

TECHNICAL DESCRIPTION OPERATING, MAINTENANCE AND REPAIR MANUAL FOR WT9 DYNAMIC LSA

Type: **WT9 Dynamic LSA**

Model: **All models**

Airplane Serial Number: **DY-448/2012 LSA**

Publication Number: **0**

Date of Issue: **16.07.2012**

The airplane manufacturer will highly appreciate all suggestive proposals and reminders concerning this Manual as well as an announcement of knowledge and experience found during WT9 Dynamic LSA airplane operation.

Translation of this manual has been done by best knowledge and judgement. In any case the original in Slovak language is authoritative.

0 GENERAL

Section	Page
0.1RECORD OF REVISION	2
0.2LIST OF EFFECTIVE PAGES.....	3
0.3TABLE OF CONTENTS	5

0.2 LIST OF EFFECTIVE PAGES

Section	Page	Date	Section	Page	Date
0	1	16.07.2012	2	5	16.07.2012
	2	16.07.2012		6	16.07.2012
	3	16.07.2012		7	16.07.2012
	4	16.07.2012		8	16.07.2012
	5	16.07.2012		9	16.07.2012
1				10	16.07.2012
	1	16.07.2012		11	16.07.2012
	2	16.07.2012		12	16.07.2012
	3	16.07.2012		14	16.07.2012
	4	16.07.2012			
	5	16.07.2012	3	1	16.07.2012
	6	16.07.2012		2	16.07.2012
	7	16.07.2012		3	16.07.2012
	8	16.07.2012		4	16.07.2012
	9	16.07.2012		5	16.07.2012
	10	16.07.2012		6	16.07.2012
	11	16.07.2012		7	16.07.2012
	12	16.07.2012		8	16.07.2012
	13	16.07.2012		9	16.07.2012
	14	16.07.2012		10	16.07.2012
	15	16.07.2012		11	16.07.2012
	16	16.07.2012		12	16.07.2012
17	16.07.2012	13		16.07.2012	
18	16.07.2012	14		16.07.2012	
19	16.07.2012	15		16.07.2012	
20	16.07.2012	16		16.07.2012	
21	16.07.2012	17		16.07.2012	
22	16.07.2012	18	16.07.2012		
23	16.07.2012	19	16.07.2012		
24	16.07.2012	20	16.07.2012		
25	16.07.2012	21	16.07.2012		
26	16.07.2012	22	16.07.2012		
27	16.07.2012	23	16.07.2012		
28	16.07.2012	24	16.07.2012		
29	16.07.2012	25	16.07.2012		
30	16.07.2012	26	16.07.2012		
31	16.07.2012				
	32	16.07.2012	4	1	16.07.2012
				2	16.07.2012
2	1	16.07.2012		3	16.07.2012
	2	16.07.2012		4	16.07.2012
	3	16.07.2012		5	16.07.2012
	4	16.07.2012		6	16.07.2012

0.3 TABLE OF CONTENTS

Section	Section title
1.	TECHNICAL DESCRIPTION
2.	OPERATION
3.	MAINTENANCE
4.	REPAIRS
5.	APPENDIXES

1. TECHNICAL DESCRIPTION

Section	Page
1.1. INTRODUCTION	3
1.2. CERTIFICATION BASIS	3
1.3. WARNINGS, CAUTIONS AND NOTES.....	3
1.4. BASIC AND GENERAL INFORMATION.....	3
1.4.1. AIRPLANE DESCRIPTION.....	3
1.4.2. DESIGNATION.....	3
1.5. BASIC TECHNICAL DATA	4
1.5.1. AIRPLANE VIEWS	4
1.5.2. THREE VIEW DRAWING.....	5
1.5.3. BASIC DIMENSIONS	6
1.5.4. WEIGHTS	6
1.5.5. CENTRE OF GRAVITY	7
1.5.6. OPERATING LIMITATIONS	7
1.6. TECHNICAL DESCRIPTION OF THE AIRPLANE.....	7
1.6.1. GENERAL	7
1.6.2. FUSELAGE.....	7
1.6.3. WING	8
1.6.3.1. AILERON	8
1.6.3.2. WING FLAP.....	8
1.6.4. HORIZONTAL TAIL UNIT	8
1.6.5. VERTICAL TAIL UNIT.....	8
1.6.6. LANDING GEAR.....	8
1.6.6.1. LANDING GEAR.....	8
1.6.6.2. RETRACTABLE UNDERCARRIAGE	9
1.6.6.3. NOSE LEG	10
1.6.6.4. RETRACTABLE UNDERCARRIAGE SYSTEM	11
1.6.6.5. WHEEL BRAKE SYSTEM	12
1.6.7. COCKPIT	13
1.6.7.1. COCKPIT	13
1.6.7.2. COCKPIT CANOPY	14
1.6.8. EQUIPMENT	14
1.6.8.1. SEAT BELTS AND SAFETY HARNESS.....	14

1.6.8.2.	BAGGAGE COMPARTMENT	14
1.6.8.3.	INSTRUMENT PANEL	15
1.6.8.4.	AVIONICS	18
1.6.8.5.	RESCUE SYSTEM	18
1.6.8.6.	OXYGEN SYSTEM	19
1.6.9.	CONTROL SYSTEM	19
1.6.9.1.	LONGITUDINAL CONTROL SYSTEM	19
1.6.9.2.	LATERAL CONTROL SYSTEM	20
1.6.9.3.	WING FLAP CONTROL SYSTEM	21
1.6.9.4.	DIRECTIONAL CONTROL SYSTEM	22
1.6.9.5.	AUTO PILOT SYSTEM	22
1.6.10.	POWERPLANT	23
1.6.10.1.	BRIEF DESCRIPTION	23
1.6.10.2.	ENGINE	23
1.6.10.2.1.	ENGINE DESCRIPTION	23
1.6.10.2.2.	TECHNICAL DATA	24
1.6.10.2.3.	OPERATION LIMITATIONS	24
1.6.10.2.4.	FUEL	24
1.6.10.2.5.	OIL	25
1.6.10.3.	PROPELLER	25
1.6.10.4.	ENGINE MOUNT	26
1.6.10.4.1.	ENGINE MOUNT FOR FIXED UNDERCARRIAGE	26
1.6.10.4.2.	ENGINE MOUNT FOR RETRACTABLE UNDERCARRIAGE	26
1.6.10.5.	ENGINE COWLINGS	27
1.6.10.6.	ENGINE LUBRICATION SYSTEM	27
1.6.10.7.	ENGINE COOLING SYSTEM	27
1.6.10.8.	AIRPLANE FUEL SYSTEM	28
1.6.10.8.1.	FUEL TANK DRAINING	30
1.6.10.9.	HEATING	30
1.6.10.10.	VENTILATION	30
1.6.11.	ELECTRICAL SYSTEM	30
1.6.12.	PITOT STATIC SYSTEM	31
1.6.13.	CABLE RETRACTOR WINCH WITH GUILLOTINE	31
1.6.14.	PLACARDS	32

1.1. Introduction

The Technical Description, Operating, Maintenance and Repair Manual for airplane WT9 Dynamic LSA has been prepared to provide the information for the safe and efficient operation of this airplane.

This manual contains supplemental data supplied by the airplane manufacturer.

1.2. Certification basis

CS-LSA Certification Specifications for Light Sport Aeroplanes.

1.3. Warnings, cautions and notes

The following definitions apply to warnings, cautions and notes used in the flight manual.

WARNING
Means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety!

CAUTION
Means that the non-observation of the corresponding procedure leads to a minor or to a more or less long term degradation of the flight safety!

NOTE
Draws the attention to any special item, not directly related to safety but which is important or unusual!

1.4. Basic and general information

1.4.1. Airplane description

WT9 Dynamic LSA is a single engine, low-wing monoplane with two side-by side seats and dual control. An airframe consists of a sandwich shells from advanced composite material. The airplane is equipped with a fixed or a retractable tricycle undercarriage with a nose wheel. As a powerplant of this aircraft is used 4 cylinder, 4 stroke engines ROTAX 912 UL (59,6 kW) or ROTAX 912 ULS (73,5 kW) or ROTAX 912 S2 (73,5 kW) or ROTAX 914 UL (84,5 kW) with 3 blades in flight electrically adjustable propeller WOODCOMP SR2000D or 2 blade in flight electrically adjustable propeller WOODCOMP SR3000/2/SP or 3 blade ground adjustable propeller DUC or 3 blade ground adjustable propeller EVRA PERFOLINE 174 or 2 blade hydraulic in flight adjustable propeller MTV-21-A/170-51 can be used to meet the customer's request.

1.4.2. Designation

WT9 Dynamic LSA is intended for sporting, recreation, glider towing and tourist flying in accordance with VFR day. Aerobatic manoeuvres and intentional spins are prohibited!

1.5. Basic technical data

1.5.1. Airplane views



1.5.2. Three view drawing

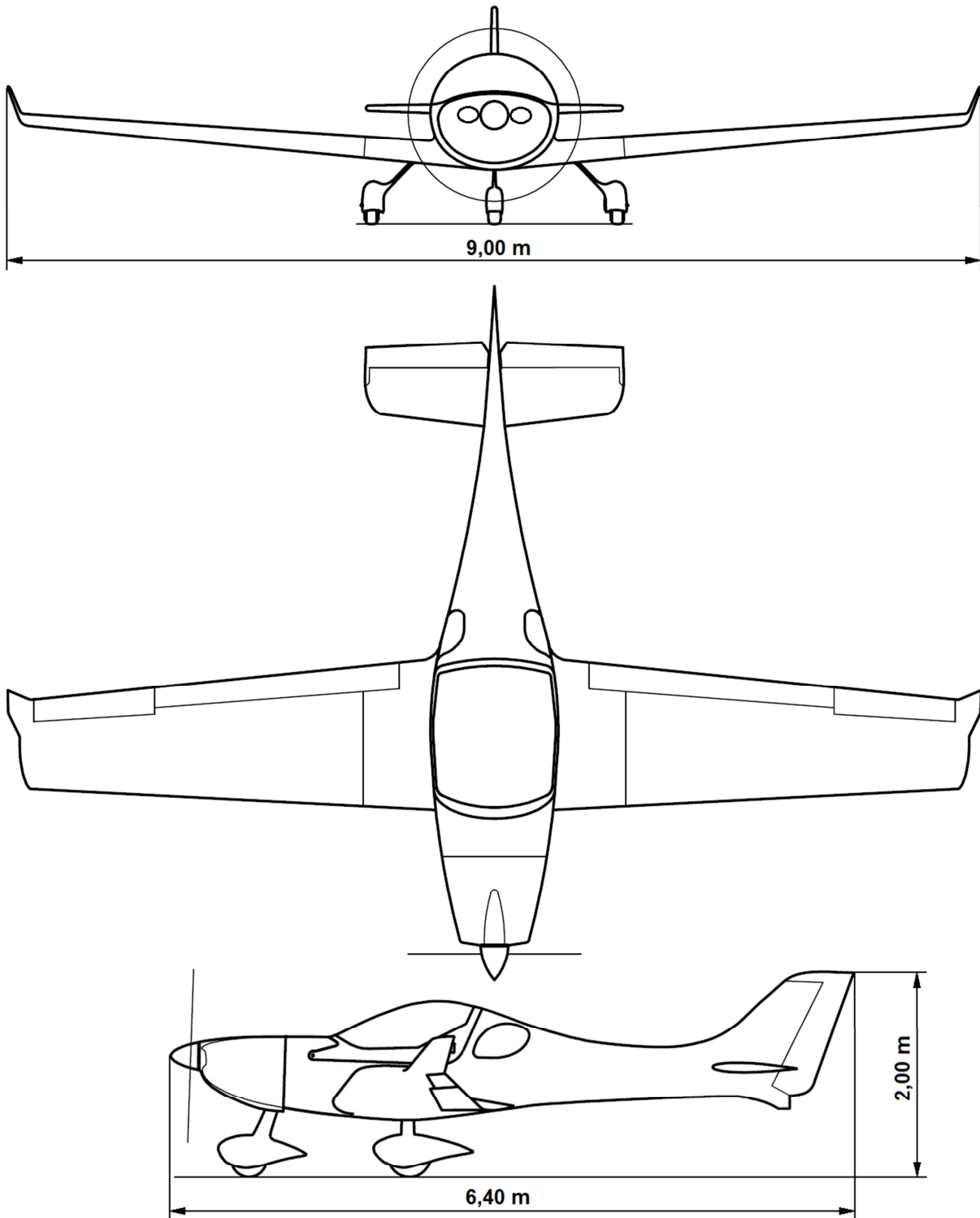


Fig. 1 Three view drawing

1.5.3. Basic dimensions

Airplane	
Wing area	10,30 m ²
Wing span	9,00 m
Length	6,40 m
Height	2,00 m
Fuselage width	1,18 m
Wing aspect ratio	7,82
Aerodynamic mean chord (MAC)	1,185 m

Control surfaces	
Aileron area	0,273 m ²
Aileron span	1,25 m
Flap area	0,75 m ²
Flap span	2,28 m
Horizontal tail area	1,68 m ²
Horizontal tail span	2,40 m
Vertical tail area	1,02 m ²
Vertical tail span	1,022 m

Landing gear	
Wheel base	1,49 m
Wheel spacing	2,27 m
Nose wheel diameter	0,32 m
Main wheel diameter	0,35 m

1.5.4. Weights

Weights	
Average empty weight with rescue system and standard equipment (Club, Club S, Club T, Club L, Club LT)	310 kg
Average empty weight with rescue system and standard equipment (Speed, Speed S, Speed T, Speed L, Speed LT)	340 kg
Maximum takeoff weight	600,0 kg
Maximum landing weight	600,0 kg
Fuel weight (74,0 / 100,0 / 126,0 litres)	53,3 / 72,0 / 90,7 kg
Maximum weight in baggage compartment	40 kg

NOTE

Actual empty weight is stated on the placard "LOAD LIMITS"
stuck in the cockpit!

1.5.5. Centre of gravity

CG positions	
Empty airplane CG position	12 ± 2% MAC
Position of CG in flight	20 ÷ 30% MAC

1.5.6. Operating limitations

Refer to the Airplane Flight Manual (FM), Section 2 for more detail about the following operating limits:

- Airspeed limits,
- Weights limits,
- CG range limits,
- Approved manoeuvres.

1.6. Technical description of the airplane

1.6.1. General

An airframe consists of a sandwich shells from advanced composite material. The shell is of three layer construction. The external and internal shell layers are made of a glass and carbon fibre fabrics, which are saturated with a resin. Between them there is a filling from a hard foam panels. The shells are formed in negative forms and they are heat treated 12 hours at temperature 54 °C for resin-harden.

1.6.2. Fuselage

The fuselage sandwich shell is divided in the symmetry plane. The fuselage cross-section are parabolic curves. The cockpit is reinforced with hollow profile from advanced composite material. The back rest of the crew and the central pedestal are glued and together with the shells they create reinforcement element of the airframe. The fin is made together with the fuselage. The wing central panel is fixed at the fuselage. There is the integral tank in the forward box of the wing central panel. The back box of the wing central panel is used as room for main legs of the retractable undercarriage. There are stiffening ribs in the back box of the wing central panel for gripping of the legs of the fixed undercarriage. A rescue system with ejection of the rescue parachute through removable cover may be located behind the fire wall of the power plant. A horizontal tail is fixed at the fuselage too. The baggage compartment is situated behind the seats. There is the frame with the access hole into the rear part of the fuselage. The Perspex canopy is glued on the composite frame. The canopy is attached to the nose section of the fuselage by pins which make it possible for the canopy to be tilted forward. For easier manipulation, the weight of the canopy is counterbalanced by two gas struts which allow it to open effortlessly. The engine section in the nose is separated from the cockpit by a firewall which the engine bed is attached to.

1.6.3. Wing

A construction of the wing is two-box type (the main spar caps are made from the carbon rods and one auxiliary girder). A torsion box is glass fibre reinforced plastics sandwich construction. Optionally is in the front wing part installed integral fuel tank which is connected with central section fuel tank with simple house connection with clamp. The spars of right and left wings are joined to the wing central panel spar with the help of two pins. The outer pin is inserted through the room for main legs of the retractable undercarriage (at model SPEED) or through the access hole on the lower wing surface (at model CLUB). The inner pin is inserted through the hole in the cockpit below pilot seat. The third join point is the pin of the auxiliary girder. The Pitot probe is located under the right wing.

1.6.3.1. Aileron

A construction of the aileron is the sandwich shell structure type. The aileron is attached to the upper surface of the wing shell with three hinges from advanced composite material. The movement by means of the rod is transmitted into the root rib. The control-surface weight balance is attached on the aileron tip rib. The deflections of the ailerons are differentiated 1:1,6.

1.6.3.2. Wing flap

The wing flap is the slotted flap type, with the low lying point of rotation. Construction of the wing flap is the sandwich shell structure type. The flap is attached to the wing with four hinges. The movement by means of the rod is transmitted into the wing flap root rib. The flap control lever has four positions: retracted, take-off with flap deflection 15°, landing position with flap deflection 24° and landing position with flap deflection 35°.

1.6.4. Horizontal tail unit

The horizontal tail unit consists of a stabilizer and elevator. The stabilizer consists of the sandwich shells from advanced composite material. The stabilizer is fixed at the fin. The elevator consists of two parts, which are joined together by means of the elevator control. The control-surface weight balance is attached on the tip of both parts of the elevator.

1.6.5. Vertical tail unit

The vertical tail unit consists of the fin and rudder and has trapezoidal shape. The fin is an integral part of the fuselage rear section. The rudder consists of a sandwich shells from advanced composite material with the control-surface weight balance. The ruder is attached by three hinges at the fin

1.6.6. Landing gear

WT9 Dynamic LSA, model Club is equipped with fixed tricycle landing gear and model Speed is equipped with retractable tricycle landing gear, which is actuated by a hydraulic system by the help of the electrical driven hydraulic pump

1.6.6.1. Landing gear

The main landing gear uses the legs, which are formed as a fibber-glass springs and are fixed in the fuselage casing under the seats on the stiffening ribs in the back box of the wing central panel. The main wheels are dimension 15x6,00-6 and they are covered with laminated fairings. The main wheels on both legs are equipped with hydraulic disc brakes. The main wheels are braked by hydraulic brakes with main hydraulic face ram, which is located beyond the seats. The main wheel brakes are actuated via the handle on the pedestal between the pilot seats. This handle actuates the parking brake too. Systems are actuated via the handle on the pedestal

between the pilot seats. The nose wheel leg consists of the steel tube and the carbon fork, where is located nose wheel with size 13x5,00-6. The nose wheel leg is supported on bearings (upper and down) and is controlled by means of the rods connected to the rudder pedals. The springing is carried out with rubber rope and with the flexible element, which is located in the upper nose wheel bearing. The nose wheel is covered with laminated fairing.

1.6.6.2. Retractable undercarriage

Main undercarriage (Fig. 2) consists of the welded steel leg (B), the arm (R) with the wheel and the flexible element (FB). The main leg is fixed into the fitting of the wing central panel main spar in front, and into the fitting of the auxiliary girder in rear. The wheel is equipped with disc brake (SB). The retraction of the undercarriage is carried out with help of the hydraulic face rams inside to the symmetry plane of the airplane. The pistons of the hydraulic face rams are connected with the drag stay, which is equipped with the spiral spring (F). This spring pushes the drag stay during of the undercarriage extension into the arrested position. The emergency extension of the undercarriage is carried out by own mass with the help a three-way valve. The drag stay is arrested with help of the springs.

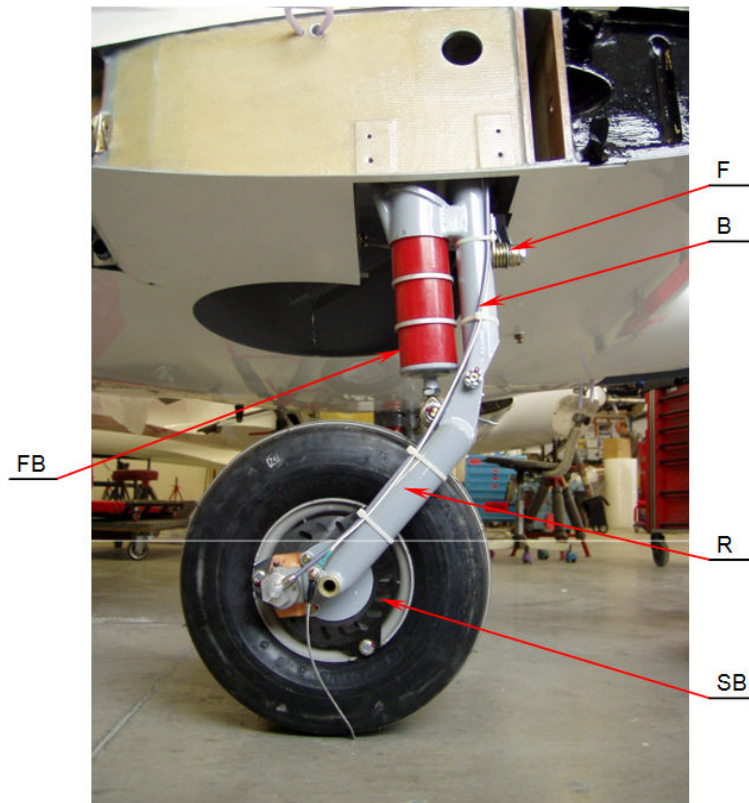


Fig. 2 Main leg of the retractable undercarriage

1.6.6.3. Nose leg

The nose leg of the retractable undercarriage (Fig. 3) position (B) is fixed into the engine bed. The nose wheel leg is the wheel arm towed type. The damping of the arm is carried out with the flexible elements from polyurethane, which are located in the tube of the leg (B). The nose undercarriage leg is retracted backwards. The drag stay (KS), which is connected with the piston of the hydraulic face ram provides for the movement of the nose undercarriage. The gas strut (GF) provides for the emergency extension of the nose undercarriage. This gas strut extrudes the drag stay into the arrested position. The control of the nose undercarriage leg is carried out with help of the control cables (KZ) „Cable craft“ type connected with the rudder pedals.



Fig. 3 The nose leg of the retractable undercarriage

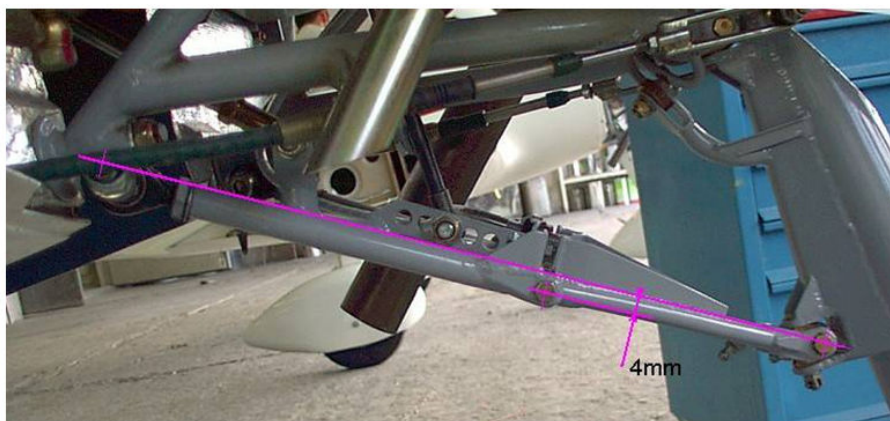


Fig. 4 Adjusting of a drag stay (KS)

1.6.6.4. Retractable undercarriage system

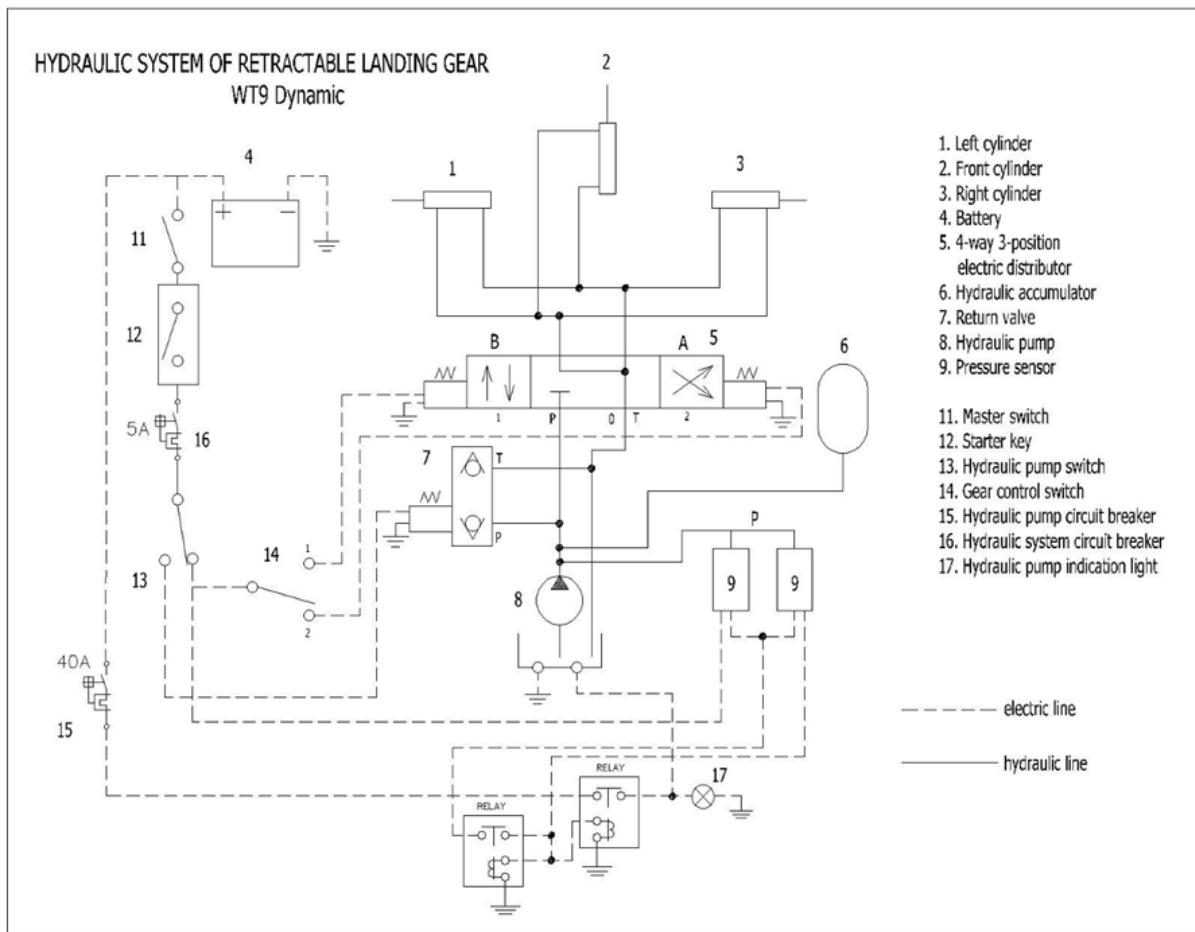


Fig. 5 Hydraulic system diagram of the retractable undercarriage

CAUTION

In case that the Hydraulic pump indication light (17) is shining for more than 20 seconds switch OFF the Hydraulic pump circuit breaker (15). The continuing running of hydraulic pump will causes damage of hydraulic system. This can be caused of loose of hydraulic pressure because of hose leaking or other reason. Fly with extended undercarriage and after landing contact authorised technician to find and solve the problem.

The power is supplied from the battery to the overswitch S1 in the up position on the instrument panel labelled "Hydraulic On", which switch on the hydraulic pump by means of the pressure switch and the relay. The pressure switch switches off the power after reaching of desired pressure. The overswitch S1 in the down position labelled "Emergency extension of L/G" switches on the emergency extension of the undercarriage. The emergency extension of the undercarriage is carried out by own mass with the help a three-way valve. The drag stay is arrested with help of the springs. The other overswitch S2 controls the direction of the pressure fluid movement for extension or retraction of the undercarriage. The pressure fluid proceeds via the three-way valve to the one or another side of the hydraulic face ram. Both sides of the hydraulic face ram are without pressure at the emergency extension of the undercarriage.

1.6.6.5. Wheel brake system

Both wheels on main undercarriage are equipped with the hydraulic disc brakes. The brake disc is bolted on the rim inner part with three screws. The hydraulic brake cylinders are actuated with the pressure of the hydraulic fluid. The source of the pressure is the main brake hydraulic face ram, which is located under pilot seat - standard or in central tunnel Beringer brakes. The main brake hydraulic face ram is actuated via the handle the pilot seats. The movement of the lever is transmitted to main brake cylinder. The pressure fluid is distributed through the hoses. This handle actuates the parking brake too.

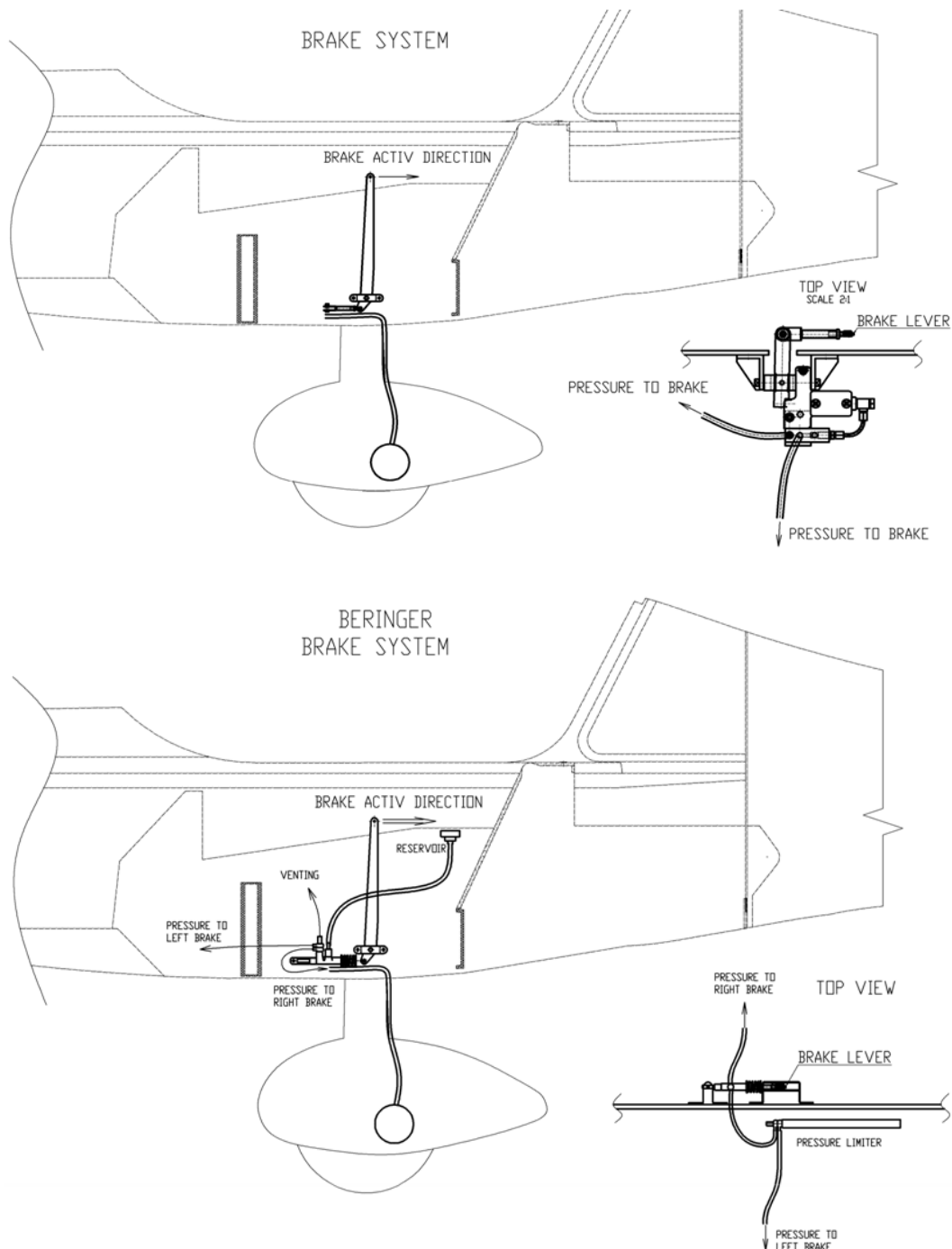


Fig. 6 Brake system diagram for standard and Beringer brake system

1.6.7. Cockpit

The side wall of the seats together with the pedestal between the seats and a back supporter of the seats are glued into the fuselage construction as the frame. The seats with a thin upholstery interior cockpit sides are covered with padded panels with pockets. The bottom of the seats is removable for the access to the aggregates, which are mounted below the seats.

1.6.7.1. Cockpit

The control sticks are supported on the torsion tube. The attachments of this torsion tube are fixed to the main spar of the wing central panel. The flap control lever, elevator trim tab lever and the main wheel brakes handle are located on the pedestal between the pilot seats.

The standard cockpit arrangement is shown in the following figure. Instrument panel arrangement is described in par. 1.6.8.3.

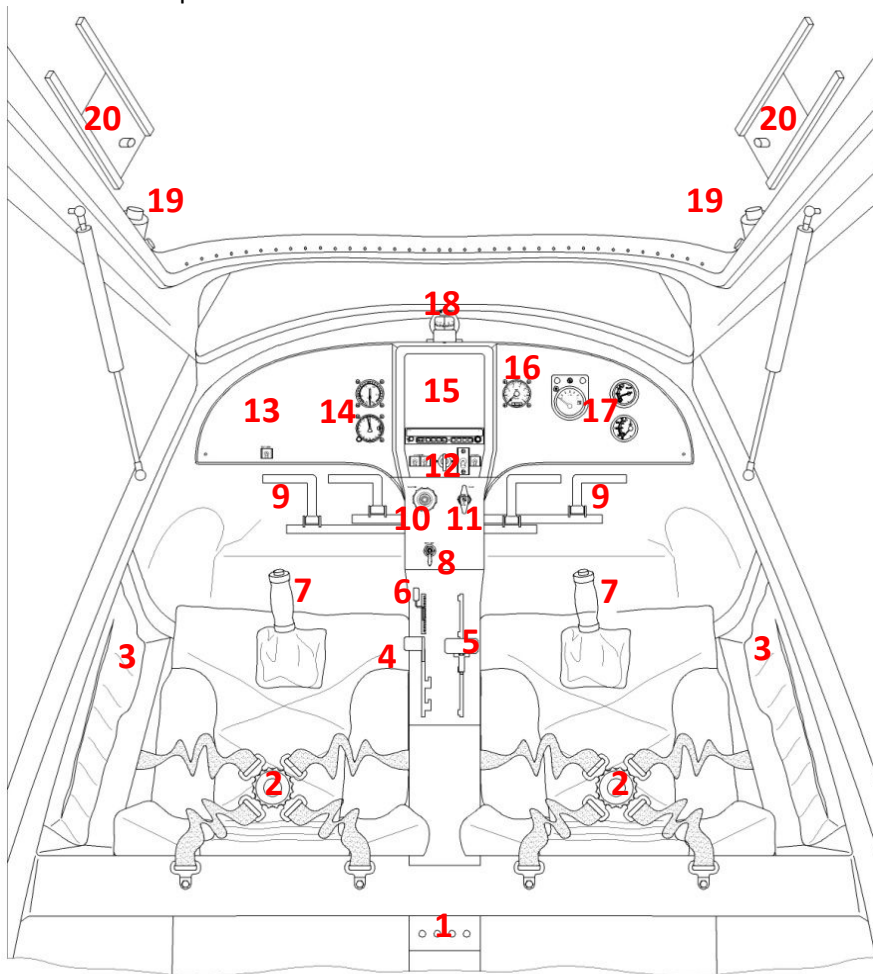


Fig. 8. The standard cockpit controls (see also Section 7.4)

1. Headset socket/jack	11. Choke
2. Seat and safety belt	12. Ignition, starter key, master switch
3. Pocket	13. Instrument panel
4. Brake lever	14. Flight instruments
5. Wing flap lever	15. GPS, radio, transponder
6. Trim lever	16. Tachometer
7. Control stick	17. Powerplant instruments
8. Fuel selector	18. Magnetic compass
9. Rudder pedals	19. Ventilation flow baffle
10. Throttle lever	20. Ventilation sliding window

1.6.7.2. Cockpit canopy

The cockpit canopy consists of one part. The Perspex canopy is glued on the composite frame. The canopy is attached to the nose section of the fuselage by two pins (B) which make it possible for the canopy to be tilted forward. For easier manipulation, the weight of the canopy is counterbalanced by two gas struts (GF) which allow it to open effortlessly. On the lower frame there are handles outside the canopy. The canopy is equipped with a lock on the upper rear section of the frame. The ventilation air flows through the canopy frame (HR) which is shaped as a hollow laminated profile. The air inlet for the ventilation (AO) is located on the upper rear section of the canopy and serves as the handle for the opening and the closing of the cockpit canopy. The ventilation air is led through the hollow to the adjustable venting nozzles on both cockpit sides. The side sliding window is located on the left- hand side of the canopy. The cockpit canopy close (HV) finds in the symmetry plane of the fuselage. This close is accessible from both seats. The pin of the close is created as the latch with push spring.

The lock with the key which is located beside the close allows the locking of the canopy cockpit.



1.6.8. Equipment

1.6.8.1. Seat belts and safety harness

The safety belts – 4 point static harness restrain system is attached to the left and right seats side panel and to the strut behind the back supporter of the seats.

1.6.8.2. Baggage compartment

The baggage compartment is situated behind the back supporter of the seats and separated from the rear fuselage section with the frame. There is a well in the baggage compartment. An elevator control rod and a rudder control rod as well as a control of the main undercarriage brake passes through this well. Maximum baggage weight is stated on a placard stick near the compartment. A loading of the baggage compartment have to be in accordance with a balancing of the airplane.

1.6.8.3. Instrument panel

The instrument panel arrangement is shown in the following figure (Fig. 9). A different instrument panel arrangement may be used, if optional flight and navigation instruments are mounted in the airplane.



Fig. 9 Instrument panel

1. Brake lever	12. Flap control unit	23. Radio
2. Throttle lever resistance setting	13. PTT button and trim control	24. Dynon SkyView SV-D1000 (2)
3. Throttle lever	14. Pedals adjustment handle	25. Airspeed indicator
4. Trim control select switch	15. 12V Socket	26. Intercom
5. Fuel selector	16. Switches*	27. Trim indicator
6. Choke	17. Ignition	28. USB connector (1)
7. Oil flap control	18. Starter key	29. USB connector (2)
8. Carburettor pre-heating	19. Master switch	30. Propeller governor
9. Cabin ventilation	20. Circuit breakers**	31. Check lights (CL) and Buttons (B)***
10. Cabin heating	21. Altimeter	
11. TOW mechanism handle	22. Dynon SkyView SV-D1000 (1)	32. Magnetic compass

* AVIONICS, ACL, LAND, FUEL PUMP

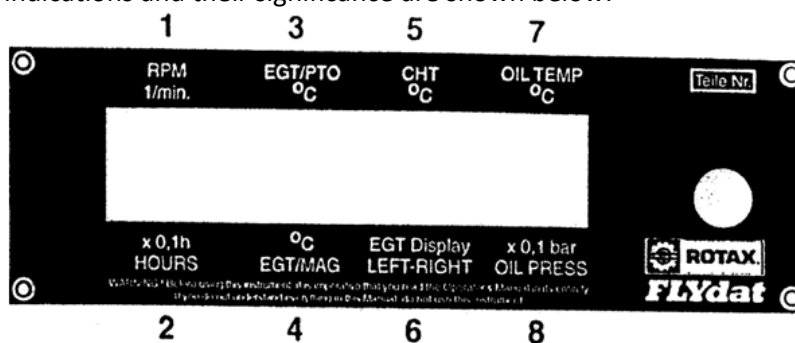
** Circuit breakers are listed on the next page

*** OVER SPEED WARNING (CL), FUEL PUMP (CL), FUEL RES. LEFT (CL), FUEL RES. RIGHT (CL), D-1000 (CL), CHARGE (CL), TEST (B)

Powerplant instrument

According to option of the customer are mounted round one-purpose needle instruments or multiple instruments FLYdat on the instrument panel. The FLYdat represents an instrument especially developed for ROTAX aircraft engines for indication and acquisition of engine operating data readily accessible for the pilot. The operating data is permanently compared with the engine specific operating limit. If the signalled operating data exceeds the stored operating limit, the FLYdat will warn the pilot by the warning light (annunciator).

FLYdat indications and their significance are shown below:



Display field	Designation	Unit	Resolution
1	Engine speed	RPM	1,0
2	Hours of operation	H	0,1
3	Exhaust gas temperature cylinder PTO*	°C or °F	1,0
4	Exhaust gas temperature cylinder MS**	°C or °F	1,0
5	Cylinder head temperature	°C or °F	1,0
6	Cylinder line***		
7	Oil temperature	°C or °F	1,0
8	Oil pressure	bar	0,1

* Cylinder PTO is at power takeoff side.

** Cylinder MS is at the magneto side.

*** Arrow indicating the line of cylinders from which the exhaust gas temperature is picked up.

← denotes left line of cylinders, → denotes right line of cylinders

The FLYdat has been configured for ROTAX 912 UL engine by the manufacturer. The following warn- and alarm limits are stored:

Display field	Unit	Warn limit	Alarm limit
Engine speed	RPM	5800	6000
Exhaust gas temperature (EGT)	°C	880	900
Cylinder head temperature (CHT)	°C	150	160
Oil temperature	°C	140	150
Oil pressure maximum	bar	6,0	8,0
Oil pressure minimum	bar	2,0	1,0

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

The FLYdat has been configured for ROTAX 912 S2 engine by the manufacturer. The following warn- and alarm limits are stored:

Display field	Unit	Warn limit	Alarm limit
Engine speed	RPM	5800	6000
Exhaust gas temperature (EGT)	°C	880	900
Cylinder head temperature (CHT)	°C	135	150
Oil temperature	°C	130	145
Oil pressure maximum	bar	6,0	8,0
Oil pressure minimum	bar	2,0	1,0

Distinguish between three ranges of readings control:

Colour range	Significance
Green (standard operation)	All readings are below or above (min. oil pressure) the warn limits programmed.
Yellow (exceeding of warn limits)	If one or more readings exceed the programmed warn limit, then the readings appears flashing on the display, and simultaneously the alarm output is periodically (0,25 sec.) switched on and off, until no readings exceed warn limit.
Red (exceeding of alarm limits)	If one or more readings exceed the programmed alarm limit, then the readings appear flashing on the display and simultaneously the alarm output is permanently activated until no reading exceeds the warn limit.

If one or more alarm limits have been exceed, or the reading on the meter of the operating hours has surpassed the programmed TBO, the maintenance message reads as follows: „**SERVICE!**“.

CAUTION
 Disregard of the warning and alarm signals might result in injuries or endanger the life of operator or third party!

BOMBARDIER-ROTAX as manufacturer, warrants every FLYdat for a period of not more than 9 consecutive months for private use owners or 12 consecutive months from date of shipment of the manufacturer or the first 150 operation hours.

Powerplant instrument markings and their colour code significance are shown below:

Instrument	Unit	Red Line Minimum Limit	Green Arc Normal Operating	Yellow Arc Caution Range	Red Line Maximum Limit
Tachometer	RPM	1400	1800 - 5500	5500 - 5800	5800
Oil temperature indicator	°C	50	90 - 110	50 - 90 110 - 130 ^{2,3} 110 - 140 ¹	140 ¹ 130 ^{2,3}
Coolant temperature indicator	°C		90 - 110	50 - 90 110 - 120	120
Cylinder head temperature indicator	°C				150 ¹ 135 ^{2,3}
Fuel pressure indicator	bar	0,15	0,20 - 0,35 ^{1,2} 0,25 - 1,00 ³	0,15 - 0,20 ^{1,2} 0,35 - 0,40 ^{1,2} 0,15 - 0,25 ³ 1,00 - 1,50 ³	0,40 ^{1,2} 1,50 ³
Oil pressure indicator	bar	0,8	2,0 - 5,0	0,8 - 2,0 5,0 - 7,0	7,0
Fuel quantity indicator	l	Red light annunciator will be illuminated with the remaining 7 litres of fuel in the fuel tank.			

1) Indication is valid for ROTAX 912 A/F/UL engine

2) Indication is valid for ROTAX 912 S/ULS engine

3) Indication is valid for ROTAX 914 F/UL engine

1.6.8.4. Avionics

The following avionics are mounted in the airplane: radios and intercom. This equipment must be connected with the headphones and with the antenna. The airplane might be equipped with other instruments (GPS, transponder, or board computer). The flight and navigation instruments are mounted as an option of the customer (but with respect to the weight limitation of the aircraft). Refer to the Manuals supplied with above mentioned instruments for right operation of the instruments and for more details.

1.6.8.5. Rescue system

The airplane can be equipped with parachute rescue system MAGNUM 601 S-LSA from the company STRATOS 07 spol. s r. o. as miscellaneous equipment. This rescue system is designed for the aircraft with maximum weight up to 620 kg and with maximum speed of using 157 knots. The area of parachute is 130 m². The descent rate with opened parachute is 1378 fpm. The container dimension is 430x210x250 mm and the total weight is 12,9 kg. Rocket motor is Magnum 600 A with total thrust pulse 0,539 kNs. The life time of the rescue system is 18 years with the repacking interval is 6 years.



Fig. 10. Rescue system MAGNUM 601 S-LSA

1.6.8.6. Oxygen system

On the plane is optionally mounted aviation oxygen system from “Mountain High E&S Company” with two removable bottles of oxygen, regulator and breathing masks or cannulas. Please read the operation manual for this system, it is attached to aircraft documentation. Basic scheme is on the figure below.

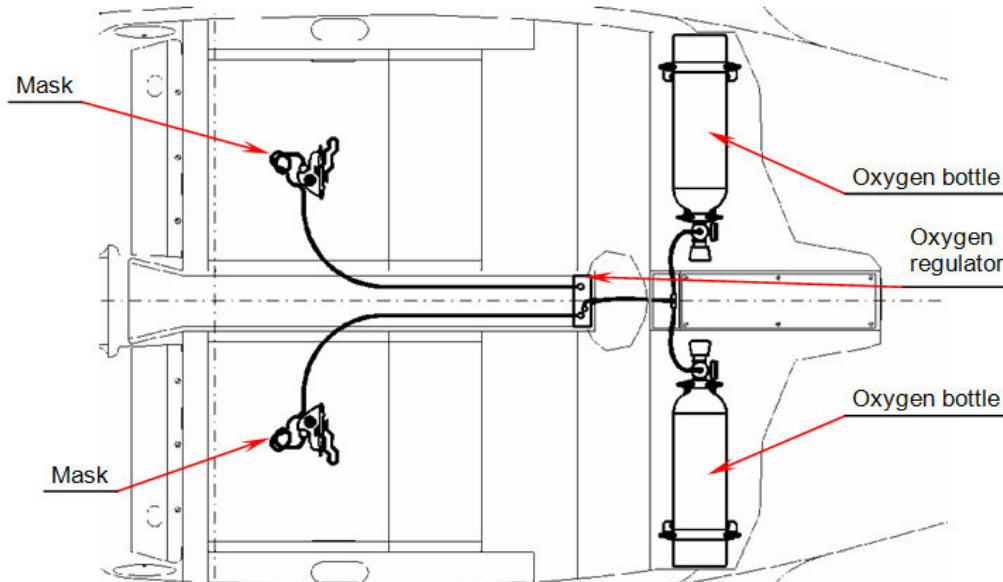


Fig. 11. Oxygen system scheme

1.6.9. Control system

1.6.9.1. Longitudinal control system

The control sticks (1) are supported on the torsion tube and a control stick pull-up or push-down movements are transmitted to the elevator by the rods. A longitudinal motion of the first rod (2) is transferred through a two-armed lever (3) to additional rods (4) and (5). The additional rods are connected together by an elevator rods connecting lever (6). An attachment of this lever is glued into the fuselage construction. The rod (5) is connected to the elevator single-arm lever (11), which is a part of the fitting connected both half of the elevator.

The control stick motions are limited by two stops (7). A “push-down” stop is glued into the wing central panel main spar. A “pull-up” stop is on the lateral located tube, which is passed through the walls of the middle console between the seats. An adjustment of the stops is allowed after removal of the pedestal upper cover. A trim control system uses lamellar carbon spring (8). A trim control lever (10) changes a position of the lamellar carbon spring during the trimming by motion of the rod (9). A force of the lamellar carbon spring is transmitted into the control by a short rod. An adjustment of the short rod by slewing of a nut adjusts a range of the trimming.

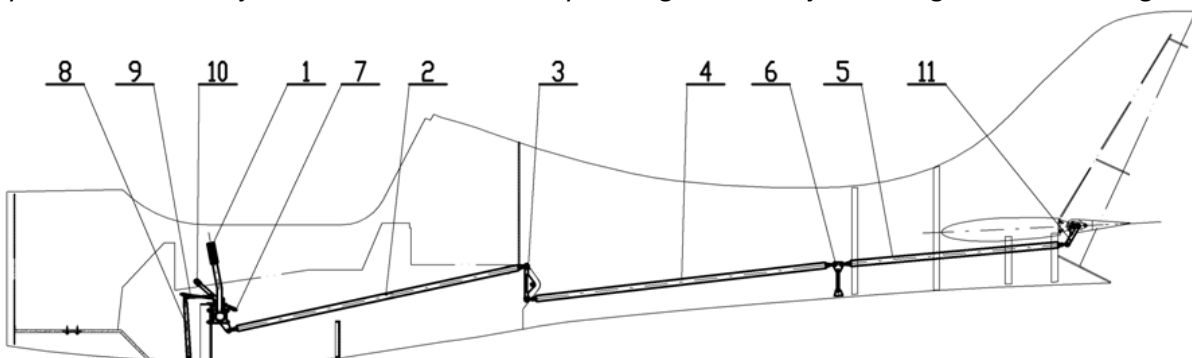


Fig. 12. Longitudinal control system scheme

1.6.9.2. Lateral control system

A control stick lateral motion (1) is transferred by rod (2) into a pin joint (BV), which allows a disconnection of the rod in case of a derigging of a wing. An access to this joint (BV) is allowed through an access hole at a model with a fixed undercarriage and through a main wheel well at a model with a retractable undercarriage. Long rod (3) guides from the end of the wing central panel to the two-arm lever (4), which a console with the bearings is attached at the wing main spar. This lever provides a necessary differentiation of the aileron deflections. Two-armed lever angular displacement is transferred at aileron by short rod (5). A longitudinal movement of a short rod is transferred into an aileron root rib, which a point of rotation is below an upper surface wing. The long rod (3) is guided in sliding guide rollers (6) which are located in the wing root rib and in the wing auxiliary rib. Its guide surfaces are equipped with a riveted sliding capsular on a rod. The range of the control stick deflection is adjusted by stops (AS) on the consoles of the torsion tube (TR). The stops are screws type with the fastening nut.

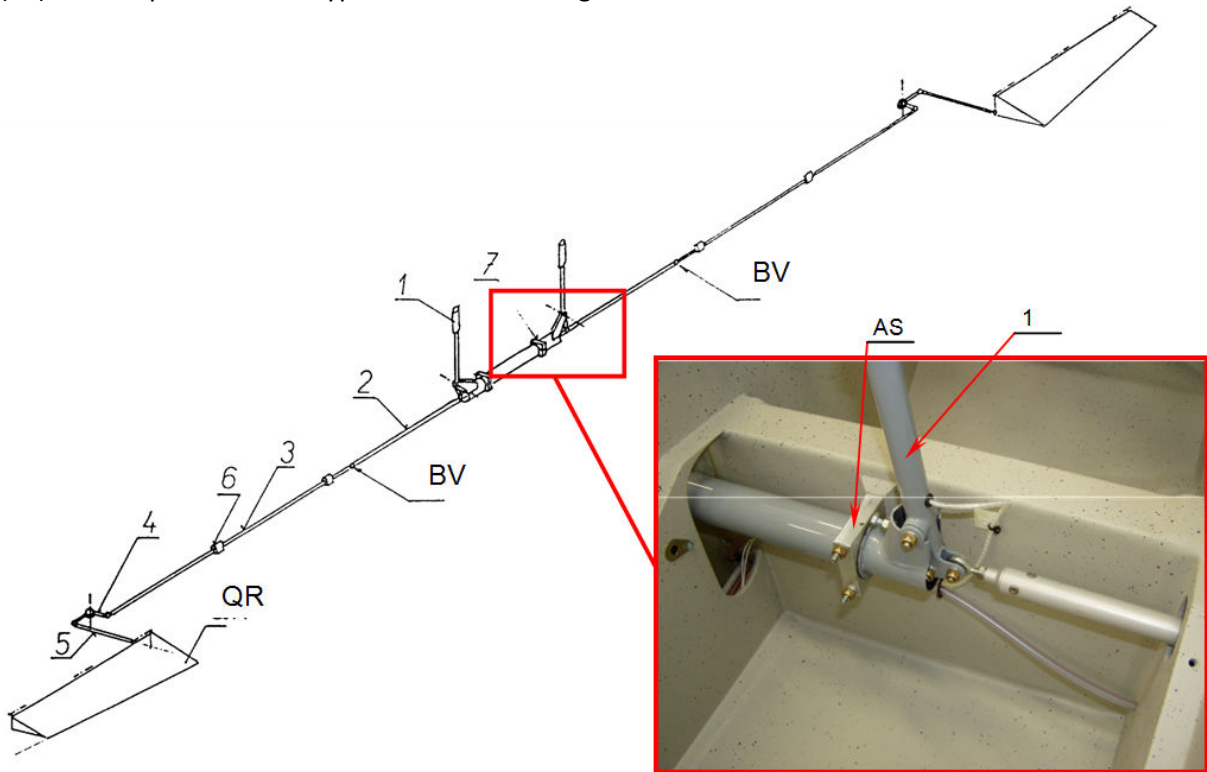


Fig. 13. Lateral control system scheme

1. Control stick	6. Sliding guide rollers
2. Push-rod in the wing central panel	7. Sliding bearings
3. Push-rod in the wing	BV - Split pin joint
4. Two-armed lever	QR - Aileron
5. Aileron push-rod	AS - Control stick adjustable stop

1.6.9.3. Wing flap control system

The wing flaps are controlled by a flap control lever (1) located on the pedestal between the seats. Set flap position is locked by the deflection of the flap control lever into the appropriate recesses on the pedestal cover, where a lever is pushed by a spring. The lever deflection is transferred at a longitudinal movement of a rod (3) to the torsion tube (5), which transfers this motion symmetrically on both wing flaps. The torsion tube (5) is supported at three sliding bearings (7). Two short rods (6) with the adjustable rod ends provide for a connection of the torsion tube with the wing flaps. These adjustable rod ends allow the symmetrical deflections adjustment of both flaps. The rods (6) are jointed with the flap control lever by means of the disconnection pin, which is secured by a cotter pin. An access to this joint is allowed by the wing flap deflection into the maximum lower landing position.

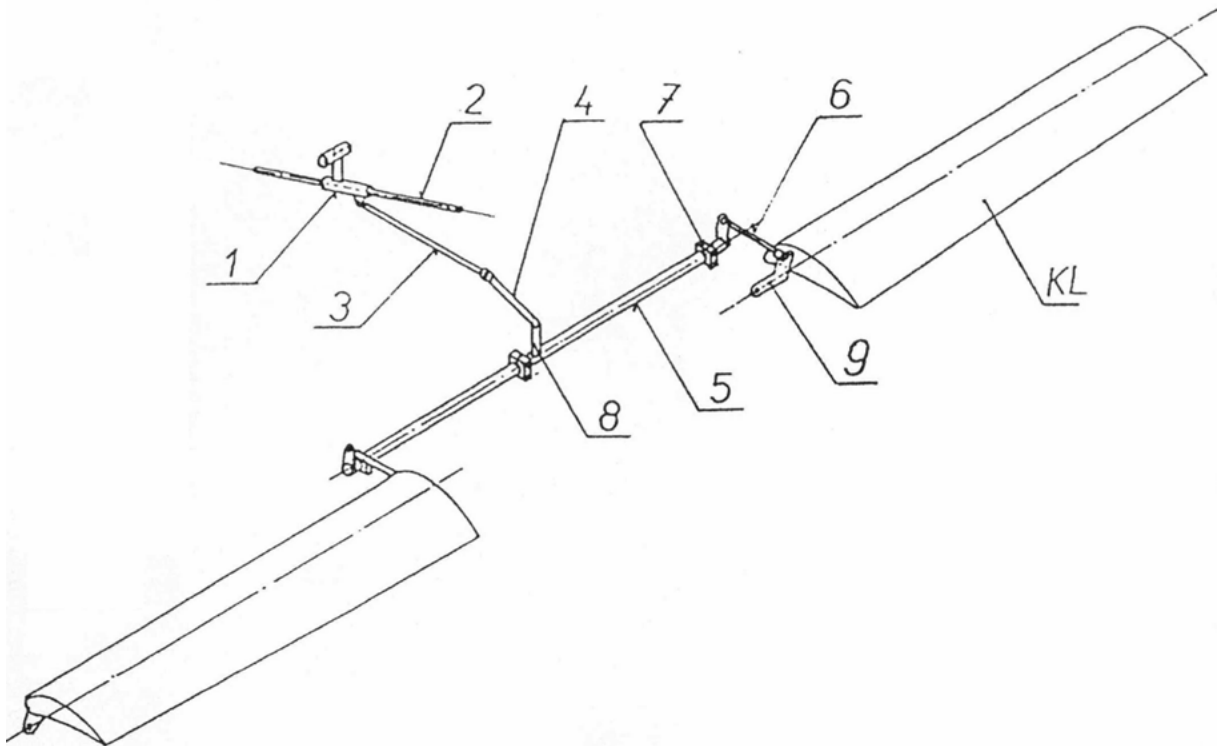


Fig. 14. Wing flap control system scheme

1. Flap control lever	6. Short push-rod
2. Changing gate	7. Sliding bearing
3. Push-rod	8. Arm joint bolt
4. Arm of the torsion tube	9. Flap arm
5. Torsion tube	KL - Wing flap

1.6.9.4. Directional control system

The rudder pedals are attached on the cockpit floor at the model with a fixed undercarriage. The pedal motions are transferred from the lateral torsion tubes (QR) to the rudder by means of the control cables. The control cables are guided through a polyurethane casing, which is attached into the fuselage structure. In case of the retractable undercarriage, due to a present of a nose wheel leg, the control system is attached on the lateral reinforcement. The rudder control is connected with nose wheel undercarriage control by means of two short rods (fixed undercarriage) or by means of control cables „Cable craft“ type at a model with retractable undercarriage.

For adjustment is necessary pull-up a pin (RB) pushed by spring, slew a pedal (P) into the required position, than push the pin (RB) again into the appropriate hole. (Fig 15a). From WT9 Dynamic serial number 245/2009 onward the WT9 Dynamics are fitted with a rudder pedals adjustment control situated under instrument panel on the both sides of the cockpit (Fig 15b).



a) Up to S/N DY-245/2009

b) From SN.: DY-145/2009

Fig. 15 Adjustment of the rudder pedals position

1.6.9.5. Auto Pilot System

In the control system is optionally mounted Autopilot system. There can be mounted two way autopilot. The autopilot servos are mounted in following places, the lateral control servo is mounted under pilot seat and the longitudinal control servo is mounted behind the baggage bulkhead. For the detailed description of the autopilot operation see also the Autopilot installation and operation manuals

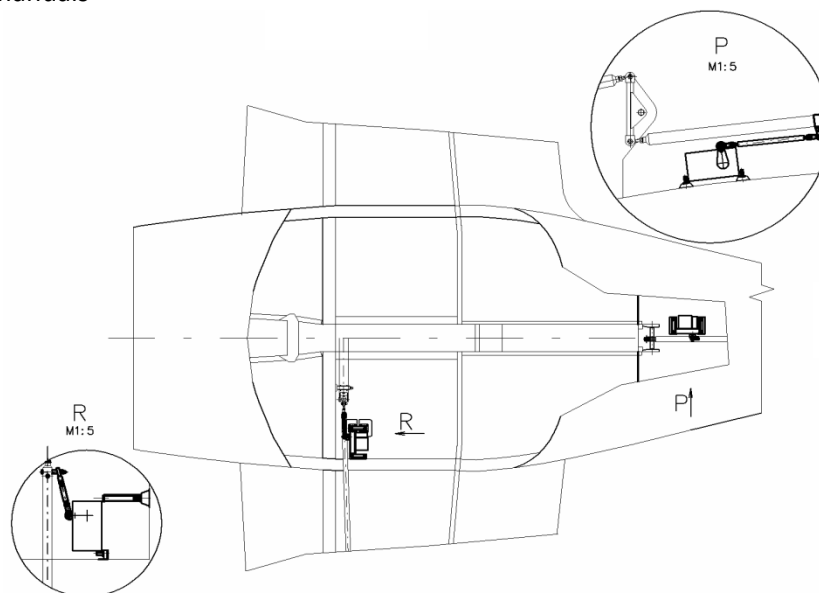


Fig. 16 Auto pilot system

1.6.10. Powerplant

1.6.10.1. Brief description

Standard powerplant consists of 4 cylinder horizontally opposed, 4-stroke engine ROTAX 912 UL or engine ROTAX 912 S2 or ROTAX 914 UL and 3-blades electrically adjustable propeller WOODCOMP SR2000D or 2-blades electrically adjustable propeller WOODCOMP SR3000/2/SP or 2-blade hydraulic adjustable propeller MTV-21-A or ground adjustable propeller DUC or 3 blade ground adjustable propeller EVRA PERFOLINE 174.

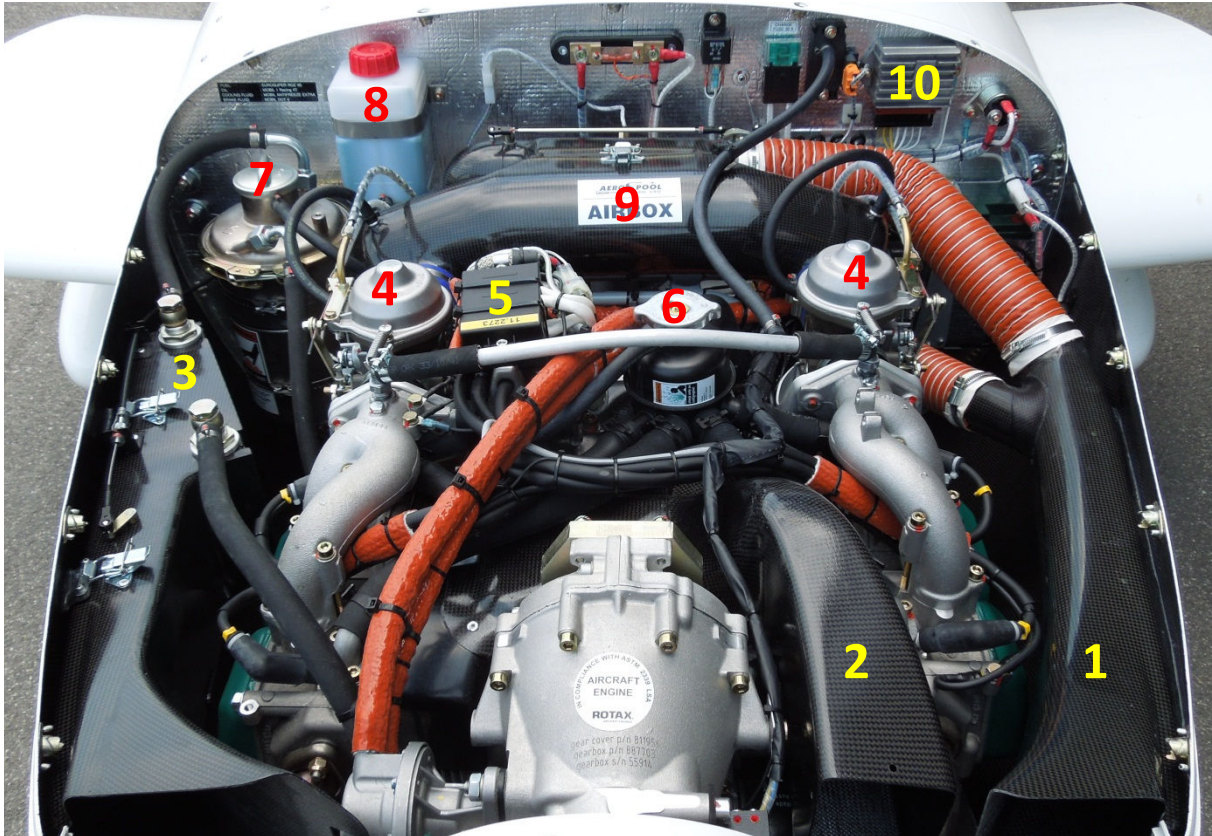


Fig. 17 Powerplant ROTAX 912 ULS

1. Cabin venting and engine intake	6. Coolant filler tank
2. Oil radiator	7. Oil tank
3. Oil thermostat	8. Coolant overflow bottle
4. Carburettor	9. Airbox
5. Ignition	10. Regulator

1.6.10.2. Engine

1.6.10.2.1. Engine description

ROTAX 912 UL / 912 S2 / 914 UL is 4-stroke, 4-cylinder horizontally opposed, spark ignition engine, one central camshaft-push-rods-OHV. Liquid cooled cylinder heads, ram air cooled cylinders. Dry sump forced lubrication. The engine is fitted with electric starter, AC generator, mechanical fuel pump (except of ROTAX 914 UL) and the reduction gear with integrated shock absorber. Engine Rotax 914 is in addition equipped with turbo charger able to produce better takeoff and high altitude performance. For more details see the Operator's Manual for corresponding ROTAX engine. See also Flight Manual.

1.6.10.2.2. Technical data

Engine	ROTAX 912 UL	ROTAX 912 S2	ROTAX 914 UL
Max. takeoff power	59,6 kW / 80 hp	73,5 kW / 100 hp	84,5 kW / 115 hp
Max. continuous power	58,0 kW / 78 hp	69,0 kW / 94 hp	73,5 kW / 100 hp

1.6.10.2.3. Operation limitations

	Rotax 912 UL	Rotax 912 S2	Rotax 914 series
Engine speed			
Maximum take-off	5800 RPM, max. 5 min	5800 RPM, max. 5 min	5800 RPM, max. 5 min
Maximum continuous	5500 RPM	5500 RPM	5500 RPM
Idling	≈1400 RPM	≈1400 RPM	≈1400 RPM
Cylinder head temperature			
Max.	140 °C	135 °C (FLYdat reading)	135 °C (FLYdat reading)
Oil temperature			
Min.	50 °C	50 °C (FLYdat reading)	50 °C (FLYdat reading)
Max.	140 °C	130 °C (FLYdat reading)	130 °C (FLYdat reading)
Optimum	90-110 °C	90-110 °C	90-110 °C
Oil pressure			
Min.	0,8 bar	0,8 bar	0,8 bar
Max.	7 bar (for short period at cold start)	7 bar (for short period at cold start)	7 bar (for short period at cold start)
Optimum	2-5 bar (above 3500 RPM)	2-5 bar (above 3500 RPM)	2-5 bar (above 3500 RPM)
Fuel pressure			
Min.	0,15 bar	0,15 bar	0,15 bar
Max.	0,4 bar	0,4 bar	1,35 bar
Engine start, operating temperature			
Min.	-25° C	-25° C	-25° C
Max.	+50° C	+50° C	+50° C
Airbox intervention temperature			72 °C or 88 °C (see Operation Manual Rotax)

1.6.10.2.4. Fuel

ROTAX 912 UL	ROTAX 912 S2	ROTAX 914 UL
Minimum octane number 90	Minimum octane number 95	Minimum octane number 95
EN 228 Normal	—————	—————
EN 228 SUPER	EN 228 SUPER	EN 228 SUPER
EN 228 SUPER plus	EN 228 SUPER plus	EN 228 SUPER plus
AVGAS 100 LL	AVGAS 100 LL	AVGAS 100 LL

Due to the higher lead content in AVGAS, the wear of the valve seats, the deposits in combustion chamber and lead sediments in the lubrication system will increase. Therefore, use AVGAS only if you encounter problems with vapour lock or if the other fuel types are not available. Risk of a vapour formation if using winter fuel for summer operation.

	Left tank (l)	Right tank (l)
The total quantity of fuel in the tank	37,0 / 63,0	37,0 / 63,0
Unusable fuel in the tank	1,9 / 2,9	1,9 / 2,9
The total usable quantity of fuel in the tank	35,1 / 60,2	35,1 / 60,2

1.6.10.2.5. Oil

Oil grade: motorcycle oil of a registered brand with gear additives. Use only oil with API classification „SF“ or „SG“! If using aircraft engine oil, than only blended one. Due to the high stresses in the reduction gears, oils with gear additives such as high performance motor cycle oils are required. Heavy dry 4-stroke motor cycle oils meet all the requirements. These oils are normally no mineral oils but semi- or full synthetic oils.

Oil capacity: 3,0 litre

Oil consumption: Max. 0,06 l/h



At the selection of suitable lubricants refer to the additional information in the Operator's Manual for all versions of ROTAX 912 and 914.

1.6.10.3. Propeller

Airplane is equipped with 3-bladed in-flight electrically adjustable propeller WOODCOMP SR2000D with 1700 mm diameter. The propeller blades are made of a wood-composite and the leading edges are made of a wear resistant material.

The angle of blades setting is adjusted by servomotor controlled from the cockpit and it can be adjusted smoothly in range from the minimum angle intended for takeoff up to maximum angle. A speed of displace is approximately 0,5 °/sec. Propeller control on the instrument panel consists of panel, in which there is placed the signalisation of the direction of propeller blades adjusting, together with control diodes of small and large angle and also the switch of control. The meaning of the control diodes signals is:

Yellow control diode of adjusting the fine angle:

- Shines after reaching the min. angle.
- Blinks when adjusting the finer angle.

Red control diode of adjusting the rough angle:

- Shines after reaching the stop at max. angle.
- Blinks when adjusting the rougher angle.

Propeller Technical Data:

Propeller diameter:	1700 mm
Propeller blade angle range:	approx. 16 ÷ 26° (depends on engine type)
Maximum propeller RPM:	2650 rpm
Propeller mass:	12,5 kg
Time between overhaul (TBO):	1500 hrs

Airplane can be fitted also with 2-bladed electrically adjustable propeller WOODCOMP SR3000/2/SP or 2-bladed hydraulic adjustable propeller MTV-21-A or ground adjustable propeller DUC or ground adjustable propeller EVRA PERFOLINE 174.

Additional data can be found in the Operator's Manuals for corresponding propeller.

WARNING

Never run the engine without propeller, this inevitably causes engine damage and is an explosion hazard!

1.6.10.4. Engine mount

The engine mount is welded from chrome-molybdenum tubes and its producing is different for an airplane model with a fixed undercarriage or for an airplane model with a retractable undercarriage.

1.6.10.4.1. Engine mount for fixed undercarriage

The engine mount is solid and attached to the firewall with 4 bolts. The engine mount is flexibly mounted with four rubber silentblocks.



Fig. 18 Fixed undercarriage engine mount

1.6.10.4.2. Engine mount for retractable undercarriage

The engine mount is two-part type. A front part is attached to the engine and with a rear part is flexibly connected with rubber silentblocks and 4 bolts. The rear part is attached to the firewall and this part serves for attachment of the retractable nose wheel leg.



Fig. 19 Retractable undercarriage engine mount

1.6.10.5. Engine cowlings

There are two laminated cowlings. The disassembly of an upper cowling is easy, just release the quick-closing locks. The quick-closing locks releases by means of a suitable screwdriver with a 90° counter clockwise slewing. The releasing starts at a rear corner with the simultaneous raising of the cowling. The quick-closing locks releases have to remain over a cowling until the disassembly of all cowling.

The lower cowling is removed after unscrew the attachment screws connecting the cooler to the cowling face side, then unscrew the attachment screws connecting the cowling to the firewall border. The coolers remain connected with the inlet hoses.

1.6.10.6. Engine lubrication system

The ROTAX 912 and 914 engines are provided with a dry sump forced lubrication system. The oil pump is driven by the camshaft. The oil pump sucks the motor oil from the oil tank via the oil cooler and forces it through the oil filter to the points of lubrication in the engine.

The surplus oil emerging from the points of lubrication accumulates on the bottom of crankcase and is forced back to the oil by the blow-by gases. The oil tank is equipped with a venting hose. The oil temperature sensor for reading of the oil inlet temperature is located on the oil pump housing. Refer to the Operator's Manual for all versions of ROTAX 912 and 914 for additional information.

1.6.10.7. Engine cooling system

The cooling system of the ROTAX 912 and 914 engines is designed for liquid cooling of the cylinder heads and ram-air cooling of the cylinder. The cooling system of the cylinder heads is a closed circuit with an expansion tank and with an overflow bottle. The coolant flow is forced by a water pump, driven from the camshaft, from the radiator to the cylinder heads.

From the top of the cylinder heads the coolant passes to the expansion tank (1). Since the standard location of the radiator (2) is below engine level, the expansion tank located on top of the engine allows for coolant expansion. The expansion tank is closed by a pressure cap (3) (with excess pressure valve and return valve). At temperature rise of the coolant the excess pressure valve opens and the coolant will flow via a hose at atmospheric pressure to the transparent overflow bottle (4). When cooling down, the coolant will be sucked back into the cooling circuit.

A direct reading of the coolant temperature is not taken. The coolant temperatures are measured by means of temperature probes installed in cylinder heads. This system allows for accurate measurement of engine temperature, even in event of fluid loss.

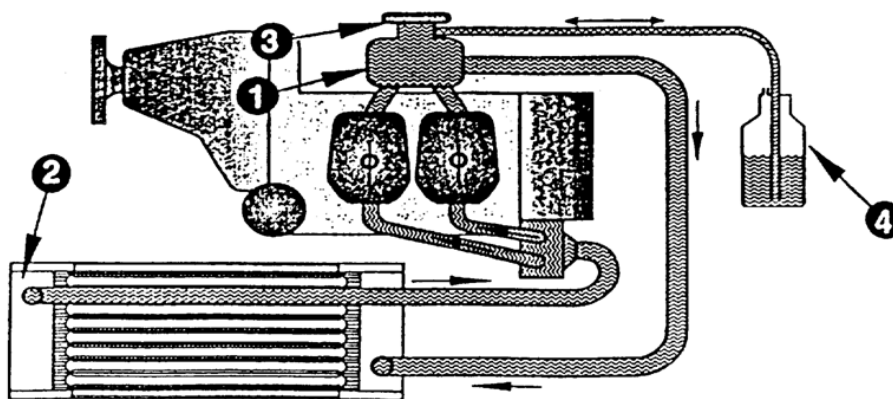


Fig. 20 Engine cooling system

1.6.10.8. Airplane fuel system

The integral fuel tanks are located in the forward box of the wing central panel and optionally in wings. The tanks are connected with simple hose joint with clamps. There is a large diameter hose, which serves for fuel flow from wing tank to central section tank, on the top side are two small diameter hoses, first of them for venting line and second to join the free air of both tanks. The inner walls of the integral fuel tanks are painted by a special resin with a less electrical resistance. There is a bulkhead in each tank for the preclusion of a rapid fuel flowage during the flight manoeuvres. The fuel tank filler necks are placed on a wing upper surface.

NOTE

The tanks in wings are connected with the fuselage tanks with a hose. The hose diameter is not enough to fill the fuselage tank from wing tank when refuelling. Please wait when the fuel from the wing tank comes into the fuselage tank, and then fill up till the wing tanks are full!

CAUTION

Electric fuel pump running when the fuel valve is in OFF position can cause its damage!

Engine Rotax 912 series:

The fuel is fed to engine driven fuel pump through the fuel selector located inside the cockpit below the instrument panel from the left or right fuel tank (in dependence on position of fuel selector). Fuel line between left fuel tank and fuel selector is equipped with an electric fuel pump. Engine driven fuel pump supplies the fuel into the carburettors through the fuel flow meter. Unconsumed fuel flows back through the return piping into the left fuel tank. In the fuel system is installed also fuel pressure sensor.

Fuel tank vent pipe is outgoing from the upper part of each fuel tank, proceeds along the rescue system board, inside of central tunnel and discharge through the lower surface of fuselage in front of main beam.

Fuel quantity indicators indicate the amount of fuel in left and right fuel tank. Red light annunciators will be illuminated when 7 litres of fuel remain in corresponding fuel tank.

Fuel installation with 126 l tanks

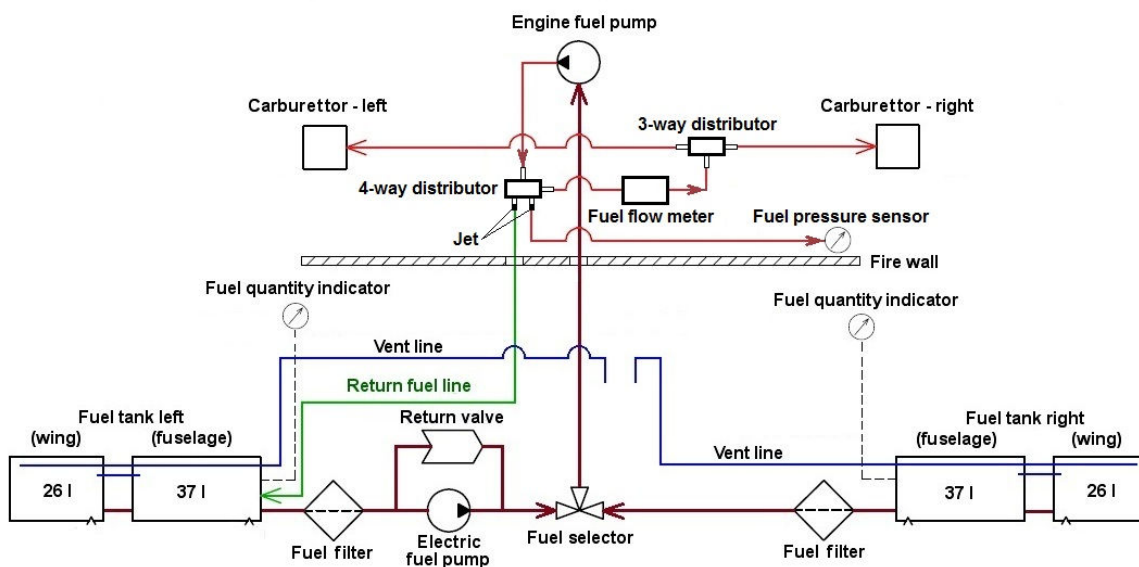


Fig. 21 The fuel system diagram ROTAX 912 series

1.6.10.8.1. Fuel tank draining

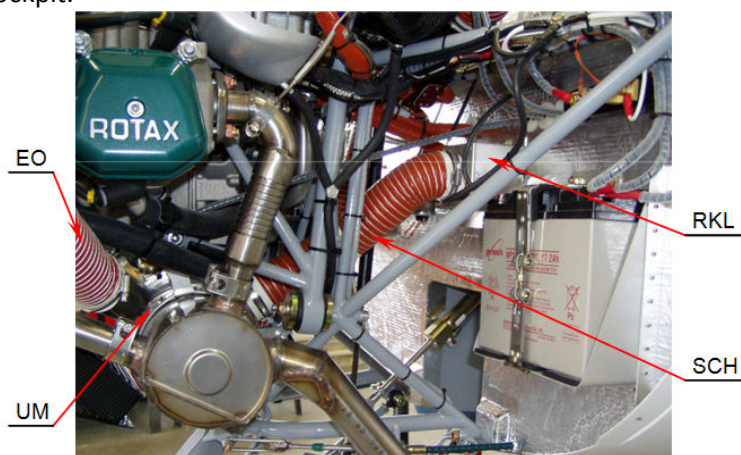
The drain valves are on the bottom of the wings, each fuel tank has its own drain. Draining procedure:

1. Place a suitable bottle below the draining outlet.
2. Open the cap of fuel tank filler neck.
3. Drain off a small quantity of fuel by pushing of drain valve shank (DC).
4. Close the drain valve.



1.6.10.9. Heating

The air for the heating is taken in at the inlet, hose (EO) and passes through a casing (UM) around a muffler. Hot air is piped through the hose (SCH) to a heating flap (RKL) controlled by a cable from a cockpit.



1.6.10.10. Ventilation

There are the following cockpit ventilation systems:

- Ram-air ventilation. The ram-air through a NACA catcher on a side of a cockpit canopy blows through the canopy frame which is shaped as a hollow laminated profile to the adjustable venting nozzles on both cockpit sides.
- A side sliding window on the left-hand side of the canopy with a venting air flap.

1.6.11. Electrical system

The electric system of WT9 Dynamic LSA airplane is single-wire type with the negative connected to the chassis. As a power source serve the single-phase generator integrated to the engine and the 12V/16Ah (10Ah) maintenance less battery. The electric system has two electric buses located on the engine bed and on the instrument panel, another one for model with a retractable undercarriage is located in the cockpit below a left pilot seat.

The wiring system depends on instrumentation (FLYdat or a conventional aircraft instruments) or other electric equipment of individual airplane according to a customer's desire. See this Manual Appendices for wiring diagram of your airplane. The fuse box contains the fuses or circuit breakers for following equipment:

Table list of Circuit breakers:

According to a customer's desire a protection of some consumers can be provided by the install of ETA circuit breakers type. The electric starter switch is a key lock type. At additional installation of the instruments by the owner is necessary to take account to the weight limitation and CG. of the aircraft and to the electromagnetic equipment compatibility. A magnetic field may be changed after an additional installation of the instruments, whereupon a compass compensation must be done.

1.6.12. Pitot static system

The Pitot probe serving to read dynamic and static air pressure is located under the right wing. Pressure distribution to individual instruments on the instrument panel in the cockpit is done through flexible plastic hoses.

Take care of the hoses from the Pitot probe during rigging of the wings. They must not be twisted and the hose coupling must be properly inserted. The static pressure receivers (small holes with diameter 1 mm) are located on the both sides of the fuselage at distance 0,5 m behind a cockpit canopy frame. Keep the system clear and without leakage to assure its right function.

Take care of these holes at the airplane washing, they must be without water and clean. In case that water is inside the system disconnect the hoses from the instrument and bow into the Pitot probe.



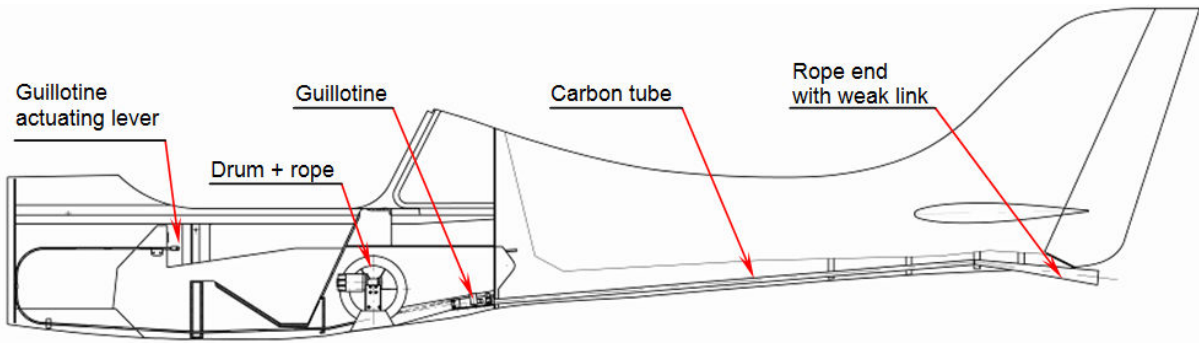
1.6.13. Cable retractor winch with guillotine

The winch serves to retract the tow rope. System consists of the drum which directly actuated by 12V electromotor, guillotine which takes all the loads form tow rope, the rope guides and drum electromotor control. In the system there are two stops, which make the limits of rope movement id in/out wards.

The rope is heaved in drum placed in baggage compartment and leads from the drum through guillotine and carbon tube into the end cone. The rope is pulled out with helper who grabs the end rings which will be engaged to the glider. Rope diameter is 6 mm and max. length is 50 m. The rope is delivered by winch manufacturer. The stop in out direction is made by knot on the rope which is covered in original cover. The cover box enters into the guillotine and stops there.

The heaving works like the pilot turn on the switch on instrument panel. The heaving is signalled by red annunciator. The shutting off is automatic when the rope end with weak link gets on the stop in end cone. The moment when rope gets into the stops is attended by click/clack noise, what also serves as acoustic signalisation for pilot.

To avoid penetration of foreign matters into the system is all half of baggage compartment secured with cover.



1.6.14. Placards

A new airplane is equipped with placard by the airplane manufacturer. There are generally the placards explaining the purpose and sense of controls, instruments, airspeeds limits placard, weight limits placard etc. and placards with additional information. The placards are usually stuck close to the appropriate instruments and controls, limitation placards are stuck on the instrument panel, external placard on appropriate airplane parts, however placards on an individual airplane may slightly differ. For corresponding placards see the Flight Manual.

<u>Airspeed IAS</u>		
Never Exceed speed	V_{NE}	151 knots
Normal Operating Limit speed	V_{NO}	135 knots
Rough Air speed	V_{RA}	121 knots
Manoeuvring speed	V_A	97 knots
Maximum Flap Extended speed	V_{FE}	76 knots

Aerobatic manoeuvres and intentional spins are prohibited!

IFR flights and flights in icing conditions are prohibited!

Maximum allowed filling of the fuel tanks in litres												
Baggage weight (kg)	Crew weight (kg)											
	100	110	120	130	140	150	160	170	180	190	200	210
0	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	116	102
20	Full	Full	Full	Full	Full	Full	Full	Full	116	102	88	75
40	Full	Full	Full	Full	Full	Full	116	102	88	75	61	47

Maximum baggage weight 40 kg!

2. OPERATION

Section	Page
2.1. OPERATION OUTLINES.....	2
2.2. AIRPLANE ASSEMBLY.....	2
2.2.1. WING	2
2.2.1.1. NECESSARY TOOLS AND MATERIAL.....	2
2.2.1.2. WING ASSEMBLY AND DISASSEMBLY PROCEDURE	2
2.2.2. LANDING GEAR.....	3
2.2.2.1. FIXED UNDERCARRIAGE.....	3
2.2.2.1.1. TYRE REPLACEMENT	3
2.2.2.1.1.1. NECESSARY TOOLS.....	3
2.2.2.1.1.2. MAIN LANDING GEAR WHEEL	3
2.2.2.1.1.3. NOSE WHEEL	5
2.2.3. COCKPIT CANOPY	6
2.2.3.1. CANOPY DEMOUNTING	6
2.2.3.2. CANOPY MOUNTING	6
2.2.4. INSTRUMENT PANEL.....	6
2.3. MEASUREMENT OF CONTROL SURFACES DEFLECTIONS.....	7
2.3.1. REQUIRED DEFLECTIONS.....	7
2.3.2. AILERON DEFLECTIONS MEASUREMENT	8
2.3.3. WING FLAP DEFLECTIONS MEASUREMENT	8
2.3.4. ELEVATOR DEFLECTIONS MEASUREMENT	8
2.3.5. RUDDER DEFLECTIONS MEASUREMENT	9
2.4. PERMISSIBLE PLAYS	10
2.5. WEIGHTING THE AIRPLANE AND CG CALCULATION	11
2.5.1. EMPTY WEIGHT DETERMINATION.....	11
2.5.2. OPERATING CG RANGE CALCULATION.....	11
2.6. GROUND HANDLING.....	12
2.6.1. TOWING THE AIRPLANE	12
2.6.2. PARKING THE AIRPLANE	12
2.6.3. MOORING THE AIRPLANE	12
2.6.4. JACKING THE AIRPLANE	12
2.7. ROAD TRANSPORT.....	13

2.1. Operation outlines

During operation and maintenance of WT9 Dynamic LSA airplane it is very important to keep instructions stated in the airplane accompanying documentation:

- Technical Description, Operating, Maintenance and Repair Manual for airplane WT9 Dynamic LSA.
- Flight Manual for airplane WT9 Dynamic LSA.
- Operator's Manual for engine.
- Operator's Manual for propeller.
- Additional documents supplied with an airplane instruments or equipment.

The airworthiness and operational readiness of the airplane depend upon careful adherence to the recommended procedures and regulations. Climate, aerodrome conditions, dustiness, manner of parking and other factors, such as corrosive effects in industrial or seaside areas, should be considered by an airplane operator.

The procedures given in this Manual suit covering operational conditions, and more harsh environments may require more frequent scheduled maintenance.

2.2. Airplane assembly

2.2.1. Wing

There is described the rigging procedure for the right wing. The procedure for the left wing is analogous.

2.2.1.1. Necessary tools and material

- Screwdriver
- Adhesive tape
- Lubricant

2.2.1.2. Wing assembly and disassembly procedure

1. Thoroughly clean and lubricate all the wing suspensions before wing assembly.
2. All pins easily lubricate.
3. Fit the spar end of the right wing into the spar end (fork) of the wing central panel and push the wing along longitudinal axis so that a connection slot between the wing central panel and the wing root is approx. 100 mm. The person holding the wing tip must lower it down at a thorax level.
4. Connect the hoses from the Pitot probe (connect the position lights wires connector, if lights installed). They must not be twisted.
5. Full push the wing into the wing central panel. Place fixation pins for connection of the wing spar end with the wing central panel. The outer pin is inserted through the room for main legs of the retractable undercarriage (at model SPEED) or through the access hole on the lower wing surface (at model CLUB). The inner pin is inserted through the hole in the cockpit below pilot seat (slightly lift and lower the wing tip to make easy the pin insertion). Secure both pins with splint pins

6. Insert auxiliary pin through the suspension at the auxiliary girder of the wing central panel and secure all the pins into special forks with split pin.
7. Insert the pin of the extended wing flap hinge into the suspension of the wing central panel and secure the connection.
8. A short flap rod joints with a flap arm, secure joint pin with a cotter pin. During this procedure the flap control lever in the cockpit shall be set to the rearmost position and the flap shall be deflected to maximum down position.
9. Joint the aileron control rod and secure the connection (a castle nut secure with a cotter pin).
10. After check the securing of the connection the connection slot between wing and the wing central panel should be glued with adhesive tape.

Use the opposite sequence for wing disassembly procedure.

NOTE

Take care of Pitot probe when handling the right wing!

2.2.2. Landing gear

2.2.2.1. Fixed undercarriage

2.2.2.1.1. Tyre replacement

2.2.2.1.1.1. Necessary tools

- Screwdriver
- Rubber hammer
- Pliers
- Spanner to tighten and loose M13 nut
- Spanner to tighten and loose M10 nut
- Spanner to tighten and loose M22 nut

2.2.2.1.1.2. Main landing gear wheel

Proceed the tyre replacement of main landing gear wheel in accordance with following procedure:

1. Disconnect the contact stripes (1), which attach a brake hose on the main landing gear leg.
2. Straighten bend small tabs (2) under screws of the wheel fairing.
3. Unscrew the screws (3) of the wheel fairing.
4. Unscrew the screws (5) of the brake hydraulic cylinder cover (4).
5. Advance a cover so that brake hose (6) passes through a slice of the cover.
6. Move up and demount the cover (7).
7. Remove the cotter pin of the main wheel axle castle nuts and unscrew the castle nut.
8. Remove the washer from the wheel axle.
9. Deflate a wheel tube.
10. Unscrew and remove the screws which joint together both rim halves.

11. Remove outer rim half from the wheel axle.
12. Take the tyre out.
13. Replace the tyre or tube
14. Insert a new tube into a tyre and slightly pump up.
15. Shoe the tyre with tube, the valve insert into the hole.
16. Put the rim with tube and tyre on the wheel axle and adjust the wheel hub.
17. Screw connecting screws both rim halves.
18. Adjust the tyre and tube positions to avoid a tyre nip.
19. Tighten the screws.
20. Put the washer on the axle.
21. Screw the castle nut on the axle, insert a new cotter pin and lock the castle nut.
22. Secure the connecting screws both rim halves.
23. Pump up the tube on a required wheel pressure.
24. Mount the wheel fairings back in the opposite sequence.

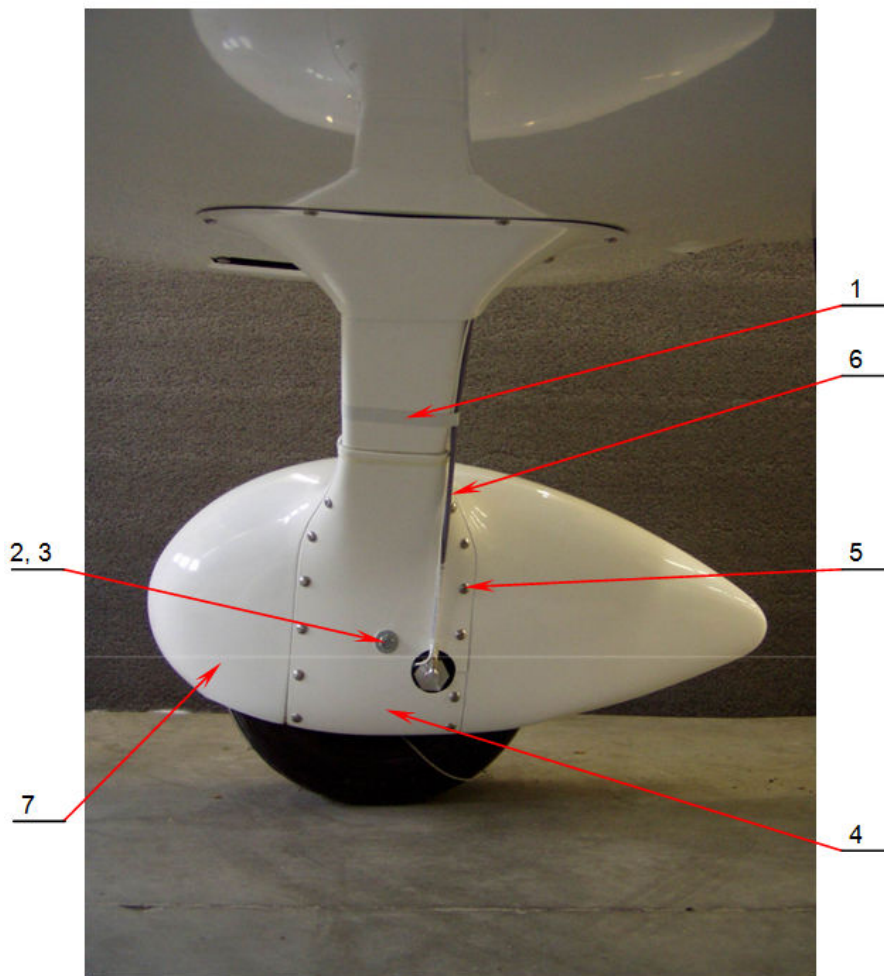


Fig. 25 Disassembly of the main landing gear wheel (fixed undercarriage)

2.2.2.1.1.3. Nose wheel

Proceed the tyre replacement nose landing gear wheel proceed in accordance with following procedure:

1. Dismantle a nose wheel fairing (if installed)
2. Remove a cotter pin securing a castle nut on a wheel axle.
3. Release and unscrew the castle nut on the wheel axle.
4. Remove a washer from the wheel axle.
5. Lift the nose of the airplane
 - a. Push the rear of the fuselage down and support the airplane under the nose wheel leg – fuselage attachment or
 - b. Sling a suitable load at the rear part of fuselage near the fin (bags with a load) to lift the nose wheel above ground.
6. Knock the wheel axle out of the wheel fork by means of a hammer and suitable brass round.
7. Remove the nose wheel.
8. Deflate a wheel tyre.
9. Release and unscrew 3 self-locking nuts from the bolts which connecting left and right part of a rim.
10. Remove 3 bolts.
11. Take apart the rim halves.
12. Take the tyre out.
13. Replace the tyre or tube.
14. Insert a new tube into a tyre and slightly pump up.
15. Set a half of a rim (with valve) on the wheel axle.
16. Shoe the tyre with tube, the valve insert into the hole.
17. Set the other half of the rim on the wheel axle.
18. Adjust the tyre and tube positions to avoid a tyre nip.
19. Attach both half of the rim with 3 bolts.
20. Put the washers on the bolts.
21. Screw and tighten self-locking nuts.
22. Draw the wheel axle out of the rim.
23. Pump the wheel on a required pressure.
24. Insert the wheel in the fork.
25. Set and hammer the wheel axle into the fork.
26. Put the washer on the wheel axle.
27. Screw the castle nut on the axle.
28. Insert a new cotter pin and lock the castle nut.
29. Lift the airplane down the supports (remove a support of the airplane under the nose wheel leg or the bags from the tail)
30. Mount the wheel fairings back (if installed).

CAUTION

Using of new self-locking nuts is highly recommended!

2.2.3. Cockpit canopy

2.2.3.1. Canopy demounting

Apply the following procedure to demount the cockpit canopy:

1. Open canopy should be supported.
2. Dismantle both gas struts. The securing shim sweep into an open position for the releasing of the strut joint pin.
3. Unscrew self-locking nuts of the front canopy hinges which are located in the cockpit.
4. Remove the canopy attachment screws.
5. Carefully remove the canopy.

WARNING

Be carefully at canopy handling on the ground
due to possibility a damage of the Perspex canopy!

2.2.3.2. Canopy mounting

The mounting procedure is opposite to the demounting one and does not require additional explanation.

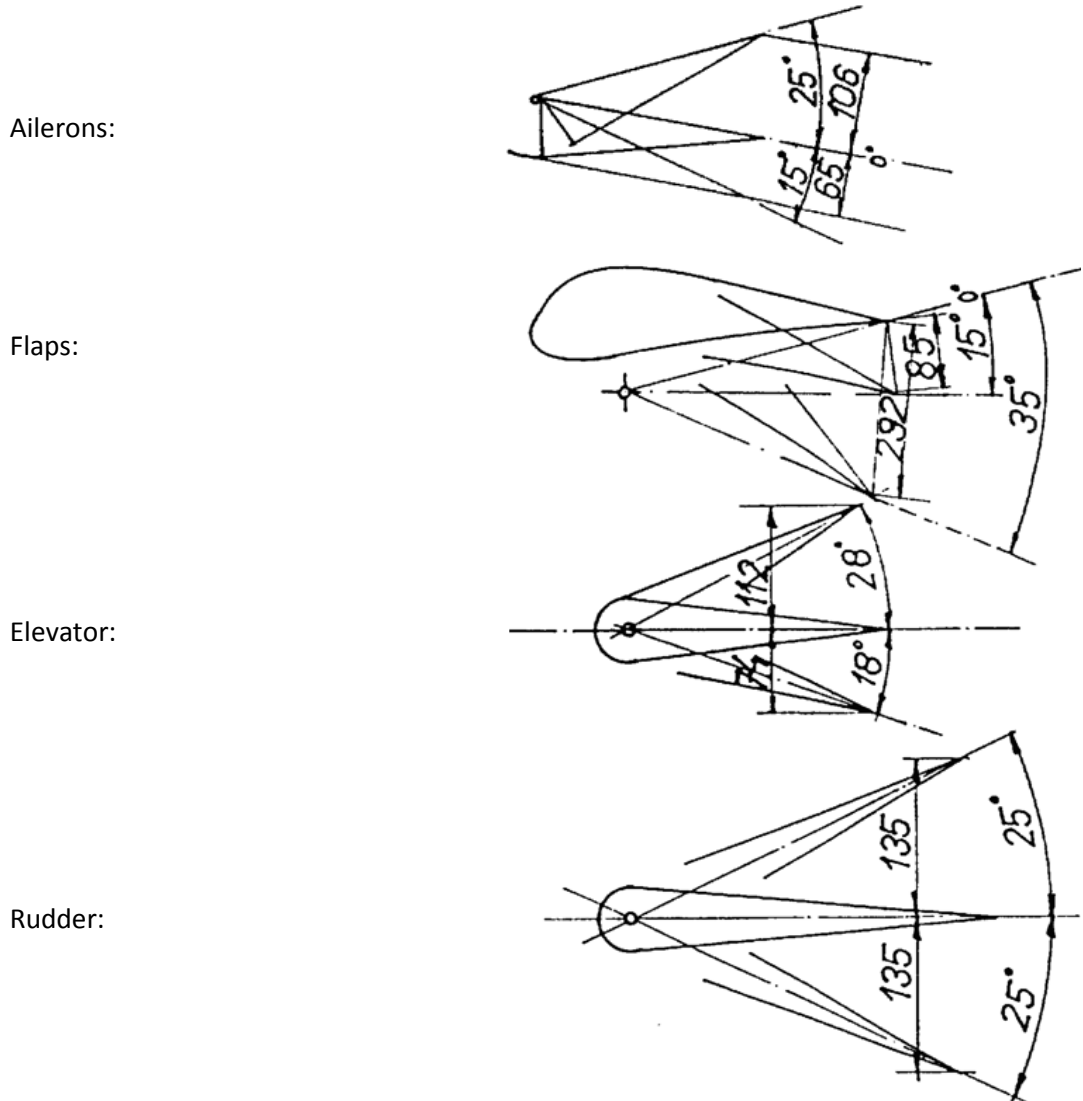
2.2.4. Instrument panel

The instrument panel is separated into two parts. The upper part of the instrument panel contains the flight instruments and powerplant instrument and lower part contains the powerplant controls. A sheet cover over the instrument panel removes after the releasing of the connecting screws when install or de-install the instruments. The flight and navigation instruments are mounted as an option of the customer (but with respect to the weight limitation and CG of the aircraft). Follow the instructions of an instrument manufacturer.

2.3. Measurement of control surfaces deflections

2.3.1. Required deflections

Control surfaces deflections are specified in a Control Surface Deflections Record, see Appendices of this Manual and following figure:



A protractor with deflecting hand is used by airplane manufacturer to measure deflections, the protractor is attached to a trailing edge of the control surface. There are also described procedures in the following text (a measurement of the distance of the deflected control surface trailing edges from a neutral position). Specified distances are present in the figure.

2.3.2. Aileron deflections measurement

Measure procedure:

1. Attach a protractor with deflection hand at upper aileron trailing edge.
2. Set the aileron in neutral position.
3. Zero the protractor – starting position for measurement.
4. Deflect the aileron fully down/up and read the deflections.
5. Compare, if measured deflections correspond with those ones specified in Control Surfaces Deflections Record.
6. If not – adjust aileron deflections according to the par 3.11.1.

If there is not a protractor at disposal, can be applied a measurement procedure of the distance of the deflected control surface trailing edges from a neutral position according to the figure.

2.3.3. Wing flap deflections measurement

The wing flaps can be set in 4 positions:

- Retracted (deflection 0°)
- Take-off (deflection 15°)
- Intermediate (deflection 24°)
- Landing (maximum deflection 35°)

The flap control lever is located on the pedestal between the seats. Set flap position is locked by the deflection of the flap control lever into the appropriate recesses. A protractor measurement procedure is similar to the aileron deflection measurement procedure. If there is not a protractor at disposal, the following procedure can be applied:

1. Insert a hard drawing paper in a space between a fuselage and flap and hold the drawing paper to the wing central panel upper surface by means of the adhesive tape.
2. Trace the trailing edge of the retracted flap.
3. Extend the flap to a required position and trace the trailing edge of the set flap again.
4. Remove the drawing paper and directly measure the distances from the “Retracted” position by means of a ruler.
5. Compare, if measured deflections correspond with those ones specified in Control Surfaces Deflections Record.
6. If not – adjust flap deflections according to the par 3.11.4. The deflection of left flap against right flap may be adjusted with the last short rod, which is attached to a flap lever.

2.3.4. Elevator deflections measurement

A protractor measurement procedure is similar to the aileron deflection measurement procedure. If there is not a protractor at disposal, the following procedure can be applied:

1. Attach the drawing papers to the rudder side surfaces by means of the adhesive tape.
2. Mark the neutral position of the elevator trailing edge.
3. Fully pull and push the control stick to deflect the elevator and mark the positions of deflected elevator trailing edge.

4. Measure the distances between marks at a half of the elevator on the hard drawing paper by means of a ruler.
5. Compare, if measured deflections correspond with those ones specified in Control Surfaces Deflections Record.
6. If not – adjust elevator deflections with adjustable end of rod according to the par 3.11.2.

2.3.5. Rudder deflections measurement

Measurement procedure:

1. Insert a hard drawing paper in a space between a rudder and a fuselage aft part and hold the drawing paper to the fuselage bottom below rudder by means of the adhesive tape.
2. Mark the neutral position of the lower rudder trailing edge on a hard drawing paper.
3. Fully deflect the rudder and mark the position of a deflected lower rudder trailing edge on a hard drawing paper.
4. Measure by means of a ruler distance between the marks on a hard drawing paper.
5. Compare, if measured deflections correspond with those one in Control Surfaces Deflections Record. Record real values into the Record.

2.4. Permissible plays

In the following table are shown the permissible plays for most important parts of the airplane. These values should be not exceeded in operation.

It is expected that an operator will take steps if finds excessive plays of any other part not listed below.

System	Procedure to find a play	Procedure to remedy a play	Max. product play	Max. operation play
Ailerons control system	Block ailerons up to the wing and move the control stick to the left and right to find possible plays	Check condition of bearings and replace if need be	2 mm	5 mm
Elevator control system	Block elevator up to the stabilizer, pull and push the control stick to find possible plays	Check condition of bearings and replace if need be	2 mm	5 mm
Flaps control system	Extend the flaps and then handle the flap trailing edge near the flap root, move the trailing edge up/downward to find possible plays	Check condition of a an arrest of the flap control lever in the cockpit, check condition of sliding bearings stowage and replace the worn-out joint bearings on the rod ends	2 mm	5 mm
Ruder control	The system is pressurised by means of a cylinder springs (therefore it had not has a possible plays). Rudder hinges (stowage) check by the moving of the rudder	Change bearing bushes.	1 mm (rudder hinges)	2 mm
Wing-Fuselage attachment	Move a wing tip to find possible plays in wing suspensions.	Check wing suspensions, replace pins	0 mm	2 mm (at wing tip)
Nose wheel	Push the rear part of fuselage down (use a weight) to lift the nose wheel, then move the wheel forward-rearward to find possible plays.	Remove the wheel, remove the rim and tyre and replace the bearings bushes and bearings.	1 mm	3 mm
Main landing gear	Jack the airplane or lift the wing tip to lift a main leg, then move the wheel forward-rearward to find possible plays in bearings or leg attachment.	Check the leg attachment, wheels attachment, replace the bearings, if necessary.	1 mm	3 mm

2.5. Weighting the airplane and CG calculation

There is necessary to keep with permitted maximum take-off weight and CG range for any configuration of crew, fuel and baggage according to the Flight Manual. The removal or addition of equipment results in changes to the centre of gravity and empty weight of the airplane, and the permissible useful load is affected accordingly. In that case new weighing is necessary to determine new empty weight and centre of gravity position of empty airplane. New empty weight and CG position should be recorded in Flight Manual, Section 6., Weight and Balance Record / Permitted Payload Range and new permitted crew weight for appropriate fuelling and baggage weight must be computed and recorded, also. Then in the cockpit stuck placard "Load Limits" should be up-dated.

2.5.1. Empty weight determination

The empty weight of an airplane includes all operating equipment that has a fixed location and is actually installed in the airplane. It includes the weight of the painted airplane, accumulator, standard and optional equipment, full engine coolant, hydraulic fluid (for retractable undercarriage), brake fluid, oil. The airplane is weighing without crew, fuel and baggage.

The following weighing procedure is recommended:

1. Remove excessive dirt, grease, and moisture from airplane before weighing.
2. Weight the airplane inside a closed building to prevent error in scale due to wind.
3. Place the scales, properly calibrate zero.
4. Place the airplane on the scales (use board to run on the scales or lift the airplane – see airplane jacking).
5. The airplane position for weighting has to be parallel with the horizontal plane which passes through the side edge of the cockpit (check by means of a bubble-level).
6. Weight the airplane and record read values in Weight and Balance Record (make a copy of standard Record included in section 5 Appendices).
7. Compute the weight and CG position according to the formulae given in the Record.
8. Compare, if computed CG position with those one in the Weight and Balance Record.
9. Up-date the placard "Load Limits" (make a new one) stuck in the cockpit.

2.5.2. Operating CG range calculation

Operating CG position calculation procedure is evident from the Weight and Balance Record. The reference point (RP) is leading edge of wing root section (Note: Moment from the nose wheel substitutes as a negative value). There are the arms of the items to the RP (fuel, crew, baggage) in the Weight and Balance Record for a purpose of Operating CG calculation procedure. In case, that calculated CG position is out of CG range limits, is necessary change a position of any items or locate additional ballast (beware of maximum allowed takeoff weight excess).

2.6. Ground handling

2.6.1. Towing the airplane

The airplane can be displaced by means of towing the airplane at a short distance by holding the blade. Handle the propeller by holding the blade root – never blade tip. For a direction motion change push rear part of a fuselage close before a fin down to lift the nose wheel, than turn the airplane into a required direction.

CAUTION

Avoid excessive pressure at the airplane control surfaces and the wing tips. The perpendicular pressure on the surface of the airframe sandwich shell thin skin layers can produce a creation of prints. These prints can weaken a sandwich shell. During the airplane towing handle the propeller by holding the blade root – never blade tip!

2.6.2. Parking the airplane

There is advisable to park the airplane inside a hangar or eventually inside other proof space. During the airplane parking can be used a parking brake.

CAUTION

In case of a parking outside a hangar and at long term parking to cover cockpit canopy by means of a suitable cloth dust- cover, due to preclusion of the sun effect. The sunbeams together with the optical action of the cockpit canopy may be the source of the spot heating, which can create damage of the cockpit area and the upholstery!

2.6.3. Mooring the airplane

The airplane is usually moored in case of parking outside a hangar or if need be. By this reason the airplane is equipped with mooring eyes (GL) located ant wing lower surface. The airplane moors to the ground by means of a mooring rope passed through the mooring eyes.

There is also necessary to moor the nose wheel landing gear, to shut all venting holes (a side sliding window), to block the control stick up e.g. by means of safety harness, to close and to cover cockpit canopy.

2.6.4. Jacking the airplane

Since the empty weight of this airplane is relatively low there is easy to lift the airplane without special equipment. The airplane may be lifted by handling the following parts:

1. Push down the rear part of fuselage (handle the fuselage before the fin) to lift the nose wheel and then support the fuselage under the firewall by means of a suitable support.
2. For a complex check of the retractable undercarriage lift the airplane with help of the holders at places assigned for this purpose. These supported points (SP) are located at the wing central panel lower surface behind the auxiliary spar and at a firewall (see figure).
3. If the airplane is supported at these points, than may be performed an operation test of the retractable undercarriage (retracting and releasing) with one person in the cockpit.

2.7. Road transport

The airplane may be transported after its loading at a suitable car trailer or a lorry. See disassembling of wings according to the procedure in the par. 2.2.1.2.

The airframe surfaces should be protected by means of a light plastic foil or cloth cover against the dust. The check holes of the engine, the fuel tanks and the pitot static system should be enclosed before the transportation, due to ability of the penetration of the strange objects (insect, birds) by means of an adhesive tape.

The landing gear latches by means of suitable blocks. There is also necessary to moor the nose wheel landing gear to the floor of the lorry. The dismantled wings should be fastened down to ensure these parts against a possible damage (the wing leading edges). The control stick blocks up by means of the safety harness. The side sliding window shuts and a cockpit canopy closes and covers.

Cover the propeller blades by special covers.

3. MAINTENANCE

Section	Page
3.1.....	OVERALL MAINTENANCE SURVEY3
3.2.....	DAILY INSPECTION3
3.3.....	PRE-FLIGHT INSPECTION3
3.4.....	INTER-FLIGHT INSPECTION3
3.5.....	POST FLIGHT INSPECTION3
3.6.....	PERIODICAL INSPECTIONS.....3
3.6.1.....	PERIODICAL INSPECTIONS INTERVALS3
3.6.2.....	PERIODICAL INSPECTIONS SIGN OF SHEETS4
3.6.3.....	PERIODICAL INSPECTIONS - EVENTS5
3.6.4.....	LIST OF PERIODICAL INSPECTIONS OF ROTAX 912 AND ROTAX 914.....14
3.7.....	OPERATING MEDIA.....15
3.7.1.....	ENGINE OIL.....15
3.7.2.....	COOLANT16
3.7.3.....	BRAKE FLUID16
3.7.4.....	FUEL.....16
3.7.4.1.....	FUELLING.....17
3.8.....	LUBRICATION17
3.8.1.....	LUBRICATION FUNDAMENTALS17
3.8.2.....	RECOMMENDED LUBRICANTS.....17
3.8.3.....	LUBRICATING POINTS18
3.9.....	MECHANISM ADJUSTMENT19
3.9.1.....	TORQUE MOMENTS.....19
3.9.2.....	NECESSARY MAINTENANCE TOOLS20
3.9.3.....	INSPECTION HOLES.....20
3.10.....	BRAKE SYSTEM20
3.10.1.....	BRAKE PADS REPLACEMENT20
3.10.2.....	VENTING21
3.10.3.....	BRAKES ADJUSTMENT21
3.11.....	CONTROL SURFACES DEFLECTIONS SETTING.....22
3.11.1.....	AILERON DEFLECTIONS ADJUSTMENT22
3.11.2.....	ELEVATOR DEFLECTIONS ADJUSTMENT22
3.11.3.....	TRIM22

3.11.4.....	FLAP DEFLECTIONS ADJUSTMENT	22
3.11.5.....	RUDDER DEFLECTIONS ADJUSTMENT.....	23
3.12.....	NOSE WHEEL LEG FLEXIBLE POLYURETHANE ROLLER REPLACEMENT	23
3.12.1.....	FIXED UNDERCARRIAGE.....	23
3.13.....	TYRE INFLATING	24
3.14.....	WINTER OPERATION.....	24
3.14.1.....	GENERAL	24
3.14.2.....	PREPARING THE AIRPLANE FOR WINTER OPERATION.....	24
3.14.3.....	OPERATION	25
3.15.....	PARTS WITH LIFE LIMITS	26

3.1. Overall maintenance survey

The airplane maintenance is a care and repairs of an airplane to save its airworthiness. There are performed periodical events (periodical and pre-flight inspections) and irregular events e.g. a repair of a damage.

3.2. Daily inspection

The daily inspection must be performed before every flight day of the airplane. A method of the daily inspection execution is the object of a pilot training. The scope of this inspection is specified in the Flight Manual and in the additional documents supplied with an airplane instruments or equipment. Special attention must be devoted to the parts, which are affected by the high vibrations and high temperatures from a powerplant.

Especially these following parts:

- Propeller attachment
- Exhaust system (a muffler)
- Engine attachment
- Wiring, especially an ignition system
- Lubrication system, a cooling system and a fuel system

3.3. Pre-flight inspection

This inspection is shorter than a daily inspection whereupon the pre-flight inspection should be performed before each flight. The Flight Manual presents more information about a pre-flight inspection. If any problems are found they must be corrected before flying.

3.4. Inter-flight inspection

Inter-flight inspection is a visual check of airplane for deformations, surface damages, fuel and oil system leaks, propeller damages, released locks, covers and cowlings etc. The found damages and failures should be repaired immediately if airplane airworthiness is affected or when impossible the airplane should be put out of operation.

3.5. Post flight inspection

Post-flight inspection is performed in the end of each flight day; the post-flight inspection events are the same as the pre-flight ones. Failures, damages and malfunctions should be recorded and repaired immediately, if possible by a qualified staff. It is useful to clean and/or wash the airplane surface. Check also fuel and oil consumption if are in normal range. Lastly record hours flown and other data in appropriate documentation of an airplane (engine, propeller).

3.6. Periodical inspections

3.6.1. Periodical inspections intervals

Periods of overall checks and contingent maintenance depends on the condition of the operation and on overall condition of the airplane. The producer recommends accomplishing of maintenance checks and periodic inspections in the following periods, at least:

1. After the first 25 ± 2 flight hours
2. After the first 50 ± 3 flight hours
3. After every 100 ± 5 flight hours

Refer to the Operator's Manual for engine and propeller.

3.6.2. Periodical inspections sign off sheets

The following Periodical inspections Sign off sheets are intended for copying and serve as the Maintenance Record. There is also recommended to register small repairs, damages and their remedy or replacement of parts. Some parts of the airplane (engine, landing gear and propeller etc.) may have special time limits – refer to appropriate manuals.

3.6.3. Periodical inspections - events

Type: WT9 Dynamic LSA	Registration:	Hours flown:	Date of inspection:
		No. of takeoffs:	

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
1	Prior to the inspection clean and wash the airplane surfaces	*	*	*		
2	ENGINE	See engine manufacturer's instructions				
2.1	Laminated engine cowlings					
2.1.1	Check condition of cowlings and quick closing locks-repair found damages			*		
2.1.2	Remove engine cowling	*	*	*		
2.1.3	Visually check fireproof primer-repaint if need be.		*	*		
2.2	Engine mount					
2.2.1	Visually check condition, attachment, security of attachment bolts: engine-engine bed, engine bed-firewall	*	*	*		
2.2.2	Visually check condition of rubber silentblocks-replace those cracked and excessively deformed			*		
2.2.3	Check the engine mount screws for cracks and damage	After 600 flight hours of operation				
2.3	Suction system					
2.3.1	Visually check condition, integrity, attachment and security of air filter at carburettor inlet - clean impure filter according to the engine manual	*	*	*		
2.3.2	Visually check condition of suction piping	*	*	*		
2.3.3	Check carburettors - condition, control cables attachment, lubricate cables at inlet to the bowdens.	*	*	*		
2.4	Battery					
2.4.1	Visually check attachment and security		*	*		
2.4.2	Check charging - charge battery if need be			*		
2.4.3	Visually check condition and attachment of wire leads-replace those damaged	*	*	*		
2.5	Wiring					
2.5.1	Visually check condition and integrity of wires, connections, security of wires	*	*	*		
2.6	Fuel system					
2.6.1	Visually check condition, integrity, attachment and security of hoses - replace those damaged	*	*	*		
2.6.2	Visually check fuel filter condition-replace impure filter	*	*	*		
2.6.3	Visually check system for leakage	*	*	*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
2.7	Cooling system					
2.7.1	Visually check cooler for condition and leakage			*		
2.7.2	Visually check condition, attachment of hoses, check system for leakage	*	*	*		
2.7.3	Tighten hose clips if need be		*	*		
2.7.4	Check coolant level in the expansion tank. Add or change coolant according to the engine manual if needed.	*	*	*		
2.7.5	Visually check condition and attachment of overflow bottle.			*		
2.8	Lubrication system					
2.8.1	Visually check condition and attachment of oil tank			*		
2.8.2	Check oil cooler for condition, attachment and leakage	*	*	*		
2.8.3	Visually check hoses for condition , leakage, attachment and security-replace damaged hoses	*	*	*		
2.8.4	Check oil level. Add or change oil according to the engine manual if needed	*	*	*		
2.9	Exhaust system					
2.9.1	Visually check exhaust system for condition, cracks, deformations or damage – repair (weld)	*	*	*		
2.9.2	Visually check condition and attachment of the muffler-weld found cracks	*	*	*		
2.9.3	Check joints security	*	*	*		
2.10	Heating					
2.10.1	Visually check hose leading hot air into the cockpit-check hose for condition, integrity, attachment and security	*	*	*		
2.10.2	Check condition, function and control of the heating flap		*	*		
2.11	Engine cowling					
2.11.1	Reinstall lower engine cowling. Upper engine cowling reinstall when the inspection is completed and engine test run performed	*	*	*		
2.12	Lubrication					
2.12.1	Lubricate according to the Lubrication Chart.	*	*	*		
3	PROPELLER	See propeller manufacturer's instructions				
3.1	Propeller blades					
3.1.1	Inspect blades for abrasions, cracks, paint damage, condition of blades leading edges and tips-repair according to the propeller manual	*	*	*		

WT9 Dynamic LSA
TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
3.1.2	Remove spinner.		*	*		
3.2	Propeller hub					
3.2.1	Check prop attachment, security of bolts		*	*		
3.2.2	Check run-out.			*		
3.2.3	Pitch change mechanism (if adjustable pitch prop is mounted) Check condition and function according to the prop manufacturer's instructions.	See propeller manufacturer's instructions				
3.2.4	Install spinner.		*	*		
4	LANDING GEAR (RETRACTABLE)					
4.1	Nose wheel leg					
4.1.1	Check condition and attachment of the nose wheel leg and leg support strut, pins play, deformations, pins security	*	*	*		
4.1.2	Check of the PU-shock absorber – replace if need be	*	*	*		
4.1.3	Check of the drag stay for damages, deformations, pins security and play	*	*	*		
4.1.4	Check tyres for condition, cuts, uneven or excessive wear and slippage-replace if need be. Check pressure – inflate at required pressure (see Flight Manual)	*	*	*		
4.1.5	Lubricate the pins			*		
4.1.6	Check condition of bearings, wheel free rotation, play – wrong bearings replace if need be			*		
4.1.7	Check nose wheel fork free rotation inside the leg- rotation should not be too free to prevent shimmy		*	*		
4.1.8	Check control cables condition, cables ends security.		*	*		
4.1.9	Check the nose wheel leg for retraction. Check the hydraulic system for leakage. Replace if need be.		*	*		
4.1.10	Operation test of the landing gear retraction together with the main landing gear (see main landing gear)			*		
4.1.11	Lubricate according to the Lubrication Chart			*		
5	MAIN LANDING GEAR (RETRACTABLE)					
5.1	Visually check of the landing gear legs for condition, damages deformations, paint damage, pins security. Inspect leg attachment into the wing spars (no play)	*	*	*		
5.2	Check attachment of brake system hoses to the main leg	*	*	*		
5.3	Check hydraulic fluid condition-add or change hydraulic fluid according to the Maintenance Manual.			*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
5.4	Check tyres for condition, cuts, uneven or excessive wear and slippage-replace if need be. Check pressure – inflate at required pressure (see Flight Manual)	*	*	*		
5.5	Check of the drag stay for damages, deformations, pins security and play.	*	*	*		
5.6	Visually check condition of the pads-steady and symmetry abrasion of the pads-replace a pad if need be The same is valid for the brake disc.		*	*		
5.7	Visually check disc for cracks, permanent deformation – replace if need be. Check condition of bearings, wheel free rotation, play		*	*		
5.8	Check of the PU – shock absorbers for cracks and permanent deformations – replace if need be		*	*		
5.9	Operation test of the landing gear. Lift the airplane with help of the holders at places assigned for this purpose. Retract the landing gear, take time of the landing gear retraction. This procedure repeat three times. Check wheel position into the room for main legs during retraction.			*		
4	NOSE LANDING GEAR (FIXED)					
4.1	Nose wheel leg					
4.1.1	Check of the leg for damages, attachment, and deformation. Check torque and security of fixed joints, nose wheel control levers condition	*	*	*		
4.1.2	Visually check rubber absorber for permanent deformation, cracks, excessive wear- replace if need be.	*	*	*		
4.1.3	Check the nose wheel fork for delaminations and damages. Check attachment of the nose wheel leg.	*	*	*		
4.1.4	Check tyres for condition, cuts, uneven or excessive wear and slippage-replace if need be. Check pressure – inflate at required pressure (see Flight Manual)	*	*	*		
4.1.5	Lubricate the pins			*		
4.1.6	Check condition of bearings, wheel free rotation, play – wrong bearings replace if need be			*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
4.1.7	Check nose wheel fork free rotation inside the leg- rotation should not be too free to prevent shimmy		*	*		
4.1.8	Visually check laminated fairing (mudguard) condition – repair found damages and cracks.	*	*	*		
4.1.9	Lubricate according to the Lubrication Chart			*		
5	MAIN LANDING GEAR (FIXED)					
5.1	Visually check of the leg for delaminations, damages, attachment, bolts security	*	*	*		
5.2	Visually check laminated fairing (mudguard) condition-repair found damages and cracks	*	*	*		
5.3	Check tyres for condition, cuts, uneven or excessive wear and slippage-replace if need be. Check pressure – inflate at required pressure (see Flight Manual)	*	*	*		
5.4	Visually check condition of the pads-steady and symmetry abrasion of the pads-replace a pad if need be The same is valid for the brake disc.		*	*		
5.5	Visually check disc for cracks, permanent deformation – replace if need be. Check condition of bearings, wheel free rotation, play		*	*		
6	LIFTING SURFACE					
6.1	Wing					
6.1.1	Wing disassembly, check of the bushing, root of beam and root rib.	After 200 flight hours or once a year				
6.1.2	Visually check of the wing surface for damages, delaminations, recesses	*	*	*		
6.1.3	Check of the surface for finding out of the delaminations of the sandwich. Contact airplane manufacturer if are found larger areas of the delaminations.			*		
6.1.4	Check plays of wing suspensions. Move the wing tip upward-downward, frontward-rearward. Contact airplane manufacturer if the motions are greater than 5 mm		*	*		
6.1.5	Check Pitot probe attachment at the right wing	*	*	*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
6.2	Ailerons					
6.2.1	Visually check of the aileron surface for damages, delaminations and paint damages	*	*	*		
6.2.2	Check free movement, aileron hinge and plays	*	*	*		
6.2.3	Check security of control rod ends	*	*	*		
6.2.4	Lubricate the bearings			*		
6.2.5	Check control-surface weight balance attachment	*	*	*		
6.3	Wing flaps					
6.3.1	Visually check of the flap surface for damages, delaminations	*	*	*		
6.3.2	Check free movement, flap hinge and plays	*	*	*		
6.3.3	Check security of control rod ends	*	*	*		
6.3.4	Check of the flaps stops for condition at the flaps up position. Increase a tension of the flap shaft, in case of the plays appearance.			*		
7	FUSELAGE					
7.1	Visually check fuselage surfaces for delaminations and damages. Pay special attention to condition of the bottom part of the wing central panel and of the get on into cockpit zone.	*	*	*		
7.1.2	Visually check of the room for main legs condition (in case of the retractable landing gear)	*	*	*		
7.1.3	Visually check of the auxiliary tail skid for attachment. Replace the auxiliary tail skid in case of delaminations.	*	*	*		
7.1.4	Visually check of the static pressure receivers for stoppage. (The small opening must be clean)	*	*	*		
7.2	Cockpit canopy					
7.2.1	Visually check canopy condition for cracks, scratches, any other damages – bore ends of cracks. Check venting windows for condition and operation.	*	*	*		
7.2.2	Check canopy lock for condition and operation.	*	*	*		
7.2.3	Operation test of the venting nozzles.	*	*	*		
7.2.4	Check gas struts operation – replace those functionless		*	*		
7.2.5	Check attached pins for condition and security			*		

WT9 Dynamic LSA
TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
8	TAIL UNIT					
8.1	Horizontal tail unit					
8.1.1	Visually check horizontal tail unit surfaces for delaminations and damages. Pay special attention to condition of the connection with the fin.	*	*	*		
8.1.2	Check elevator free movement, elevator hinges and plays.	*	*	*		
8.1.3	Check control-surface weight balance condition	*	*	*		
8.2	Rudder					
8.2.1	Visually check of the surface for delaminations, damages.	*	*	*		
8.2.2	Check plays in the bearings and in the hinges	*	*	*		
8.2.3	Check control cables condition			*		
8.2.4	Check security of control rod ends	*	*	*		
8.2.5	Check control-surface weight balance condition in the upper rudder tip.	*	*	*		
9	COCKPIT					
9.1	Instrument panel					
9.1.1	Visually check condition and attachment of the instrument panel		*	*		
9.1.2	Check functions of instruments (see manufacturer instruction)		*	*		
9.1.3	Check throttle and choke levers free movement and lock	*	*	*		
9.1.4	Inspect completeness and readability of placards			*		
9.2	Seats					
9.2.1	Visually check of the safety harness for condition, attachment and security-replace if need be			*		
9.2.2	Visually check seat upholstery condition			*		
9.3	Hand control					
9.3.1	Remove control stick covers above a seat		*	*		
9.3.2	Check control stick free movement. Remove foreign objects and contamination	*	*	*		
9.3.3	Check control surface deflections and plays.	*	*	*		
9.3.4	Check security of control rod ends			*		
9.3.5	Lubricate the control rod ends			*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
9.4	Foot control					
9.4.1	Check stiffness of movement	*	*	*		
9.4.2	Check joints security	*	*	*		
9.4.3	Check condition and security of cables	*	*	*		
9.4.4	Check nose wheel control levers conditions at the output from fuselage	*	*	*		
9.4.5	Lubricate according to the Lubrication Chart			*		
9.5	Flap control					
9.5.1	Remove central pedestal cover between pilots seats		*	*		
9.5.2	Check pin joints for security and plays in the flaps bellcranks		*	*		
9.5.3	Check free movements of levers	*	*	*		
9.5.4	Lubricate guider tube of the flaps control lever		*	*		
9.5.5	Check operation of flap control lever	*	*	*		
9.5.6	Check of the play in the flap control. Find out the plays in the flap control at fixed flap control lever by the moving of the flap.	*	*	*		
9.6	Trimmer control system					
9.6.1	Check pin joints of the control system for security	*	*	*		
9.6.2	Check of the trimmer control lever blocking. If the control stick is moved fully forward/rearward, the trimmer control lever must be without motion.	*	*	*		
9.6.3	Check of the lamellar carbon spring for delaminations and attachment (lower hinge)	*	*	*		
9.6.4	Check free movements of trimmer control system (foreign objects)	*	*	*		
9.7	Brake system					
9.7.1	Check of the bowden from brake lever to the main brake hydraulic face ram	*	*	*		
9.7.2	Check of the brake lever in the parking position. The airplane must be braking – check by towing of the airplane. Adjust the cable if need be.		*	*		
9.7.3	Check hydraulic fluid condition-add or change hydraulic fluid according to the Maintenance Manual.		*	*		
9.7.4	Reinstall central pedestal cover between pilot's seats.	*	*	*		

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

Event	Event description	Inspection after			Carried out by:	Inspected by:
		First 25 hr.	First 50 hr	Every 100 hr		
10	MISCELLANEOUS EQUIPMENT					
10.1	Rescue system	See rescue system manufacturer's instructions				
10.1.1	Check the blocking of the rescue system control lever			*		
10.1.2	Remove rescue system cowling			*		
10.1.3	Check of the attachment of the rocket engine and the control lever			*		
10.1.4	Check the attachment of the parachute			*		
10.1.5	Check the attachment at the firewall and at the auxiliary girder			*		
10.1.6	Check condition of parachute lines			*		
10.1.7	Install rescue system cowling			*		
10.2	TOW release fixed	See TOW release fixed manufacturer's instructions				
10.2.1	Remove tow release E85			*		
10.2.2	Check tow release E85			*		
10.2.3	Install tow release			*		
10.2.4	Check the tow release control lever for free movement, tension of rope check, screw joints, lubrication of control rod			*		
10.2.5	Check the attachment of tow release in the fuselage for delaminations, screw joints			*		
10.2	TOW release winch	See TOW release winch manufacturer's instructions				
10.2.1	Check condition of entire rope			*		
10.2.2	Check end knot, red line is visible			*		
10.2.3	Check the knot condition at guillotine			*		
10.2.4	Check the winch shaft for foreign matters			*		
10.2.5	Check the leading on guillotine and on guillotine actuating lever in cabin			*		
10.2.6	Functional test winch and auto shutoff			*		

3.6.4. List of periodical inspections of ROTAX 912 and ROTAX 914

Inspection of engine must be performed according to the Maintenance Manual of engine producer.

List of scheduled maintenance checks with intervals for ROTAX 912 is available in Chapter 05-20-00 of MAINTENANCE MANUAL for ROTAX ENGINE TYPE 912 SERIES.

List of scheduled maintenance checks with intervals for ROTAX 914 is available in Chapter 05-20-00 of MAINTENANCE MANUAL for ROTAX ENGINE TYPE 914 SERIES.

3.7. Operating media

Operating media are: fuel (F), engine oil (EO), coolant (CO), brake fluid (Standard brakes (BFS), Beringer brakes (BFB)), hydraulic oil (HO). Operating media filling holes can be seen on following figures:

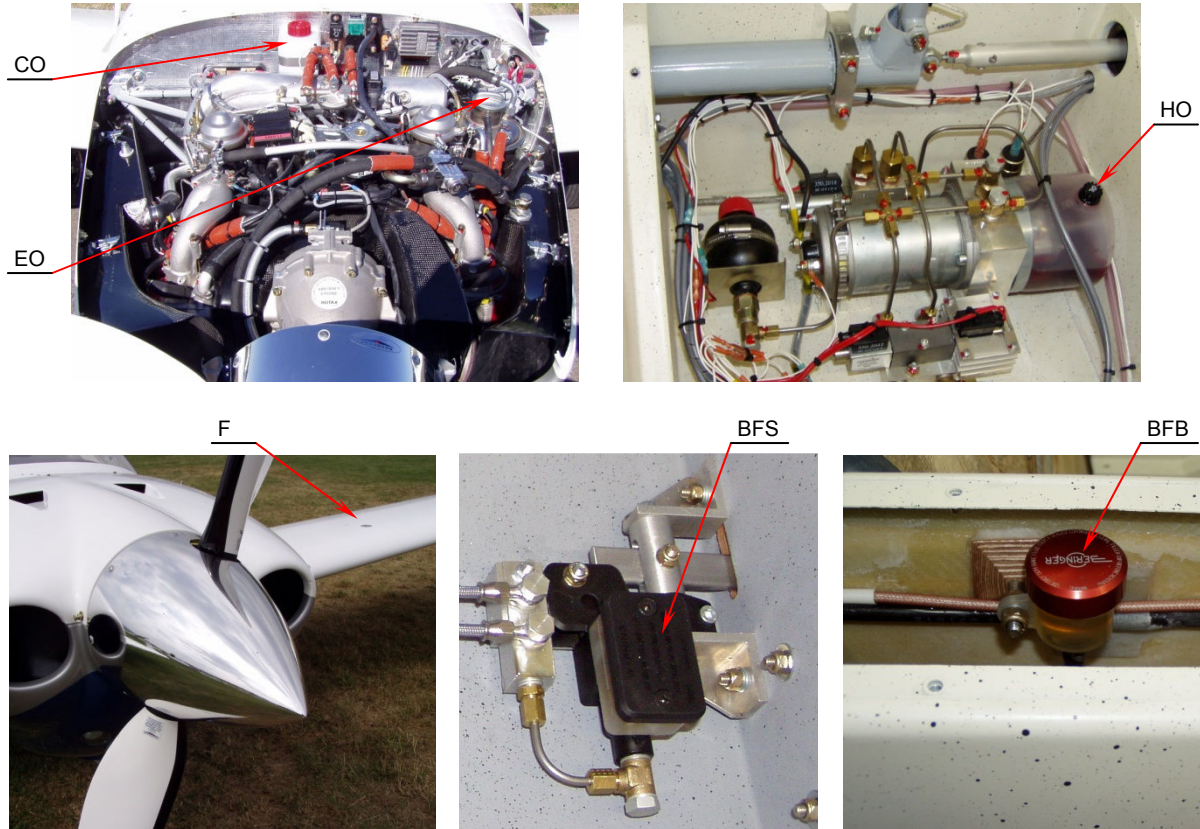


Fig. 27 Operating media

3.7.1. Engine oil

Total oil quantity in ROTAX 912 and 914 lubricating system amounts to 3,5 litres. The oil tank is located in the engine compartment and is accessible when engine upper cowling is removed. Oil quantity is measured by wire-gage in the oil tank.

The recommended oil brands are listed in the Operator's Manual for all versions of ROTAX 912 and 914 engines. Prior to oil check, turn the propeller by hand several times to pump oil from the engine into the oil tank, or let the engine idle for 1 minute. The oil level in the oil tank should be between min. and max. mark and should not be below min. mark (see the Operator's Manual for all versions of ROTAX 912 and 914 engines).

For oil emptying the following procedure can be applied:

Place a suitable container for old oil below the oil tank,

- Unscrew a drain screw from the bottom of the oil tank to empty oil,
- Remove and replace oil filter at each oil change,
- Replace a new sealing ring of the drain screw,
- Fit drain screw,
- Refill with approx. 3 litre of new oil

It is recommended to empty oil immediately after engine test run or a flight when it is warm and better escape the engine and the oil tank. For further information see the maintenance manual for ROTAX Engine Type 912 and 914 Series.

3.7.2. Coolant

Refer to the Operator's Manual for all versions of ROTAX 912 and 914 engines for recommended coolant sorts. Manufacturer recommends 50% antifreeze concentrate with additives against corrosion and 50% pure water, or use of an equivalent premixed coolant. Information concerning used coolant and its characteristic is noted on fire wall. Total coolant quantity is about 1,5 litres. The coolant level in the overflow bottle should be between min. and max. mark. In case of the coolant emptying disconnect hose leading coolant from the radiator into the pump (on the lowest part of the cooling system) to empty coolant into a suitable bottle. The liquid coolant fills into the expansion tank (the highest point of the cooling system) located in the engine compartment. In addition to that an overflow bottle is attached on the firewall to absorb coolant in case engine overheating. Run engine to operating temperature and allow engine to cool down before checking coolant level. Replenish as necessary. Oftentimes make checking coolant level during the first 10 operation hours as far as the last pneumatic blebs are removed.

3.7.3. Brake fluid

Only brake fluid of D.O.T.4 (meets classification J1703c) should be used for hydraulic brake system (sort for middle hard or hard operation). In general the certified automobile brake fluid meet needed requirements. Brake fluid refilling is necessary when low brake system efficiency occurs due to fluid leak. The wheel brake system is filled with the brake fluid into the tank which is located on the main brake hydraulic face ram located beyond the rear frame of the baggage compartment. Brake fluid gets thick during airplane operation and absorb air humidity. This is the most important condition, which causes brake system failures. There is not possible to determine time when it occurs. The best way is to precede any troubles and change brake fluid every 2 years with new one.

3.7.4. Fuel

Recommended fuel brands are listed in a table below:

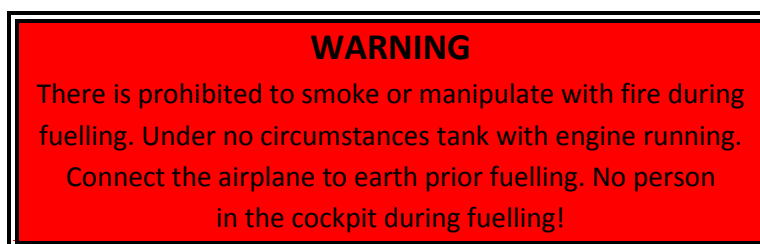
ROTAX 912 UL/A/F	ROTAX 912 ULS/S2	ROTAX 914 UL/F
Minimum octane number 90	Minimum octane number 95	Minimum octane number 95
EN 228 Normal	-	-
EN 228 Super	EN 228 Super	EN 228 Super
EN 228 Super plus	EN 228 Super plus	EN 228 Super plus
AVGAS 100 LL	AVGAS 100 LL	AVGAS 100 LL

AVGAS 100 LL use places greater stress on the valve seats due to its high lead content and forms increased deposits on the combustion chamber and lead sediments in the oil system. Thus it should only be used in case of problems with vapour lock or when other fuel types are unavailable. When the engine operating primarily (over 30% of engine operating time) on AVGAS fuel, the Rotax engine producer recommends to make a change of engine oil every 25 operation hours. (See List of periodical inspections of ROTAX 912 and 914 engine and Operator's Manual for ROTAX 912 and 914 engines).

Due to ethanol presence in E10 and its specific features it is recommended in case of expected long period aircraft sitting to drain E10 out from a tanks, refuel them with non- ethanol blended fuel and run the engine long enough to burn off E10 remaining in the fuel supply system. In the case of the long time aircraft sitting with ethanol blended fuel in the tanks, drain them out, fuel with fresh fuel and and run the engine long enough to burn off E10 remaining in the fuel supply system. Inspect the in-line fuel filter. (see Service instruction SI-912-016 R1 and R2 issued by Rotax engine producer).

3.7.4.1. Fuelling

The total fuel volume is 74 (100 or 126) litres. The fuel tank filler necks are placed on a wing upper surface near of the wing root. Keep in mind maximum permitted takeoff weight when fuelling the airplane.



3.8. Lubrication

3.8.1. Lubrication fundamentals

There are some inaccessible joints and control system parts inside a wing and fuselage, which have been cleaned and lubricated during airplane assembly and next lubrication will be performed during a periodic inspection.

On the other side there are some parts, e.g. landing gear, which are exposed to external conditions and to varying loads. Those parts would be inspected during pre-flight and periodical inspections and should be lubricated always when it necessary, but at least at intervals specified below.

3.8.2. Recommended lubricants

The manufacturer recommends using of greases and oil without acid for the lubrication only.

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

3.8.3. Lubricating points

Unit	Lubricating point	After 25 hr	Every 50 hr	Every 100 hr	Lubricant
Propeller	See Manufacturer Manual	*			
Engine	Oil change according an engine manual				
	Carburettor control cable at inlet into the bowden	*	*		Oil the control cables
	Choke control cables at inlet into the termination	*	*		Oil the control cables
Nose wheel landing gear (retractable undercarriage)	Wheel bearings				Lubricate by grease
	Swing wheel fork joint pins	*	*	*	Grease nipple Lubricate by grease
	Drag stay pins			*	Lubricate by grease
	Gas strut pins			*	Lubricate by oil
	Upper and down leg pin		*	*	Lubricate by grease
	Swivel bearings in the cables terminations close to the nose wheel control levers			*	Lubricate by grease
Nose wheel landing gear (fixed undercarriage)	Wheel bearings			*	Lubricate by grease
	Upper and down leg locating bush		*	*	Lubricate by grease
	Joint pins of the control		*	*	Lubricate by grease
Main landing gear (retractable undercarriage)	Swing wheel fork joint pins	*	*	*	Grease nipple Lubricate by grease
	Drag stay pins		*	*	Lubricate by grease
	Hydraulic face rams pins			*	Lubricate by grease
	Wheel bearings			*	Lubricate by grease
Hand control	Control stick bearings and all movable joints			*	Lubricate by grease
Foot controls	All movable joints			*	Lubricate by grease
Ailerons	Supporting bearings		*	*	Lubricate by grease
	Rod end bearings		*	*	Lubricate by grease
Rudder	Sliding bearings			*	Lubricate by grease
	Rudder lever pins		*	*	Lubricate by grease
Elevator	All movable joints		*	*	Lubricate by grease
	Supporting bearings			*	Lubricate by grease
Wing flaps	Rod sliding bearings			*	Lubricate by grease
	Rod joint pins			*	Lubricate by grease at each flaps disassembly
	Changing gate guided a flap control lever in the pedestal between the pilot seats		*	*	Lubricate by HHS 2000 oil (Würth Firm)

3.9. Mechanism adjustment

3.9.1. Torque moments

Metric thread		Strength class									
		4D	5D	4S	6E	5S	5R	6S	8G	10K	12K
M4	N.m					1,67					
	kg.m					0,17					
M5	N.m					3,45					
	kg.m					0,35					
M6	N.m	4,31	4,90	5,39	5,88	6,86	7,84	8,33	9,80	13,72	16,67
	kg.m	0,44	0,50	0,55	0,60	0,70	0,80	0,85	1,00	1,40	1,70
M7	N.m	5,88	7,84	8,82	9,80	10,78	11,76	12,74	14,70	20,59	25,49
	kg.m	0,60	0,30	0,90	1,00	1,10	1,20	1,30	1,50	2,10	2,60
M8	N.m	8,33	10,78	12,74	13,72	15,69	17,65	19,61	22,55	32,36	38,24
	kg.m	0,85	1,10	1,30	1,40	1,60	1,80	2,00	2,30	3,30	3,90
M10	N.m	16,18	21,57	24,51	27,45	31,38	34,32	37,26	44,12	61,78	73,54
	kg.m	1,65	2,20	2,50	2,80	3,20	3,50	3,80	4,50	6,30	7,50
M12	N.m	27,45	36,28	42,16	47,07	52,95	58,83	63,74	74,53	104,93	125,52
	kg.m	2,80	3,70	4,30	4,80	5,40	6,00	6,50	7,60	10,70	12,80
M14	N.m	43,14	58,83	66,68	73,54	78,54	93,16	98,06	117,67	164,75	196,13
	kg.m	4,4	6,00	6,80	7,50	8,00	9,50	10,00	12,00	16,80	20,00
M16	N.m	60,80	78,45	93,13	98,06	107,87	127,48	131,29	164,75	225,55	274,58
	kg.m	6,20	8,00	9,5	10,00	11,50	13,00	14,00	16,80	23,00	28,00
M18	N.m	88,25	117,67	137,29	156,90	171,61	196,13	205,93	245,16	343,23	411,87
	kg.m	9,00	12,0	14,00	16,00	17,50	20,00	21,00	25,00	35,00	42,00
M20	N.m	117,67	156,90	176,51	196,13	225,55	245,16	274,58	313,81	441,29	539,36
	kg.m	12,00	16,00	18,00	20,00	23,00	25,00	28,00	32,00	45,00	55,00
M22	N.m	147,09	196,13	225,55	245,16	284,39	313,81	33,42	392,26	558,97	676,65
	kg.m	15,00	20,00	23,00	25,00	29,00	32,00	34,00	40,00	57,00	69,00
M24	N.m	205,93	274,58	313,81	353,03	392,26	441,29	470,71	549,17	755,11	970,85
	kg.m	21,00	28,00	32,00	36,00	40,00	45,00	48,00	56,00	77,00	99,00
Ultimate strength		37	50	37	-	50	-	60	80	100	120
ϕ in %		25	22	14	-	7	-	8	12	8	8
Yield point		21	28	32	36	40	45	48	64	90	108

Torque moment formula (valid for all bolt sizes):

$$M_{kmax} = 1,065 \cdot \frac{d \cdot \sigma \cdot S}{m}$$

M_{kmax}	Torque moment	kg.cm
d	Bolt shank diameter	cm
σ	Minimum yield point	kg/cm ²
m	Safety factor	m=1,25 for $\sigma < 50$ kg/mm ² ; m=1,43 for $\sigma > 50$ kg/mm ²
S	Lead of helix	cm

3.9.2. Necessary maintenance tools

No special tools are needed for WT9 Dynamic LSA maintenance. The manufacturer recommends using of the suitable piercer for dismantling of the nose wheel axle.

3.9.3. Inspection holes

There are not use the special inspection holes for an access into the airframe on the ground of preservation of the smooth airplane surface. There is an inspection window blinded by transparent acryl glass on the wing lower surface for the inspection of the aileron two-arm lever. After opening of this small window and the finishing of the works glue it by means of pure silicon glue again.

The control elements are accessed after the pedestal cover demounting and the rear frame cover demounting behind the baggage compartment.

3.10. Brake system

3.10.1. Brake pads replacement

The brake pads replacement is performed when the pads are worn-out. Apply the following procedure:

1. Lift the airplane
2. Remove the cotter pin, unscrew the M22 main wheel axle nut, remove washer from the wheel axle.
3. Bend small tabs on 3 washers and unscrew screws connecting brake disc to the rim.
4. Remove the wheel and a distance ring from the axle.
5. Take the brake disc down (leave the brake on a main leg).
6. Remove the cotter pins, shift the pins out and remove the brake pads.
7. Mount a new brake pads, secure the pins with cotter pins (diameter 2 mm, length 14 mm)
8. Put the brake disc on the wheel.
9. Put the distance ring on the axle and then the wheel (adjust the distance ring between bearings).
10. Set tab washers on the screws, apply a LOCTITE and screw the brake disc to the inner part of a rim, bend the tabs of washers to secure screw heads.
11. Put the washer on the axle, screw main wheel axle nut back and secure with a cotter pin.

List of parts necessary for brake pads replacement procedure:

- | | |
|-----------------------------------|-------|
| 1. Brake pads | 4 pcs |
| 2. Cotter pins \varnothing 2x14 | 4 pcs |
| 3. Cotter pins \varnothing 4x40 | 2 pcs |
| 4. Secure Tab washers 6x2 | 6 pcs |
| 5. LOCTITE (blue) | |

3.10.2. Venting

It is most important thoroughly vent the brake system, otherwise the system function may be unreliable and the brakes may fail. There are two main reasons of air entry into the brake system:

1. Disconnected or released brake hoses.
2. Insufficient quantity of brake fluid.

Procedure:

1. Loosen the vent screw in appropriate brake calliper (OS).
2. Pull brake control lever in the cockpit and hold at a rear position.
3. Tighten the vent screw.
4. Repeat several times until the brake control lever offers resistance against motion.
5. Full tighten the vent screw.

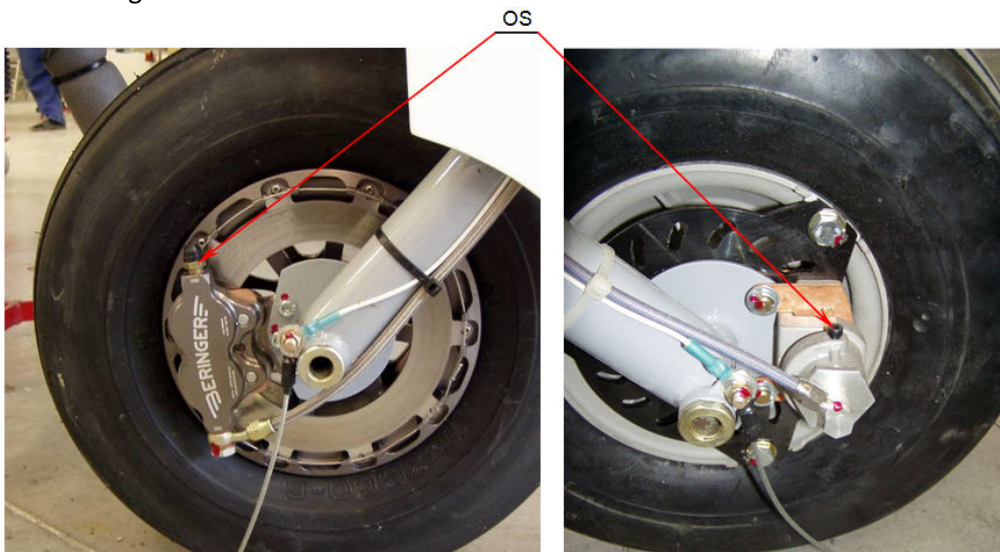


Fig. 28 Brakes venting (retractable undercarriage)

CAUTION

If brake efficiency remains unsatisfactory after venting, there is necessary to fill brake fluid and vent the system again!

3.10.3. Brakes adjustment

The brakes adjustment carries out after the brake system venting and after a brake plate replacement. The main landing wheels are braking together by means of the brake control lever pulling in the cockpit. The brake effect adjustment is carried out at the brake control lever in the cockpit. Bowden cable leads from the brake control lever to the main brake hydraulic face ram, it is adjusted so that at rear detent position of the brake control lever (a parking position) the airplane is full braked.

3.11. Control surfaces deflections setting

Control surfaces deflections of a new airplane are set by the manufacturer. Deflections are adjusted at values specified in Control Surfaces Deflections Record enclosed in this Manual.

A neutral position of control surfaces and controls is a base for adjustment of deflections.

3.11.1. Aileron deflections adjustment

The range of the control stick deflection is adjusted by stops (AS) on the consoles of the torsion tube (TR) (see Lateral control system scheme, page 1-20). Aileron deflections can be adjusted with adjustable threaded end of a short rod (5). Further adjustable rod ends are located at a place a pin joint (BV), which allows a disconnection of the rod in case of a derigging of a wing. An access to this joint (BV) is allowed through an access hole at a model with a fixed undercarriage and through a main wheel well at a model with a retractable undercarriage.

Deflection of the two-arm lever (4), which a console with the bearings is attached at the wing main spar and provides a necessary differentiation of the aileron deflections, is set by the manufacturer and cannot be adjusted in operation.

3.11.2. Elevator deflections adjustment

The control stick motions are limited by two stops (7) (see Longitudinal control system scheme, page 1-19). A “push-down” stop is glued into the wing central panel main spar. A “pull-up” stop is on the lateral located tube, which is passed through the walls of the middle console between the seats. An adjustment of the stops is allowed after removal of the pedestal upper cover. Elevator deflections can be adjusted with adjustable threaded rod end (2).

3.11.3. Trim

A neutral position of a trim control lever can be adjusted by means of an adjustment of a length of the rod (R). An adjustable nut (N) is accessible after removal of the tunnel upper cover between seats

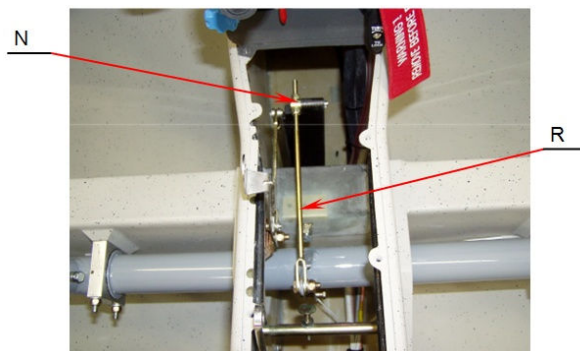


Fig. 29 Trimming deflection adjustment

3.11.4. Flap deflections adjustment

Set flap position is locked by the deflection of the flap control lever into the appropriate recesses on the pedestal cover, where a lever is pushed by a spring.

A neutral position of each flap adjusts by means of an adjustment of an adjustable short rod end (6). A common neutral position of the flaps can be adjusted by means of an adjustment of an adjustable rod end (3). An access to this joint is allowed after removal of the pedestal upper cover between seats.

3.11.5. Rudder deflections adjustment

The rudder deflections are set by the airplane manufacturer by means of corresponding length of the control cables and cannot be adjusted in operation

3.12. Nose wheel leg flexible polyurethane roller replacement

3.12.1. Fixed undercarriage

The springing is carried out by means of the gilled flexible polyurethane roller, which is located in the upper nose wheel bearing bush (1) and by means of the rubber ropes twisted around a leg (2) and bearing console pin (3). At the gilled flexible polyurethane roller replacement must be the nose wheel leg demounted.

Procedure:

1. Remove both engine cowlings.
2. Disconnect both pin joints of the nose wheel control rod.
3. Loosen the screws (4) of the lower bearing bush (5) and a part of the bearing bush together with a nose wheel leg pull read forward through a groove inside console (6).
4. Eject a leg from an upper bearing bush so that the gilled flexible polyurethane roller can be replaced.
5. Pull the gilled flexible polyurethane roller and replace new one.
6. Assemble back the nose wheel leg in inverted sequence.

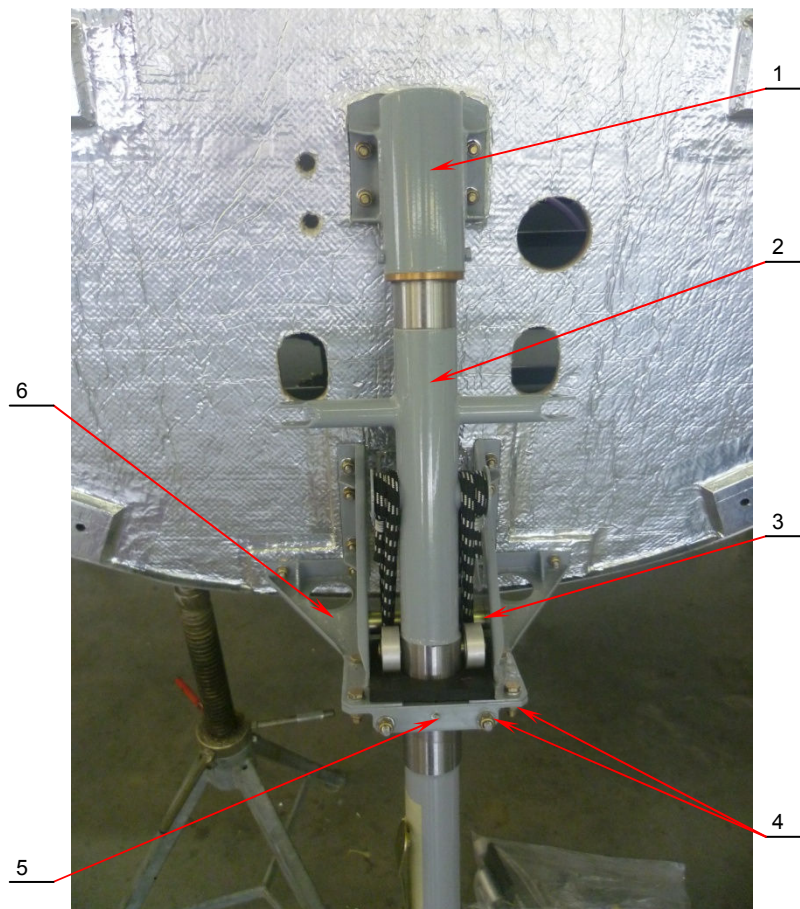


Fig. 30 Nose wheel leg of the fixed undercarriage mounting

3.13. Tyre inflating

Wheels pressures for tyres are stated on placards stuck on the airplane, also. A car pump or a compressor or a pressure bottle may be used to pump a wheel.

Wheel:	Pressure
Nose wheel	200 kPa
Main wheel	250 kPa

3.14. Winter operation

3.14.1. General

The airplane is considered as a winter one, if outside temperature falls below +5 °C. The airplane must be prepared for winter operation.

3.14.2. Preparing the airplane for winter operation

Airframe:

- Lubricate the airplane per Lubricating Chart, if from the last 100 hrs. Inspection did not pass more than 6 months.
- Check fuel tank venting.
- Check attachment of wing, ailerons, flaps and tail units; lubricate per Lubricating Chart.

Powerplant:

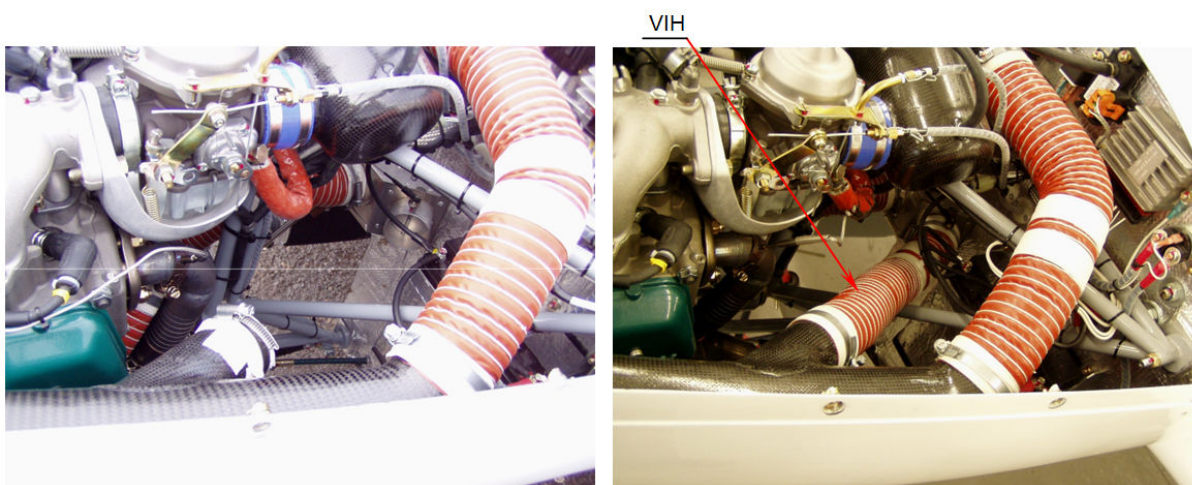
- The cooling system of the cylinder heads is filled with the mixture of the non- freezing liquid and water, which protects the cooling system against the freezing up to –38 °C. If the temperature is below this value, the coolant must be drained or renewal with pure the non-freezing liquid. The coolant must be renewal after each two years. Use only coolant according to the current Operator’s Manual for engine ROTAX 912.
- Fill engine oil suitable for low temperatures. The required operation oil temperature and operation temperature of the coolant are not reached in the winter operation. The oil temperature must be higher than 90 °C.
- Cover the oil cooler face or a part of face only. Cover a part of radiator face by means of a width adhesive tape so, that is a small 10–15 cm width slot for cooling and for the inlet of air for the heating. The oil tank must be isolated by means of suitable thermal insulation in case of the lower outside temperatures.

CAUTION

The limit temperatures of the coolant, cylinder heads and oil must be kept after these arrangements!

- Check electrode gap of the spark plugs and adjust as necessary or renew as required.

In winter operation is advisable to disconnect the ventilation intake hose (VIH) due the better performance of heating system. After disconnecting the ventilation intake hose close the socket for the hose. Otherwise the ram air will be loosen through this opening.



3.14.3. Operation

Pre-flight inspection:

In addition to the pre-flight inspection events in Flight Manual (AFM), the following would be done:

- Throw down or ice from airplane surfaces.
- Check control surfaces for free movement and cleanness of slots of control surfaces and flaps.
- Check cleanness and passage of the fuel tank venting before each flight.
- Check fuel system (fuel filter) for frail, if found than empty the fuel tank and refill with new one.
- Check fuel for water prior filling
- Drain fuel tank, deflate a small quantity of a fuel.
- If the airplane is equipped with a tricycle type of fixed undercarriage, for the winter operation on the frozen or harden surface of the runway is recommended to remove the spats from the wheels due to their damages.

Pre-heating engine and oil:

There is possible to start an engine without need of pre-heating if outside temperature is not below +5 °C. It is recommended to pre-heat the engine and oil if temperature falls below +5 °C. Use suitable air heater or a dryer.

WARNING

Never use open fire to pre-heat an engine!

Blow hot air from the front into the hole around the propeller hub. Temperature of hot air should not exceed 100 °C. Pre-heat until cylinder head temperature and oil temperature exceed +20 °C.

CAUTION

If cylinder heads and oil temperatures fall during parking among flights than is recommended to start and warm up engine from time to time. Do not open choke when starting hot engine!

Parking and taxiing:

Check wheel brakes for freezing when parking outside and temperature is below 0 °C. Check wheels free rotation prior to taxiing (hold a propeller and tow an airplane). Heat the brakes with hot air to remove freezing. Freezing should not be removed by force towing.

After winter operation:

- Clean the airplane thoroughly
- Lubricate the airplane per Lubricating Chart
- Check and adjust the control system

3.15. Parts with life limits

Part	Lifetime	Note
Airframe	3000 hours	Life extension inspection
Engine	2000 hours or 15 years	Overhaul
Propeller SR3000/2/SP SR2000D	1500 hours	Overhaul
Propeller DUC	800 hours	Overhaul
Propeller EVRA PERFOLINE 174	None	-
Rubber parts	5 years	Change
Brake liquid	2 years	Change
Coolant liquid	2 years	Change
Safety belts	12 years	Change
Hydraulic oil	2 years	Change
Towing system	4000 cycles	Inspection for life extension
Rescue system	18 years	Life extension inspection after every 6 years

4. REPAIRS

Section	Page
4.1..... REPAIR OUTLINES	2
4.2..... REPAIR CLASSIFICATION	2
4.3..... CONSTRUCTION.....	2
4.4..... MATERIALS.....	2
4.5..... REPAIR PREPARATION	3
4.6..... REPAIR CLASS 4	4
4.7..... REPAIR CLASS 3	4
4.8..... REPAIR CLASS 2	4
4.9..... REPAIR CLASS 1	6
4.10..... REPAIRS OF A METAL PARTS	6
4.11..... TEST FLIGHT AFTER A REPAIR	6

4.1. Repair outlines

Describe procedures apply to minor damages only. Major repairs can be carried out by the airplane manufacturer or a repair workshop approved by local Civil Aviation Authority (CAA). The sandwich shells, from which is airplane made, are repaired very difficult.

4.2. Repair classification

The repairs are divided according to the influence to the airworthiness of all airplanes into following classes:

Repair class 1: Large damages required a partial replacement of the airframe important or large repairs can be carried out by the airplane manufacturer or a repair workshop approved by local Civil Aviation Authority.

Repair class 2: Destruction of the whole shell (also the inner glass fibre laminate destroyed), however small size only.

Repair class 3: Simple surface damage (only the outer glass fibre laminate damaged) and small damage of the foam filling.

Repair class 4: The erosion damages caused by the scores and the scrapes without the outer glass fibre laminate damage and without the breakage of the element.

4.3. Construction

WT9 Dynamic LSA airframe consists of a sandwich shells from advanced composite material. The shell is of three layer construction. The external and internal shell layers are made of a glass and carbon fibre fabrics, which are saturated with a resin. Between them there is a filling from a hard foam panels (Polyurethane foam HEREX 3–8 mm thick).

4.4. Materials

The following materials apply to all advanced composite material parts:

Resin :	L 285 type	Manufacturer Scheufler Firm
Hardener :	L 286 type	Manufacturer Scheufler Firm
Weight mixing rate:	100:38	(Resin:Hardener)
Volume mixing rate:	2:1	(Resin:Hardener)

The given mixing proportion of components must be observed as exactly as possible. Mixture of a resin and a hardener must be stirred thoroughly until there are no cloudiness and no bubbles in a vessel. The thickeners and the resin-fillers are added after stirring.

The hardening of the mixture is 15 hours at a temperature 55 °C. The mixture reaches final properties after this time.

Reinforcements:

GLASS FABRICS			
Marking	Weave	Weight (g/m ²)	Application
91110	Cross twill	110	Inner skins
92110	Cross twill	163	Fuselage, wing, control surfaces
92125	Cross twill	285	Fuselage, wing
92145	Unidirectional	216	Fuselage, wing
EC9-756 K43	Roving		

CARBON FABRICS			
Marking	Weave	Weight (g/m ²)	Application
CF200	Cross twill	200	Fuselage
CF140	Unidirectional	140	Fuselage, stabilizer
TENAX HTA 5131	Roving		

Other material:

Core material:	HEREX C70.55
Resin fillers:	Aerosil, Chopped cotton wool, white Microballoons
Lacquer:	Acryl
Steel:	L-CM3.6 (AISI 4130, DIN 1.7214.4)
Light metals:	Duralumin Z 424203.61 (ASM 2024)

4.5. Repair preparation

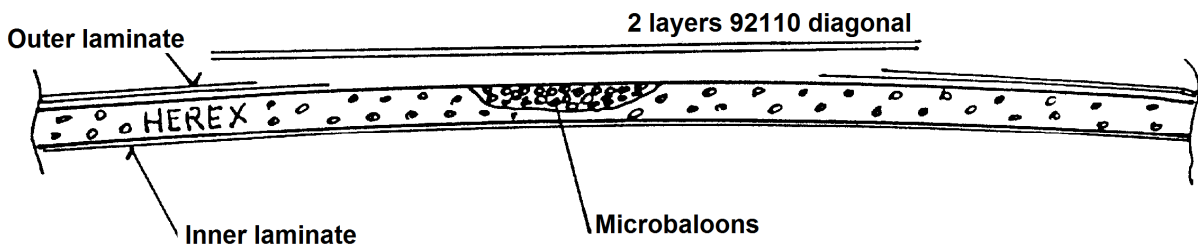
You should first inspect the damaged area to determine exactly the extent of damage, type of construction and type and density of weave concerning to main dimensions of the part. The airplane WT9 Dynamic LSA has the first layer of the sandwich outer layers from the 92110 cloth with 45° diagonal weave direction to the fuselage centre line or to the wing centre line. The first step is removing all damage parts and all portion of the shell which has become delaminated from a damage area. A repair area should be washed with soap and dried up. Then clean a repair area with carbon tetrachloride or acetone. Prepare clean vessels for stirring the mixtures of a resin and a hardener

4.6. Repair class 4

The erosion damages caused by the rain, the scores, the scrapes without the outer glass fibre laminate damage require the lacquer works only. Suitable is PE – Lackvorgelat, white No. 3-69469 and PE – Hardener No. 07-20500. Mixing proportions by weight 100 parts Lackvorgelat to 10 parts hardener. The lacquer remains to gel (app. 30 minutes) for filling more deep scrapes. In case of first cloth layer damage, then whole repair area cleans well and sands smooth with an abrasive paper. Lay on the cloth layer and, if the resin is dry, the repair area can be puttied and repainted with lacquer.

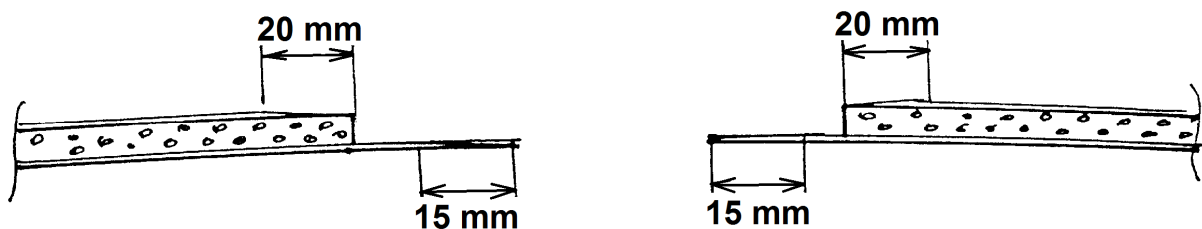
4.7. Repair class 3

If the outer shell receives a puncture or a fracture, tap to determine the extent of delamination from the foam. Follow by removing the lacquer with a sanding disc or block and remove from the foam the portion of the shell which has become delaminated. Around the edge of the damaged area where the shell is still firmly bonded, scarf with an abrasive block or a plane blade at least 4 cm (for each cloth layer about 15 mm is necessary). After scarfing the shell, blow out thoroughly the whole repair area including the pores of the foam and wash the scarf with carbon tetrachloride or acetone. Now fill the hole in the foam with microballoons and simultaneously fill the pores of the exposed foam. Then lay two patches of the 92110 cloth with diagonal weave direction (stepwise largest patch first) over the damaged area. The applied cloth must be dry and dust free. After hardening (app. 8 hrs at 20 °C) the damaged area should be smoothed, filled and painted. In smoothing take care that only the edges of the patches are sanded.

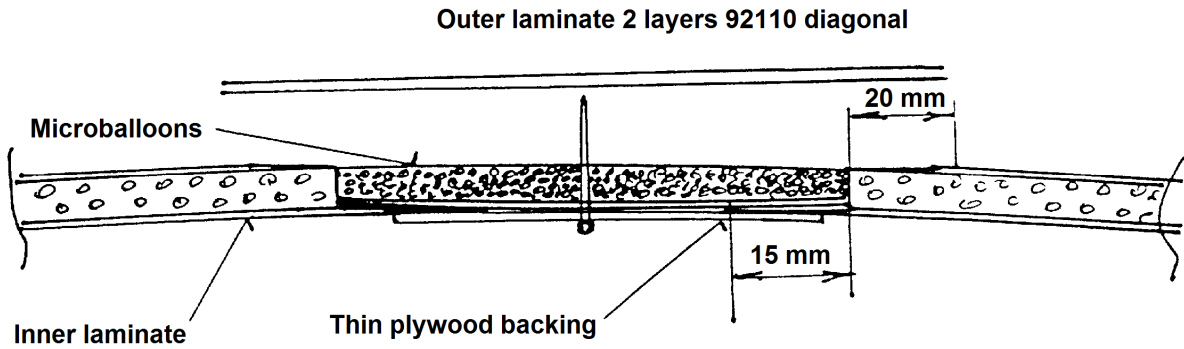


4.8. Repair class 2

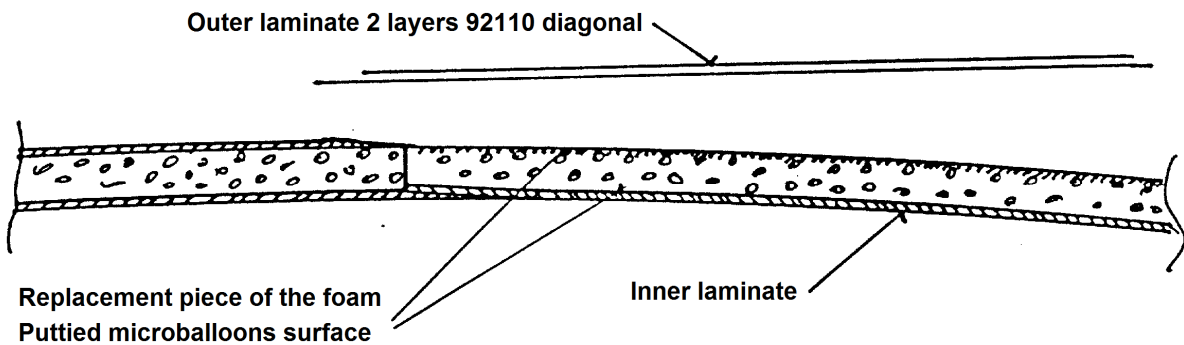
If there is a through hole in the sandwich shell then the inner laminate must be repaired. We remove the outer laminate in the region of the region of the damage which is no longer bonded to the foam and enlarge the hole in the foam and inner laminate until good bonding to the foam is evidenced. Then the foam is further removed 20 mm around the hole in the inner laminate and the outer laminate scarfed as under Repair class 3.



Now the projecting inner laminate is cleaned of any foam and feathered. If the hole in the foam is smaller than a fist then glue with Patex a thin plywood or polyester plate from the inside to the laminate, lay on the inner laminate (2 layers 92110 diagonal) and fill the hole in the foam with microballoons mixed with Styropor kernels or crumbled Styropor. After hardening (app. 8 hrs at 20 °C) the damaged area should be smoothed, sanded and apply the outer patches (2 layers 92110 diagonal).



A tip on gluing the plywood plate – the hole in the inner laminate should always be a bit oblong so as to insert the plywood backing plate. Before inserting the plywood drive through the middle of the ply a pin or nail by which it can be drawn against the inner shell. With additional nails or pins it is in this manner possible to close very large holes to the proper contour to lay the cloth patch on. Basically it is possible to repair also larger shell parts in the foregoing manner. Because of weight you should use a plug of foam in place of the microballoons and Styropor kernels. In this case you cut or sand a plug of foam to fit the hole, spread the inner laminate. The inner laminate must harden before doing further work. If the hardening is completed at least progressed so that the laminate does not separate from the foam, then glue the plug in the hole with thickened resin (chopped cotton wool, microballoons). The foam with laminate on one side is flexible so that it can be fitted to the repair place contour (if necessary warm the foam with hairdryer and bend). Once the foam is glued it can be smoothed, puttied with microballoons and the outer laminate applied (2 layers 92110 diagonal).



4.9. Repair class 1

These repairs have serious character and can be carried out by the airplane manufacturer or a repair workshop approved by local Civil Aviation Authority (CAA). In any case contact the airplane manufacturer.

4.10. Repairs of a metal parts

In case of a damage of any fittings, if a damage reason was not designate immediately, contact the airplane manufacturer. It is necessary take account to an element function, a material composition, a processing technology and etc. The airplane manufacturer can evaluate all these factors only.

Welding should be carried out only by an approved aircraft welder. All welds made by the airplane manufacturer are by the Argon-arc welding method.

4.11. Test flight after a repair

CAUTION

Only qualified pilot may perform a test flight!

The test flight should be performed above all in following cases:

After repair or replace of fixed surfaces – wing, fin, stabilizer, or control surfaces – elevator, aileron or flap. Flight characteristics and airplane stability can be affected when above mentioned part is replaced or adjusted. Therefore a test flight should be performed to check airplane flight characteristics, control surfaces setting, manoeuvrability, stability and stall characteristics. The characteristics are check during taxiing, takeoff, climbing, cruise, descent, approach and landing. Use the Flight Test Record (see Section 5, Appendices, of this Manual) to record data obtained during a test flight.

Test flight flying time:

Test flight flying time takes about 40 minutes if the test flight is performed according to the Flight Test Record.

Airplane inspection before a Test flight:

Prior to the test flight the airplane should be thoroughly inspected, weighed, found faults debugged and the airplane should be prepared for the flight (tank etc.).

Test crew:

Only qualified persons (test pilots) are permitted to perform a test flight. In-flight found faults should be debugged forthwith the test flight.

5. APPENDIXES

Section	Page
5.1..... LIST OF APPENDIXES	2
5.1.1..... CONTROL SURFACES DEFLECTION RECORD.....	2
5.1.2..... MAGNETIC COMPASS COMPENSATION RECORD	3
5.1.3..... CHECKING CONTROL SURFACES WEIGHTS AND BALANCING	4
5.1.4..... FLIGHT TEST RECORD.....	5
5.1.5..... PITOT-STATIC SYSTEM FOR LEAK PROOF TEST RECORD	6
5.1.6..... WEIGHT AND BALANCE RECORD	7
5.1.7..... MEASUREMENT RECORD - ZKM ENCODING ALTIMETER	8
5.1.8..... MEASUREMENT RECORD - ZKM RADIO STATION VHF.....	9
5.1.9..... MEASUREMENT RECORD - ZKM TRANSPONDER.....	10
5.1.10..... CHECKLIST OF EQUIPMENT	11
5.1.11..... AIRPLANE WIRING DIAGRAMS	12

5.1. List of appendixes

5.1.1. Control Surfaces deflection record

Control Surfaces Deflection Record					
Type: WT9 DYNAMIC LSA	Registration:		S/N:		Date:
Control surface deflection	Upward		Downward		Distance between the measurement point and the turning point
	Specified	Real	Specified	Real	
Left aileron	25°/106 mm		15°/65 mm		252 mm
	Tolerance ±5 mm		Tolerance ±5 mm		
Right aileron	25°/106 mm		15°/65 mm		252 mm
	Tolerance ±5 mm		Tolerance ±5 mm		
Elevator	28°/112 mm		18°/74 mm		240 mm
	Tolerance ±6 mm		Tolerance ±6 mm		
Rudder	Right		Left		320 mm
	25°/135 mm		25°/135 mm		
	Tolerance ±20 mm		Tolerance ±20 mm		
Wing flap deflection		Specified	Real		295 mm (root rib of the outer wing)
			Right	Left	
1. Intermediate		15°/76 mm			
2. Centre		24°/120 mm			
3. Maximum		35°/181 mm			
Deflections tolerance ±6 mm, maximum difference between both flaps deflection ±6 mm					
References and notes:					
Place, Date :					
..... Supervisor / Signature					

5.1.2. Magnetic compass compensation record

A/C Type: WT9 Dynamic LSA	S/N:	Registration:
	Power plant running: Yes - No	Radio/Radio compass: Yes - No
Type power plant and S/N:	Compass type and S/N:	Compass compensation place: Compensation circle at the Airfield Priedviza

	FRONT	REAR
HEADING (°)	Measured Deviation Value	Measured Deviation Value
N		
030		
060		
E		
120		
150		
S		
210		
240		
W		
300		
330		

Place, Date of the compensation: Priedviza,	Compensation carried out by: Signature
Notes:	Record approved by: Supervisor / Signature

5.1.3. Checking control surfaces weights and balancing

AEROSPOOL Prievidza	CHECKING CONTROL SURFACES WEIGHTS AND BALANCING					
Type: WT9 DYNAMIC LSA	Registration:		S/N:		Date:	
Control surface	Without balancing		With balancing			
	Specified values		Specified values		Real values	
	Weight (kg)	St. moment (N.cm)	Weight (kg)	St. moment (N.cm)	Weight (kg)	St. moment (N.cm)
Aileron	Right	0,77 - 0,95	70 - 100	1,00 - 1,25	20 - 60	
	Left	0,77 - 0,95		1,00 - 1,25		
Arm l = 252 mm (the distance between rotation axis of the control surface and weighting point) Note: Without balancing						
Elevator	Right	1,00 - 1,20	60 - 85	1,15 - 1,40	30 - 68	
	Left	1,00 - 1,20		1,15 - 1,40		
Arm l = 240 mm (the distance between rotation axis of the control surface and weighting point) Note: Without balancing						
Rudder	1,50 - 1,90	40 - 70	1,75 - 2,25	-40 -20		
Arm l = 320 mm (the distance between rotation axis of the control surface and weighting point) Note: Without balancing						
Wing flap	Right	2,50 - 3,30	180 - 220	2,25 - 2,90	-20 25	
	Left	2,50 - 3,30		2,25 - 2,90		
The static moment is measured on root rib at arm distance l = 320 mm. Note: Without balancing						

Checking static moment of the control surfaces are within the approved tolerances

Prievidza, date:

.....
Supervisor / Signature

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL


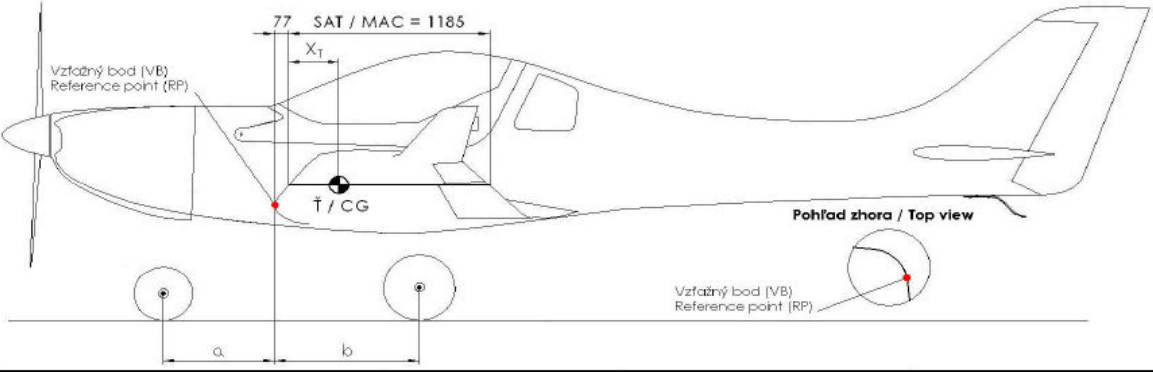
5.1.4. Flight test record

<h2 style="margin: 0;">Flight Test Record</h2>			
Take-off weight: kg		TOW CG.: %MAC	
Model: WT9 DYNAMIC LSA		S/N.:	Registration mark:
Engine:		S/N.:	Hours flown:
Propeller:		S/N.:	Take-offs:
RESULTS: (Airspeeds are IAS)			
Regime		Test Flight	
Meteorological conditions		Sea Level Atmosphere Pressure QNH	hPa
		Temperature on the ground QMU	°C
		Wind direction / velocity	° / kt
Engine Ground Test	Full Throttle	Engine Speed 5500±200 rpm / Manifold press 27,5 in.Hg	rpm / in.Hg
		Fuel Pressure 0.15 – 0.4 bar	bar
		Oil Temperature min. 50 °C	°C
		Oil Pressure 1.5 – 5.0 bar	bar
	Ignition Check at 4000 rpm Engine Speed Drop max. 300 rpm with either magneto switched off	L: R:	
	Check Idling	1600 + 100 rpm	rpm
Take-off and climbing to 3300 ft ISA (1000 m) IAS = 120 km.h ⁻¹ (65 kts)		Engine Speed max.5500 rpm / Manifold press. 27in.Hg	rpm / in.Hg
		Fuel Pressure 0.15 – 0.4 bar	bar
		Oil Pressure 1.5 – 5.0 bar	bar
		Oil Temperature 90 – 110 °C, max 130 °C	°C
		CHT max 135 °C	°C
		Time of climbing 300-1000 m ISA (1000-3300 ft)	. .
Stalling speed at idle		Landing configuration (flaps fully extended) V _{SO} = max 65 km/h (35 kts)	km.h ⁻¹
		Cruise configuration V _S = max 80 km/h (43 kts)	km.h ⁻¹
Radio & Navigation Equipment		COM <input type="checkbox"/> NAV <input type="checkbox"/> XPDR <input type="checkbox"/> GPS <input type="checkbox"/> EFIS <input type="checkbox"/> AP <input type="checkbox"/>	Serviceable YES <input type="checkbox"/> NO <input type="checkbox"/>
Steep Turns		max. 45°, reversing a turn time max 5 s	sec
Never Exceed Speed		V _{NE} = 280 km/h IAS (272 CAS) 151 kts IAS (147 CAS)	km.h ⁻¹
		Engine speed max. 5800 rpm	rpm
+Cruising speed at engine speed: Altitude 1650 ft ISA (500 m) 4000 - 208 km.h ⁻¹ 4500 - 218 km.h ⁻¹ 4800 - 228 km.h ⁻¹		Airspeed at 5000 rpm / Manifold pressure: 26 in.Hg min. 200 km/h IAS (195 CAS) 108 kts IAS (105 CAS)	in.Hg km.h ⁻¹
		Fuel Pressure 0.15 – 0.4 bar	bar
		Oil Pressure 1.5 – 5.0 bar	bar
		Oil Temperature 90-110 °C; max 130 °C	°C
		CHT 60-135 °C	°C
Maximum horizontal speed Altitude 1650 ft ISA (500 m)		Airspeed at 5500 rpm/Manifold pressure: 27 in.Hg min. 220 km/h IAS (215 CAS) min. 118 kts IAS (116 CAS)	in.Hg km.h ⁻¹
		Fuel Pressure 0.15- 0.4 bar	bar
		Oil Pressure 1.5 – 5.0 bar	bar
		Oil Temperature 90-130 °C	°C
Landing		Touchdown speed	km.h ⁻¹
		Another observations or recognized malfunctions: NIL	
If more space is needed, write at reverse of this form .			
Date:		Pilot's signature:	
Conclusion: Flight Test Results comply with Type Certificate.			

5.1.5. Pitot-static system for leak proof test record

Pitot - static system for leak proof Test Record	
A/C Type : WT9 Dynamic LSA	S/N:
Registration:	Date:
There is a measured decrease in the static pressure system:kts/h per 5 min.	
Tested at airspeed indicator reading:.....kts/h.	
Prievidza, date:	Supervisor / Signature
Leakage place:	
Repair process:	
Repair carried out by:	
Signature:	

5.1.6. Weight and balance record

 WEIGHT AND BALANCE RECORD WT9 DYNAMIC LSA			
TYPE and MODEL	SERIAL NUMBER	REGISTRATION MARK	DATE OF ISSUE
			
Scale position	Weight (kg)	Distance from RP (mm)	Static moment (kg.mm)
Nose wheel		a = -722	
Right main wheel		b = 678	
Left main wheel		b = 678	
Total empty weight (G)*		Total moment (M)	
* Total weight including oil, coolant and ballast (if installed)			
* No ballast is used.			
CG position on MAC in mm			
$X_T \text{ (mm)} = \frac{M}{G} - 77 = \text{—————} - 77 = \text{—————} \text{ mm}$			
CG position on MAC in %MAC (MAC = 1185 mm)			
$X_{CT} \text{ (% MAC)} = \frac{X_T}{SAT} \cdot 100 = \text{—————} \cdot 100 = \text{—————} \text{ % MAC}$			
Allowed CG position range of empty airplane is from 10% to 14% MAC			
CG IS INSIDE OF ALLOWED RANGE			
..... Place	 Date	
..... Supervisor stamp and signature			

5.1.7. Measurement record - ZKM encoding altimeter

MEASUREMENT RECORD – ZKM									
A/C Type: WT9 Dynamic LSA			S/N:			Registration:			
Encoding altimeter			Type:			S/N:			
A. Transitions of the encoder (Feet)									
Transition altitude	Measured error climb	Measured error descent	Allowed toleran.	Code change	Transition altitude	Measured error climb	Measured error descent	Allowed toleran.	Code change
50			50		7950		xx	± 50	
750		xx	"	B1	8050	xx		"	
850	xx		"	B1	9950		xx	"	
1950		Xx	"		10050	xx		"	
2050	xx		"		14750		xx	"	A1
2750			"	A4	14850	xx		"	A1
2850	xx		"	A4	15950		xx	"	
3950		Xx	"		16050	xx		"	
4050	xx		"		19950		xx	"	
4950		Xx	"		20050	xx		"	
5050	xx		"		24950		xx	"	
5950		Xx	"		25050	xx		"	
6050	xx		"		29950		xx	"	
6750		Xx	"	A2	30050	xx		"	
6850	xx			A2	34950		Xx		
					35050	xx			
Code change: comply (yes – no)									
B. OTHERS TESTS									
Tightness test		Allowed tolerance (measure at 4000 feet) is -100 feet			Measured deviation				
C. TOTAL ASSESSMENT: comply (yes – no)									
Record elaborated by :			Record approved by : Date:			Measurement carried out by:			
Date:						Date:			

5.1.8. Measurement record - ZKM radio station VHF

Measurement Record			
A/C Type: WT9 Dynamic LSA		S/N:	Registration:
Radio station VHF		S/N:	Value
Pos.	MEASUREMENT	Specified	Real
1	Check function of the control knobs and the lighting	satisfy	
2	Receiver sensitivity f= 118,00 MHz 126,50 MHz 136,95 MHz	3,0 uV	uV uV uV
3	Squelch f= 126,50 MHz	satisfy	
4	VF Transmitter power U _{js} - 28,5 V f= 118,00 MHz 126,50 MHz 136,95 MHz	7 W	W W W
5	Carrier frequency without modulation f=118,00 MHz 126,50 MHz 136,95 MHz		
6	Reflected power f= 118,00 MHz 126,50 MHz 136,95 MHz	satisfy	
7	Total assessment	satisfy	
Record elaborated by:		Record approved by:	Measurement carried out by:
Date:		Date:	Date:

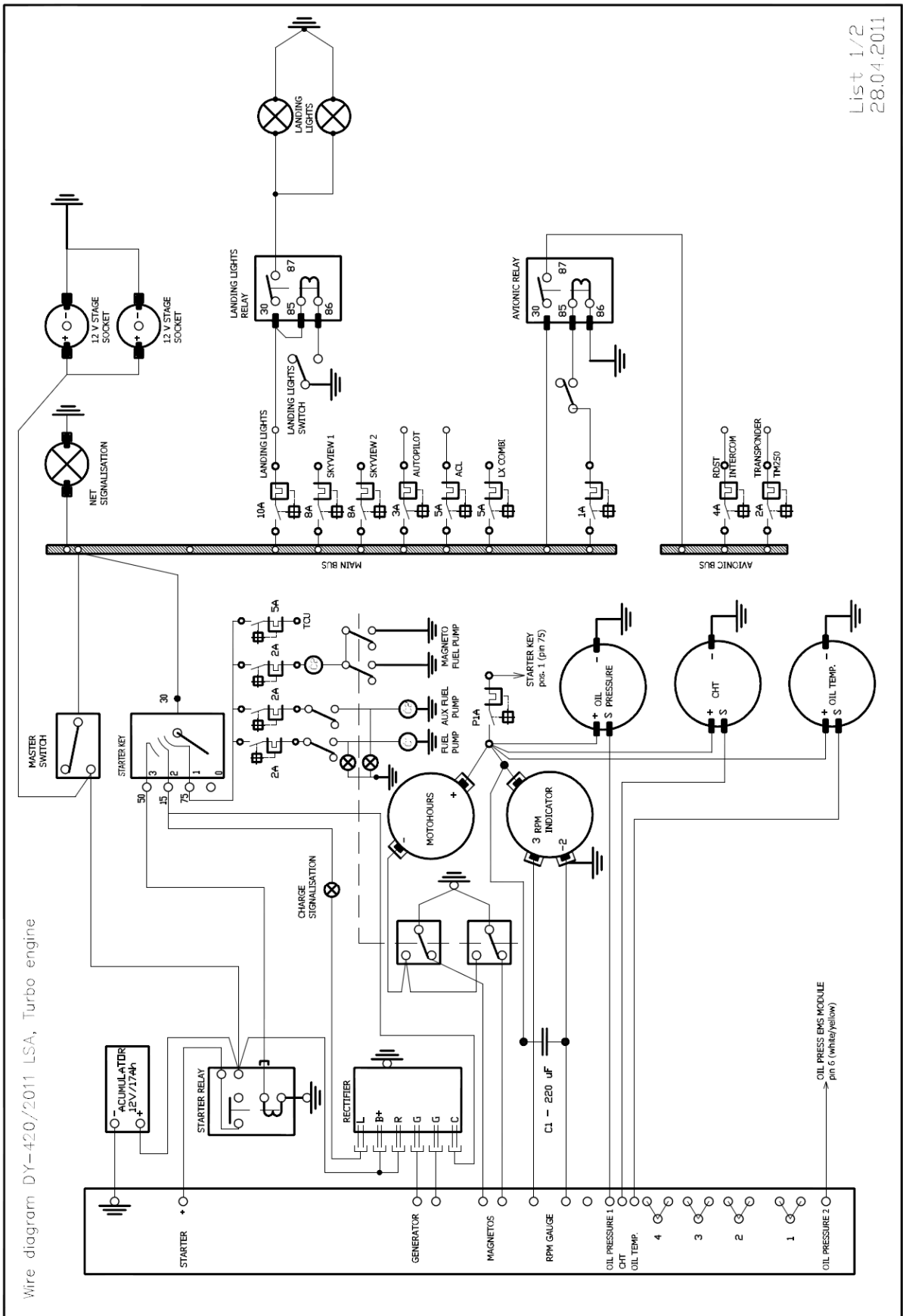
5.1.9. Measurement record - ZKM transponder

Measurement Record			
A/C Type: WT9 Dynamic LSA		S/N:	Registration:
Transponder :			S/N:
Pos.	MEASUREMENT	Specified	Real
1	Validity of the Pilot code	Satisfy	
	Function of the A/C converter	Satisfy	
2	Transmitter power	Min. 200W	
3	Transmitter frequency	1090MHz+3MHz	
4	Reply	Min. 90%	
5	SPI – Duration	25 + 5 sec	
6	Impulse position P3 - allowed	0	
	(INTER) - limited		
7	Width and position F2 - FRAMING	Width 0,3 - 0,6 us Position + 0,15 us	
8	Sensitivity in Mode - ALT - CODE	Min. 72dBm/90% Min. 72dBm/90%	
	135,95 MHz		
9	Suppression of the lateral pattern (SLS) – 9 dB	% Reply 0%	
		Reply 90–100 %	
10	Function TEST	Satisfy	
11	Total assessment	Satisfy	
Record elaborated by:		Record approved by:	Measurement carried out by:
Date:		Date:	Date:

5.1.10. Checklist of equipment

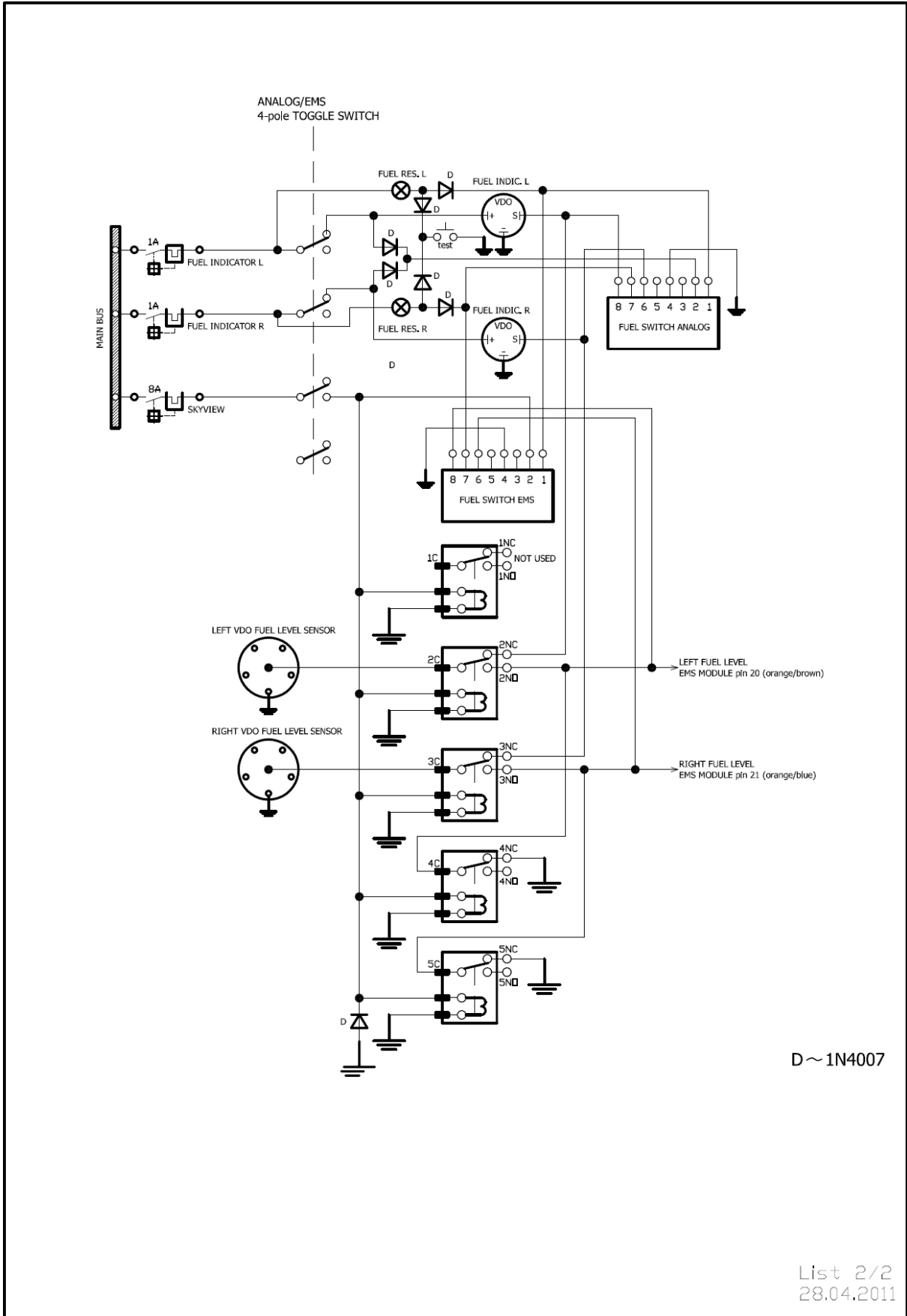
Check list of equipment					
Registration:			S/N:		
A/C Type:	WT9 DYNAMIC LSA		Power plant	Propeller	
Model:					
S/N.:					
Date of production:					
Equipment	Quan.	W	Equipment ,Manual, Records	Quan.	W
Altimeter:			Main landing gear Tyres:		
Airspeed Indicator:			Nose landing gear Tyre:		
Variometer:			Color Camera:		
Compass:			N coder:		
VHF:			Efis:		
Transponder:			EMS:		
Autopilot:			ELT:		
Intercom:			VOR:		
GPS:			DVR:		
Landing gear control:			LCD:		
Horizon:			Checking of the Control Surfaces and Balancing		
Rescue Sys.:			Maintenance Manual for ROTAX Engine Type 912 Series		
Rocket:			Operator s Manual for all version of Engine ROTAX 912		
Oil Pressure Indicator:			Installation Manual for ROTAX 912 UL Aircraft Engine		
Oil Temperature Indicator:			Heating		
CHT Indicator:			Manual Propeller DUC		
Fuel Quantity Indicator:			Compass Compensation Record		
Fuel Pompe:			Control Surface Deflections Record		
Fuel Pressure Indicator:			Check list of equipment		
RPM Indicator:			Flight Test Record		
Boostmeter:			Measurement Radio Record		
Digital Thermometer:			Pitotstatic System Test Record		
Parking Brake Lever:			Transponder Measurement Record		
Pedals:			Weight and Balance Record		
Breakers:			Measurement record-ZKM		
Ventilation:			Final acceptance check list WT9		
Ventilation sliding window:			Statement of conformity		
Seat Belts:			Cover of the cockpit canopy		
Strobo Lights:			Key for canopy lock		
Landing Lights:			Tools for engine		
Navigation Lights:			Mooring eyes		
Air box:			Towing Shaft		
Accumulator:			Support Jack		
Motor Hours:			"L" Bolster		
12 V Stage Pocket:			Cover of the winglets		
Flam:			Starting Cables:		
Flaps Control:					
Stick Grip:					
Manufacturer:	Customer: I confirm that I have checked the aircraft and equipment and I confirm that everything mentioned in the above check list is installed or supplied with the aircraft.				
Date:	Name:	Signature:	Date:		

5.1.11. Airplane wiring diagrams



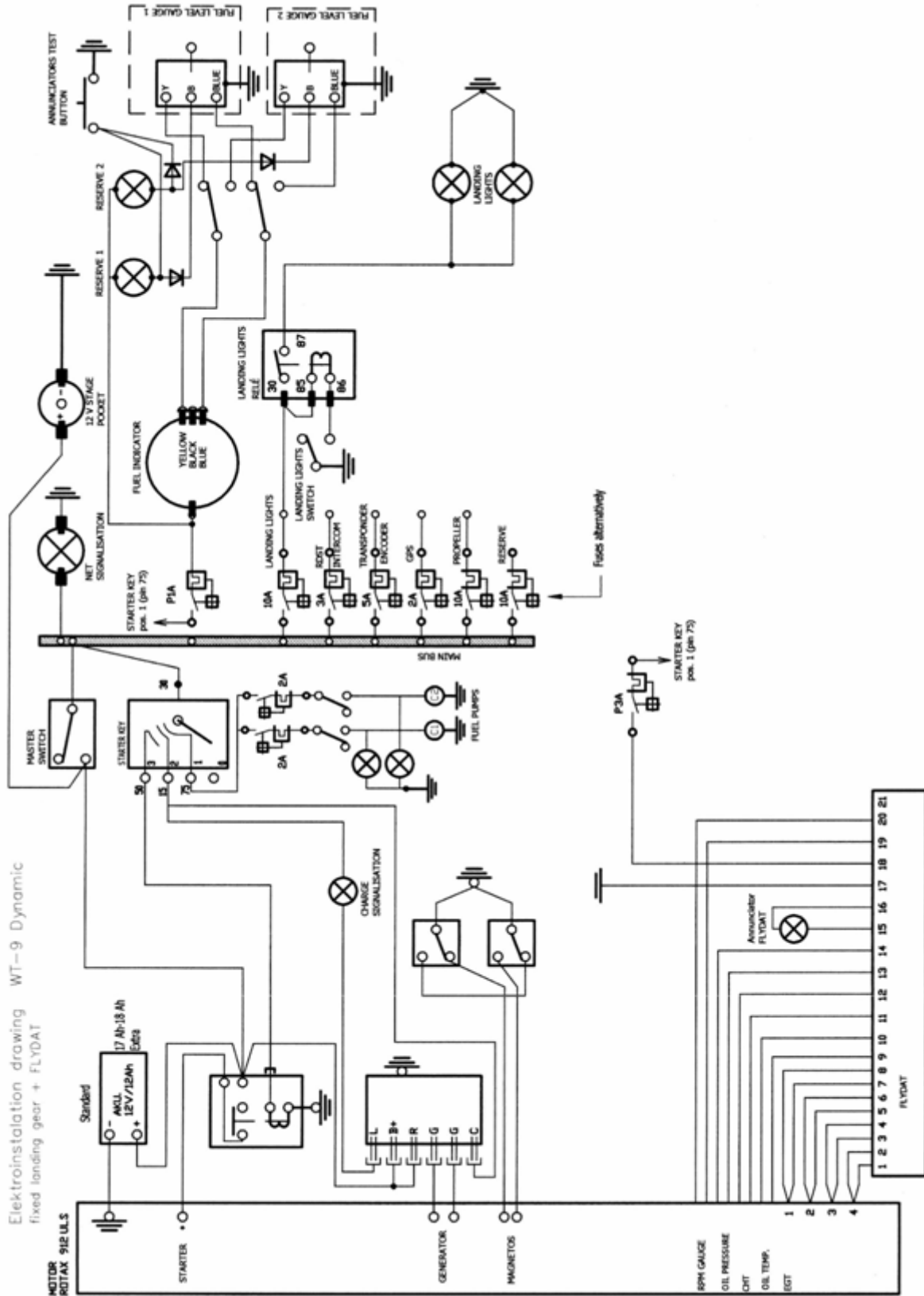
List 1/2
 28.04.2011

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL

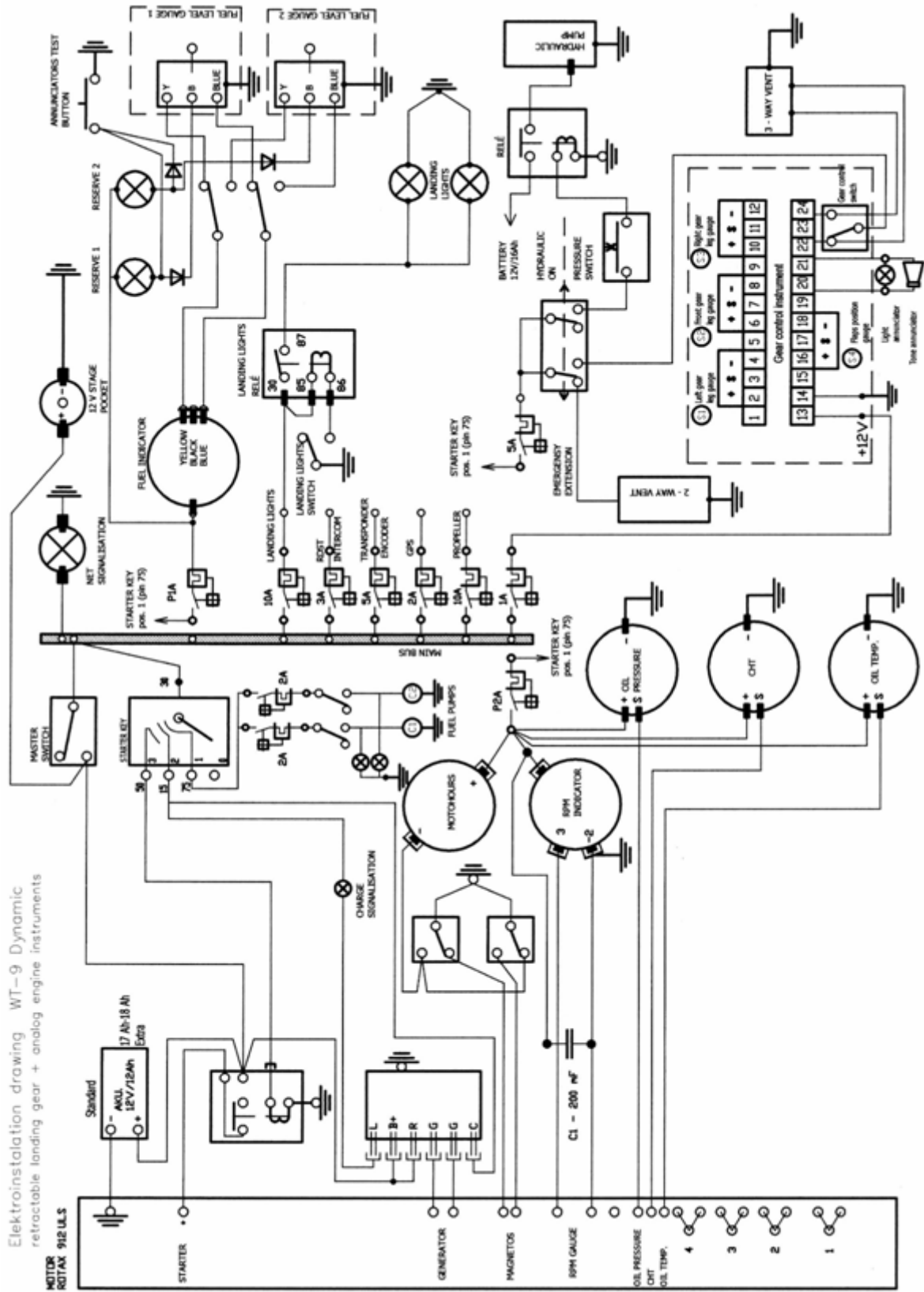


List 2/2
 28.04.2011

WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL



WT9 Dynamic LSA
 TECHNICAL DESCRIPTION, OPERATING, MAINTENANCE AND REPAIR MANUAL



Elektroinstallation drawing WT-9 Dynamic
 retractable landing gear + analog engine instruments
 MOTOR ROTAX 912 ULS

