



MAINTENANCE MANUAL

STORM CENTURY S-LSA

MAINTENANCE MANUAL

AIRCRAFT **STORM Century S-LSA**

SERIAL N°

CLASS



STORMAIRCRAFT

DATE : 11-14-2005

SEVICE BULLETIN

STORM Century S-LSA

This manual contains all the information concerning maintenance and periodic overhauls as suggested by **STORMAIRCRAFT**

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CHAPTER 1

GENERAL

This manual contains all the necessary information to perform the periodic overhaul and the maintenance, and for all other operations needed for STORM S-LSA aircraft.

This manual includes the information concerning the aircraft, its construction and its components. For all operations on the engine, though included in this manual, and for some periodic operations, please refer to the engine manual:

OPERATOR'S MANUAL FOR THE ROTAX 912 – 912 S

For all the operations concerning the propeller, though included in this manual, for its installation and for some specific operations please refer to the instructions and recommendations of the manufacturers: WOODCOMP - WARPDRIVE

For all the operations concerning the components such as: hubs – wheels – brakes – pumps – filters – pulleys – cables – pipes – bolts – rivets – extrusions – fusions etc., please follow the manufacturer's instructions and recommendations.

NOTE: The military specifications listed in the MAINTENANCE MANUAL are not compulsory, but they are considered a satisfactory choice of the materials.- The products of major material producers meet or exceed these specifications.



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1.1 Equipment list: Datum Firewall

NOTE : (*) ROTAX 912 ULS DRY ENGINE WEIGHT INCLUDES REDUCER-CLUTCH-GENERATOR-CARBURETORS-OIL TANK-ELECTRIC SYSTEM

A. POWERPLANT UNIT

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
A-01	X	STANDARD ENGINE (*)	BOMBARDIER-ROTAX type 912 ULS P/N	01	129,58	-23
A-02	X	STARTER 12v/0,6 kW	BOMBARDIER-ROTAX P/N 293 157	01	2,64	-14,1
A-03	X	WARM INLET AIR FILTER	STA P/N 825 711	01	0,33	-13
A-04	X	COLD INLET AIR FILTER	STA P/N 825 711	01	0,33	-11,8
A-05	X	AIR BOX SYSTEM	STA P/N A - 14	01	2,42	-13
A-06	X	OIL COOLER	STA P/N 1RARXOL001	01	1,1	-28,7
A-07	X	COOLANT RADIATOR	STA P/N 1RARXAQ001	01	2,2	-7,8
A-08	X	PROPELLER & SPINNER	WOODCOMP P/N SR200	01	8,734	-35,4
A-09	X	ELECTRIC PUMP	STA P/N A1ACMOPB001	01	1,76	In Firewall
A-10	X	FUEL FILTER GASCOLATOR	STA P/N ACMOFB001	01	0,5456	In Firewall
A-11	X	CABIN HEAT SYSTEM	STA P/N SL605000/55	01	0,77	In Firewall
A-12	X	UPPER ENGINE COWL	STA P/N 08-010-20/R	01	5,28	-17,7
A-13	X	LOWER ENGINE COWL	STA P/N 08-010-10/R	01	7,26	-17,7
A-14	X	FUEL PIPES 1/4" AND AS1072C PROTECTION	STA P/N MIL-H-6000-4	01	16,0292	-15,7
A-15	X	EXHAUST MANIFOLDS AND MUFFLER	BOMBARDIER-ROTAX P/N 777 663	01	8,8	-9
A-16	X	ENGINE RING MOUNT – SILENT BLOCK	STA P/N 07-020-00	01	19,14	-7,1
A-17	X	FLOAT CHAMBER	BOMBARDIER-ROTAX P/N 874 300	01	0,66	In Firewall



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B. LANDING GEAR UNIT

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
B-01	X	5" MAIN WHEEL	MATCO WHLW51S1.25	02	2,42	55,1
B-02	X	MAIN WHEELS TIRE	MCCREARY P/N 06-08300	02	1,98	55,1
B-03	X	5" MAIN WHEEL TUBE	MATCO P/N TIRTU500X5	02	3,96	55,1
B-04	X	BRAKE DISC ASSY	MATCO P/N WHLB45-4	02	8,58	55,1
B-05	X	MAIN WHEEL AXLE	STA P/N SL500000-22/05	02	2,86	55,1
B-06	X	MAIN WHEEL FAIRING	STA P/N SL500000-03/00	02	2,86	55,1
B-07	X	4" NOSE WHEEL	MATCO P/N TIRT4.00X4-6	01	3,96	-9,4
B-08	X	NOSE WHEEL TIRE	MATCO P/N TIRT4.00X4-6	01	2,42	-9,4
B-09	X	4" NOSE WHEEL TUBE	STA TUB4.00X4	01	1,98	-9,4
B-10	X	NOSE WHEEL AXLE	STA P/N SL503000-02/03	01	2,86	55,1
B-11	X	NOSE WHEEL FAIRING	STA P/N SL500000-03/00	01	3,96	-9,4



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C. POWER UNIT

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
C-01	X	BATTERY	FIAMM P/N 911767	01	11,66	In Firewall
C-02	X	VOLTAGE REGULATOR	DUCATI 12 VDC P/N 965 347	01	0,22	In Firewall
C-03	0	LANDING LIGHT	STA P/N AS11-04800	01	0,44	-6,3
C-04	X	TAIL STROBE LIGHT	STA P/N TSL-002	01	3,52	222,4
C-05	0	ANTICOLLISION LIGHT	STA P/N ACL-002	01	0,484	43,3
C-06	X	STABILATOR ELECTRIC TRIM ACTUATOR	RAY ALLEN T2/7A	01	0,275	211,4
C-07	0	RUDDER ELECTRIC TRIM ACTUATOR	RAY ALLEN T2/7A	01	0,484	212,6
C-08	X	ELECTRIC LIGHTER	STA P/N 1ELALPC001	01	0,22	17,3
C-09	X	BATTERY RELAY	STA P/N 1ELCDET001	01	0,22	-194,9
C-10	X	STARTER RELAY	BOMBARDIER-ROTAX P/N 992 819	01	0,22	In Firewall
C-11	X	CONDENSER	STA P/N 1ELCDET001	01	0,066	In Firewall



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D. INSTRUMENTS

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
D-01	X	AIR SPEED INDICATOR	STA P/N 1STVOAG010	01	0,748	17
D-02	X	VERTICAL SPEED INDICATOR	STA P/N 1STVOAG008	01	0,704	17
D-03	X	ALTIMETER	STA P/N 1STVOAG001	01	1,254	17
D-04	X	TURN & BANK INDICATOR	STA P/N 1STVOAG009	01	0,11	17
D-05	X	COMPASS	STA P/N 1STVOAG003	01	0,682	17
D-06	0	GYRO HORIZON	STA P/N 1STVOAG007	01	2,7434	17
D-07	0	DIRECTIONAL GYRO	STA P/N 1STVOAG004	01	2,893	17
D-08	0	VACUUM-SUCTION-METER	UMA P/N 10-01100	01	0,22	17
D-09	0	VACUUM PRESSURE GAUGE	UMA P/N 10-25145	01	0,33	17
D-10	X	HOUR METER	STA P/N 1STMOAG001	01	0,352	17
D-11	X	OIL PRESSURE GAUGE	STA P/N 1STMOAG007	01	1,54	17
D-12	X	OIL TEMP. GAUGE	STA P/N 1STMOAG012	01	1,65	17
D-13	X	VOLTMETER	STA P/N 1STMOAG013	01	0,308	17
D-14	0	FUEL PRESSURE GAUGE	STA P/N 1STMOAG006	01	0,33	17
D-15	X	CHT HEAD AND CYLINDER TEMP. GAUGE	STA P/N 1STMOAG012	02	0,33	17
D-16	X	FUEL LEVEL INDICATOR	STA P/N 1STMOAG004	02	0,264	17



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E. COCKPIT

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
E-01	X	SEAT BELTS	STA P/N 1CNNYAA003	02	4,28	46,5
E-02	X	SEAT UPHOLSTERY	STA P/N UPY020-001	02	8,58	45,3
E-03	X	CANOPY	STA P/N SL104010-01/00	01	11	39,3
E-04	X	REAR WINDOWS	STA P/N SL101000-42/00	02	1,32	74,8
E-05	X	FLIGHT INSTRUMENTS PANELS	STA P/N SL105200-01	02	2,42	17,3
E-06	X	ENGINE INSTRUMENTS PANELS	STA P/N SL105300-01	02	2,42	17,3
E-07	X	FUEL VALVE ON-OFF SELECTOR	STA P/N 1VVSFFF001	01	0,484	24,4
E-08	X	CARPETS & CTRL STICK COVER	STA P/N UPY020-...	02	4,07	25,6
E-09	X	DOORS LOCKING SYSTEM	STA P/N DLS-001	01	0,22	30,3
E-10	X	IGNITION SWITCH	STA P/N 1ELINAC001	1	0,44	17,3
E-11	X	BREAKERS	STA P/N 1ELALBK...	10	0,066	17,3
E-12	X	SWITCHES	STA P/N 1ELINLE001	07	0,044	17,3
E-13	X	ELEV./RUDDER TRIM INDICATOR	RAY ALLEN P/N RP3 LED	02	0,170	17,3
E-14	X	ELEV./RUDDER TRIM SWITCH	RAY ALLEN P/N RS2	02	0,170	17,3
E-15	X	LIMIT TAGS	STA P/N TGS-002	//	negligible	_____
E-16	X	VARIOUS TAGS	STA P/N TGS-001	//	negligible	_____



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F. AVIONICS

ITEM NR.	X=INST Or 0= NOT INST	DESCRIPTION	BUILDER and P/N	Q.TY	WEIGHT lbs	ARM inches
F-01	X	VHF COM & COM	ICOM IC-A200	01	2,794	17
F-02	X	TRANSPONDER	GARMIN GTX320A	01	3,102	17
F-03	0	MICROPHONE	TELEX 8421 P/N 66 T D.206	01	0,616	17
F-04	X	"COM" ANTENNA	COMANT P/N C-121	01	0,5456	98,5
F-05	X	TRANSPONDER ANTENNA	COMANT P/N CI-105	01	0,0616	67
F-06	0	GLOBAL POSITIONING SYSTEM	GARMIN GPS P/N 165-TSO	01	1,5114	17
F-07	0	VOR-DME APPARATUS	NARCO DME P/N 11-14000	01	3,8918	17
F-08	0	VOR INDICATOR	NARCO IDME P/N 11-14200	01	2,5938	17
F-09	0	ADF UNIT	NARCO ADF 841 P/N 11-13900	01	2,695	17



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1.2 SOURCES TO PURCHASE PARTS

STORMAIRCRAFT

Via Enzo Ferrari
04016 Sabaudia LT
Italy
Tel +39(0)773515216
Fax +39(0)773511407
www.stormaircraft.com
info@stormaircraft.com

BOMBARDIER-ROTAX

See your local Rotax dealer
www.rotax.bombardier.com

WOODCOMP (US dealer)

Grand Aero LLC
Fresno, CA
Tel. 1-559-304-7550
www.grandaero.com

MATCO Mfg

550 West 3615 South
Salt Lake City, UT 84115
www.matcomfg.com

AIRCRAFTSPRUCE WEST

225 Airport Circle
Corona, CA 92880
Tel. 951-372-9555
800-861-3192
info@aircraftspruce.com
www.aircraftspruce.com

AIRCRAFTSPRUCE EAST

452 Dividend Drive
Peachtree City, GA 30269
Tel. 770-487-2310
800-861-3192
info@aircraftspruce.com
www.aircraftspruce.com

GARMIN

Visit Garmin dealer section on www.garmin.com to find authorized dealer or shop closer to you

ICOM

Visit Icom America dealer section on www.icomamerica.com for authorized dealer or shop closer to you

BENDIX KING

Visit Bendix King dealer section on www.3bendixking.com for authorized dealer or shop closer to you



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1.3 LIST OF DISPOSABLE REPLACEMENT PARTS

DESCRIPTION	P/N	100	500	ANNUAL	SPECIAL
AIR FILTER	STA 825 711		✈		
FUEL FILTER GASCOLATOR	STA ACMOFB001			✈	✈
5" MAIN WHEEL TUBE	MATCO P/N TIRTU500X5				✈
4" NOSE WHEEL TUBE	STA TUB4.00X4				✈
5" MAIN WHEEL	MATCO WHLW51S1.25				✈
NOSE WHEEL TIRE	MATCO TIRT4X4.00-6				✈



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1.4 ENGINE SPECIFICATIONS

ROTAX 912S

100-HP ROTAX 912S AIRCRAFT ENGINE

ENGINE DESCRIPTION: Rotax 912 ULS

4-cylinder, 4-stroke liquid / air cooled engine with opposed cylinders, dry sump forced lubrication with separate oil tank, automatic adjustment by hydraulic valve tappet, dual CD carburetors, mechanical diaphragm pump, electronic dual ignition, electric starter, integrated reduction gear 1 : 2.43

BORE / STROKE	3.31 in (84 mm.) 2.40 in. (61 mm.)
DISPLACEMENT	82.6 cu. in. (1352 cc)
POWER OUTPUT	Approx. 95 HP (69 kW) @ 5500 RPM 100 HP (73.5 kW) @ 5800 RPM* * with Rotax airbox and exhaust system
TORQUE MAX.	Approx. 94 ft.lbs. (128 Nm) @ 5100 RPM
WEIGHT	136 lbs. (62 kg) with electric starter, carburetors, fuel pump, air filters and oil system
MAX RPM	5,800 RPM (1/min.)
CYLINDER	light alloy cylinders, NIKASIL plated
PISTON	aluminum cast, three piston rings
VALVE TRAIN	OHV, hyd. lifters, pushrods, rocker arms
CYLINDER HEAD	4 separate cylinder heads
COMPRESSION	10.5 : 1
VALVE GAP	auto adjustment by hydraulic valve
CAM SHAFT	steel, heat treated, nitrated
CRANKSHAFT	case hardened with 5 bearings
COOLING	liquid cooled cyl. heads, air cooled cyl.
LUBRICATION	dry sump with trochoid pump, camshaft driven
OIL	.08 US Gal. (3 litres); high performance auto (SAE 15W40)
FUEL	premium unleaded: 90 oct. or higher leaded or unleaded or AVGAS 100 LL
GENERATOR	13.5 V, 250 W DC @ 5500 RPM

Rotax 912 ULS
Shown with options

Manifold Pressure and Fuel Consumption graph



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Rotax 912 S UL Aircraft Engine

(Non Certified Version)

Continuous Performance: 69.6 KW (95 HP) @ 5500 RPM

Take - off Performance: 73.6 KW (100 HP) @ 5800 RPM (Max. 5 min.)

Fuel consumption at 75% continuous power: 4.9 gph

Engine TBO (Time Between Overhaul): 1,500 hours

4-stroke, 4 cylinder horizontally opposed, dual spark ignition engine, one central camshaft, pushrods, OHV:

- Liquid cooled cylinder heads, ram air-cooled cylinders
- Dry sump forced lubrication
- Electric starter and starter relay
- Dual breakerless, capacitor discharge ignition
- Rectifier/regulator
- Prop drive via reduction gear with integrated shock absorber.
- Integrated AC generator
- Mechanical (engine driven) fuel pump
- R.F.I. suppression
- 2 carburetors

* Full 73.6 KW (100 HP) available only when installed with Rotax tuned intake and exhaust systems designed for the 912 S UL. Use of other intake and / or exhaust systems may result in reduced take-off power. Potential users of the 912 S UL should consult the 912 S Maintenance Manual attached to this manual for more detailed information.



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1.5 WEIGHT AND BALANCE INFORMATION

A – WEIGHING PROCEDURE

Following procedures are suggested for weighing operations	
01	Before weighing, remove dirt, grease, humidity etc. from the aircraft.
02	The aircraft weighing shall be performed in a closed shed to avoid incorrect readings of the scale due to wind.
03	To determine the center of gravity, the aircraft shall be set on attitude of horizontal flight.
04	All the equipment items included in the certified tare weight shall be installed IN THEIR POSITION when performing the weighing.- These equipment items are part of the weighing report.-
05	The scales must be properly calibrated, zeroed and used as per builder's instructions. The scales and the suitable supports for the aircraft, when needed, are normally positioned under the aircraft wheels. Other structural points that can suitably support the aircraft may be used, as for example the jack plates on the main spar. These points must be clearly pointed out in the weighing report.
06	If not otherwise required by the aircraft specifications, the fuel system must be drained until the indicator shows "ZERO" or "EMPTY" when the aircraft is on attitude of horizontal flight. The fuel quantity remaining in the tank, in the pipes and in the engine is called "RESIDUAL FUEL" and must be included in the tare weight.- In particular cases the weighing can be performed with full load of fuel, provided that an accurate instrument is available to determine the exact weight.-
07	If not otherwise specified in the aircraft specifications, the oil system shall be completely drained with all the drain cocks open. In these conditions, the oil quantity remaining in the tank, in the pipes and in the engine is called "RESIDUAL OIL" and must be included in the tare weight. When weighing is performed with a full load of oil, the actual tare weight is equal to the real registered weight minus the weight of the oil contained in the tank (oil weight = oil capacity in gallons multiplied by 7,5 lbs). It must be specified in all weighing reports whether full load of oil is included in the weights or if weights are considered after oil drainage.
08	The brakes must not be operated when reading the scale.
09	After removing the aircraft from the scale, take note of the tare weight.



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B - WEIGHING AND BALANCING CALCULATIONS

01 UNITARY WEIGHTS FOR WEIGHING AND BALANCING PURPOSES

Fuel	:	6 lbs per Gal/USA	= a	0,720 gr per liter
Turbine fuel	:	6,7 lbs per Gal/USA	= a	0,803 gr per liter
Lubricating oil	:	7,5 lbs per Gal/USA	= a	0,900 gr per liter
Crew and passengers	:	180 lbs per person	= a	81 kgs per person

02 Take the reference plane of the longitudinal distances from the C.N.. If not shown, choose a suitable one provided that once it has been determined, it will be the only reference for the calculation of arms and moments.

03 ALGEBRAIC SIGNS

Great care must be taken over assigning the right algebraic signs (+ o -) during the whole balancing calculation. For uniformity purposes, when doing these calculations, you should always consider to observe the aircraft with its nose on the left side. In this position, any left side arm (forward) of the reference has a minus (-) sign, and any right side arm (rear) of the reference has a plus (+) sign. Any weight added to the aircraft on any side of the reference HAS A PLUS (+) SIGN; any removed weight HAS A MINUS (-) SIGN.-

When weights are multiplied by arms, the result will have a (+) sign if signs are the same, and a (-) sign if signs are different.

Following combinations are possible:

Weights added in front of the reference plane: (+) weight x (-) arm = (-) moment

Weights added at the back of the reference plane: (+) weight x (+) arm = (+) moment

Weights removed in front of the reference plane: (-) weight x (-) arm = (+) moment

Weights removed at the back of the reference plane: (-) weight x (+) arm = (-) moment

The total weight of the aircraft is equal to the tare weight of the aircraft plus the added weights minus the removed weights.

The total moment of the aircraft is determined by the algebraic sum of the aircraft moment with tare weight and all the single moments of the added and/or removed items.



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04	WEIGHING AND BALANCING CALCULATION FORMULAS
a	Nose wheel aircraft : Reference plane in front of the main wheels : $C. G. = D - (F \times L/W)$ Reference plane at the back of the main wheels : $C. G. = - (D + F \times L/W)$
b	Nose wheel aircraft : Reference plane in front of the main wheels: $C. G. = D+R (R \times L/W)$ Reference plane at the back of the main wheels: $C. G. = D+R (R \times L/W)$
c	Formulas used on AV-16 model, to be filled in, valid for nose wheel as well as for nose wheel aircrafts. $X = M/G$ --- % C.M.A. = $X - Y/L$
d	WHERE : for the formulas referred to in point B-04/a and B-04/b C.G. = distance from the reference plane to center of gravity of a/c W = aircraft weight when weighing. D = horizontal distance taken from reference plane to weighing point of main wheels L = horizontal distance taken from weighing point of main wheels to nose or tail weighing point R = weight on tail weighing point
e	WHERE : for formulas used in point B-04/c A = total weight when weighing B = weights to be added if not on board when weighing. C = weights to be deducted if on board when weighing. G = tare weight resulting from $A+B-C$. E = tare weight moment taken when weighing. (A) F = weight moment to be added if not on board when weighing. (B) H = weight moment to be deducted if on board when weighing.(C) M = tare weight moment resulting from: $E+F-C$. X = distance from reference plane of the gravity center of the tare weight of the aircraft L = length of mean aerodynamic chord Y = distance of front end of the mean aerodynamic chord from reference plane. % C.M.A. = tare weight gravity center position expressed in percentage of the mean aerodynamic chord NOTE : MAKE SURE THAT MEASUREMENT UNITS ARE EVEN
CLOSING THE OPERATIONS Register the obtained results in the Weighing Report and Analysis. Update all aircraft documentation (C.N. – Flight Manual - logbooks).	



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WEIGHING ANALYSIS

Support n° reading	LEFT			RIGHT			NOSE		
	Reading	Tare	Net	Reading	Tare	Net	Reading	Tare	Net
1									
2									
3									
4									
5									
Totals									
MEAN VALUES (to be registered in the first page)									

WEIGHTS TO BE ADDED (if not on board when weighing)				WEIGHTS TO BE DEDUCTED (if on board when weighing)			
Name	Weight Lbs	Arm Inch	Moment Lbs. Inch	Name	Weight Lbs	Arm Inch	Moment Lbs. Inch
Total				Total			



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1.6 TIRE INFLATION PRESSURES

Nose gear tire inflation pressure: 26 psi
Main landing gear inflation pressure: 26 psi

Check tires at each refuelling to make sure there are no cuts, foreign matters, irregular wear; an irregular wear could be due to a bad use of brakes as well as to a wrong wheel alignment.

Replace worn tires.

An excessively worn tire considerably increases the possibility and the danger of burst.

NOTE : tires shall be disposed of in compliance with current environmental provisions.

1.7 APPROVED OILS AND CAPACITY

- Type : for car use, classification API "SF" or "SG"
- Quantity : 0,7 gal max. level – 0,5 gal. minimum level, with filter total capacity 0,8 gal
- Grade
 - over 15° C SAE 30 or SAE 40
 - from 0° C to 32° C SAE 40
 - from -18° C to 21° C SAE 40 or SAE 30
 - below -12° C SAE 20W/20

or use multigrade oil

from -05° C	to 40° C	SAE 20 W-50	SAE 20W-40
from -15° C	to 40° C	SAE 15 W-50	SAE 15W-40
from -25° C	to 40° C	SAE 10 W-40	
from -25° C	to 30° C	SAE 10 W-30	
from -30° C	to 20° C	SAE 5 W-20	
from -30° C	to 40° C	SAE 5 W-50	

CAUTION : check oil level at each refuelling. This check shall be done when the aircraft is as levelled as possible. An oil level between MIN and MAX on the dipstick shall be considered acceptable. Should the oil level drop below MIN, you shall immediately top it up with an oil meeting ROTAX specifications.

The range between MIN and MAX signs is equal to approx. **0,13 gal** oil.

Never top up oil above MAX level (maximum)

NOTE : A repeated and prolonged contact of your skin with used oil can cause dermatitis and is carcinogenic. Avoid contact and, should it occur, wash up carefully. Keep used oil far from children's reach. Dispose used oil in special dumps. Empty cans shall not be thrown in domestic use dumpsters, but disposed of in special containers.



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1.8 RECOMMENDED FASTENER TORQUE VALUES

Profile ISO		TORQUE Nm				
Diameter	Pitch (mm)	4.8	5.8	8.8	10.9	12.9
M3 (3mm)	0.5	0.54	0.68	1.09	1.53	1.84
		0.66	0.83	1.34	1.88	2.25
M4	0.7	1.24	1.56	2.49	3.5	4.21
		1.52	1.9	3.04	4.28	5.14
M5	0.8	2.44	3.05	4.99	6.87	8.25
		2.99	3.75	6.00	8.43	10.12
M6	1	4.22	5.27	8.44	11.86	14.24
		5.16	6.46	10.43	14.53	17.43
M8	1.25	10.15	12.68	20.3	28.54	34.25
		12.47	15.58	24.94	35	42
M10	1.5	20.4	25.51	40.81	57.4	68.88
		25.15	31.44	50.31	70.75	84.9
M12	1.75	34.73	43.41	69.45	97.68	117.21
		42.83	53.54	85.66	120.46	144.5
M16	2	84.43	105.54	168.8	237.4	284.9
		104.93	131.17	209.8	295.13	354.1
M18	2.5	116.88	146.1	233.7	328.7	394.5
		144.43	180.53	288.8	406.2	487.4
M20	2.5	164.9	206.14	329.8	463.8	556.56
		204.95	256.2	409.9	576.43	691.7

TABLE GRIP RIVETS

RIVET TYPE	DIAMETER		GRIP	
	INCHES	MILLIMETER	INCHES	MILLIMETER
AVEX 1661 -0410	0.1250	3.2	0.0315 ÷ 0.1695	0.8 ÷ 4.3
AVEX 1661 - 0412	0.1250	3.2	0.0469 ÷ 0.2500	1.2 ÷ 6.3
AVEX 1661 - 0414	0.1250	3.2	0.1575 ÷ 0.3750	4.0 ÷ 7.9
AVEX 1604 - 0412	0.1250	3.2	0.0938 ÷ 0.2500	2.4 ÷ 6.3
AVEX 1661 - 0512	0.1575	4.0	0.0469 ÷ 0.2500	1.2 ÷ 6.3
AVEX 1661 - 0516	0.1575	4.0	0.1575 ÷ 0.3750	4.0 ÷ 9.5



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TABLE SOLID RIVETS

RIVET TYPE	DIAMETER		GRIP
	INCHES	MILLIMETER	VALUE
AN470 TO 4 – 3	1/8 x 3/16	3.2 x 4.76	L + 1 D
AN470 TO 4 - 4	1/8 x 1/4	3.2 x 6.35	L + 1 D
AN470 TO 4 – 5	1/8 x 5/16	3.2 x 7.94	L + 1 D
AN470 TO 4 – 6	1/8 x 3/8	3.2 x 9.53	L + 1 D
AN470 TO 4 – 8	1/8 x 3/4	3.2 x 12.7	L + 1 D
AN470 TO 4 – 12	1/8 x 3/4	3.2 x 19	L + 1 D
AN470 TO 5 - 6	5/32 X 3/8	4.0 x 9.53	L + 1,5 D
AN470 TO 5 - 8	5/32 X 1/2	4.0 x 12.7	L + 1,5 D
AN470 TO 5 - 9	5/32 X 9/16	4.0 x 14.29	L + 1,5 D
AN470 TO 5 - 10	5/32 X 5/8	4.0 x 15.88	L + 1,5 D
AN470 TO 5 - 12	5/32 X 3/4	4.0 x 19.05	L + 1,5 D
AN470 TO 5 - 16	5/32 X 1	4.0 x 25.40	L + 1,5 D
AN470 TO 5 - 22	5/32 X 1 3/8	4.0 x 34.92	L + 1,5 D

TABLE SOLID RIVETS

RIVET TYPE	DIAMETER		GRIP
	INCHES	MILLIMETER	VALUE
AN426 TO 3 - 6	3/32 x 3/8	2.38 x 9.53	L + 1 D
AN426 TO 3 - 10	3/32 x 5/8	2.38 x 15.87	L + 1 D
AN426 TO 4 - 4	1/8 x 1/4	3.2 x 6.35	L + 1 D
AN426 TO 4 – 6	1/8 x 3/8	3.2 x 9.53	L + 1 D
AN426 TO 4 – 9	1/8 x 9/16	3.2 x 14.3	L + 1 D
AN426 TO 4 – 12	1/8 x ¾	3.2 x 19.05	L + 1 D
AN426 TO 4 – 10	1/8 x 5/8	3.2 x 15.87	L + 1 D
AN426 TO 4 - 16	1/8 x 1	3.2 x 25.4	L + 1 D



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1.9 GENERAL SAFETY INFORMATION

INTRODUCTION

Some maintenance and aircraft repairing methods may involve the risk of physical injuries or other risks for your health. This section lists some of these dangerous operations in alphabetical order, together with the materials and the relevant equipments. The necessary precautionary rules to avoid these risks are pointed out.

This list is **obviously incomplete** and all the repairs, including handling of the materials, should be carried out keeping health and sanitary rules in mind.

Please read the safety regulations for use of the materials provided by the manufacturer or by the supplier before using any product.

ACIDS AND ALKALIS

Caustic soda and sulphuric acid, for example, used for batteries and in cleaning products, are irritating and corrosive for skin, eyes, nose and throat. They may cause burns. They can destroy normal overalls. Avoid to spray such products on your skin, eyes or clothes. Wear suitable protective gloves and glasses. Do not inhale fumes. Make sure that all necessary products to wash your eyes, for the shower and soap are always within reach, should accidental sprays occur.

BATTERY ACID

The gases released during battery charge are explosive. Never use flames or allow sparks to occur near batteries in charge or just charged. Make sure that there is a suitable ventilation.

RESINS AND HARDENERS

Contact of your skin with resins and not polymerized hardeners may cause irritations, dermatitis and intradermal absorption of toxic and harmful chemical products. Sprays may injure your eyes. Provide for a suitable ventilation and avoid contact with your skin and eyes. Anaerobic adhesives, cyanoacrylates, and other acrylics (superglues): many of these are irritating, sensitizing of harmful for your skin and/or your respiratory system. Some are irritating for your eyes, avoid contact with your skin and follow the instructions provided by the manufacturer. The cyanoacrylate based adhesives (superglues) must never get in touch with your skin or eyes. Should your skin or ophthalmic tissue remain tied, cover it with a clean damp tampon and call the doctor immediately. Do not try to separate the tissue. These product must be used in well ventilated areas because its fumes may irritate your nose and eyes.

ISOCYNATE (POLYURETHAN) BASED ADHESIVES/DOPES

If you suffer from asthma or respiratory allergies you should not work with this kind of materials nor work close to them, since they could cause sensitization reactions. An excessive exposure can irritate your eyes and respiratory system. Excessive concentrations may affect your nervous system and could even be soporific. Loss of consciousness may occur in extreme cases. A continuous exposure to concentrations of vapors could have negative effects on your health. An extended contact with your skin can have a degreasing effect which can irritate your eyes and might cause dermatitis. Sprays into your eyes will cause irritations and possible damages. Spraying should rather be executed in ventilated cabins provided with aspirator in order to remove vapors and drops from the area. Wear gloves, glasses and faceplates.



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ASBESTOS

If inhaled, asbestos may cause damages to your lungs and in some cases cancer. Asbestos is used for brake linings. Asbestos dust to be wasted should first be dampened, then put into a sealed container with a special label to be sure that it will be wasted in a safe way. Should you need to cut or to drill materials containing asbestos, wet the part and use only slow speed hand or electrical tools. The present law does not allow to use asbestos.

ANTIFREEZE

See also: isopropyl alcohol, glycol, methanol, solvents.
Highly flammable, flammable, combustible.

It is used in the cooling system of the cylinder heads. If heated, the antifreeze (glycol) can release detrimental vapors. Avoid to inhale them. Antifreeze can be absorbed in injurious and toxic quantities through your skin. If ingested, it could be lethal and a doctor should be contacted immediately.

COMPRESSED AIR EQUIPMENTS

Never point a high pressure nozzle at your skin, since the liquid could pierce your skin and cause hard injuries.

GENERAL SHOP TOOLS AND EQUIPMENTS

It is fundamental that tools and equipments be kept in good conditions and that, if necessary, the proper safety equipments be used.

Never use tools or equipments for purposes other than their specific use.

Never overload equipments like hoists, jacks, trestles or slings.

The damage caused by overload is often not immediately perceivable and it might cause fatal damages next time you use it.

Do not use damaged or defective tools, specially high speed equipments as grinding wheel. A grinding wheel can break without notice causing hard injuries. Wear suitable protective glasses when using grinding tools.

GAS CYLINDERS

Take care while using gases, like oxygen, acetylene, etc. to avoid leaks from the cylinders or from the piping and avoid lighting sources.

FUEL

Try as far as possible not to get your skin in touch with fuel. Should it occur, wash the affected part with water and soap.

GASOLINE

Highly flammable. Observe the signs "no smoking" .- The ingestion might cause irritations of your mouth and throat and the absorption in your stomach could cause you a torpor condition and loss of consciousness. Transit of liquids through your lungs, for example when vomiting, is a serious risk. Gasoline dehydrates the skin and may cause irritations and dermatitis if the contact is prolonged and repeated. Gasoline can irritate your eyes. It can contain remarkable quantities of benzol, which is toxic if inhaled, and the concentration of gasoline vapors must



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be kept very low. High concentrations will irritate your eyes, nose and throat and cause nausea, headache, depression and symptoms of drunkenness. Very high concentrations will cause a quick loss of consciousness.

While using gasoline, make sure that there is always a suitable ventilation.

Should there be a high vapor concentration raised from pouring it in a limited space, avoid as far as possible the serious consequences of inhalation. Gasoline shall not be used as a cleaning solution. Avoid to do transfer operations with your mouth.

OVERHUNG LOADS

Danger must always be taken into consideration when a load is lifted and hung. Never work under loads which are hung or lifted without any support. Make sure that the lifting units like jacks, hoists, slings, etc. are suitable for the specific work and conditions and that they are regularly overhauled.

INSULATING FIBERS

These are used for soundproofing. The fibrous nature of the surfaces and the sharp edges may cause skin irritations. The effect is normally physical and not chemical. The necessary precautions shall be taken to avoid the prolonged contact with your skin, taking up suitable working methods and wearing protective gloves.

BRAKE FLUID

Highly corrosive, avoid contact with painted parts. If the brake liquid is erroneously poured on painted parts, immediately wash with cold water.

Sprays on skin and eyes are irritating. Avoid as much as possible contact with your eyes and skin.



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1.10 NOTIFICATION OF SAFETY OF FLIGHT CONCERNS

To notice the manufacturer about safety of flight concerns during maintenance or repair operations, please fill the form below and send by fax at +390773511407 or by mail at:

STORMAIRCRAFT
Via Enzo Ferrari
04016 Sabaudia (LT)
ITALY
tel +390773515216
www.stormaircraft.com

NOTIFICATION			
MAKE	MODEL	SERIAL NUMBER	DATE OF MFG
COMMENTS <i>(list applicable part number)</i>		NOTE	DATE OF INSPECTION
		Signature	



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CHAPTER 2

INSPECTION AND MAINTENANCE PERIODS

PERIOD DESCRIPTION

This chapter includes all the inspection and maintenance procedures needed for STORM Aircraft.

The operative life of STORM Century S-LSA, as determined in the project, is 10000 flight hours.

Regular inspections shall be carried out when reaching respectively : **50 , 100, 200 , 600 ,1000** and **1200** flight hours.

Moreover, after the first **25** hours , when the aircraft is new, the **100** hours inspection must also be done on the engine, **as specified in ROTAX 912 UL S engine manual**, and a visual check shall be made on all screws coupling the structural parts.

The period between the two 200 hours inspections must not exceed one year.

For each inspected item, the person in charge for the aircraft maintenance shall sign the check list.

The completion of the inspection must be entered in a special register.

The results and the corrections must be registered in a special report and filed with the inspection list in the maintenance register of the aircraft.

NOTE : maintenance may be done in advance, but for no reason should it be postponed.- Maintenance can only be postponed upon agreement with the aircraft airworthiness check Authority, upon engine and fittings builder's specifications or on aircraft designer's directions.



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USE OF THE INSPECTION LIST

In the following lists all checks marked with the symbol ➔ must be performed on the aircraft on specified periods.-

When a special 200, 600, 1000, 1200 hours or a planned annual inspection is performed, the 100 hours inspection must be carried out as well.

NOTICE:

If an inspection or maintenance must be carried out with connected battery and ignition, make sure first that the area around the propeller is free.

When inspections must be carried out with the engine on, make sure that there are extinguishers within reach and that the aircraft is braked and blocked with chocks.-

IMPORTANT :

As far as ROTAX 912 engine installation, inspections and maintenance are concerned, carefully follow the instructions of the engine manual supplied with the engine.

For maintenance and inspections of parts with finished materials or supplied by other manufacturers, such as: propeller, hubs, wheels, brakes, pumps, filters, pulleys, cables, pipes, bolts, rivets, extrusions, fusions, etc., follow the suggestions of the manufacturer, if supplied.



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2.1 POWER CHECK

Inspection description	Flight hours			performed by
	50	100	special	
Clean the aircraft before each inspection	→	→		
I. PERFORM POWER CHECK				
1 - Let the engine run until it reaches oil temperature of 50° C – check and verify engine instruments	→	→		OWNER
2 - Check of the ignition circuit (RPM= 3850) Power loss of circuit A (RPM = 300 max) Power loss of circuit B (RPM = 300 max) Difference between circuits A-B (RPM = 115 max)	→	→		OWNER
3 - Warm air to carburetor, if installed Check power loss (NOT FORESEEN)				OWNER
4 - Check the ignition switch	→	→		OWNER
5 - Check fuel selector ON / OFF	→	→		OWNER
6 - Ignition OFF - Battery OFF Fuel selector OFF Remove ignition lock key	→	→		OWNER
7 - Disconnect battery- Open all the inspection doors	→	→		OWNER



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2.2 ENGINE COMPARTMENT

Inspection description	Flight hours			performed by
	50	100	special	
II. ENGINE COMPARTMENT				
1 - Remove cowling, inspect for cracks, burnings, distortions, missing screws in the fastening system. – Remove dirt from cowling .-	→	→		OWN
2 - Check if there are fuel, oil or coolant leaks in the engine compartment Clean engine compartment.-	→	→		A&P
3 - Check carburetor – verify overflows and their discharge position – check pipes	→	→		A&P
4 - Visual check of the engine anchoring to the motor cradle – check possible cracks or distortions of motor cradle – visual check of the silent blocks of the motor cradle	→	→		A&P
5 - Visual check: exhaust manifolds – muffler exhaust pipes – check cracks or leaks on heat exchanger	→	→		A&P
6 - Visual check of carburetor – air filters – fuel pipes fastenings	→	→		OWN
7 - Visual check : lubrication circuit tank - oil cooler - oil cooler fastenings – possible leaks on oil pipes	→	→		OWN
8 - Visual check : cooling circuit tank – coolant tank – possible leaks on pipes	→	→		OWN
9 - Visual check of fuel pipes, check if safe and if there are leaks	→	→		OWN
10- Fuel filter check – check if safe and if there are leaks	→	→		OWN
11- Visual check: inspect for possible cracks or leaks on electric fuel pump - testing	→	→		OWN
12- Visual check : check battery and cables	→	→		OWN
13- Visual check: vacuum pump - pipes	→	→		A&P
14- Replace vacuum system filter	→	→	500	A&P



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2.3 ENGINE

Inspection description	flight hours			performed by
	50	100	special	
III. ENGINE - (see Rotax 912 engine manual)				
1 - Engine cleaning	→	→	200	OWN
2 - Visual check of engine	→	→	200	OWN
3 - Check of possible leaks	→	→	200	OWN
4 - Check of engine silent-block supports	→	→	200	OWN
5 - Check of engine external parts	→	→	200	A&P
6 - Visual check of reduction gear	→	→	200	A&P
7 - Oil level check	→	→	200	OWN
8 - Engine oil change	→	→	200	A&P
9 - Oil filter change	→	→	200	A&P
10- Check of cooling system	→	→	200	A&P
11- Inside washing of cooling system			200	A&P
12- Change of coolant (every 2 years or)			200	A&P
13- Change the cooling system pressure cap			200	A&P
14- Visual check and regulation of carburetors	→	→	200	A&P
15- Visual check and regulation of carburetors	→		200	A&P
16- Control cables check	→	→	200	OWN
17- Check of spark plug wires			200	A&P
18- Change of spark plugs			200	A&P
19- Check of spark plug wires			200	A&P
20- Compression check			200	A&P
21- Check of engine electric parts	→	→	200	A&P
22- Change of rubber parts			5 years	A&P
23- Check of overvoltage relay			200	A&P
24- Total engine overhaul			1200 15 years	A&P



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2.4 PROPELLER

Inspection description	flight hours			performed by
	50	100	special	
IV. PROPELLER				
1 - Remove spinner	→	→		A&P
2 - Check possible breaking or cracks of the spinner	→	→		OWN
3 - Make sure that propeller blades and surfaces are intact	→	→		OWN
4 - Check inclination and trailing edge of blades	→	→		OWN
5 - Check the perfect torque of bolts (do not release them)	→	→		OWN
6 - Make sure there are no cracks near the hub			annual	OWN
7 - Change graphite brushes of pitch		→		OWN
8 - Make sure the electric parts are intact	→	→		OWN
9 - Make sure the moving parts are intact	→	→		OWN
10- Clean and install the spinner				OWN



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2.5 COCKPIT

Inspection description	flight hours			performed by
	50	100	special	
V. COCKPIT				
1 - Inspect canopy for faults or cracks		→		OWN
2 - Check locking device of canopy		→		OWN
3 - Check safety belts and anchoring		→		OWN
4 - Remove seats – remove dirt		→		OWN
5 - Check flap control lever – check its smooth running		→		OWN
6 - Check flap lever connections		→		OWN
7 - Check trim and deflector excursion and efficiency		→		OWN
8 - Check smooth running of control movements		→		OWN
9 - Check conditions of rubber wirings		→		OWN
10- Check if antiskid material on pedals is well fixed and make sure that there is nothing interfering - check free pedal movement, its regulation and max. range – lubricate if necessary		→		OWN
11- Check and adjust the mechanical cable braking system on passenger's side – inspect for possible damages		→		OWN
12- Check brake pumps on left side, inspect for possible damages or leaks		→		OWN
13- Check for leaks or damages of parking brakes		→		OWN
14- Check free movement of the two control sticks		→		OWN
15- Keeping control stick blocked, check aileron and stabilizer clearance		→		OWN
16- Check if markings of instrument limits are intact		→		OWN
17- Check tags and their exact position		→		OWN
18- Remove instrument panel – inspect components, switches, fuses, instruments, wires and pipes for possible connection faults – remove dirt			200	A&P



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Inspection description		flight hours			performed by
		50	100	special	
VI.	COCKPIT				
19-	Check main wing connection		→		OWN
20-	Make sure that the fuel selector has no clearance	→			OWN
21-	Inspect for possible leaks from fuel cock		→		OWN
22-	Clean fuel tank and fuel trap			600 5years	OWN
23-	Check tank vents and cap		→		OWN
24-	Replace fuel pipes			600 5years	A&P



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2.6 SURFACE AND STRUCTURE CHECKS

Inspection description	flight hours			performed by
	50	100	special	
VII. SURFACE AND STRUCTURE CHECKS				
01 - Check wing surfaces, control surfaces, fuselage; inspect for paint cracks around the rivets which could detect hidden cracks		→		OWN
02 - Make sure that aileron clearance is not excessive	→	→		OWN
03 - Check for possible damages and/or imperfections on aileron connections and wing controls		→		OWN
04 - Make sure there are no anomalies of the flap actuators on wings and fuselage – make sure there are no excessive clearances		→		OWN
05 - Check and, if necessary, remove stabilator, inspect for corrosion, check bolts, lubricate and, if removed, reinstall the stabilator			1000	OWN
06 - Check stabilator connections, trim winglet and if the trim winglet excursion is normal, inspect for corrosion signs, check control rod of stabilator – lubricate		→		OWN
07 - Check if the electrical system earthing is suitable		→		OWN
08 - Inspect for possible corrosion areas between stainless steel firewall and airframe		→		OWN
09 - Check fastening of the radio and transponder antennas; check wirings and possible corrosion signs		→		OWN
10 - Check fastening of Pitot tube and statics		→		OWN
11 - Check fuel bleeding system in the fuselage, inspect for possible faults of the return spring		→		OWN
12 - Make sure that all the external tags are intact and in place		→		OWN



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2.7 LANDING GEAR

Inspection description	flight hours			performed by
	50	100	special	
VIII. LANDING GEAR				
01 - Check possible leaks of hydraulic braking system and pipes		→		OWN
02 - Change braking oil and pipes			1000	OWN
03 - Check mechanic parts of braking system		→		OWN
04 - Visual check of main gear struts Visual check of leaf spring and nose wheel		→		OWN
05 - Visual check of bolts coupling landing gear and airframe		→		OWN
06 - Remove main and nose gear struts and inspect for possible distortions; check airframe – replace bolts and reassemble – do a geometric and functional check			1200	A&P
07 - Remove fairing of main gear wheels and check possible anomalies or wear – check brake disc and lining		→		A&P
08 - Disassemble the wheel assembly, clean and lubricate bearings, if necessary replace brake linings and discs if not already replaced before due to wear			1000	A&P



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2.8 FUSELAGE – AIRFRAME – COCKPIT INSPECTION

CONTENTS OF THE SCHEDULED ANNUAL INSPECTION

- 01 Before inspection, remove or open all necessary inspection ports or access doors, fairings and covers. Carefully clean the aircraft.-

A. FUSELAGE AND AIRFRAME INSPECTION

- 01 Structure and coating – check possible deterioration, distortion or any other crack and possible faulty fastening of accessories
- 02 Component systems - check if correctly installed, if there are apparent faults or defective operation
- 03 Check conditions of tanks and connected parts

B. COCKPIT INSPECTION

- 01 General check of possible dirt or foreign matters which may alter the operation of controls
- 02 Seats and safety belts – check conditions and apparent faults
- 03 Windows and windshields – inspect for deterioration or cracks
- 04 Instruments – check installation conditions, markings and (wherever possible) defective operation
- 05 Flight and engine controls – check correct installation and possible defective operation
- 06 Battery – check if installation and charge are correct
- 07 Magnetic compass – check if intact and if correctly operating (compensation validity not over 48 months for VFR)
- 08 Check the correct installation, the general conditions, possible apparent faults or unsafe fastenings of all systems.



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2.9 ENGINE – NACELLE – LANDING GEAR INSPECTION

C. ENGINE PARTS AND NACELLE INSPECTION	
01	Engine unit - check if there are evident oil, fuel and hydraulic fluid leaks and determine the reasons for such leaks
02	Stud bolts and nuts – check if driving torque correct and inspect for possible loosening
03	Inside part of the engine – check cylinder compression and make sure that there are no metallic particles or foreign matters on filters and on the fuel trap caps (if compression is low, make sure that the inside conditions are normal and that the inside tolerances are correct)
04	Engine fastenings – inspect for possible cracks and for missing fastenings; check support loosening
05	Elastic vibration dampers – check if in bad conditions or damaged
06	Engine controls – check possible faults, if the stroke is correct (unsuitable regulation) and if brakings are correct.
07	Hoses – pipes and clamps – check possible leaks, deterioration and loosening
08	Exhaust pipes – check possible cracks, faults and wrong fastening
09	Accessories – check if there are evident assembly faults.
10	All systems – check correct installation, verify general conditions and make sure there are no faults and unsafe fastenings
11	Cowlings – check if there are cracks and faults
D LANDING GEAR INSPECTION	
01	Check conditions and safe fastening of all components
02	Hydraulic lines – inspect for possible leaks
03	Wheels – check if there are cracks or faults, check bearing conditions
04	Tires – check if worn, cut or abraded.



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2.10 WING – STABILIZER – PROPELLER – RADIO SET INSPECTION

E. WINGS	
01	Inspect (where applicable) all wing parts, all its movable parts, the relevant controls and the central section assembly and check general conditions, the possible deterioration of structure or covering, the safe fastening, the correct installation and the correct operation of the components.
F. STABILIZER	
01	Inspect (where applicable) all parts and systems making up the whole stabilizer assembly, check movable surfaces and relevant controls, check general conditions, possible deterioration of structure or covering, check safe fastening, correct installation and correct operation of components.
G. PROPELLER INSPECTION	
01	Propeller assembly – inspect for cracks, notches, chippings and oil leaks from reduction gear
02	Bolts – check correct driving torque and loosening of locks
03	Control gears – check correct operation, safe fastening and stroke limitations.
04	Electrical system of propeller – check correct operation and safe fastening
H. RADIO SET INSPECTION	
01	Radio and electronic equipments – check correct installation and safe fastening
02	Cables and cable ducts – check if path is correct, if fastening is safe and if there are evident faults
03	Connections and shielding – check correct installation and conditions
04	Antennas – check conditions, safe fastening and correct operation



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2.11 AIRWORTHINESS PRESCRIPTIONS AND POWER CHECK

I. AIRWORTHINESS PRESCRIPTIONS

- | | |
|----|---|
| 01 | Verify the application of the airworthiness prescriptions concerning the aircraft and the relevant parts and pertinences. |
| 02 | Check aircraft configuration for possible changes and verify the approval status. |
| 03 | Check presence and conditions of all tags, compulsory markings and foreseen service notices and restore if lacking or missing |
| 04 | Verify validity of the weighing and balancing data in connection with changes of configuration and/or scheduled deadlines. |
| 05 | Verify time limits of parts having a limited use or life. |

J. AT THE END OF THE INSPECTION

- | | |
|----|--|
| 01 | At the end of the inspection and before restarting the aircraft operation, do following power checks to verify if the performance is meeting the manufacturer's recommendations. |
|----|--|

K. POWER CHECK (see installed engine manual)

- | | | | | |
|----|-----------------------------------|---------|-----|------------------|
| 01 | Delivered power at fix point | : | RPM | P.A. |
| 02 | Idling rev. control | : | RPM | P.A. |
| 03 | Ignition check A + B | : | RPM | |
| | 3850 RPM - max .drop | 300 RPM | : | circuit A: _____ |
| | max diff. between circuit A and B | 115 RPM | : | circuit B: _____ |
| 04 | Fuel pressure | : | | |
| | 0,15 - 04 bar (2,2 - 5,8 p.s.i.) | | | |
| 05 | Lubricant pressure at max RPM | : | | |
| 06 | Cylinder heads temperature | : | | |
| | Cylinder heads temperature | : | | |
| 07 | Lubricant temperature | : | | |



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2.12 SYSTEM AND AVIONICS MAINTENANCE

SYSTEM AND AVIONICS MAINTENANCE

The attached table is a reference guide for the development of a maintenance schedule for all systems and avionics installed on the aircraft.-

The terms used in the table will have the following meaning:

OPERATIONAL TEST: quantitative check to make sure that a system, a system function or equipment is working as expected.- It is mainly used to search failures or malfunctions.- No equipments nor instruments other than the ones supplied with the aircraft are needed for this kind of check.-

FUNCTIONAL TEST: quantitative check to make sure that a system, a system function or equipment is working within the limits and the tolerances as defined in the applicable test specifications.- This kind of check normally requires functional testing equipments (usually test benches) and the recording of the taken measurements.-

BENCH TEST: this test points out the operational mode of check rather than its content.- It is used for the quantitative check (functional check) of the operation parameters of the instruments taken off the aircraft.

The laboratory instruments, the builder's procedures and data or approved international standards shall be applied for the bench test of the aircraft on trial.

VHF unit	Functional Test	24 months
Pitot system – Statics	Static system inspection	48 months
Altimeter	Functional Test	48 months
Magnetic compass	Operational Test	48 months
ATC Transponder	Functional Test	24 months



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2.13 FUNCTIONAL TEST (1)

ACCEPTANCE FLIGHT LIST AFTER OVERHAULS *STORM Century S-LSA*

Inspection type : Pilot :
 Date : Take-off :
 Airport : Landing :

FUNCTIONAL TEST	CHECKED	
	NO	YES
Displayed fuel quantity		
Altimeter on QNH		
Radio sets check		
Check of basic navigation instruments		
Electric fuel pump		
Cold engine start operation		
Oil pressure gauge		
Voltmeter		
Engine revolution counter RPM		
Cylinder temperature CHT		
Parking brake		
Flaps		
A and B ignition circuits check		
Operation during take-off		
Speed indicator		
Rate-of-climb indicator (option)		
Compass		
Operation during climb		
Cylinder temperature CHT		
Oil temperature		



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FUNCTIONAL TEST (2)

FUNCTIONAL TEST	CHECKED	
	NO	YES
Cockpit heating, if connected		
Operation at max. cruising speed		
Trim range on Stabilator		
Operation at minimum speed		
Stall		
Landing functionality		
On ground, shut down functionality		
On ground, warm engine ignition functionality		

NOTES:

(Pilot)



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2.14 DAILY INSPECTION

Date	Performed by:
COCKPIT 01. switch OFF 02. battery ON 03. fuel remote level indicator check 04. flaps out 05. trim on zero – free controls 06. battery OFF EXTERNAL CHECKS 01. canopy integrity check 02. bleedings: check fuel tank and filter (before moving the aircraft) 03. fuselage : check lower and upper side integrity – radio antenna - transponder antenna 04. fin and rudder : check integrity and free movements 05. Stabilator and tab - connections : check integrity and free movements 06. nose wheel unit : check tire - integrity 07. main landing gear : check tires – if pressure as required - brakes 08. flap – right aileron : check integrity and free movement 09. right wing leading edge – make sure there are no dents 10. check if Pitot tube and statics are free	

2. DAILY INSPECTION

Date	Performed by:
ENGINE COMPARTMENT 01. remove upper cowling 02. engine compartment free from foreign matters 03. no liquid leaks 04. check the unfixed or unbraked parts 05. check oil level 06. check cylinder head coolant level 07. reassemble and fasten upper cowling PROPELLER 01. spinner and propeller : check fastening and integrity 02. make sure the propeller blades have no notches nor scratches EXTERNAL CHECKS, CONTINUED 01. check if landing light fastened and intact 02. engine cowling unit intakes: check if obstructed, clear if necessary 03. left wing leading edge: make sure there are no dents 04. aileron and flap : check integrity and free movement	



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CHAPTER 3

STRUCTURES

3.1 DESCRIPTION OF FLIGHT CONTROLS

The main, traditional flight controls used by the pilot for the immediate control of rolling, yaw and pitching consist of:

Aileron - control
Rudder - control
Stabilator - control
Attitude control, Stabilator Trim

The flight controls are provided with stops to limit the travel of every aerodynamic surface controlled by the system.

The flight controls can be operated from the pilot seats, both equipped with control stick for aileron/Stabilators operation and with rudder pedals to operate the rudder.

1- Aileron control

The aileron control drive, which is connected to the control stick, is a rigid rod with connecting rods mounted on double ball bearings.

2- Rudder, fin control surface

The fin control surface is controlled through the pedals, and the control is transmitted from pedals to fin control surface through cables.

3- Stabilator control

The Stabilator control is a rigid rod working on bearings and is operated through the control stick in the cockpit.

4- Stabilator Trim

Two pull-up/push-down buttons on both control sticks operate an electric actuator positioned on the rear part of fuselage, which transmits the movement to the Stabilator trim through a transmission bar. The transmission from the actuator works through a bar connected to the hinge bracket of the Stabilator trim (see aircraft structure chapter).

The position of the trim device as to the setting range is displayed by an indicator on the lower part of the instrument panel.



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3.1.1 FLIGHT CONTROL INSPECTION

Open all inspection doors of the aircraft in order to carry out inspections and maintenance.
For flight control removal and installation, please refer to drawings in the aircraft structure chapter, in the specific pages.

Check every **100 hours** if control stops are intact, inspect for wear, loosening or loss of adjustment.

Check every **100 hours** if controls are easily operating, if they are smoothly running, free from jamming, excessive friction or excessive elastic deformation.

FOLLOWING TOLERANCES ARE ACCEPTED FOR CONTROL SURFACES AND TRIM

	downwards	upwards
Aileron	12° ± 2°	15° ± 2°
Rudder	25° ± 2° RH	25° ± 2° LH
Stabilator	20° ± 2°	32° ± 2°
Stabilator Trim	20° ± 2°	20° ± 2°

Movement and effect of aerodynamic controls in the cockpit

Aileron	to right (clockwise) to lower the right wing
Stabilator	backwards to pitch
Rudder	right pedal forward for heading right
Trim	the hand movement on the switch shall be in the same direction as the aircraft response (forward/nose down) (backwards/nose up)



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3.1.2 FLAP CONTROL

An electric actuator installed inside the central console (for checking remove the central cover) controls the flaps on four positions: 0° - 10° - 20° - 35°.

The flaps are moved by two rigid rod between the wing and the fuselage. The pilot may select the suitable flap position with the switch installed in the center console. The position indicator is installed in the upper right side of the instrument panel. For further details, refer to aircraft structure chapter, flaps control.

Optionable : Electric Flap Controller (EFC) - Automatic / Manual Flap control system installed in the central console.

Check every **100 hours** if the control is working smoothly and safe, free from any jamming, excessive friction and excessive elastic deformation, and that the slots are intact.

For removal and installation, please refer to the aircraft structure chapter, flap control.

ACCEPTED TOLERANCES IN VARIOUS FLAP CONFIGURATIONS

Flaps 0°	Tolerance
Flaps 10°	Tolerance ± 2°
Flaps 20°	Tolerance ± 2°
Flaps 35°	Tolerance ± 2°

Movement and effect of flap control in the cockpit

Flaps control	- forward to retract the flap system
	- backwards to extract the flap system



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3.2 REMOVAL - INSTALLATION

3.2.1 WING (A&P)

REMOVAL

Disconnect battery.

Empty tank completely using the bleeding screw under the tank on the decantation tank; open also the bleeding screw under the gascolator.

CAUTION: keep fire extinguisher within reach when draining the tank, take all necessary precautionary measures, keep the area ventilated.

Disconnect fuel feed/return flow pipes

CAUTION: if you do not expect to change the fuel pipes, we suggest to close them with a pin of the same size as the inside diameter of the pipe.

THIS OPERATION MUST BE PERFORMED BY AT LEAST TWO PERSONS.

REMOVAL

Remove wing fairing.

Remove seats and rear carpets.

Disconnect aileron control rod from control stick through control stick frontal inspection door, unscrewing the M6x35 bolt.

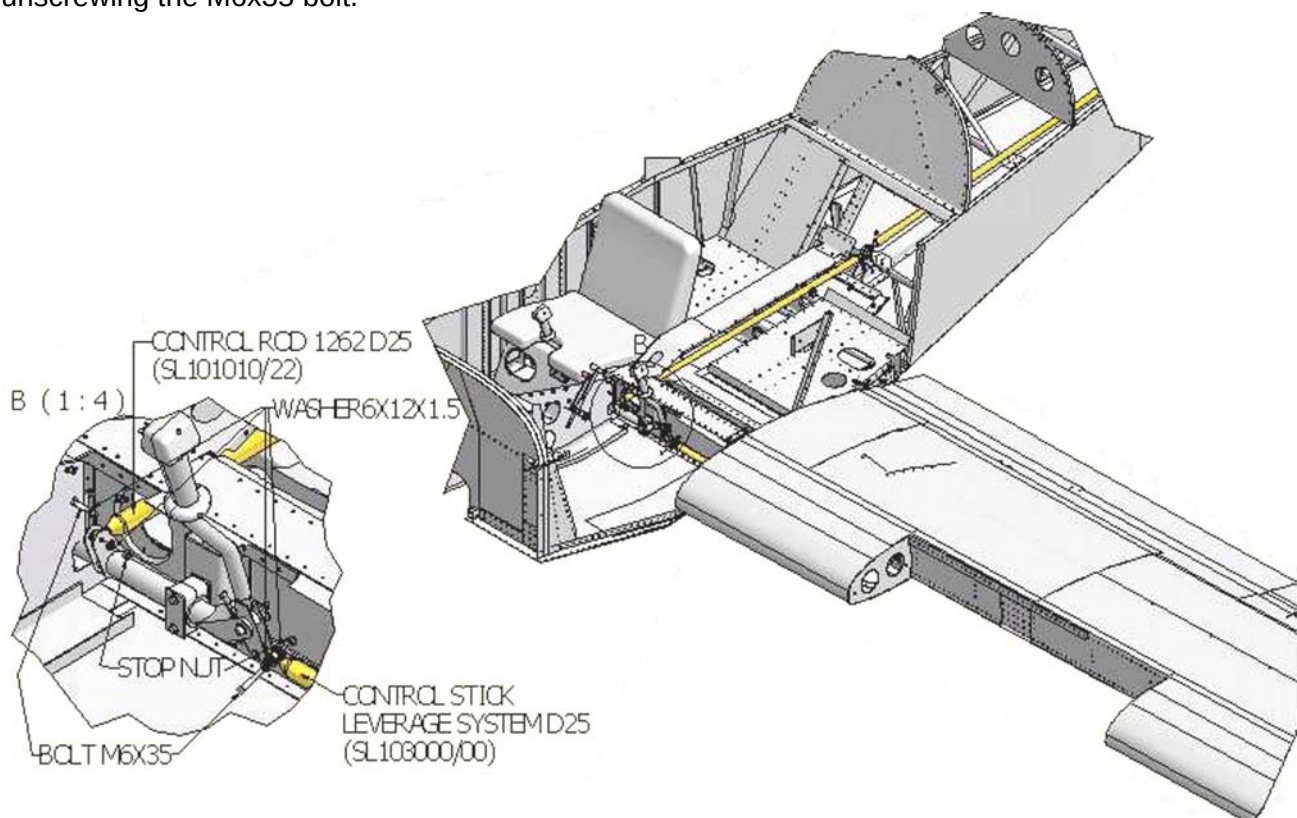


Fig.3-1



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Disconnect fuel line through control stick inspection door, marking the inline and outline. Close the tubes with caps to avoid fuel leaks.

Disconnect right wing pitot tube and all electrical wirings (including fuel sensor floats) from control stick inspection door. Mark the static and the dynamic lines.

Disconnect flap connection unscrewing the M6x35 bolt from flap.

Disconnect wing rear spar from fuselage unscrewing the M6 bolt through inspection holes behind the seats.



Fig. 3-2

Unscrew the 6 M10x80 bolts from wing box as shown below.

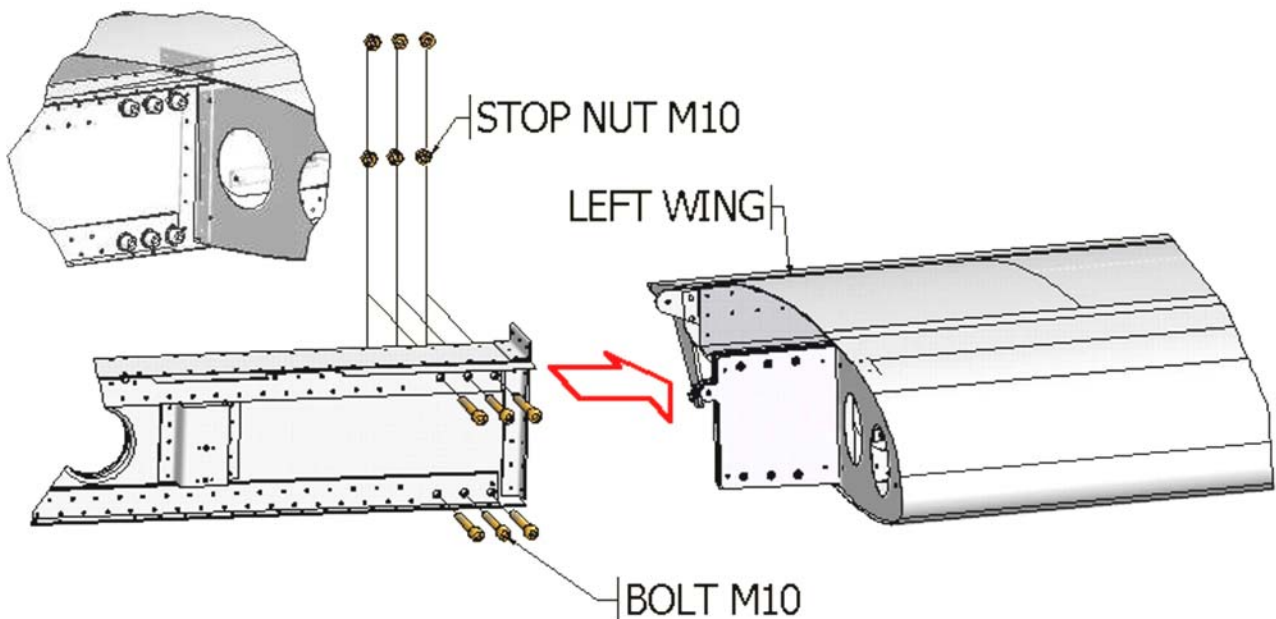


Fig.3-3

Move the wing up and down from wing tip for easy removal.

INSTALLATION

Insert the wing main and rear spars through dedicated housings, passing all tubes and electrical system cables through housings.

Screw main and rear spars to fuselage with M10x80 bolts for the main spar and with the M6 bolt for the rear spar.

Connect flap connection to fuselage control bracket and screw with M6x35 bolt.

Connect fuel line tubes and pitot tube through control stick inspection door.

Connect aileron control rod to control stick with M6x35 bolt.

Connect all electrical wirings (including fuel sensor floats).



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3.2.2 FLAP (A&P)

REMOVAL

Disconnect the flap from fuselage flap connection if not previously disconnected.

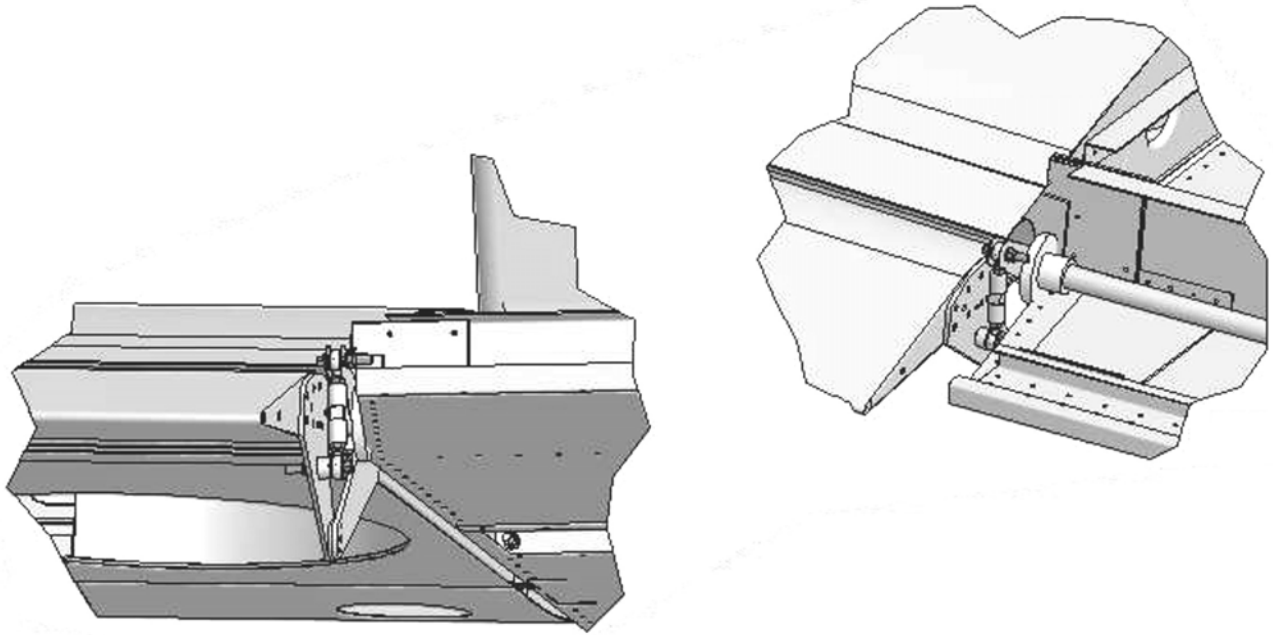


Fig. 3-4



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Unscrew the wing-flap connection M5x30 bolts.

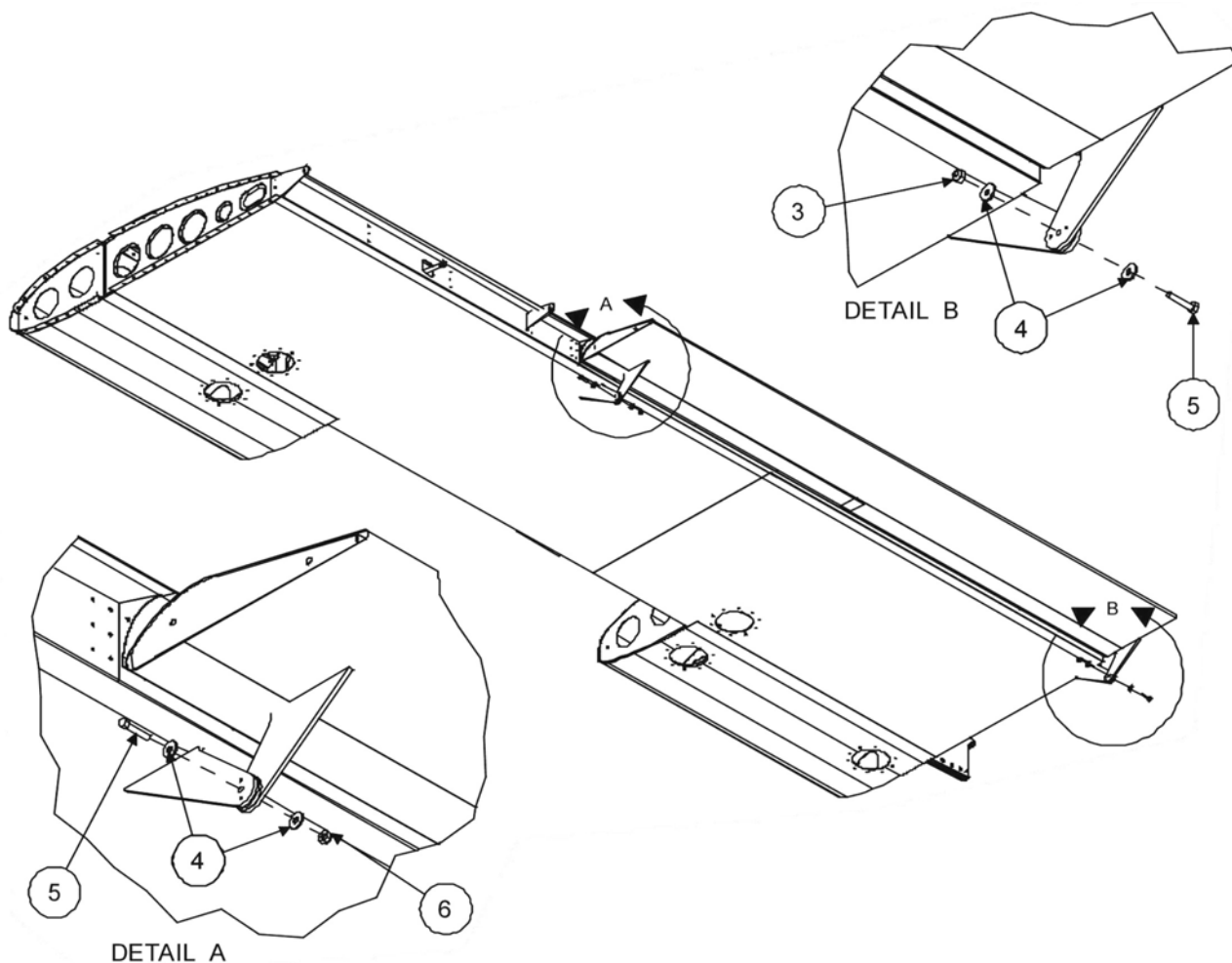


Fig. 3-5

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	2	WASHER M5x15
2	1	BOLT M5x30
3	1	STOP NUT M5
4	2	WASHER M5x15
5	1	BOLT M5x30
6	1	STOP NUT M5



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INSTALLATION

Connect the flap to wing screwing the M5x30 bolts to wing-flap connections.

Connect the flap to fuselage flap connection as described in Wing Removal section (only if wing is correctly fixed to fuselage).

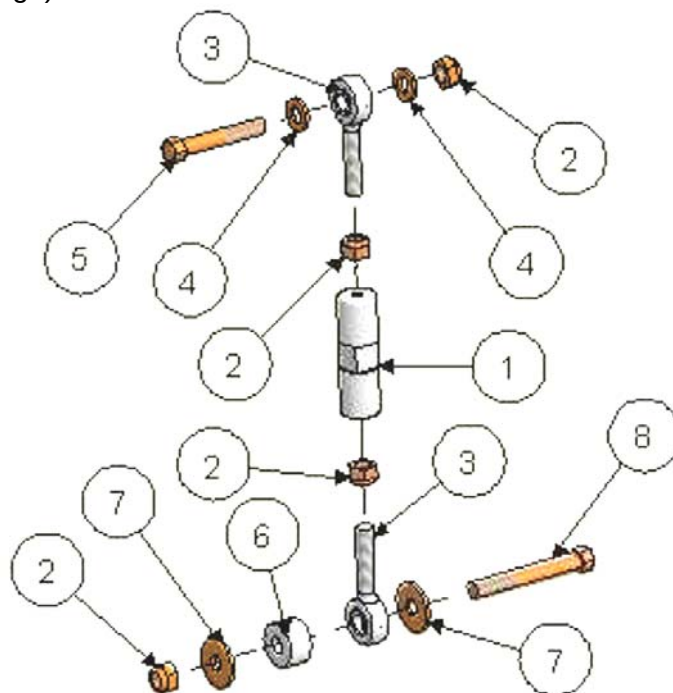


Fig. 3-6

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	1	HEXAGONAL SPACER
2	4	STOP NUT M6
3	2	BEARING M6
4	2	WASHER M6
5	1	BOLT M6x35
6	1	SPACER
7	2	WASHER M6x18
8	1	BOLT M6x45



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3.2.3 AILERON (A&P)

REMOVAL

Position flaps at maximum degrees.

Disconnect aileron control rod from aileron unscrewing the M6 bolt from aileron central bearing.

Unscrew the M5x35 bolt from outboard wing-aileron connection and the M6x35 bolt from inboard wing-aileron connection.

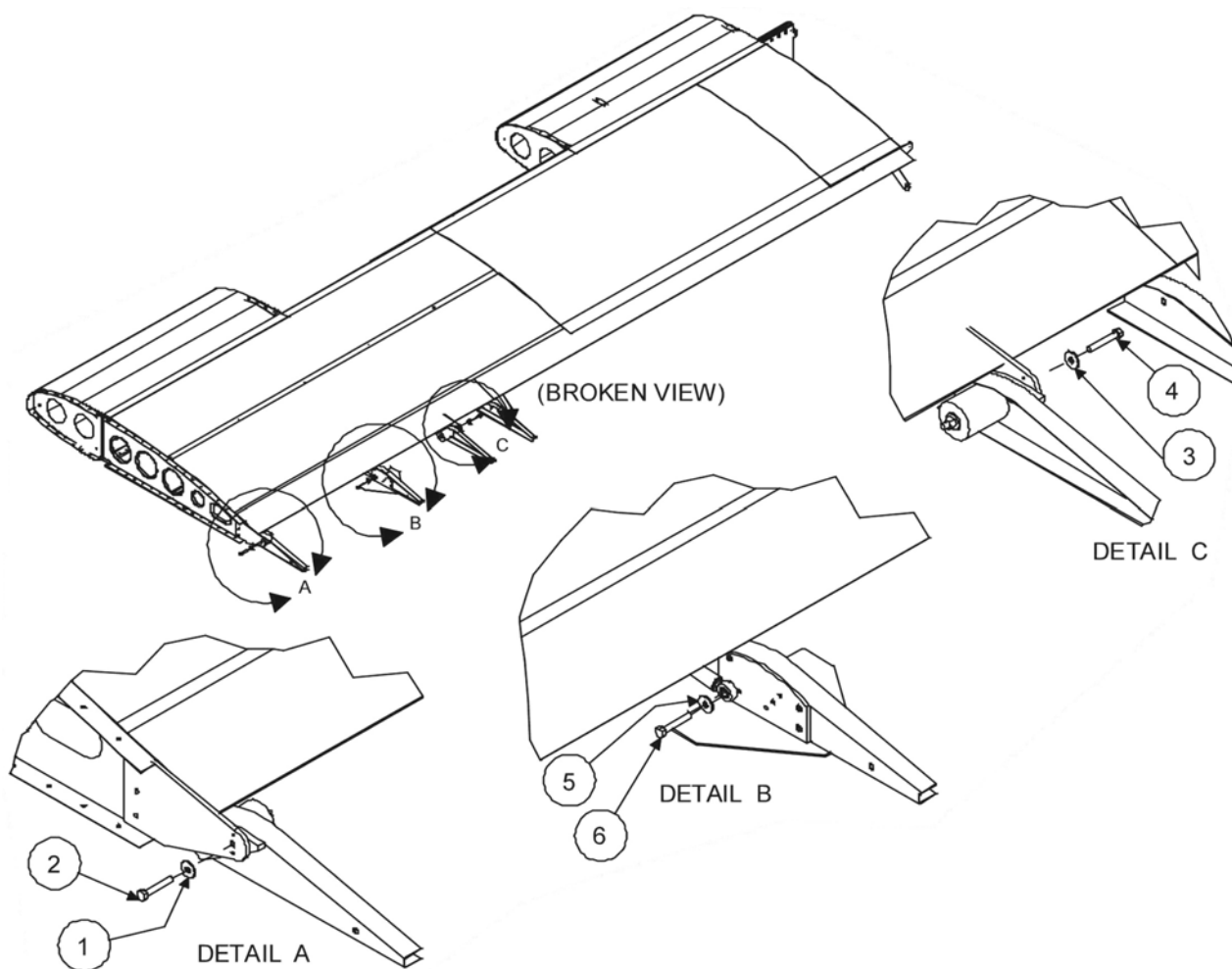


Fig. 3-7

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	1	WASHER M5x15
2	1	BOLT M5x35
3	1	WASHER M5x15
4	1	BOLT M5x35
5	1	WASHER M5x15
6	1	BOLT M5x35



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INSTALLATION

Connect the aileron to wing screwing the M5x35 bolt to outboard wing-aileron connection and the M6x35 to inboard connection.

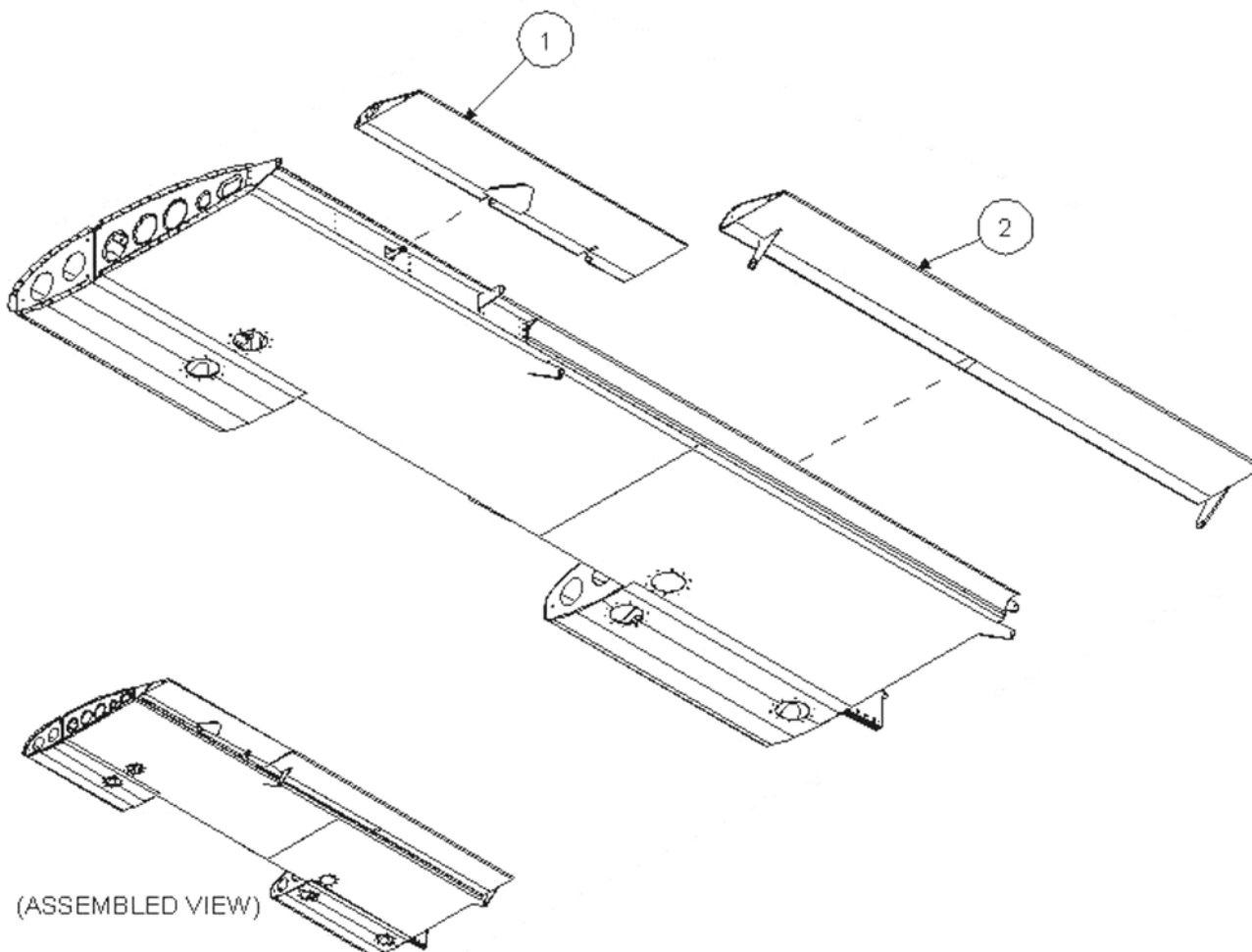


Fig. 3-8

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	1	AILERON
2	1	FLAP

Connect the aileron control rod to aileron central bearing with M6 bolt.



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3.2.4 RUDDER (A&P)

REMOVAL

Disconnect the rudder cables from rudder connections unscrewing the M6x45 bolts.

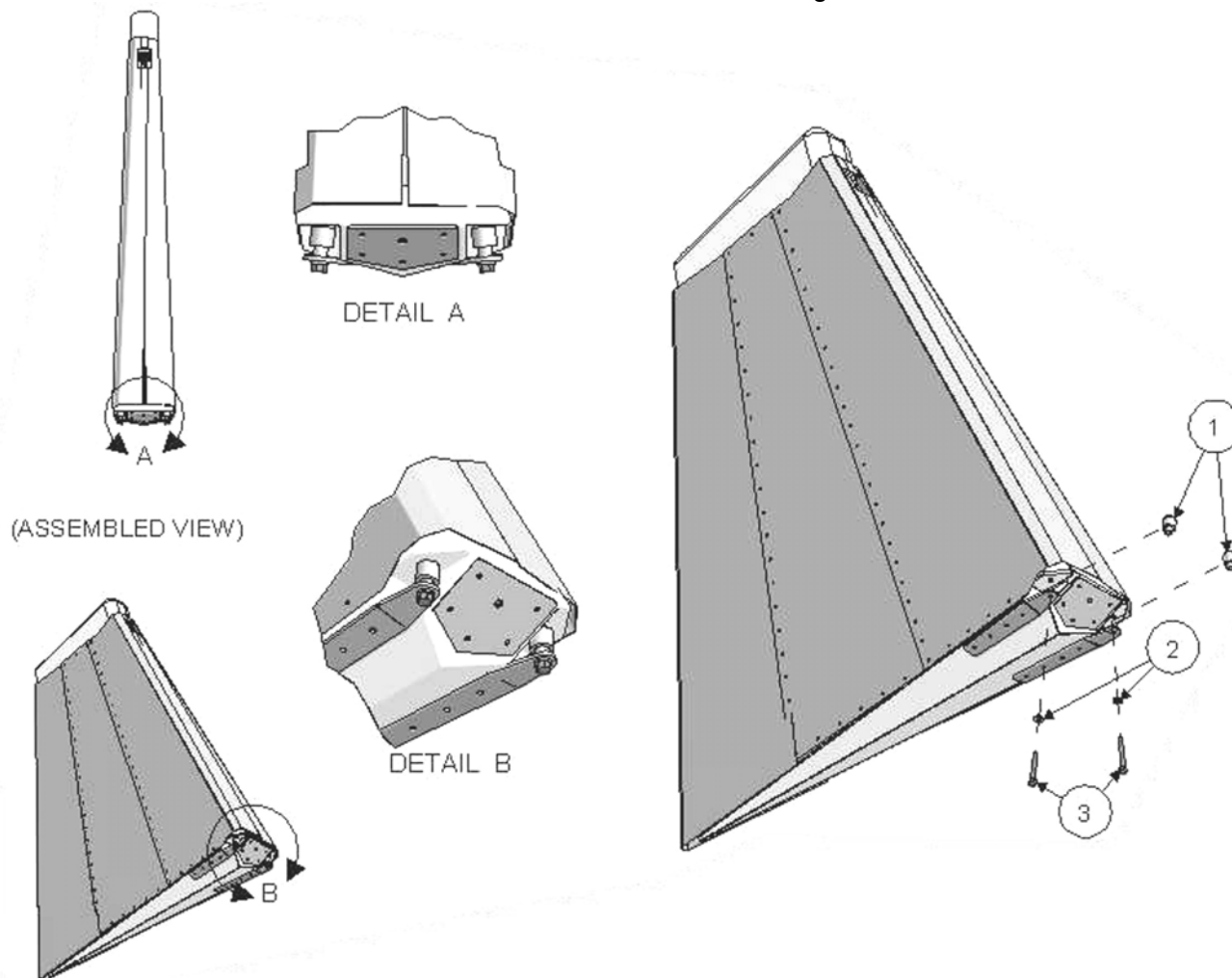


Fig. 3-9

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	2	SPACER
2	2	WASHER M6
3	2	BOLT M6x45

Unscrew the M6 stop nuts from rudder connections on fuselage fin (the ones with bearings).

Remove the rudder.



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INSTALLATION

Position the rudder through dedicated bearing connections on fuselage fin.

Screw the rudder pins to fin bearing connections with M6 stop nuts.

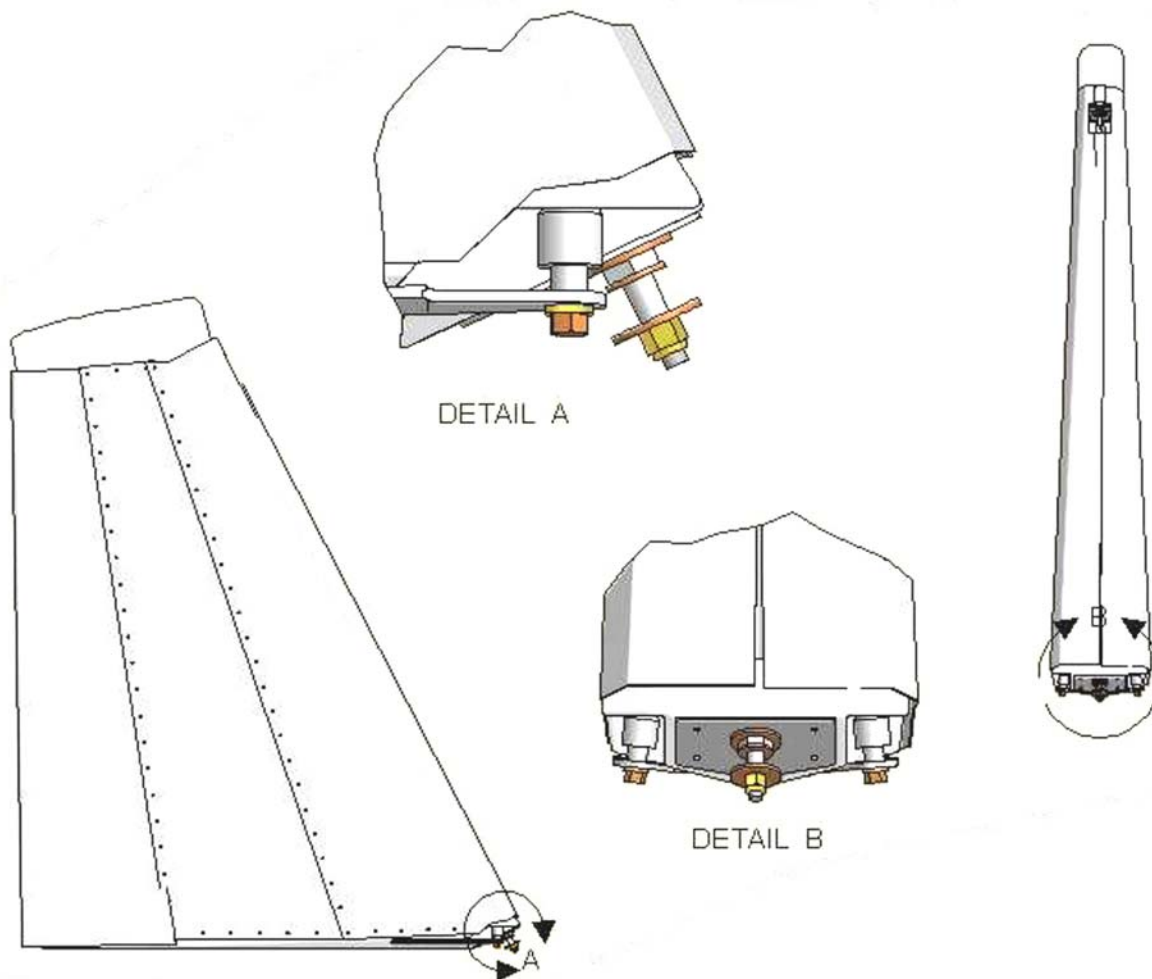


Fig.3-10



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Connect the rudder cables to rudder with M6x45 bolts (remind to insert the spacers).

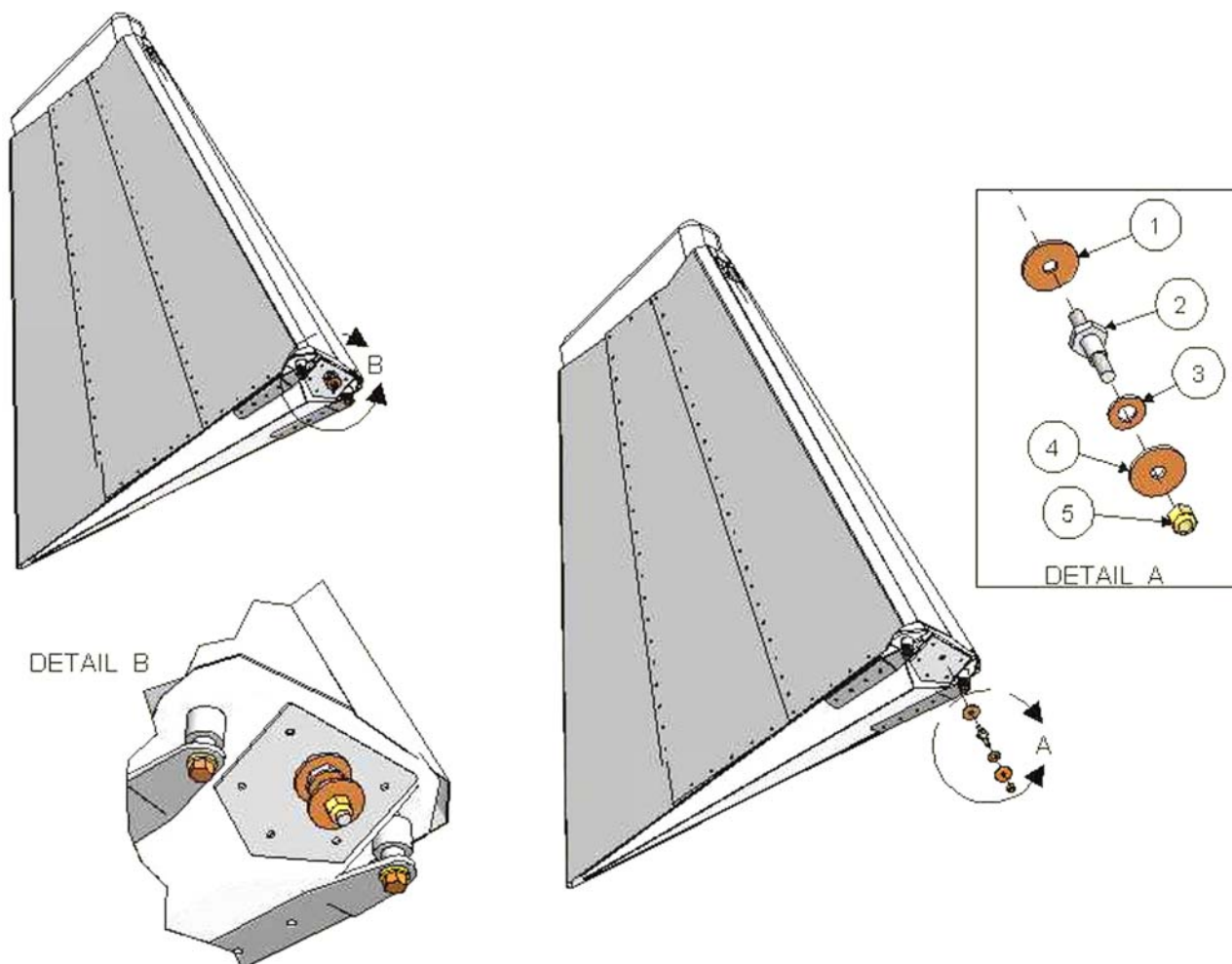


Fig.3-11

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	1	WASHER M6x24
2	1	PIN SL401020-05/00
3	1	WASHER M8
4	1	WASHER M6x24
5	1	STOP NUT M6



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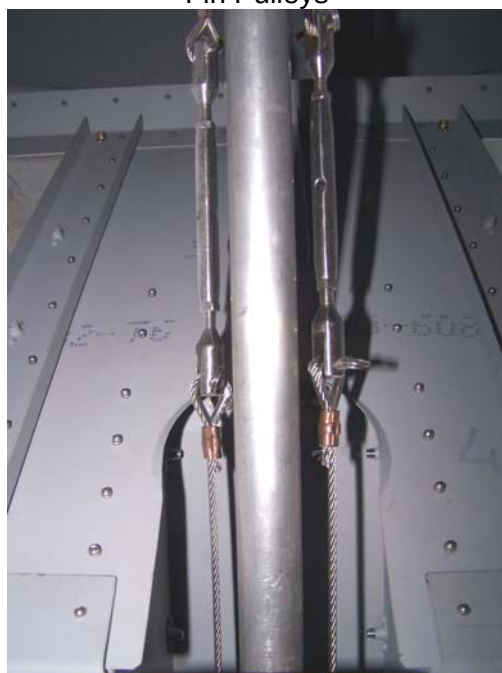
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3.2.5 RUDDER CABLES (A&P)

Rudder cables must be installed through the snap-in bushings and pulleys positioned inside the fuselage as shown below. (from fin to pedal)



Fin Pulleys



Baggage bulkhead



Rear console pulleys



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Forward console

Because of the sizes of the end fittings, the rudder cable must be installed from the rear to the front, as the front end is the only one with a small enough diameter to pass through the fairleads. Note that the rudder cables have been assembled with sections of polyethylene tubing on them. These are used as fairleads where the cable exits the rear fuselage skin.



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3.2.6 STABILATOR (A&P)

REMOVAL

Remove rudder.
Remove tailcone.

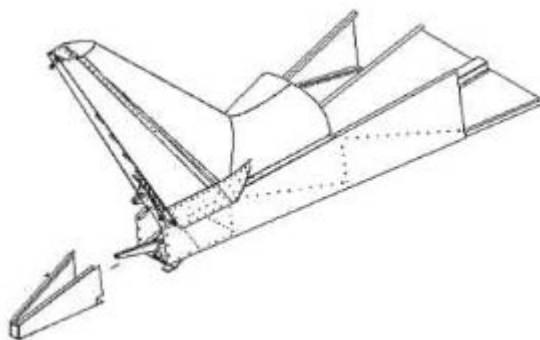


Fig.3-12

Disconnect stabilator electrical trim wiring.
Disconnect stabilator trim tab from fin connection removing the M6x45 bolt.

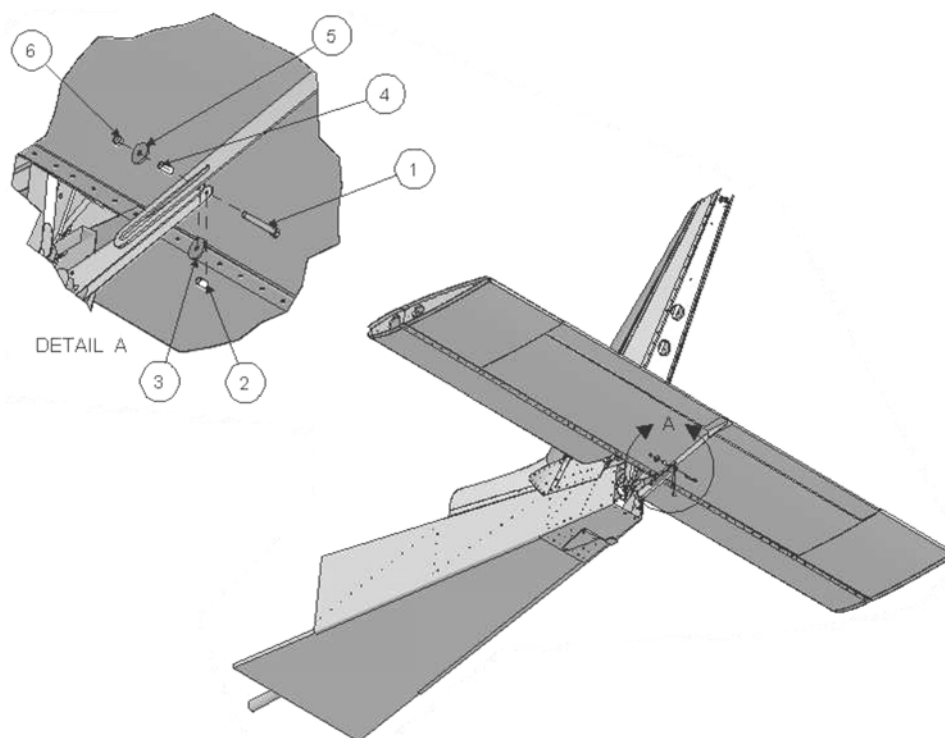


Fig.3-13

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	1	BOLT M6x45
2	1	SPACER
3	1	WASHER M6X24
4	1	SPACER
5	1	WASHER M6X24
6	1	STOP NUT M6



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Disconnect stabilator control rod unscrewing the M6x35 bolt from stabilator connection as shown below.

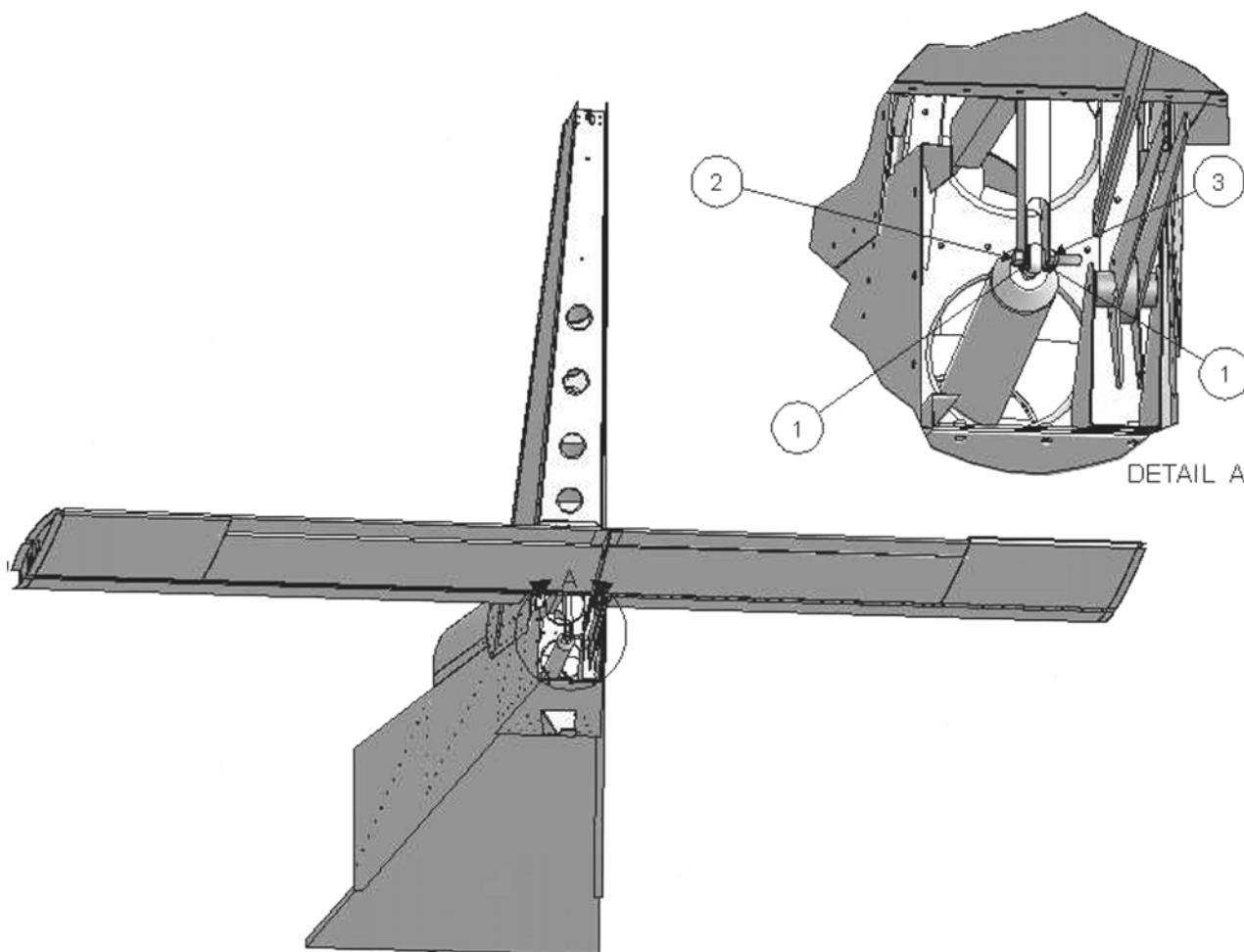


Fig.3-14

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	2	WASHER M6
2	1	BOLT M6x34
3	1	STOP NUT M6



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Unscrew the M6x40 bolts from fuselage fin connections.

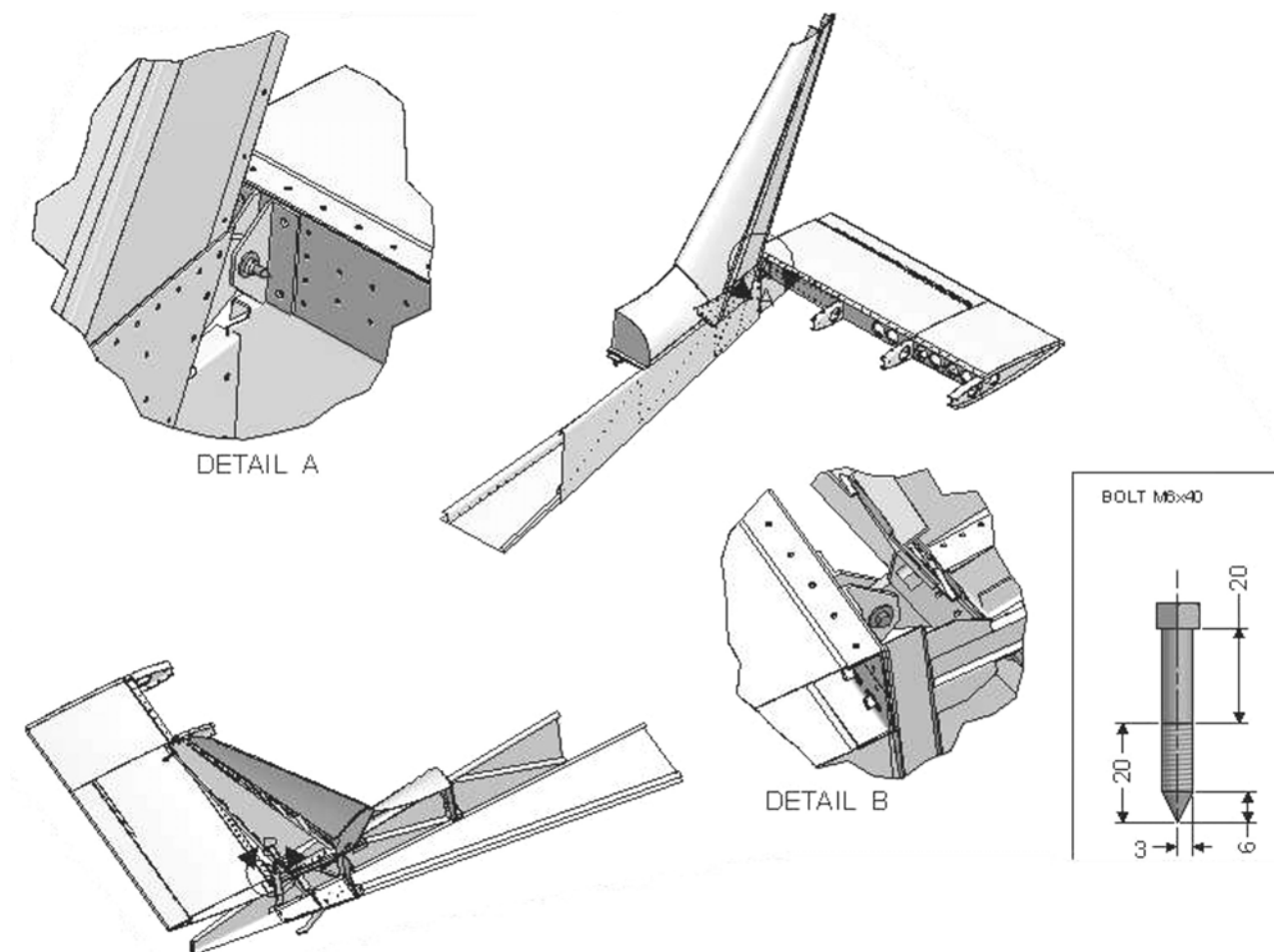


Fig.3-15

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	4	WASHER M6
2	4	WASHER M6x24
3	2	BOLT M6x40
4	2	STOP NUT M6



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INSTALLATION

Connect the stabilator to fuselage fin screwing 2 M6x40 bolts to fin connections (the ones with bearings).

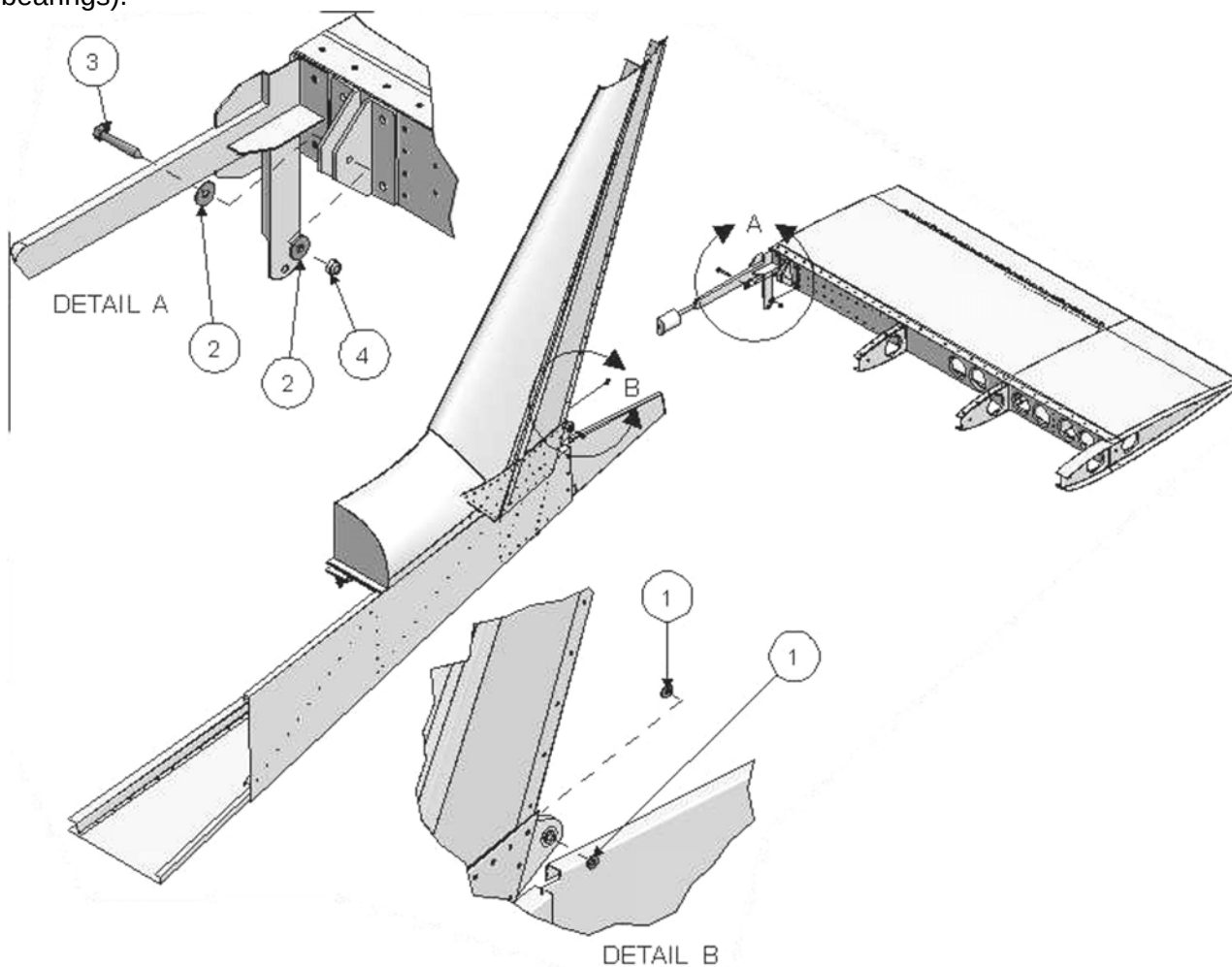


Fig.3-16

Connect stabilator trim tab to fin connection using M6x45 bolt. Align the trim tab at 0° with stabilator.

Connect stabilator trim wiring.



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Connect the stabilator control rod to stabilator connection with M6x35 bolt.

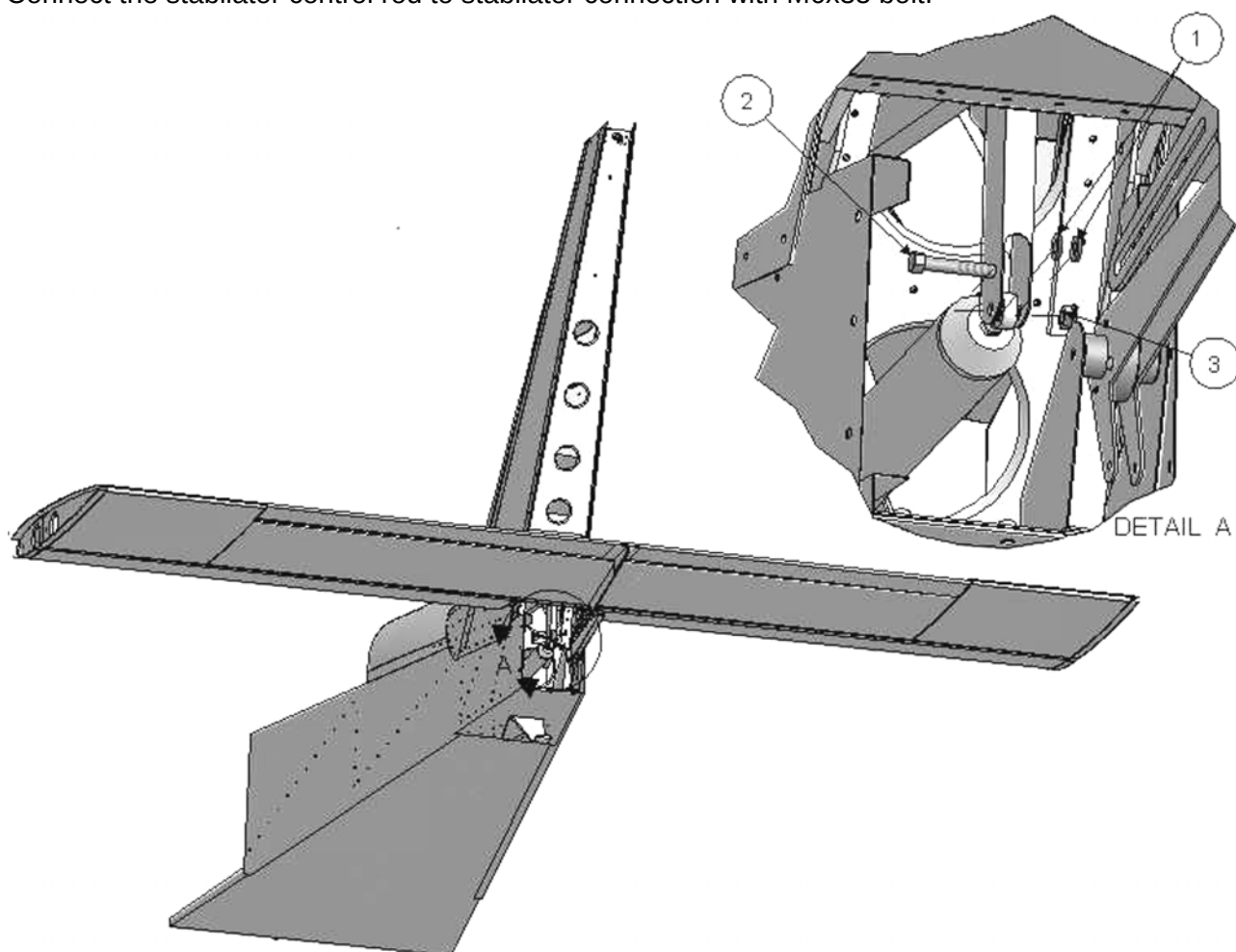


Fig.3-17

PARTLIST		
ITEM	Q.TY	DESCRIPTION
1	2	WASHER M6
2	1	BOLT M6x34
3	1	STOP NUT M6



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3.2.7 TRIM CONTROL (A&P)

The push buttons on the STICK GRIP control the electric actuator RAY ALLEN 6A of the trim, transmitting the requested control to the Trim on the Stabilator and, if provided for, to the flattener tab on the Rudder.

The red push button of the handgrip is used for radio communications (PTT)

The black button is used for the Stabilator trim

- Pushing forward = aircraft nose down
- Pushing backward = aircraft nose up

Two STICK GRIPS are mounted on the aircraft for pilot and co-pilot.

The aircraft attitude can be adjusted with both systems simply pushing the buttons on the STICK GRIP.

REMOVAL

The electric actuator is installed in the under skin of the RH Stabilator

- Remove the screws from the cover.
- Turn the cover upside down to reach the wirings
- Remove the electric connector
- Remove hinge rod (mark its position)

INSTALLATION

Invert removal sequence.

Make sure that the guides of the lower part perfectly fit with the upper part guides without forcing them and that wirings are not squashed.

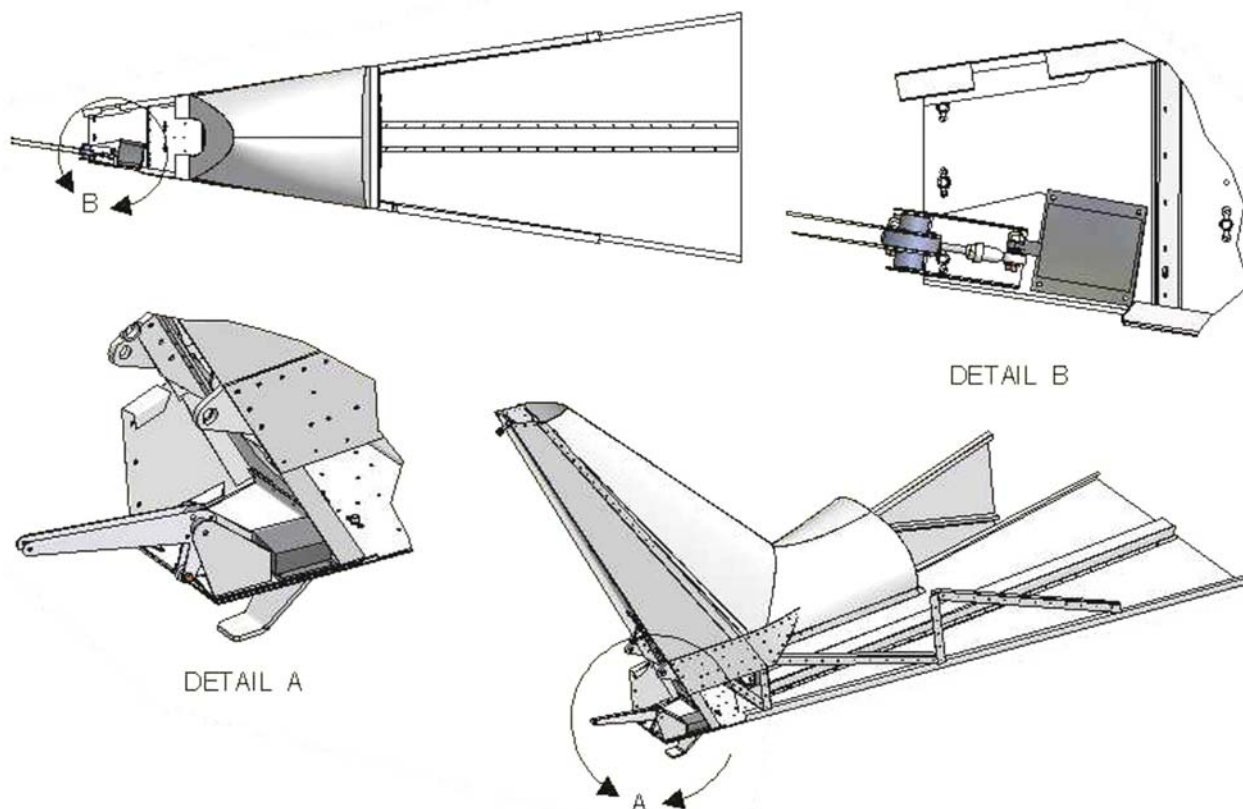


Fig. 3-18 TRIM ACTUATOR POSITION



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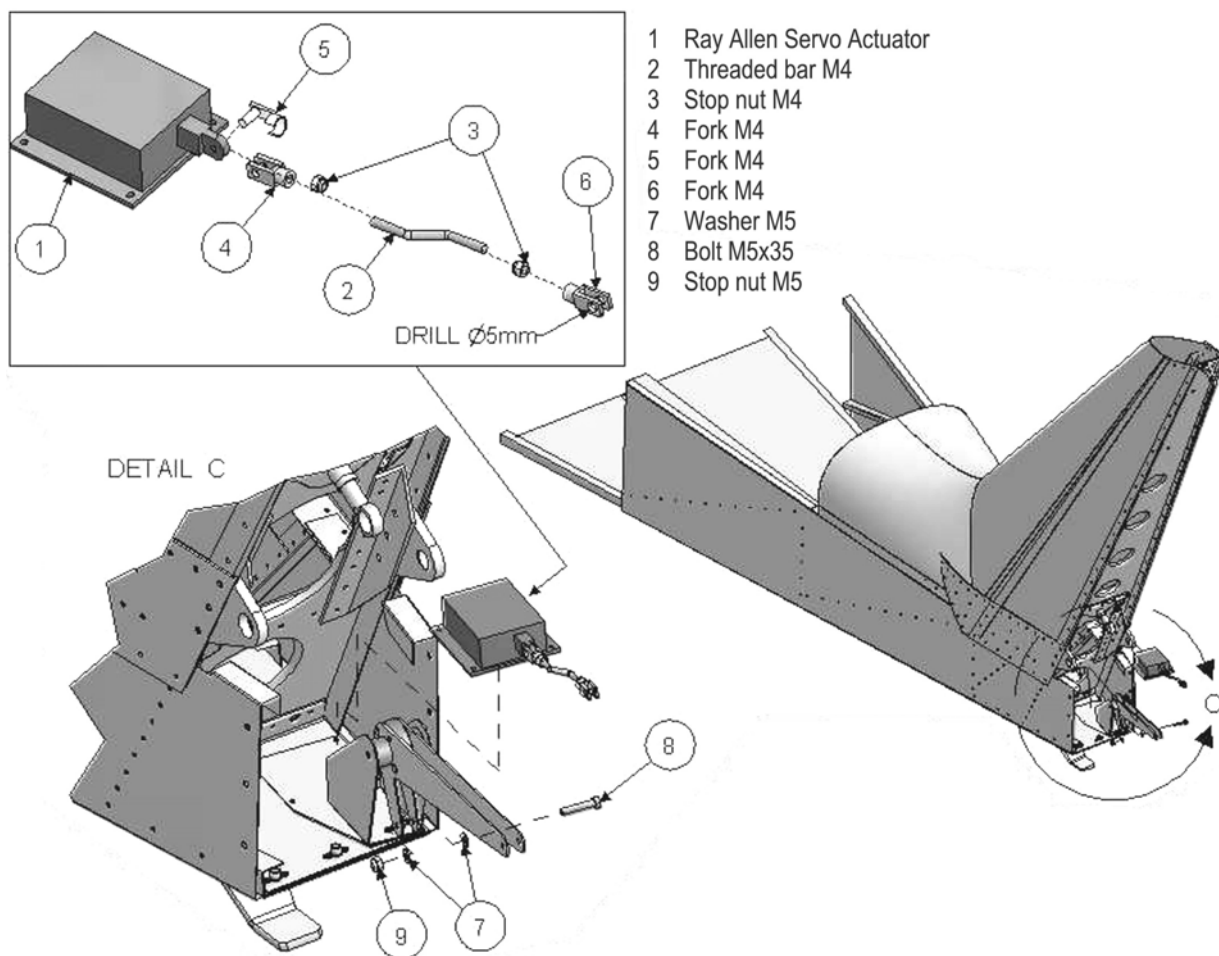


Fig. 3-19 TRIM TAB ACTUATOR REMOVAL

TRIM CONTROL

SPECIFICATIONS OF “RAY ALLEN 6 A” ACTUATOR		
Operating voltage	12 – 14 Volts DC	
No loads current	150 ma	
Weight	4.0 oz.	
Max Thrust	40 lbs	
Output shaft movement	1.0 inch	
Output travel time	12 seconds	
Construction material	22 c fiber filled nylon	

NOTE : should it be necessary to change wires, use a 26 AWG wire like the ones supplied by the builder. For its length, please refer to drawings.

CAUTION : the pads on the back of the switches are pre bent by the builder to supply the required clearance. Do not bend backwards and up, they can easily break. When reassembling the parts, make sure to run wires as per drawings to avoid to squash them. It's suggested to follow the builder's instructions.



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3.3 - CONTROL STOP AND REGULATION (A&P)

RUDDER

Rudder and steerable nose wheel are in the same circuit a bellcrank installed to the pedals supports two cables move the rudder and two rods through the firewall move the steerable nose wheel. The regulation of the stops of this system are installed in the connection bracket of the nose wheel where the pedals rods are fixed.

The right and left stops can be adjusted unloosing the regulation bolt nut and screwing or unscrewing it according to the required stop adjustment.

Caution: check the Rudder range: 25° RH & LH minimum

AILERON

Its regulation device is on right and left sides of the control stick. The right and left stops can be adjusted unloosing the regulation bolt nut and screwing or unscrewing it according to the required stop adjustment.

Caution: check the aileron range

Aileron	12° ± 2° UP	15° ± 2° Down
----------------	--------------------	----------------------

STABILATOR

Its regulation device is on the pilot grip support facing the center console. The nose-up stop can be adjusted screwing or unscrewing nut and lock nut, the nose-down stop can be adjusted screwing or unscrewing nut and lock nut .

Caution: check the stabilizer range

Stabilator	20° ± 2° DOWN	32° ± 2° UP
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3.3.1 LUBRICATION AND CONTROLS CHECK (A&P)

every 100 hours lubricate control hinges and articulations

oil CRC POWER LUBE
grease LUBRIPLATE No.630AA

P/N 09-39605
P/N 09-25400

wires and wire slide
articulations control bars
hinges

After having performed the 100 hours inspection, make sure that each control in the cockpit is positioned to grant a comfortable operation and to avoid confusion or involuntary operations.

Controls must be ranged in such a way that, when the pilot is fastened to his seat, all control movements are free and complete, without being hampered by his garments or by the cockpit structure.

Make sure that all protection particulars are restored in the cockpit to prevent foreign matters from jamming the system.

CAUTION : before you install the control protections, make sure you did not forget tools, bolts or anything else

If during maintenance you installed a locking device on controls, remove locking device before taking the aircraft to the starting line

CAUTION : do a further check of all controls up to limit stops, they must be free

3.4 LANDING GEAR

MAIN LANDING GEAR DESCRIPTION

The main landing gear has two shock struts made of light alloy which allow to absorb landing impacts.- The two leaf spring struts are bolted to the central structure of the landing gear on fuselage L.G. box and rested in special housings on the trestle sides.

Wheels are mounted cantilevered on the struts and are equipped with hydraulic dual caliper disc brakes controlled by a pump installed in the center console a lever operate the brakes.

(Optionable: two pumps connected to the pilot pedals. Available two additional brakes pump for the co-pilot).

The main gear wheels have 5 x 5.00" x 6 tires that must be inflated to a pressure of 26 p.s.i. (1,8 bar)



MAINTENANCE MANUAL ***STORM CENTURY S-LSA***

3.4.1 LANDING GEAR AND BRAKE SYSTEM FAULTS

	Possible cause :	Remedy :
OWN	- abraded nose gear wheel covering	- replace covering
OWN	- reference signs between wheel and rim of nose gear shifted	- adjust covering and verify possible damages of the air valve
A&P	- the main landing gear wheel is blocked - brake linings stuck on the disc	- verify tightening of bearings on the hub, not too tightened - replace linings and grind disc
A&P	- strong noises rising from the wheels during taxing, like whistles, etc.	- possible seizing up of bearings, faulty brake linings
A&P	- "schimmy" phenomenon on the nose wheel	- too high landing speed, check the nose gear unit for possible damages
A&P	- strong vibrations rising from the nose gear unit	- check connection of the nose gear leg
A&P	- brake handle to end of stroke but not braking - brake fluid leak from pumps or from pipes	- air in the left or right circuit, bleed the involved air circuit – if necessary overhaul the system

3.4.2 MAIN LANDING GEAR REMOVAL (A&P)

- Remove wheel fairing
- It is necessary to lift the aircraft to remove main landing gear (see section: Points of Support)
- Disconnect brake fluid hoses from the leaf spring strut of main gear
- Remove wheel and bearings
- Remove brake calipers
- Unscrew and remove the under Landing Gear Caps.



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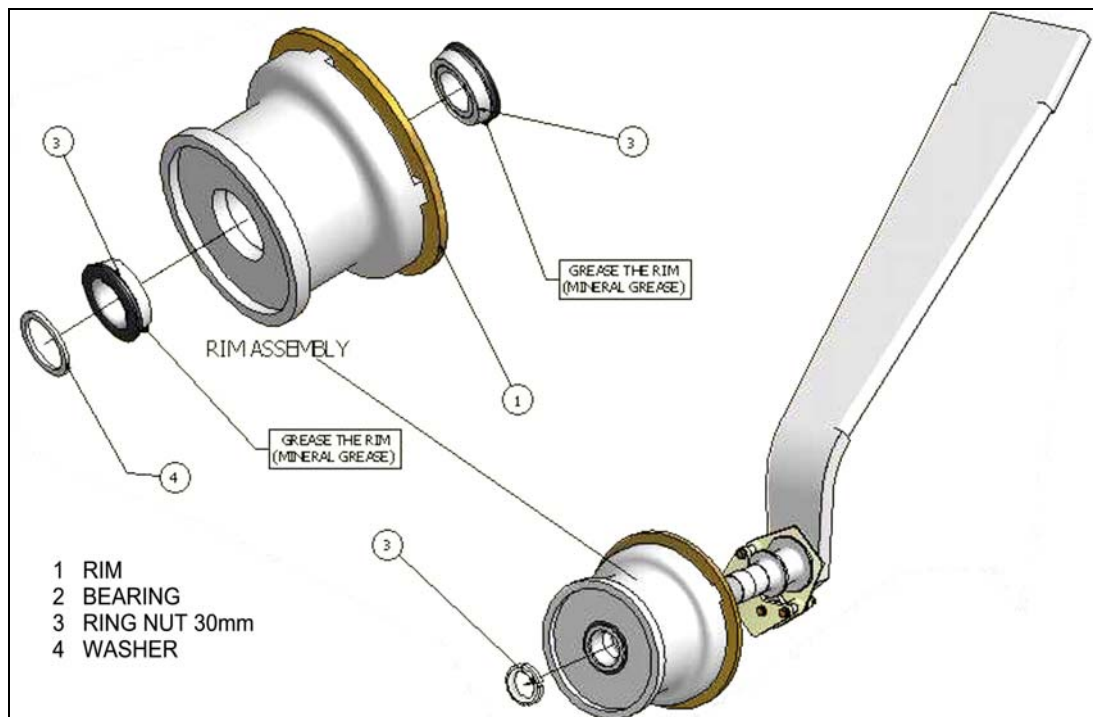


Fig. 3-20

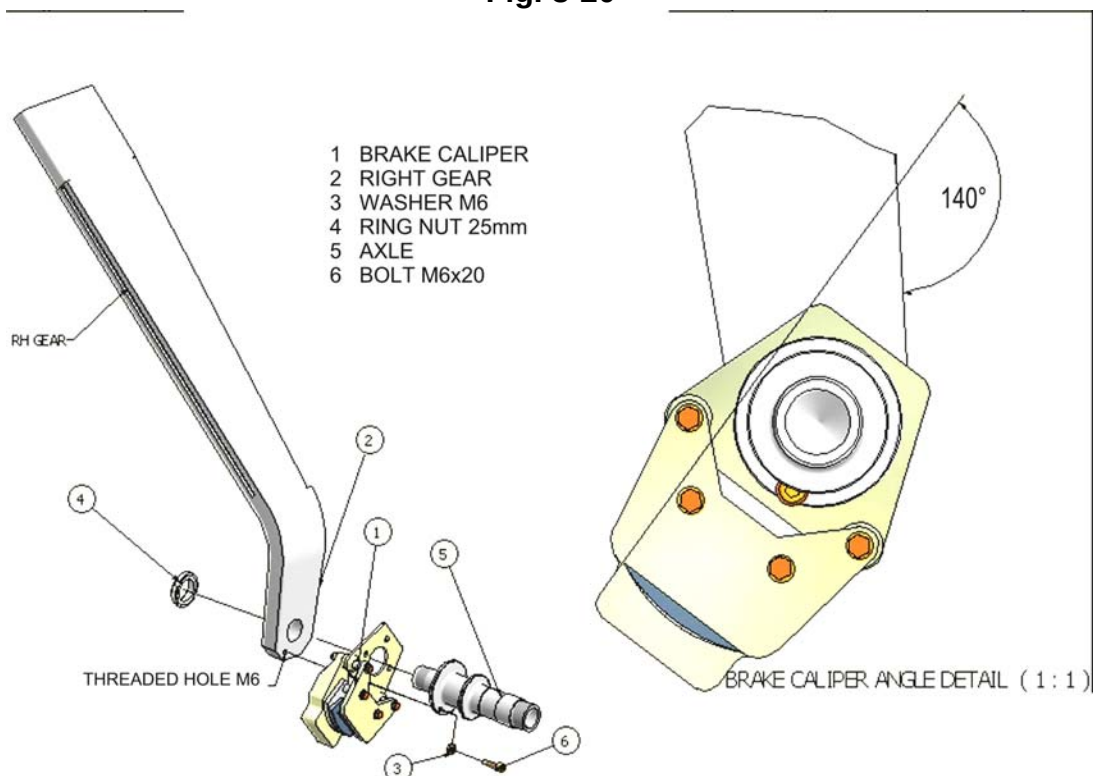


Fig. 3-21

CAUTION:

All screws fastening landing gear to fuselage must be changed when removed. Self-locking nuts must be changed when released; pin locks shall be changed, not reutilized. Tighten all screws up to correct torque value.



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LUBRICATION

All bearings are "**long life**", they do not require special lubrication; if necessary, use **LUBRIPLATE NO. 630AA** p/n 09-25400 for lubrication.

Change wheel bearings every 1000 hours.

WARNINGS

CAUTION

SHOULD A BUMPY LANDING OCCUR OR ANYTHING ELSE THAT MAY CAUSE DAMAGES TO THE LANDING GEAR STRUCTURE, YOU SHALL:

1 – Make sure that the fuselage part where the landing gear structure is assembled, is not damaged or warped.
2 – Remove the whole landing gear unit and check all fuselage connections
3 – Replace damaged part
4 – Install the landing gear assembly in its seat
5 – Landing gear measurements shall fall within tolerances



MAINTENANCE MANUAL ***STORM CENTURY S-LSA***

3.4.3 BRAKE SYSTEM (with Toe brakes) (A&P)

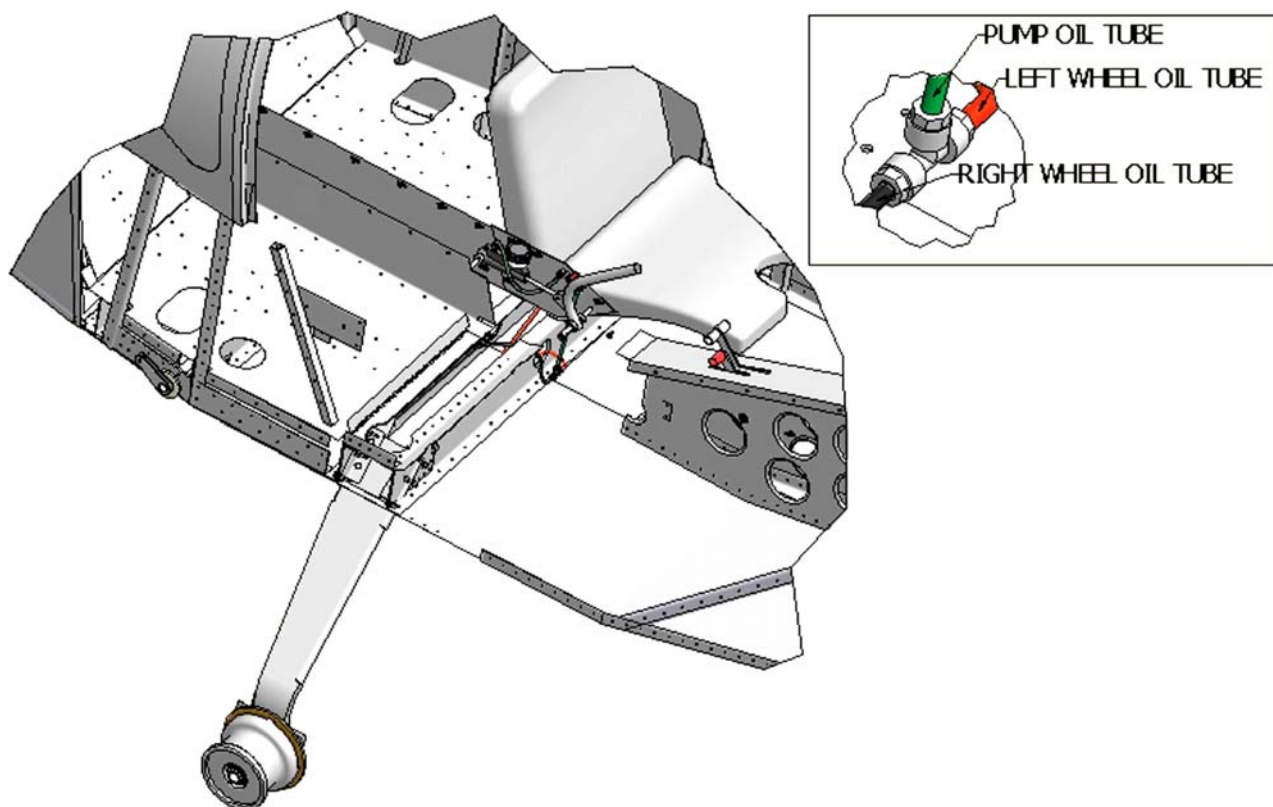


Fig. 3-22

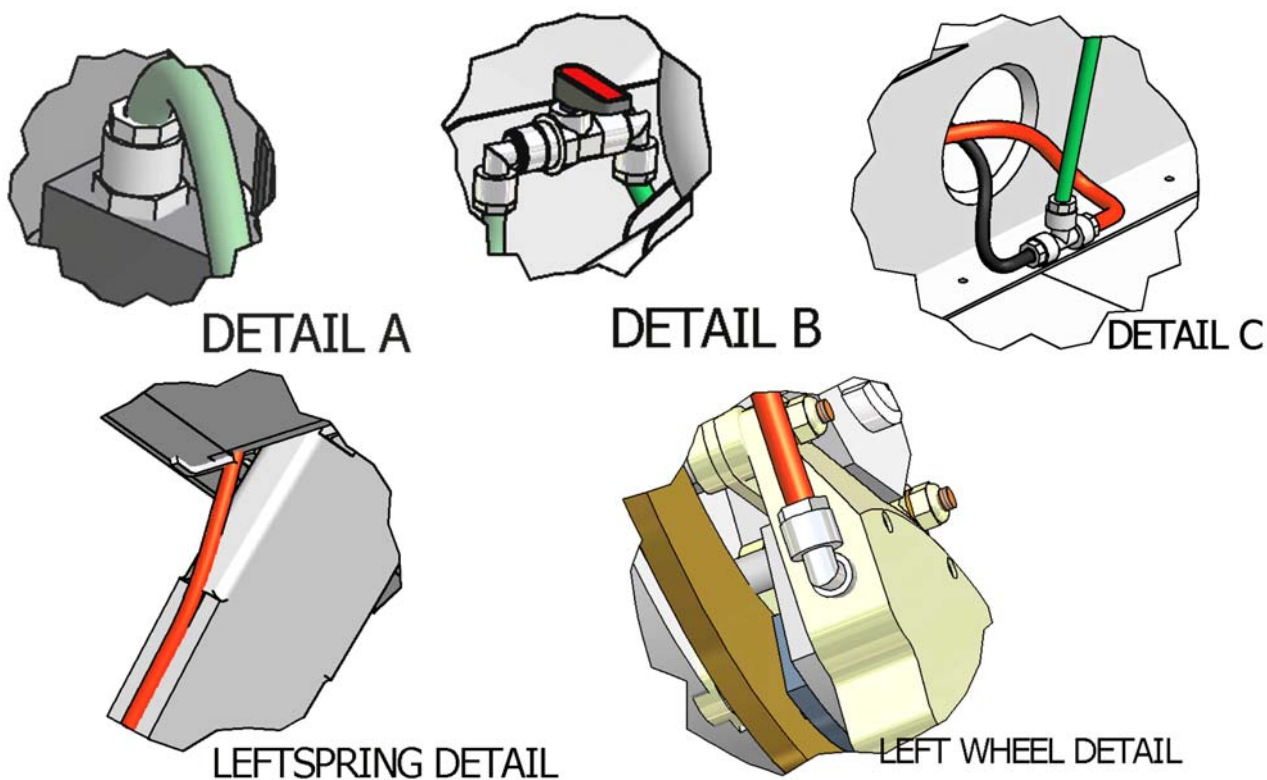


Fig. 3-23



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STORM CENTURY S-LSA

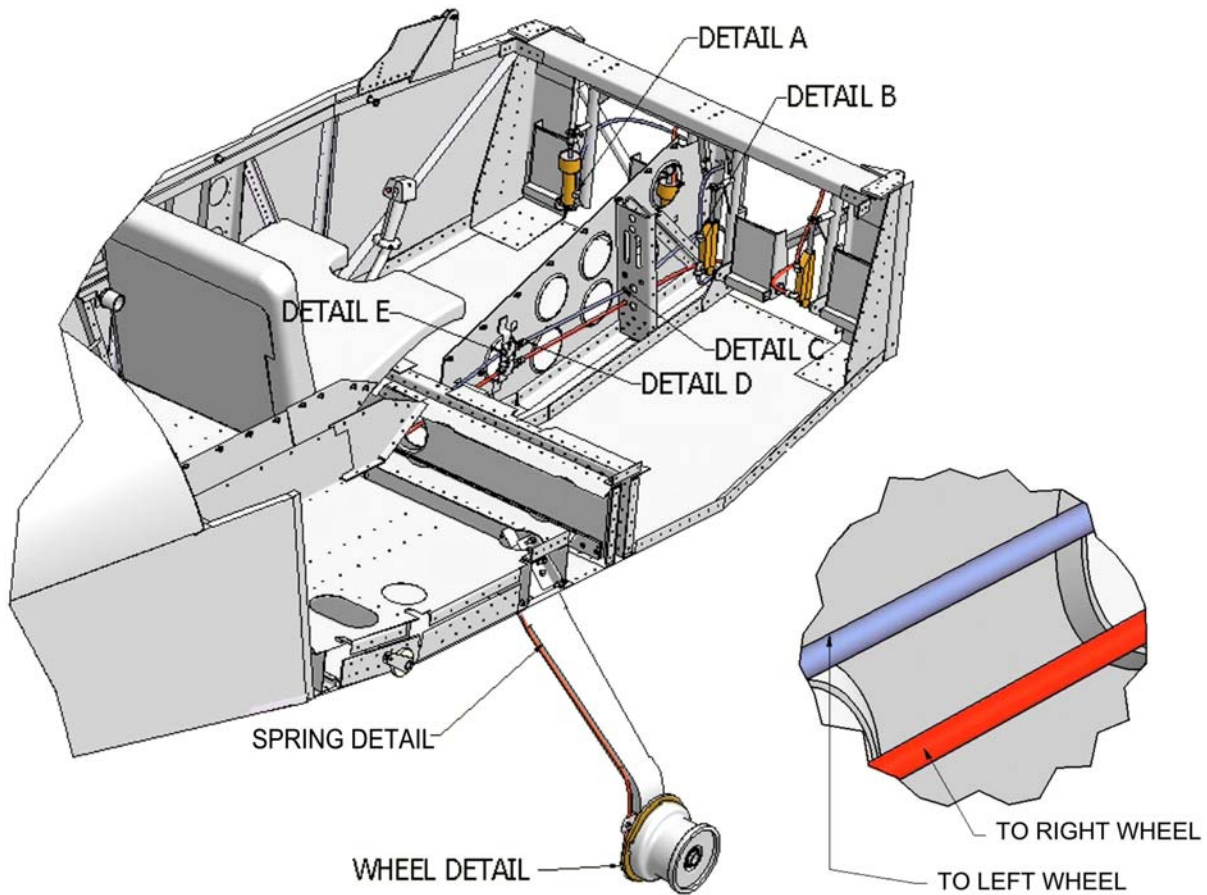
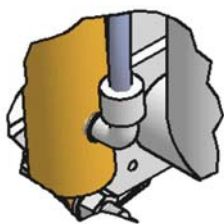
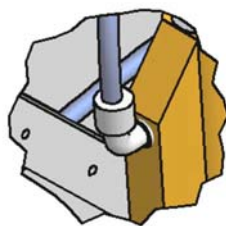


Fig. 3-24



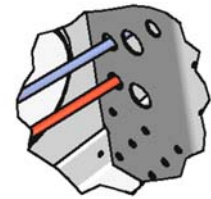
DETAIL A



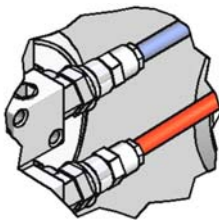
DETAIL B



DETAIL C



DETAIL D



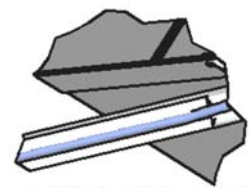
DETAIL E



DETAIL F



BRAKE DETAIL



LEG DETAIL

Fig. 3-25



MAINTENANCE MANUAL

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3.5 STEERABLE NOSE GEAR

STEERABLE NOSE GEAR DESCRIPTION

The steerable nose gear is bolted to the engine cradle; a removable bracket on the top is connected to the rudder pedals with two bars with adjustable end bearing. Two springs fixed to the pedals, also adjustable, keep in flight, the nose wheel straight when the wheel fairing is installed. A series of shock absorber are installed to the gear strut to cushion. The rubber shock absorbers must be replaced every 400 hours heavy landing excepted. the lubrication of the visual parts must be done every 100 hours to the inside strut and the bushing every 500 hours.

NOTE: Protect the rubber shock absorber from grease and lubricant.

The nose gear wheels have 4 x 4.00" x 6 tires that must be inflated to a pressure of 26 p.s.i. (1,8 bar).

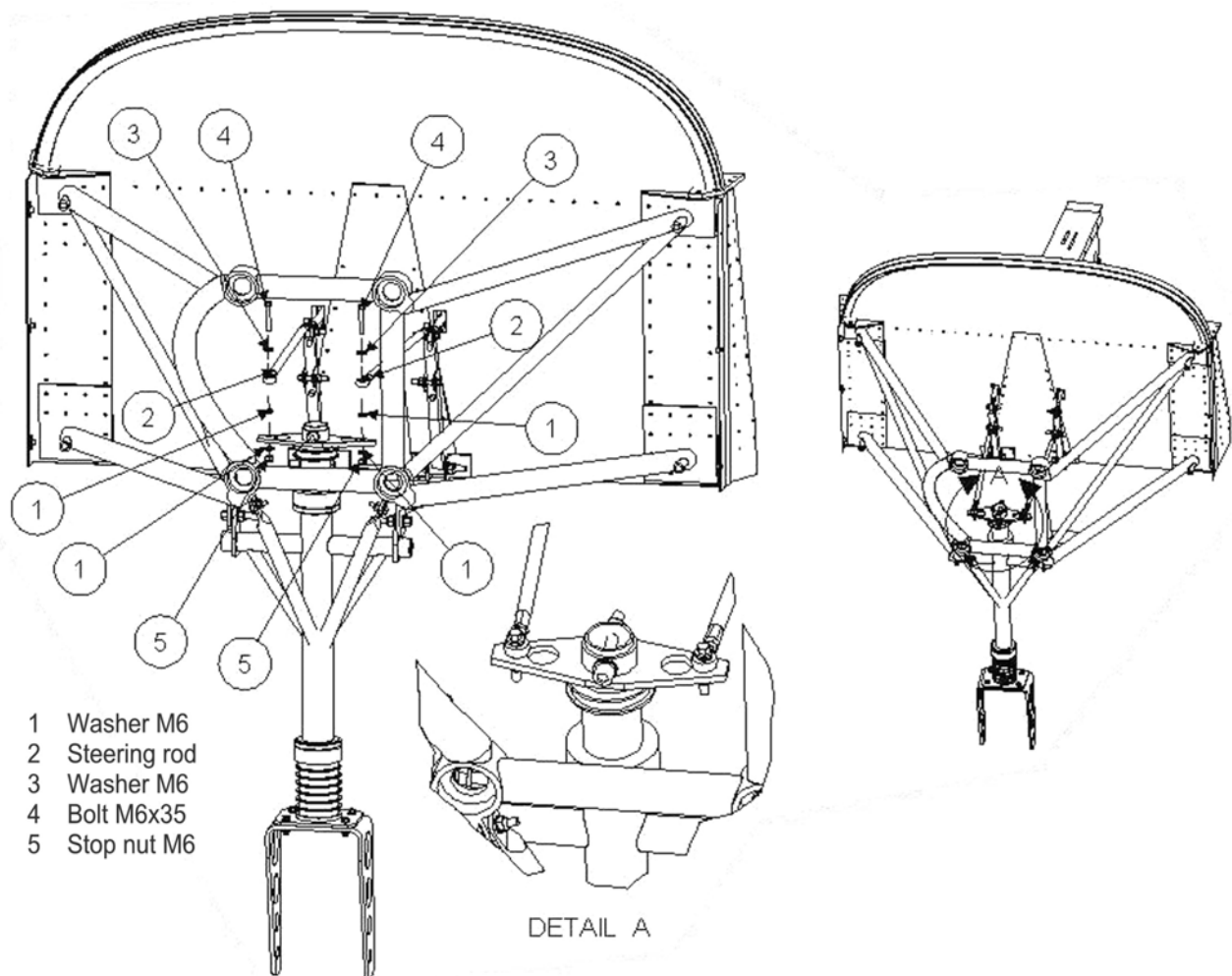


Fig. 3-26 STEERABLE NOSE GEAR



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3.5.1 STEERABLE NOSE GEAR REMOVAL (A&P)

REMOVAL
- Remove the cowlings
- Remove wheel fairing
- It is necessary to lift the aircraft to remove nose landing gear. Position tail down (see chapter: Points of Support)
- Remove nose wheel and axle
- Disconnect the steerable control rods
- Remove the 2 FW. M 6 bolts and the 2 M8 AFT bolts from the engine cradle.
- Withdraw nose gear assembly from engine cradle.

INSTALLATION
- Invert removal sequence

CAUTION: All screws fastening nose gear to fuselage must be changed when removed. Self-locking nuts must be changed when released; pin locks shall be changed, not reutilized.

Tighten all screws up to correct torque value.

LUBRICATION

All bearings are "long life", they do not require special lubrication; if necessary, use **LUBRIPLATE NO. 630AA** p/n 09-25400 for lubrication.

Change wheel bearings every 1000 hours.

WARNINGS

CAUTION

SHOULD A BUMPY LANDING OCCUR OR ANYTHING ELSE THAT MAY CAUSE DAMAGES TO THE NOSE GEAR STRUCTURE, YOU SHALL:

1 – Make sure that the engine cradle part where the nose gear structure is assembled, is not damaged or warped.
2 – Disassemble the whole nose gear unit and check all parts. Don't forget to mark the rubber shock absorbers and plastic washers position.
3 – Replace damaged part
4 – Install the landing gear assembly in its seat
5 – Nose gear measurements shall fall within tolerances



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STORM CENTURY S-LSA

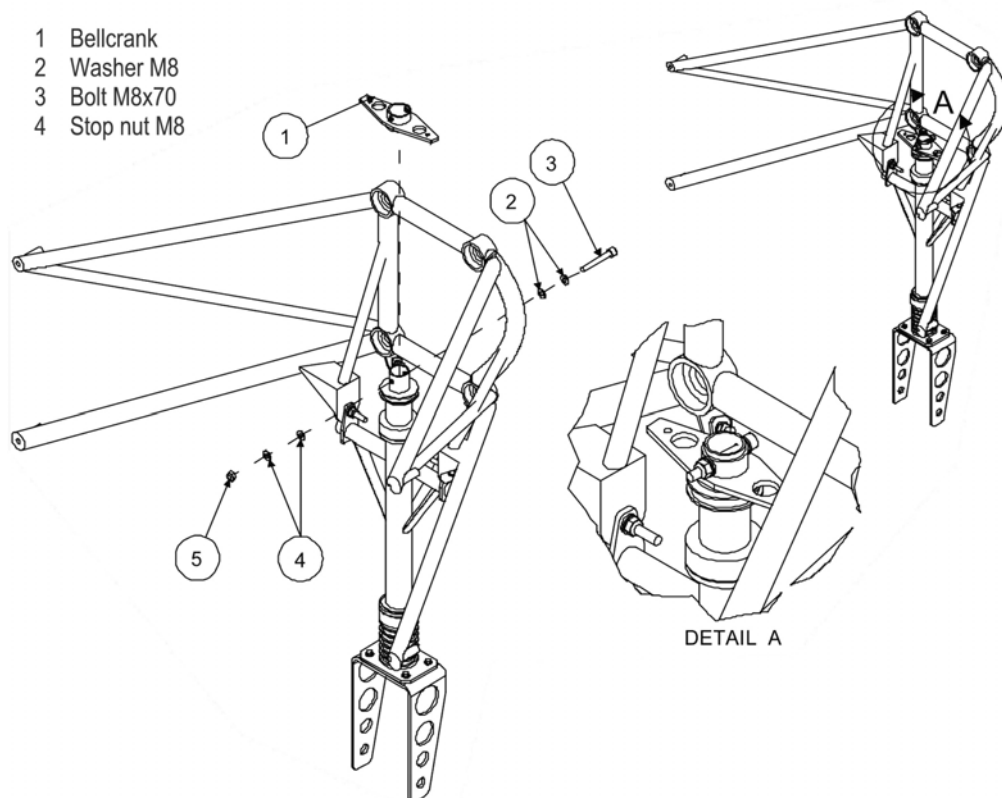


Fig. 3-27 REMOVING NOSE GEAR

PEDALS/NOSE WHEEL HINGES CONNECTION

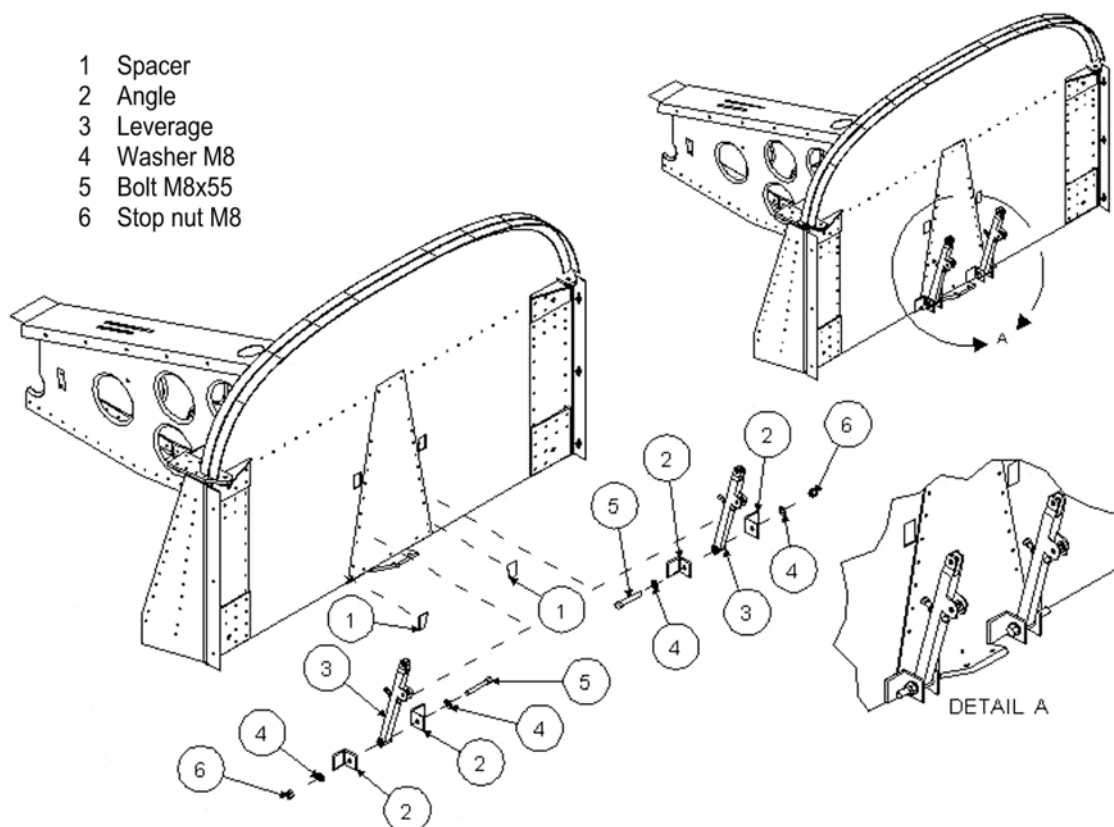


Fig. 3-28 PEDALS LEVERAGE FIREWALL CONNECTION



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PEDALS/NOSE WHEEL CONNECTION

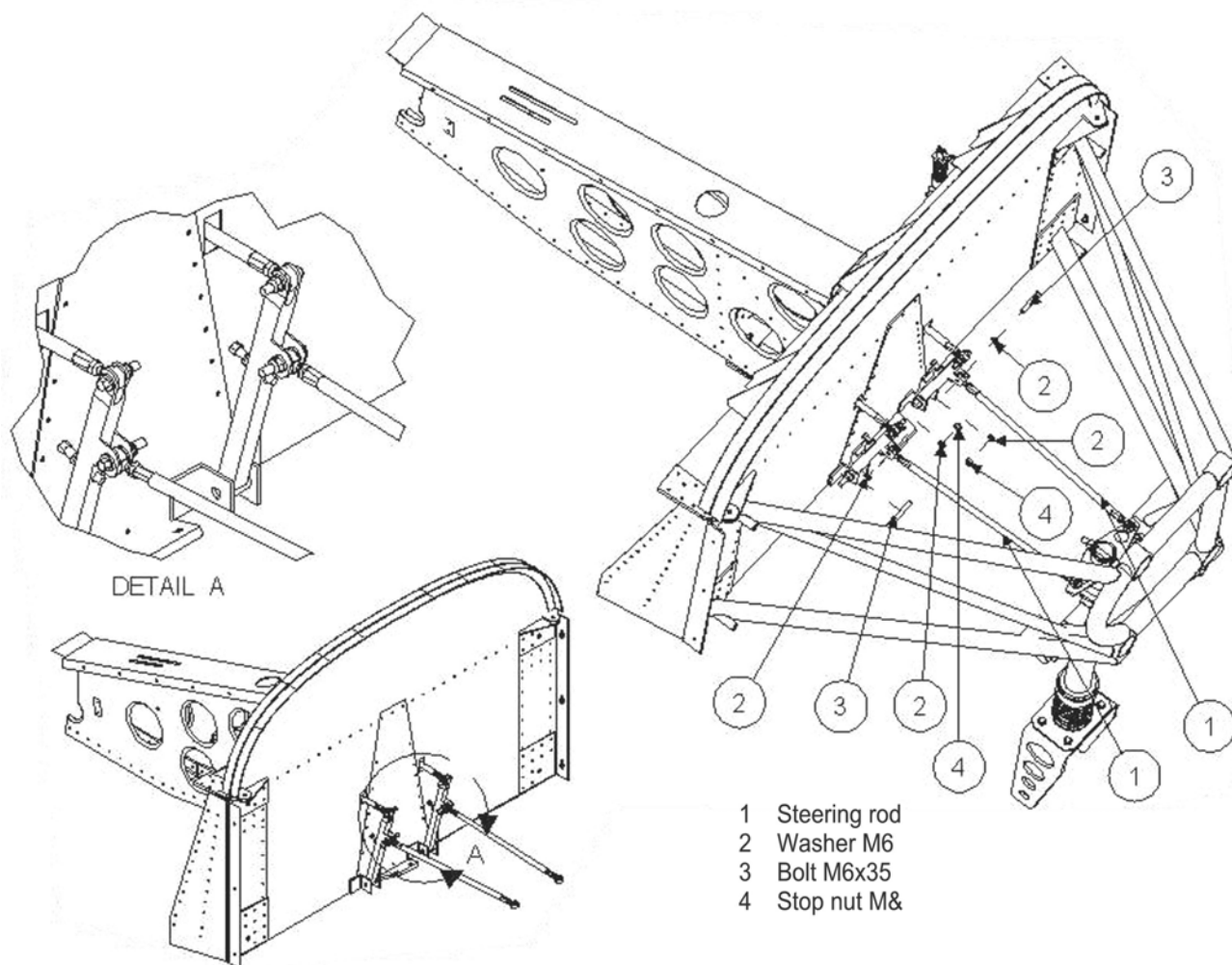


Fig. 3-29 PEDALS/NOSE WHEEL BRACKETS CONNECTION



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3.6 SEAT BELTS

SEAT BELTS INSTALLATION

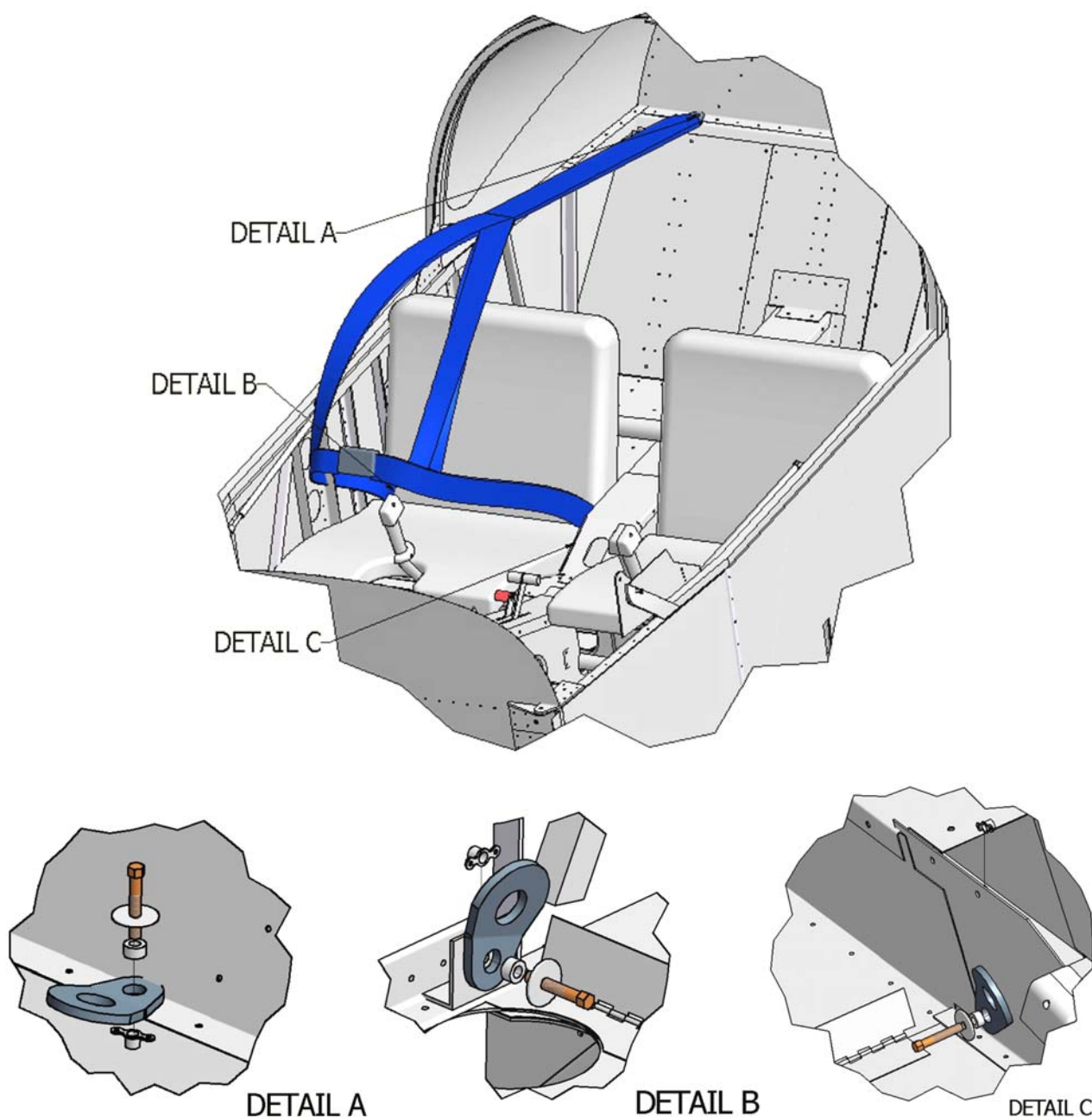


Fig. 3-30

Screw the M6 bolts to dedicated anchor nuts installed on baggage bulkhead (detail A), fuselage side (detail B) and central console (detail C).



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4 ENGINE

See Rotax Maintenance Manuals provided with this manual.

5 FUEL SYSTEM

The fuel system is connected to 2 wing tanks. In normal operating conditions, an AC pump located on the left of the engine in an advance position supplies fuel to the carburetors. From the wings the fuel go to a little tank installed in the upper side of the firewall inside the cabin from here to the shut-off valve in the FW center consol with two positions: open/closed ; then to the gascolator filter located in the lower left part of fuselage on the firewall. The gascolator also has a bleeding. The fuel flows then from the gascolator to the electric pump controlled by the pilot, located on top of it, then to the mechanical pump driven by the engine and then to the switch. From the switch, located on the upper part of the circuit, the fuel reaches the carburetors. Some of this fuel starts the fuel pressure gauge up, and the exceeding part flows back through the top of the wing tanks . Should one of these pumps fail, feed is guaranteed by the other one. We suggest you to operate the electric pump during take-off and landing.

In the switch fuel return line, there is installed a Jet with 1mm hole : clean each 300 hours.

NOTE : we suggest you to keep tank always full so as to avoid humidity condensation inside. Always fill with previously filtered and clean fuel.

Description of fuel system drawing:

- 01 - Fuel filler on top of left side of fuselage
- 02 - Fuel tanks
- 03 - Fitting and decantation tank
- 04 - Bleeding screw
- 05 - Two ways feed cock ON/OFF
- 06 - "gascolator" carburetor filter
- 07 - Bleeding screw
- 08 - Electric pump
- 09 - Mechanical pump
- 10 - Switch
- 11 - Carburetor
- 12 - Carburetor
- 13 - Fuel pressure gauge
- 14 - Return flow pipe



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STORM CENTURY S-LSA

5.1 FUEL SYSTEM

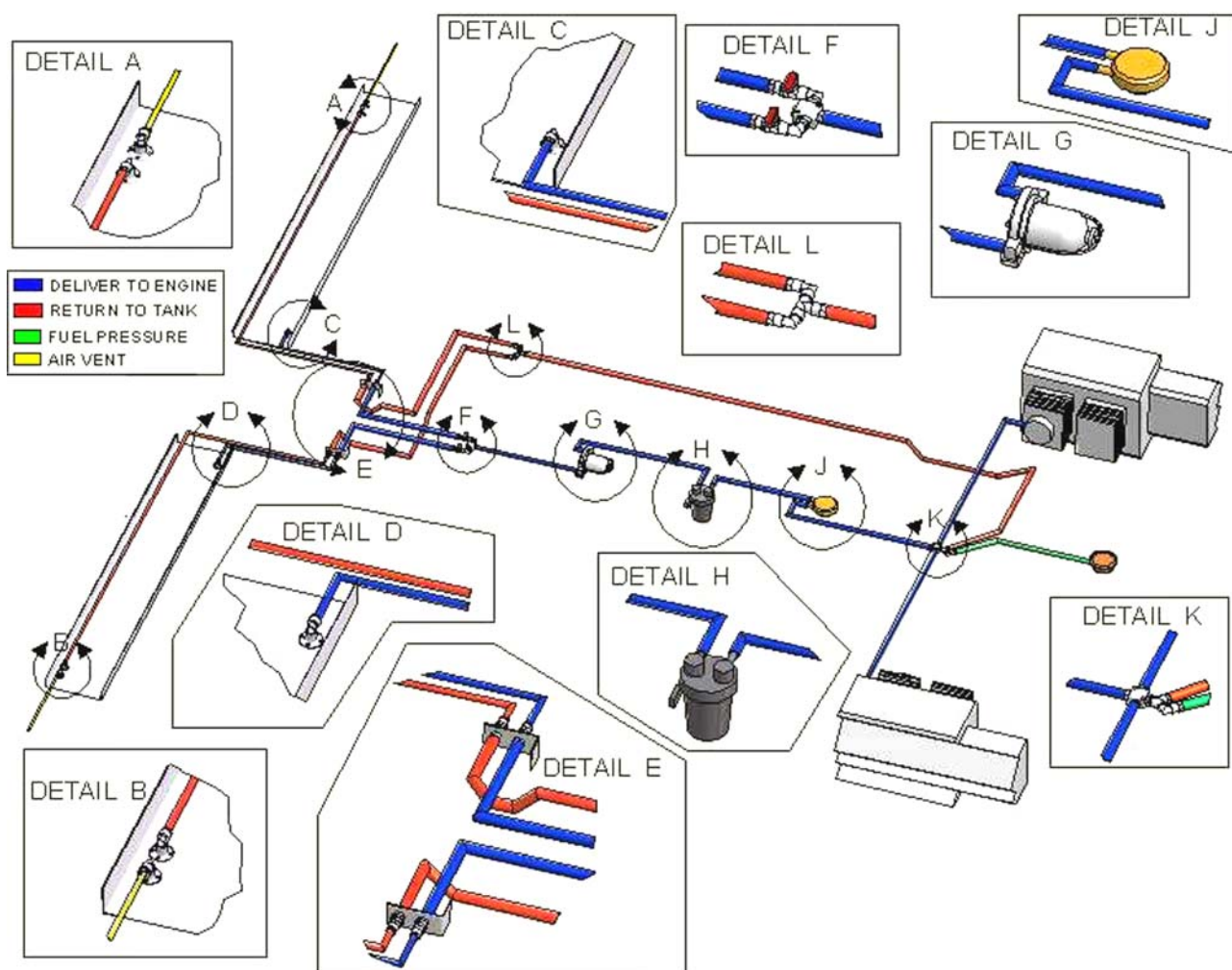


Fig.5-1 FUEL SYSTEM DIAGRAM



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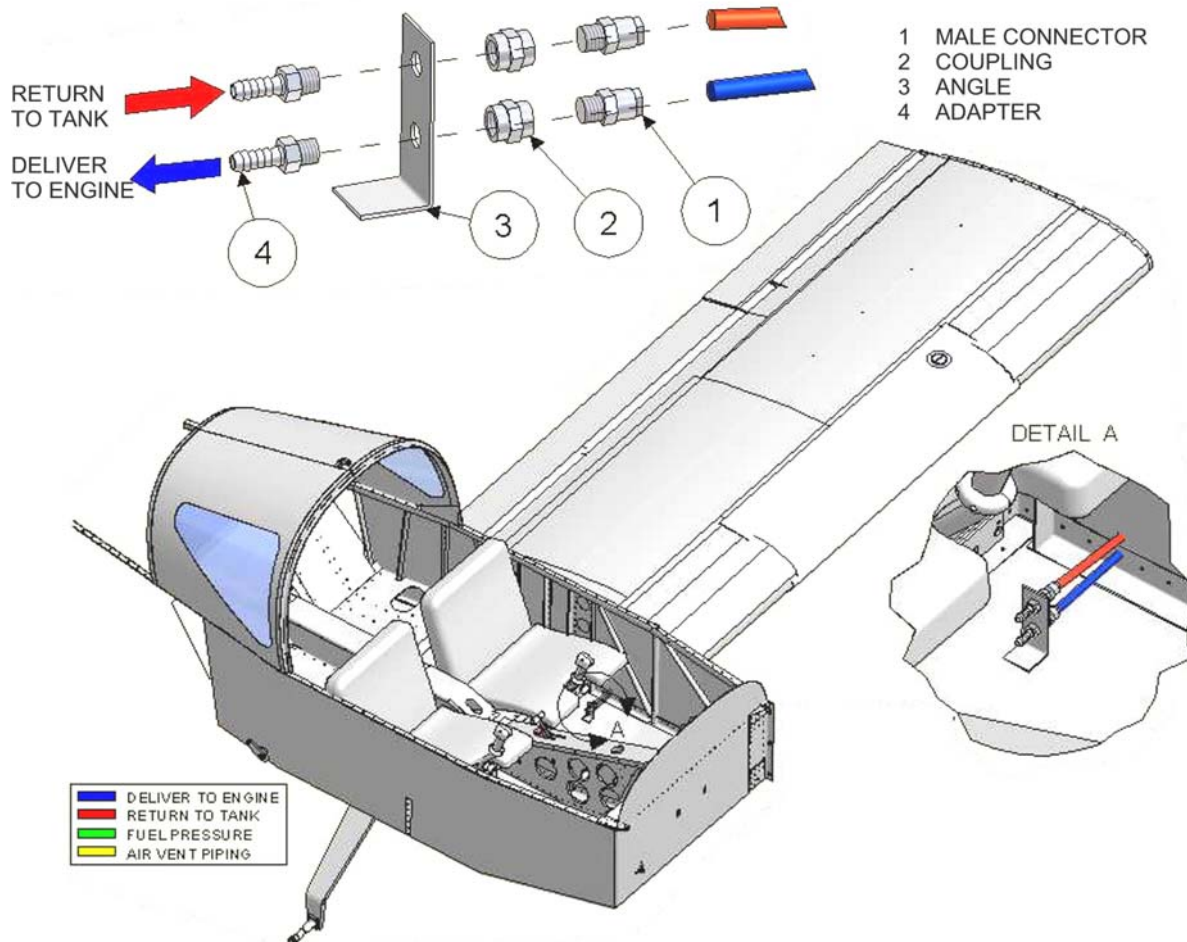


Fig.5-2 FUEL LINE FROM WING TO FUSELAGE FLOOR FITTINGS

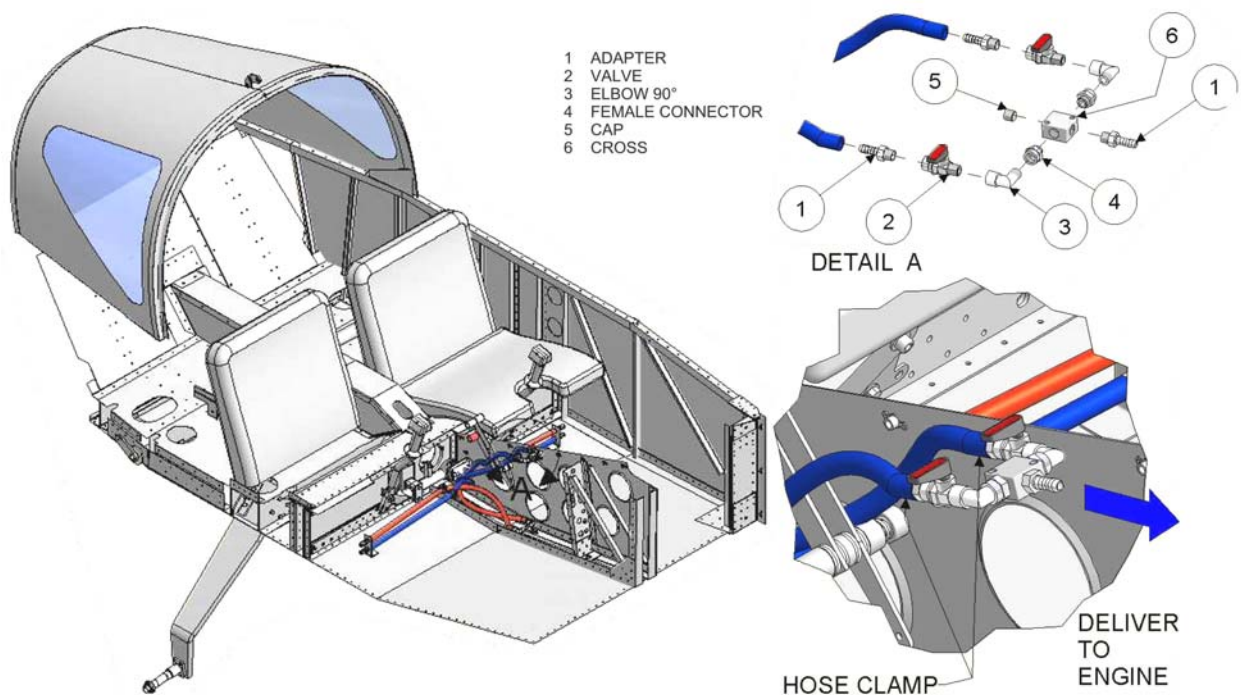


Fig.5-3 DELIVER FROM FUSELAGE FLOOR TO CENTRAL CONSOLE VALVES



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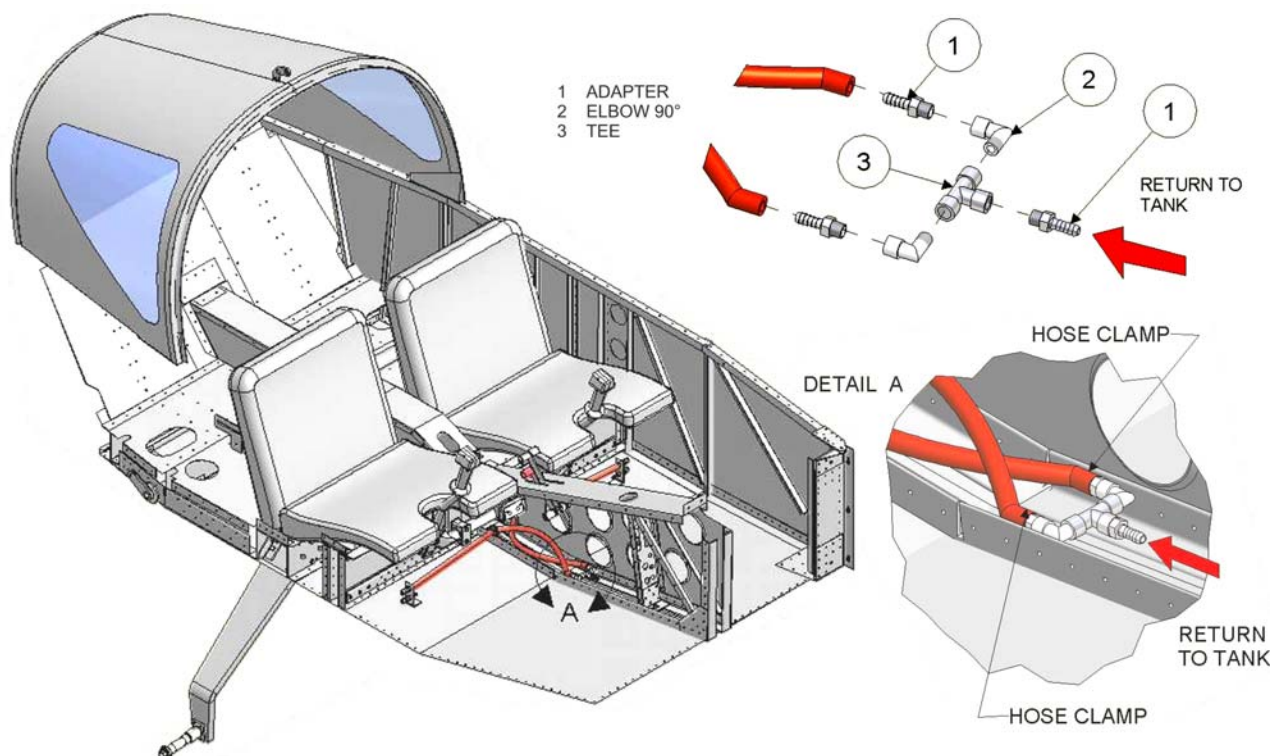


Fig.5-4 RETURN FROM FUSELAGE FLOOR TO CENTRAL CONSOLE VALVES

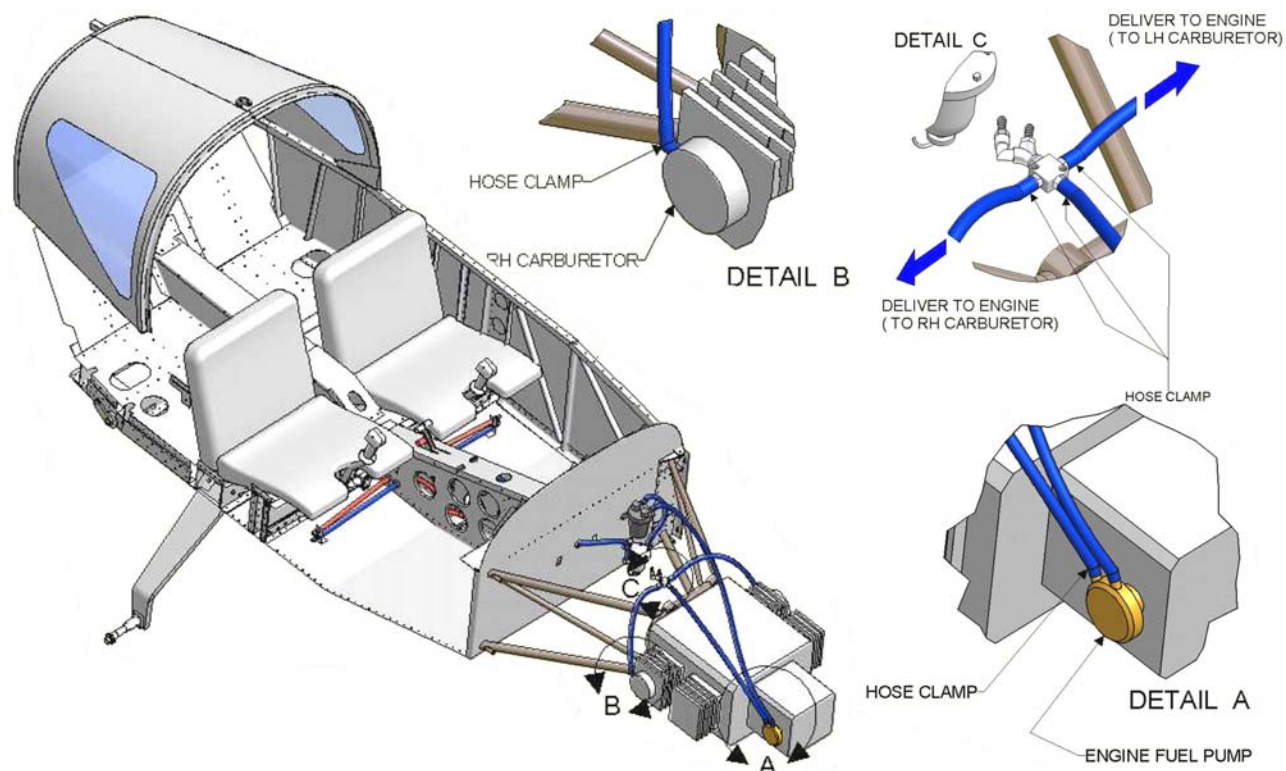


Fig.5-5 DELIVER FROM FIREWALL TO ENGINE



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STORM CENTURY S-LSA

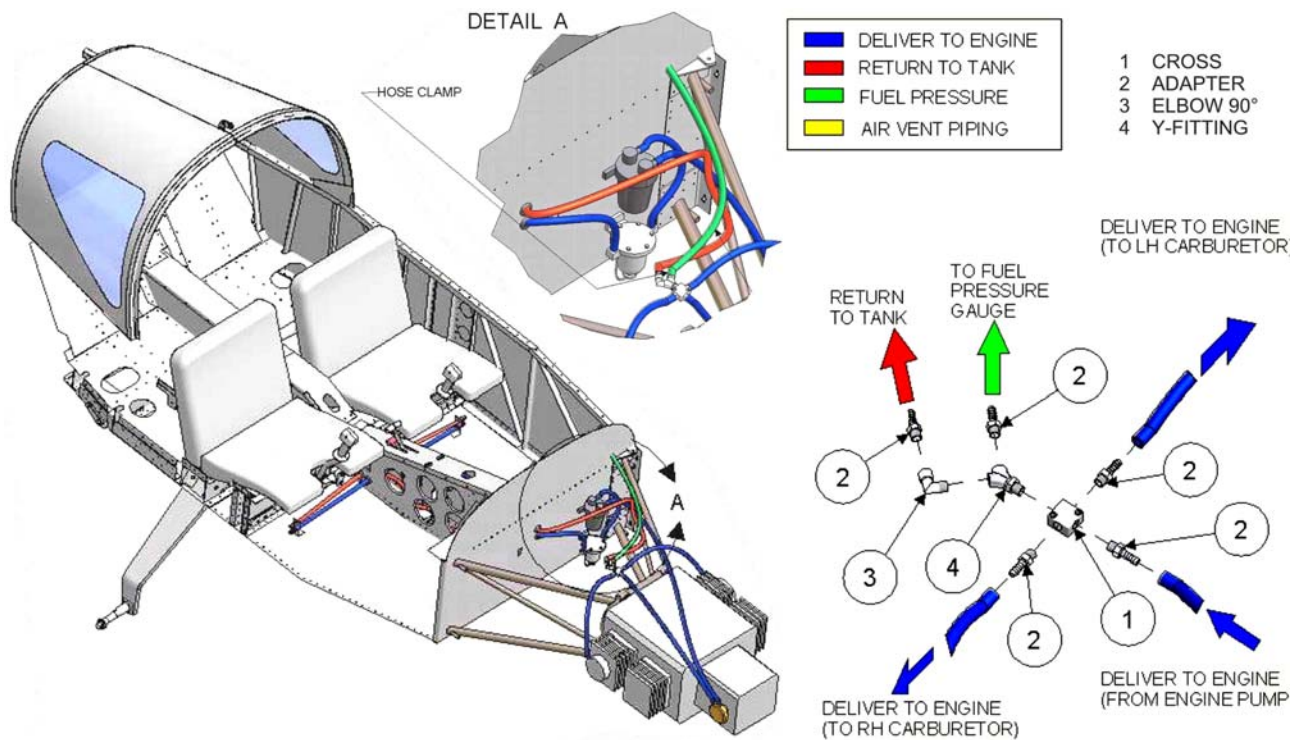


Fig.5-6 FUEL LINE FROM FIREWALL TO ENGINE

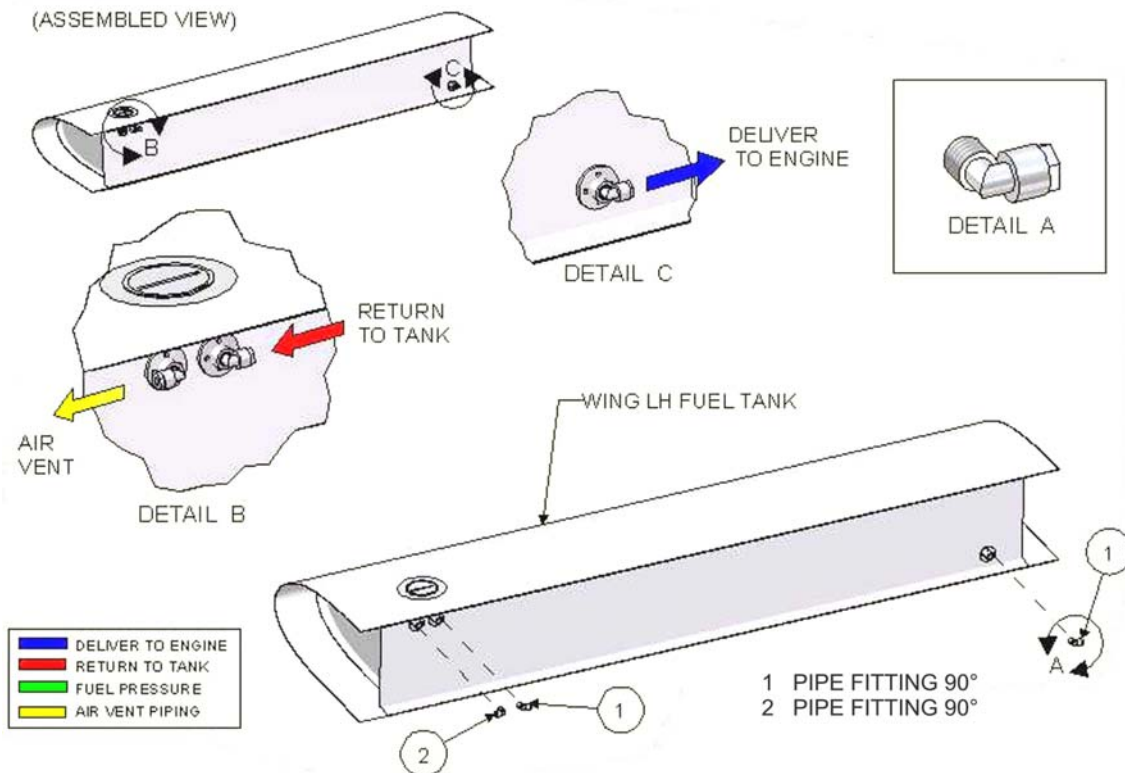


Fig.5-7 WING TANKS FUEL LINE FITTINGS

CAUTION: Should fuel marks or drippings be noticed on the central part of fuselage, an immediate check will be necessary in order to find out the origin of drippings and carry out the necessary repairs.



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REMOVAL

Disconnect battery

Empty tank completely using the bleeding screw under the tank on the decantation tank; open also the bleeding screw under the gascolator.

CAUTION: keep fire extinguisher within reach when draining the tank, take all necessary precautionary measures, keep the area ventilated.

Disconnect fuel feed/return flow pipes

CAUTION: if you do not expect to change the fuel pipes, we suggest to close them with a pin of the same size as the inside diameter of the pipe.

INSTALLATION

- a) carefully clean the inside of the tank from any processing residual, make sure that the breather is free.
- b) invert the sequence for installation

5.2 FUEL SYSTEM FITTINGS

GASCOLATOR FUEL FILTER (DETAIL G - FUEL LINE DIAGRAM)

The gascolator, containing 0,13 gal fuel, is in the lowest part of the fuel circuit, on the firewall. The fuel filter is inside the gascolator.

The gascolator has a pressure bleeding where the condensation residuals are collected; it can be reached from the lower outside part of the nacelle.

ELECTRIC FUEL PUMP (DETAIL H - FUEL LINE DIAGRAM)

This pump is used as auxiliary or emergency pump which can be turned on during take-off or landing or in particular emergency conditions. The operation of this pump works on the vibrating movement of a diaphragm cylinder which creates suction and pressure; its movement is controlled by an electromagnet.

MECHANICAL FUEL PUMP

The mechanical diaphragm pump is controlled directly by the engine. When the engine is on, the mechanical pump sucks fuel through the electric fuel pump, and sends it to the carburetors with a pressure of about 0,15 - 0,4 bar (2.2 - 5.8 p.s.i.).



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FUEL SHUT – OFF VALVE

The two ways shut off valve is controlled by an OPEN / CLOSED switch on the central console, in front of the throttles.

FUEL PIPES

From wing tanks to the auxiliary tank : Rilsan 8/6 mm

From the auxiliary tank through the firewall rubber fuel pipe inside diameter 7 mm.

Caution: use only piping agreed for unleaded fuel

FLOAT

If installed It is accessible through the inspection hole on the wing.

To remove you must disassemble the wing (see Chapter 3.2.1)

5.2.1 FITTING REMOVAL AND INSTALLATION

CAUTION : before you proceed with the removal of: gascolator, electric pump, mechanical pump and feed cock, the remaining fuel must be drained from the tank.

REMOVAL

Gascolator, electric pump, mechanical pump :

- a) close feed cock
- b) disconnect fuel pipes
- c) disconnect electrical system from electric pump
- d) remove locking nuts from firewall and engine

CAUTION: should a malfunction of the mechanical pump occur, it cannot be repaired. It has to be replaced.

INSTALLATION

gascolator, electric pump, mechanical pump :

invert removal sequence



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5.3 SHUT OFF FUEL VALVE

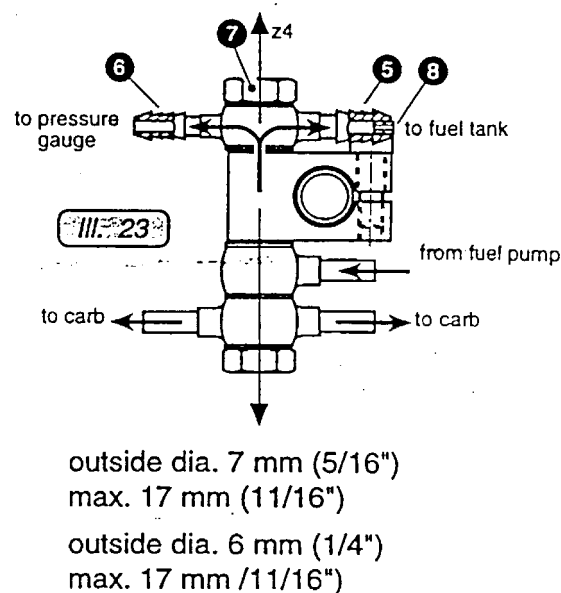
REMOVAL

- remove top screw of selector
- unloose the socket head screw on the stainless steel pipe, insert setscrew wrench from special trapdoor on the console side
- disconnect fuel pipes from cock
- unscrew metal pipes from cock
- remove cock from its housing

INSTALLATION

- invert removal sequence
- make sure that the selector ON/OFF position matches the OPEN/CLOSED position of the cock
- the hose clamps must be changed when operating on the cock
- mark all screws with anti-sabotage material

5.4 FUEL SWITCH



Drawing of fuel switch (from Bombardier-Rotax)



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CARBURETOR

Description : two vacuum carburetors "Bing 64/32": the incoming air sucks the membrane which causes valve and needle to rise.

There is no drive of the mixture control (MIXER); the carburetor valve is controlled by the vacuum created on a membrane by the air taken in by the carburetor and not by a manual gear (wire or stiff rod). When the carburetor is set in a correct way, the stoichiometric proportion air/carburetor is steady.

The synchronization of the carburetors must be performed by Rotax technical staff, using the vacuumometer sockets under the suction ducts. The carburetor setting is fixed and predetermined with only one variant: the needle position may be changed.

The carburetor has a circuit **for cold start** to enrich the air/fuel mixture controlled through the STARTING CARB. lever, working on an idling circuit duct.

CAUTION : some total or partial breakaways of the carburetors were supposed to be due to wrong installation, to vibrations caused by unbalanced propellers and to a bad synchronization of carburetors with subsequent engine bumping.

Frequent checks must be carried out. Leave a 7mm opening on the clamp for normal tightening; the clamp must be original and with its screw facing down.

The carburetor has also an overflow in the fuel bleeding system.

CAUTION : do not throttle overflow pipes in any way, make sure that they do not dump fuel directly on or near the exhaust manifolds.

5.5 FUEL AND AIR CIRCUIT IN THE CARBURETOR

The fuel circuit is made of a needle valve operated by the rocker controlled by floats located in the chamber. The fuel level in the chamber must be steady: floats which open and close the needle valve keep a steady fuel inflow to the engine.

The fuel level in the chamber can be modified if necessary.

CAUTION : modifying the fuel level will affect the titer of the air/fuel mixture

Lowering the fuel level in the chamber as to normal, the carburetion will be leant.
Increasing the fuel level in the chamber as to normal, the carburetion will be richer.

The fuel level must be measured from the upper chamber lip and it must be about 12 - 13 mm.

The air circuit is basically made of a suction filter and of the conduct conveying air to the engine. The purpose of this filter is to avoid that impurities get into the engine. The paper filter may be cleaned with a special detergent: "Filter Clean" ; it must be used stroking the filter both inside and outside, leaving it on for 10 minutes. The filter must then be plunged into a basinful of water and finally carefully rinsed with water avoiding to scrub it. The filter must be dried in quiet air.

Do not use compressed air to dry the filter.



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WARM AIR

Storm Century does not require the use of warm air to carburetor, since it utilizes a simple "warm air" system.

The "warm air" system avoids the need for a heat exchanger, taking air directly from the engine compartment. In this way, warmer and thinner air enters the cylinders, thus involving a slight drop of the engine power performance.

This system is considered simple because there is a "warm/cold" valve in "warm air" connected with the **throttle** and whenever required, the maximum power can be reached inserting cold air to carburetor. "STORM Century S-LSA" has no "warm/cold" valve.

CAUTION : a traditional heat exchanger may be installed for warm air to carburetor. If installed, the maximum jets in the carburetor shall be modified from 158 to 155.

CAUTION : icing may occur in the carburetor in particular circumstances, therefore avoid all flight conditions where icings are possible.

5.6 FUEL SYSTEM - Main components

Description	Q.ty	Builder	P/N	Fig.5-1
Gascolator fuel filter	1	AVTEK	10560	G
Electric fuel pump	1	HUCO	13-3000	H
Mechanical fuel pump	1	Rotax / Pierburg	720 971 55	J
Shut off fuel valve Lh &Rh wing tank	2	STA	E-07	F
Fuel pipes Ø 7 mm x 14	--	PIRELLI	MIL-H-6000 4	DWG
90° elbow size 1/4"	14	ELBOW	AN 848 4D	A/B/C/D/F/L
Straight pipe 1/4"	8	HOSE NIPPON	AN 840 4D	F
Straight pipe Vent "Rils" 1/4"	2	Nylon Tubing R	268P-04X02	A/B
90° elbow size 1/4"	2	HOSE ELBOW	AN 842 4D	K
Fuel drainage valve 1/4"	2	CURTIS DRAIN	CCA-1319	D



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CHAPTER 6

PROPELLER

See Propeller Maintenance Manual provided with this manual.

CHAPTER 7

UTILITY SYSTEM

Cabin Heat System

The cabin heat box has been engineered to be smoothest and efficient. Fabricated from aircraft – grade aluminium with stainless steel shaft, arm and flapper. It's installed to the forward side of the firewall.

The inlet warm air comes from the heat muff box fixed outside the exhaust system.

CAUTION: AERODUCT FLEXIBLE DUCTING MUST WITHSTANDS TEMPERATURE FROM
– 65° F TO OVER 450° F Check each 50 hours and replace after 500 hours



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CHAPTER 8

INSTRUMENTS AND AVIONICS

INSTRUMENT PANEL - GENERAL DESCRIPTION

ATTITUDE AND NAVIGATION CONTROL INSTRUMENTS – INSTRUMENT PANEL

A. All flight and navigation instruments, except the magnetic compass, are installed on the left part of the instrument panel.

- (1) The frontal reading compass is set in the upper part of the instrument panel, the residual deviation table is underneath.
- (2) The anemometer or air speed indicator is standard type, with Knots scale graduated to 160 Knots; it is feeded by the dynamic and the static air.-
- (4) The altimeter has three pointers: the shortest one marks the ten thousands, the the intermediate one the thousands and the longest one the hundred and the ten foot.
A turning button in the lower left part allows to set the pressure values which will be read in millibar on a small opening on the right side of the instrument.- (QFE - QNH - QNE). It is feeded by the air taken in from the statics.
- (4) The rate-of-climb indicator, standard type, is also feeded by the static air; it is calibrated in ft/min with a full scale value of 2.000 ft/min.-
- (5) The bank indicator is a turn coordinator electric.-
- (6) The optional artificial horizon is electric or vacuum operated and has a reference aircraft profile displaying the aircraft movements; the aircraft profile may be moved vertically, depending on the pilot's height to avoid parallax errors. It is operated through a knob on the lower part of the instrument .-
- (7) The optional directional gyro has a vertical revolving dial, graduated with 05° - 10° and 30° intervals .- It is electric or vacuum operated and has a knob in its lower left part to select route or heading to be matched with the magnetic compass.



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8.1 INSTRUMENT PANEL

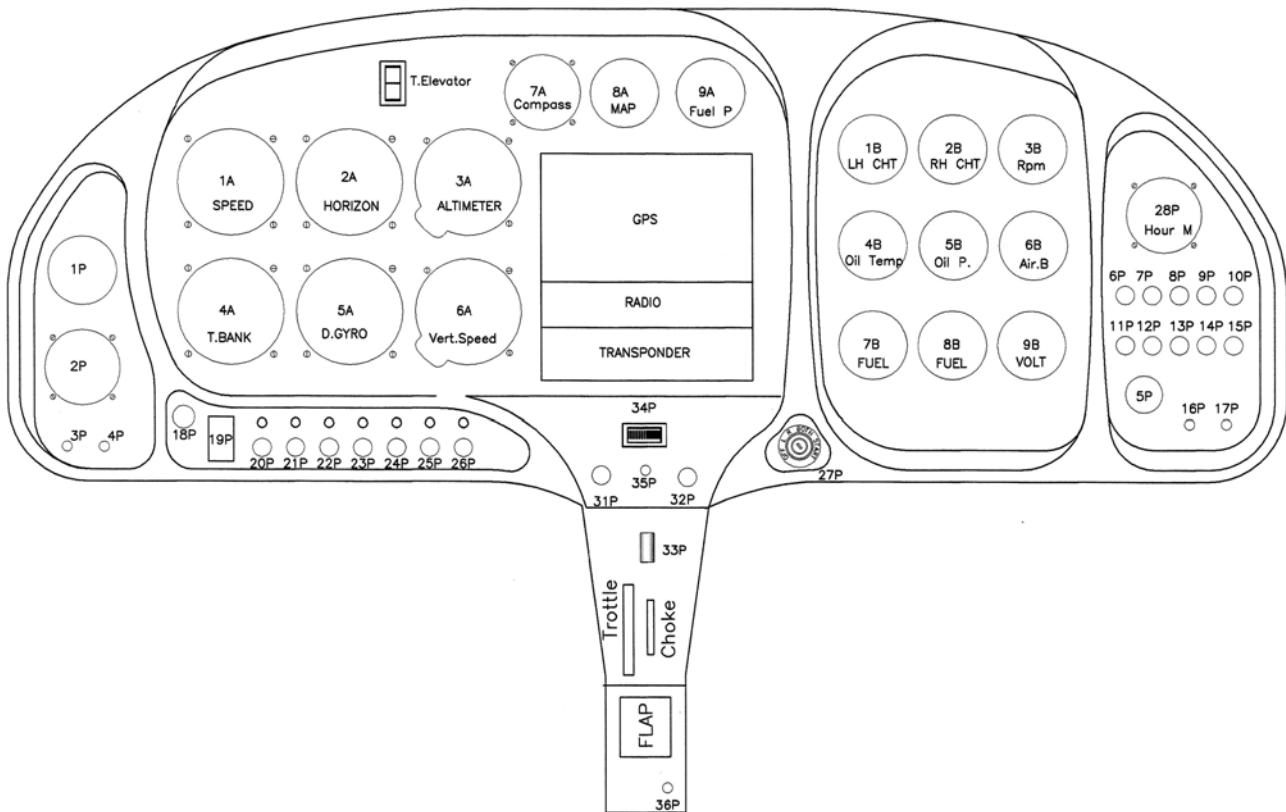


Fig.8-1 DRAWING OF INSTRUMENT PANEL

DESCRIPTION OF INSTRUMENT PANEL

Following instruments are located on the “upper” part of the instrument panel:

- on the left: basic flight and navigation instruments
- on the right: engine instruments and breakers
- centrally: radio sets, GPS and transponder

LEFT SIDE OF INSTRUMENT PANEL

- N. 1P - OPTION: Vacuum gauge indicator for the two Gyro instruments:
Attitude Gyro & directional gyro
- N. 2P - OPTION : Fuel Flow



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CENTRAL PART OF INSTRUMENT PANEL

- N. 1A - Airspeed
- N. 2A - OPTION : Attitude Gyro
- N. 3A - Altimeter
- N. 4A - Turn Coordinator
- N. 5A - OPTION : Directional gyro.-
- N. 6A - Vertical Speed
- N. 7A - Compass
- N. 8A - OPTION : MAP
- N. 9A - OPTION : Fuel Pressure
- N.10A - OPTION : GPS
- N.11A - Transceiver
- N.12A - Transponder

RIGHT SIDE OF INSTRUMENT PANEL

- N. 1B - CHT LH
- N. 2B - CHT RH
- N. 3B - RPM
- N. 4B - Oil Temperature
- N. 5B - Oil Pressure
- N. 6B - OPTION Airbox Temperature
- N. 7B - Fuel Gauge LH Tank
- N. 8B - Fuel Gauge RH Tank
- N. 9B - Voltmeter
- N.28P - Hourmeter

SWITCHES : LOWER LEFT SIDE OF INSTRUMENT PANEL

- N. 18P - Alternator RED light Alarm
- N. 19P - MASTER General switch "ON/OFF"
- N. 20P - Fuel pump switch
- N. 21P - NAV / COM Switch
- N. 22P - GYROS if installed
- N. 23P - Strobe Lights if installed
- N. 24P - NAV Lights if Installed
- N. 25P - Landing Light if installed
- N. 26P - AUX
- N 27P - KEYED IGNITION SWITCHE (Lower central Right of Instrument Panel).

CENTRAL LOWER PART OF INSTRUMENT PANEL: CONSOLE

- N 31P - CABIN HEAT (Push = OFF)
- N 32P - CARBURATORS HEAT (Push = OFF) if installed
- N 33P - FUEL VALVE (ON = OPEN - OFF = CLOSED)
- N 34P - RUDDER TRIM SWITCH
- N 35P - ELEVATOR RUDDER TRIM SELECTOR (Pilot or Co-pilot)
- N 36P - INTERCOM SELECTOR



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HEAD SET CONNECTORS & OUTLET 12 Volts

N 3P & 4P HEAD SET LOWER LEFT SIDE OF INSTRUMENT PANEL
N 5P OUTLET 12 Volts
N16p & 17P HEAD SET LOWER RIGHT SIDE OF INSTRUMENT PANEL

CENTER CONSOLE

THROTTLE & STARTER CHOKE
FLAP SYSTEM

STABILATOR TRIM INDICATOR : In Vertical position LH upper side of Instrument Panel

RUDDER TRIM INDICATOR: In Horizontal position LH upper side of Instrument Panel

BREAKERS LOCATED ON THE RIGHT SIDE OF INSTRUMENT PANEL

6P MASTER 30 A
7P FUEL PUMP 5A
8P NAV/COM 5A
9P GYRO (OPTION) 2A
10P INSTRUMENT/RPM 2A
11P TRIM 2A
12P FLAP 4 A
13P LANDING LIGHT (OPTION) 10A
14P STROBE/NAV LIGHT (OPTION) 10 A
15P OUTLET 12V 5A

INSTRUMENT PANEL AND CONSOLE COVER REMOVAL

REMOVAL CENTRAL PANEL

Remove screws around the instrument panel
Remove wirings connectors.
Remove instrument panel from its seat
Disconnect and mark all instrument pipes (Fuel lines for MAP & Fuel Pressure PITOT lines).

Remove instrument panel

IIINSTALLATION

Invert removal sequence



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STORM CENTURY S-LSA

CONSOLE COVER

REMOVAL

- Unscrew and remove throttle handgrips
- Remove screws locking the console cover to the instrument panel and to the structure
- Remove side screws
- Remove head screw on fuel selector and remove selector
- Remove parking brake selector
- Remove console cover

INSTALLATION

- Invert removal sequence



MAINTENANCE MANUAL ***STORM CENTURY S-LSA***

8.2 MAIN INSTRUMENTS

Fig.8-2 MANIFOLD PRESSURE GAUGE (OPTION)

STA - P/N 10-25145

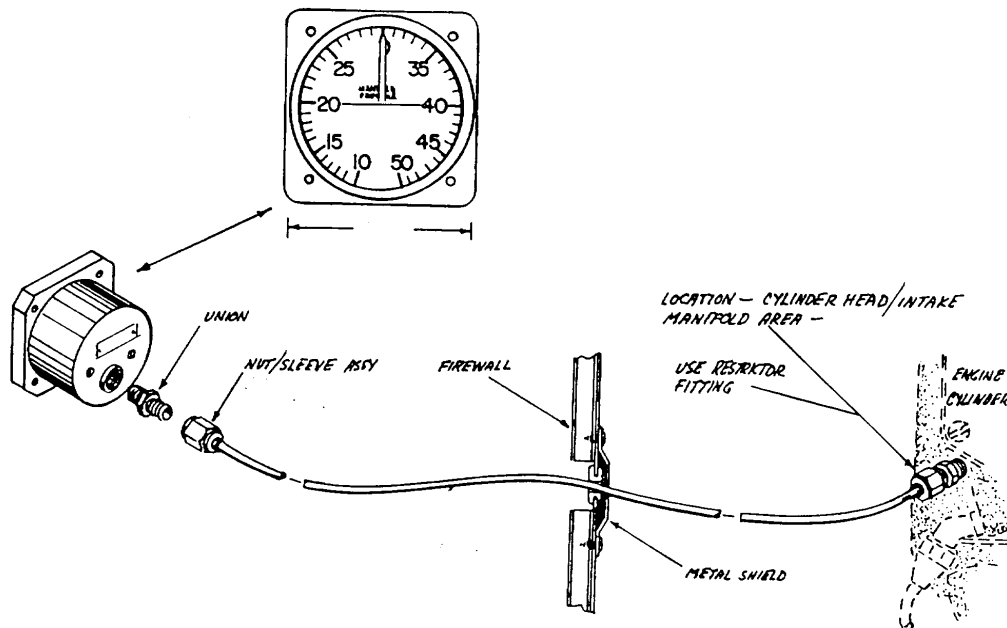
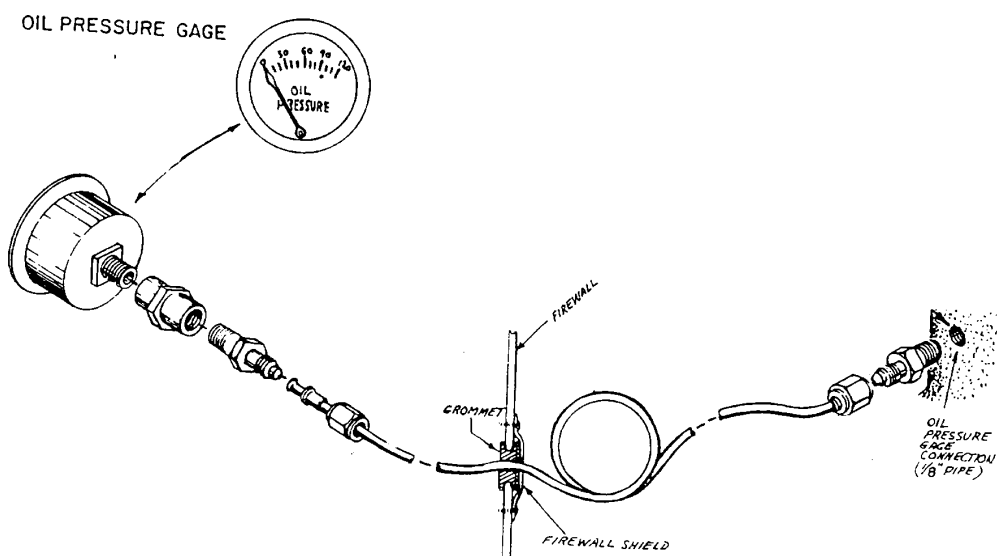


Fig.8-3 OIL PRESSURE GAUGE

STA - P/N 956 520





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Fig.8-4 OIL TEMPERATURE GAUGE

STA - 956 525

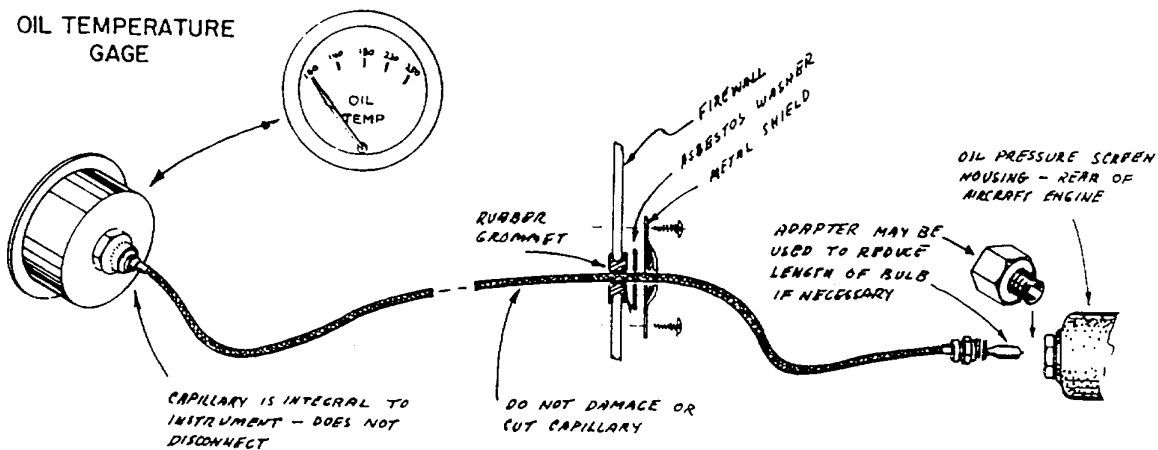
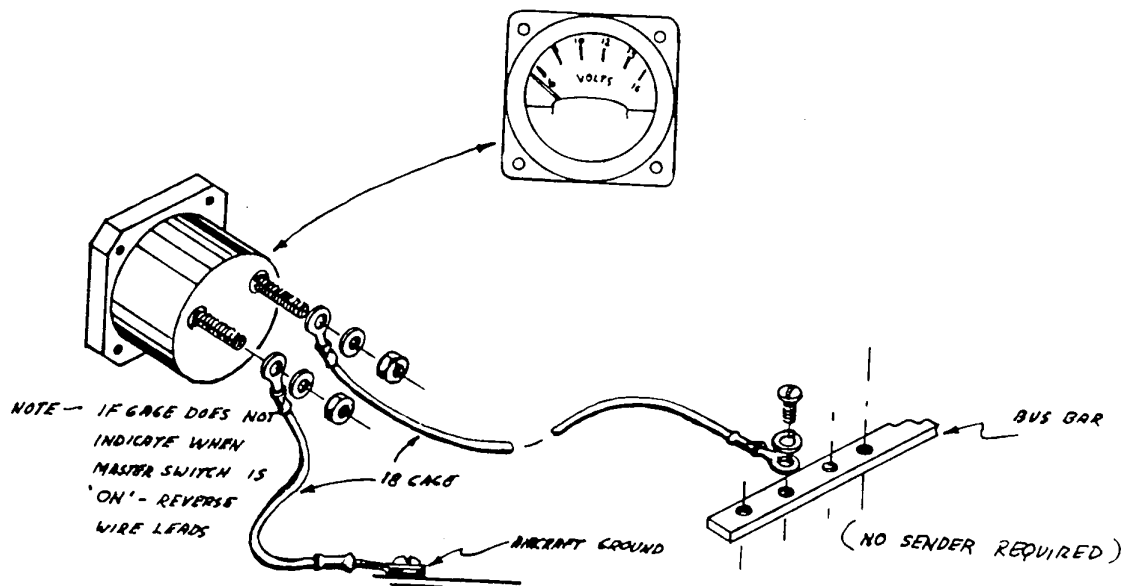


Fig.8-5 VOLTMETER

STA - 332.304/015/001 8-16 V.





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STORM CENTURY S-LSA

Fig.8-6 FUEL GAUGE

STA - P/N 10-22201

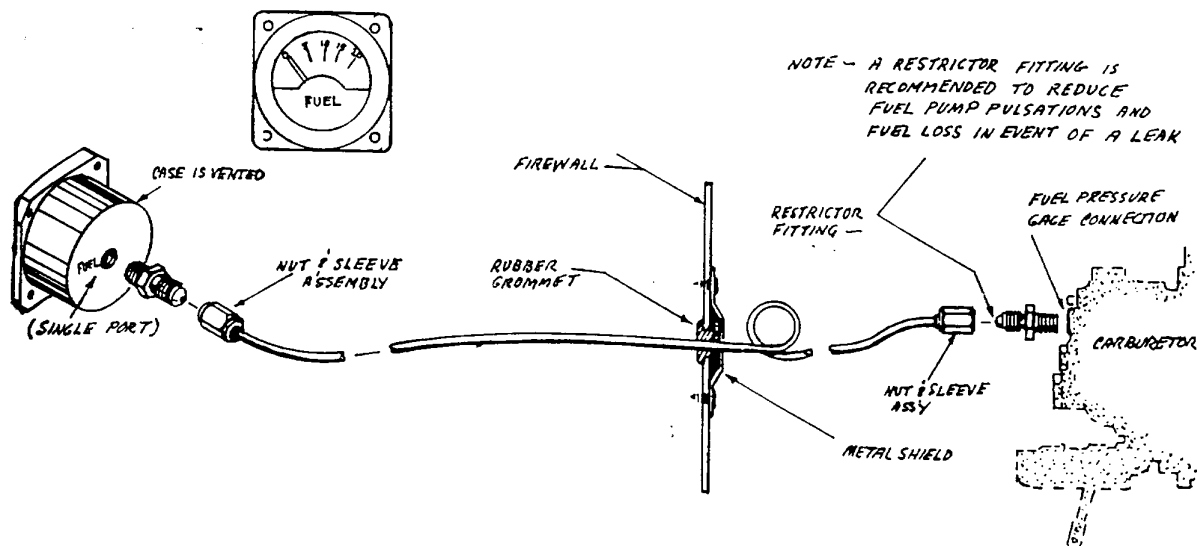
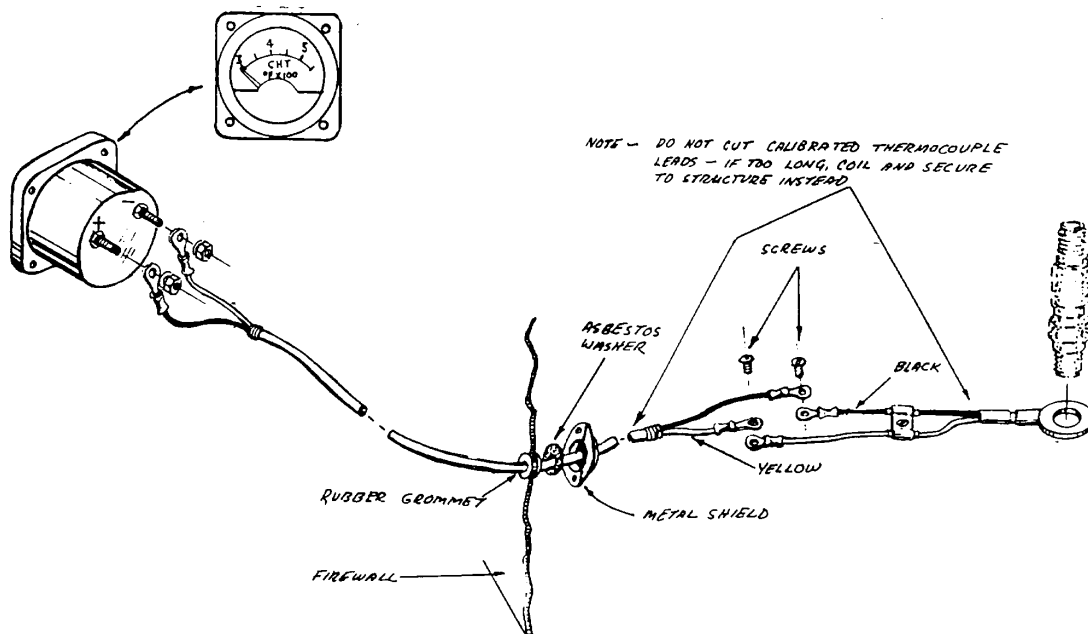


Fig.8-7 CYLINDER HEAD TELETHERMOMETER

STA - P/N 956 525





MAINTENANCE MANUAL

RALLY S-LSA

8.3 RADIO

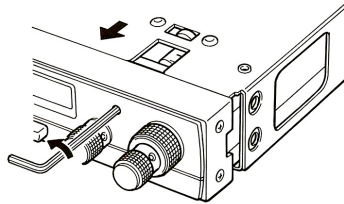
ICOM IC-A200 RADIO SET REMOVAL AND INSTALLATION (from ICOM IC-A200 Installation Manual)

i 5 REMOVAL AND INSTALLATION

■ Transceiver removal

The IC-A200 is easily removed from the mounting rack, if required.

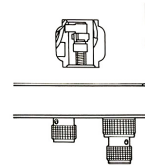
- 1) Insert a 3/32 in allen wrench into the hole in the front panel.
- 2) Rotate the wrench counterclockwise until the front panel moves slightly from the mounting rack.



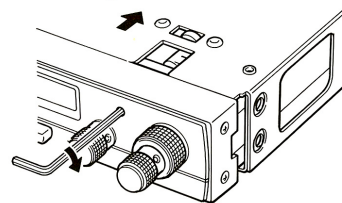
- 3) Slowly pull the transceiver out from the mounting rack.

■ Transceiver installation

- 1) Visually confirm that the metal catch on the top of the transceiver is as shown below.



- 2) Slowly insert the transceiver into the mounting rack.
- 3) Insert a 3/32 in allen wrench into the hole in the front panel.
- 4) Rotate the wrench clockwise until the screw stops.
 - **DO NOT** overtighten the screw.



■ General

- Frequency range : 118.000~136.975 MHz
- Mode : AM (6K00A3E)
- Tuning steps : 25 kHz, 50 kHz or 1 MHz
- Number of memory channels : 9
- Antenna impedance : 50 Ω
- Power supply requirement : 13.8 V DC $\pm$ 15% (negative ground)
- Current drain :

Transmit		2.6 A
Receive	Max. audio output	600 mA
	Squelched	320 mA

- Usable temperature range : $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- Frequency stability : $\pm 0.0015\%$ ($-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$)
- Dimensions : 160(W) $\times$ 34(H) $\times$ 271(D) mm
6.3(W) $\times$ 1.3(H) $\times$ 10.7(D) in
(projections not included)

- Weight : 1.1 kg; 2.4 lb

■ Transmitter

- Output power : 7 W (Carrier power)
- Microphone impedance : 600 Ω

■ Receiver

- Receive system : Double-conversion superheterodyne
- Intermediate frequencies : 1st 32.455 MHz
2nd 455 kHz
- Sensitivity : 2 μV for 6 dB S/N
(with 1 kHz, 30% modulation)
- Spurious rejection : -80 dB
- Audio output power : 5 W with a 4 Ω load
100 mW with a 500 Ω load

All stated specifications are approximate and subject to change without notice or obligation.



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STORM CENTURY S-LSA

BENDIX / KING KY97A (OPTION) TSO RADIO SET DESCRIPTION

In addition to ICOM IC-A200, the STORM LSA can be equipped with a "com" *BENDIX / KING* KY97A TSO radio set, which allows to select an operating frequency and stand-by in a frequency range from 118 MHz to 136.975 MHz (760 channels).- The radio set is in the lower central part of the instrument panel. To remove radio set from panel, use the special setscrew wrench, 1/2 turn; this will lock or unlock the radio set in its position on instrument panel.

SPECIFICATIONS

KY 97A : Operated at 14 volts
 TSO compliance: Transmitter: TSO C37c, Class 3 or 4
 Receiver : TSO C38c, Class A&C
 Dimensions: Height : 1.35 inches (3,43 cm)
 Width : 6.312 inches (16,032 cm)
 Depth : 10.776 inches (27,37 cm)
 Weight: 2.8 lbs (1,27 Kg)
 Temperature Range: - 20° C to + 55° C with short time operation at + 70° C
 Frequency Range: 118.0 to 136.975 MHz in 25 KHZ increments
 Power output: 5 Watt minimum
 Modulations: 70% modulation with 98% limiting. Less than 15% distortion at 70% modulation.
 Duty Cycle: 1 minute on, 4 minutes off.
 Receiver Sensitivity: 2uV (hard) or less for 6dB s+N/N with 1 KHz tone modulated 30%.

Antenna	Broad Band p/n av-529
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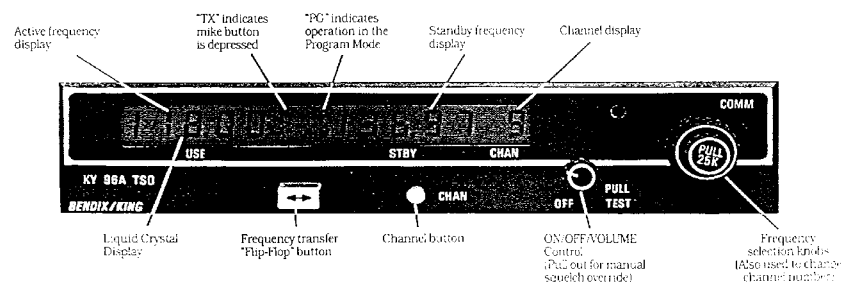


Fig.8-8 KY97A TSO radio set



MAINTENANCE MANUAL

STORM CENTURY S-LSA

P1/N *BENDIX / KING* KY97A TSO RADIO SET

Description	Qty	P/N Reference
KY 97 A TSO <i>Bendix / King</i> set	1	064-01051-0070
		PCN-0-000-086
Radio kit KY 196 A J180 adaptable to K 97 A TSO	1	050-02600-0000
Terminals	24	030-01107-0031 J 352
Terminal board	1	030-01094-0080
o-ring (seger)	1	090-0019-0007 J 352
Screws	2	089-05903-0007 J 352
Nuts	6	089-02353-0001 J 352
Nut	1	089-02013-0037 J 163
Washer	1	089-08094-0030 J 352
Antenna connector	1	030-00101-0002 J 352
Washer	1	089-08168-0002 J 352
Parker screw block	4	089-002051-0024 J 225
Screws	6	089-06012-0008 J 225
Self-locking nut	1	089-02191-0022 J 352
"com 1" tag	1	057-02193-0001 J 352
"com 2" tag	1	057-02193-0002 J 352
Electrovert fairlead	1	091-00072-0002 J 352
Screw	1	089-05907-0008 J 352



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BENDIX / KING KY97A TSO RADIO SET ELECTRICAL EQUIPMENT

NOTES - BENDIX / KING KY9A TSO RADIO SET

1. Intercom operation requires a mic which provides audio out with the mic key deenergized.
2. All wires **24 AWG** unless otherwise noted.
3. Terminate audio shields at one end only.
4. All grounds are airframe grounds unless otherwise noted.
5. Aircraft power wiring should be two **18 AWG** to the circuit breaker and power ground should be two **18 AWG** to ground.
6. Switched A/C power **PINS P** and **13** and **27,5 v** power **PINS N** and **12** must be jumpered together with **20 AWG minimum**.
7. Remote frequency transfer/remote channel increment: a momentary ground at **PIN L** will cause the radio to increment to the next channel in memory and display it in the STBY window. A momentary ground at **PIN 11** will transfer the use and stby frequencies. A two position spring loaded rocker switch or two separate momentary pushbutton switches may be used at the installer's option.
8. For tracking of **28 v** lighting bus, connect DIM SELECT (**PIN A**) to ground.
For tracking of **14 v** lighting bus, leave DIM SELECT (**PIN A**) **unconnected**.
When panel dimmer is turned all the way down backlighting goes to half brightness.
If continuous half brightness is desired **PIN A** can be connected to aircraft supply.
If no connection is made to the panel dimmer bus and dim select.
The backlighting will be at half brightness.
9. KY 97 A models 064-1052-50/51/60/61/70 have **8 w - 4 ohm** audio available.
Rated audio is **50 mW** at **PIN N** of these units.

Rated audio of these sets at **PIN N** is **50 mW**.

(from Bendix / King)

**CAUTION: for installation or maintenance problems please refer to:
BENDIX/KING DEALER**



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STORM CENTURY S-LSA

8.4 TRANSPONDER

GARMIN GTX-320A TRANSPONDER DESCRIPTION

ELECTRICAL CONNECTIONS

All electrical connections, except for the antenna, are made through a single, 25 pin, D subminiature connector. Figure 2-1 defines the electrical characteristics of all input and output signals and identifies the cable requirements for each signal. Required connector and associated hardware are supplied in the installation kit (P/N 010-10160-00). See figures B4 and B5 for interconnect wiring diagrams.

Larger pins are supplied for the connector to provide power and ground at pins 13, 14, 15, and 25 when required. Refer to Figure B4, Note 3.

Pin Contact Part Numbers

	25 pin connector (P102)	
Wire Gauge	18 AWG	20-24 AWG
GARMIN P/N	336-00023-00	336-00022-00
Military P/N	N/A	M39029/63-368
AMP	N/A	205090-1
Positronic	FC6018D	M39029/63-368
ITT Cannon	See Note 3	031-1007-042

Recommended Crimp Tools

Wire Gauge	Hand Crimping Tool	18 AWG		20-24 AWG	
		Positioner	Insertion/ Extraction Tool	Positioner	Insertion/ Extraction Tool
Military P/N	M22520/2-01	N/A	M81969/1-02	M22520/2-08	M81969/1-02
Positronic	9507	9502-11	M81969/1-02	9502-5	M81969/1-02
ITT Cannon	995-0001-584	N/A	N/A	995-0001-604	980-2000-426
AMP	601966-1	N/A	N/A	601966-5	91067-2
Daniels	AFM8	K774	M24308/1-02	K13-1	M24308/1-02
Astro	615717	N/A	M81969/1-02	615724	M81969/1-02

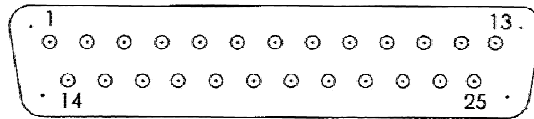
NOTES

1. Insertion/extraction tools from ITT Cannon are all plastic; others are plastic with metal tip.
2. Non-GARMIN part numbers shown are not maintained by GARMIN and consequently are subject to change without notice.
3. Alternate contacts for 18 AWG wire: As an alternative to the Positronic contacts listed (and provided in the installation kit), the installer may use contacts made by ITT Cannon under P/N 031-1007-001. These contacts require the use of a different crimp tool positioner than shown in the table, with the part numbers as follows: Daniels P/N K250, Astro P/N 616245, or ITT Cannon P/N 980-0005-722.
4. All wires must be passed through the backshell before being assembled to connector.
5. In aircraft equipped with a dropping resistor for +28 VDC buss voltage, make sure the dropping resistor is bypassed.



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PIN	DESCRIPTION
1	Not Used
2	Do Not Connect
3	Altitude A1
4	Altitude C2
5	Altitude A2
6	Altitude A4
7	Altitude C4
8	External Ident
9	Altitude B1
10	Altitude C1
11	Altitude B2
12	Altitude B4
13	Ground
14	Switched Power Output
15	Aircraft Power (+11 to +33 VDC)
16	External Standby
17	External Suppression (Suppress I/O-GTX 320A)
18	Altitude D4
19	Not Used
20	Not Used
21	Not Used
22	Not Used
23	28 V Lighting
24	14 V Lighting
25	Ground

Figure 2-1. DB-25 Pin-Out Definitions

Continued Airworthiness

Other than for regulatory periodic functional checks, maintenance of the GTX 320/320A is "on condition" only. Refer to the GTX 320 and GTX 320A Maintenance Manuals. Periodic maintenance of the GTX 320/320A is not required.

This section provides assistance to the installing agency in preparing Instructions for Continued Airworthiness (ICA) in response to Bulletin Number HBAW 98-18, "Checklist for Instructions for Continued Airworthiness for Major Alterations Approved Under the Field Approval Process", effective 10/7/98.

Aviation Authority approved installers are hereby granted permission to reference appropriate service instructions and excerpts from this Installation Manual to accomplish the Instructions for Continued Airworthiness. This permission does not construe suitability of the documents. It is the applicant's responsibility to determine the suitability of the documents for the ICA.

Following is a suggested ICA for a GARMIN GTX 320/320A unit installation. Some of the checklist items do not apply, in which case they should be marked "N/A" (Not Applicable).



MAINTENANCE MANUAL

STORM CENTURY S-LSA

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS, GARMIN GTX 320/320A

1. **Introduction** [Aircraft that has been altered: Registration (N-) number, Make, Model and Serial Number]

Content, Scope, Purpose and Arrangement: This document identifies the Instructions for Continued Airworthiness for the modification of the above aircraft by installation of a GARMIN GTX 320/320A. Applicability: Applies to aircraft altered by installation of the GARMIN GTX 320/320A. Definitions/Abbreviations: None, N/A.

Precautions: None, N/A.

Units of Measurement: None, N/A.

Referenced Publications: GARMIN GTX 320/320A Installation Manual, P/N 190-

00133-01 GARMIN GTX 320 Maintenance Manual, P/N

190-00133-02

GARMIN GTX 320A Maintenance Manual, P/N 190-00133-08

GARMIN STC # [applicable STC number for the specific model installed, refer to Appendix B of this manual].

GARMIN GTX 320/320A Pilot's Guide, P/N 190-00133-09.

Distribution: This document should be a permanent aircraft record.

2. **Description of the Alteration**

Installation of the GARMIN GTX 320/320A, with interface to Encoding Altimeter or Blind Encoder. Refer to section 2.4 and Appendix B of Installation manual for interconnect information. Antenna installation, removal and replacement should be in accordance with applicable provisions of AC43.13-1B and 43.13-2A.

3. **Control, Operation Information** Refer to the GTX 320/320A Pilot's Guide.

4. **Servicing Information**

N/A

5. **Maintenance Instructions**

Maintenance of the GTX 320/320A is 'on condition' only. Periodic maintenance is not required. Refer to the GTX 320 and the 320A Series Maintenance Manuals.

6. **Troubleshooting Information**

Refer to the GTX 320 and the GTX 320A Maintenance Manuals.

7. **Removal and Replacement Information**

Refer to section 2.4 of Installation manual. If the unit is removed and reinstalled, a functional check of the equipment should be conducted in accordance with section 3.2 of Installation manual.

8. **Diagrams**

Refer to Appendix B of Installation manual.

1. **Special Inspection Requirements** N/A



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10. Application of Protective Treatments

N/A

11. Data: Relative to Structural Fasteners

Antenna installation, removal and replacement should be in accordance with applicable provisions of AC43.13-1A and 43.13-2A. Also, refer to section 2.3 of Installation manual.

12. Special Tools

N/A

13. This Section is for Commuter Category Aircraft Only

- A. Electrical loads: Refer to section 1.3 of this manual.
- B. Methods of balancing flight controls: N/A.
- C. Identification of primary and secondary structures: N/A.
- D. Special repair methods applicable to the airplane: Antenna installation, removal, and replacement should be in accordance with applicable provisions of AC43.13-1B and 43.13-2A.

14. Overhaul Period

No additional overhaul time limitations.

15. Airworthiness Limitation Section

N/A.

16. Revision

To revise this ICA, a letter must be submitted to the local FSDO with a copy of the revised FAA Form 337, and revised ICA. The FAA inspector accepts the change by signing Block 3 and including the following statement:

"The attached revised/new Instructions for Continued Airworthiness (date _____) for the above aircraft or component major alteration have been accepted by the FAA, superseding the Instructions for Continued Airworthiness (date _____)."

17. **Assistance** Flight Standards Inspectors have the resources to respond to questions regarding the ICA.

Implementation and Record Keeping

For major alterations performed in accordance with FAA field approval policy, the owner/operator operating under Part 91 is responsible for ensuring that the ICA is made part of the applicable section 91.409 inspection program for their aircraft. This is accomplished when a maintenance entry is made in the aircraft's maintenance record in accordance with section 43.9. This entry records the major alteration and identifies the original ICA location (e.g., Block 8 of FAA Form 337, dated _____) along with a statement that the ICA is now part of the aircraft's inspection/maintenance requirements.



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STORM CENTURY S-LSA

BENDIX / KING KT76A (OPTION) TRANSPONDER DESCRIPTION

In addition to GARMIN GTX-320A Transponder, the STORM LSA can be equipped with the BENDIX/KING KT 76 A transponder - module "A" that can be converted into module "C" - is in the low central part of the instrument panel, under the radio set. To remove or fit the transponder in its housing, use a setscrew wrench doing ½ turn.

SPECIFICATIONS

Applicable documents	:	TSO C74b, RTCA DO-138
Temperature range	:	- 15° to + 55° C for continuous operations
Humidity test	:	Composite test of 95% at 50°C, and 85% at 38°C for 48 hours
Weight	:	3.1 lbs. (1,41 Kg) including mounting rack and KA 60 antenna
Installation space	:	6.25" (15,87 cm) x 1.63" (4,14 cm) x 10.00" (25,40 cm)
Power requirements	:	14 volt-1.8 A max. 1.1 A Standby
Altitude	:	tested up to 35,000 feet, which exceeds TSO requirements
Transmitter frequency	:	1090 MHz +/- 3 MHz
Transmitter power	:	200 watts peak minimum
Receiver frequency	:	1030 MHz (crystal controlled local oscillator)
Receiver sensitivity	:	- 74 dBm (nominal) - 72 dBm (minimum for 90% reply)
Mode A capability	:	4096 identity codes plus special identifications pulse
Mode C capability	:	Accepts standard ICAO altitude transmission Code digitizer output, reporting in 100-foot increments from - 1000 feet up to 63,000 feet .
Side lobe suppression	:	3 pulse

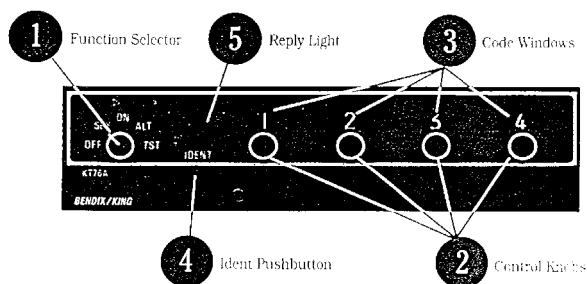


Fig.8-9 TRANSPONDER BENDIX / KING KT 76 A



MAINTENANCE MANUAL

STORM CENTURY S-LSA

TRANSPONDER *BENDIX / KING* KT 76 A

Description	Qty	P/N Reference	
Unit KT 76 A S/N 113899 <i>Bendix / King</i> T-027 I-021 ATE Z397 F012	1	066-01062-0010	
Antenna Transponder KA - 60 <i>Bendix / King</i>	1	071-1174-00 0897	
Antenna plate KA-60	1	047-4570-00	
Kit 76A / 78A J 180	1	050-01577-0000	
Washer	1	089-08168-0002	J 352
Pin	1	030-01096-0000	J 352
Washer	1	089-08094-0030	J 352
Screws	6	089-06012-0008	J 352
Nut	1	089-02013-0037	J 163
Screws	1	089-05903-0007	J 352
Nuts	6	089-02353-0001	J 163
Washer	1	089-08027-0030	J 163
o-ring seger	1	090-00019-0007	J 225
terminals	24	030-01107-0024	J 352
Antenna cable terminal	1	030-00005-0000	J 225
Split washer	1	089-08110-0034	J 352
Screw	1	089-05907-0006	J 352
Antenna wiring	1	030-00101-0002	J 225
Terminal board		030-01094-0002	J 225
Clamping screws		091-00031-0005	J 352



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STORM CENTURY S-LSA

BENDIX / KING KT 76 A TRANSPONDER - ELECTRICAL SYSTEM

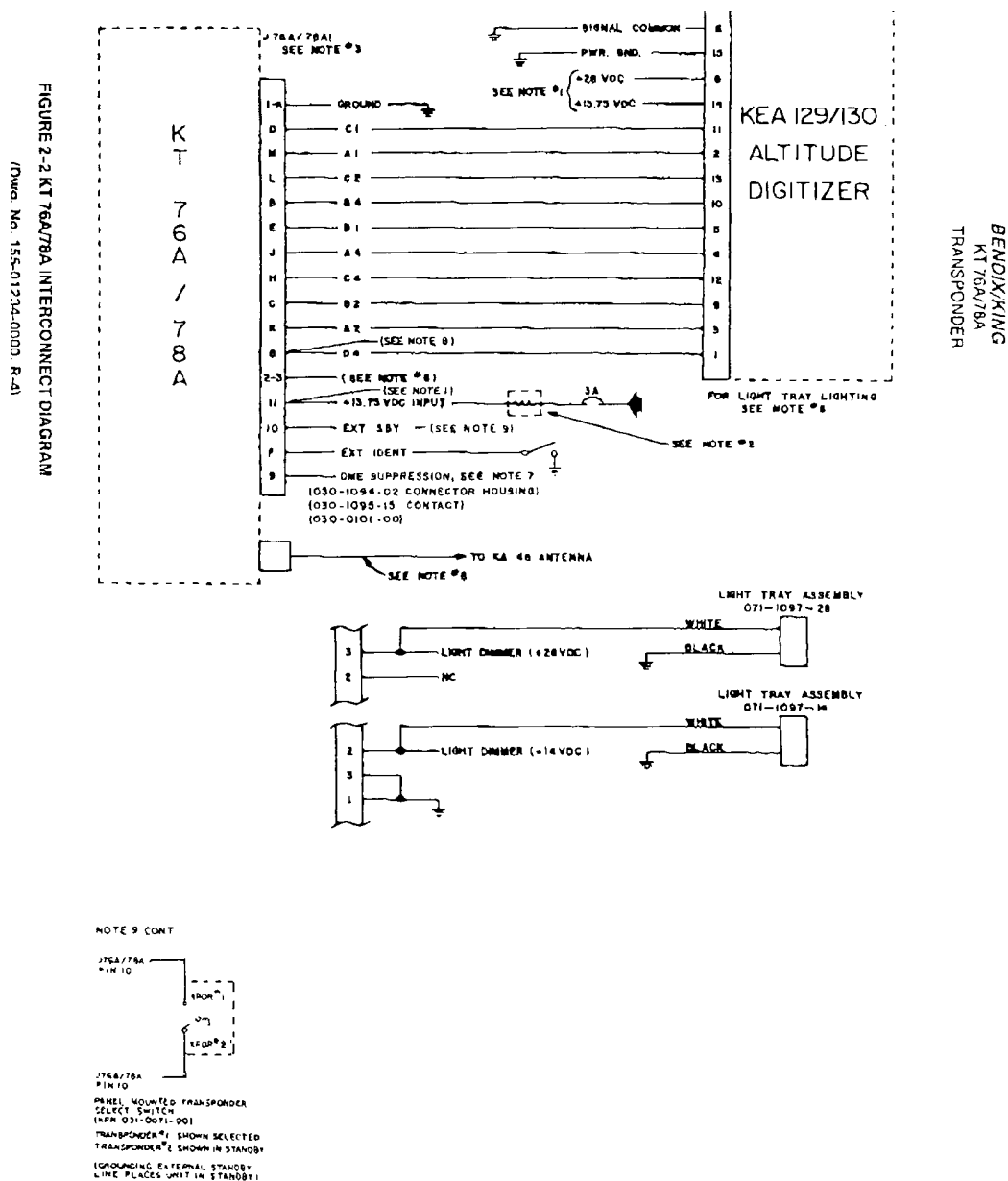


Fig.8-10 BENDIX / KING KT 76 A - KT 78 A ELECTRICAL SYSTEM DIAGRAM



MAINTENANCE MANUAL

STORM CENTURY S-LSA

NOTES - TRANSPONDER *BENDIX / KING* KT 76 A

- 1- Use **PIN 8** for 28 VDC or **PIN 14** for 13,75 VDC .
Do not connect PIN 8 and PIN 14.
Together do not connect **PIN 8 or PIN 14** to the non-switched input on **PIN 11** of the KT 76A / 78A because damage to the altitude digitizer could occur.
If **PIN 14** is connected to **PIN 11** of the kt 76A/78A in A 28 VDC aircraft power system when the transponder is turned off. The voltage at **PIN 11** will be approximately 28 VDC through the series dropping resistors connect the input of the altitude digitizer to a switchable voltage.
- 2- 14 to 28 VDC changeover kit. Mount on aircraft firewall or other structural member away from the avionics stack.
- 3- Connector terminals number is specified on connector.
- 4- All wires should be 22 AWG
- 5- Route the antenna cable as far as practical from any harness bundle. In no case should the antenna cable be laced into a harness bundle.
- 6- Connector wiring for light dimmers.
- 7- Accepts positive going suppression pulses. Refer to KT 76A/78A **Service Bulletin 3** revised for incorporation of the suppression circuitry if the KT 76 A is below S/N 14,000 and the KT 78 A is below 7,000.
- 8- To be used with digitizer rated at 31,000 feet and above there is no valid information on the D4 below 31,000 feet. No damage will occur if D4 is connected to a digitizer rated below 31,000 feet.
- 9- EXT SBY when tied to ground will place that set in SBY MODE.
KT 76 A S/N 35,900 and above with MOD S status provides EXT SBY function.
S/N 35,899 and below and all KT 78 A sets, MOD S may be incorporated.

(from Bendix / King)

NOTE : *the transponder electrical system shall be protected with a 3 amp. fuse.*

CAUTION: for installation or maintenance problems please refer to:
BENDIX/KING DEALER



MAINTENANCE MANUAL

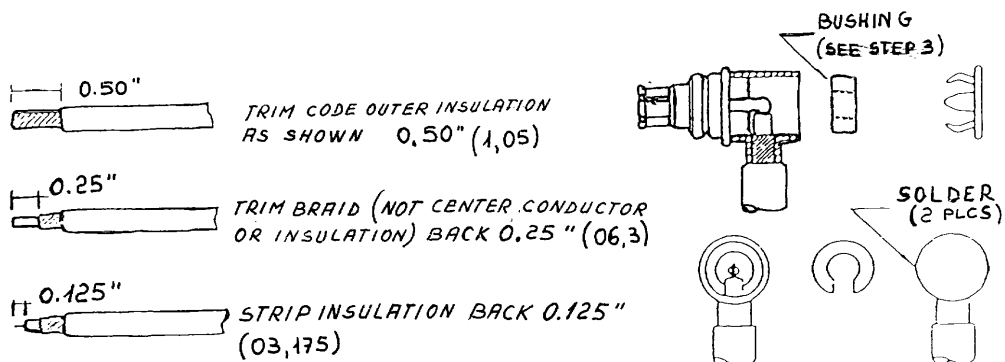
STORM CENTURY S-LSA

RF CONNECTOR ASSEMBLY INSTRUCTION SHEET *Bendix / King* KT 76 A

Warning

KT 70, KT 71, **KT 76 A**, KT 76C, KT 78A, and KT 79 ARE NOT INTERCHANGEABLE WITH A KT 76 or KT 78.

The KT 76/78 and KT 70/71/**76A**/76C/78A/79 installations are different because the KT 70/71/**76A**/76C/78A/79 transponders use an improved **RF connector** (with a 50 ohm matching "C" bushing) that provides for a lower VSWR. The KT 70/71/**76A**/76C/78A/79 are built and aligned at the factory for use with the improved **RF connector**. The KT 76 and KT 78 must use the unimproved **RF connector** (without the 50 ohm matching "C" bushing). The KT 76 radio telephone also uses the RF connector without the 50 ohm matching "C" bushing. Should any of these sets be used with an **RF connector** other than the appropriate one, transmitter frequency will be pulled to one side or the other. For this reason the correct connector must be used. For further installation information on **Bendix / King** equipment refer to the individual set's installation manual.



1. insert cable (center conductor, dielectric and shield braid) through the sidewall of the connector and solder the center conductor to the center pin of the connector.

NOTE : *When using loss cable, it may be necessary to flatten the solid wire center conductor slightly so it can fit the slot on the RF CONNECTOR center pin.*

2. Heat the outside of the connector sleeve and at the same time apply solder between the braid and the sleeve. Continue to apply heat until the solder flows evenly.
3. When the cable is to be used with a KT 70, KT 71, **KT 76 A**, KT 76C, KT 78A or KT 79, the 50 ohm matching bushing must be inserted into the end of the fitting. Discard the 50 ohm bushing if the cable is to be used with a KT 76, KT 78 or KT 96.
4. Insert connector cap and tack solder in two places.





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STORM CENTURY S-LSA

8.5 SYSTEM PRESETTING FOR GPS UNITS (OPTION)

A G.P.S. (Global Positioning System) unit, a satellite bearing system, may be installed on the aircraft.

The electrical system presetting requires a 2 amp. fuse on the electric line and a switch to disconnect the G.P.S. apart from other uses.

- 1- Connect red wire to positive pole of power supply DC 8-40 V
- 2- Connect black wire to ground
- 3- Connect white wire to GPS data output
- 4- Connect brown wire to GPS peripheral input

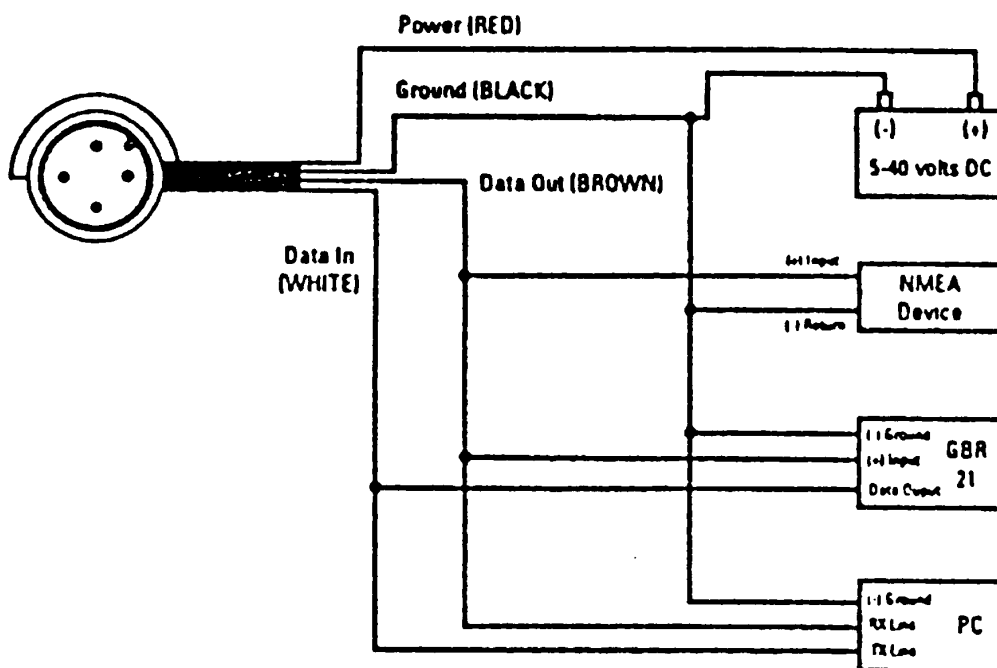


Fig.8-12 GPS ELECTRICAL SYSTEM PRESETTING DIAGRAM



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CHAPTER 9

ELECTRICAL SYSTEM DIAGRAM

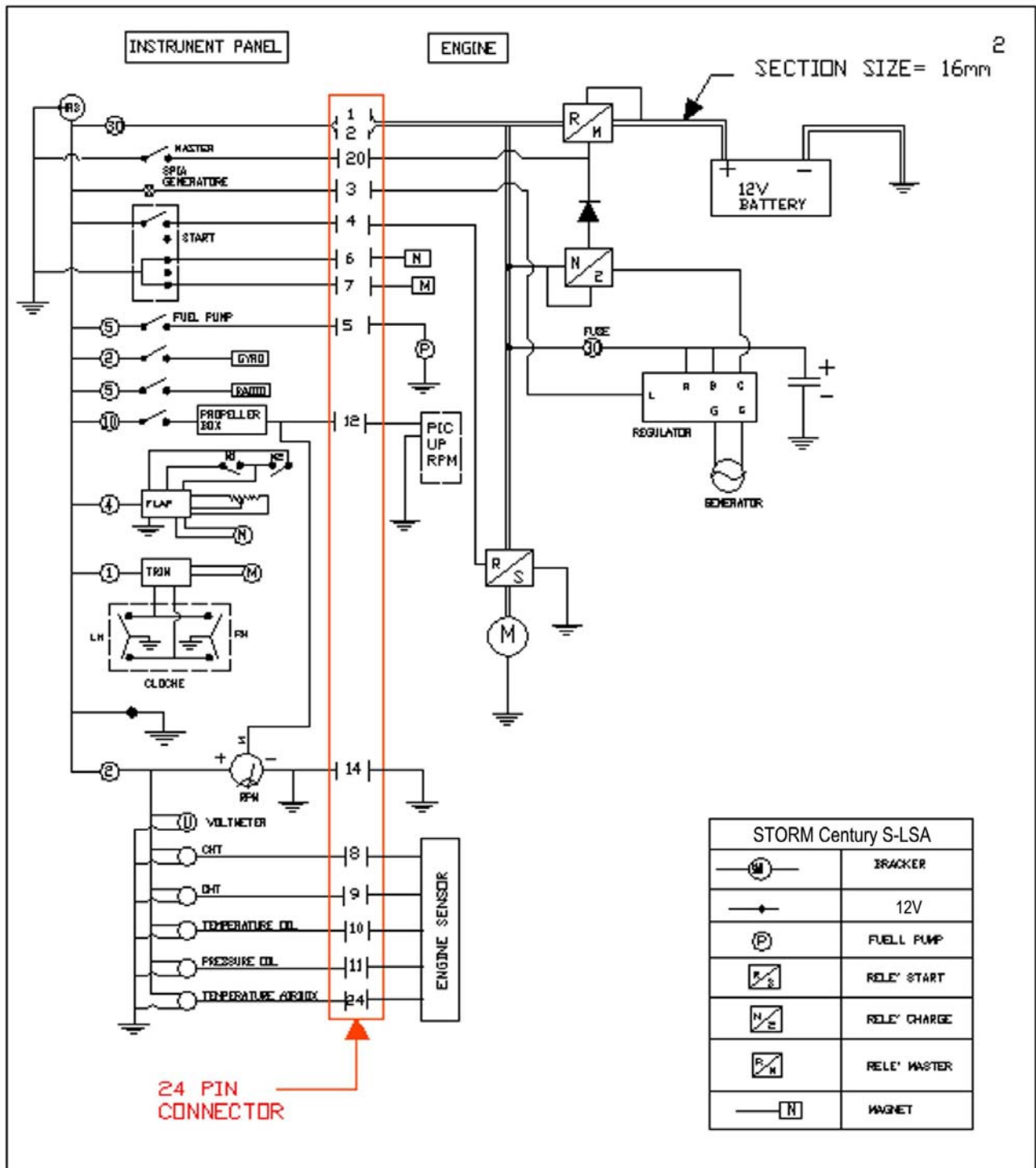


Fig.9-1



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CHAPTER 10

STRUCTURAL REPAIR

LINE MAINTENANCE, REPAIR AND ALTERATIONS

TOOLS LIST:

Wrenches	8mm x 10mm Open End	Miscellaneous	Locking Pliers
	12mm x 13mm Open End		2AA Metal Body Flashlight
	12mm x 14mm Open End		Electrical Tape
	14mm x 15mm Open End		WD-40®
	8mm Combination		Permatex® Threadlocker
	10mm Combination		Needlenose Pliers
	12mm Combination		Cable Ties (5 pcs.)
	14mm Combination		Mechanics Wire
	8" Adjustable		Shop Towel
	PackWrench 3-Way Wrench		Plug Socket Straps
Hex Keys	"L" Style, # of pieces		Tire Pressure Gauge
Screwdriver	6-in-1 Reversible**		Tire Levers
Spark Plug*	2-in-1 Socket + Bar		
	Gap Gauge		

NECESSARY TOOLS FOR ENGINE OPERATIONS

- Please refer to the repair manual edited by BOMBARDIER-ROTAX for ROTAX 912S engine.

NOTE : In the event of engine operations, should you not finish your work, protect the engine with a cover, protect spark plug boots and the seats of induction and exhaust manifolds to prevent them from dusts and dangerous oxidations.



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10.1 ENGINE FAULTS

ENGINE FAULTS 1

FAULT : ENGINE DOES NOT START		
	Possible cause :	Remedy :
OWN	- contact is disconnected	- turn contact on
OWN	- too high distance of spark plug electrodes	- adjust distance to 0,5 (0.02") mm or replace spark plugs
OWN	- fuel cock closed or filter obstructed	- open the cock or change the filter, inspect for leaks on the system
OWN	- fuel tank empty	- provide for refueling
OWN	- high voltage wires erroneously connected (spark plug wires)	- connect as shown on the ignition box with sequence: 1 - 4 - 2 - 3
OWN	- starting speed too low - faulty or exhausted battery	- charge or replace battery
OWN	- starting speed too low - starting problems when engine is cold	- use low viscosity oil - or "multigrade" oil
A&P	- loosen or damaged high voltage wires (spark plug wires)	- check and replace spark plug wires
OWN	- humidity in the ignition box	- carefully dry the box
OWN	- condensation in the spark plugs	- carefully dry spark plugs inside and outside
A&P	- spark plug surface moist with fuel due to an excessive STARTING CARB operation or excessive fuel flow from carburetor	- dry spark plugs and find out probable faults in the carburetor system
A&P	- flow valve dirty or jammed	- clean or change flow valve
	- carburetor nozzles obstructed	- clean nozzles
OWN	- water in the carburetor	- drain and clean carburetor, fuel pipes and filter
TS	- insufficient compression	- identify the pressure losses and repair if necessary
TS	- total engine damage	- check if there are metal particles in the oil tank; should that be the case, a complete overhaul of the engine will be necessary



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ENGINE FAULTS 2

FAULT : ENGINE IDLING UNSTEADY AFTER PREHEATING WITH SMOKE RELEASE		
	Possible cause :	Remedy :
OWN	- STARTING CARB started up	- disconnect STARTING CARB
A&P	- carburetors wrongly synchronized	- adjust carburetors
A&P	- flow valve dirty, blocked or consumed	- clean or replace flow valve
A&P	- air transit in the induction manifold - cracks	- tighten all connections – replace faulty parts
FAULT : ENGINE DOES NOT RUN PROPERLY AND OCCASIONALLY MISFIRES		
	Possible cause :	Remedy :
A&P	- faulty spark plug	- check spark plug – clean it inside and outside adjust spark gap – if necessary replace spark plug
A&P	- cracks on the HT wires (spark plugs)	- replace damaged wires
TS	- faulty ignition unit	- repair, if possible, or replace the ignition unit
OWN	- fuel filter obstructed	- clean or replace carburetor filter



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ENGINE FAULTS 3

FAULT : ENGINE RUNS TOO FAST AND OIL TEMPERATURE EXCEEDS 140°C

	Possible cause :	Remedy:
OWN	- an excessive oil quantity remains in the crankshaft sump	- make sure that the oil return pipe is open - verify vapor tightness of the engine
OWN	- insufficient airflow on oil cooler	- check and clean air inlets
OWN	- insufficient lubrication	- check oil level; top up if necessary
OWN	- low or not suitable motor oil quality	- change oil, use suitable oils
OWN	- oil filter obstructed	- change filter
TS	- excessive piston vent	- most common reason: worn or blocked piston rings. Should this occur, an engine overhaul will be necessary
TS	- faulty bearings	- metal particle traces in the oil circuit; engine overhaul is necessary
A&P	- faulty oil gauge	- replace gauge

FAULT : UNSATISFACTORY ENGINE EFFICIENCY

	Possible cause :	Remedy:
TS	- ignition fault	- check ignition circuits Should you detect faults, check the wires and, if necessary, overhaul the ignition unit
A&P	- too much oil in the crankcase sump	- check if the return pipe of oil to tank is open
A&P	- insufficient fuel feed	- check fuel feed system
OWN	- fuel not meeting specifications	- fill with filtered and suitable fuel
A&P	- wrong regulation of throttle	- suitably adjust throttle
TS	- the air intake leaks	- tighten all the connections, check crank case of carburetor
TS	- the carburetor diaphragm is damaged	- replace diaphragm



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ENGINE FAULTS 4

FAULT : THE OIL PRESSURE IS LOW

	Possible cause :	Remedy :
OWN	- insufficient oil in the tank	- check oil level and top up if necessary
A&P	- oil remains in the engine and does not flow back to the tank – faulty tightness	- make sure that return pipe of oil to tank is open - verify engine tightness, replace oil gaskets
A&P	- faulty oil pressure	- check if there are foreign matters in the oil pressure valve - check the spring
A&P	- the oil pressure does not rise – air in the suction pipes	- release air from the pipes
A&P	- faulty pressure gauge	- check if there are holes, check instrument and cables
TS	- faulty crankshaft bearing	- total engine overhaul

FAULT : EXCESSIVE OIL CONSUMPTION

	Possible cause :	Remedy:
TS	- piston rings worn out, broken or wrongly installed	- a repair or an engine overhaul is necessary
A&P	- low oil quality	- change oil using a suitable oil quality
TS	- worn valve guides or bad tightness of the stem	- cylinder heads must be repaired
TS	- oil leaks	- replace gaskets

NOTE : For all engine operations please refer to " ROTAX 912S " engine manual. Engine operations shall be carried out in repair shops authorized by the manufacturer BOMBARDIER-ROTAX .



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10.2 PROPELLER FAULTS

FAULT : EXCESSIVE NOISE AND VIBRATIONS

	Possible cause :	Remedy :
A&P	- cracked spinner or loosen bolts	- replace spinner – torque bolts
A&P	- loosen propeller hub bolts	- tighten to the exact torque value or replace
A&P	- scratched or scored propeller blades	- if possible, remove scorings, otherwise replace blades
A&P	- Different pitch blades	Check again the pitch angle of each blades See Propeller manual

NOTE : *the propeller edge is sharp, be very careful*



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10.3 ELECTRICAL SYSTEM FAULTS

	Possible cause :	Remedy:
OWN	- the voltmeter displays a voltage higher than 11,5 v	- faulty or run-down battery, charge or replace the battery
A&P	- battery trouble, short-circuit	- remove the short-circuit and replace the battery
TS	- the voltmeter displays a voltage higher than 14 v	- the starter pinion is worn or faulty overhaul starter
TS	- the voltmeter displays a voltage of 12 v instead of 13,75 v	- alternator failure - overhaul
TS	- the starter does not run when inserting the ignition lock key	- interrupted or broken starter coil, or inactive starter relay – overhaul starter or replace relay, check the starter fuse
TS	- the starter does not run and makes noise when inserting the ignition lock key	- the starter pinion is worn out or faulty overhaul starter
A&P	- inoperative electrical instruments	- the battery is down, or the instrument fuse is broken
A&P	- inoperative fuel level indicator	- check transmitter in the tank and wirings – check fuses
TS	- overvoltage relay troubles	- replace the relay, the generator does not charge the battery
A&P	- inoperative electric fuel pump	- check fuse, replace electric pump
A&P	- inoperative trim indicator	- check wirings - replace
A&P	- inoperative electrical trim on control stick	- check switch between the two control sticks, if necessary replace - check wirings on control stick
TS	- radio noises	- check high voltage cables of spark plugs, if necessary replace with suitable cables
A&P	- inoperative anticollision lights, navigation lights, landing light	- check fuses, check lamps and replace if necessary



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10.4 FLIGHT AND ENGINE INSTRUMENT FAULTS

	Possible cause :	Remedy :
OWN	- inoperative anemometer, altimeter and rate-of-climb indicator	- check if the static protection has been removed – or if the static inlet is obstructed if so, disconnect pipes from instruments and blow low pressure air
A&P	- inoperative artificial horizon – directional gyro	- check vacuum indicator, possible vacuum system failure check system
TS	- inoperative artificial horizon working directional gyro	- possible gyroscope failure
TS	- inoperative compass during flight	- presence of a strong ferrous mass
A&P	- inoperative engine instruments	- check fuse
A&P	- inoperative cylinder temperature indicators	- check feelers and electrical equipment
A&P	- inoperative oil telethermometer	- check feeler and electrical equipment
A&P	- inoperative oil gauge	- check bulb or engine condition
A&P	- inoperative mechanical wire revolution counter	- check wire drive
A&P	- voltmeter	- check electrical equipment
A&P	- low radio signal	- check antenna connection
A&P	- the ATC transponder does not receive tracks	- check antenna connection



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10.5 LANDING GEAR AND BRAKING SYSTEM FAULTS

	Possible cause :	Remedy :
OWN	- abraded nose gear wheel covering	- replace covering
OWN	- reference signs between wheel and rim of nose gear shifted	- adjust covering and verify possible damages of the air valve
A&P	- the main landing gear wheel is blocked - brake linings stuck on the disc	- verify tightening of bearings on the hub, not too tightened - replace linings and grind disc
A&P	- strong noises rising from the wheels during taxing, like whistles, etc.	- possible seizing up of bearings, faulty brake linings
A&P	- "schimmy" phenomenon on the nose wheel	- too high landing speed, check the nose gear unit for possible damages
A&P	- strong vibrations rising from the nose gear unit	- check connection of the nose gear leg
A&P	- brake handle to end of stroke but not braking - brake fluid leak from pumps or from pipes	- air in the left or right circuit, bleed the involved air circuit – if necessary overhaul the system



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10.6 REPAIR

WARNING

STORMAIRCRAFT should be consulted before performing any repair.

The task of repair begins when it has been determined that the structure has been damaged to the extent that it requires a repair. It is important to evaluate the damage to determine such information as the type of defect, depth, size and location on the aircraft. Some defects may be more serious to the performance of the part. This information is used to determine the method of repair.

Classification of Damage

Classification of damage is placed in one of three categories: ***negligible, repairable, or non-repairable.***

Negligible damage is damage that may be corrected by a simple procedure with no restrictions on flight operation.

Repairable damage is damage to the skin, composite parts that cannot exist without placing restrictions on the aircraft or part. All permanent repairs must be structural, load carrying repairs that meet the aerodynamic smoothness requirements. A Metal or composite part that is damaged beyond limits must be replaced,.

A non-repairable part is one that is damaged beyond established repair limits. If a composite part has been damaged beyond the specified repairable limitations, it should be removed and replaced. **With the approval from the manufacturer**, the part may be re-manufactured.

The part should be crated and sent to the manufacturer, or an authorized repair station that is equipped to perform the necessary remanufacturing operations to restore the part.

There are definite engineering reasons for establishing repair limits for critical airframe components. Standard repair procedures cannot always replace 100% of the full strength of a damaged part.



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Types Of Damage

Cosmetic Defects

A cosmetic defect is a defect on the outer surface skin that does not involve damage of the structural parts. It may be caused by chipping or scratching during handling, does not usually affect the strength of the part, and is usually repaired for esthetic reasons. If damage is to the fiberglass, it many times would be considered negligible or cosmetic damage.

Impact Damage

Impact damage may occur if struck by a foreign object. The degree of damage may range from slight to quite severe. Probably the most common cause of impact damage results from careless handling during transportation, storage, or by standing parts on their edge without adequate protection.

Because of the thin metal sheets, they are susceptible to impact damage. An area which has been subjected to impact damage should also be inspected for cracks around the impacted area.

Nicking, chipping, cracking or breaking away pieces of the edge or corner can also be caused from improper handling.

Inspection

Methodology

Areas on the aircraft which are subject to damage, such as leading edges made of thin metal sheets over, should be inspected more often than areas which are more protected by design, such as the vertical stabilizer.

Visual inspection to these areas should be accomplished periodically, more in depth inspection should be done at regular overhaul intervals.

Many times the inspection method requires that the component be removed from the aircraft in order to be inspected correctly.

This type of inspection is usually accomplished at the time of the aircraft's overhaul. Between overhaul inspections, visual inspection is usually adequate.

Visual Inspection

Visual inspection is used to detect cracks, surface irregularities (from an internal flaw), surface defects such as bruise or rivet loosening.



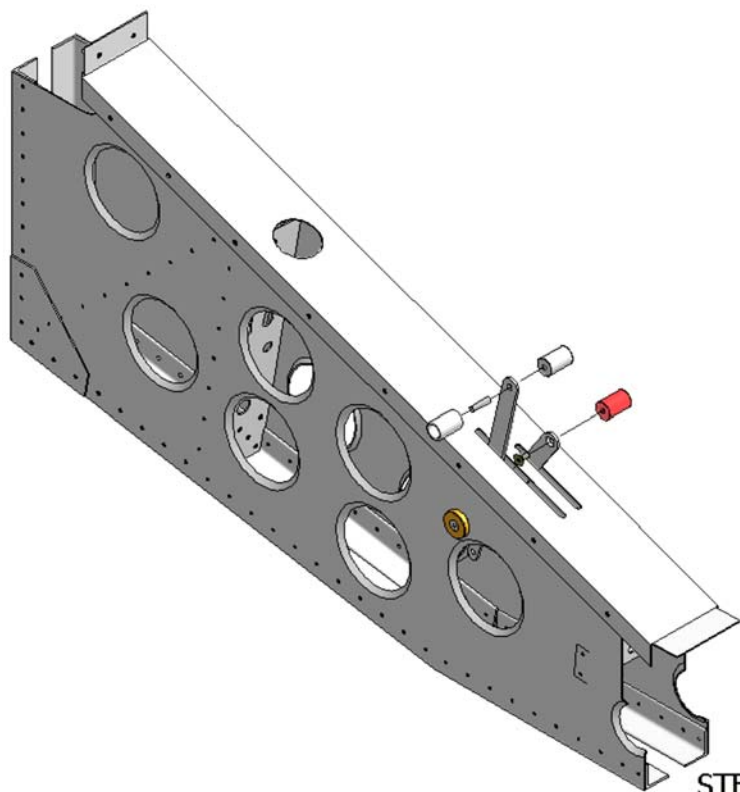
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10.7 ADDITIONAL INSTALLATIONS MAINTENANCE AND REPAIRING

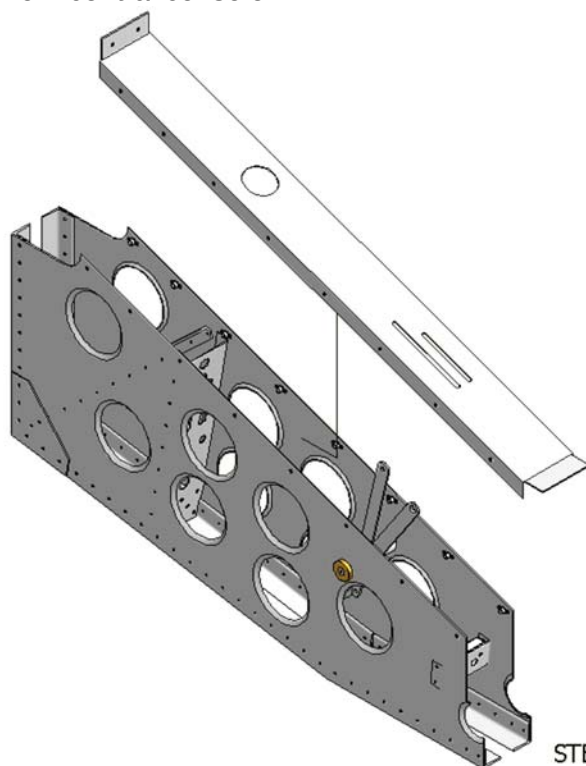
10.7.1 THROTTLE INSPECTION

Unscrew the throttle and choke knobs.



STEP 1 Fig.10-1

Unscrew the M5 bolts from central console.



STEP 2 Fig.10-2

Remove the console cover and inspect throttle cables and operation.



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10.7.2 ELECTRIC FLAP SYSTEM REPLACEMENT (A&P)

Unscrew the M5 bolts from central console cover behind seats. Remove the cover.

Unscrew M5 bolts from central console.

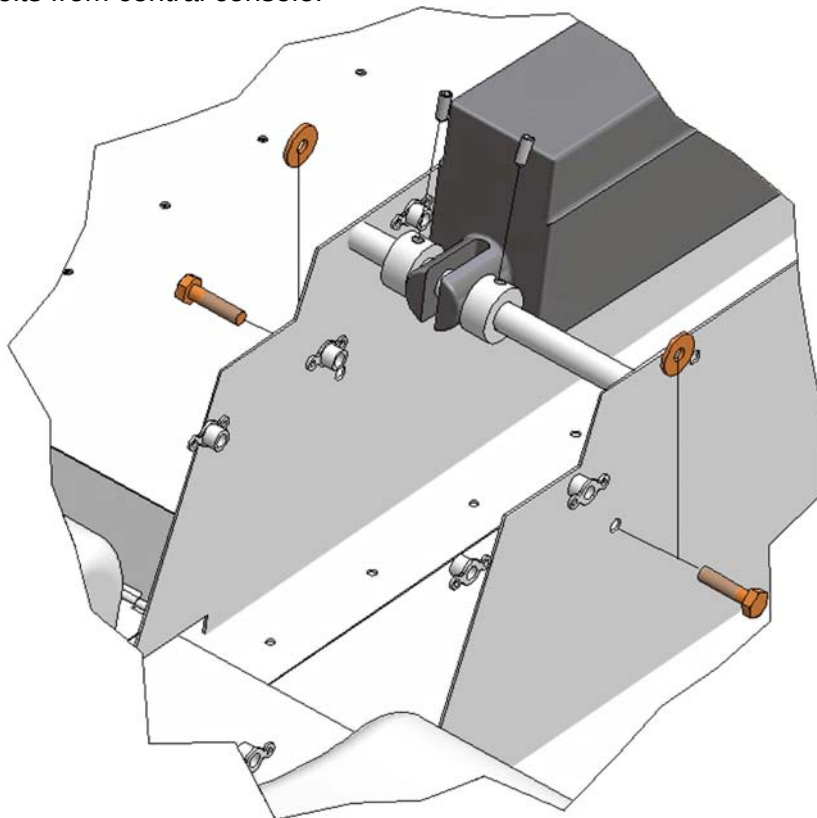


Fig.10-3

Remove the pin stops.

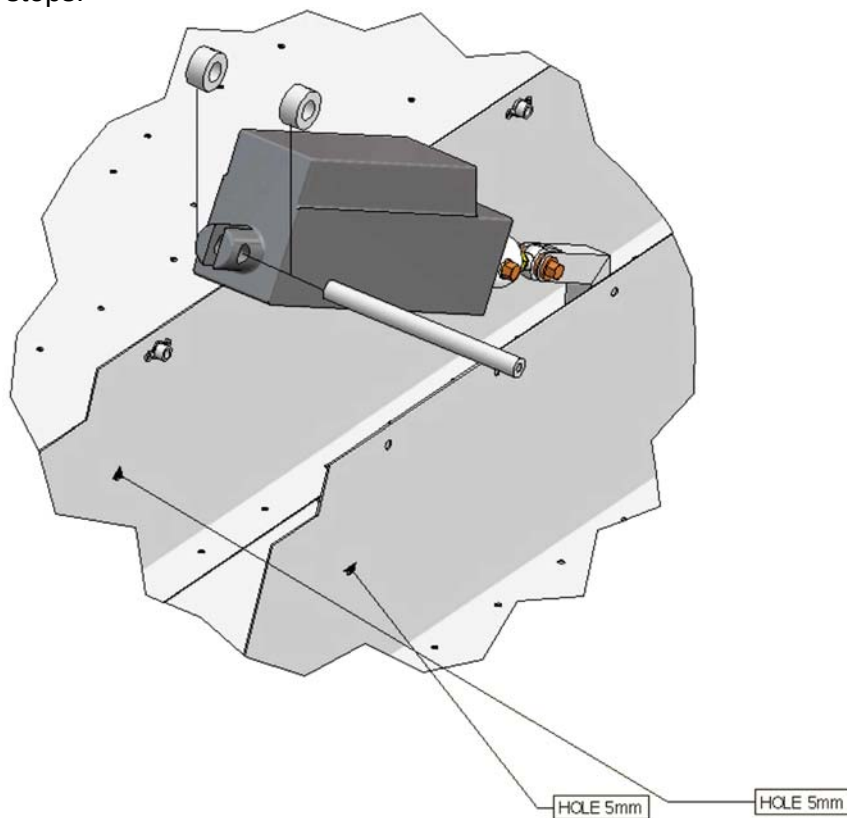


Fig.10-4



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Unscrew the M6 bolt from flap system fitting and remove the flap actuator.

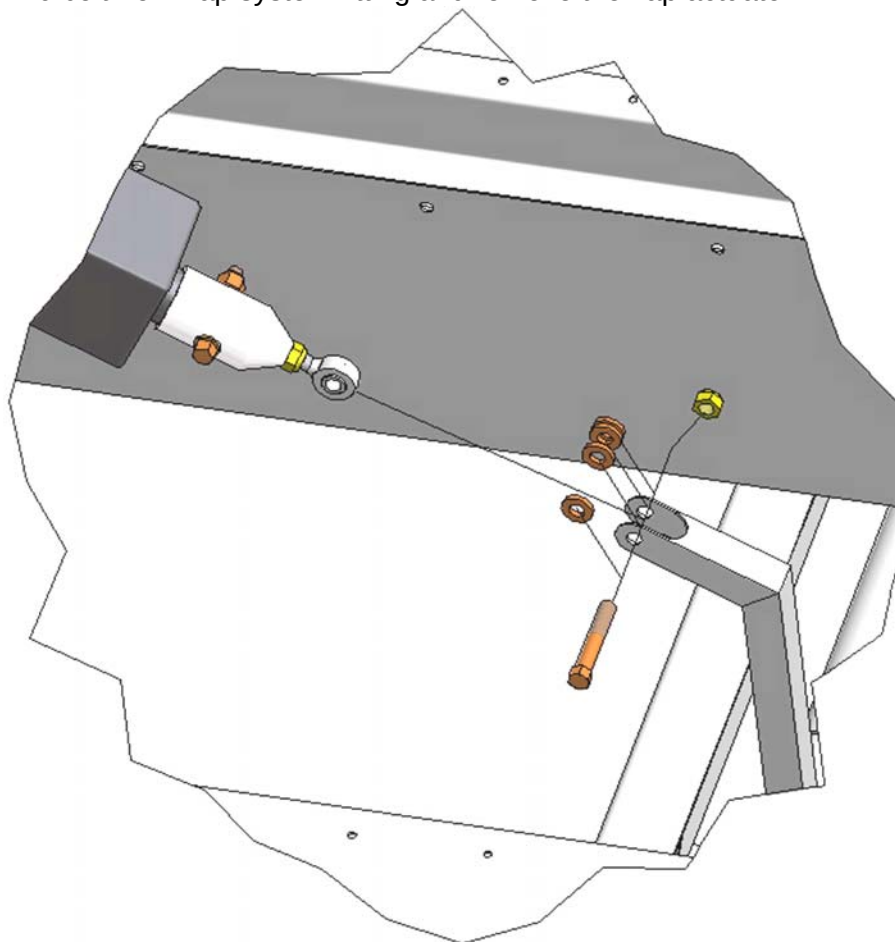


Fig.10-5

Remove the end rod bearing from flap actuator unscrewing the M5 bolt.

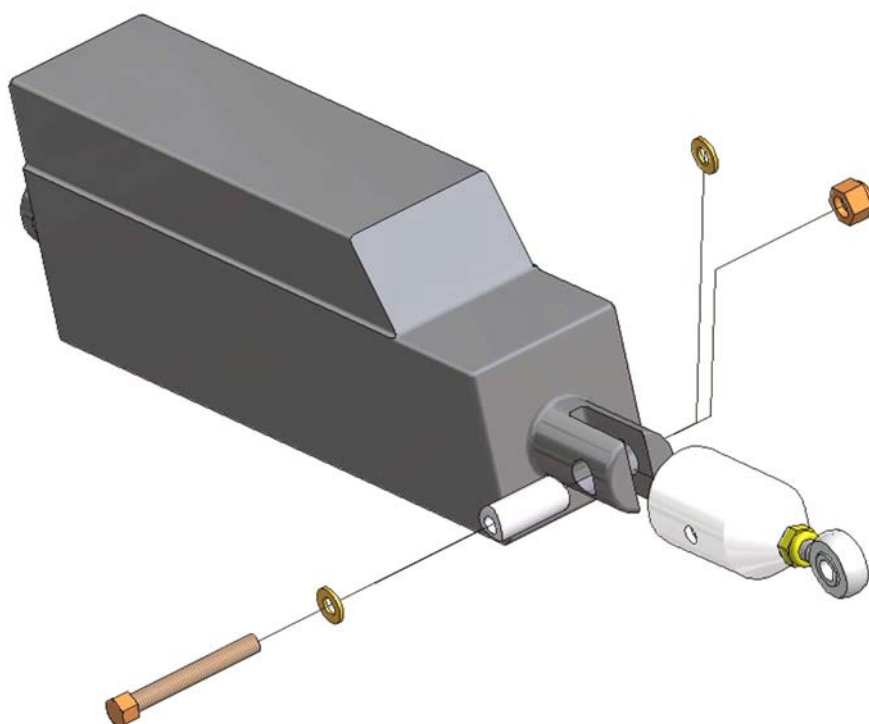


Fig.10-6



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10.7.3 FIREWALL ELECTRIC PANEL

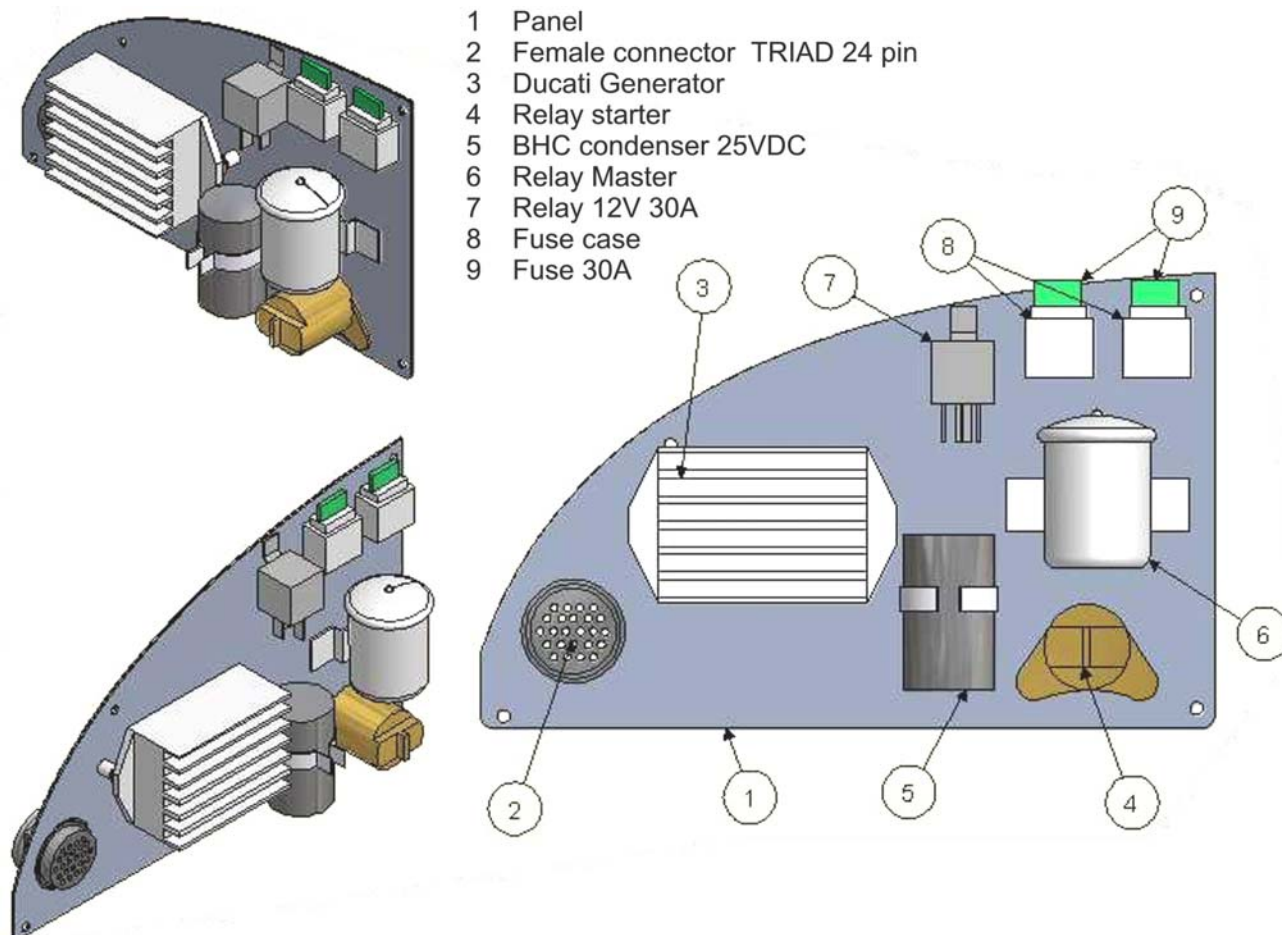


Fig.10-7



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10.7.4 CONTROLS

10.7.4.1 CONTROL STICK

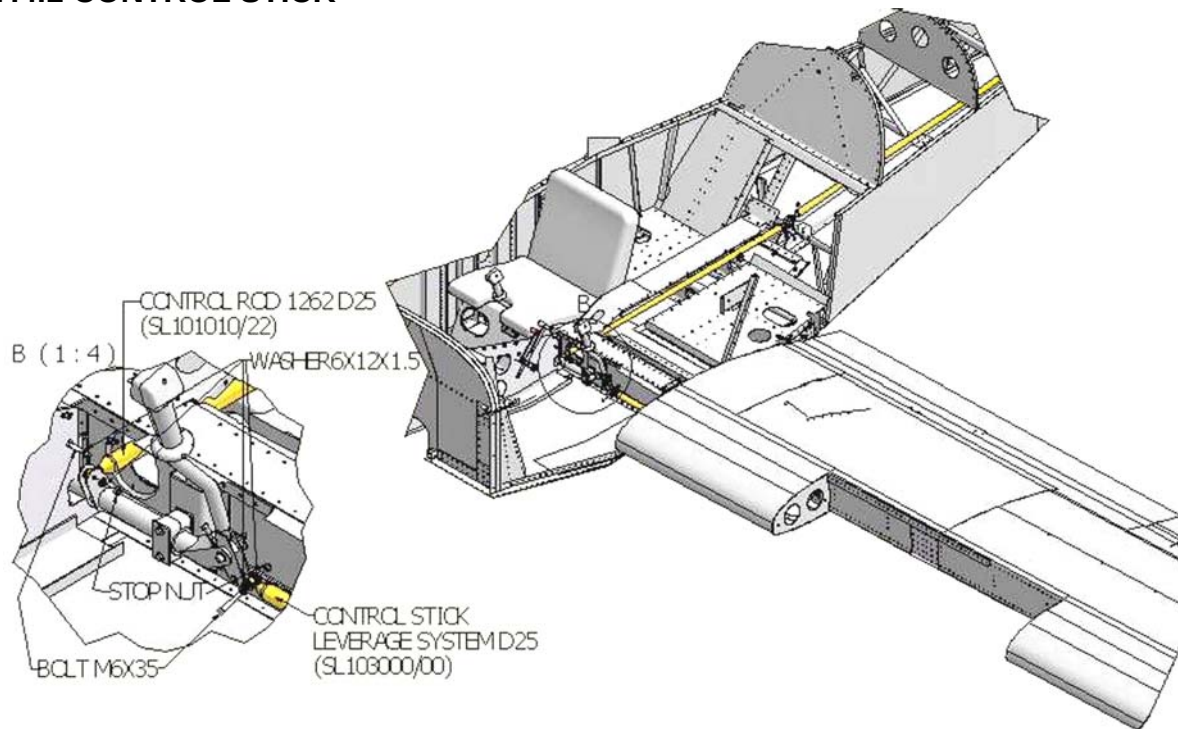


Fig.10-8 CONTROL STICK : STABILATOR & AILERON CONTROLS

10.7.4.2 STABILATOR CONTROL

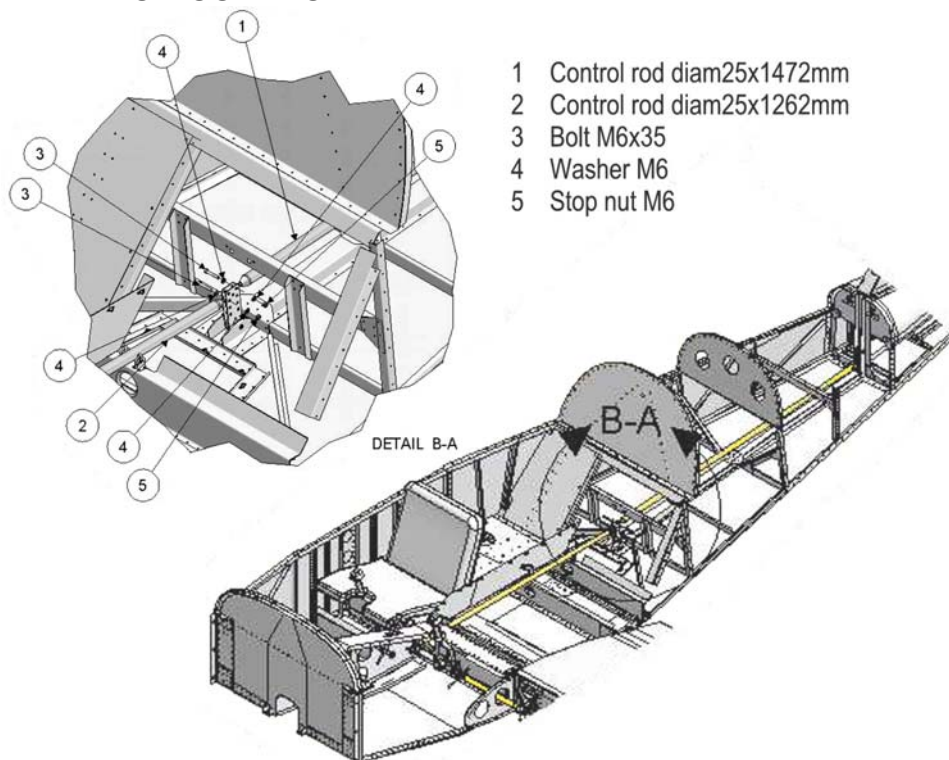


Fig.10-9 CENTRAL BELLCRANK VIEW



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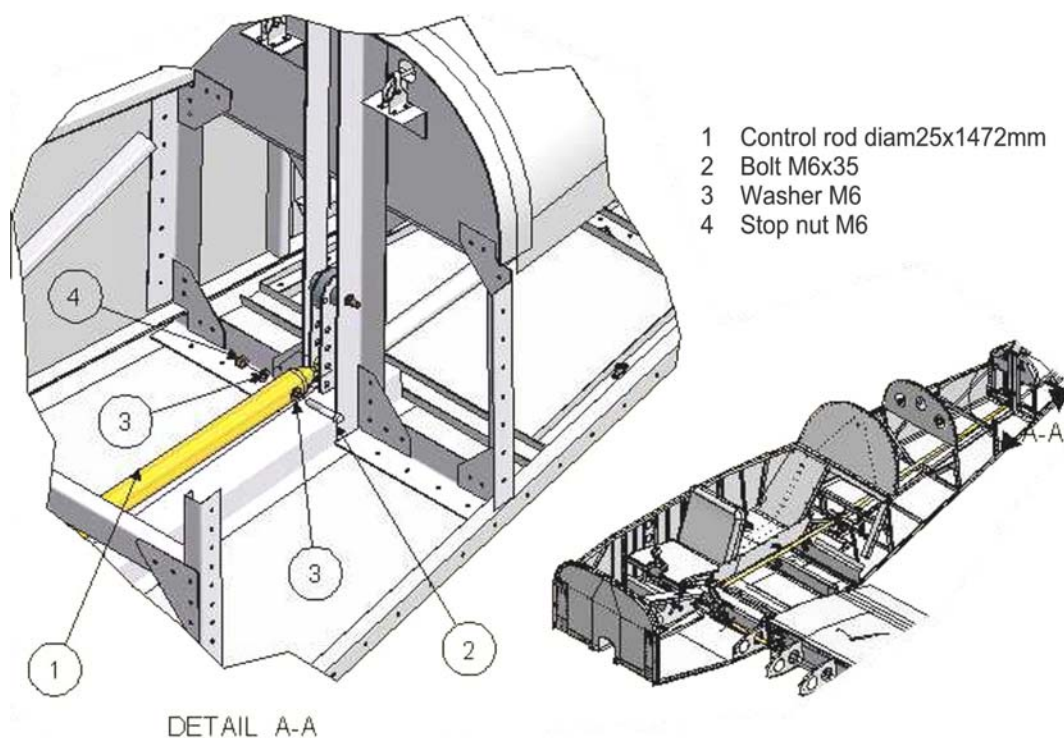


Fig.10-10 REAR BELLCRANK VIEW

10.7.4.3 AILERON CONTROL

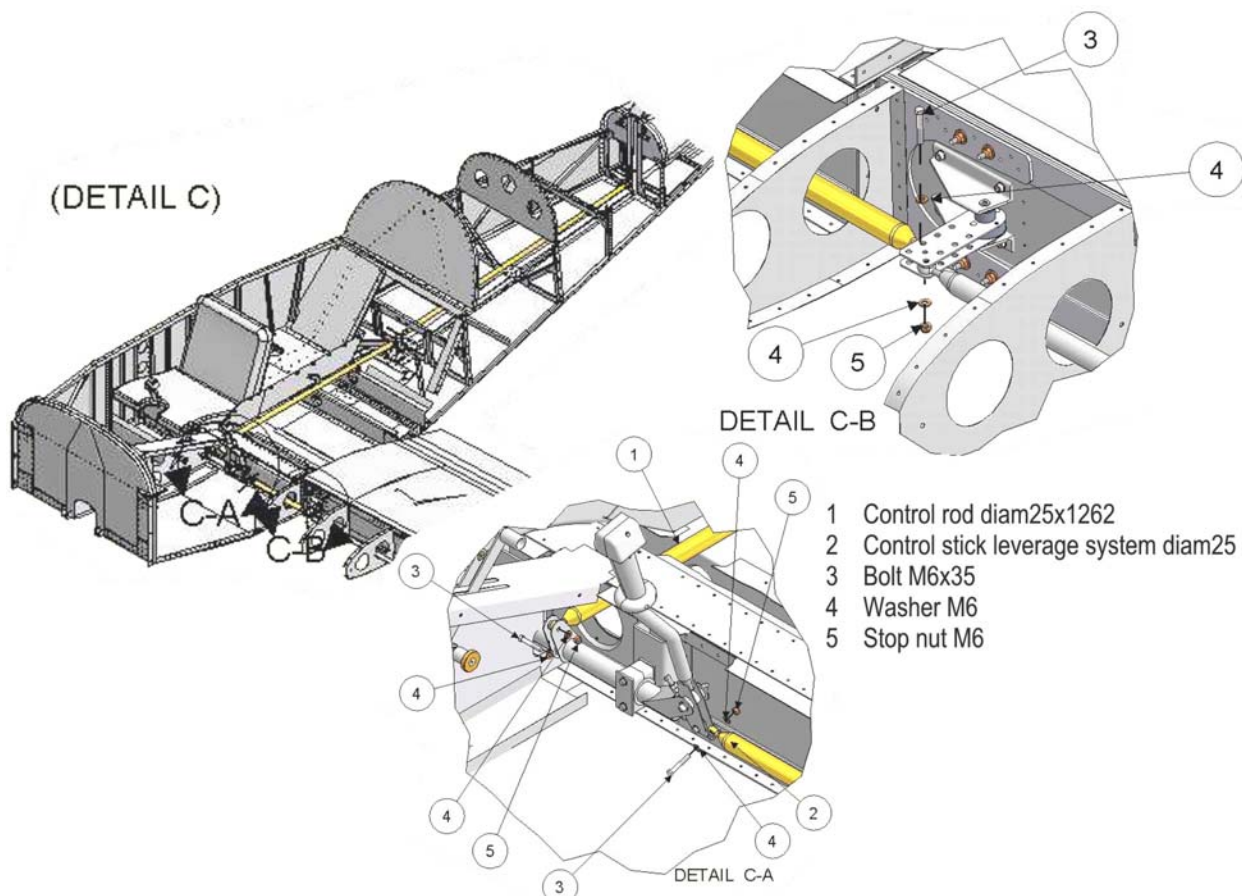


Fig.10-11 AILERON CONTROL ROD VIEW



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CHAPTER 11

PAINTING

A. Surface Preparation

It goes without saying that no finish will last long if the metal surface has not been properly prepared. The metal must be thoroughly cleaned and microscopically roughened to provide a bond for the finish. A primer applied to the metal provides a sandwich to which the topcoats can adhere. If the metal has already been painted, this paint must be thoroughly reconditioned or completely removed before a new finishing system can be applied.

1. Paint stripping

There are two types of paint strippers which can be used to remove the finish from an airplane. The solvent type, which is a clear liquid, is not very effective for stripping an airplane because of the fast rate of evaporation of its active solvents. These solvents do not have time to penetrate the film.

Wax-type removers are most generally used when stripping an entire airplane because the wax holds the active solvents against the surface until they penetrate it. Methylene chloride is the active agent in this type, and it penetrates the film of enamels or some primers to expand them so they pucker up and break their bond with the metal. After the bond has been broken, the wax gets between the film and the metal, preventing its re-sticking. Never remove, or attempt to remove, the stripper until all of the area has puckered up, or is completely softened. Flushing the stripper before it has finished its work defeats its effectiveness. If an area dries before it puckers or softens, apply some more stripper and allow it to remain until its action is complete.

To properly strip a surface, the remover is applied with a bristle brush, a non-atomizing spray, or a roller. If it is brushed on, a heavy, wet coat should be applied, brushing only in one direction. After this has been done, lay an inexpensive poly-ethylene drop cloth over the surface to hold the solvents until they have had ample time to penetrate the film. Acrylic lacquer will not expand or wrinkle when the stripper works on it. It will only soften. As an area is softened, the drop cloth should be rolled back, exposing a small section of the softened finish. This is scraped off with a piece of Plod-glass or a rubber squeegee, and the cleaned area washed with a rag wet with methyl-ethyl-ketone (MEK) or acetone. Roll the drop cloth back and remove more finish.

One of the most important parts of the paint stripping process is the complete removal of every trace of wax left on the surface from the stripper. Careful scrubbing with acetone or MEK after removing the acrylics generally leaves the surface free from wax, provided all of the faying strips and the area around the rivets, fittings, and joints are flushed out with the solvents in a power spray gun.

Enamel or polyurethane residue must be flushed off with water, and the entire surface scrubbed with a good solvent. MEK or acetone is generally suitable, but a less expensive solvent such as turpentine or xylol is more desirable. Lacquer thinner is not satisfactory because it will not absorb the wax; it will only spread it around. Any wax left on the surface will tend to be absorbed by the solvents in the finish and brought up into the system and locked in, preventing its drying.

Polyurethane film is readily attacked by the solvents, but if it is held against the surface long enough, the active agent will loosen the bond to the primer and release the film. The surface formed by a



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properly converted wash primer will not be damaged by the paint stripper; it can re-main on the finish until the polyurethane has completely puckered up or lifted before flushing off the stripper and paint residue.

No prepared paint remover should be used on air-craft fabric or be allowed to come in contact with any fiberglass reinforced parts such as radomes, radio antenna, or any component such as fiberglass-reinforced wheel pants or wing tips. The active agents will attack and soften the binder in these parts.

CAUTION: Any time you use a paint stripper, always wear protective goggles and rubber gloves. If any stripper is splashed on your skin, wash it off immediately with water; and if any comes in contact with your eyes, flood them repeatedly with water and CALL A PHYSICIAN.

2. Corrosion removal

Any trace of the white powder which indicates corrosion must be critically examined. Corrosion of aluminum or magnesium is essentially an electrochemical process in which the alloying agents in the metal have reacted with moisture and/or oxygen on the surface to form an electrical battery and generate a flow of electrons. The chemical action which caused these electrons to flow has converted some of the metal into a porous salt which has no physical strength. Corrosion, once it starts, will often continue until the skin or component is damaged beyond repair. The manual entitled *Aircraft Corrosion Control* deals in detail with this problem—its cause and correction. If corrosion is found on the airplane you have stripped, it is recommended that you consult this book.

If corrosion is found, every trace must be re-moved with fine sandpaper (no emery), aluminum wool, or a nylon scrubber.

CAUTION: Never use steel wool or a steel brush to remove corrosion from aluminum, as tiny bits of steel will embed in the aluminum and cause much worse corrosion than you had to begin with.

3. Conversion coatings

After every trace of corrosion has been removed, it must be determined whether or not the structure has been damaged enough to require replacement or reinforcement. If the damage is relatively superficial, the metal may be treated with a con-version coating. This is essentially a phosphoric acid etchant which reacts with the metal to convert into a phosphate film over the metal and prevents recurrence of the corrosion.

The acid content of these materials is so low that a thorough flushing of the surface with water followed by air drying is sufficient to remove all traces of any unconverted acid. The extremely thin phosphate film left by this conversion provides a good bond for subsequent primers or top-coats.

Conversion coatings are applied to surfaces of new clad aluminum to microscopically roughen and prepare them so the additional coats will adhere.

4. Corrosion protection for dissimilar metals

Any time aluminum and magnesium are to be joined, the magnesium should be treated with a chromic acid brush-on treatment similar to the Dow 19 treatment. Mix 1-1/3 ounces of chromic anhydride (CrO₃) with one ounce of calcium sulfate (CaSO₄) in enough water to make one gallon. Brush this on the magnesium and let it stay for one to three minutes and rinse it off with cold water. After it is thoroughly dry, treat the surface with a wash primer, and after this has cured, coat it with an epoxy primer.



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Use zinc chromate primer as a dielectric between the two metals. Spray both pieces and join them while the primer is wet. Wipe off the excess after the parts are together, and finish as required.

B. Primers

After the surface has been properly pre-treated, a primer is applied to provide a good bond between the metal and the topcoats. For years, zinc chromate has been the standard primer for aircraft use because of its good corrosion resistance. But, since it does not provide as good a bond to the surface as some of the new primers, its use is decreasing. Two-component epoxy primer is recommended.

1. Wash primer

High-volume production of all-metal aircraft has brought about the development of a primer which provides a good bond between the metal and the finish, and which allows the topcoat to be applied after only about a half-hour cure. These primers can be used on aluminum, magnesium, steel or on fiberglass. Acrylic or enamel topcoats can be applied directly over the wash primer, but for maximum protection, such as required for seaplanes or agricultural aircraft, an epoxy primer should be applied over it.

When wash primer is applied over a properly cured conversion coating, the organic film of the wash primer bonds with the inorganic film and provides excellent adhesion between the topcoat and the surface. It also provides good protection for the metal.

Wash primer is a three-component material. Four parts of primer are mixed with one part of acid diluent and four parts of thinner and allowed to stand for twenty minutes to begin its curing action. Restir, and spray on the surface. The viscosity is adjusted by the addition of more thinner in order to get the extremely thin film required, but never use more than 8 parts of thinner to 4 parts of primer.

Wash primers should be applied with a film thickness of not more than 0.3 mil (0.0003 in., 0.0076 mm). This can be determined by looking at the surface. A film of proper thickness will not nearly hide the surface, but will give a slight amber cast to the aluminum.

One of the main reasons wash primers are so popular for production is the fact that they may be topcoated in a short time after their application without the finish sinking in and losing its gloss. The acid requires about thirty minutes to convert into the phosphate film, so the topcoat must not be applied until the conversion has finished; but it must be applied within eight hours, or the glaze on the primer will be so hard that the topcoat will not adhere to it. Every effort should be made to topcoat wash primer within this time frame of one to eight hours; but if it is absolutely impossible to finish within this period, another coat of primer must be applied over this first one. Omit the acid when mixing the primer for the second coat and when it is going to be used over fiberglass or plastic.

About the most critical aspect of the application of wash primers is the necessity of having sufficient moisture in the air to properly convert the acid into the phosphate film. It has been proven by much research that proper conversion requires nine-hundredths of a pound of water for every pound of dry air during the application of the primer. It is not really difficult to know exactly how much water is in the air.



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This is a modification of a relative humidity chart, and in order to use it, you must have two mercury thermometers. Wrap a cotton wick around the bulb of one, and, with the thermometers placed side by side in the spray booth, blow air from the spray gun across them. This will evaporate the water from the wick and lower the temperature measured on that thermometer. Locate the temperature of the thermometer with-out the wick (dry-bulb) across the bottom of the chart, and follow this line up until it is crossed by the slanting line representing the temperature of the wet-bulb thermometer. Read the amount of water on the horizontal line through this intersecting point. Let's assume, for instance, that the dry-bulb temperature is 70 degrees F and the wet-bulb temperature is 60 degrees. These two lines cross above the horizontal line indicating 0.09 pound of water per pound of dry air, actually at about 0.095 pound. This means that there is enough water in the air to properly convert the acid in the primer.

If there is not enough water in the air for proper conversion, the finish will trap active acid against the metal. In order to prevent this, and the subsequent danger of corrosion, water may be added to the thinner. The thinner for wash primer is primarily an alcohol, and it will accept water. If there is somewhere between 0.05 and 0.09 pound of water to each pound of air, you may add one ounce of distilled water to each gallon of thinner. If there is less water than 0.05 pound per pound of dry air, you may add two ounces to each gallon of thinner; but this is the maximum amount permissible under any circumstances.

Acrylic lacquer applied over an improperly cured wash primer is porous enough to allow moisture from a heavy dew to penetrate the film and unite with the free acid and convert it. In the process of doing this, the paint, primer and all, will be lifted from the surface in the form of blisters. If these blisters appear shortly after the painting has been finished, allow the airplane to sit in the sun-shine and get thoroughly warmed. These blisters will go down and the surface will be smooth again. The acid has now received sufficient water for its conversion and the primer will have its pro-per cure; the finish has not been damaged, provided the condition was not initially too severe.

Another condition could exist within the wash primer if it is not sufficiently converted and is covered with an epoxy or zinc chromate primer or a polyurethane topcoat. These finishes are not as porous as acrylics and will not allow sufficient water to enter to complete the conversion, but will allow enough to penetrate to react with the acid and the metal to form filiform corrosion.

This is simply corrosion having a thread-like form in which the acid and water have reacted with the metal and formed a salt, destroying the metal. Once filiform corrosion is detected under any of these films, all of the finish must be stripped and the entire surface treated to remove every trace of the corrosion.

2 Epoxy primer

The most popular primer for use under the new polyurethane finishes and for any finish where the maximum corrosion protection is required is one of the epoxy primers. These are two-component materials which produce a tough, dope-proof sandwich coat between the finish and the surface. Epoxy primers may be used on aluminum, magnesium, steel or fiberglass, and for the maximum corrosion protection can be applied over wash primers.

Epoxy primers are not used for high-volume production aircraft because of the long time period required for them to develop their hold-out. This is the hardness required of a primer to prevent the topcoat sinking into it and distorting its surface so it loses its gloss. A waiting period of at least five hours, and preferably over night, is required before topcoating epoxy with acrylic or with enamel. These finishes will soften the primer and lose gloss if they are applied before the primer has had its full time to cure. Polyurethane enamels are compatible with the epoxy primers and will not re-lift them, so they may be applied after a wait of only about one hour. The poly-urethane finish softens the surface of the epoxy and forms a chemical bond with the primer.

If you ever have to wait more than 24 hours between the time the primer is sprayed on the surface and



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the application of the topcoat, the epoxy will have to have its surface glaze broken by scuffing it with crumpled kraft paper, number 600 sandpaper, or a Scotch-Brite pad. This hard surface, if not roughed up, will not soften enough to allow the finish to adhere.

Wash the surface with an acrylic lacquer thinner or toluol. MEK is excellent, but it is more costly. Thoroughly mix one part of epoxy primer with one part of primer catalyst or mixing liquid, stir-ring the components separately, and then stirring them together. Add 1-1/2 parts of thinner and allow the mixture to age for twenty minutes. Restir and apply to the surface. This should be sprayed on with one light, even coat to give a film thickness of about half a mil (0.0005 in, or 0.013 mm), just thick enough to slightly color the metal. The catalyst for epoxy primer is quite re-active to moisture and the container should be kept tightly closed. If the lid should be left off of the catalyst for some time, and then the container resealed, the moisture which has been absorbed into the material can cause an action that could burst the can.

Epoxy primers should be used within six hours after they are mixed. After the spraying operation is completed, the spray gun and hose must be cleaned out with the same thinner used for mixing, or with MEK.

3. Zinc chromate primer

MIL-P-8585 zinc chromate primer is just about one of the best known finishing materials used by A&P technicians. Its familiar green or yellow is "what airplane primer is supposed to look like." This has been the attitude for years; but it is losing ground now to the faster wash primers with their better adhesion, or to the far more durable epoxy primers. Zinc chromate is still a good primer as far as corrosion resistance is concerned, but it is inferior to the others with regard to adhesion. Where it is desired to use zinc chromate, it can be effectively sprayed over a surface which has been properly treated with a con-version coating such as Alodine. The Alodine provides for the adhesion, so the corrosion-inhibiting qualities of the zinc chromate can be used.

Zinc chromate is held in an alkyd resin. This does not produce an absolutely tight surface, but allows a small amount of water to enter the film and free some of the chromate ions, preventing, or at least inhibiting, the formation of corrosion on the surface it protects. It may be thinned for spraying with a proprietary thinner or with toluol.

Zinc chromate is available in both the familiar yellow and green colors. The primers are the same except for a touch of black pigment put into yellow primer to make it green. Red iron oxide may be added to zinc chromate primer to produce a hard, tough, protective film.

While zinc chromate has a wide usage as a primer for both aluminum and steel, it does have some limitations. It should not be applied over a wash primer, unless you are absolutely sure all of the phosphoric acid has been converted into the phosphate film. The zinc chromate primer will tend to entrap water and allow the formation of filiform corrosion. Zinc chromate should not be used as a base coat for acrylic lacquers, as the solvents in the acrylic will lift the zinc chromate unless it has aged for several days.



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C. Topcoat Systems 1. Enamel

It can sometimes be a rather fine point whether a material is a lacquer or an enamel, but a pretty general definition identifies a lacquer as a finish which cures by the evaporation of its solvents, and one which can always be put back into its original condition by the use of thinners. An enamel cures by the conversion of some of its solvents, by heat, oxidation, or by catalytic action. One test is to rub a little of the thinner used to reduce the material for spraying over some of the dried material. If it softens the film, the material is a lacquer. If it does not, it is in all probability an enamel.

The older enamels were essentially pigments suspended in an oil-type varnish. These are no longer used in any production aircraft, but may be encountered when restoring old aircraft to their original finish. These enamels air-dry to touch by flashing off, or the evaporation of the solvents; the true cure is by oxidation or polymerization of the resins.

The only acrylic enamels which can be considered as suitable aircraft enamels are those whose cure is produced by baking; that is, by heat conversion.

Conventional enamels are supplied at a solids content of about 45 to 50 percent; acrylics have about 2/3 this amount of solids, considerably less than the polyurethanes, which have at least 60 percent solids.

Enamels are reduced or thinned with a proprietary enamel reducer or with toluol by a ratio from 20 parts of enamel to one part thinner, to a maximum of five parts enamel to one part thinner. Ten parts enamel to one part thinner is about the typical reducing ratio. The thinners used have a high solvency and are used to reduce the viscosity of the material, not to thin the solids. A five to one or a ten to one reduction allows you to spray on a thin coat of material with high solids content.

Wash primer or epoxy primer should be applied to the surface, allowed to dry, then have its glaze broken by scuffing it with crumpled kraft paper. Spray on a light mist coat of enamel, and allow the thinners to flash off, which takes about fifteen minutes. Follow with a full wet cross-coat and allow to dry for about forty-eight hours before taping or masking.

2. Acrylic lacquers

High-volume production of aircraft has brought out a requirement for a finish that has best been met with acrylic lacquers. This material has a low solids content, compared with either conventional enamel or polyurethane, and it may be applied over wash primer, favored for new production, or over any of the epoxy primers. After the primer is thoroughly dry, rub it down with clean, dry kraft paper and apply the finish. A white base coat should be applied to assure the proper color match for the finish.

The low solids content of acrylics makes them somewhat tricky in their application. Their low viscosity and poor hiding qualities would seem to favor heavy coats, but not so; they should be thinned, using four parts of material to five parts thinner. This seems more thinner than actually required, but is good for a starting point. Adjust the amount of thinner to get the best coat. Spray on a very light tack coat, then follow with at least three cross-coats, allowing about a half hour drying time between coats. If the material is too heavy, pinholes or orange peel are likely to show up in the finish. The gloss in the final coat may be improved by adding about a fourth as much retarder as you have thinner in the material. If retarder has been used in the final coat, the finish should be allowed to dry overnight before taping or masking.



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3. Polyurethane enamel

One of the most durable and attractive finishes for modern, high-speed, high-altitude airplanes is the polyurethane enamel system. This hard, chemically resistant finish finds wide application with agricultural aircraft, seaplanes, and others which operate in hostile environments.

Polyurethane enamel is a two-part, chemically cured finish having a very high solids content, at least 60%. The high gloss inherent with this system is primarily due to the slow-flowing resins used. The thinners flash off quickly but the resins continue to flow for three to five days. It is this long flow-out time and the even cure throughout the film that give the pigment and the film time to form a truly flat surface, one that reflects light and has the glossy "wet" look which makes them so popular.

Polyurethane finish is used on agricultural air-craft and seaplanes because of its abrasion resistance and resistance to chemical attack. Skydrol hydraulic fluid, which quite actively attacks and softens other finishes, has only minimal effect on polyurethanes. Even acetone will not dull the finish. Paint strippers must be held to the surface for a good while to give the active ingredients time to break through the film and attack the primer.

Wash primers may be used for polyurethanes, but for corrosion resistance, epoxy primers are recommended. The best undercoating is a conversion coating applied with care, using the manufacturer's recommendation *to the letter*, with an epoxy primer applied over it.

Polyurethane enamel is mixed with its catalyst in the proportion specified in the mixing instructions, usually in a one-to-one ratio. It is allowed to stand for about fifteen minutes as part of its induction period. In this time the curing action is started. The primary purpose of this waiting period is to aid in the inter-mixing or blending of the two components.

After this induction period, the material is stirred and mixed with reducer to the proper viscosity for spraying. This is measured with a number 2 Zahn cup and is between 18 and 20 seconds. There is more about this method of viscosity measurement in the section on paint shop equipment. When you have the proper viscosity, spray on a very light tack coat, lighter than with a conventional enamel. Allow it to set for about fifteen minutes so the thinner can flash off, or evaporate, and spray on a full wet cross-coat.

The main problem with the application of poly-urethane lies in getting it on too thick. A film thickness of about 1.5 mils (one-and-a-half thousandths of an inch) is about maximum for all areas except for those subject to excessive erosion, such as leading edges. Too thick a film which might build up in the faying strips can crack because of the loss of flexibility. A good practical way to tell when you have enough material is to spray until you feel that one more pass will be just right, then quit right there, before you make that *one more pass*. The high solids content of polyurethane, its slow drying, and low surface tension allow the finish to crawl for an hour or so after it has been put on. If you can still see the metal when you think you have almost enough, don't worry; it will flow out and cover it. Almost no polyurethane job will look good until the next day, because it is still flowing. It will actually flow for about three to five days. It will be hard in this time, and the airplane may be flown in good weather, but the paint below the surface is still moving.

Masking tape may be applied after 12 hours under the most ideal conditions, but it is far better if you can wait 24 hours after application of the finish; it should be removed as soon after the trim is sprayed as possible. If it is left on the surface for a day or so, it will be almost impossible to remove.



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Both polyurethane enamel and the epoxy primer that sandwiches the film to the surface are catalyzed materials. They should be mixed and used within six hours. If they are not applied within this time, they will not have the full gloss because of the reduced flow time. If it is impossible to spray all of the polyurethane within the six-hour time period, careful addition of reducer can add a couple of hours to the useful life of the material.

The catalysts used for these primers and finishes are highly reactive to moisture, and the cans should be recapped immediately after using. If a can of the catalyst is allowed to remain open for a period of time, and is then resealed, the moisture in the can will activate it, and swell it up so much there is danger of the can bursting. High humidity and/or heat accelerate the cure.

All catalyzed material must be removed from the pressure pot, the hose, and the gun, immediately upon completion of the spraying operation, and the equipment thoroughly washed. If any of this material is allowed to remain overnight, it will solidify and ruin the equipment.

NOTE: Polyurethane may be injurious to your health. Wear proper safety equipment and clothing.



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