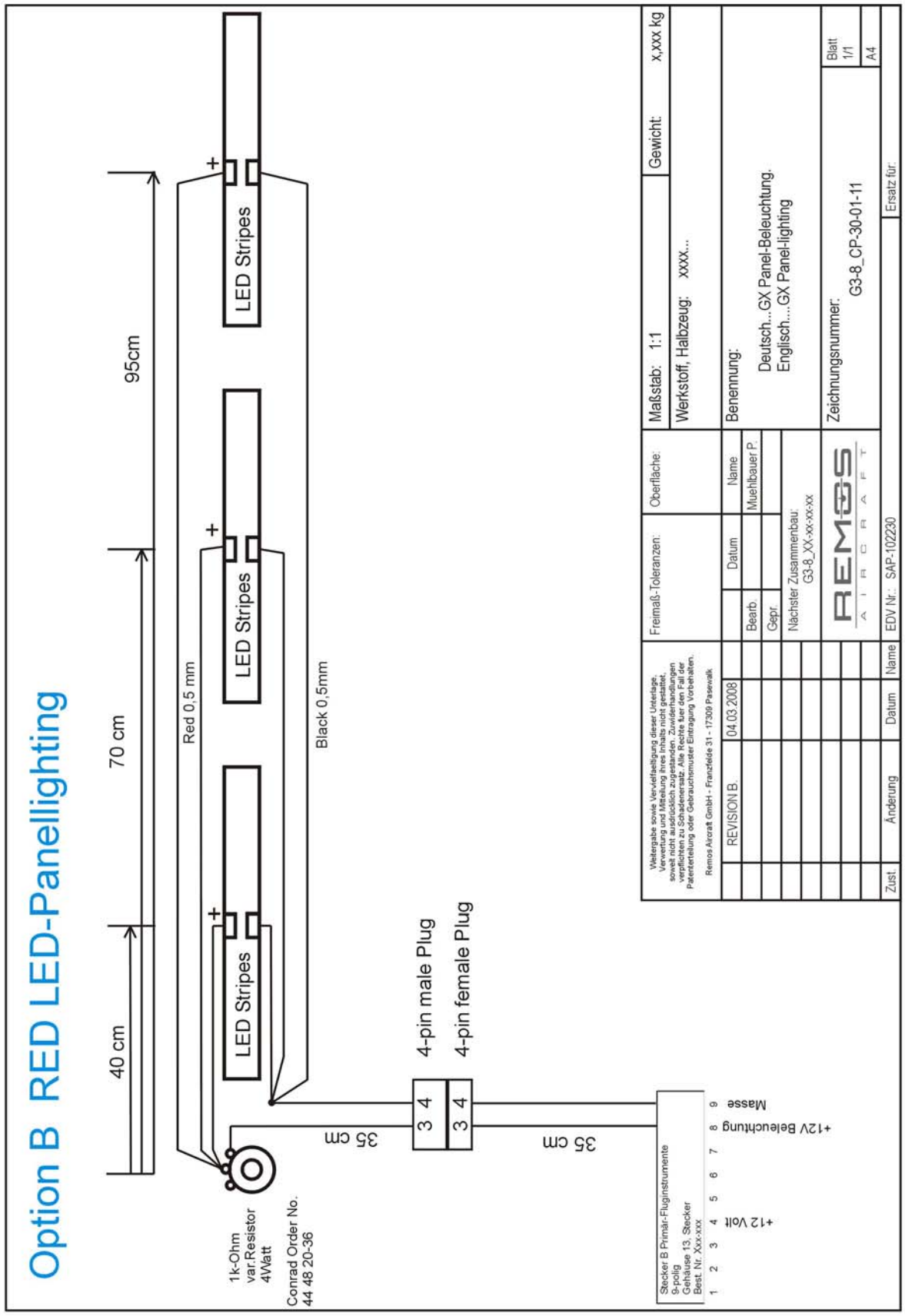


Freimaß-Toleranzen:	Oberfläche:	Maßstab: 1:1	Gewicht: x,xxx kg			
		Werkstoff, Halbzeug: xxxx...				
			Datum	Name	Benennung:	
REVISION C	07.06.2008	Bearb	07.06.2008	Muehlbauer P	Deutsch....GARMIN TRANSPONDER GTX 328/330	
		Gepr.			Englisch....GARMIN XPDR GTX 328/330	
		Nächster Zusammenbau: G3-8_XX-xx-xx-xx				
		REMOS AIRCRAFT			Zeichnungsnummer: G3-8_CP-30-01-02	Blatt 1/1 A4
Zust.	Änderung	Datum	Name	EDV Nr.: SAP-xxxxxxx		Ersatz für:


GX Kabelplan Aviator II incl. DSAB
DYNON HS 34
DYNON HS 34
DYNON EMS D120
DYNON EFIS D100
DYNON EDC 10A
GARMIN COM 1 - SL 30
GARMIN COM 2 - SL 40
AUDIO PANEL GMA 340
TERMINAL K
Garmin GPS 296 396 496
Terminal H GPS
GARMIN MD 200-306 IND.
Notes:
Note 1: Garmin GPS 296, 396 and 496 have different plugs !
Note 2: Connect cable shields to the mounting frame: pigtales< 1.25 inches
Note 3: Connect shields to chassis ground at both ends of each shielded cable.
Note 4: If Dynon HS 34 is not installed connect DB 9 Male connector from SL 30 direct to Dynon EFIS D100 DB 9 female plug
Note 5: For additional information refer to Option B (EFIS D100).
OAT Probe side: plug 4-pin housing 11 male (Order No. 589-639)
Dynon EDC side: plug 4-pin housing 11 female (Order No. 589-585)
Note 12: Use shielded cable for Resolver signals.
Note 6: Pin's from GPS (Rx and Tx lines)to HS 34 are depending on brand and company of GPS-System
Note 7: Use for Terminal K gold plated pins !
Power Connections to SI30 or SL40 use AWG 20 wire, all other wiring should be 20 to 24 AWG unless otherwise specified.
USE ONLY GARMIN CRIMPING AND EXTRACTION TOOLS !
(Option)


Option B (Primär Fluginstrumente - EFIS D100)
EFIS D100 DB25 Connector
(SUB-D 25 Pin Buchse)
EDC-D10A
Länge 25 cm
Länge 25 cm
OAT (wird zugeliefert)
Stecker
Länge 50 cm
Anschlussstecker Primär Instrumente
Efis PC Conn.
Länge 90 cm
Länge 30 cm
Länge 50 cm
XPDR Alt sig.
Dynon EFIS D 100
EDC-D10A
9 Pin Buchse
OAT Probe
Blue
Yellow
Red
EFIS PC Conn.
9 Pin Buchse
Serial Ground
EFIS Tx/PC Rx
EFIS Rx/PC Tx
Shielded
Dynon Smart Bus
Green
Blue
OPEN ENDS (sealed)
Efis Audio Alert out
OPEN END (sealed)
Transponder Alt signal length 50cm
0.5 shielded
Male sub D
9 pin
AOA
Pitot
Static
EFIS D 100
(Back side)
D-Sub 25, Stecker
Geräte-Ansicht von hinten
Maßstab: 1:1
Gewicht: x,xxx kg
Werkstoff, Halbzeug: xxxx...
Benennung:
Deutsch....EFIS D100 Primary Flight Display (option B)
Englisch....EFIS D100 Primary Flight Display (option B)
Zeichnungsnummer:
G3-8_CP-30-01-07
Blatt 1/1
A3
REMOS
AIRCRAFT
REVISION C
Datum
Name
11.06.2008
Muehlhauser P
Änderung
Datum
Name
EDV Nr. SAP-102210
Ersatz für


DYNON EMS D120 Engine Monitoring DSAB
Sub D 9 pin Stecker werden mit Kunststoff-Haube versehen ! Kennzeichnung DSAB 1 und DSAB 2 !
Nur zur Übersicht !
FIREWALL
Sensor in der Airbox
Sensor mounted in Airbox, supply ground point.
37 Pin Sub D female
DSAB 1
DSAB 2
DYNON D 120 Engine Monitoring
25 pin Sub D
Chassis should have Ground wire to aircraft main ground !
Shount
Shount
Carb Heat
Fuel Level
Fuel Level
GND F-Flow
Fuel Flow In
Fuel Flow +
GND
Oil Temp
GND
GND
Oil Press
+5V main Pr.
Man Press
GND
Power IN
RPM L
Fuel Press
Water Temp
Ser. Aux
Länge 70cm
Länge 90cm
Länge 90cm
Länge 30cm
Länge 50cm
Stow with endcap
EGT/PTO 1, vorne rechts
EGT/MAG 4, hinten links
EGT/MAG 3, hinten rechts
EGT/PTO 2, vorne links
OPTIONAL
Vom Hauptkabelstrang
REMOS
Zeichnungsnummer
G3-8_CP-30-01-01
Deutsch. DYNON EMS D 120 Eng Monitoring DSAB.
English. DYNON EMS D 120 Eng Monitoring DSAB.


Option B RED LED-Panellighting
40 cm
70 cm
95cm
Red 0,5 mm
Black 0,5mm
LED Stripes
LED Stripes
LED Stripes
1k-Ohm
var.Resistor
4Watt
Conrad Order No.
44 48 20-36
35 cm
35 cm
4-pin male Plug
4-pin female Plug
Stecker B Primär-Fluginstrumente
9-polig
Gehäuse 13, Stecker
Best. Nr. Xxx-xxx
1 2 3 4 5 6 7 8 9
+12 Volt
+12V Beleuchtung
Masse
Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster Eintragung Vorbehalten.
Remos Aircraft GmbH - Franzfelde 31 - 17309 Pasewalk
Freimaß-Toleranzen:
Oberfläche:
Maßstab: 1:1
Gewicht: x,xxx kg
Werkstoff, Halbzeug: xxxx...
Benennung:
Deutsch...GX Panel-Beleuchtung.
Englisch....GX Panel-lighting
Zeichnungsnummer:
G3-8_CP-30-01-11
Blatt 1/1
A4
REVISION B
04.03.2008
Bearb.
Muehlbauer P.
Gepr.
Nachster Zusammenbau:
G3-8_XX-xx-xx-xx
REMOS
AIRCRAFT
Zust.
Änderung
Datum
Name
EDV Nr.: SAP-102230
Ersatz für:

Safety Directives and Safety Monitoring System

Table of Contents Page

21.1 General

Safety Directives where issued by Remos Aircraft GmbH, to ensure the safe operation of the aircraft if required. Safety Directives are issued in accordance to the applicable ASTM continued airworthiness specifiacation. Service Directives are considered as mandatory tasks in order to maintain a condition of safe operation and compliance with the applicable original ASTM design specification.

21.1.1 Notice of Corrective Action

When corrective action is determind to be warranted, Remos Aircraft GmbH will issue a notice to the known owner/operators of the affected aircrafts. These notices are titled by one of the following uppercase letters:

“SAFETY ALERT”	Notifications that require immediate action.
“SERVICE BULLETIN”	Notifications that do not require immediate action but do recommend future action.
“NOTIFICATION”	Notifications that do not require necessarily recommended future action but are primarily for promulgation of continued airworthiness information.

21.1.2 Safety Directive, Structure

Every Safety Directive consists of the following information:

- Title in bold uppercase letters and Subject
- Name and contact information of the issuing entity
- Release date
- Date the notice takes effect
- Limitations for completion of any required corrective action
- Make and model of the affected LSA aircraft
- Serial number of the affected LSA aircraft
- Page number and number of total pages

- Reason for corrective action
- Subject of corrective action
- Listing of tools needed to accomplish the task
- List of parts needed to accomplish the task
- Type of maintenance (line, heavy, overhaul)
- Level of certification required to accomplish the task
- Detailed instruction and diagrams as needed to perform the task
- Method to test/inspect to verify the task was accomplished properly

21.2 Operational Safety Monitoring System

An operational safety monitoring system is maintained by Remos Aircraft GmbH to ensure continued airworthiness of your aircraft. To receive and evaluate all safety of flight and service difficulty reports a feedback form is provided with this maintenance manual.

21.2.1 Owner/Operator Responsibilities

1. Each owner/operator of an LSA airplane shall read and comply with the maintenance and continued airworthiness information and instructions provided by the manufacturer.

2. Each owner/operator of an LSA airplane shall be responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins.

3. The owner/operator of an LSA airplane shall be responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery.

4. The owner/operator of an LSA airplane shall be responsible for complying with all manufacturer issued notices of corrective action and for complying with all applicable aviation authority regulations in regard to maintaining the airworthiness of the LSA airplane.

5. An owner of an LSA airplane shall ensure that any needed corrective action be completed as specified in a notice, or by the next scheduled annual inspection.

6. Should an owner/operator not comply with any mandatory service requirement, the LSA airplane shall be considered not in compliance with applicable ASTM Standards and may be subject to regulatory action by the presiding aviation authority.

Note

The feedback form is provided as attachment to this maintenance manual to submit information to the aircraft manufacturer.

Annual/100hour Inspection Checklist

Condition Inspection Checklist Related to FAR 43, Appendix D

Aircraft Make/Model: Remos **/** G-3/600	S/N:
Engine Make/Model: Rotax **/**	S/N:
Date of Inspection:	
TT Engine:	TT Airframe:

A	Each person performing an annual or 100-hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall thoroughly clean the aircraft and aircraft engine after initial visual inspection for oil, exhaust, or other leaks as applicable is completed.

B	Each person performing an annual or 100-hour inspection shall inspect the following components of the fuselage and hull group:		
1	Pass	Fail	Fabric and skin-for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.
2	Pass	Fail	Systems and components-for improper installation, apparent defects, and unsatisfactory operation.

C	Each person performing an annual or 100-h inspection shall inspect the following components of the cabin and cockpit group:		
1	Pass	Fail	Generally/for uncleanliness and loose equipment that might foul the controls.
2	Pass	Fail	Seats and safety belts/for poor condition and apparent defects.
3	Pass	Fail	Windows and windshield/for deterioration and breakage.
4	Pass	Fail	Instruments/for poor condition, mounting, marking, and (where practicable) improper operation.
5	Pass	Fail	Flight and engine controls/for improper installation and improper operation.
6	Pass	Fail	Battery/for improper installation and improper charge.
7	Pass	Fail	All systems/for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.

D	Each person performing an annual or 100-hour inspection shall inspect components of the engine and nacelle group as follows:		
1	Pass	Fail	Engine section/for visual evidence of excessive oil, fuel, or water leaks, and sources of such leaks.
2	Pass	Fail	Studs and nuts/for improper torquing and obvious defects.
3	Pass	Fail	Internal engine/for cylinder compression and for metal particles or foreign matter on filter and sump drain plug. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.
4	Pass	Fail	Engine mount/for cracks, looseness of mounting, and looseness of engine to mount.
5	Pass	Fail	Engine controls/for defects, improper travel, and improper safetying.
6	Pass	Fail	Lines, hoses, and clamps/for leaks, improper condition and looseness.
7	Pass	Fail	Exhaust stacks/for cracks, defects, and improper attachment.
8	Pass	Fail	Accessories/for apparent defects in security of mounting.
9	Pass	Fail	All systems/for improper installation, poor general condition, defects, and insecure attachment.
10	Pass	Fail	Cowling/for cracks, and defects.

E	Each person performing an annual or 100-hour inspection shall inspect the following components of the landing gear group:		
1	Pass	Fail	All units/for poor condition and insecurity of attachment.
2	Pass	Fail	Linkages, trusses, and members/for undue or excessive wear fatigue, and distortion.
3	Pass	Fail	Hydraulic lines/for leakage.
4	Pass	Fail	Wheels/for cracks, defects, and condition of bearings.
5	Pass	Fail	Tires/for wear and cuts.
6	Pass	Fail	Brakes/for improper adjustment.

F	Each person performing an annual or 100-hour inspection shall inspect all components of the wing and center section.		
1	Pass	Fail	Assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, and insecurity of attachment.

G	Each person performing an annual or 100-hour inspection shall inspect all components and systems that make up the complete empennage assembly for:		
1	Pass	Fail	Poor general condition, fabric or skin deterioration, distortion, evidence of failure, insecure attachment, improper component installation, and improper component operation.

H	Each person performing an annual or 100-hour inspection shall inspect the following components of the propeller group:		
1	Pass	Fail	Propeller assembly/for cracks, nicks, binds.
2	Pass	Fail	Bolts/for improper torquing and lack of safetying.

I	Each person performing an annual or 100-hour inspection shall inspect the following components of the radio group:		
1	Pass	Fail	Radio and electronic equipment/for improper installation and insecure mounting.
2	Pass	Fail	Wiring and conduits/for improper routing, insecure mounting, and obvious defects.
3	Pass	Fail	Bonding and shielding/for improper installation and poor condition.
4	Pass	Fail	Antennas /for poor condition, insecure mounting, and improper operation.

J	Each person performing an annual or 100-hour inspection shall inspect each installed piece of optional equipment on this listing for improper installation and improper operation.		
1	Pass	Fail	Option number one
2	Pass	Fail	Option number two
3	Pass	Fail	Option number three
4	Pass	Fail	Option number four

K	Each person performing an annual or 100-hour inspection shall remove and inspect the ELT installed for proper operation of:		
1	Pass	Fail	The “G” switch and calendar date currency of the batteries installed in accordance with FAA Advisory Circular 91-44 current revision.

!	Notes and explanation of unairworthy items found:

Operational Safety Feedback Form

Please use this feedback form to report any safety of flight or service difficulties to Remos Aircraft GmbH. It is important for the operational safety monitoring system and will guarantee the continued airworthiness of your aircraft. After receiving and evaluating this information, Remos Aircraft GmbH will issue appropriate Safety Directives to all known Owners/Operators providing instructions as necessary for continued airworthiness.

Aircraft Make/Model: Remos / G-3/600	S/N:
Engine Make/Model: Rotax /	S/N:
Date of Report:	
TT Engine:	TT Airframe:

Name:	Phone:
First Name:	Fax:
Adress:	e-mail:
City/State:	Web:

!	Notes and explanation of unairworthy or service difficulty items found:

Send to: Remos Aircraft GmbH, Franzfelde 31, D-17309 Pasewalk / Germany
Phone: +49/3973/225519-0, Fax: +49/3973/225519-99
e-mail: email@remos.com, Web: www.remos.com

Owner/Operator Responsibility Commitment Form

Please fill out this commitment form to confirm that you agree with the ASTM announced responsiblities for LSA aircraft owners/operators. This is mandatory to every customer to ensure a proper function of the manufacturers operational safety monitoring system.

Aircraft Make/Model: Remos / G-3/600	S/N:
Engine Make/Model: Rotax /	S/N:

Name:	Phone:
First Name:	Fax:
Adress:	e-mail:
City/State:	Web:
Customer Signature:	Dealer Signature:

Agreed Owner/Operator Responsibilities:

1. Each owner/operator of an LSA airplane shall read and comply with the maintenance and continued airworthiness information and instructions provided by the manufacturer.

2. Each owner/operator of an LSA airplane shall be responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins.

3. The owner/operator of an LSA airplane shall be responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery.

4. The owner/operator of an LSA airplane shall be responsible for complying with all manufacturer issued notices of corrective action and for complying with all applicable aviation authority regulations in regard to maintaining the airworthiness of the LSA airplane.

5. An owner of an LSA airplane shall ensure that any needed corrective action be completed as specified in a notice, or by the next scheduled annual inspection.

6. Should an owner/operator not comply with any mandatory service requirement, the LSA airplane shall be considered not in compliance with applicable ASTM Standards and may be subject to regulatory action by the presiding aviation authority.

Send to: Remos Aircraft GmbH, Franzfelde 31, D-17309 Pasewalk / Germany
Phone: +49/3973/225519-0, Fax: +49/3973/225519-99
e-mail: email@remos.com, Web: www.remos.com

Or: Provide your local dealer/distributor at date of purchase.