

ANG-01



**AIRCRAFT
MAINTENANCE MANUAL**

ANG.01.AMM.02

SUMMARY OF THE DOCUMENT

Name: ANG-01 Aircraft Maintenance Manual

Designation: ANG.01.AMM.02 (Edition 2)

Developer: ANG Patriot-Ukraine LLC (Brovary, Ukraine)

Purpose: the document outlines specific rules of ground operations and maintenance of the ANG-01 aircraft.

Applicability: aircraft ANG-01 series 1 (MSN 005... 008)

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INTRODUCTION

The ANG-01 Aircraft Maintenance Manual (further on in this document - AMM, Aircraft Maintenance Manual) was performed in Ukrainian and English language, the translation is equivalent. The customer (operator) can to make translate AMM on another language at his own responsibility.

AMM contains the information about the aircraft, its design and the functioning of systems, assemblies, units, required for its operation. The responsibility for execution this operations not stipulated ref. AMM, or use of the materials, equipment or tools not recommended PART 6 rests with the operator.

AMM is originally operating document for maintenance of the ANG-01 type aircraft, him extent and period maintenance check. The work execution procedure is stated in the spetional form of task card.

The legal basis for operation of the ANG-01 type aircraft is the national laws of country registration.

Present AMM is not a substitute for an appropriate theoretical and practical training. Failure to comply with the AMM provisions, as well as the missing of proper training of technical personnel, may result in a failure, loss of the aircraft or tragic consequences.

Maintenance personnel are permitted to operate ANG-01 aircraft provided that they are holders B1+B2 or B.3 licence and just after a thorough perusal training AMM.

The AMM holder is the Developer and Manufacturer of the ANG-01 aircraft type is "ANG Patriot-Ukraine" LLC (Brovary, Kyiv region, Ukraine), which is fully responsible for timely and correct introduction of all revisions and supplements to the AMM.

The Manufacturer is not obliged to provide a print copy of the present Manual, unless otherwise stipulated in the Agreement with Customer.

The present version Aircraft Maintenance Manual is permanently available at <http://www.angpatriotua.com>.

Permission to print the Manual is granted to third parties. Preferred print format: A5 size.

It is also advisable to have an electronic version Maintenance Manual on the notebook or smartphone. The electronic version in PDF format (with prohibition on introducing any changes) is structured in parts, sections and paragraphs, it has practicable cross-references that facilitate the search for necessary information.

You should regularly (at least once a month) to make check ANG-01 Aircraft Developer's website for AMM updates. It is also necessary to regularly check the websites of Engine, Propeller and Equipment Manufacturers for Service

Bulletins (SBs), software updates as well as the CAA website of the country registration aircraft for availability of mandatory Airworthiness Directives (AD). References to these websites are listed in PART 5.

The responsibility for following up above information to rest on the aircraft operator. The list of perhaps damages that may occur in the continuity of operation with which further operation of the aircraft is permitted till the execution of the C-Check, is presented in the APPENDIX 1.

The list of probably unserviceability with which operation of the aircraft is permitted till the rectification defect (MMEL, Master Minimum Equipment List), is presented in the APPENDIX 2.

Revisions and supplements to the AMM are issued instead of or in addition to the existing material in a form of standard separate sheets type exemplar.

These changes or additions are marked in the record of revision, marked with a vertical line in the fields to the right of the changed part.

In the bottom left of the page amended in line revision number is placed into "Change" marked rate changes. Also, instead of the number of revision and the date of the previous edition/revision, a new edition/revision number with a new date is placed.

In the printed version of the AMM Manual, the previous version of the modified page is removed and deleted.

CAUTION: Operation of the ANG-01 aircraft without AMM, Aircraft Maintenance Records and Logbook is PROHIBITED.

Definition of terms(identification of terms)

Instructions that are critical and particular importance, as set out in warning, "CAUTION", "WARNING" and "NOTE" that bold capital letters. The importance of the instructions is additionally emphasized by color marking (red, brownish and green respectively) of the text block. The following provides definitions of each of these terms.

CAUTION: means that failure to follow a proper procedure or condition can be damage to health.

WARNING: means that failure to comply with the relevant procedures or conditions can be cause damage to the aircraft.

NOTE: draws attention to the special circumstances in which it is necessary to focus provides the necessary information and explanatory material.

All numerical values are specified in the metric measurement system.

Abbreviations

AD	-	Airworthiness Directive
ACS	-	Aircraft stick controller
AD	-	Airworthiness Directive
ADAHRS	-	Air data, attitude and heading reference system
AFM	-	Aircraft Flight Manual
AMM	-	Aircraft Maintenance Manual
AMR	-	Aircraft Maintenance Records
ALB	-	Aircraft Logbook
ANL	-	Aircraft navigation light
AS	-	Instrument speed
CAA	-	Civil Aviation Authority
CAS	-	Calibrated air speed
CI	-	MMEL Control Item
CB	-	Automatic circuit breaker
CG	-	Center of gravity
CS-23	-	Airworthiness standards
ECU	-	Engine control unit
EMS	-	Engine monitoring system
ELA	-	European Light Aircraft
ELV	-	Elevator
EOM	-	Engine operation mode
ISA	-	International standard atmosphere
MAC	-	Middle airfoil chord of wing
RDR	-	Rudder
SB	-	Service Bulletin
GNSS	-	Satellite Navigation System (Global Navigation Satellite System)
APS	-	Aircraft plane of symmetry
STB	-	Stabilizer (horizontal tail)
STOBE	-	Aircraft strobe lights (flashing lights)
TC		Task Card
TCL	-	Throttle control lever
TGSIM	-	Tools, ground support items, materials
VPP	-	Variable pitch propeller



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PART 2. DESCRIPTION OF CONSTRUCTION

CONSTRUCTION

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Introduction

The section defines the classification and purpose, options for the ANG-01 aircraft, information about its design and functional purpose of its main components.

The stated text and graphic material is enough to present the design of the ANG-01 aircraft for proper maintenance.

2.1 Classification, purpose of the aircraft

ANG-01 aircraft type refer to the ELA1 class (with a maximum take-off weight up to 1200 kg).

The ANG-01 aircraft of normal category, not acrobatic use, is designed to carry up to 5 people (including up to 2 pilots) in non-commercial entertainment or scheduled flights, only in the daytime, in simple weather conditions.

2.2 Types of orders, aircraft equipment and furnishings options

Depending on the order, the ANG-01 aircraft can be delivered in the following order options:

- ✓ The aircraft (fully assembled, upon the completion by the Manufacturer of all acceptance test procedures);
- ✓ KIT (set of parts, assemblies and units for an individual assembly of the aircraft by the Customer).

The equipment features of each individual ANG 01 aircraft (or a group thereof) are specified in the Agreement between the Manufacturer and the Customer in all types of orders.

The package of documentation for all types of orders includes:

- ✓ Aircraft Flight Manual ANG.01.AFM.02
- ✓ Aircraft Maintenance Manual ANG.01.AMM.02
- ✓ Aircraft Maintenance Records ANG.01.AMR.02
- ✓ Aircraft Log book ANG.01.ALB.02
- ✓ Operators Manual for Rotax 915 iS3A
- ✓ Engine Log Book for Rotax 915 iS3A
- ✓ Complete list of documents is presented in the section 2.2 of the ANG.01.AMR.02 Aircraft Maintenance Records.

In addition, when ordering an ANG-01 aircraft in the form of a KIT, the documentation set also includes the Instructions for assembling the KIT (Construction Manual) ANG.01.CM.02.

2.3 General Information

Airplane ANG-01 of normal aerodynamic model, low-wing construction aircraft(without strut) with fuselage, deck tail unit, trapezoidal wing.

Control surfaces: two-section elevator (with a trim tab fitted to the right section), one-section ailerons, rudder (with a trim tab). All surfaces have an aerodynamic horn balance(compensator).

Wing configuration(devices): two-section slot flaps.

Landing gear is of retractable, tricycle type landing gear, with NLG steering.

Power plant:, one piston engine , pulling a 3-blade propeller variable pitch in flight.

General view of the aircraft (skin covering is made translucent):



The basic geometric dimensions of the ANG-01 aircraft, required for its operation and maintenance are listed in the AFM.

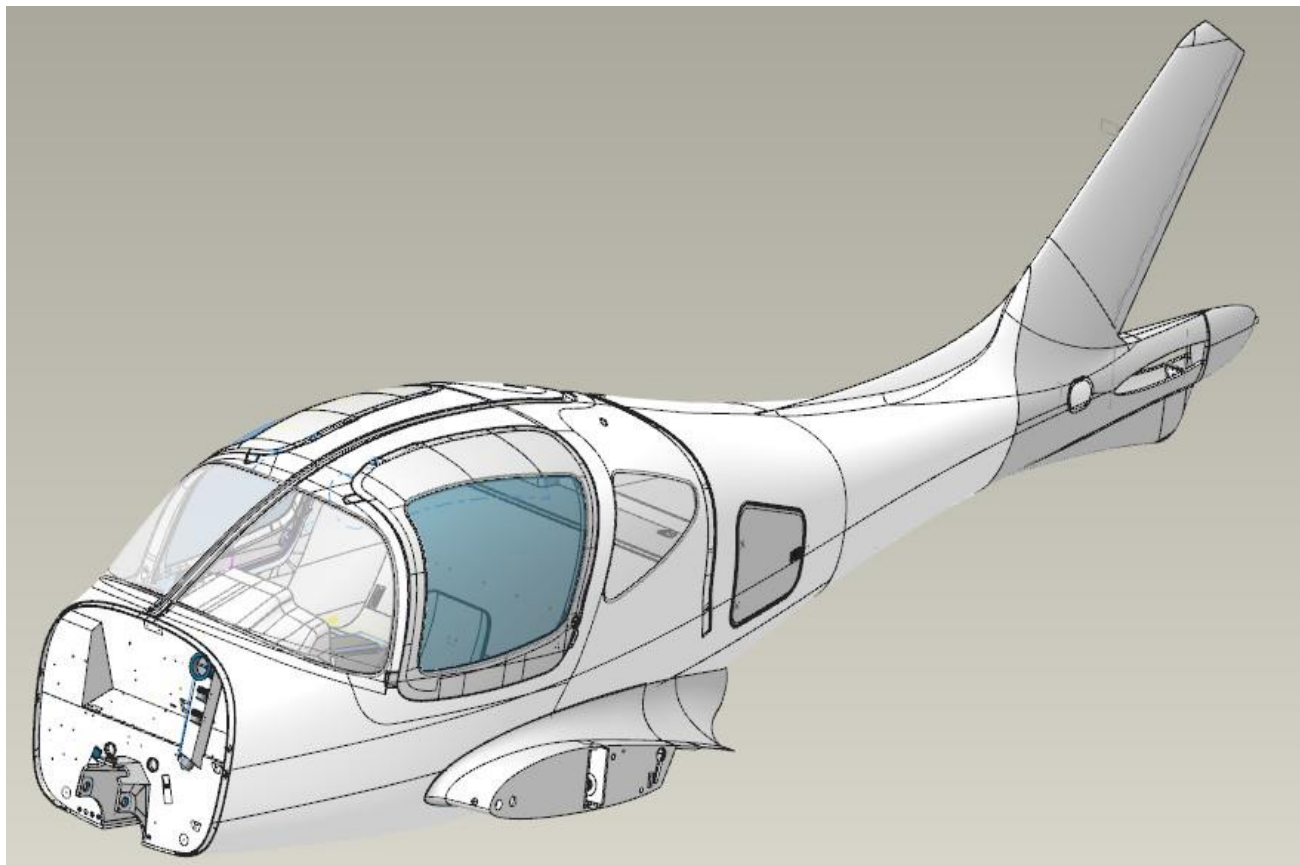
2.4 Fuselage

2.4.1 Fuselage structure

Fuselage in the cross section of a variable, near to a rectangular form.

The engine compartment is accommodated in the fore-body of the unpressurized cabin (for pilots and passengers) and baggage compartment are located the central part of the fuselage, the tail unit(empennage) is arranged in the aft part.

General view of the fuselage:



To enter and exit the cabin are two doors on the left and right side, which open forward and upward, they are emergency exits (pins on the door hinges).

Access door to the baggage compartment through a hatch behind the cockpit (left side).

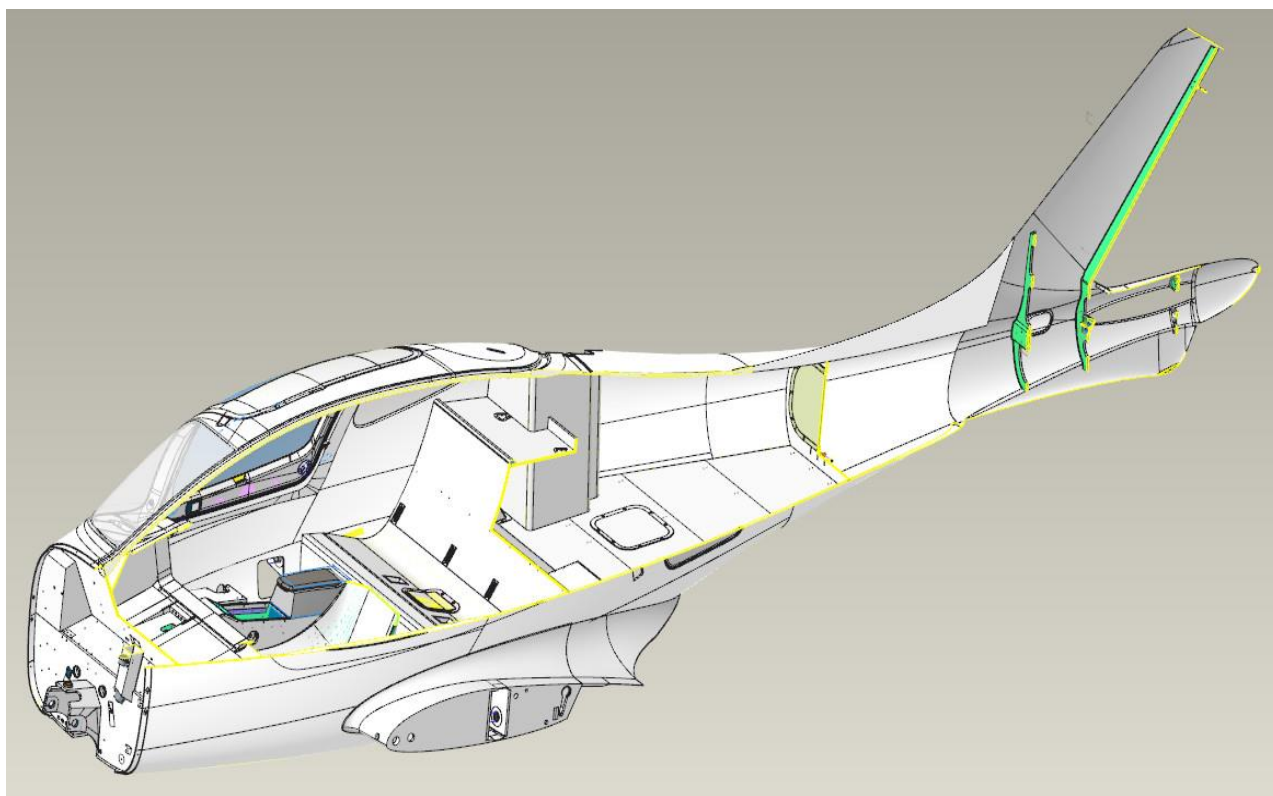
Windscreen(glass windows): in front of the cabin is equipped with a two-section stationary lighting instrument, on the sides of the glass window is mounted in the door, at the rear of the section of fixed glass window at the location of passengers.

The fuselage is made entirely of composite materials such as "sandwich" (carbon fabric, foam, bonding material).

Structural arrangement: monocoque, made entirely with vertical tail unit, the maintaining skin covering and supported by a power set, which is its only integral structure:

- ✓ 5 frames;
- ✓ wing spar casing;
- ✓ centroplane port (they are also main landing gear(MLG) bay)
- ✓ NLG well and central box;
- ✓ floors of the pilot, passenger area and baggage compartment;
- ✓ beam of pilot seats;
- ✓ rescue system container.

View of the fuselage in longitudinal cut:



2.4.2 The engine compartment configuration

The compartment accommodates the engine with the gearbox, injector, turbine, muffler and engine cooling system (oil and water radiators), generator, air filter casing with a damper (baffle), air and oil filters.

In addition to the engine items, the engine compartment also accommodates the pipelines and the cabin air intake, the cabin heating system, the hydraulic unit, the landing gear brake elements.

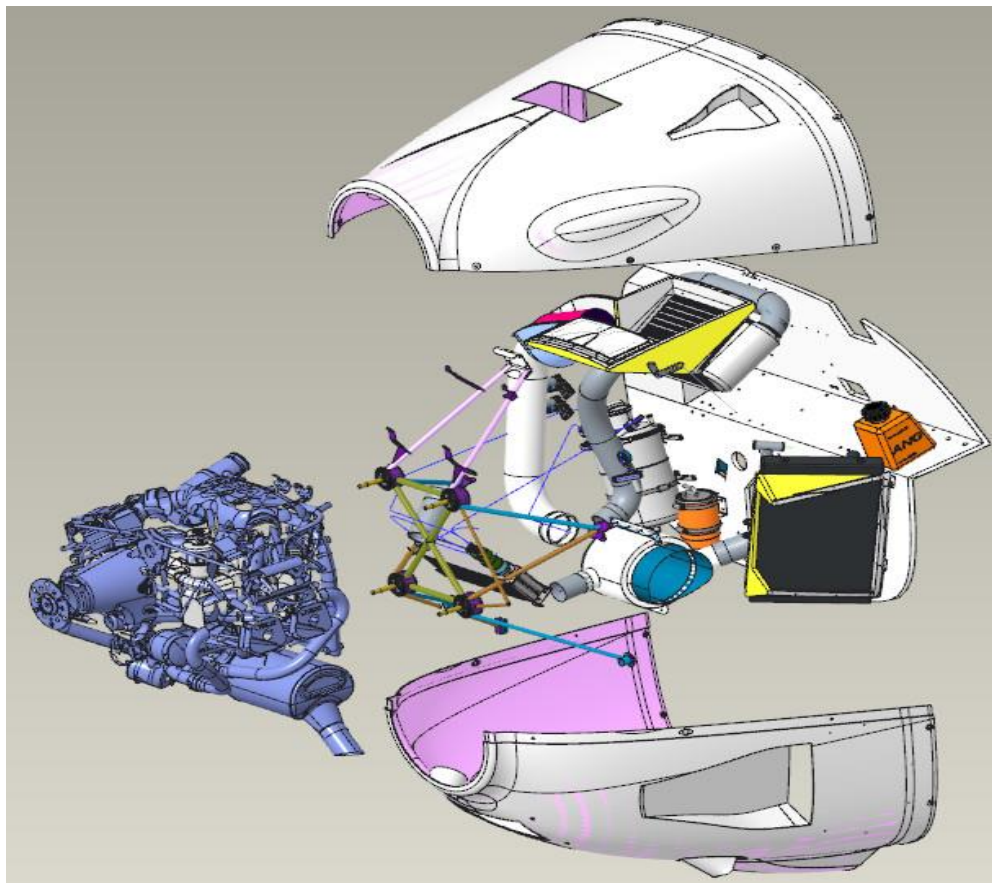
The nose landing gear strut is accommodated in the bottom area of the compartment, on the protruding casing of the landing gear well. The storage battery is located in an isolated compartment.

The engine is fixed to a welded steel engine mount by means of vibration damping pads, the engine mount is attached to the bulkhead №1 (with fire resistant coating).

The engine compartment is covered with the top and bottom cowlings, which are attached to the bulkhead №1 and interconnected by means of guides and quick access fasteners (Dzus spiral cam fasteners).

The cowlings have an opening for the propeller shaft (they are accurately matched to spinner), an port-hole(wheel well) for the nose landing gear, separate air intakes for water and oil radiators.

General view of the engine compartment:



2.4.3 The central compartment configuration (pilot and passenger cabin)

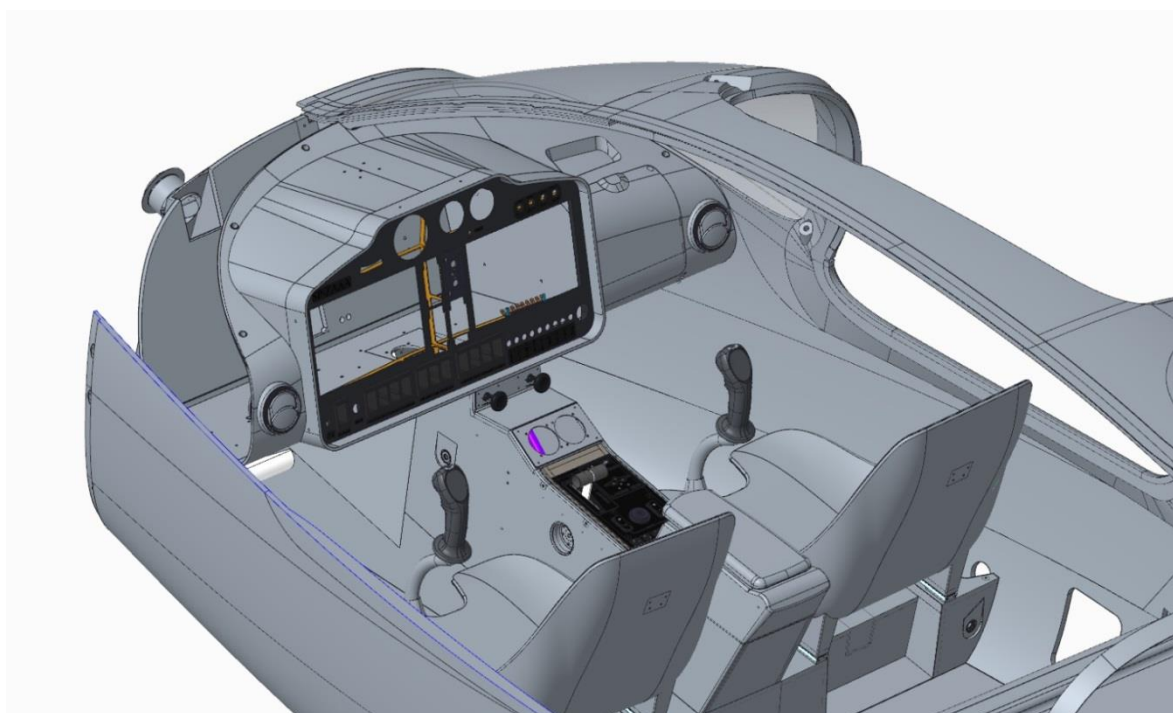
The cabin is designed for five occupants with 1 or 2 side-to-side seated pilots, and 1 to 3 passengers seated on a sofa in its aft area. The cabin is not pressurized; it is equipped with ventilation and air heating.

In the front area of the cockpit (between the flashlight and the foots for the pilots' feet, behind the frame №1, with a shift to the left), there is a bay of equipment.

It accommodates the display systems, redundant (backup) navigation instruments, flight navigation and radio communication equipment, control boards, toggle switches and automatic circuit breakers. All this equipment is installed on the instrument control- panel, which is secured in this bay. The bay is equipped with ventilation.

The bay also accommodates the tube out board air and cabin heater ducts. There is located, turn to right hand, a small luggage compartment for small objects and documents.

General view of the front and central areas cabin (without installed units and equipment):



The pilot's seats are arranged in the central area of the cabin, in its bottom part, on the beam of the pilots' seats (on the longitudinal position adjustment actuators). The mechanical aircraft control system elements and the autopilot servo drives are accommodated in the bottom portion of the beam.

The central box (pedestal), which is the extension of the nose landing gear well, is located in the central area of the cabin, between the pilots. It accommodates the internal communication board, landing gear

extension/retraction control board, and the pressure bottle with the tap for the landing gear emergency extension (in the armrest), electric harness and hydraulic system tubes.

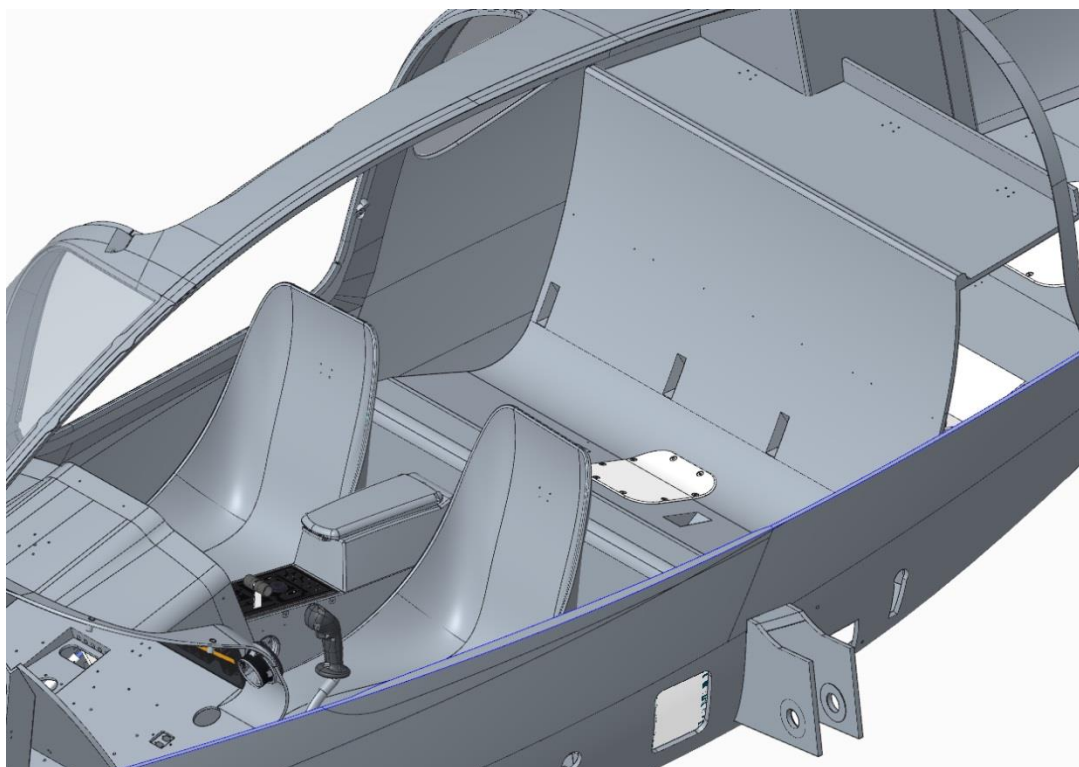
For access to the attach elements of the wing consoles during their installation in the lower part of the Central zone, hatches(door port) are made on the sides.

In the rear area of the cabin is a passenger sofa, under which is a box of wing spars.

The back of the sofa that separates the passenger and baggage areas ADAHRS sensors placed aeronautical complex and two supply fuel tanks.

There is an operating hatch in the floor (access to the aneroid-membrane highway and electric harnesses). An operating hatch (access to aneroid-membrane and fuel lines and electric harnesses) is located in the passenger sofa seat.

General view of the rear area of the cabin (without installed units and equipment):



At the rear of the central compartment is set up a baggage compartment, one part of which is occupied by the box - container of the rescue system.

In the floor of the horizontal baggage compartment and the rear area of the baggage compartment vertically (on the frame №2) there are operational hatches (access to the control system and electric harnesses).

2.4.4 The Tail Unit configuration

The compartment accommodates a vertical and horizontal empennage with control surfaces, ventral fin, tail unit fairing.

Vertical Rudder unit: sweepback type, symmetrical profile, made whole with a fuselage of fiberglass composite materials (to ensure radio transparency, because it has a radio antenna).

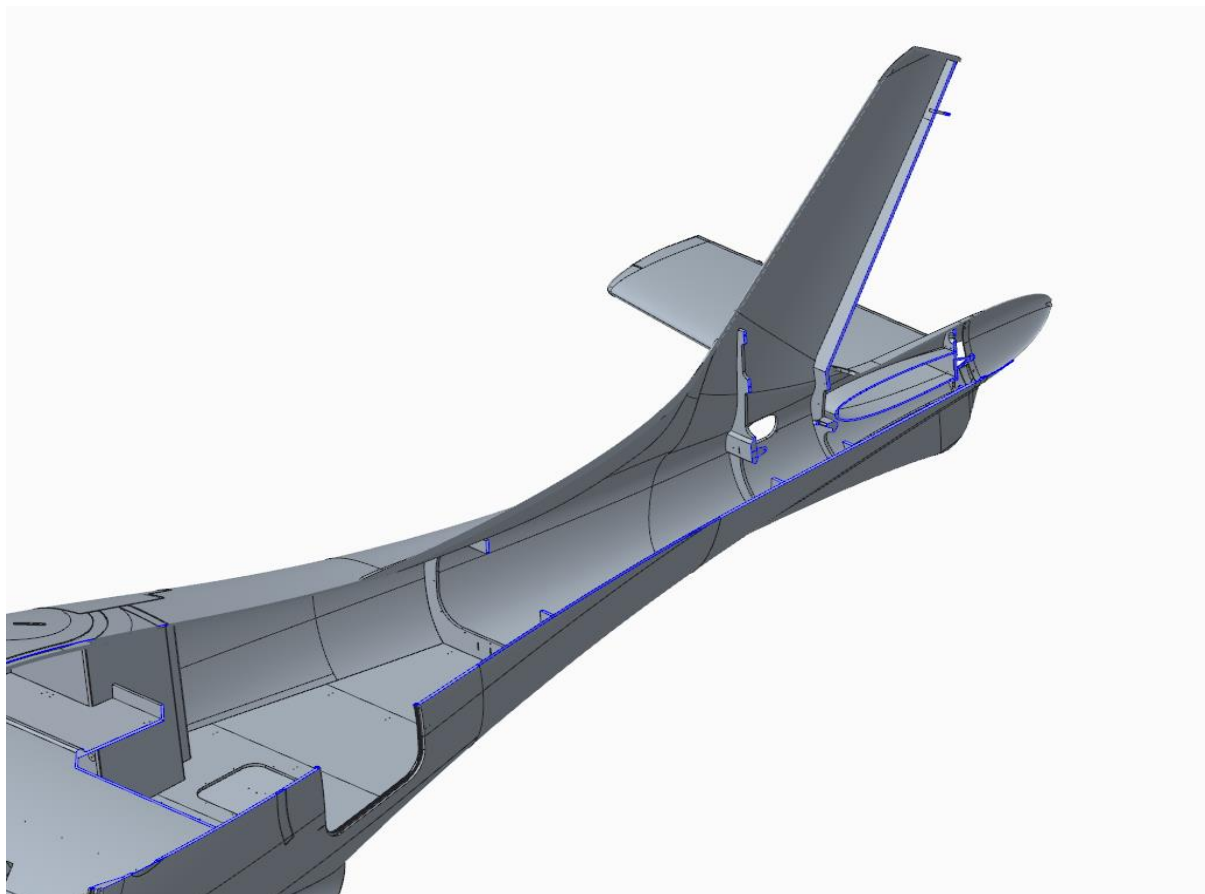
Structural and power schematic: one spar monocoque, without ribs. On the side member, in the rear part of the tail fin, 2 supporting arm the mounting units of rudder.

Horizontal tail: sweptback type, asymmetrical profile, unity construction, glued to the fuselage, made of carbon-plastic composite materials. Structural and power scheme: one spar monocoque, with two ribs (root and end). On the side member, in the rear part of the stabilizer, 4 support arm of a hinge elevator (on 2 for the left and right sections of alevator) are mounted.

Before the tail unit, on the left and on the right side, the hatches are symmetrically located (access to the control system and electric harnesses and to the frames №4,5).

The tail unit fairing with ANL is mounted to the frame №5.

View in the profile of tail unit compartment, with a inline stabilizer (without installed units and equipment):



2.5 Wing and flaps configuration

2.5.1 Structural schematic

The wing of the aircraft is trapezoidal form in plan, without geometric twist. Structural arrangement is following: two wing panels, monocoque, one spar, with a rear wall and inboard and end ribs.

The wing panels are made entirely of "sandwich"-type composite materials (carbon fabric, foam core, bonding material). The top and bottom spar rack are made of carbon fiber rods with square cross-section.

2.5.2 Configuration

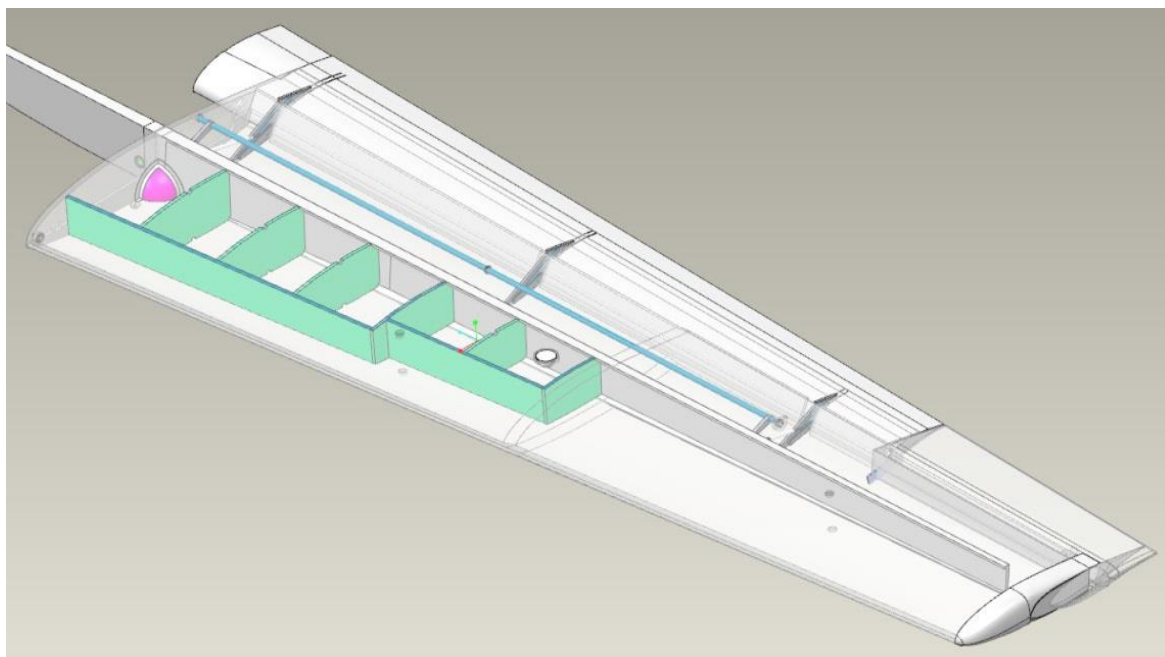
Structurally, the wing is made of left and right consoles, the side members are integrally inline into them. To the rear wall of each console are inline 2 supporting arm hinged aileron and 3 supporting arm of the wing control devices.

The wing panels accommodate the pull-rods and the aileron bellcranks of the control system, the wing control device drive shaft, wiring harness (for ANL). The right wing panel also accommodates the elements of the Pitot tube: wiring harness (for heater controller and pneumatic line).

To maintenance the elements in the consoles, there are 2 hatches(door) on the bottom surface.

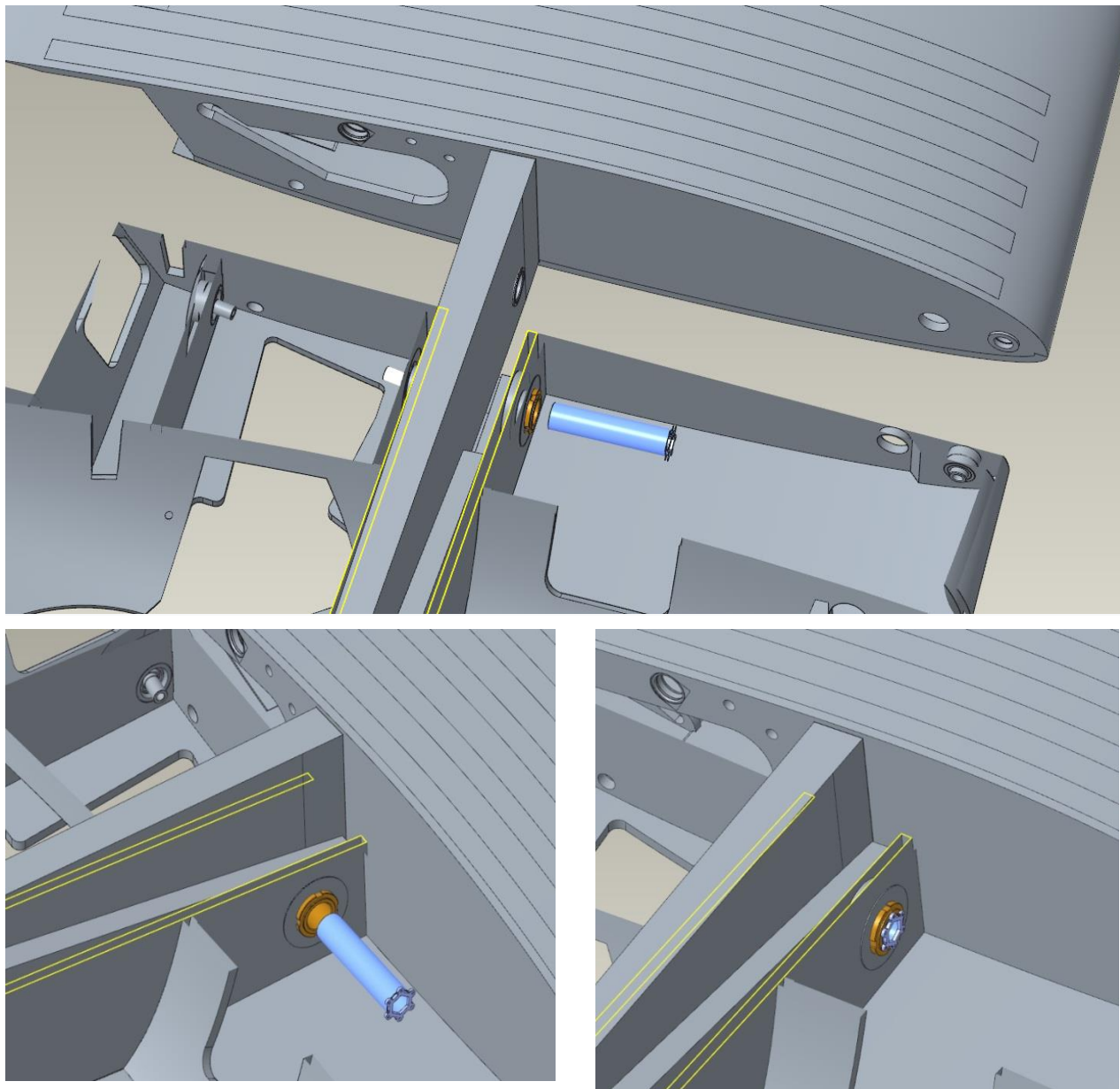
In the middle of each console there is one fuel caisson tank. At the top of the consoles is the filler neck of the corresponding caisson tank.

View in the cross-cut of the wing console (without installed elements).



The consoles are mechanically (steel elements of special design) bonding with the fuselage in the box spar and the centerplane irons. The front unit of the consoles is also attached to the irons of the centerplane with special steel elements.

Wing panel attachment:



The wing panel are bonding together with a steel fixing bolt, which is bonding with six fixing screws. The locking bolt has 5 holes.

2.5.3 Flaps

rear edge consists of the Fowler flap (single-slotted, extendable), with a maximum flap extension angle of 30° . The intermediate positions are 10° and 20° .

The flap is extend and retract from a servo actuator located in the fuselage, in the middle of the corresponding part of the shaft (combined with the mounting brackets during their installation).

The flap extension and retraction system:



Control for extend and retract flaps is made from the EFC67-P panel. Manufacturing by Microel s.r.l. (Italy), location see section 2.10.7:



2.6 Flight control system

The aircraft control system is a traditional 3-channel one: pitch channel (elevator), roll channel (ailerons) and yaw channel (rudder).

The control system is mechanical, it consists of control elements (ACS and left and right pilots' pedals which are mechanically interconnected), mechanical elements (pull-rods and bellcranks) and control surfaces.

All the control system pull-rods and bellcranks are made of composite materials. The cables and spring linkages are absent. All hinges of the control system are equipped with spherical bearings.

All control surfaces are slotted, equipped with aerodynamic horn and weight balance of hinge moments. The elevator is two-sectional, while ailerons and rudder are single-sectional. For increasing the efficiency of the elevator it is equipped with special vortex generator.

To reduce the force for deflecting the ACS, an electric driven trim tab is provided on the right section of the elevator (controlled by means of the button on the ACS).

A trim tab is fitted to the rudder for providing directional (yaw) balance during a flight at cruising speed. The autopilot servo-actuator are installed in the pitch and roll channels of the control system.

General view of the control system in the pitch channel:



General view of the control system in the roll channel:



General view of the control system in the yaw channel:



2.7 Power plant

2.7.1 Engine

Rotax 915 iS 3A is the engine, designed and manufactured by BRP-Rotax GmbH (Austria), piston engine, gasoline powered, four-cycle, 4-cylinder, engine with the opposite arrangement of cylinders.

Engine power (nameplate values, in ISA):

- ✓ Take-off power(maximum) setting: 104 kW (141 HP) at 5800 rpm;
- ✓ Minimum continuous power(engine idle): 99 kW (135 HP) at 5500 rpm.

The aircraft propeller is powered through a reduction gearbox with a gear ratio of 2.47. The fuel-air mixture is formed by means of an injector. For enhancing the power, the engine is equipped with a booster pump air and intercooler.

The engine cooling system is of a combined type: the cylinder heads are fluid-cooled, the cylinders are air-cooled. The engine is equipped with an enclosed type oil (lubrication) system.

The complete *BRP-Rotax* engine set and the detailed engine design are described in the “Engine Operator's Manual for Rotax engine type 915 IA series”. The main items of this set:

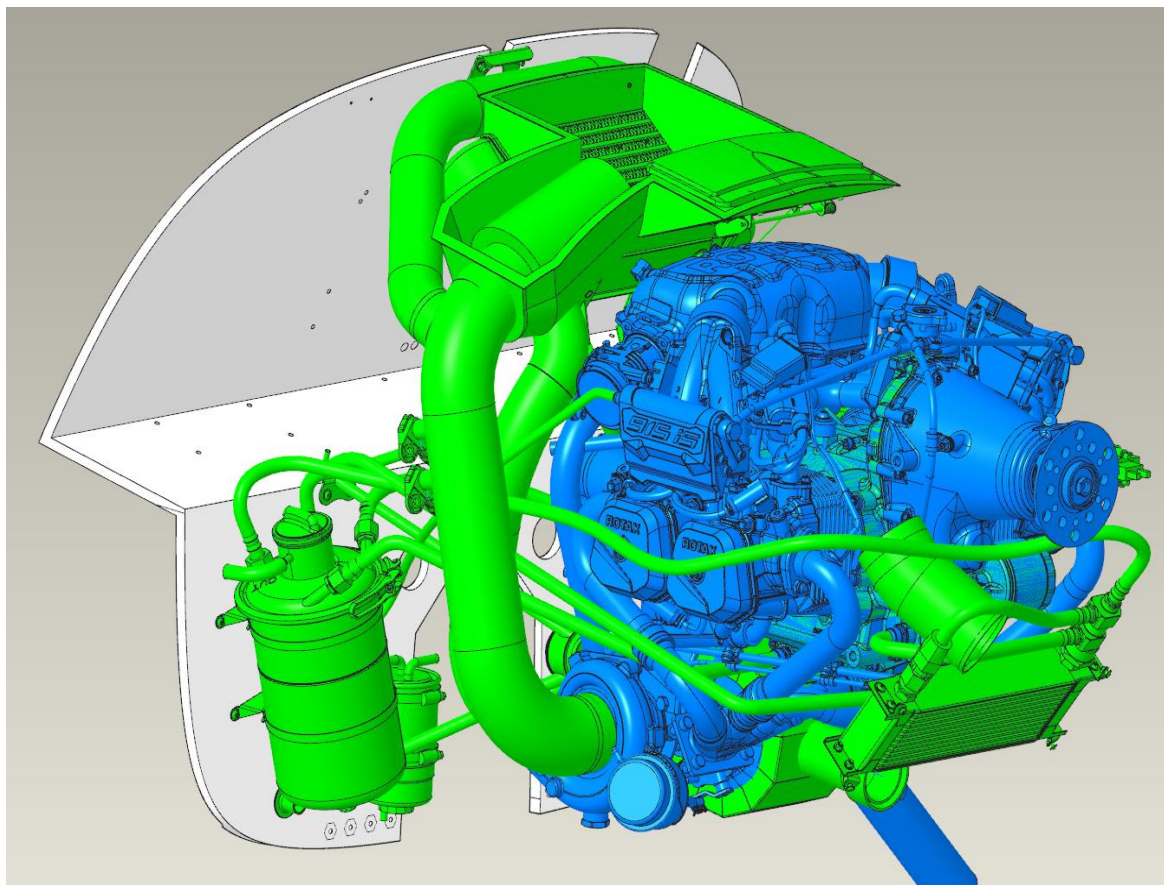
- ✓ Engine;
- ✓ Reduction gearbox;
- ✓ Injector (1 per 2 cylinders), receiver;
- ✓ Throttle valve;
- ✓ Intercooler (radiator);
- ✓ Booster air pump with gas discharge valve;
- ✓ Muffler;
- ✓ Engine mount;
- ✓ Oil tank;
- ✓ Oil filter;
- ✓ Oil pump;
- ✓ Coolant pump with discharge valve;
- ✓ Air, oil, fuel pipelines;
- ✓ Starter;
- ✓ Alternator;
- ✓ Starter relay;
- ✓ Alternator relay;
- ✓ Engine fuse box;
- ✓ Engine control unit (ECU);
- ✓ Sensors (shaft speed, cylinder head temperature, exhaust gas temperature, oil temperature and pressure, throttle position, voltage at alternator terminals, etc.).

The items not included in the engine set:

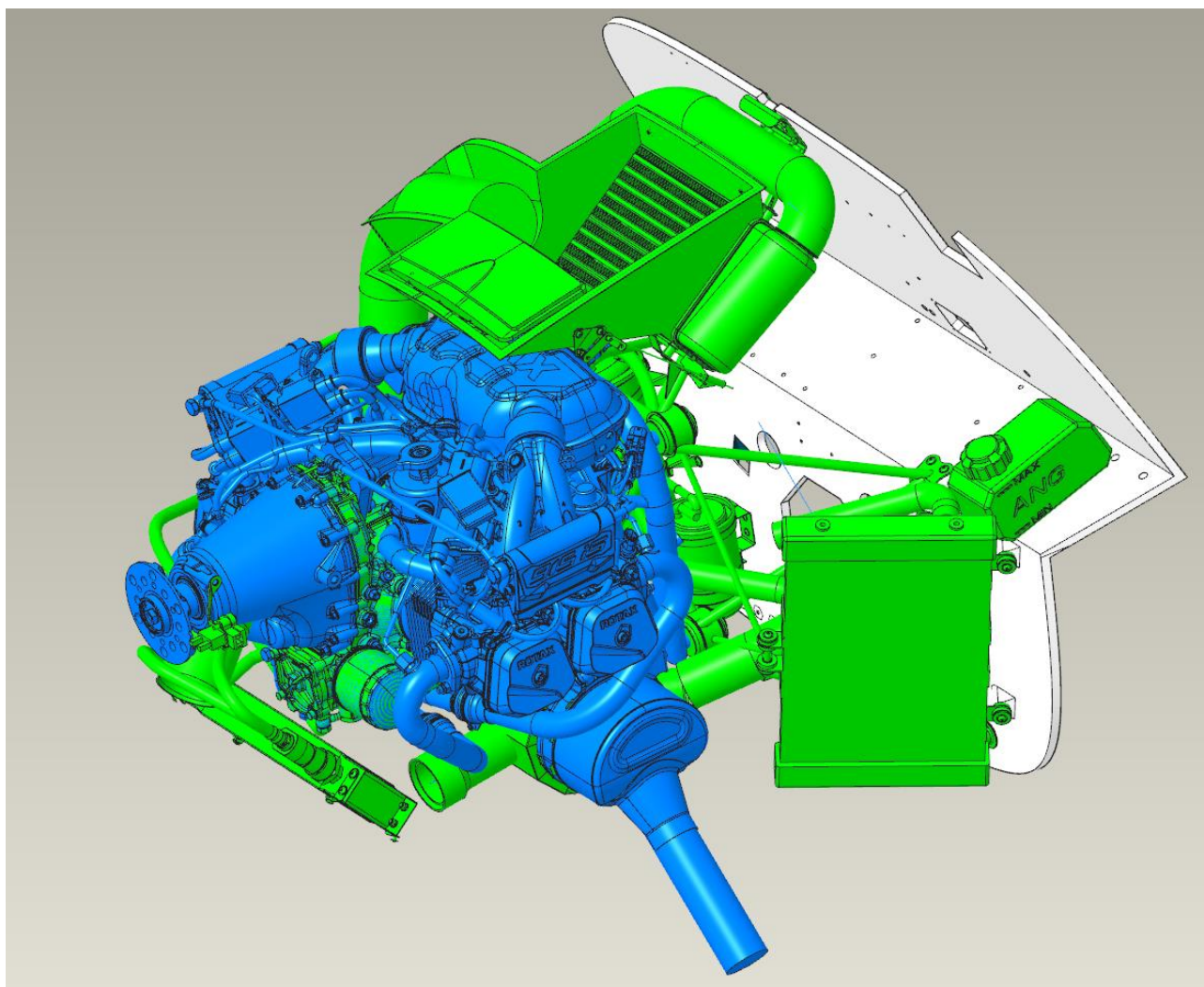
- ✓ Oil radiator;
- ✓ Coolant radiator;
- ✓ Coolant overflow tank;
- ✓ Oil and coolant tybing;
- ✓ Fuel system tybing;
- ✓ Cabin heating system tybing;
- ✓ Cabin heating system casing;
- ✓ Fuel filter;
- ✓ Air filter;
- ✓ Air filter damper;
- ✓ Air filter flap door;
- ✓ Box of Air filter;
- ✓ Oil system thermostat;
- ✓ Thermostat of oil system;
- ✓ Cooling system thermostat;
- ✓ Fuel pressure sensor;
- ✓ VPP control relay;
- ✓ Master relay.

General view of the engine assembly with equipment (the items of the engine set are shown in blue colour, green – the items that are not included in the engine set):

Left view:



Right view:



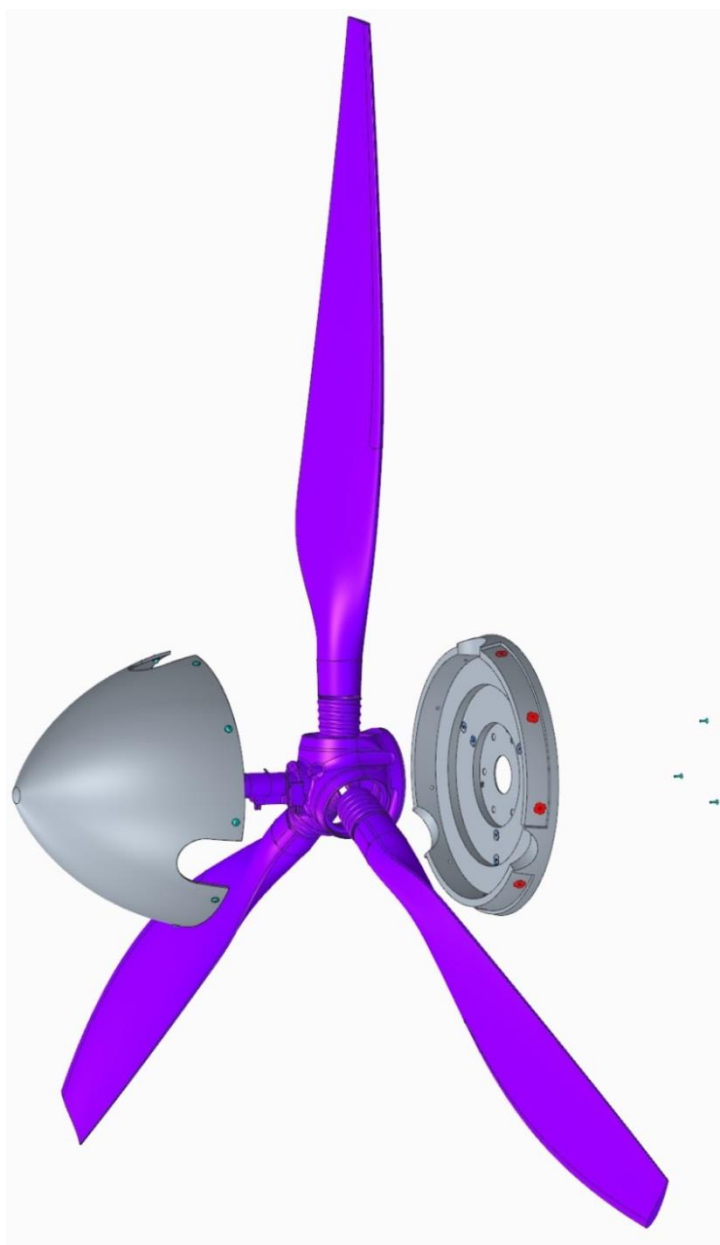
CONSTRUCTION

2.7.2 Propeller

There are two options of the aircraft propellers: the first one designed and manufactured by S-PROP company (Ukraine) with the diameter of 1860 mm. The second propeller has been designed and manufactured by ANG, it has the diameter of 1820 mm. Both are propellers is propel, three-bladed type, in-flight adjustable variable pitch propellers.

The blades are made of composite materials; the front edge is protected against mechanical damage by a rubber lining. The blades is not has heating .

The elements of the aircraft propeller:



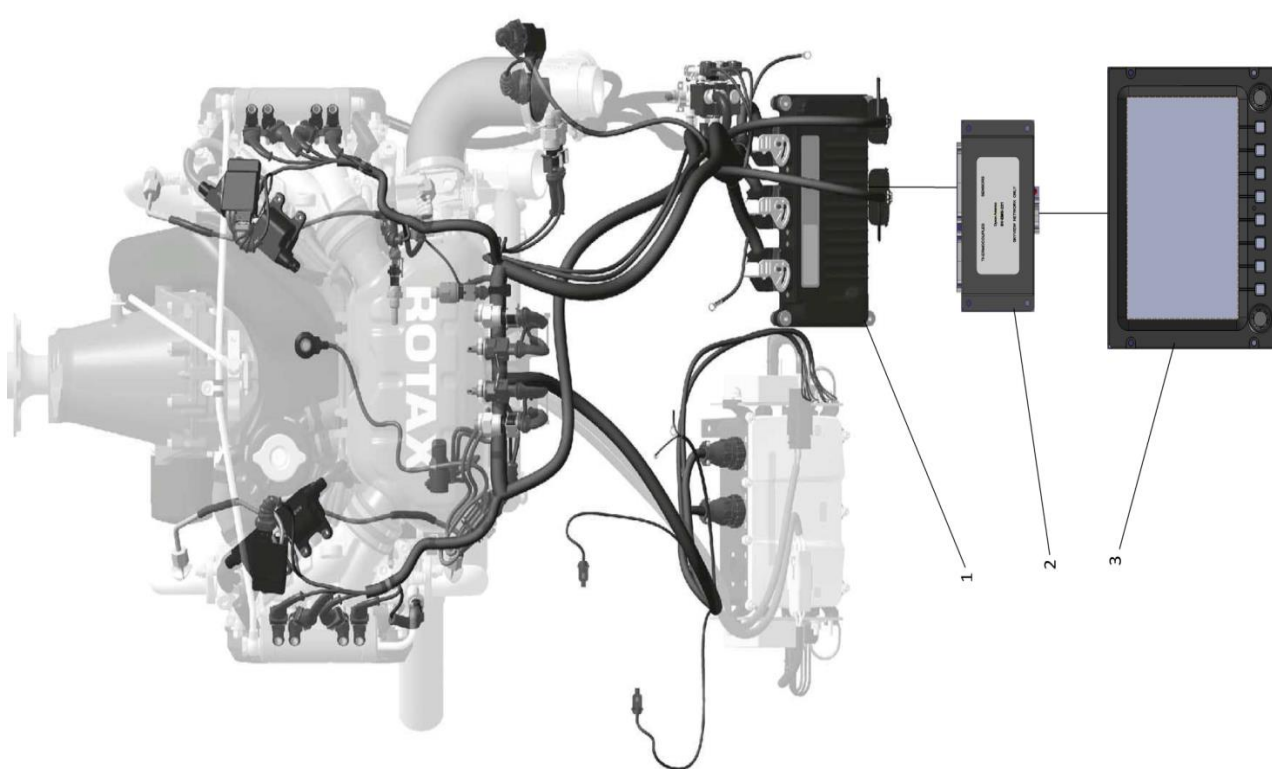
The bushing is made of aluminum alloy. The propeller pitch control drive is electrically powered, it is arranged on the bushing (under the spinner). The pitch control signal is applied to the actuator from the control stand (selector), located in the cabin by means of a sliding contact.

2.7.3 The control and monitoring engine

For monitoring of the power plant, for crew is furnished with the following current information:

- ✓ Engine speed;
- ✓ Temperature of cylinder heads (rear);
- ✓ Exhaust gas temperature;
- ✓ Coolant temperature;
- ✓ Oil temperature;
- ✓ Oil pressure;
- ✓ Air pressure in the receiver;
- ✓ Throttle position;
- ✓ Specific Fuel consumption (determined ref. throttle position);
- ✓ Fuel pressure in the tube;
- ✓ Remaining fuel in tanks (total);
- ✓ Alternator terminal voltage (phases A, B);
- ✓ Total engine operating time (in hours).

To display this information, the ECU receives it from the engine sensors and auxiliary sensors and supplies it via the CAN-bus to the EMS for displaying it on the Dynon SkyView SV1100 multifunctional system displays.



The displays also present warning information about emergency condition of the power plant, the Dynon SkyView SV1100 generates appropriate sound alerts and make send its to the aircraft intercommunication system.

The power plant control elements in the cabin:

- ✓ Throttle control lever (TCL) (*also called thrust lever*);
- ✓ The variable pitch propeller (VPP) control board.

The TCL is mechanically connected by a system of cables and rods to the throttle valve and the air filter damper. The throttle control lever is mounted on the central pedestal between the pilots. All other engine control commands are executed by the ECU.

A placard located next to the TCL expressly specifies the purpose of this engine control element ("THRUST LEVER"), as well as the relative scale and the designations of the minimum and maximum positions ("MIN" and "MAX"). For the location of the TCL and the placard see the section 2.10.7.

The PR-1 VPP control stand (for the location see the section 2.10.7) designed and manufactured by Microel s.r.l. (Italy) can operate both in manual and automatic conditions, selected by a toggle switch on the control stand. When in a manual condition, the pilot sets the required propeller speed by means of a setter (select knob), when in automatic condition, the speed is set and supported by the ECU depending on the position of the throttle. Then the electrical control signals are applied to the VPP control relay, and subsequently to the Selectric drive via the sliding contact. The control board is equipped with a display, indicating the selected propeller speed.

VPP control board:



2.7.4 Fuel system

The fuel in the aircraft is accommodated in two wing box type tanks (the capacity of each one is about 110L) and two service tanks in the fuselage (20L each). Thus, maximum total capacity of 260 liters without considering remainder refueling on board.

Service tanks are arranged in the bottom part of the central fuselage compartment, between the passenger sofa and the baggage compartment, in such a way that the fuel from the wing-box panel tanks flows into them by gravity feed system.

There are 2 interchangeable constant flow pumps of MAM00023M type (designed and manufactured by *Magnetti Marelli Company, Italy*), accommodated in the left service tank, which also incorporate fuel level sensors (fuel gauge).

They supply fuel to the fuel filter located in the engine compartment and subsequently into the engine injector via pressure line, accommodated between the cabin floor and bottom covering of the fuselage on the aircraft plane of symmetry and on right side from box of the landing gear wheel well.

Schematic of the fuel system:



The excess fuel from the injector is routed back to the service tanks via the return line, which is also arranged between the cabin floor and the bottom fuselage covering on the aircraft plane of symmetry, on left side of the landing gear wheel well.

The draining system in the wing panel and service tanks is arranged in a centralized manner, a U-shaped tube (intended to preclude the fuel leakage into the central compartment) is routed to the branch pipe under the fuselage. Additional drainage in the wing box tanks is arranged through the refueling port.

The refueling should be performed solely through the refueling port of the wing-box panel tanks.

WARNING: The use of fuel types other than those specified in the section 3.3, may result in disabling the connectors, tubing, fuel system and engine equipment.

The wing-box panel tanks represent an essential part of the wing, their inner surface has been processed with a special gasoline-resistant sealant. Service tanks are manufactured by rotary molding of gasoline-resistant antistatic polyethylene.

Fuel system and drainage tybing are made of aluminum tubes attachment to the aircraft structure. The tybing in the engine compartment and at the wing-box panel attach are made of gasoline-resistant hoses.

The refueling port of the wing-box panel tanks are made of aluminum alloy, has drainage hole, they are locked by rotating them 90°, their locked position is secured.

2.8 Landing gear and hydraulic system

2.8.1 Structural schematic

The landing gear is tricycle type, with two (MLG) main landing gears and one nose landing gear (NLG).

All landing gears are retractable in flight: the NLG retracts aft. stream, the MLG retract under the fuselage normal to the stream across. The out panel wheel well doors is absence.

The landing gear retraction/extension cylinders are of unified design for all the landing gear, the difference consists in the operating shock absorber rod only (shorter for the NLG):



The NLG is equipped with the retraction centering mechanism.

All landing gear are equipped with fluid-pneumatic struts type. The NLG is telescopic type, the MLG are semi-handle type.

NLG is equipped with a steering mechanism and is kinematically connected with the directional control pedals (the angle of $\pm 30^\circ$ at full thrust pedal position). The main landing gears are equipped with an eccentric for adjustment the wheel-alignment in the directional and lateral axis position.

All tyres are equipped with magnesium discs designed and manufactured by ANG and the tubeless tires MITAS 4.00-6, 400x100 mm (Czech Republic) of uniform type and size. It is possible to install the RF-004 4.00-6" discs, tires and brakes (designed and manufactured by Beringer, France).

The fork arms, axle and upper bellcrank of the NLG, as well as the MLG struts are made of composite material

2.8.2 Brakes

The MLG are equipped with hydraulically driven double-caliper disc brakes, anti-skid automatics is absent:



The hydraulic brake drive is a road vehicle type: the brakes operate without switch on hydraulic unit, the fluid reservoirs are located in the engine compartment.

Braking is performed by push on the brake pedals, which are fitted to the directional (yaw) control pedals of both the left and right pilots, i.e. each of them can apply the brakes independently.

2.8.3 Landing gear extension/retraction control

2.8.4 The position indication of each landing gear (retracted or extended) is performed by the ref. green Light Emitting Diode(LED) (they are red in intermediate positions) on the landing gear control board («LANDING GEAR»), which is accommodated on the pedestal within reach of both pilots (for location, see 2.7.10).

The control of LEDs, position monitoring, engagement of the hydraulic unit and delivering of a signal to the footstep actuators is performed by an electronic device accommodated under the landing gear control stand.

The retracted or extended position of each gear is identified by the hydraulic locking mechanism incorporated into each cylinder.

Landing gear control stand (together with the pilot seat adjustment board and the intercom board):



When the toggle switch on the landing gear board is set either to extension or retraction («UP» or «DOWN» positions respectively), the electric driven hydraulic unit is engaged, the fluid pressure is supplied to the cylinders on the associated side.

In the event of the hydraulic unit failure or in the absence of power supply, the landing gear extension is possible by means of the emergency system only. For this purpose, set the three-way valve (see the picture in the section 2.8.4) to the Landing gear extension position. This opens the pressure nozzle of the carbon dioxide pressure bottle (in the cylinder above the valve), the pressure of this gas moves the slide valve, closing the pressure line of the hydraulic unit and pressing on the piston in the rod cavity of each cylinder

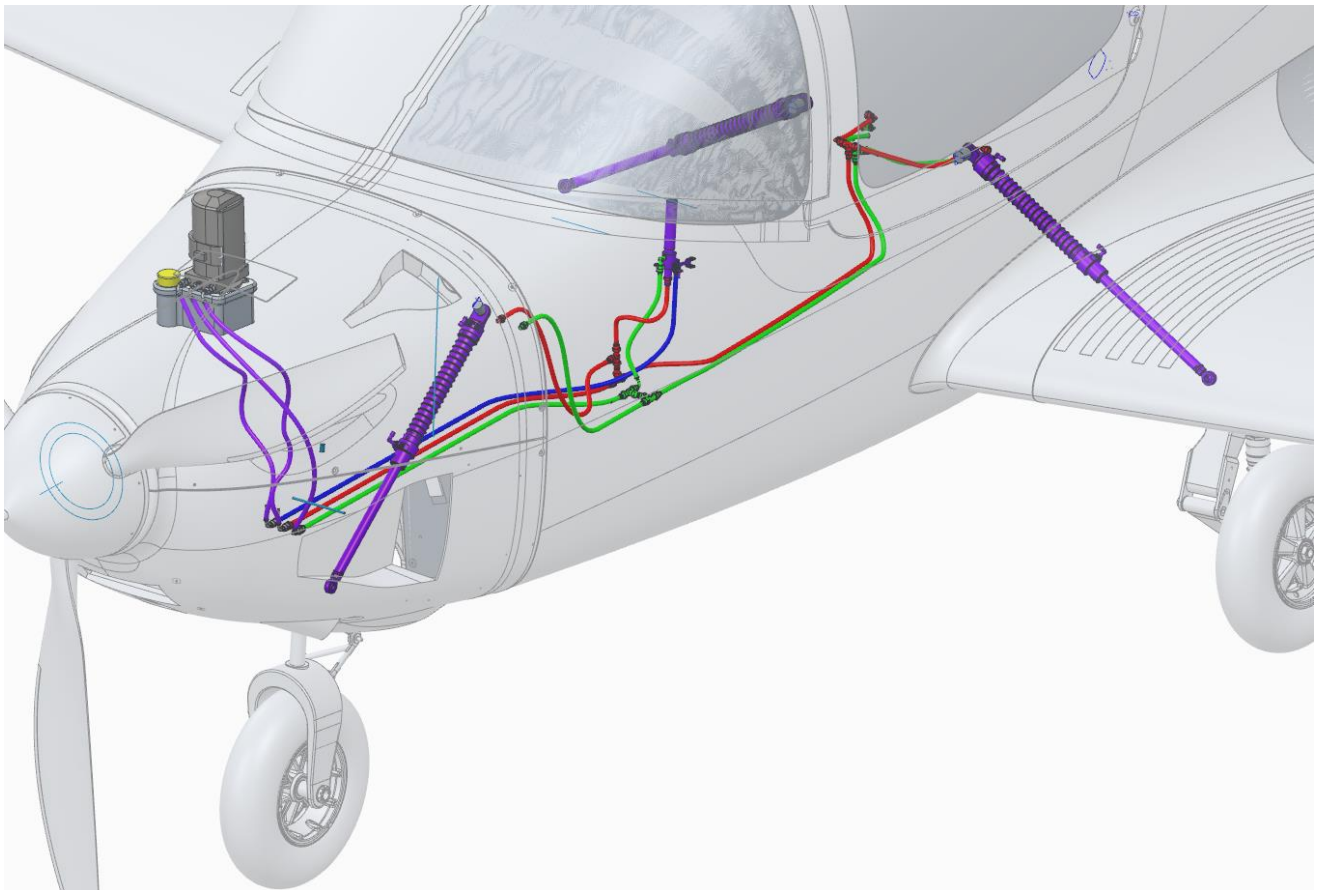
2.8.5 Hydraulic system

The one purpose of the hydraulic system is ensuring the extension and retraction of the landing gear.

The pressure source (15 MPa) is the SAE J1171 MARINE electrically driven hydraulic unit (*other name: trim pump motor*) which is a single-unit reverse gear pump with a 2.5 liter reservoir and safety valves.

Hydraulic fluid is ATF DEXTRON oil. Hydraulic tubing are composed of HYDROSCAND oil resistant hoses.

The landing gear extension/retraction cylinder in its locked position a move as a stronger rod and takes up the landing gear load. Unlocking is performed by applying hydraulic fluid to the opposite slide valve. The position indicator limit switch elements are mounting on the locking elements of the cylinder.



2.9 Electrical system

The generator №2 is incorporated into the engine. The generator №1 is a power source for the engine solely (injector, ignition system, ECU, etc.). Both generator are installed on a single stator, they are electrically isolated, each of them is connected to the fuse box.

The 12 V 14 Ah on-board lithium-polymer electrical battery (the recommended type is YLP14), is accommodated in an isolated compartment, in front of the bulkhead №1. It is permitted to install other electrical battery of similar performance and dimensions.

The access to this compartment is provided via an individual hatch (door) on the starboard (on the right outboard) side of the aircraft. The compartment accommodates the terminals for connection to the aircraft circuit and the thermal sensor (for the temperature indication).

Power supply of the on-board circuit by the the generator № 2 is possible only after run-up to the engine speed of 1800 rpm and disengagement of the starter.

In case of failure of the generator №1, the generator № 2 will be automatically switched to power the engine. Thus, it will be disconnected from the on-board consumer circuit, supplying the power solely to the engine. The associated light indication "WARN EMS" will illuminate thereby on the instrument control panel.

The battery supplies power to:

- ✓ in the process of maintenance: all user (30 min, in ISA);
- ✓ for engine start: the starter and ECU;
- ✓ in flight, in case of the failure of both generator: to all user (15 min, in ISA).

The electric power is used by the instrumentation system as per the section 2.10.

The aircraft electrical system diagrams are provided in the ANNEX 3 (classified by their functionality).

2.10 Equipment

2.10.1 The primary flight and navigation equipment/warning system

The primary flight and navigation equipment is the *Dynon SkyView SV1100* system designed and manufactured by *Dynon Avionics (USA)*.

The material available in this AMM is sufficient for an appropriate operation of the *Dynon SV1100* system, but it is possible to peruse optionally an additional manual for this system on <http://docs.dynonavionics.com>. (Dynon Avionics does not provide print copies of the manual).

Constituent elements of the system:

✓ <i>Dynon Heated AOA / Pitot Probe</i>	Pitot tube with heater	(1 pc.);
✓ <i>Dynon SV-HDX1100</i>	Display	(1/2 pc.);
✓ <i>Dynon SV-ADAHRS-200</i>	ADAHRS primary module	(1 pc.);
✓ <i>Dynon SV-ADAHRS-201</i>	ADAHRS secondary module	(1 pc.);
✓ <i>Dynon SV-OAT-340</i>	Temperature sensor	(2/3 pcs.);
✓ <i>Dynon SV-GPS-250</i>	GNSS module	(1 pc.);
✓ <i>Dynon SV-EMS-221</i>	Engine interface module	(1 pc.);
✓ <i>Dynon SV-AR-PANEL/V</i>	Autopilot control board	(1 pc.);
✓ <i>Dynon SV-COM-PANEL/V</i>	Radio set control board	(1 pc.);
✓ <i>Dynon SV-52</i>	Autopilot servo-actuator	(2 pcs.);
✓ <i>Dynon SV-XPNDR-261</i>	ransponder	(1 pc.);
✓ <i>Dynon SV-BAT-320</i>	Power supply battery	(1/2 pc.).



All elements of the system are interconnected by means of special interference-proof wires and connectors, the length of the wires does not exceed that recommended by the Dynon SW1100 system Manufacturer. All elements of the system are fed with 12V DC power by the on-board power circuit via the generator relay. In the event of a power failure, the system is supplied by an emergency battery that provides power for 30 minutes (in ISA).

A special fan is intended to eliminate excess heat from the area behind the instrument control panel (which accommodates the primary elements).

Pitot tube is connected to ADAHRS modules by means of pneumatic tubes. The Pitot tube is provided with an anti-icing heating via the associated controller.

The ADAHRS module is a source of data for indicated airspeed and vertical speed, pressure altitude, angle of attack due to the aneroid pressure gauges accommodated in it. The ADAHRS module is a source of data for attitude angles, magnetic heading and load factors due to the gyroscopes, magnetometer and accelerometers accommodated in it. The ADAHRS module is a source of data for ambient air temperature due to a separate sensor, accommodated in landing gear wheel well. To increase its reliability, the system incorporates two ADAHRS modules: the primary full-function one and the secondary one with limited functionality (operating as a "hot" backup).

Both primary and secondary modules are equipped with an ambient air temperature sensor. The integrated magnetometer is also used by the system to compute the angle of drift.

The GNSS module is a source of data for ground speed, altitude above the Earth's surface, aircraft position on the map. It receives the current latitude, longitude and altitude from Satellite Navigation Systems with a maximum positioning error of ± 1 m (this version of the GNSS module uses only GPS NAVSTAR).

The EMS received to the system the power plant data described in the section 2.7.3.

The autopilot module outputs command signals to the autopilot servo-actuators via the control stand to maintain the selected condition.

The transponder emits relevant aircraft identification data (current position, altitude, registration number, etc.).

Follow the recommendations of the section 4.12.3 when connecting new or replaced devices that are recognized by the system, as well as at the initial setup of the system or in case of calibration of all system sensors or adjusting the presentation of information on the displays.

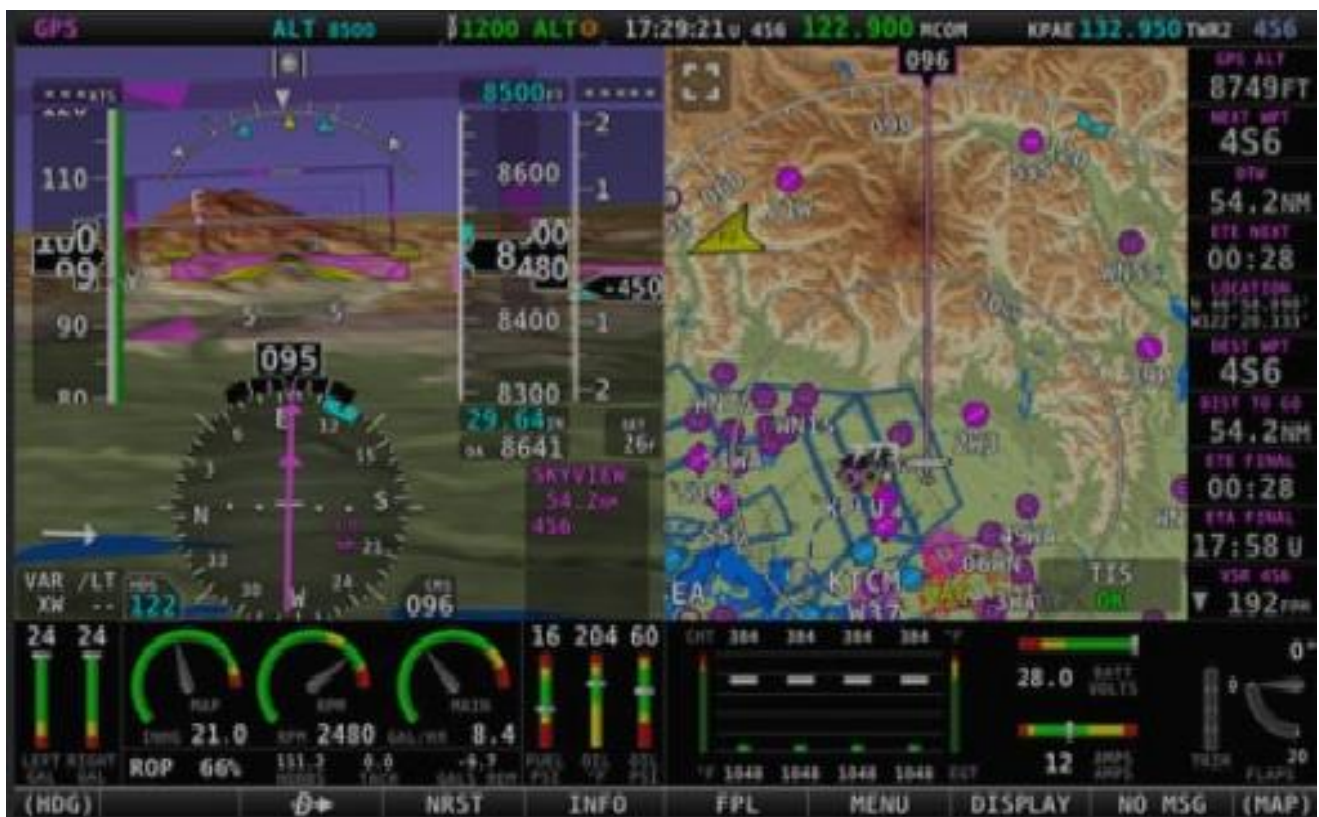
Multifunctional coloured touch-screen displays (see section 2.10.7) are interchangeable, interconnected via CAN-bus, equipped with processors that

compute all the received current data and generate the images of scales and current flight and navigational information, engine, autopilot, transponder information, as well as the aircraft position on map, flight route, the battery compartment temperature. An option with one display and an EFB laptop is possible.

The indicated air speed is adjusted for the instrumental correction to calibrated airspeed. (see the section 4.12.4 for calibration method).

The information can be displayed in both metric and imperial systems of measurement. The presentation of all the determined information on the displays can be adjusted. (see section 4.12.3).

The arrangement of scales (dials) and segments for flight, navigation information, engine and fuel system information, recommended for ANG-01 aircraft (the screen for example):



All elements of the Dynon SkyView SV1100 system are protected against electromagnetic interference (including HIRF), mechanical stresses, vibration, exposure to humidity, water (drop protection), dust and sand, mould, barometric pressure and ambient temperature (exceeding the aircraft operating limitations). The operating limitations of the system for these exposures, as well as for the barometric pressure and ambient temperature, are more restrictive the overall aircraft limitations.

A USB connector has been provided for copying and analyzing this information.

2.10.2 Alternate electronic instrument system

The aircraft is equipped with the following redundant flight instruments, supplementary to the primary Dynon SkyView SV1100 system, (for location, see 2.8.6):

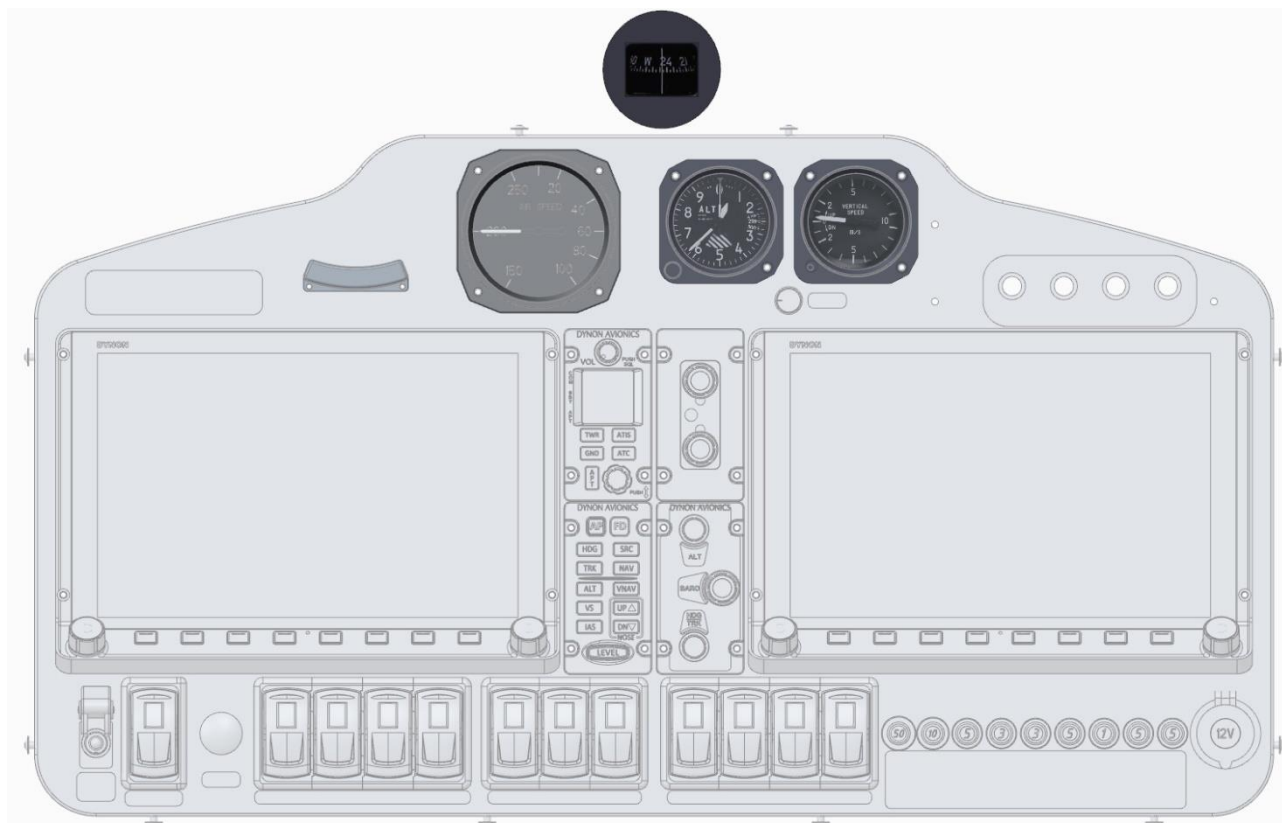
- | | |
|----------------------|------------------------------|
| ✓ FALCON ASI316KN-3 | Air Speed Indicator; |
| ✓ FALCON ALTN10MBF-3 | Pressure Altitude Indicator; |
| ✓ FALCON VSI10MEF-3 | Vertical Speed Indicator; |
| ✓ FALCON CM13L | Magnetic Compass; |
| ✓ FALCON SI-2Q | Slip Indicator. |

The instruments are connected to the Pitot tube in parallel with the ADAHRS primary system sensors, the compass and the slip indicator operate autonomously.

Instruments are provided with metric dials. The installation of other instruments in imperial system, having the same dimensions as the former one, is also possible.

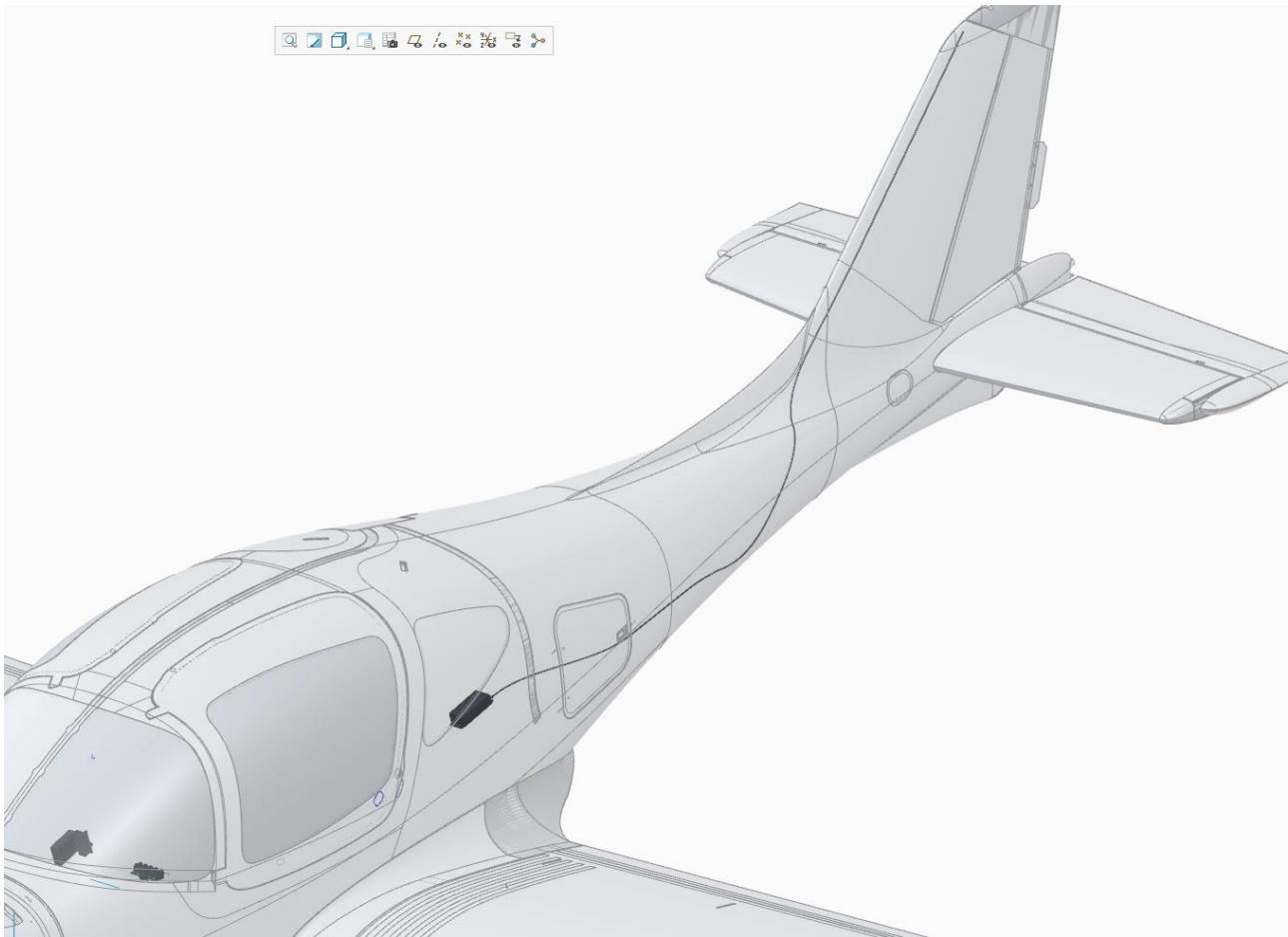
The airspeed indicator is supplemented with the instrumental corrections chart (located on the frame of the cockpit).

General view and arrangement of Alternate (backup) instruments:



2.10.3 Radio communication equipment

External radio communication is provided by the *Dynon Skyview Com Radio SV-COM-25C* short wave radio set. The antenna feeder of the radio set is integrated into the vertical empennage (which is radio-wave transparent, made of fiberglass). The radio set control board is located on the instrument control panel (see section 2.10.7).



The internal communication is provided through a 5 user switchboard with headset plugs, including the intercom device (for location, see section 2.10.7).

David Clark type headsets are recommended (with noise cancellation). The use of any certified aviation headsets is also allowed..

2.10.4 Lighting equipment

The aircraft is equipped with the aircraft navigation lights (ANL), flashing lights (STROBE) and LED headlights.

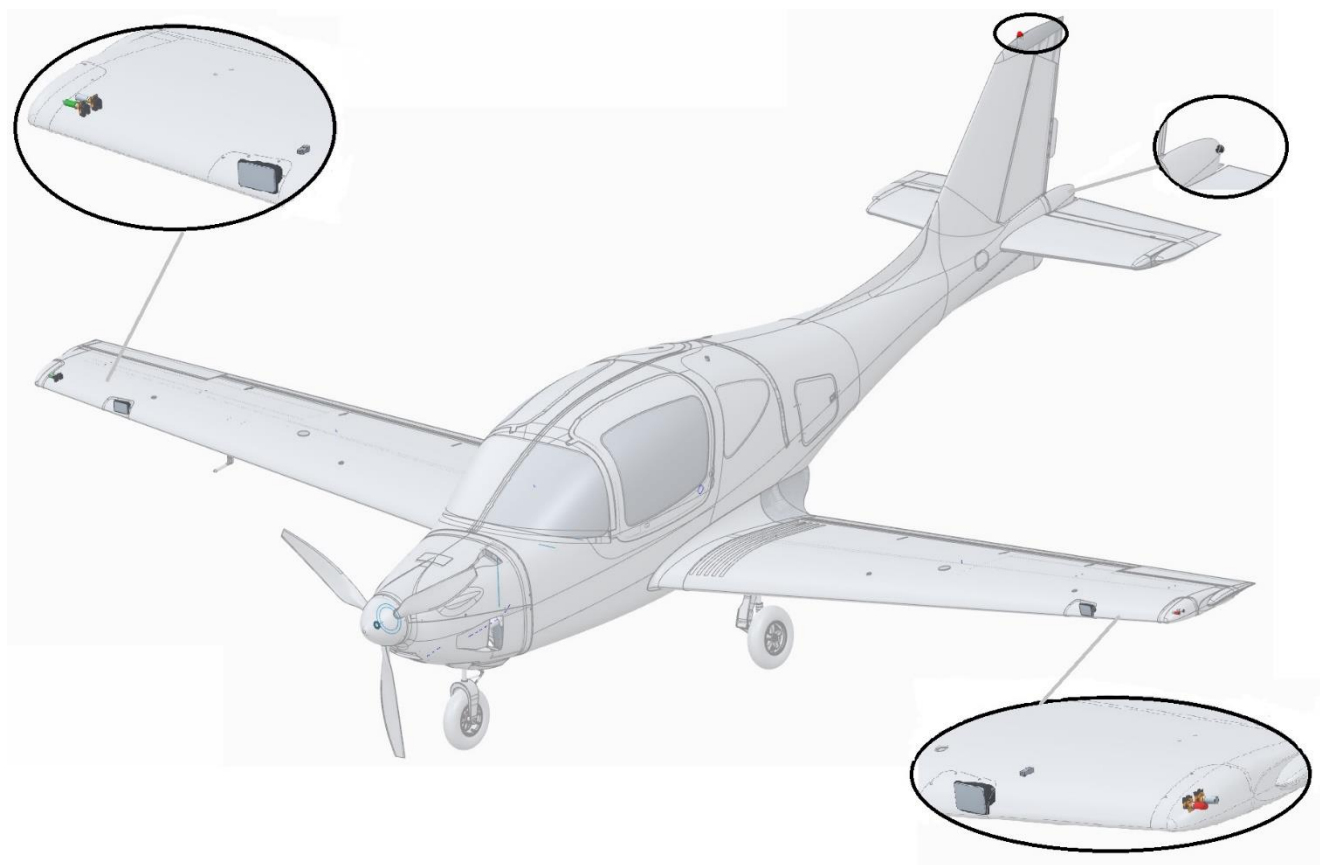
The interior cabin and baggage compartment lighting, as well as the instrument backlighting are absent (the aircraft is intended for VFR flights). Only the baggage compartment light bulb is provided.

The ANL consist of a red light, arranged on the left/port wing tip and a green light on the right/starboard wing tip. The ANL are fitted under a transparent fairing. The white light is positioned in the aft part of the fuselage.

The strobes are arranged on the tips of the right/starboard and left/port wing panels (jointly with ANL) and on the top part of the rudder (separately).

The switching is performed by individual toggle switches, arranged in the cabin (for location see section 2.10.7), the lighting pattern is controlled by an individual electronic device.

Arrangement of lighting equipment:



2.10.5 Light annunciator system (caution and flight warning system)

Annunciator system is an array of indicator lights and associated circuitry designed to secure pilot's attention by blinking and sounding when a process changes to abnormal state. The annunciator lights are arranged on the instrument panel (for location, see section 2.7.10):

- ✓ Loop A of the ignition system («CH A» of the «ENG WARN» group);
- ✓ Loop B of the ignition system («CH B» of the «ENG WARN» group);
- ✓ Operation of the engine monitoring system ("WARN EMS");
- ✓ Operation of the Pito tube heating ("PITOT HEAT").

Each light is equipped with placards, containing typical abbreviations that expressly define their purpose (indicated in brackets).

Green lights indicate satisfactory operation of respective systems. Red is the color for a failure condition. The aircraft has an aural warning system working in conjunction with illuminated annunciator system. The aural warning system alerts the pilot about a failure condition with audio signals via the intercom.

The visual and aural signals and alerts are generated by the *Dynon SkyView SV1100* system.

2.10.6 Toggle switches and circuit breakers (CB)

The toggle switches and CB are arranged on instrument panel (2.10.7):

- ✓ Master switch (under a green cap);
- ✓ Battery toggle switch ("Master SW");
- ✓ Starter button (or lock) ("START");
- ✓ Toggle switch of the engine ignition system A Loop ("A");
- ✓ Toggle switch of the engine ignition system B Loop ("B");
- ✓ Toggle switch of the main fuel pump ("MAIN PUMP");
- ✓ Toggle switch of the auxiliary fuel pump ("AUX PUMP");
- ✓ Avionic toggle switch ("AVIONIC");
- ✓ Autopilot toggle switch ("AP");
- ✓ Pitot Probe heater toggle switch («PITOT HEAT»);
- ✓ ANL and headlight toggle switch ("LAND LT");
- ✓ Strobe light toggle switch ("STROBE");
- ✓ Hydraulic unit CB ("HYDR PUMP"), rated current 50A;
- ✓ Pito heater CB (PITOT HEAT), rated current 10A;
- ✓ Flap automatic CB ("FLAPS"), rated current 5A;
- ✓ Landing gear ("LDG GEAR") CB, rated current 3A;
- ✓ VPP control CB ("PROP CONT"), rated current 3A;
- ✓ Trim servo CB ("TRM"), rated current 1A;
- ✓ Radio set CB ("INTERCOM"), rated current 1A;
- ✓ Dynon primary display CB ("PFD"), rated current 1A;
- ✓ Dynon secondary display CB ("MFD"), rated current 1A.

All toggle switches and automatic circuit breakers (CB) are equipped with placards.

2.10.7 Configuration of control instrument panel:



2.11 Furnishings and rescue equipment

2.11.1 Seats and safety fasten belts/ cabin interior

The pilots use individual seats in the forward area of the central compartment, individually adjustable lengthwise to ensure the suitability and reachability of the controls (depending on the pilots' height).

Adjustment of the pilots' seats (individual for left and right pilots) is performed by means of the actuators, accommodated under the seats.

The passengers are seated in the aircraft on a single triple sofa in the aft of the cabin, the individual seat adjustment is not provided.

The intercom switchboard is accommodated on the central pedestal in front of the passengers, within their reach.

The pilots' seats, passenger sofa, floor and interior of the cockpit are made of "sandwich"-type carbon fiber composite materials.

All pilots and passengers are secured in their seated position with individually adjustable 4-point safety fasten belts. There is ensured reliable anchorage of belt fittings to the aircraft structure in case of emergency landing.

The cabin interior is fabricated of non-flamable and easy washable materials.

The mesh holders for minor items are arranged in the passenger.

2.11.2 Ventilation and cabin heating

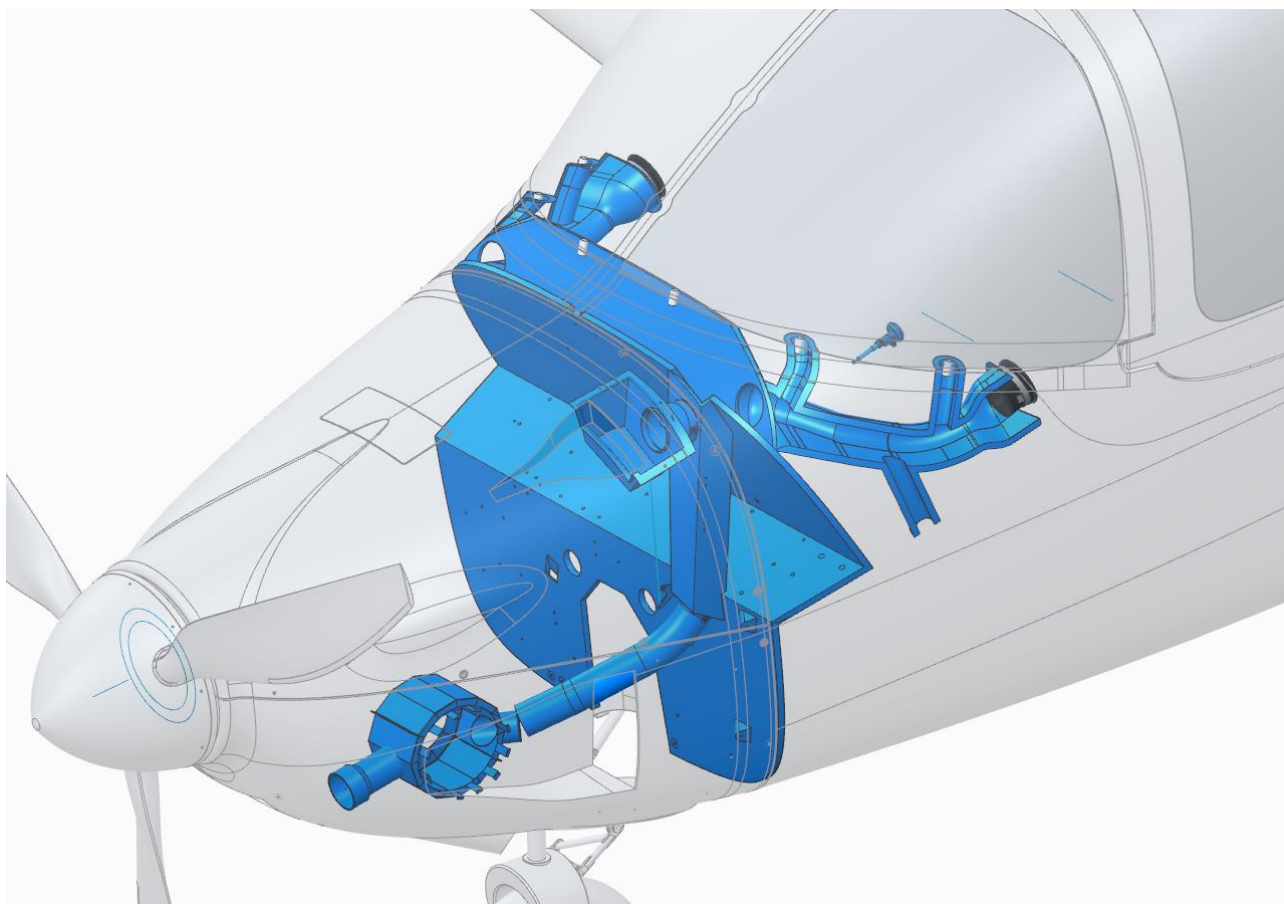
Ventilation of the cabin with the ambient air is carried out via the car type baffles (dampers) arranged on the left and right sides of the instrument panel.

A separate air intake is accommodated in the top cowling of the engine compartment, it is connected by a flexible pipe to the flange on the bulkhead №1. The air supply control valve and fiberglass pipes, routed to the baffles are arranged behind the flange.

The air supply regulating valve is operated by a moveable handle on the central pedestal. The air distribution is controlled by moving the baffles.

The cabin is heated by extracting excess heat from the engine muffler, due to a special housing with a separate ambient air intake in the engine compartment bottom cowling.

The housing is connected to the flange on the bulkhead №1 by a thermally protected flexible pipe. The air supply regulating valve and the pipes, routed to the baffles, are accommodated behind the flange:



2.11.3 Baggage compartment

The aircraft is equipped with an isolated baggage compartment, a glove-box compartment on the instrument panel, and a small compartment (a cell) in the armrest.

The baggage compartment is intended to accommodate the baggage of the pilots and passengers: carry-on baggage, such as medium size bags or suitcases, other items. The maximum total weight thereof should not exceed 60 kg.

For securing baggage, there is provided a retention mesh, which is attached to the special tie-down fittings on the reinforced floor of the compartment.

CAUTION: Exceeding the maximum baggage weight or improperly implemented tie-down of baggage may result in a critical upset of the aircraft balance and as a consequence, the impairment of the aircraft controllability and tilting of the aft area when on the ground.

The glove-box compartment is intended for storage operational documentation: AMM, the Aircraft Maintenance Manual and the Engine Logbook, as well as minor items and the documents of the crew members.

The armrest compartment (cell) is intended to access the landing gear emergency extension valve (see part 2.8.3), as well as for placing there in the AFM (which should be within easy reach of both pilots).

The baggage compartment is located in the aft area of the central compartment, between the back of the passenger sofa (behind the fuel feed tanks) and the frame №2. Its internal usable volume amounts to 600L, maximum internal dimensions are of 1.2x0.8x0.6 m (LxWxH).

The access to the baggage compartment is possible solely on the ground, from outside, via an individual hatch on the port side with a minimum size of 0.3x0.5m, that opens upstream to preclude its opening in flight.

The hatch is equipped with a lock and key, its hinges can secure it an open position (maximum opening angle 90 ° relative to the fuselage). The access to the fuel service tanks, fittings and the fuel system drainage is also provided through the baggage compartment. The access to the bellcranks and pull-rods of the control system, as well as to the radio set feeder connectors and power harness is provided via the floor access-door hatch and the access-door hatch in the rearpart baggage compartment.

The baggage compartment and glove-box compartment are upholstered inside with piled (fluffy), non-flammable and easily washable materials.

There is provided the lighting and ventilation of the baggage compartment.

2.11.4 Rescue system

The aircraft is equipped with a rescue system that ensures an emergency landing of the aircraft with its maximum weight by means of a parachute, within the speed range of 60...320 km/h, at a minimum altitude of 80 m.

The system is *GRS 6/800-990 SDS/FF* model, designed and manufactured by *Galaxy GRS s.r.o (Czech Republic)* is an integral container with a folded parachute enclosed in it and a parachute releasing device, containing a powder charge.

The rescue system is installed in the aircraft in a special box container in the aft area of the central section of the fuselage, on the right side (it occupies a part of the baggage compartment). The top of the container is closed with an individual cover



The slings of the rescue system are placed in longitudinal and transversal grooves in the top part of the fuselage and are covered with protective tapes. The ends of the slings are firmly attached to the parachute and the fuselage strength members.

The rescue system is activated by a handle (with a security peg), which is mechanically connected to the parachute releasing device. The gunpowder charge punches through the container cover in the fuselage and unfolds the parachute.

CAUTION: activation of the rescue system on the ground, including the process of the aircraft maintenance, may result in a fatal accident. Never and under no circumstances disassemble the GRS system. The GRS system must be handled as a pyrotechnical device or a loaded gun.

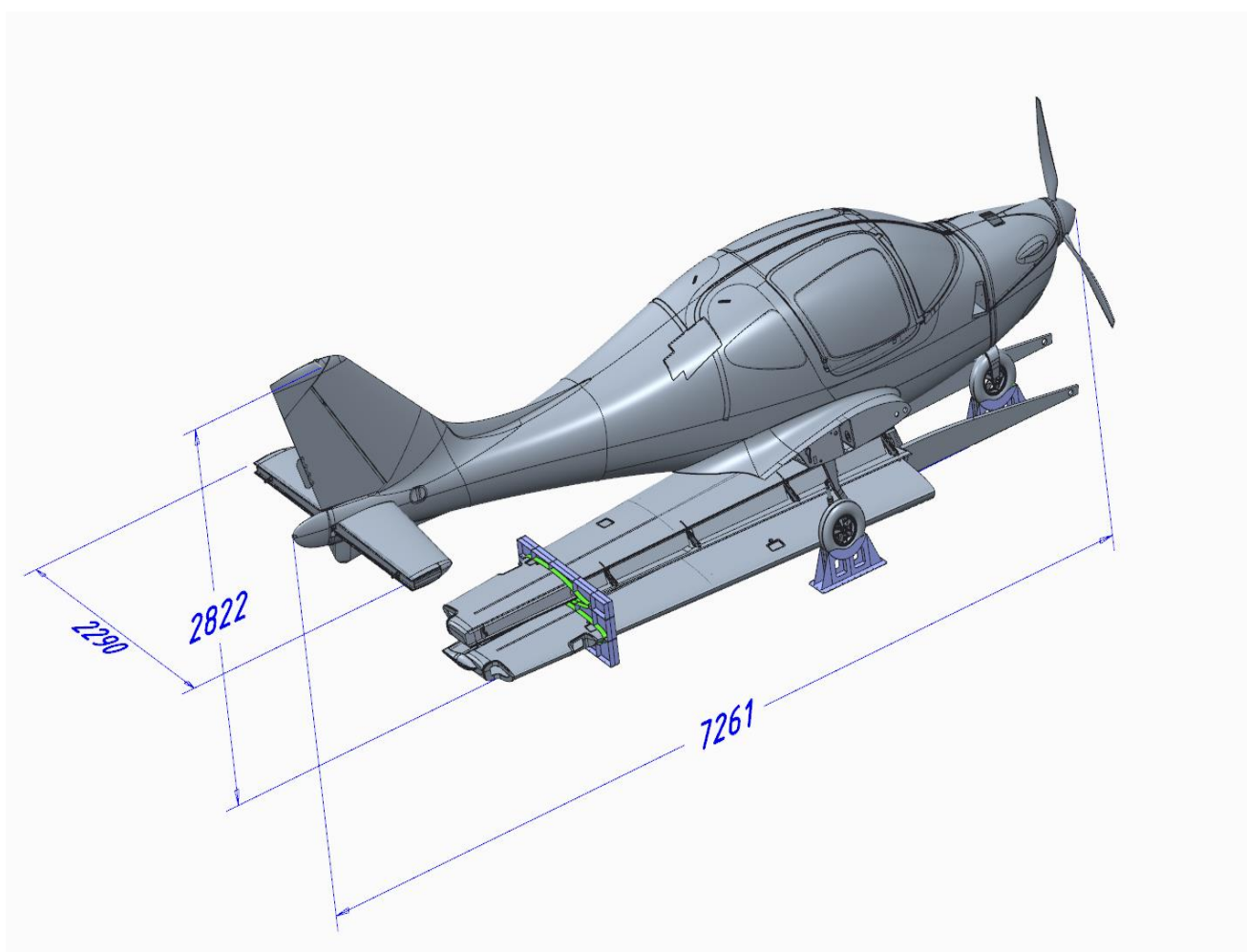
2.12 Ground equipment

2.12.1 Aircraft transportation equipment

The following ground equipment is intended to ensure the transportation of the aircraft as per the limitations specified in the section 3.5 and the procedures as per the section 4,

- ✓ Nose gear transportation wheel block (1 unit);
- ✓ Main gear transportation wheel block (2 unit);
- ✓ Wing panel transportation cradle (2 unit);
- ✓ Glazing cover (1 piece);
- ✓ Aircraft propeller blade cover (3 unit.);
- ✓ Motor compartment air intake plugs (4 unit);
- ✓ Centre wing section fillet cover (2 unit.);
- ✓ Wign-box panel root rib cover (2 unit);
- ✓ ACS detent (1unit).

The arrangement of the aircraft components for transportation, the maximum dimensions there of in the transportation condition:



The total weight of the equipment for transportation is 25 kg.

2.12.2 Aircraft storage equipment

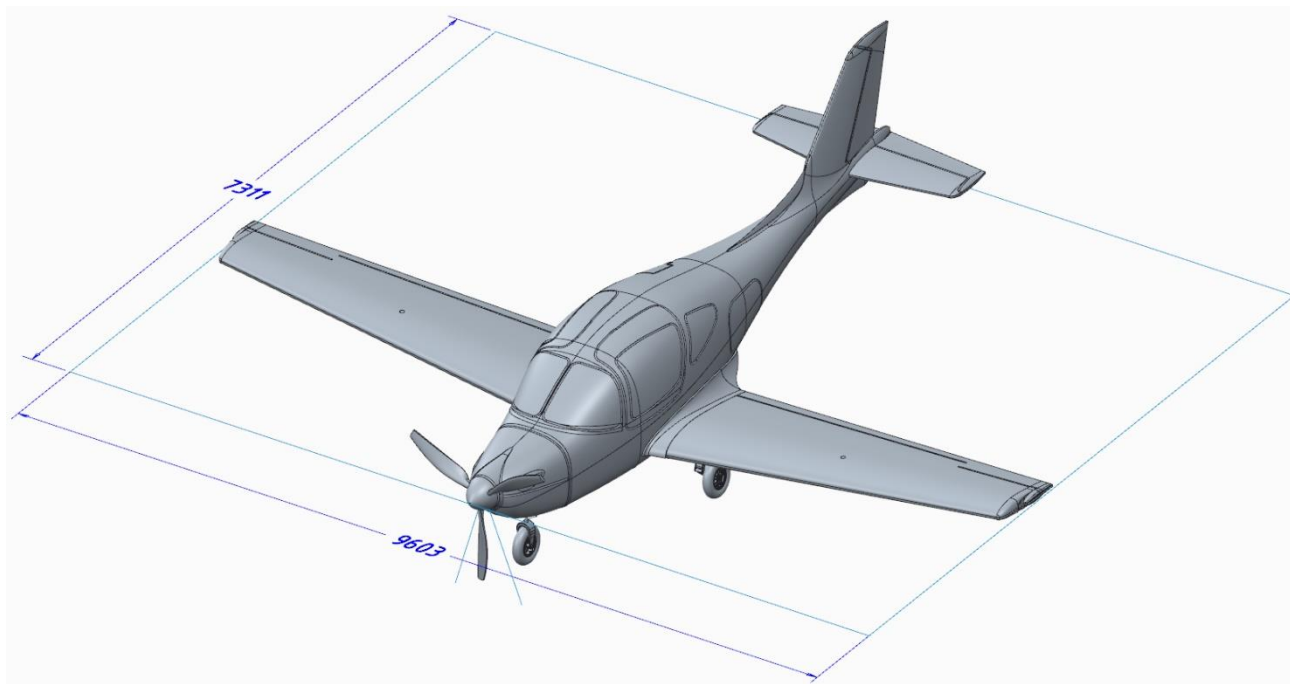
The following ground equipment is intended to ensure the storage and parking of the aircraft as per the limitations defined in the section 3.4 and the procedures of the section 4.5:

- ✓ Main landing gear parking chock (2 unit);
- ✓ Pitot tube cover (1 unit);
- ✓ Tow-bar (1 unit);
- ✓ Tie-down (mooring) rope with fittings (3 unit).

The following ground transportation equipment is also used for storing the aircraft at the parking lot (see section 2.12.1):

- ✓ ACS detent (1 unit);
- ✓ Windscreen cover (1 unit);
- ✓ Aircraft propeller blade cover (3 unit.);
- ✓ Engine compartment air intake plugs (4 unit).

Schematic of the aircraft in storage and parking:



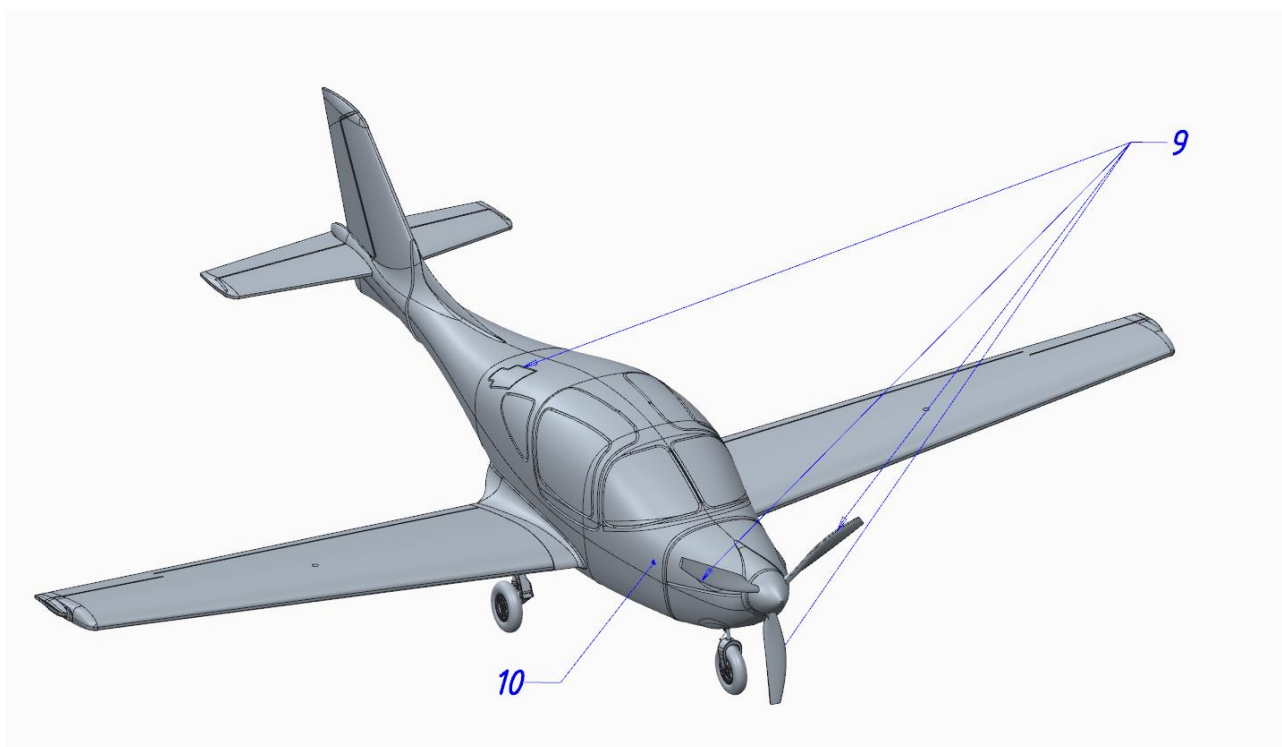
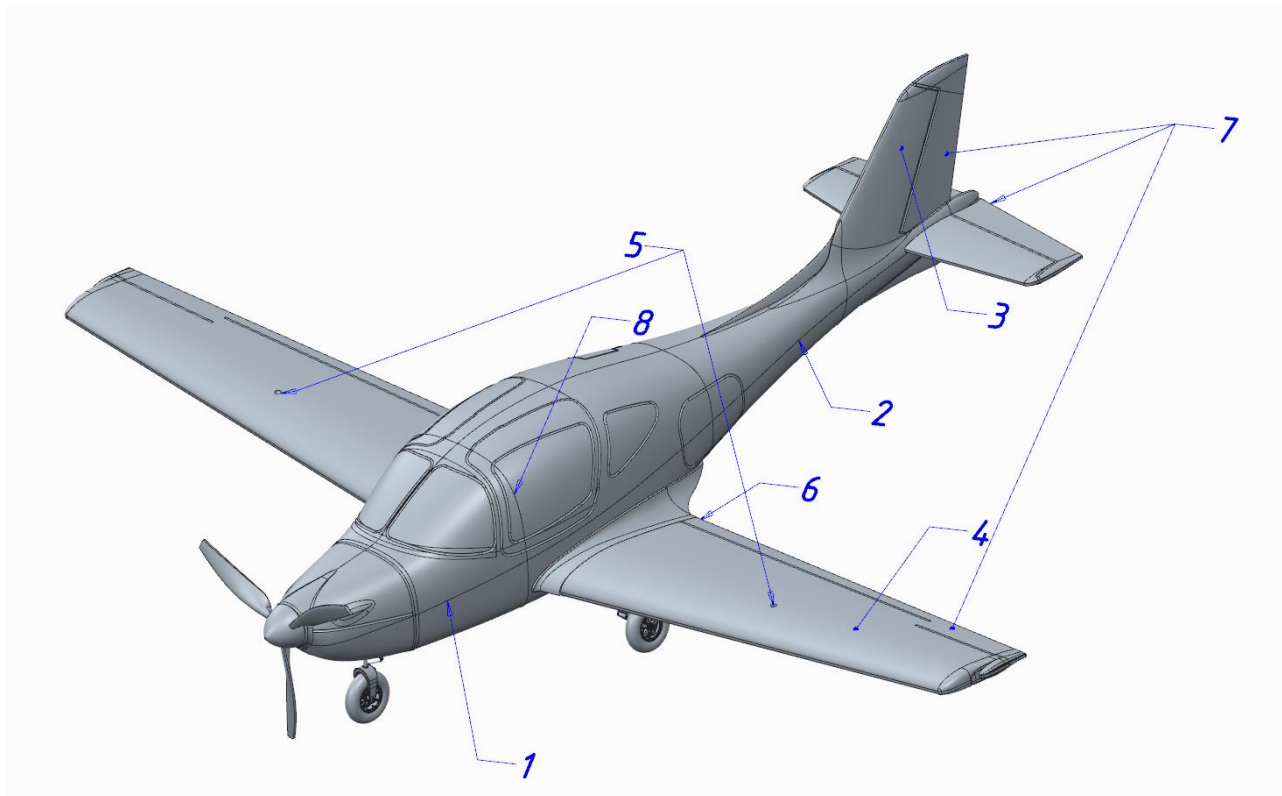
When performing route flights that true parking beyond the base station, the pertinent equipment should be carried in the aircraft baggage compartment.

The total weight of the aircraft storage equipment makes about 5 kg.

2.13 Placard/ Marking

The operational and warning inscriptions and the charts containing the pertinent information, required by the Airworthiness Standards are applied to the outside and inside surfaces of the aircraft.

The arrangement of markings on the outside surface of the aircraft:



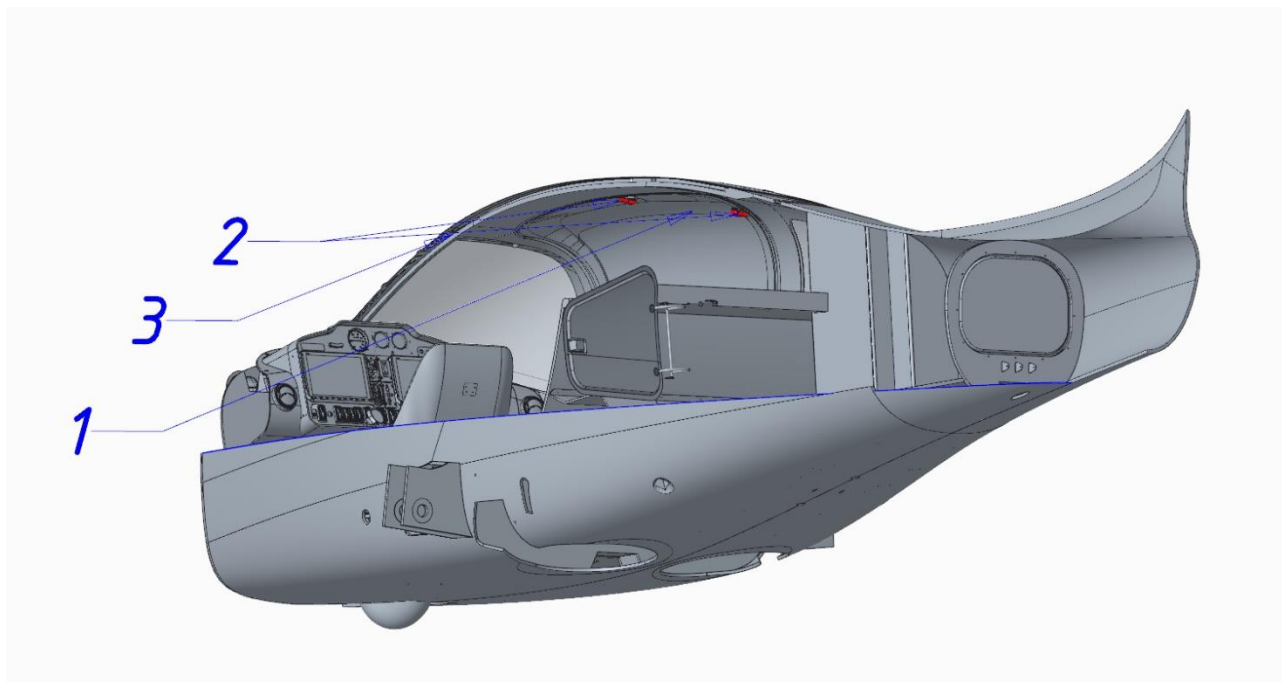
The following markings are arranged in the respective areas, shown in the above images:

1. "ANG-01" (aircraft name, black colour, Arial font size 35);
2. The aircraft registration number (size as per the rules of the country of registration);
3. The flag of the country registration;
4. "NO STEP" (on the flaps);
5. "DON'T STEP" (on the wing-box panels);
6. "92 OCTANE, UNLEADED AUTO GAS, CAPACITY 100 LITERS" (around the refueling port of the wing fuel tanks);
7. "NO PUSH" (on the RDR trim tab, ailerons, elevators and elevator trim);
8. "OPEN" and "EMERGENCY EXIT" on the doors;
9. "DANGER!" on the rescue system cover and all the propeller blades;
10. "12V 14 Ah" on the the battery compartment hatch-door;
11. "HEATING" on the Pitot tube mounting bracket.

Besides, there are provided the signs on the outer surface of the aircraft, indicating the locked condition of the quick access fasteners (Dzus spiral cam fasteners) and the turn signs are also provided on the main landing gear wheels.

Markings number 4...11 are made in red colour, font Arial, size 25, on a distinct background. If the aircraft is painted red in the area of these markings, the font color is changed to white.

The following placards and plates are arranged in the cabin and the baggage compartment:



The following placards are arranged, as specified by the numbers in the image:

1. "CAPACITY 600L, 60 KG, LUGGAGE MOORING IS MANDATORY" (on the inner side of the baggage compartment hatch-door);
2. "MTOW 950 KG, VA = 200 k/h, VNO = 340 km/h, NORMAL-CATEGORY LEVEL 2, LOW SPEED, NO AEROBATICS AEROPLANE" (on the instrument panel);
3. "OPEN" (on the door);
4. "EMERGENCY EXIT" (on the doors and rip pins for the door emergency discarding);
5. "TURN" on the door lock;
6. "NO SMOKING" (top center, behind the windshield);
7. "ANG-01, S/N 000, registration number": a steel plate riveted in the corners (on the pedestal on the left pilot's side).

PART 3. OPERATING LIMITATIONS

CONTENT

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The section identifies all the necessary operational limitations of the aircraft ANG-01, during the maintenance without failure in the operation and maintenance are guaranteed.

The complete list of the aircraft operating limitations required for ensuring safe flights, is contained in the ANG.01.AFM.02 Aircraft Flight Manual.

CAUTION: Failure to comply with these limitations may result in a damage to the structural elements of the aircraft or be a cause a severe accident.

3.1 Weight and balance

The maximum operating weight of the aircraft is 950 kg, the weight of an empty equipped aircraft is 375...385 kg (depending on the equipment and furnishings version).

The weight and balance data of an empty equipped aircraft in actual equipment and furnishings version shall be entered into the Aircraft Maintenance Manual.

NOTE: the weight of an empty equipped aircraft is to be determined without crew, baggage, fuel (except for remainder refueling on board), ground equipment. The aircraft should be filled with hydraulic fluid, oil and engine coolant.

Determining of weight and balance of an empty equipped aircraft shall be performed in the cases stipulated in the Part 4.4, in conformity with the procedure specified there.

The procedure of calculating the flight weight and balance of the aircraft is also described in the Part 4.4.

WARNING: altering the aircraft balance of an empty equipped aircraft using a ballast is PROHIBITED.

When performing maintenance and task card, it is not recommended that more than 2 persons should be simultaneously seated on the passenger sofa, while nobody is sitting on the pilot seats. This may result in upsetting the aircraft and damaging the tail part.

3.2 Aircraft control system and wings configuration

3.2.1 Control system

Limit deflections of control surfaces induced by the inputs of standard controls (ACS and pedals, until to against the stop).

Control surface	Direction	Angle	Tolerance/ play
Elevator (left, right sections)	Up	30°	±1°
	Down	15°	
Rudder	To the left	25°	±1°
	To the right	25°	
Aileron (left, right)	Up	14°	±1°
	Down	17°	
Elevator trim tab	Up	15°	±1°
	Down	15°	

The rate of shift of the ELV trim tab from one limit position to the other is 10 seconds.

WARNING: applying to the control system elements of a load exceeding 50 kgf (in the pitch and roll channels) and exceeding 100 kgf (in the yaw channel) may result in disabling these elements.

With a neutral position of the ACS and pedals, the control surfaces must match the outline of the stabilizer, fin and wings, the tolerance for all surfaces should not exceed $\pm 1^\circ$, respectively.

The rudder trim tab may be deflected by an angle of up to $\pm 10^\circ$ to compensate for gyroscopic torque and asymmetric flow from the propeller (angle selection technique is described in AFM).

3.2.2 Wing devices

Limit positions of flaps are "0" and "3", intermediate positions are "1" and «2».

When in "0" position, the flaps should match the outline of the wing.

The divergence between the left and right sections of the flaps should not exceed $\pm 2^\circ$ in all positions.

WARNING: applying to the flaps a vertical load exceeding 70 kgf may result in their disabling. Therefore it is FORBIDDEN to step on them, a respective warning marking is provided to this effect.

3.3 Power plant

3.3.1 Engine

The main operating limitations ref. by BRP-Rotax company:

Limitation	Value	Note
Shaft speed	1800 rpm	Idle operation
	5500 rpm	Maximum-continuous power,
	5800 rpm	Full power operation, up to 5 minutes
Maximum altitude	7000 m	in ISA
	4570 m	at Th = + 50 ° C
Ambient temperature	-20°C	Minimum
	50°C	Maximum
Oil consumption	0.06 L/h	Maximum
Oil pressure	0.8 bar	Minimum, <3500 rpm
	2.0 bar	Minimum, <3500 rpm
	5.0 bar	Maximum
Fuel pressure	2.9 bar	Minimum operating
	3.1 bar	Maximum operating
Oil temperature *	-20°C	Minimum
	90°C	Maximum operating
Coolant temperature *	-20°C	Minimum
	90°C	Maximum
Exhaust gas temperature (EGT)	200°C	Minimum
	950°C	Maximum

* - during the ground trial run, start up and heating

Operating limitations concerning the use of engine fluids have been established by BRP-Rotax company (see for detailed information the SI-915 i-001 Service Instructions):

Oil: according to the RON 424 classification.

Coolant: *Shell Dex-Cool* is recommended.

Fuel: A92, AKI 91, MOGAS EN 228 super (plus), AVGAS 100 LL.

3.3.2 Propeller

Operation limitation («S-PROP» or «ANG»):

Limitation	Value	Note
Shaft speed	2700 rpm	Maximum
Ambient temperature	-25°C	Minimal
	45°C	Maximum
Thrust blade angle (blade rate 2°/s)	10°	Minimum
	25°	Maximum
Propeller blade flapping	≤1.5 mm	Radial
	≤7.0 mm	Axial

3.4 Parking/Mooring/ Base station storage conditions

The hangar for aircraft is mandatory at its base station and in the course of line and base maintenance (as per part 5.7, 5.8 respectively). The hangar must be equipped with artificial lighting and ventilation.

The temperature in hangar for aircraft should be about 14... 24⁰ C, the humidity should be about 35... 73%, as dictated by the conditions of long-term storage of the rescue system.

At the same time, some activities under the mentioned types of maintenance lasting up to 2 hours should be executed beyond hangar (e.g. engine run-up) and not closer than 50 m to the large and heavy metal magnetic structures (e.g. in case of GNSS and compass sensor calibration).

The aircraft may be kept outside the hangar in the areas of temporary location for up to 2 days, as well as in the course of its pre-flight inspection and line maintenance (as per part 5.6, 5.7). The use of all prescribed covers and plugs (caps) during the line maintenance is mandatory (see their list in the part 2.12.2), it is required mooring the aircraft as per the part 4.5.2, in order to preclude the effects of a significant wind.

It is mandatory to use only the wheel chocks and the Pitot tube cover during the pre-flight inspection.

WARNING: The longer exposure to direct sunlight, precipitation and erosion by sand and dust may result in damaging the composite covering, varnish and paint coating, and may result in clouding and deformation of the windshield, corrosion of metal elements and deterioration the of interior elements.

Parking, storage and all types of maintenance are allowed when the aircraft is positioned on a level clean surface, preferably on a solid artificial surface. Dimensions of the lot: at least 10x10x3 m (LxWxH).

The limitations and requirements to towing of the aircraft are established in the AFM.

3.5 Towing/Taxiing/Transportation

It is authorized to carry the aircraft by road, water or railway transport.

WARNING: the use of transportation equipment other than specified in part 2.12 is **FORBIDDEN**.

Transportation procedures are listed in the part 4.1

3.6 Service and condition limit

It is authorized to operate the ANG-01 airframe based on its technical condition, without any established service limit, provided the following requirements are met:

- ✓ Observance of operating procedures specified in the present AMM;
- ✓ Observance of the maintenance schedule, established for the items with approved serviceable life and condition limits;
- ✓ Appropriate and timely completion of the Aircraft Maintenance LogBook and Engine LogBook.

WARNING: The claims of an aircraft operator without duly completed Aircraft Maintenance Logbook are **DISREGARDED**.

List of part unit with approved serviceable life and condition limits.

Part/ unit	Interrepaire	Approved serviceable life
Engine	2000 hours	15 years
Propeller	500 hours	1000 hours/6 years
Rescue system	6 years	30 years
Engine muffler	-	5 years
Fuel tank pumps	-	5 years
Hydraulic unit (trim pump motor)	-	5 years
Fuel hoses	-	5 years
Oil system hoses	-	5 years
Cooling system hoses	-	5 years
Landing gear wheel brake hoses	-	5 years
Engine mount anti-vibration pads	-	5 years
Power storage battery	-	2 years
Engine spark plugs	-	100 hours
Engine oil filter	-	100 hours
Engine air filter	-	100 hours
Engine fuel filter	-	100 hours

PART 4. GROUND OPERATIONS

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Introduction

This part defines the pertinent ground procedures intended to ensure without failure operation of the ANG-01 type aircraft.

CAUTION: Failure to comply with these procedures may result in a damage to the structural elements of the aircraft, or create the conditions for a seriously aircraft accident.

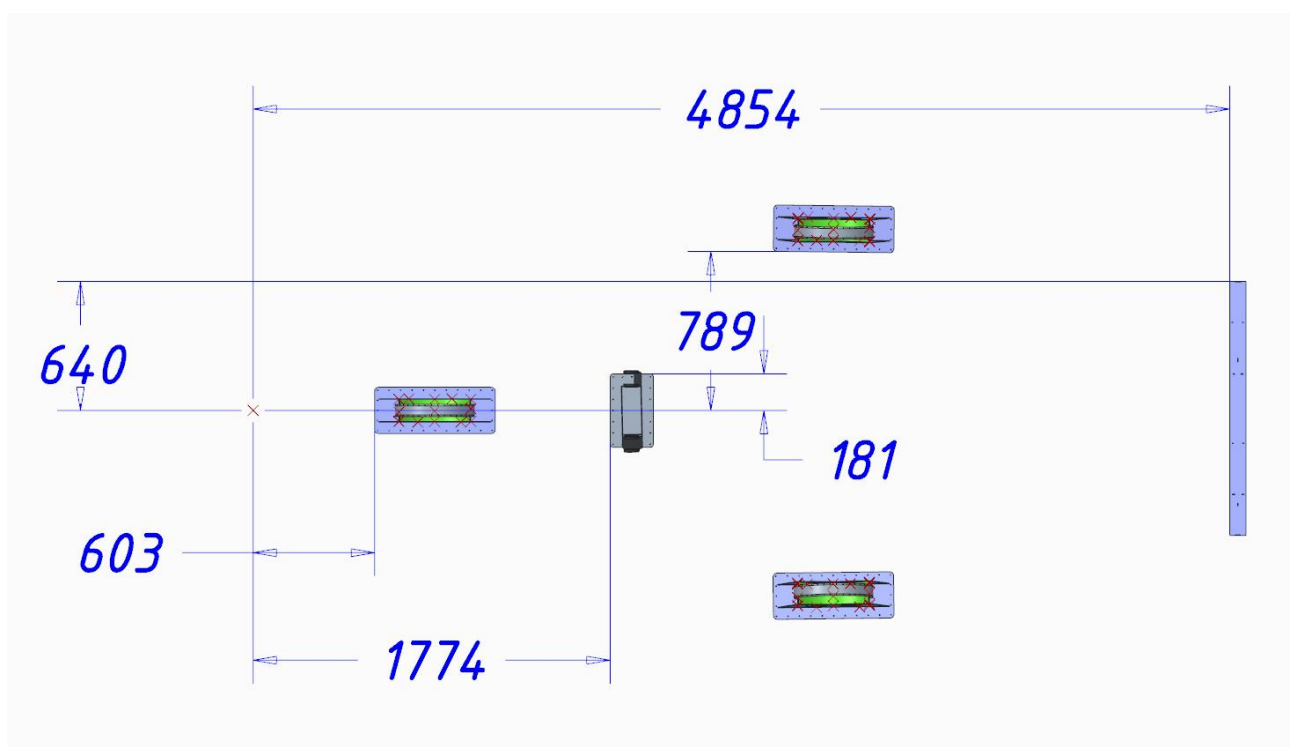
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4.1 Transportation

It is necessary to use for transporting the aircraft a level horizontal platform made of any hard material (wood, plywood, metal) with a total capacity of 450 kgf, with point loads of at least 100 kgf/m² in the areas of placing the transportation wheel blocks and cradles. This platform is not included into the ground equipment set.

WARNING: it is strictly forbidden to transport the aircraft towing it by NLG.

The overall dimensions for placing the aircraft on a vehicle are of 7.5x2.5x3.0m (LxWxH), the figure of the aircraft units is provided in the section 2.12.1 Mounting dimensions of blocks and cradles for their arrangement on the vehicle:



Blocks and cradles must be securely fastened to the vehicle platform with bolts, precluding their displacement. The bolts are included into the ground equipment set.

It is allowed to carry the aircraft on a railway or a vehicle open-top and open-side platform provided the duration of travel will not exceed two days.

In case of a long lasting transportation or transportation by water, the top and sides of the platform with aircraft units should be covered any lightproof and waterproof materials placed on a rigid frame (such as a truck awning) or a container of prescribed dimensions and capacity should be used.

The frame, materials and container are not included into ground equipment set.

WARNING: Prolonged transportation without protecting the aircraft units against exposure to sun, precipitation and sea water may result in damaging the varnish and paint coating, delamination and critical loss of wing panel, fuselage and propeller strength (they are made of composite materials), as well as the corrosion of the engine and landing gear elements (they are made of metals).

The transportation is usually performed by motor transport, the truck body floor serving as a platform.

It is allowed to install the platform on a trailer floor or use the trailer floor as a platform (provided the blocks are installed on the same level).

Pre-transportation preparation should be performed by at least 2 persons and includes the following operations in the sequence listed below:

- ✓ Determine the method, route and duration of transportation and, therefore the necessity to tent the platform or use a container;
- ✓ Assess the adequacy of the platform (container) with respect to the overall and installation dimensions, load capacity;
- ✓ Install and fasten to the platform 3 blocks and 2 craddles according to the diagram (figure);
- ✓ Defuel the aircraft and drain point (according to 4.5);
- ✓ Bleed out the shock struts and tires of the main landing gear to reduce the dimensions of the fin area;
- ✓ Place the ACS detent;
- ✓ Detach and plug the Pito tube, Task Card 031.01 (as per the part 0);
- ✓ Detach the wing panel, Task Card 051.05 (as per the part 0);
- ✓ Deposit into the "glove compartment" the AFM, AMM, Aircraft Maintenance Manual and the Logbook, as well as the accompanying documents;
- ✓ Stow into the luggage compartment parking wheel chocks, Pitot tube;
- ✓ Seal the doors and luggage compartment (if needed);
- ✓ Place the fuselage onto the transportation blocks on the platform;

NOTE: the equipment to be used – a hoist with a loading capacity of above 300 kgf with an adequate arm reach. The hooking points on the fuselage are specified in the diagram of the part **Помилка! Джерело посилання не знайдено..** To hook the engine, remove the top cowling of the engine compartment, replace the cowling after mounting the fuselage onto the platform.

WARNING: mounting of the fuselage on the platform should be performed at a wind speed not exceeding 5 m/s in order to preclude a mechanical damage to it and to the propeller, its uncontrolled rotation or swaying in a suspended condition and thus preclude injuring of personnel and animals.

- ✓ Secure the landing gear wheels on the transportation blocks;
- ✓ Assess the vertical clearance of the aircraft or container mounted on the vehicle;
- ✓ Place all the plugs and covers (see the diagram in the 2.12.1);
- ✓ Place and fasten the wing panels to the transportation cradles on the platform, check for proper locking of the refueling tanks port (if need be, seal them).

When planning the route and in the course of transportation, be sure to observe a clearance of at least 0.2 m between the top point of the aircraft or container mounted on the vehicle and the power lines, bridges, etc.).

4.2 Aircraft assembly

Assembling of the aircraft after transportation is to be performed on a site of at least 10x10 m size, with level dry hard surface, ventilation and artificial lighting. The site should be provided with a table for documents and tools.

The site must be protected against direct sunlight, wind and precipitation. It is preferable to arrange the heating of the site at temperatures below 10°C.

Assembling of the aircraft to be performed by at least 2 persons in the following sequence:

- ✓ Check for the integrity of all seals, if any;
- ✓ Check for the availability of the AFM, AMM, Aircraft Maintenance Manual and LogBook, as well as the accompanying documents;
- ✓ Unlatch the wing-box panels and remove them from the spar;
- ✓ Unlatch and remove from the blocks the fuselage, place it on a level surface. The pertaining equipment and safety measures are specified in the part 4;
- ✓ Tow the fuselage to the area of aircraft assembly as per the methods defined in the part 4.8 and place it on the parking chocks, fetch also there both wing panels (each one can be carried by two persons);
- ✓ Dismount from the platform the blocks and cradles (if necessary);
- ✓ Examine the aircraft following the TC 025.01, 051.01, 052.01, 061.01;
- ✓ Remove all plugs and covers, ACS detent;
- ✓ Charge the landing gear shock struts, TC 032.03;
- ✓ Inflate the tires;
- ✓ Attach the wing panels, TC 051.05. For this purpose, connect:
- ✓ the aileron control system pull-rods;
- ✓ flap shaft;
- ✓ Pitot tube pneumatic piping between the right wing panel and fuselage;
- ✓ pipelines and drainage of the wing-box fuel tanks;
- ✓ ANL and STROBE light electric wiring between the wing panels and the fuselage;
- ✓ Fit the Pitot tube, TC 031.01;
- ✓ Carry out the cleaning and washing of the aircraft (as per the part 4.10);
- ✓ Check the condition of the paint coating, placards, markings and plates (as per the part 2.13);
- ✓ Perform the aircraft leveling (as per the part 4.3);
- ✓ Fill it with working fluids (as per the part 4.5);
- ✓ Examine the units of the engine compartment, TC 029.01, 072.;
- ✓ Check the condition of the rescue system, TC 101.01;
- ✓ Check the control system and flaps, TC 027.01;
- ✓ Check the electrical system, TC 024.01;
- ✓ Check the on-board equipment, TC 024.01, 031.01;
- ✓ Check lighting equipment, TC 024.02;

-
- ✓ Check the landing gear, TC 032.02, except for the replacement of the landing gear wheel brake;
 - ✓ Carry out the engine ground run-up check.
 - ✓ Make a respective entry in the Aircraft Maintenance Manual.

4.3 Aircraft leveling

The aircraft leveling in the course of the ground operations to be performed in the below listed cases following:

- ✓ transportation and assembly of the aircraft;
- ✓ exceeding operating loads and speeds;
- ✓ hard landing with a vertical speed exceeding 2 m/s;
- ✓ a tail strike at takeoff or landing;
- ✓ The bird strike in during flight, or a collision with a drone or other object;
- ✓ landing with a retracted or partially extended landing gear;
- ✓ emergency landing using the rescue system;
- ✓ on the pilot's request.

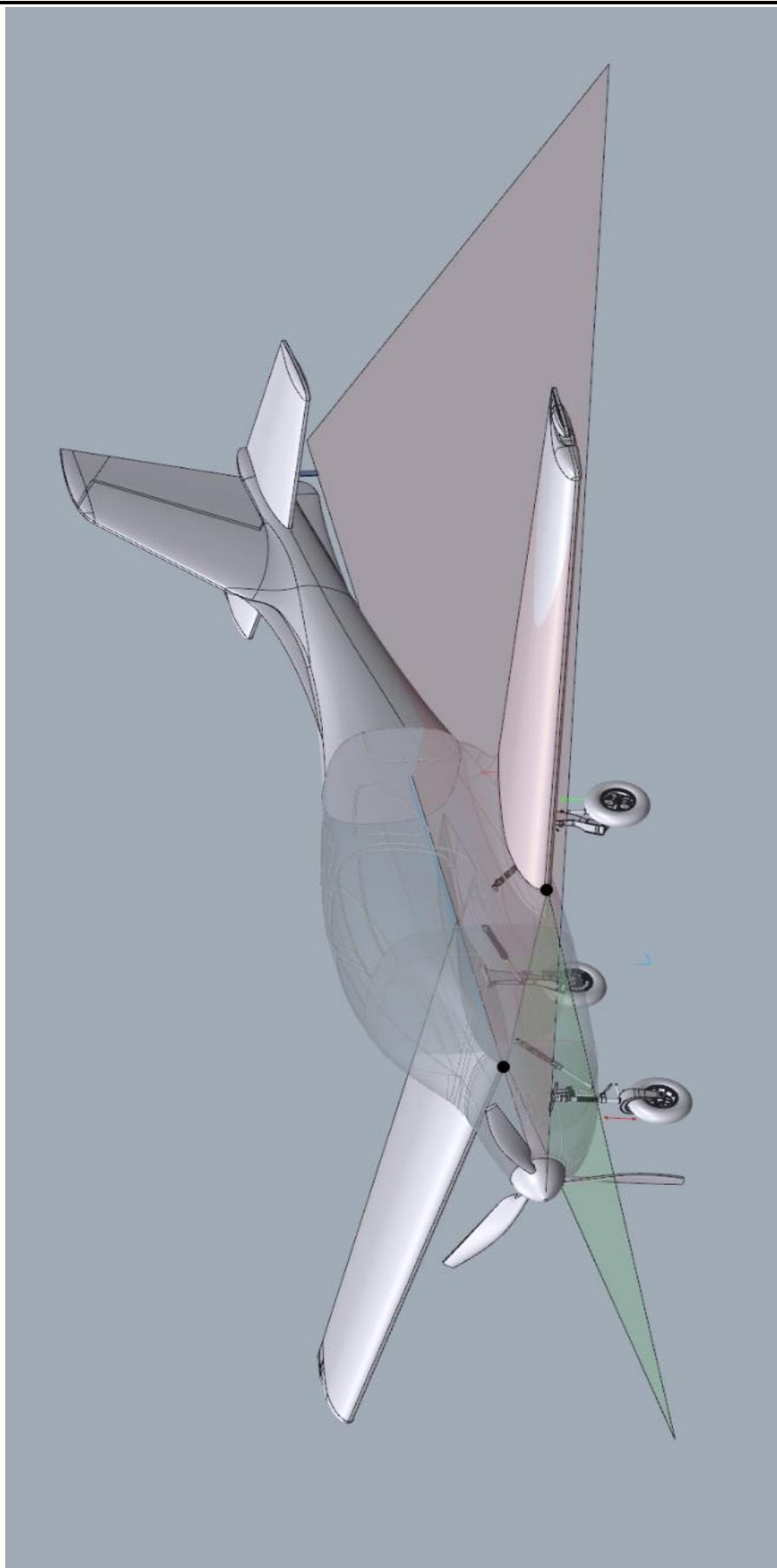
To be performed in a hangar or on a level hard surfaced open ground (in still air and in the absence of any precipitation).

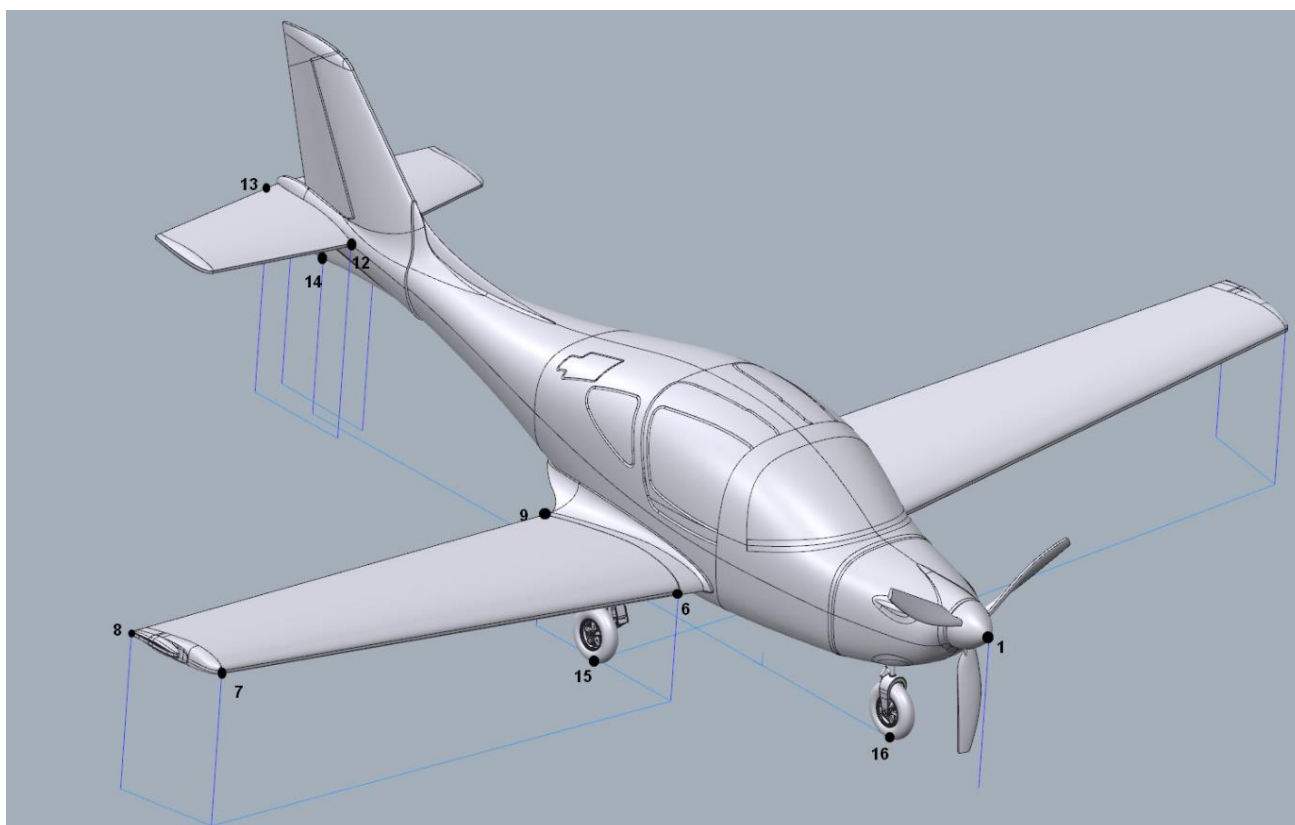
NOTE: When leveling do not perform any other operations with the aircraft, do not alter the tire and landing gear shock-strut pressure, do not apply any loads to the aircraft surface.

Use any verified spirit level, a 10 m measuring tape, a builder's plumb bob, a marker, the rudder axle end bellcrank template of angular shape (marked $\angle 1$, included into the TGSIM set), car jack with a shank up to 0.5 m (all the above listed items, except the template, are not included into the TGSIM set).

Perform the actions below:

- ✓ Check the levelness of the ground using a spirit level (it should be horizontal);
- ✓ Detach the tail cone and fit the $\angle 1$ template to the rudder axle end bellcrank;
- ✓ Set the aircraft in longitudinal horizontal position (level the aircraft along the longitudinal axis), having applied the jack and raising its shank, until the mark of the spirit level, which is positioned horizontally from the propeller spinner tip, matches the mark on the template. If the stroke of the jack shank is not sufficient for reaching this position, set the angle by adjusting the pressure in the shock strut and/or the pressure in the nose wheel tire. The positioning is shown in the image below
- ✓ Enter the results of measurements in the Aircraft Maintenance Manual.
- ✓ Compute the angles using any calculator, enter the results into the Aircraft Maintenance Records and compare with the reference ones.





The "Leveling" section of the Aircraft Maintenance Manual contains the following measurement values (H height and D horizontal distance with an accuracy of 0.01 m):

Parameter	H	D	Formula	Calc.	Reference
The dihedral angle of the left wing panel	___ m	___ m	$\text{atan} [(H_2-H_3) / D_{2-3}]$	___ ⁰	5.0± 0.1 ⁰
The dihedral angle of the right wing panel	___ m	___ m	$\text{atan} [(H_6-H_7) / D_{6-7}]$	___ ⁰	
The angle of incidence (mounting angle) of the left wing panel end	___ m	___ m	$\text{atan} [(H_3-H_4) / D_{3-4}]$	___ ⁰	0.0± 0.1 ⁰
The angle of incidence (mounting angle) of the right wing panel end	___ m	___ m	$\text{atan} [(H_6-H_8) / D_{6-8}]$	___ ⁰	
The angle of incidence (mounting angle) of the left wing panel root	___ m	___ m	$\text{atan} [(H_2-H_5) / D_{2-5}]$	___ ⁰	0.0± 0.1 ⁰
The angle of incidence (mounting angle) of the right wing panel root	___ m	___ m	$\text{atan} [(H_7-H_9) / D_{7-9}]$	___ ⁰	
The angle of incidence (mounting angle) of the left horizontal empennage section root	___ m	___ m	$\text{atan} [(H_{10}-H_{11}) / D_{10-11}]$	___ ⁰	5.5± 0.1 ⁰
The angle of incidence (mounting angle) of the right horizontal empennage section root	___ m	___ m	$\text{atan} [(H_{12}-H_{13}) / D_{12-13}]$	___ ⁰	
Tail clearance	___ m	n/a	$\text{atan} [H_{14} / D_{14-15}]$	___ ⁰	17.0± 0.5 ⁰
The aircraft length	n/a	n/a	___ m D_{1-14}	___ m	7.31± 0.02 m
The horizontal empennage arm	n/a	n/a	___ m D_{2-10}	___ m	3.95± 0.01 m
The landing gear tread	n/a	n/a	___ m D_{15-15} (left / right)	___ m	1.94± 0.02 m
The landing gear wheel base	n/a	n/a	___ m D_{15-16}	___ m	1.98± 0.02 m

WARNING: in case of non-compliance of results with the reference data, contact the Manufacturer to decide about further operation of the aircraft.

4.4 Determination of weight and balance

Determination of the aircraft weight and balance is to be performed in the following cases, after:

- ✓ mounting/demounting of any equipment, whose weight exceeds 5 kg;
- ✓ painting of the aircraft;
- ✓ base maintenance;
- ✓ on the pilot's demand.

The operation should be performed inside a hangar or on an open site with a level hard surface (in still air and in the absence of any precipitation).

NOTE: when determining the weight and balance, do not perform any other other operations on the aircraft, do not apply loads to the surface of the aircraft. This will result in incorrect results.

Use any calibrated scales with a range up to 150 kgf (3 pcs.), a leveling unit or level with a base of above 3 m (to assess the levelness of the ground), a 10 m measuring tape, builder's plumb bob, a marker (not included into the set).

Perform the actions below:

- ✓ Check the levelness of the ground using a spirit level (it should be horizontal);
- ✓ Defuel the aircraft, except for the minimum remain fuel on board;
- ✓ Remove from the cabin, baggage compartment, "glove compartment" all foreign objects, ground and transportation equipment, close the door and baggage compartment;
- ✓ Enter into the Aircraft Maintenance Records a list of installed items and the amount of working fluids (oil, coolant and hydraulic fluid);
- ✓ Clean and wash the aircraft (as per the section 4.10);
- ✓ Place the scales on the ground, set the "kg" measurement units to zero;
- ✓ Roll the aircraft onto the scales, and enter into the Aircraft Maintenance Manual the weight read out for EACH landing gear;
- ✓ Determine the horizontal distance between the propeller spinner tip and the wheel axles of the nose and main landing gears with actual weight of the aircraft as per the diagram, and enter this data into the Aircraft Maintenance Manual;

NOTE: it is required to measure these distances at each weighing, since they depend on the aircraft weight and balance, charging and the condition of the shock strut piston. The use of statistical or previous data may result in a CG calculation error up to 3% of MAC

- ✓ Perform the calculation of the weight and balance by using the method of moments relative to the propeller spinner, using any calculator, enter the results in the Aircraft Maintenance Manual and compare them with the reference data.

The section "Determination of weight and CG" of the Aircraft Maintenance Manual contains the following values (the weight with an accuracy of 0.1 kg, the distance with an accuracy of 0.01 m):

Parameter (designation of value, formula for calculation)	Measure ment	Calc.	Standard
Weight for the nose landing gear (m_N)	___ kg	n/a	n/a
Weight for the left main landing gear (m_L)	___ kg	n/a	n/a
Weight for the right main landing gear (m_R)	___ kg	n/a	n/a
Weight of the aircraft : $m_{PL} = m_N + m_L + m_R$	n/a	___ kg	380±10 * kg
Distance between the spinner and the axis of the nose landing gear (D_N)	___ m	n/a	n/a
Distance between the spinner and the axis of the left main landing gear (D_L)	___ m	n/a	n/a
Distance between the spinner and the axis of the right main landing gear (D_R)	___ m	n/a	-
CG: $X_t = \left\{ \frac{(m_L + m_R) * \frac{(D_L + D_R)}{2} + m_N * D_N}{m_{PL}} - 2.24 \right\} / \left(\frac{1.17}{100} \right)$	n/a	___ %	17.6± 1 %

* - depending on the interior furnishings

WARNING: in case of divergence of the results with the reference data, contact the Manufacturer to make a decision about corrective actions (displacement equipment, placing additional ballast, etc.).

The weighing configuration of the aircraft should be also specified in the section "Determination of mass and CG" of the Aircraft Maintenance Manual:

Part	Weight, kg	Distance to CG, m	Effect on CG, %	Actually established
Propeller (its set as per 2.7.2)	6.0	0.20	-3.0	
Engine (its set as per of 2.7.1)	35.0	0.65	-12.8	
Hydraulic unit	4.0	0.85	-1.4	
Engine oil	3.0	0.65	-1.2	
Engine coolant	5.0	0.80	-1.8	
Hydraulic unit working fluid	2.0	1.00	-0.6	
Undrainable (trapped) fuel	5.0	3.34	+1.3	
Storage battery	1.5	0.95	-0.5	
Cabin interior	20.0	2.30	0.0	
The inner upholstering of the luggage comp.	2.0	3.96	+0.8	
Rescue system	25.0	3.73	+8.2	
Fire extinguisher	2.0	2.30	0.0	
First aid kit	1.0	3.00	+0.1	
Transponder	1.0	3.42	+0.3	
Ballast in the ventral fin	16.0	6.60	+16.2	
Parking chock (2 pcs.)	2.0	4.00	+0.6	
Tow bar (1 piece)	2.0	4.00	+0.6	
Mooring (tie-down) rope	2.0	4.00	+0.6	
ACS detent (1 piece)	1.0	4.00	+0.3	
Glazing cover (1 piece)	2.0	4.00	+0.6	
Propeller blade cover	1.0	4.00	+0.3	
Air intake plugs	0.5	4.00	+0.1	

4.5 Parking and mooring

Short-term (up to 4 hours) and long-term (up to 2 days) parking is allowed. The storage in hangar is mandatory In case of more extended period as per the part 3.4.

4.5.1 Short-time parking

Short-time parking is allowed without mooring the aircraft, if no likely significant precipitation and a wind speed exceeding 5 m/s are forecast.

NOTE: do not leave the doors open to preclude their damaging in the event of their sharp closure by a gust of wind.

Minimum actions required to be performed:

- ✓ Chock the main landing gear wheels
- ✓ Cover the Pitot tube.

4.5.2 Long-term parking

Mooring and covering of the aircraft are mandatory the minimum overall dimensions are presented in the image of the part 2.12.2

NOTE: take into account the prevailing wind direction in the mooring area. The aircraft should be positioned facing the wind to preclude its damaging in case of strong wind.

Required steps:

- ✓ Examine the parking lot (it must be a dry level ground with properly secured anchoring fittings);
- ✓ Choose the direction of parking (facing the wind) and position the aircraft on the parking lot;
- ✓ Chock the nose and main landing gear wheels;
- ✓ Place the cover on Pitot probe;
- ✓ Moor (tie-down) the aircraft with ropes from the respective set;
- ✓ Place the ACS detent;
- ✓ Place the engine compartment air intake plugs.
- ✓ Place the cover on windshield;
- ✓ Place the covers on the propeller blades;
- ✓ Affix the seals to cowlings, doors, baggage and battery compartment hatches-door (if needed).

4.6 Refueling aircraft and work fluids

Use only the fuel, oil and working fluids listed in the part 3.3.

CAUTION: When refueling the aircraft, and refilling it with working fluids, make sure of the absence of any open flame, smoking, heating appliances within the range below 20 m, and proper ventilation of the area. It is strictly forbidden to refuel the aircraft and refill its working fluids with the engine running and the aircraft power supply turned on.

4.6.1 Refilling with working fluids:

- ✓ Refilling the engine with oil, TC 072.03;
- ✓ Refilling with coolant, TC 072.05;
- ✓ Refilling the hydraulic system, TC 029.02;
- ✓ Refilling the wheel brake system, TC 032.03;
- ✓ De-charging landing gear shock struts, TC 032.03.

4.6.2 Refueling

To be performed manually, exclusively through the wing tank refueling port, using 20-liter containers (canister) and funnels with a strainer (coarse filter) and water separating fuel filter (not included into the aircraft ground equipment).

Upon completion of refueling, lock the refueling tank port tightly to match the red lines on the refueling port assembly and wing panels, check the condition of the refueling port of leak (the hole must be clean).

In case of spilling fuel leakage on the wing-box panel, wipe it with a dry cloth.

Fuel quantity to be followed up by counting the number of containers (canister) and the fuel indicator readouts after activating the flight navigation system.

The quantity of fuel is assessed by the pilot, based on the route, flight duration, weather forecast, number of occupants and the amount of baggage.

CAUTION: the quantity of fuel aboard should tally with the quantity assessed by the pilot, the permissible error is about ± 5 liters.

The sediment should be drained in 5...10 minutes following the refueling. This is to be performed through a drain hole under the fuselage, in any clean transparent container (not included in the ground equipment set).

CAUTION: the presence of solid mechanical particles, water, ice crystals in the sediment is not admissible

4.7 Crew boarding and baggage compartment loading

Loading of the baggage compartment to be performed through the baggage compartment hatch-door. If the flight plan envisages staying at other aerodrome, all the ground equipment intended for short-term parking (about 2 days) of the aircraft, should be stowed in the baggage compartment (as per the part 2.12.2).

CAUTION: all baggage must be mooring to preclude its displacement in flight. Unattached baggage may cause a critical CG deviation, the loss of the aircraft controllability and damaging the fuel system elements.

Check the “glove compartment” in the cabin and the armrest compartment (cell) for the absence of flammable agents. The AMM, Aircraft Maintenance Manual, aircraft documents, other small items should be stowed in the “glove compartment”, while in the armrest compartment (cell) there should be kept only AFM and spare pressure bottles for the emergency landing gear extension.

CAUTION: accommodation of crew and baggage should be performed only in compliance with the options defined by the AFM.

The left pilot should access the aircraft first, then the other crew member. All the occupants access the cabin on the left and right sides behind the wing, stepping on special footrests and anti-slip strips on the center wing section fillets.

WARNING: it is strictly forbidden to step on the flap and wing-box panel in order to avoid their damaging. Special markings are provided thereon to caution the occupants (see part 2.13).

Exiting the aircraft and unloading of the baggage compartment after the flight should be performed in reverse sequence.

4.8 Aircraft towing and taxiing

Towing the aircraft is permitted with any weight thereof and any surface condition, at any wind speed (within the operating limits and aerodrome conditions specified by the AFM).

Towing should be performed at a speed of up to 5 km/h, manually, by two persons, using a tow bar from the ground equipment set, attached to the nose wheel axle.

Before towing, make sure that the wheels are unchocked, there are no objects on the surface that can obstruct the movement of the wheels in the intended direction.

When the aircraft clears the hangar doorway or other obstacles, the person handling the tow bar, should carefully observe the passage of the wing-box panels, empennage (widthwise) and fin (heightwise).

The heading of the aircraft should be directed by swivelling the nose landing gear with the tow bar.

WARNING: When towing, do not apply any force to the propeller blades, control surfaces, flaps, hatches and doors to avoid their damaging. If it is needed to make a sharp turn with a radius below 10 m, or to clear an overhanging obstacle, which poses a risk of damaging the fin, push the tail slightly down to raise the nose landing gear and complete the maneuver.

If the distance of moving the aircraft exceeds 200 m, it is preferable to perform the movement of the aircraft by taxiing, with the engine running.

Taxiing with the engine running is allowed with any weight of the aircraft, and surface condition, at any wind speed (within the operating limits and aerodrome conditions specified by the AFM).

Taxiing should be performed at a speed below 20 km/h.

NOTE: 1. Radius of turn-on for 180° when taxiing equals to 15 m and 10 m, without and with asymmetric wheel braking, respectively.
2. When the wind speed exceeds 5 m/s, consider the increase in radius by 2 m when turn-on into the wind.
3. When taxiing on a precipitation affected surface, consider the increase in radius by 1 m.

4.9 Engine run-up

Start up and shut down the engine in conformity with the procedures described in part 4.2 of AFM.

When running, monitoring the engine parameters following the operating limitations as per the part 3.3.

CAUTION: when performing ground run-up, it is strictly forbidden to attain high engine power settings (TCL more than 50% and more than 2900 rpm on the VPP speed selector) independently of the condition of the parking lot surface, unless the aircraft is attached to any strong immovable support, since it may cause a spontaneous movement of the aircraft, which cannot be stopped by the brakes or “jumping” the parking chocks.

Attaching of the aircraft to a strong fixed support during the ground run-up with high engine power settings, exceeding 50% of the throttle control lever, should be performed by tying up the main landing gear with mooring ropes from the ground equipment set.

4.10 Aircraft cleaning and washing

The presence of dirt, insects, ice on the propeller, wing-box panels and stabilizer can significantly increase fuel consumption, impair the controllability of the aircraft and reduce the aircraft stall margin or even result in a sharp asymmetrical wing drop at operating speeds.

Contamination of the Pitot tube may result in erroneous indications of the primary flight parameters: air speed, pressure altitude and angle of attack.

Contamination of the windshield may result in deterioration of the visibility outside the cabin and thus complicate the flight conditions.

Contamination of the landing gear may result in an inability to retract or extend the affected landing gear in flight (especially at ambient temperatures below 0°C when the mud freezes and disables the extension of landing gears in flight by means of both primary and emergency systems).

Contamination of the air intakes may result in engine overheating and its instable operation, as well as the ingress of contaminated air into the cabin.

All these factors directly or indirectly affect the safety of flight, therefore it is mandatory to keep the aircraft clean.

Dirt, dust, insects, ice and traces of fuel and oil leaks, should be removed with a soft cotton cloth and warm water, the use of any household detergent is allowed.

WARNING: the out side surfaces of the aircraft, almost entirely consisting of painted composite materials, as well as polycarbonate windshield, should not be washed with gasoline, acetone or similar aggressive fluids. This may cause clouding of the windshield and deterioration of the paint coating. Do not wipe the windshield with a dry cloth, since it may have an abrasive effect. Avoid direct ingress of water into the Pitot tube.

It is preferable to remove the dirt from the baggage compartment using a vacuum cleaner.

It is not recommended to use paper, wool or silk cloth, since they may induce an electrostatic charge and attract dust to the cleaned surface.

Removing corrosion from the metal parts in the engine compartment, as well as from the wheel discs, brakes, shock absorbers and landing gear retract cylinders should be carried out with fine abrasive paper and polishing with a cotton swab moistened with gasoline. It is allowed to apply touch-up paint to the engine mount assembly.

4.11 Minor repairs to the aircraft covering

It is allowed to perform minor repairs to the aircraft covering (skin) if the damage surface does not exceed 5 cm² or the damaged areas are not located closer than 2 cm to the structural members and the elements of crucial importance (wing-box panel and stabilizer spar, spar casing and all the fuselage frames, landing gear struts, landing gear fitting assembly, flaps and control surfaces, control system pull-rods and crankbells).

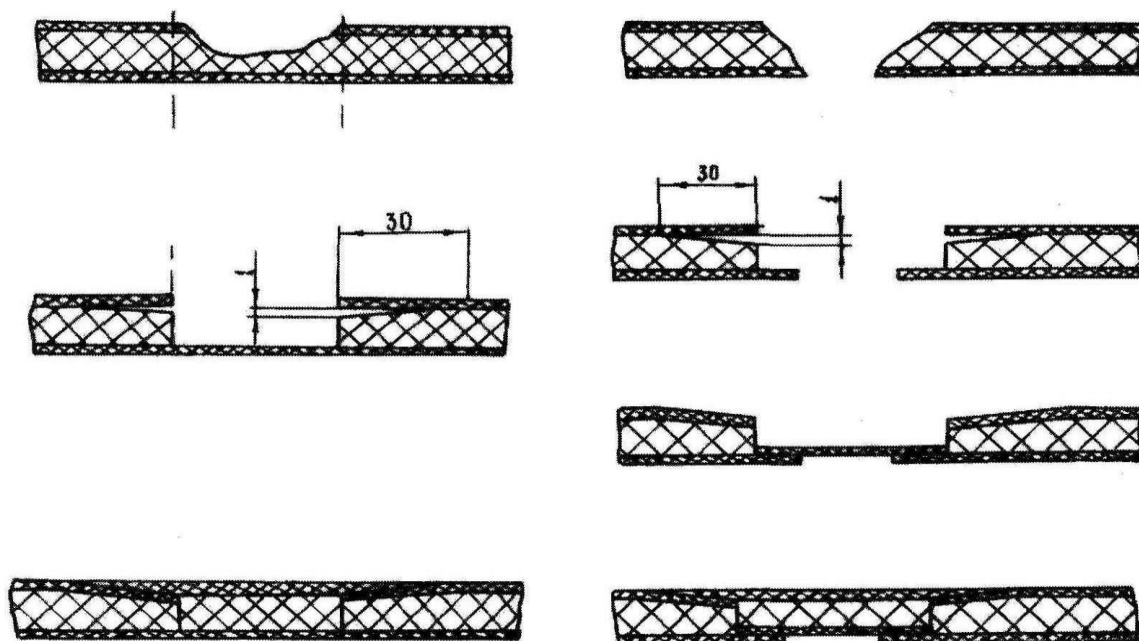
To be used the following adhesive composition: ED-20 GOST 10578-84 epoxy resin or similar, 10% plasticized, in a mixture with PEPA hardener or similar with a ratio of 8: 1.

Required tools and materials (not included into the supply set): a cutter, fine abrasive paper, carbon fabric with a density of 100 g/m², foam core with a density of 80 g/m² 3 mm thick, putty, paint of the appropriate color.

4.11.1 Repairing of "sandwich"- type covering(skin).

In case of a superficial (non-through) damage:

- ✓ -round off the edges of the damaged area with abrasive paper;
- ✓ -trim away and remove the foam core from the damaged area with the cutter;
- ✓ -glue in a foam core insert as shown in the diagram below;
- ✓ -glue the outer skin (covering) as shown in the diagram below;
- ✓ -polish the edges of the skin (covering) with a fine abrasive paper;
- ✓ -putty and paint the damaged area.



Поверхностное повреждение

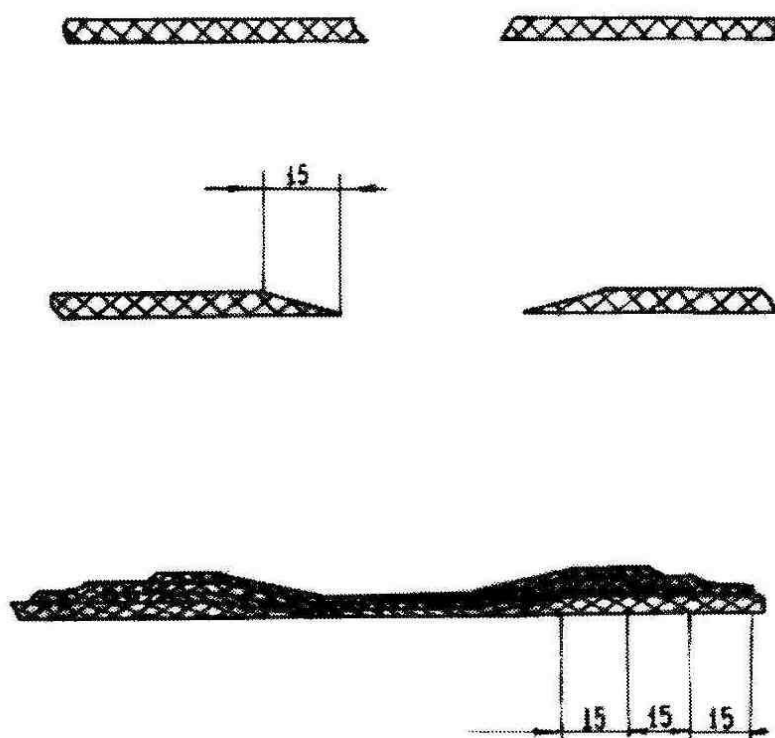
Сквозное повреждение

In case of a through damage the repair is similar, but before gluing a foam core insert, fix the damaged area from the inside with an additional figure, as shown in the diagram above.

4.11.2 Repair of a single-lamination covering.

In case of damage do the following:

- ✓ round off the edges of the damaged area with abrasive paper;
- ✓ chamfer it with a abrasive paper 20... 30 times wider than the thickness of the covering, as shown in the diagram below;
- ✓ seal the skin (covering) with 3 lamination of fiberglass;
- ✓ smooth the edges of the skin (covering) out with fine abrasive paper;
- ✓ putty and paint the damaged area.



4.12 Adjustment Instrument equipment

4.12.1 Signing up as Dynon SW1100 system user

After installation the Dynon SW1100 system, each individual user must sign up at the official Dynon Avionics portal <http://register.dynonavionics.com> to confirm the ownership of the equipment, to receive the relevant system updates and service bulletins.

4.12.2 Dynon SW1100 system software updating

The Dynon SW1100 system has factory software settings, but it must be updated via the following link <http://downloads.dynonavionics.com> after the initial installation of the system or replacement of the system elements (see 2.10.1).

Software updating should be performed for each display separately.

Updates are downloaded to the system via a regular USB storage device of FAT32 format, checked for viruses. This storage device is first used to download updates from any personal computer connected to the Internet as per the above link, and then to be connected to the Dynon SW1100 onboard system via a USB connector in the cabin “glove-box compartment” (see 2.10.1).

To enter the main menu, press simultaneously the buttons 7,8 below the system display for 2... 3 seconds. It is necessary to specify the registration number of the ANG-01 aircraft (without dashes and spaces) or its MSN if the registration has not yet been completed.

To restart the display, press simultaneously the buttons 1,2,5 below the system display for 2...3 seconds.

4.12.3 Dynon SW1100 system setup

To control the SkyView on-board network, one display is automatically designated as "Master" and the other one as "Standby". If the "Master" display fails, the "Standby" display automatically becomes "Master".

The displays have the incorporated brightness control, but a manual adjustment is possible separately by means of a knob on the bottom left of each display.

Unit of measurement setup: "SYSTEM SETUP> UNIT".

The actions in the system setup menu "SYSTEM SETUP" are presented on display, they are intuitive to any personal computer user having a basic knowledge of English and do not require additional explanations:

The recommended arrangement of the flight, navigation information scales as well as the engine fuel system information (the screen display) on the both system displays is provided in the part 2.10.1.

The user may prefer another screen layout, which can be modified by means of the "SYSTEM SETUP> PDF PAGE" and "SYSTEM SETUP> ENGINE PAGE" "SYSTEM SETUP> MAP PAGE" setup menus, respectively.

4.12.4 The speed calibration of ADAHRS and redundant (backup) instrument Calibration of speed sensors means the calculation of calibrated airspeed (CAS) by correcting airspeed for instrument error (ΔV_i) and aerodynamic (ΔV_a) error, since all operating limitations are specified in AFM in $CAS = AS - \Delta V_a - \Delta V_i$.

The instrument error depends on the type of sensors (of the primary and secondary ADAHRS and redundant mechanical instrument).

The aerodynamic error depends on the type of Pitot tube, its position on the aircraft (local aerodynamics) and the angle of attack, it does not depend on the type of sensors. The aerodynamic error is determined by the Manufacturer in the course of flight tests of the ANG-01 type aircraft and amounts to:

AS, km/ h	40	80	120	150	200	250	300	350
ΔV_a , kmh	15	10	2	0	0	-2	-5	-10

Calibration should be performed using the following technique:

- ✓ Position the aircraft in a hangar or outdoors (if the air is still);

NOTE: if the difference of ambient temperature outside and inside of the hangar exceeds 15°C (if the procedure is being carried out in the hangar), the calibration should be performed at least in 30 minutes, since the ADAHRS sensors are subject to temperature compensation. Otherwise there may occur an error of up to 5 km/h.

- ✓ Connect the master speed setter (KPU-3 combined test unit with a verified speedometer or any other calibrated speed setter with a range of up to 350 km/h) directly to the Pitot tube, stop the static pressure holes with the setter nozzle or insulating tape of a conspicuous color, to be sure to remove it after calibration;
- ✓ Activate the Dynon SW1100 system using the ground power supply;
- ✓ Set the speed by means of the master speed setter, increasing and decreasing it according to the table above, maintain an unchangeable speed interval for at least 30 seconds. Record readings simultaneously for the primary and secondary displays of the Dynon system (speed readouts of the primary and secondary ADAHRS respectively) as well as those of the redundant mechanical instrument.

CAUTION: if the speed readings of the reference setter drop down at the unchangeable interval, it means that the system is unpressurized. It is needed to detect the cause of this leakage and re-check it. Flying with an unpressurized system is **PROHIBITED**.

- ✓ Compute the CAS for the primary and secondary ADAHRS and redundant mechanical instrument by the formula above;

- ✓ Draft the CAS graph as function of the AS and the total of dVi, dVa for the redundant instrument. Place it on a placard as per the part 2.13.
- ✓ Enter the CAS graph as function of the AS and the total of dVi, dVa for the primary ADAHRS into the primary display, following the recommendations of the menu "SETUP> CALIBRATION> AirSPEED";
- ✓ Enter the CAS graph as function of the AS and the total of dVi, dVa for the secondary ADAHRS into the primary display, following the recommendations of the menu "SETUP> CALIBRATION> AirSPEED";
- ✓ Repeat setting of speed by means of the master speed setter, increasing and decreasing it, according to the table above.
- ✓ The criterion for successful calibration is the condition when the speed readouts of the primary and secondary displays, as well as those of the redundant (backup) mechanical instrument will differ only by a value of aerodynamic correction.

4.12.5 Calibration of the ADAHRS gyroscopes and accelerometers

Calibration should be performed using the following technique:

Level the aircraft as per the recommendations of the part 4.3;

WARNING: place the aircraft either in a hangar or outdoors (if the weather conditions are calm), avoiding the effect of wind. Do not change the position of the aircraft in the course of the calibration, do not stay in the cabin and do not apply any significant physical force to the aircraft. All this may result in a calibration error. It is desirable to combine the calibration with leveling of the aircraft.

- ✓ Activate the Dynon SW1100 system using a ground power source;
- ✓ Follow the recommendations of the menu "SETUP> HARDWARE> AHRS> CALIBRATION" by pressing the associated symbols on the display.

The criterion for successful data update will be the condition when the aircraft is in the level position, and the readouts of roll and pitch on the display are $\pm 1^\circ$, vertical load factor is $1.0g \pm 0.05g$, as well as the alignment with the horizontal line (attitude).

CAUTION: if the ADAHRS unit is installed upside down, the blue arc of the attitude indicator will be at the bottom and the brown arc will be at the top. It is necessary to return the ADAHRS to its appropriate position, otherwise in case of engagement of the autopilot in flight, it will attempt to overturn the plane via the roll control and this maneuver may be extremely dangerous without timely intervention

of the pilot. This applies to both the primary and secondary ADAHRS units.

4.12.6 Calibration of ADAHRS magnetometers of the Dynon SW1100 system
Calibration should be performed using the following techniques:

- ✓ Position the aircraft in an open space with its nose pointed to the NORTH (use the redundant aircraft compass);

WARNING: the aircraft must be located at least 20 m away from heavy and bulky metal structures to preclude their magnetic effect.

- ✓ Activate the Dynon SW1100 system as per normal procedure;
- ✓ Start up the engine as per normal procedure, maintain the idle operating condition;

WARNING: the calibration to be performed with operating engine in order to take into account its electromagnetic effect on the compass readings.

Keep turning the aircraft on the spot (by the wing) to the EAST, SOUTH, WEST and reversely, using the redundant compass. Follow the recommendations of the menu "SETUP> HARDWARE> COMPASS> CALIBRATIO" in each direction by pressing the associated virtual buttons on the display.

The criterion for successful data update will be the compliance of the magnetic heading on the display with that of the redundant on-board compass with an accuracy no less than $\pm 2^\circ$.

4.12.7 Calibration of the GNSS

The tab "GPS FIX STATUS" identifies the navigation information from the GNSS portion of the system, which the system uses for determining the current position, movement of the map on the display, synthetic vision system and for performing the calculations of drift, direction and speed of wind.

To ensure correct operation of the system, it is required to regularly update this status (to calibrate the GNSS), as well as to install Jeppesen airfield databases.

Calibration should be performed using the following techniques:

- ✓ Position the aircraft immovably in an open space;
- ✓ Activate the Dynon SW1100 system using a ground power source;
- ✓ Update the current data via the "GPS FIX STATUS" menu.

The criterion for successful data update will be the correct position of the aircraft on the map, zero GS, the absence of the "NO GPS FIX" alert.

4.12.8 Calibration of the Dynon SW1100 system autopilot servo-activator.

Calibration should be performed using the following techniques:

- ✓ Position the aircraft immovably;
- ✓ Activate the Dynon SW1000 system using a ground power source;
- ✓ Follow the recommendations of the "SETUP> HARDWARE> APSERVO> CALIBRATIO" menu, performing sequential deflection of the ACS for pitch and roll to its end positions and enter in each position of the control stick the position of the servos by pressing the appropriate virtual buttons on the display.

The criterion for successful calibration will be the autopilot status on the display.

4.12.9 Calibration of the fuel gauge

Calibration should be performed using the following techniques:

- ✓ Activate the Dynon SW1000 system using a ground power source;
- ✓ Level the aircraft approximately as per the ADAHRS readings (pitch and roll deviation of $\pm 2^\circ$ is allowed);
- ✓ Top off the fuel system with GASOLINE through the left and right tank necks. Refuelling should be performed using a 20L measuring container (jerrican), counting the number thereof;
- ✓ Enter the calculated maximum amount of gasoline into the system, following the recommendations of the menu "SETUP> HARDWARE> FUEL_MAX> CALIBRATIO" by pressing the virtual buttons on the display;
- ✓ Enter into the system a value of 20L, which should correspond to 0L as per the indication of the Dynon SW1100 system, following the recommendations of the "SETUP>HARDWARE>FUEL_MIN> CALIBRATIO" menu by pressing the virtual buttons on the display.

NOTE: 20 liters is a minimum amount of fuel which gives the first signs of unstable engine operation(failure engine) in level flight at a requisite power setting.

The criterion for successful calibration will be the correct fuel gauge readings that tally with minimum and maximum amount of fuel.

PART 5. MAINTENANCE PROGRAM

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Introduction

The present maintenance program is a main operational document specifying the ANG-01 aircraft systems subject to maintenance, as well as the scope and frequency of their maintenance.

The maintenance program is developed to ensure the airworthiness of the aircraft type ANG-01 in the course of maintenance work. The maintenance program defines the responsibility and the procedure for ensuring the maintenance of aircraft by the owner, as well as the types, frequency and scope of maintenance operations, whose timely execution ensures a needed operational level of reliability and flight readiness of the aircraft.

The maintenance program does not comprise the execution of supplementary Airworthiness Directives (AD) issued by the CAA of the country of registration of the ANG-01 type aircraft.

The maintenance program does not comprise the execution of additional Service Bulletins (SB) issued by the Manufacturers of the engine, propeller, Dynon SW1100 system, parachute rescue system (these SB should be followed up independently on the Manufacturers' websites):

- ✓ Engine manufacturer <http://www.flyrotax.com>;
- ✓ Air propeller manufacturer <http://www.s-prop.com.ua>;
- ✓ Manufacturer of the Dynon SW1100 <http://www.dynonavionics.com>;
- ✓ Manufacturer of the rescue system <http://www.galaxysky.cz>

The maintenance perform techniques are ref. in a form of Task Cards.

5.1 Periodicity for maintenance

5.1.1 Periodicity for pre-flight inspection:

- ✓ for ensuring the first flight and the consecutive flights of the day. The inspection should be made before the first flight of the day as close as practicable to the intended departure time.

5.1.2 Periodicity for line maintenance:

- ✓ A-Check is performed once, following **20±1** flight hours, or following **20±1** flights, or following 1 month of the aircraft calendar life (depending what occurs earlier);
- ✓ B-Check is performed once, following **100 ± 10** hours of flight, or following 100 ± 10 flights, or following half a year of the aircraft calendar life (depending what occurs earlier);

5.1.3 Periodicity (interval) for base maintenance

- ✓ C-Check is performed once, following **500 ± 10** hours of flight, or following 500 ± 10 flights, or following 2 years of the aircraft calendar life (depending what occurs earlier);
- ✓ after occurrence of specific situations in flight (section 5 of AFM);
- ✓ following an evident damage to the aircraft;
- ✓ in the cases defined in the table to the part 0.

5.1.4 Record keeping of the maintenance work periodically:

Record keeping of accumulated operating time and calendar life time is to be performed in the Aircraft Maintenance Manual.

Perform a B-Check instead of each 5th A-Check (the former overlaps the scope of work).

Perform a C-Check instead of each 5th B-Check (the former overlaps the scope of work).

According to the pilot's decision, certain A-Check or B-Check TCs may be performed prior to complicated flights. In this case, the record keeping of accumulated operating time is not altered.

5.2 General requirements to the organization of maintenance

All work to be performed using the tools, materials and equipment recommended in the PART 6.

Responsibility for the execution of maintenance work rests directly with the person executing it.

All forms of maintenance should be executed in a warm space, in any base, in the absence of direct precipitation.

After completing the A-Check, B-Check and C-Check activities it is required to make appropriate entries into the Aircraft Maintenance Logbook.

The Task Card number, if available, begins with the System Code. The standardized number system are used.

The column "Codes of Activities" indicates the minimum labour input for each type of activity (in fractions).

The activities should be performed in the following sequence.

5.3 Task codes and their meaning

Task Card number begins with a System Code. The following standardized numbers are used:

- 008. - Leveling and weighing;
- 010. - Parking/ mooring /storage
- 011. - Placards and markings
- 012. - Servicing
- 020. - Standard practices
- 024. - Electrical power
- 025. - Equipment/Furnishings
- 027. - Aircraft control system;
- 028. - Fuel system;
- 029. - Hydraulic system;
- 031. - Indicating/recording System
- 032. - Landing gear;
- 034. - Navigational.
- 051. - Structures&Standard Practices
- 052. - Doors/Hatches
- 061. - Aircraft propeller;
- 072. - Piston engine;
- 101. - Rescue system.

All activities are divided into three types:

- ✓ Condition monitoring;
- ✓ Maintenance Manual Technology
- ✓ Maintaining the aircraft in serviceable condition and restoring its serviceability

Each type of activity is divided into groups as per the commonality of techniques. Standardized codes of activities are used:

Condition monitoring

- 110 - Visual check without use of tools;
- 112 - Special check. It is performed to verify the absence of: deterioration, dents, deformations or other mechanical damage, delamination of covering, corrosion and contamination, deterioration of electrical insulation, electrical connections;
- 113 - Special visual check of the aircraft control system. It is performed to verify: Free movement of the control surfaces from stop-to-stop positions, correct position of the control elements, the absence of their damage;
- 140 - Checking for proper functioning of systems and equipment by the on-board means;
- 163 - Measurement of electromagnetic values;
- 164 - Measurement of mechanical forces, backlashes (plays), geometric dimensions;
- 165 - Measurement of fluid level;
- 198 - Weight (leveling) control;

Maintenance Manual Technology

- 220 - Cleaning;
- 228 - Purging (blowing-through);
- 231 - Removal of plugs (caps), covers, detents, chocks, etc .;
- 234 - Activation of the systems and equipment
- 235 - Installation and demounting of units;
- 236 - Opening and closing the hatches;
- 237 - Perform documents;
- 243 - Removal of batteries, equipment;

Support the aircraft in service condition and restoring of its serviceability .

- 301 - Tightening of bolted joints;
- 304 - Adjustment of mechanical forces, backlashes, gaps, mutual position of the elements;
- 311 - Replacement of units upon the end of their operational limit (TBO);
- 312 - Fluid replacement;
- 321 - Renovation of a protective covering in the areas of damage;
- 341 - Minor repairs to structural elements without disassembly .
- 343 - Medium repair by renovation or replacement

5.4 List of maintenance activities to followed by functional check flight

- ✓ Engine replacement.
- ✓ Replacement of engine units.
- ✓ Replacement of the aircraft propeller.
- ✓ Replacement of instrumentation equipment (as listed in 2.10.1 and 2.10.3)

5.5 Safety action at aircraft maintenance check

5.5.1 Prior to inspection and maintenance, it is imperative to take all precautionary measures intended to protect the technical personnel against electric shock, inadvertent start engine, to preclude injuring the technical personnel directly involved in the work, as well as other persons and animals in the proximity.

5.5.2 Performing any activities with running engine is FORBIDDEN.

5.5.3 Performing the aircraft maintenance check, the activation (switch on) of the equipment in case of any visually noticeable mechanical, thermal, electrical or chemical deterioration thereof is PROHIBITED.

5.5.4 Smoking, making open flame, use of heating devices and flammable substances at a distance less than 20 m to the area of maintenance activities is PROHIBITED.

5.5.5 In the event of a fire accident due to a short circuit of any nature, it is FORBIDDEN to extinguish it with water. If possible, put out the flame by any mechanical means, switch off the power and use a fire extinguisher.

5.5.6 Starting the engine is allowed only upon giving the order "CLEAR PROP!"

5.5.7 When starting the engine, staying of the crew members, other persons and animals in the propeller disc plane within a range below 10 m is PROHIBITED.

5.5.8 When starting the engine, take into account the direction and speed of wind and a probability of wind gusts.

5.5.9 Perform maintenance check in the conditions of an intensive thunderstorm is PROHIBITED.

5.6 Pre-flight Inspection

Total duration of activities performed by one person does not exceed 30 minutes.

Task card	The name of the item being worked on <i>Type of activity</i>	Code/time rate (min.)	Tool	Criteria of compliance (in case of non-compliance make an entry into the AMR, sect. 9)
010.01	Covers and plugs (caps), parking chock <i>Demounting</i>	231 / 1.0	-	All covers and plugs are removed. Chocks were installed.
061.01	Aircraft propeller. <i>Thorough examination</i> <i>Free play/backlash (hand effort)</i>	112 / 0.1 164 / 0.2	-	Damage and backlash (play) not exceeding those specified in 0. Oil leaks are absent. The spinner is secured. The clearance between the slip ring, spinner and each blade is not less than 5 mm
072.01	Engine and its items: injector, intercooler, turbine, fuel rail, reduction gearbox, starter, fuel/oil/air filters, intercooler damper, oil and water radiators, throttle cables and dampers. <i>Demounting of the top cowling</i> <i>Thorough examination</i> <i>Backlash/free play (hand effort)</i> <i>Measurement of the amount of fluid (oil, water)</i>	236/0.5 112/2.0 164/0.2 165/2.0	Screwdriver	The leakage of fuel, oil, coolant is absent. Air filter, radiators are clean. The cable is free of sagging. Cowlings are without any evident thermal effects. The items are properly secured. Engine mount rubber pads are not deteriorated. The absence of any burnt wiring smell. The terminals of the VPP contactor match with the spinner slip ring paths
029.01	Hydraulic system and its items: Hydraulic fluid level and LG brake fluid level <i>Thorough examination</i> <i>Backlash (hand effort)</i> <i>Measurement of the amount of fluid</i> <i>Remounting of the top cowling</i>	112 / 2.0 164 / 0.2 165 / 2.0 236 / 0.5	Screwdriver	The leakage of hydraulic fluid and LG brake fluid is absent. Fluid level is normal (in reservoirs). The units are secured. The absence of burnt wire smell.
024.01	Battery. <i>Thorough visual check</i> <i>Backlash/free play (Free Play) (hand effort)</i>	112 / 0.5 164 / 0.5	-	The battery is available, integral and connected. The backlash (play) is absent. The compartment hatch is closed. The Dynon voltage is $\geq 11V$
027.01	Control surfaces, flaps, rudder trim tab, elevator trim tab. <i>Special visual inspection check</i> <i>Backlash/free play (hand effort)</i> <i>Stop-to-stop deflections</i>	113 / 2.0 164 / 0.5 140 / 0.5	-	All control surfaces are available, integral. Backlashes (play) do not exceed those specified in 3.2.1, 3.2.2. Absence of chafing.
052.01	Doors and hatches, cowlings <i>Visual check</i> <i>Backlash/free check (hand effort)</i>	110/0.1 164/0.5	-	Everything is available and integral. There are no backlashes (plays). Door glazing undamaged. Hatches and cowlings are closed.
051.01	Wing panels, stabilizer, fuselage. <i>Thorough visual inspection check</i> <i>Backlash/free play (hand effort)</i> <i>Tapping (by hand)</i>	112 / 2.0 164 / 0.5 113 / 1.0	-	Everything is available and integral. There are no backlashes. The paint coating and glazing are undamaged. The delamination of covering is absent (a dull sound when tapping by hand) ANL, strobes, headlights are secured and undamaged

Task card	The name of the item being worked on <i>Type of activity</i>	Code/time rate (min.)	Tool	Criteria of compliance (in case of non-compliance make an entry into the AMR, sect. 9)
032.01	Landing gears, brakes: Landing gears, shock struts, LG extension/retraction cylinders, wheel discs and tires, hoses and brake pads. <i>Thorough visual inspection check</i> <i>Backlash/free play (hand effort)</i>	112 / 1.0 164 / 0.1	-	The landing gear legs are undamaged, there is no soiling and corrosion of the brakes, shock-struts, cylinders. The play of LG legs, cylinders is absent. Shock struts do not have any signs of oil leakage. Clearance between LG and tires is ≥ 3 mm. Wheel turn marks matching. The tires are inflated, the bulges, deep wear to the cord are absent
034.01	Instrumentation: Dynon system, redundant flight instruments, radio set, intercom, variable pitch propeller, flap control boards, toggle switches, automatic circuit breakers <i>Thorough visual inspection check</i> <i>Functionality check</i> <i>Wiping displays with alcohol wipes</i>	112/2.0 140/2.0 220/1.0	Regular Dynon display, regular headsets, wipes	Everything is in place and integral. Absence of any soiling, backlash (play). All circuit breakers are on. Activation of the equipment as per the procedures and sequence described in AFM. Sparkling and smell of burnt wire are absent after activation. Normal operation of annunciator lights Dynon displays show information from all the standard sensors, no errors are indicated. Internal and external communication has been checked (not below 4 by 4 level)
031.01	Pito Probe. <i>Visual inspection check</i> <i>Backlash/free play (hand effort)</i>	110 / 0.1 164 / 0.1	-	It is integral, soiling, water, insects are absent. The holes are clean. The backlash (play) is absent.
028.01	Fuel system: wing-box panel and service tanks, drainage. <i>Visual check</i> <i>Measurement of the fuel quantity</i> <i>Turning off the Dynon system</i>	110 / 0.5 165 / 1.0 140 / 0.1	By the regular Dynon display	Quantity of fuel based on the intended flight duration (checked by Dynon), as per 4.6.2. Soiling, corrosion and fuel leakage through drainage are absent
101.01	Rescue system. <i>Thorough visual inspection check</i>	112 / 0.5	-	The cover and slings are closed. The launching handle safety peg is removed
025.01	Cabin and baggage compartment. <i>Thorough visual check</i>	112/1.0	-	Foreign objects and strange odors are absent. Belts and headsets are available for all crew members. Luggage (if any) is attached. Documents are available and located as intended
072.02	Engine Verification of oil consumption (using oil tank measuring stick)	165/1.0	-	The oil consumption does not exceed that specified in 3.3.1
012.01	Aircraft Maintenance Manual, <i>LogBook</i>	237 / 2.0	Ballpoint pen	Make an entry about the aircraft flight readiness (for a series of flights)

5.7 Line maintenance (A-Check, B-Check)

5.7.1 A-Check

Total duration of activities performed by one person does not exceed 2 hours.

Task card	The name of the item being worked on Type of activity	Code/time rate (min.)	Tool	Criteria of compliance (in case of non-compliance perform C-Check)
051.02	Fuselage, wing panel, stabilizer, cowl covering (skin) <i>Thorough visual check</i>	112/15	-	The cracks, deterioration, bucklings are absent. The paint coating is integral
051.03	Glazing, ANL and strobe fairings <i>Thorough visual check</i>	112/5	-	The cracks and cloudiness, whose sizes exceed that specified in the Annex 3, are absent
061.02	Propeller: spinner, VPP mechanism, blades, bushing, slip ring. <i>Demounting of spinner</i> <i>Thorough visual inspection check</i> <i>Checking for backlash (free play)</i> <i>Verification of thrusting blade angles</i> <i>Verification of blade rate</i> <i>Verification of blade tightening torque</i> <i>Remounting of spinner</i>	235/5 112/5 164/5 140/5 140/5 164/5 235/5	Clinometer, stopwatch, torque wrench	Damage and radial/axial blade flapping (wobbling) not exceeding specified in 0. The oil leakage is absent. The spinner, bushing, VPP mechanism, slip ring are integral, corrosion is absent. Absence of wear and corrosion of the slip ring contact paths. Thrusting blade angles are in conformity with 0. Blade tightening torque is of 10 kg/m.
072.02	Engine and its items: injector, intercooler, turbine, reduction gearbox, starter, oil/air filters, intercooler damper, oil and water radiators, throttle and damper cables, muffler, thermostats, pipelines, collars (clamps), engine mount <i>Demounting of cowlings</i> <i>Thorough visual inspection check</i> <i>Backlash/free play (hand effort)</i> <i>Verification of engine mount fittings' tightening torque</i> <i>Remounting of cowlings</i>	235/5 112/10 164/5 164/5 235/5	Screwdriv er, torque wrench	All items and pipelines, engine collars (clamps) have no traces of corrosion, cracks, paint coating is not deteriorated, absence of any mechanical, thermal, electrical damage. Cables of throttle and intercooler dampers are free of bends and sags. Tightening torques for attachment to the engine mount are of 50 kg/m, the torque of the TCL mounting bolt is of 10 kg/m The collars are securely fastened. Absence of leakage from the cooling system expansion tank. It is properly secured
031.02	Pitot Probe <i>Purging (blowing out)</i> <i>Verification of the heater controller</i>	228/5 140/1	Screwdriv ers, Pressure selector	The system is pressurized. The instrument corrections comply with those specified in section 4.12.4
012.02	Aircraft Maintenance Manual <i>LogBook</i>	237/5	Ballpoint pen	Make an entry about completing the A-Check

5.7.2 B-Check

Total duration of activities performed by two persons does not exceed 8 hours.

Task Card	The name of the item being worked on <i>Type of activity</i>	Code/time rate (min.)	Tools/mate rials	Criteria of compliance (in case of non-compliance perform C-Check)
020.01	Airframe <i>Cleaning of the exterior surface as per 4.10</i> <i>Cleaning of the interior as per 4.10</i>	220/30 220/15	Cloth, water, detergent	The aircraft exterior surface, propeller, landing gear, Pitot Probe are clean
051.04	Strength members of the wing panel and fuselage: spars, frames, spar casing in the fuselage <i>Demounting of hatches from baggage compartment and wing panel</i> <i>Thorough visual inspection check</i> <i>Tapping (slight knocking) of the covering</i> <i>Remounting of hatches to the baggage compartment and wing panel</i>	235/10 112/30 112/30 235/10	Flashlight, screwdriver, socket/torque wrenches	The cracks, deterioration, bulging of the covering near the strength elements are absent. The sound of tapping is dull
027.02	Aircraft control system and high lift devices: ACS, pedals, pull-rods, crankbells, the hinges of control surfaces, rudder trim tab and flap <i>Demounting of hatches from the cabin and luggage compartment</i> <i>Demounting of hatches from the wing panels</i> <i>Demounting of cowlings</i> <i>Demounting of ELV, RDR, ailerons (TC 027.03)</i> <i>Demounting of flaps (TC 027.03)</i> <i>Special inspection check</i> <i>Verification for backlash (free play)</i> <i>Greasing of bearings</i> <i>Remounting of cowlings</i> <i>Remounting of hatches to the wing panels</i> <i>Remounting of ELV, RDR, ailerons (TC 027.03)</i> <i>Remounting of flaps (TC 027.03)</i> <i>Remounting of hatches to the cabin and baggage compartment</i>	235/5 235/5 235/5 235/20 235/20 113/30 164/5 165/30 235/5 235/5 235/20 235/20 235/5	Flashlight, screwdriver, torque wrench	Movement of all control surfaces is free of binding. All pull-rods, bellcranks, hinges of ELV, RDR, aileron, nose LG steering, ELV trim and their locks are undamaged and free of deformation, backlash (play) of the eyelets is absent. All bearings are greased. Backlash (play) of elevator and rudder are within the tolerance as per 3.2.1 Backlash (play) of all pull-rods, bellcranks and their fittings is absent. ACS and pedals of left and right pilots are integral. Limit positions of control surfaces induced by ACS and pedals are as per Помилка! Джерело посилання не знайдено.. The tightening torque of the spring in the ELV channel for the left and right pilots amounts to 5 kg/m
072.03	Engine and its units: oil/air filters, ignition system, oil system. <i>Demounting of cowlings</i> <i>Air filter replacement</i> <i>Oil filter replacement</i> <i>Changing of oil</i> <i>Replacement of spark plugs</i> <i>Examination of engine mount and pads</i> <i>Remounting of cowlings</i>	235/5 311/10 311/15 312/15 311/20 235/5 235/5	Screwdriver, engine oil, air and oil filters, spark plugs	Air and oil filters have been replaced. Spark plugs have been replaced. Oil has been changed
028.02	Fuel system: feed tanks, pipelines, connectors in the wing panels and under the hatch in the passenger sofa, drainage, fuel pumps, fuel filter. <i>Demounting of the baggage compartment panels</i> <i>Demounting of feed tanks</i> <i>Demounting of fuel pumps</i> <i>Demounting of the hatch from the passenger sofa</i> <i>Thorough visual check</i> <i>Remounting of the hatch to the passenger sofa</i> <i>Drainage purging (blowing through)</i> <i>Flushing of fuel pumps</i> <i>Check service tanks for leak</i> <i>Remounting of fuel pumps</i> <i>Remounting of feed tanks</i> <i>Remounting of panels to baggage compartment</i> <i>Demounting of the cowlings</i>	235/5 235/10 235/10 236/5 112/20 236/5 228/10 220/10 228/15 235/10 235/10 235/10 235/5	Screwdriver, fuel filter, 500 cm ³ syringe, alcohol 0.5 L, car pump, pressure gauge	All pipes and connectors are integral, without any chemical or mechanical damage. Fuel filter has been replaced. The drainage has been purged (with a syringe). Fuel pumps have been cleaned (with alcohol). Fuel feed tanks have been checked for integrity and leakproofness (pump, manometer)

Task Card	The name of the item being worked on <i>Type of activity</i>	Code/time rate (min.)	Tools/materials	Criteria of compliance (in case of non-compliance perform C-Check)
	Replacement of fuel filter Remounting of the cowlings Ground trial running as per 4.9	311/15 235/5 130/30		
101.02	Emergency equipment: cover of the rescue system, emergency door jettison mechanisms and door locks, seat belts. Demounting of the rescue system cover Demounting of cowlings Thorough inspection check Remounting of cowlings Remounting of the rescue system cover	236/10 235/5 112/15 235/5 236/20	Screwdriver, flashlight, silicone	All elements are undamaged, belts are not chafed, seams and fittings are integral. The door emergency jettison rip pins slide out smoothly. Belts and their fittings ensure restraint when strongly and sharply tugged by the hand. The rescue system is securely attached, the cable of the handle in the cabin and the slings are connected. The cover of the rescue system is secured with silicone
032.02	Landing gear wheel, shock struts, landing gear retraction/extension cylinders, wheel discs and tires, footrests, hoses and brake pads Aircraft jacking up Retraction and extension of the landing gear (main system) Demounting of the main landing gear wheels Remounting of wheels to the main landing gear Aircraft remove from jacks	120/10 140/10 235/15 235/15 120/10	Jack, torque wrench, Pressure gauge, brake pads, 12V ground power source	Landing gear legs and disks are integral, corrosion of LG shock strut cylinders and brakes is absent. Tightening torques for LG legs, shock struts, cylinders amounts 10 kg/m. LG position indication is correct. The footrests retract and extend simultaneously with the LG legs. Cylinder and shock absorber pressure amounts to 3... 5 atm. Brake pads have been replaced
024.02	Power supply system: storage battery, generator and starter relays, wiring, contacts, connectors. Demounting of cowlings Demounting of the instrument panel Demounting of the central board (pedestal) Demounting of hatches from the baggage compartment Thorough inspection check Checking of lighting equipment. Serviceability check of ANL and strobe lights Serviceability check of the headlights Remounting of hatches to the luggage compartment Remounting of the central board (pedestal) Remounting of the instrument panel Remounting of cowlings Demounting of the storage battery Storage battery charging (full cycle) Remounting of the storage battery	235/5 243/15 243/10 236/10 112/30 163/5 163/5 163/5 236/10 243/5 243/15 235/5 243/5 243/30 243/5	Flashlight, screwdrivers, alcohol (0.2L), multimeter, 12V ground power source	All elements and wires are integral, without any chemical, electrical and mechanical damage. The wires are secured with clamps, kinks are absent. All contacts and connectors are without any traces of corrosion, they have been cleaned (with alcohol) Wire lines have been tested for continuity (by multimeter). Complete 30 min battery charging cycle has been performed, the voltage after charging is not less than 11V. Feeder and radio unit (under the luggage compartment hatch) are integral, without any damage and corrosion
012.03	Aircraft Maintenance Manual LogBook	237/10	Ballpoint pen	Make an entry about completing B-Check

5.8 Base maintenance (C-Check)

Total duration of activities performed by two persons does not exceed 16 hours

Task card	The name of the item being worked on Type of maint. activity	Code/time rate (min.)	Tool, material, appliance	The cause for execution of C-Check
051.05	Wing-box panels. Mounting (dismounting in reverse sequence). <i>Fitting of wing panels into the fuselage casing</i> <i>Fixing of wing panels (as per 2.5.2)</i> <i>Connection of pull-rods and flap shafts</i> <i>Connections of tubes (pneumatic, fuel)</i> <i>Connection of electric wires</i>	235/2 301/10 301/5 301/5 301/1	Screwdrivers, torque, socket wrenches	Assembling the aircraft as per 4.2 and preparation for transportation
051.06	Airframe skin (covering). <i>Minor repairs (as per the instructions of 4.11)</i>	341/90	Glue, foam core, carbon fabric as per 4.11, cutter, brush	The presence of damage to the covering (size thereof not exceeding that specified in 4.11)
051.07	Load-bearing elements of the wing-box panels and fuselage: Spars, frames, fuselage spar casing <i>Dismounting of the wing panels</i> <i>Dismounting of hatches from baggage compartment and wing panels</i> <i>Thorough inspection check</i> <i>Tapping of covering (skin) and spars</i> <i>Remounting of the wing panels (TC 051.05)</i> <i>Remounting of hatches to baggage compartment and wing panels</i>	235/15 235/10 112/30 112/60 235/15 235/10	Flashlight, screwdrivers, torque, socket wrenches, rubber mallet	Frequency as per 5.1.3. The cracks, damage and bulgings near load bearing elements are absent. The wing panel attachments, bushings and the adjacent areas are integral. The bolts, nuts, washers, threads are undamaged. The sound of tapping is dull.
027.03	Control surfaces, flaps, trim tab. Mounting (dismounting in reverse sequence). <i>Mounting to brackets</i> <i>Securing and locking</i> <i>Thorough inspection check</i> <i>Stop-to-stop deflection</i>	235/5 301/10 112/90 140/1	Screwdrivers, clinometer	Frequency as per 5.1.3. Execution of TC 027.02
031.02	Pitot Probe Dismounting (remounting in reverse sequence). <i>Thorough inspection check</i> <i>Fitting to the brackets</i> <i>Securing</i> <i>Purging (blowing out)</i> <i>Checking of the heater controller</i>	112/5 235/1 301/2 228/5 140/1	Screwdrivers, scotch tape, ground power source 12V	Frequency as per 5.1.3. Assembling the aircraft as per 4.2 and preparation for transportation. Extent of deterioration making impossible functioning as per 2.10
061.03	Propeller. <i>Dismounting of cowling</i> <i>Dismounting of the propeller</i> <i>Thorough inspection check</i> <i>Propeller replacement (depending on service life limit) or Overhaul at the Manufacturer's facility</i> <i>Remounting of the propeller</i> <i>Execution of TC 061.02</i> <i>Ground trial run as per 4.9</i>	235/5 235/60 112/30 311 / - 343 / - 235/30 140/20 140/30	Screwdrivers, clinometer Chronometer torque wrench	Frequency as per 5.1.3. Service limit has been reached as per 3.6 Extent of deterioration and backlash exceeding those specified in 3.3.2. Non-compliance with TC 061.02
072.05	Engine. <i>Dismounting of cowlings and tubes</i> <i>Dismounting of the engine</i> <i>Thorough inspection check</i> <i>Engine replacement (depending on the service condition limit)</i> <i>Replacement of the engine mount rubber pads</i> <i>Ground run-up as per 4.9</i>	235/15 235/60 112/30 311 / - 311/30 140/60	Screwdrivers, a hoist of ≥80kg lifting capacity	Frequency as per 5.1.3 Service limit has been reached as per 3.6 Extent of deterioration does not allow to observe limitations 3.3.1 Rubber pads replacement

Task card	The name of the item being worked on Type of maint. activity	Code/time rate (min.)	Tool, material, appliance	The cause for execution of C-Check
072.06	Engine items (activities requiring engine demounting): turbine, reduction gearbox, starter, muffler, engine mount pads <i>Demounting of cowling and pipelines</i> <i>Demounting of the engine</i> <i>Demounting of a respective item</i> <i>Thorough inspection check</i> <i>Replacement or Overhaul at the Manufacturer's facility</i> <i>Ground trial run as per 4.9</i>	235/15 235/60 235/90 112/30 343 / - - 140/30	Screwdrivers, a hoist of ≥80kg lifting capacity	Frequency as per 5.1.3 Service limit has been reached as per 3.6 (muffler, engine mount pads). Extent of deterioration does not allow to observe limitations as per 3.3.1
072.07	Engine items (activities not requiring engine demounting): injector, intercooler, intercooler damper (baffle), oil and water radiators, throttle and choke cables, oil and cooling system rubber hoses. <i>Thorough inspection check</i> <i>Demounting of cowlings and pipelines</i> <i>Demounting of a respective unit</i> <i>Replacement or overhaul at the Manufacturer's facility</i> <i>Ground run-up as per 4.9</i>	112/30 235/15 235/90 343 / - - 140/30	Screwdrivers	Frequency as per 5.1.3 Extent of deterioration does not allow to observe limitations as per 3.3.1
028.03	Fuel system: pumps, tubes <i>Defueling</i> <i>Demounting of panels (partitions) from the luggage compartment</i> <i>Demounting of tubes</i> <i>Demounting of service tanks</i> <i>Thorough inspection check</i> <i>Replacement of pumps, pipelines/tubes (depending on service life limit)</i> <i>Calibration of the fuel gauge as per 4.12.9</i>	230/10 235/10 235/30 235/30 112/30 311/- - 140/60	Screwdrivers	Frequency as per 5.1.3 Service limit has been reached as per on 3.6 Extent of deterioration does not allow to observe limitations as per 3.3.1
029.02	Hydraulic system: hydraulic unit, pipelines, the LG emergency extension tap, LG retraction/extension cylinders. <i>Demounting of cowlings</i> <i>Changing of hydraulic fluid</i> <i>Replacement of hydraulic unit and hoses (depending on service life limit)</i> <i>Thorough inspection check</i> <i>Repair of cylinders and tap(valve)</i> <i>LG retraction/extension (main system)</i> <i>One-time extension of LG (emergency system)</i>	235/1 312/15 311/30 112/30 343 / - - 140/30 140/10	Jack, screwdrivers, hydraulic fluid (2l), emergency LG extension pressure bottle	Frequency as per 5.1.3 Service limit has been reached as per on 3.6 Extent of deterioration making impossible functioning as per 2.8.3
032.03	Landing gear: LG wheel, brakes, shock-struts, wheel discs and tires, hoses and brake pads. <i>Thorough inspection check</i> <i>Replacement of tires, hoses depending on service limit)</i> <i>Charging shock absorbers with nitrogen</i> <i>Changing of hydraulic fluid</i> <i>Charging shock absorbers with fluid (by syringe)</i> <i>Inflating tires with nitrogen</i> <i>Adjustment of brake pedals</i>	112/30 312/15 311/33 312/15 312/10 312/5 304/15	Jack, torque wrench, pressure gauge, syringe, pump, screwdrivers, Nitrogen (5l), hydraulic fluid (1L)	Frequency as per 5.1.3 Service life limit has been reached as per 3.6 (rubber hoses, tires). Execution of TC 032.02. Non-compliance with TC 032.01. The shock strut rod stroke in parking condition is less than 45 mm
024.03	Electric Power supply system: battery, generator and starter relays, wiring, contacts, connectors, toggle switches and automatic circuit breakers. <i>Demounting of cowlings and battery compartment hatch</i> <i>Battery replacement (depending on service limit)</i> <i>Thorough inspection check</i> <i>Cleaning the contacts</i> <i>Replacement of toggle switches, CBs. (the type as per 2.10.6)</i>	235/1 311/10 112/60 234/30 337/30	Screwdrivers, alcohol (0.2 L) multimeter, 12V ground power source	Frequency as per 5.1.3 Service limit has been reached as per 3.6(battery). Non-compliance with TC 024.02. Extent of deterioration making impossible functioning as per 2.9.

Task card	The name of the item being worked on Type of maint. activity	Code/time rate (min.)	Tool, material, appliance	The cause for execution of C-Check
034.02	Instrumentation: as per 2.10.1 as well as the control boards of the intercom, variable pitch propeller, flaps. <i>Demounting of the instrument panel</i> <i>Demounting of the central board (pedestal)</i> <i>Demounting of respective equipment</i> <i>Thorough inspection check</i> <i>Overhaul or replacement at the Manufacturer's facility</i> <i>Equipment setup (see 4.12)</i>	243/15 243/10 243/15 112/60 343/- - 140/90	Flashlight, screwdrivers, multimeter, 12V ground power source	Frequency as per 5.1.3 Non-compliance with TC 034.01. Extent of deterioration making impossible functioning as per 2.10
101.03	Emergency equipment: Parachute rescue system cover and slings, door emergency jettison mechanisms and door locks, safety belts <i>Demounting of the rescue system cover</i> <i>Demounting of cowlings</i> <i>Detachment of the tapes, covering the rescue system slings</i> <i>Thorough inspection check</i> <i>Remounting of cowling</i> <i>Attachment of the tapes, covering the rescue system slings</i> <i>Remounting of the rescue system cover</i>	236/10 235/5 236/10 112/30 235/5 236/20 236/20	Screwdrivers, Flashlight, Silicone	Frequency as per 5.1.3 All elements are undamaged, belts are not chafed, seams and fittings are integral. The door emergency jettison rip pins slide out without undue effort. Belts and their fittings ensure restraint when strongly and sharply tugged by hand. The rescue system is securely attached, the handle cable in the cabin and the slings are connected. The rescue system cover and the sling tapes are secured with silicone
101.04	<i>Parachute rescue system (demounting, reinstallation)</i> <i>Demounting of the rescue system cover</i> <i>Replacement of the rescue system (depending on the service limit)</i> <i>Remounting of the rescue system cover</i>	213/5 311/90 235/30	Screwdrivers, Silicone (0.2 L)	End of service life as per 3.6
020.01	Painting, application of decals, markings. <i>Following standard procedures (cleaning, degreasing, priming, painting, drying)</i>	321/90	Paint, brush, stencils	Deterioration of paint coating, found in the course of execution of the TCs 051.02, 072.02
008.01	Aircraft leveling. <i>As per the techniques described in the part 4.3</i>	304/30	Level, measuring tape, plumb bob, marker, W1 template, jack	Frequency as per 5.1.3 In the cases specified in 4.3
008.02	Determination of weight and CG <i>As per the techniques described in the part 4.4</i>	198/30	Scales (3 pcs), level, plumb bob	In the cases specified in 4.4 After painting more than 20% of the outer surface
012.04	Aircraft Maintenance Manual <i>LogBook</i>	237/10	Ballpoint pen	Record the execution C-Check. It is required to specify in particular what TCs have been executed



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PART 6. TGSIM

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Introduction

The Specification of tools, ground support items and materials (TGSIM) defines the list, purpose and quantity of TGSIM required for the operation of the ANG-01 aircraft.

6.1 List of ground support items

6.1.1 The ANG-01 aircraft is fitted with the following support items:

- ✓ Transportation block for nose landing gear wheel (1 piece);
- ✓ Transportation blocks for main landing gear wheel (2 pieces);
- ✓ Transportation wing panel cradle (2 pieces);
- ✓ Windshield cover (1 piece);
- ✓ Propeller blade cover (3 pcs.);
- ✓ Engine compartment intake plugs (4 pieces);
- ✓ Wing center section fillet cover (2 pcs.);
- ✓ Wing panel root rib cover (2 pieces);
- ✓ ACS detent (1 piece);
- ✓ Parking chock for main landing gear wheels (2 pieces);
- ✓ Pitot Probe cover (1 piece);
- ✓ Tow bar (1 piece);
- ✓ Mooring rope with fittings (3 pcs.).

The total weight of the ground support items is 45 kg.

6.1.2 The ANG-01 aircraft is NOT equipped with the following equipment, which is widely available for general use and can be provided at any aerodrome:

- ✓ KPU-3 pressure/vacuum unit with a calibrated speed instrument or any other calibrated speed setter with a range of up to 350 km/h;
- ✓ Ground power source 12 V (car power storage battery);
- ✓ USB data storage device;
- ✓ Ballpoint pen;
- ✓ Clinometer (protractor);
- ✓ Multimeter;
- ✓ Pressure gauge (up to 5 atm);
- ✓ Car tyre pump;
- ✓ Calculator;
- ✓ Stopwatch;
- ✓ Flashlight;
- ✓ Car jack (lifting capacity ≥ 300 kgf);
- ✓ Fuel containers (standard 20L car jerricans), 4 pieces or more;
- ✓ Fuel funnel;
- ✓ Hoist (lifting capacity above 300 kgf);
- ✓ Levelling instrument;
- ✓ Builder's plumb bob;
- ✓ Measuring tape (10 m);
- ✓ Floor scales (up to 150 kgf), 3 pcs.

6.2 List of tools

The ANG-01 is NOT equipped with tools. The following basic car tools are sufficient for its servicing:

- ✓ Set of flat tip screwdrivers;
- ✓ Set of figure screwdrivers;
- ✓ Torque wrench;
- ✓ Socket wrench;
- ✓ Cutter.

6.3 List of consumables

The aircraft is NOT equipped with any consumables. Common, widely used materials are sufficient for its servicing:

- ✓ Cloth;
- ✓ Detergent;
- ✓ Industrial alcohol;
- ✓ Personal protective equipment (respirator, gloves);
- ✓ Syringe (500 cm³);
- ✓ Silicone;
- ✓ Scotch-tape;
- ✓ Nitrogen (5L bottle);
- ✓ Putty, paint, brush;
- ✓ Glue, foam core, carbon fabric (as per 4.11).

The aircraft is NOT furnished with any engine fuel-lubricants materials, hydraulic fluid and engine cooling fluid. They are specified in the present AMM.

The aircraft is NOT furnished with any spare air, fuel and oil filters, spark plugs and any other spare parts for engine, propeller, support equipment or with brake pads. Their list is specified in the present AMM.



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ANNEX 1

DAMAGE LIST limitation

Airframe components and items	Type of damage	Max. size of damage	Timelines of rectification
Fuselage	Scratches, chipped paint, wear of (markings)	5x5 mm	C-Check
Glazing	Scratches, cracks, "silvering"	30 mm	B-Check
Wing	Scratches, chipped paint, wear of (markings)	5x5 mm	C-Check
Flap	Scratches, chipped paint, wear of (markings)	5x5 mm	C-Check
Stabilizer	Scratches, chipped paint	5x5 mm	C-Check
Control surfaces	Scratches, chipped paint	5x5 mm	B-Check
Control elements	Scratches, chipped paint	5x5 mm	B-Check
Engine mount	Changed shade of paint, scratches, chipped paint	5x5 mm	C-Check
Landing gear legs	Scratches, chipped paint	5x5 mm	A-Check
Wheel tyres	Cuts, wear to the cord	1x5 mm	A-Check
Interior	Abrasion, scratches, loose threads, cuts, discoloration	15 mm	C-Check



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ANNEX 2

The list of unserviceabilities with which the operation of the aircraft is permitted. (Master Minimum Equipment List, MMEL).

‘Correction intervals’ Inoperative items or components, deferred in accordance with the MMEL, must be rectified at or prior to the rectification intervals established by the following letter designators:

Category A: Inoperative parts/units/system in this category shall be during within the 1st calendar day. Rectification shall be accomplished at the earliest opportunity.

Category B: Parts/units/system in this category shall be rectified within three (3) calendar days, excluding the day of discovery.

Category C: Parts/units/system in this category shall be rectified within ten (10) calendar days, excluding the day of discovery.

Category D: Parts/units/system in this category shall be rectified within one hundred and twenty (120) calendar days, excluding the day of discovery.

‘Inoperative’: an item which does not accomplish its intended purpose or is not consistently functioning within its approved operating limits and tolerances.

(O): The symbol is used to denote that the respective procedure may be performed by the pilot.

(M): The symbol is used to denote that the respective procedure must be performed solely by the maintenance personnel.

‘Open control item day’: the calendar day when a malfunction was recorded in the aircraft maintenance record/log book. This day is excluded from the calendar days or flight days specified in the MMEL for the rectification of an inoperative item. This definition applies to all categories: A, B, C and D.

A system is considered to be a collection of equipments and/or instruments that perform a function.

MMEL applies to all unserviceabilities that occur before or after the flight.

If the modification of the aircraft affects the acceptability of the records, the serial number of the specific aircraft should be provided.

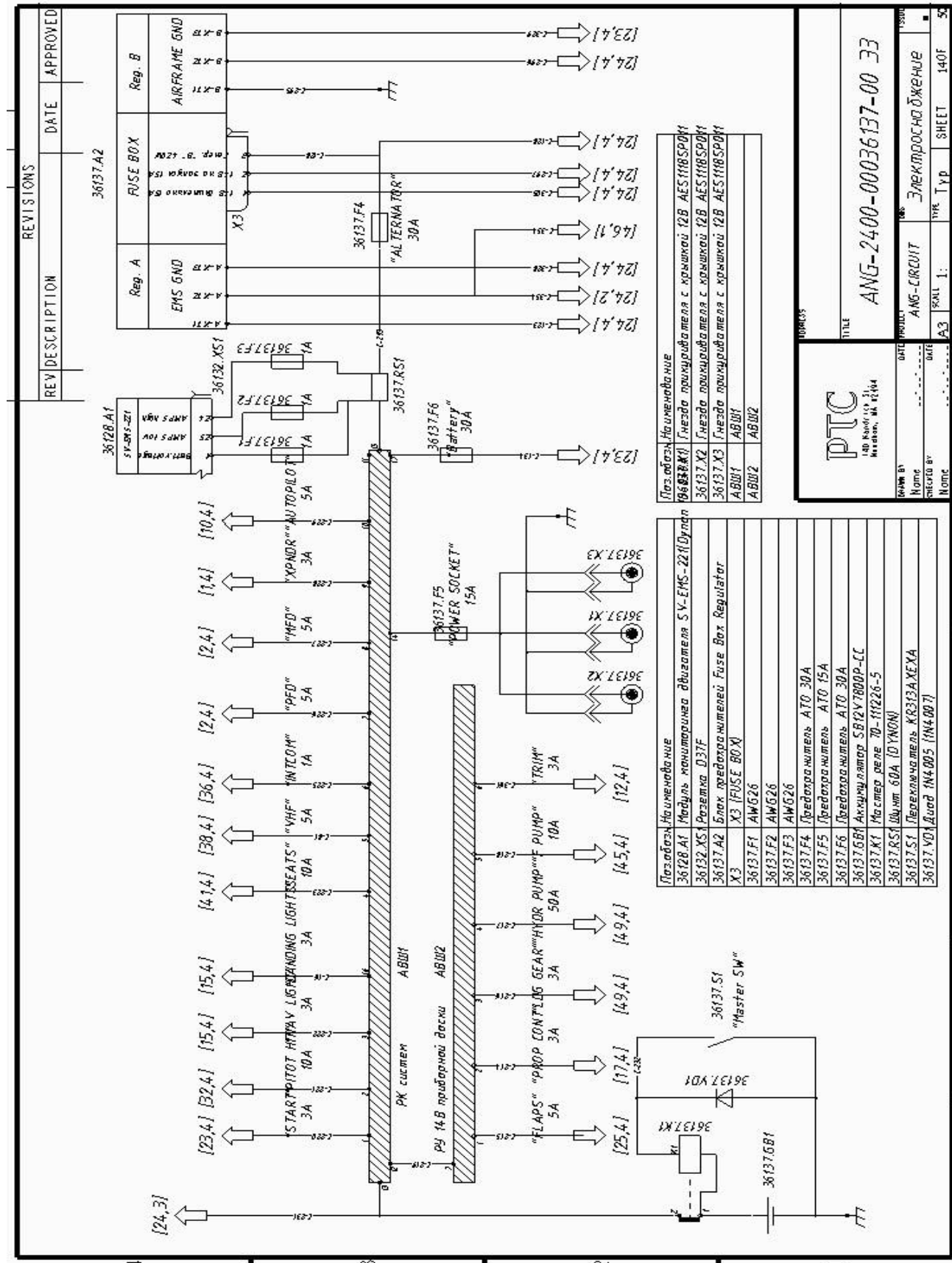
It is not advisable to rectify or replace the item before the flight.

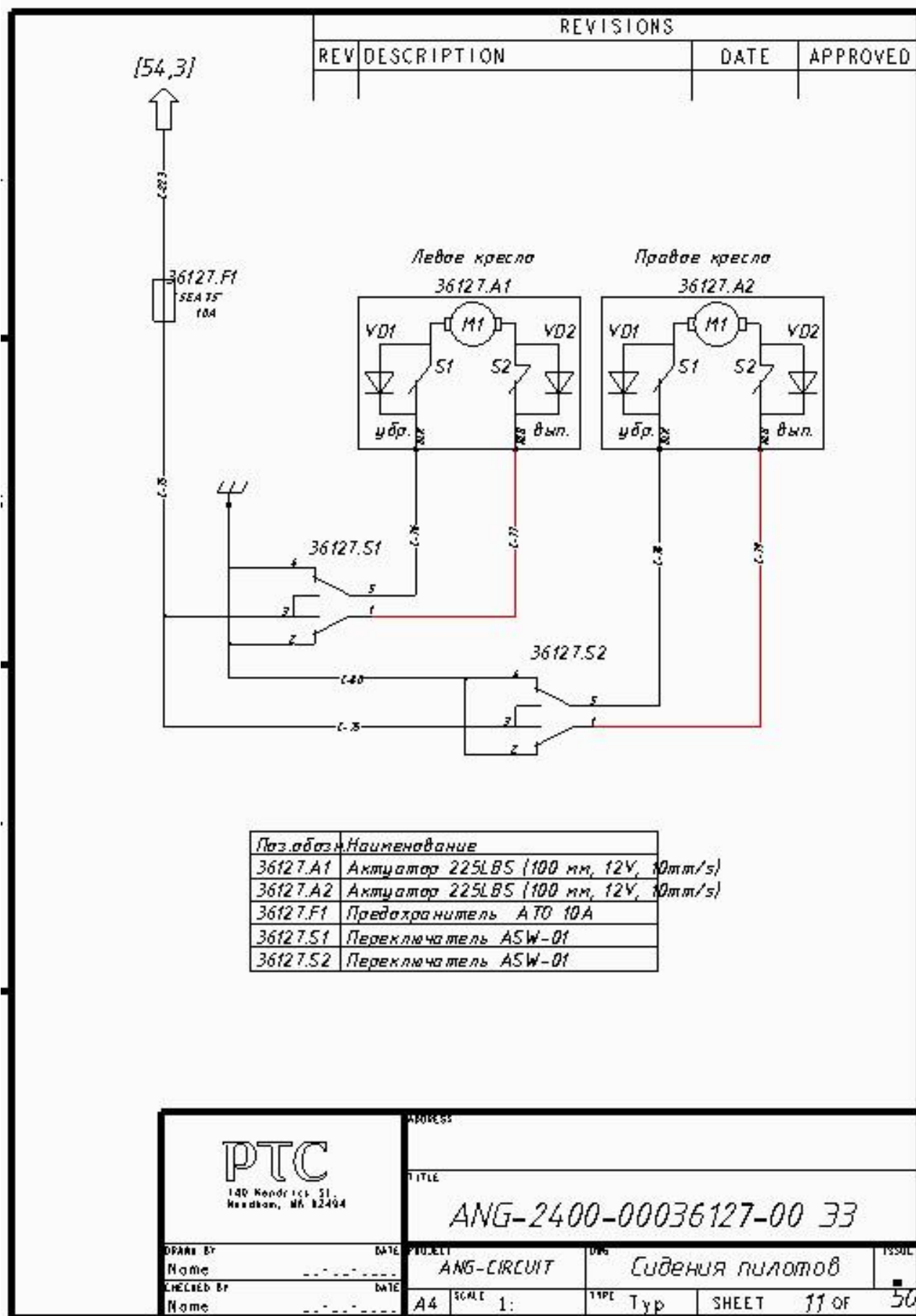
NOTE: a flight may be conducted if spare parts and specific personnel are not available, or the time is insufficient to rectify the unserviceability. The unserviceabilities shall be necessarily rectified upon completion of the flight.

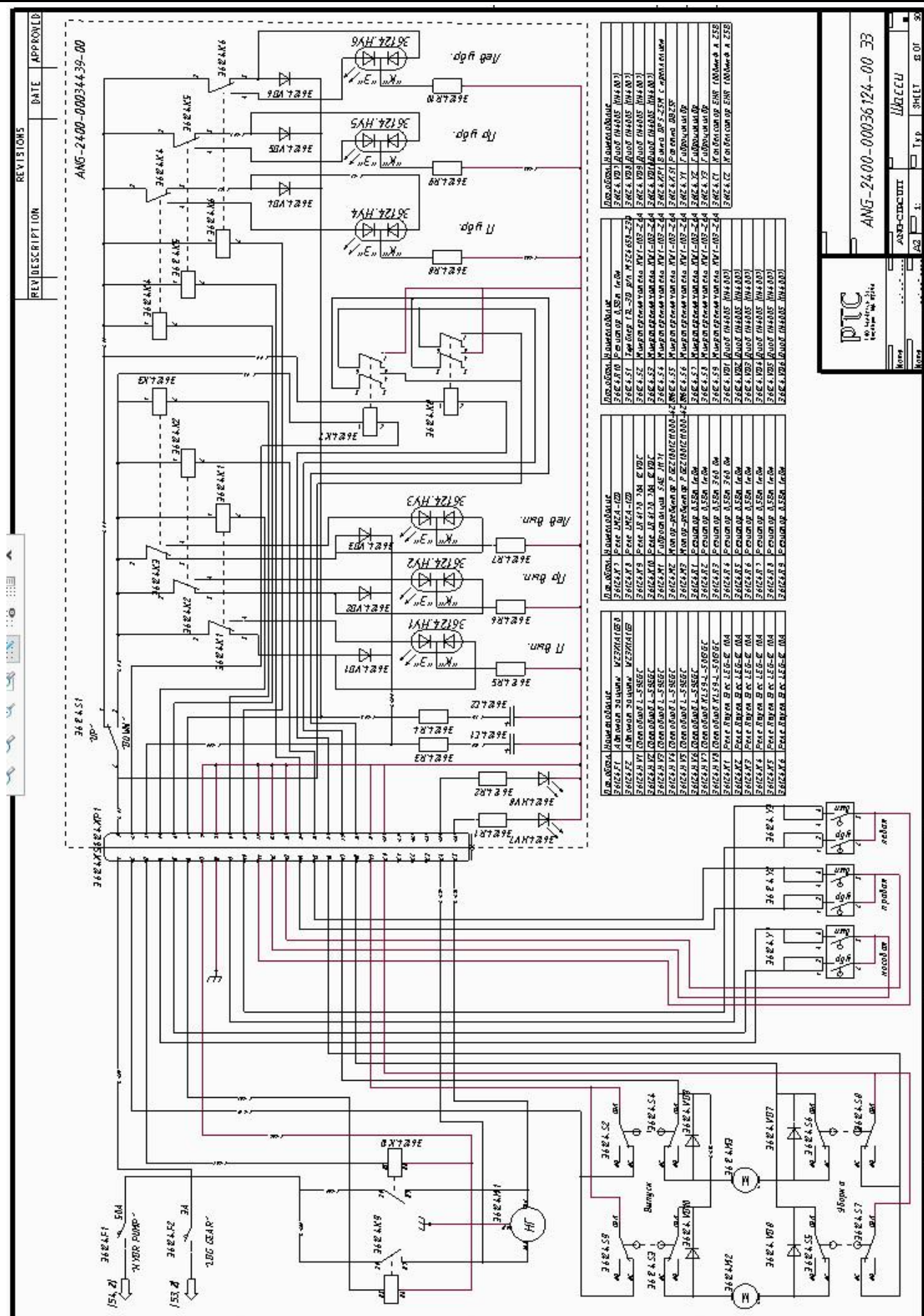
ATA Number/System	M MEL	Number of items	Number of items with which a flight is authorized	Notes
027 /Control system <i>Elevator trim tab</i>	C	1	0	(M) make an entry in ALB, specify CI
027/Steering system <i>NLG</i>	B	1	0	(M) make an entry in ALB, specify CI (O) crosswind up to 2 m/s
072/Power plant <i>Muffler</i>	D	1	0	(M) make an entry in ALB, specify CI
072/Power plant <i>Alternator</i>	B	2	1	(M) make an entry in ALB, specify CI (O) the duration of flight up to 30 minutes
072 / Power plant <i>Heating system housing</i>	D	1	0	(M) make an entry in ALB, specify CI (O) flight at a temperature not lower than 10°C
072 / Power plant <i>Fuel pressure sensor</i>	A	1	0	(M) make an entry in ALB, specify CI (O) give particular consideration to the engine performance parameters
072 / Power plant <i>Fuel pump</i>	A	2	1	(M) make an entry in ALB, specify CI (O) give particular consideration to the engine performance parameters and fuel consumption
032/Landing gear <i>Shock strut</i>	A	3	3	(M) make an entry in ALB, specify CI (O) rod protrusion not less than 20 mm
032 /Landing gear <i>Wheel tyres</i>	A	3	3	(M) make an entry in ALB, specify CI (O) landing without heavy braking, take-off weight up to 600 kg
032/Landing gear <i>Retract cylinder</i>	B	3	3	(M) make an entry in ALB, specify CI (O) flight without retracting LG
029/Hydraulic system <i>Hydraulic Unit (pump motor)</i>	B	1	0	(M) make an entry in ALB, specify CI (O) flight without retracting LG
031/Instrumentation <i>Pito heater controller</i>	D	1	0	(M) make an entry in ALB, specify CI (O) flight at a temperature not lower than 10 ° C
031/Instrumentation <i>ADAHRS secondary module</i>	C	1	0	(M) make an entry in ALB, specify CI (O) in case of failure in flight of the primary ADAHRS use the secondary one
031/Instrumentation <i>GNSS module</i>	C	1	0	(M) make an entry in ALB, specify CI (O) exclusively non-route flights
031/Instrumentation <i>Autopilot</i>	C	1	0	(M) make an entry in ALB, open CI (O) perform manual control
031/Instrumentation <i>Redundant (backup) speed, altitude indicators, variometer, slip indicator</i>	B	1	0	(M) make an entry in ALB, specify CI (O) flight with serviceable primary and secondary ADAHRS modules
031/Instrumentation <i>Backup magnetic compass</i>	C	1	0	(M) make an entry in ALB, specify CI (O) exclusively non-route flights
031/Electrical system <i>Headlights/runway&winglight</i>	C	2	1	(M) make an entry in ALB, specify CI
031/Electrical system <i>Aux. fuel pump toggle switch or circuit breaker</i>	A	2	1	(M) make an entry in ALB, specify CI (O) give particular consideration to the engine performance parameters and fuel consumption
031/Electrical system <i>Autopilot toggle switch or circuit breaker</i>	C	1	0	(M) make an entry in ALB, specify CI (O) perform manual control
031/Electrical system <i>Pito Probe heater toggle switch or circuit breaker</i>	D	1	0	(M) make an entry in ALB, specify CI (O) flight at a temperature not lower than 10 ° C
025/Utility-type equipment <i>Electrical mechanism for adjustment of the pilot's seat position</i>	D	2	2	(M) make an entry in ALB, specify CI (O) adjust the seat as needed and secure it on the ground

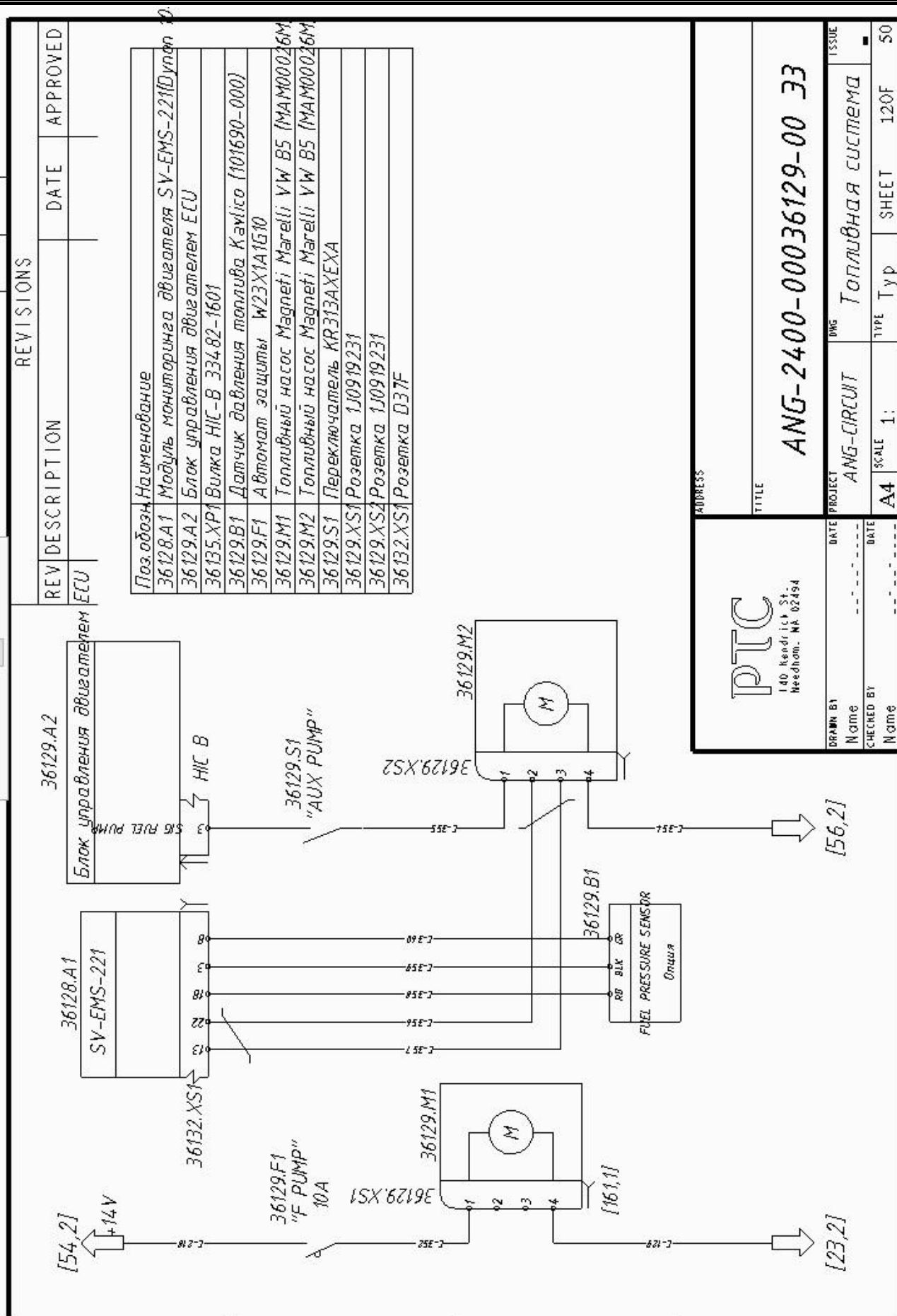
ANNEX 3

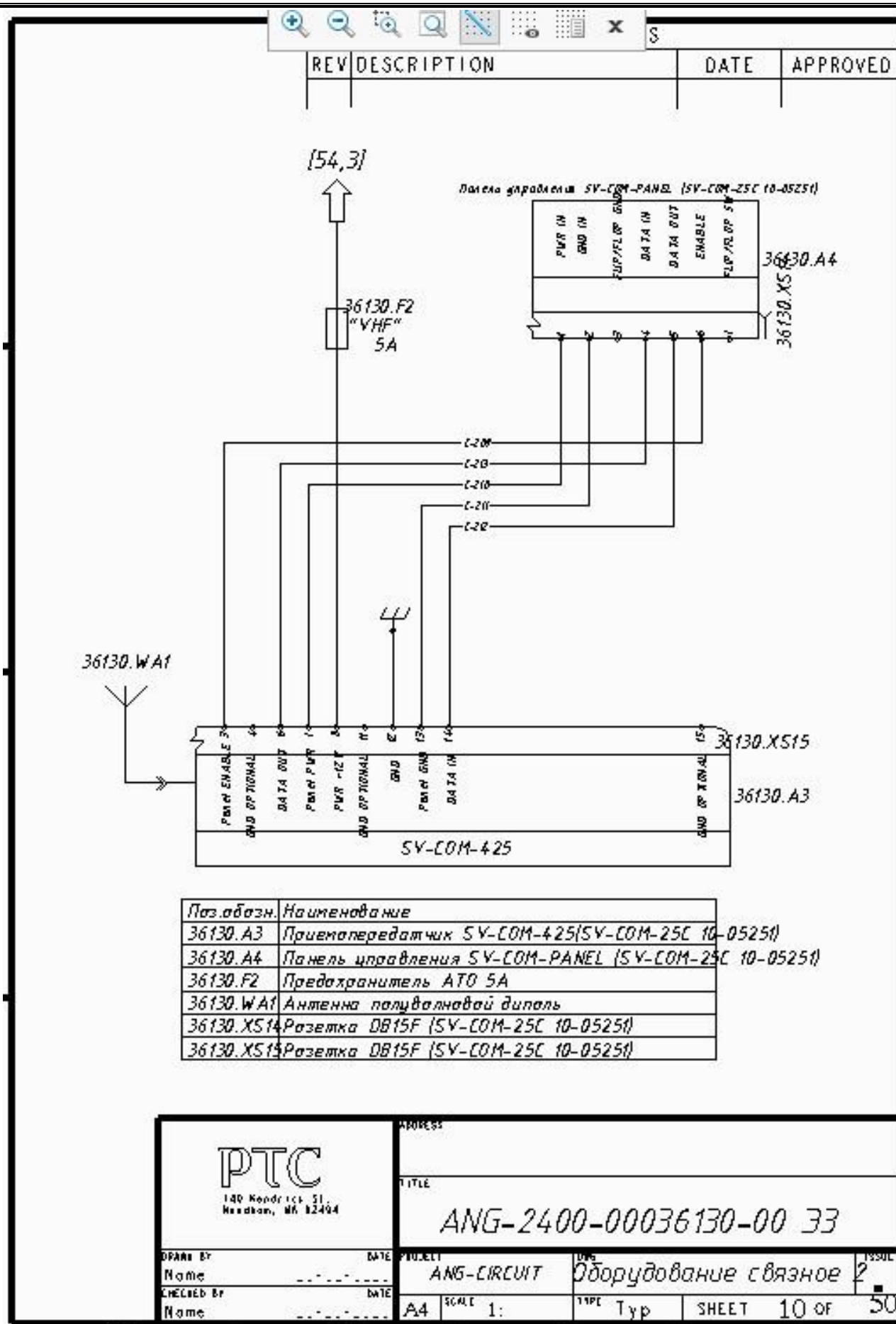
Wiring Diagramm

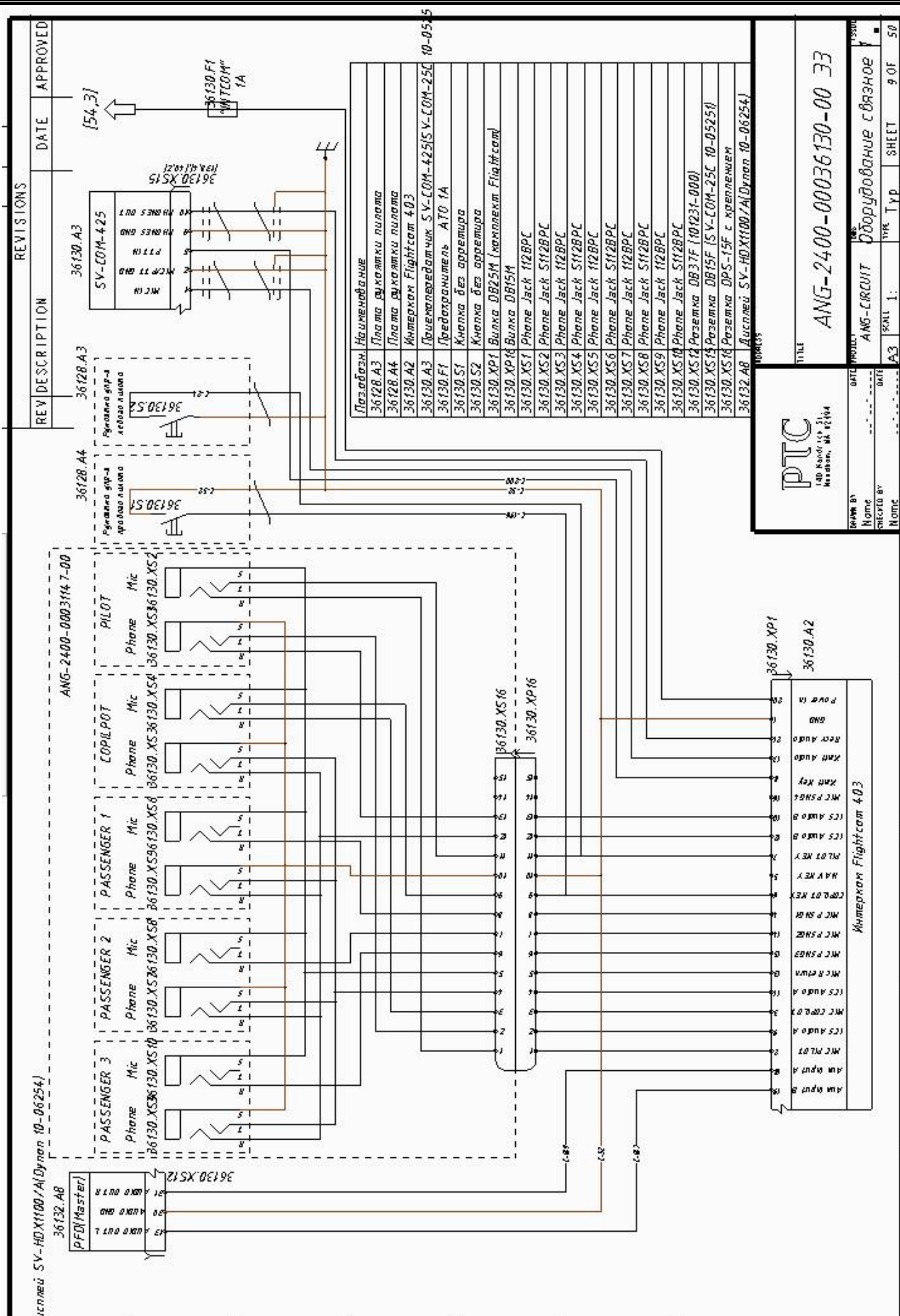


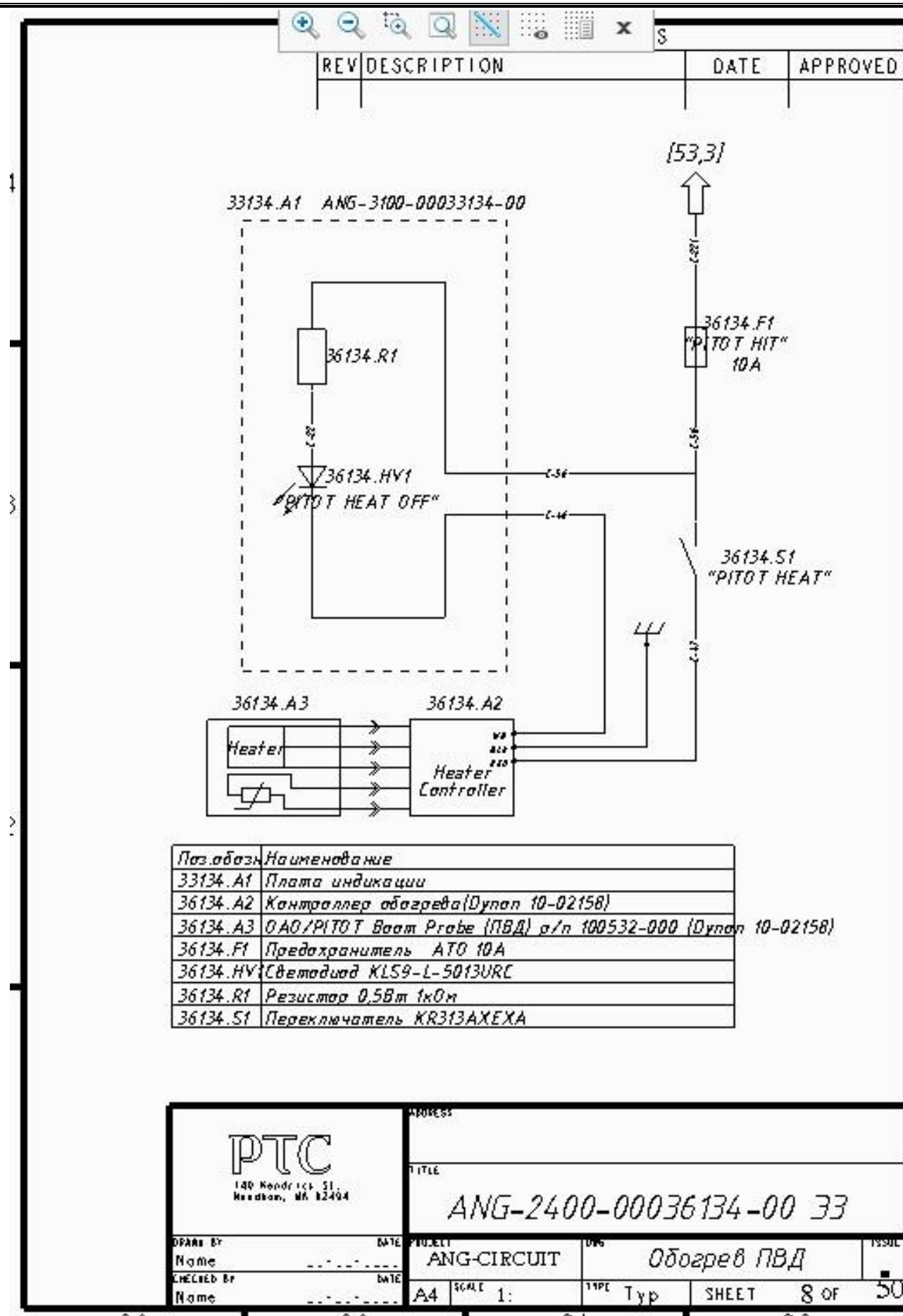


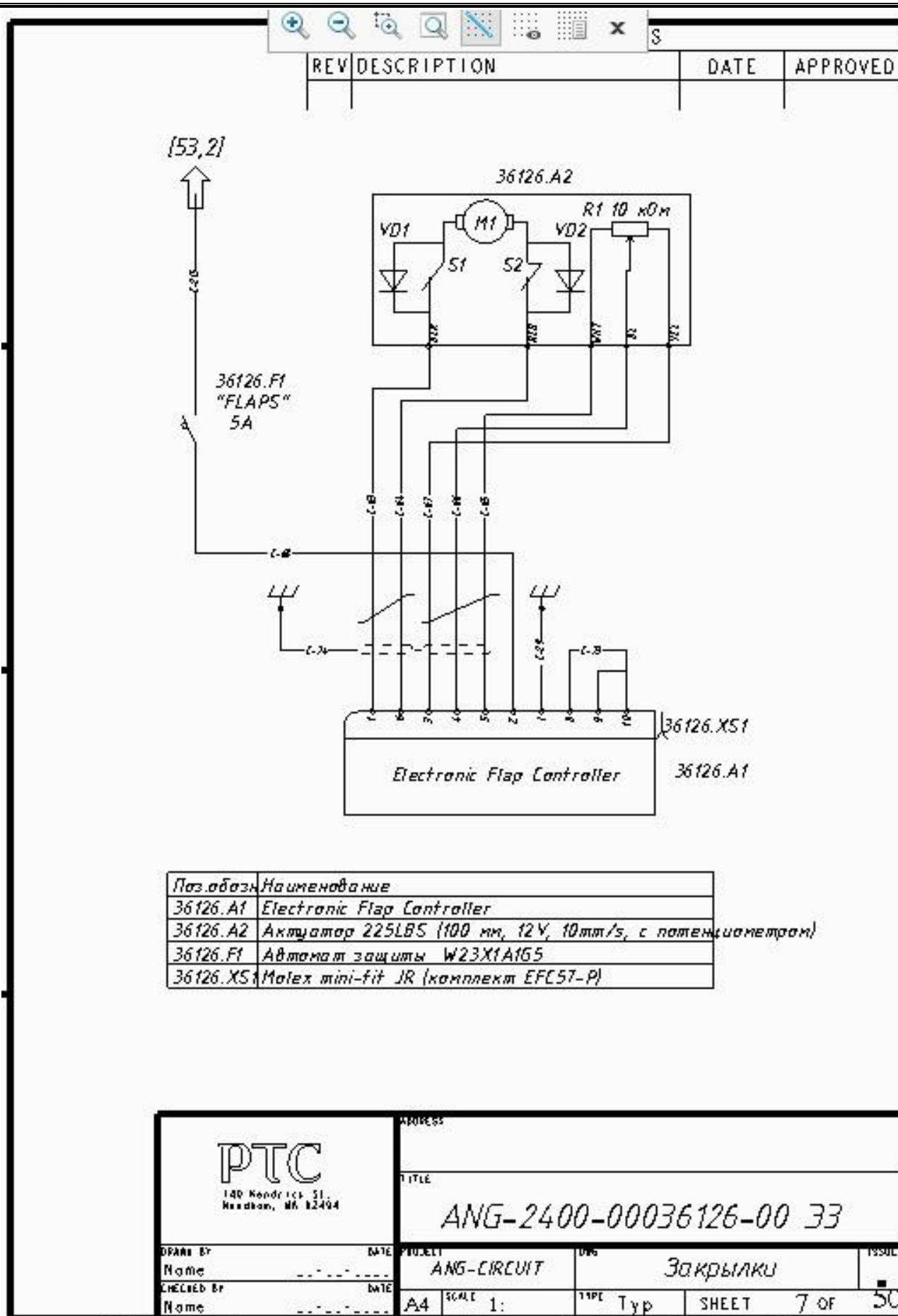


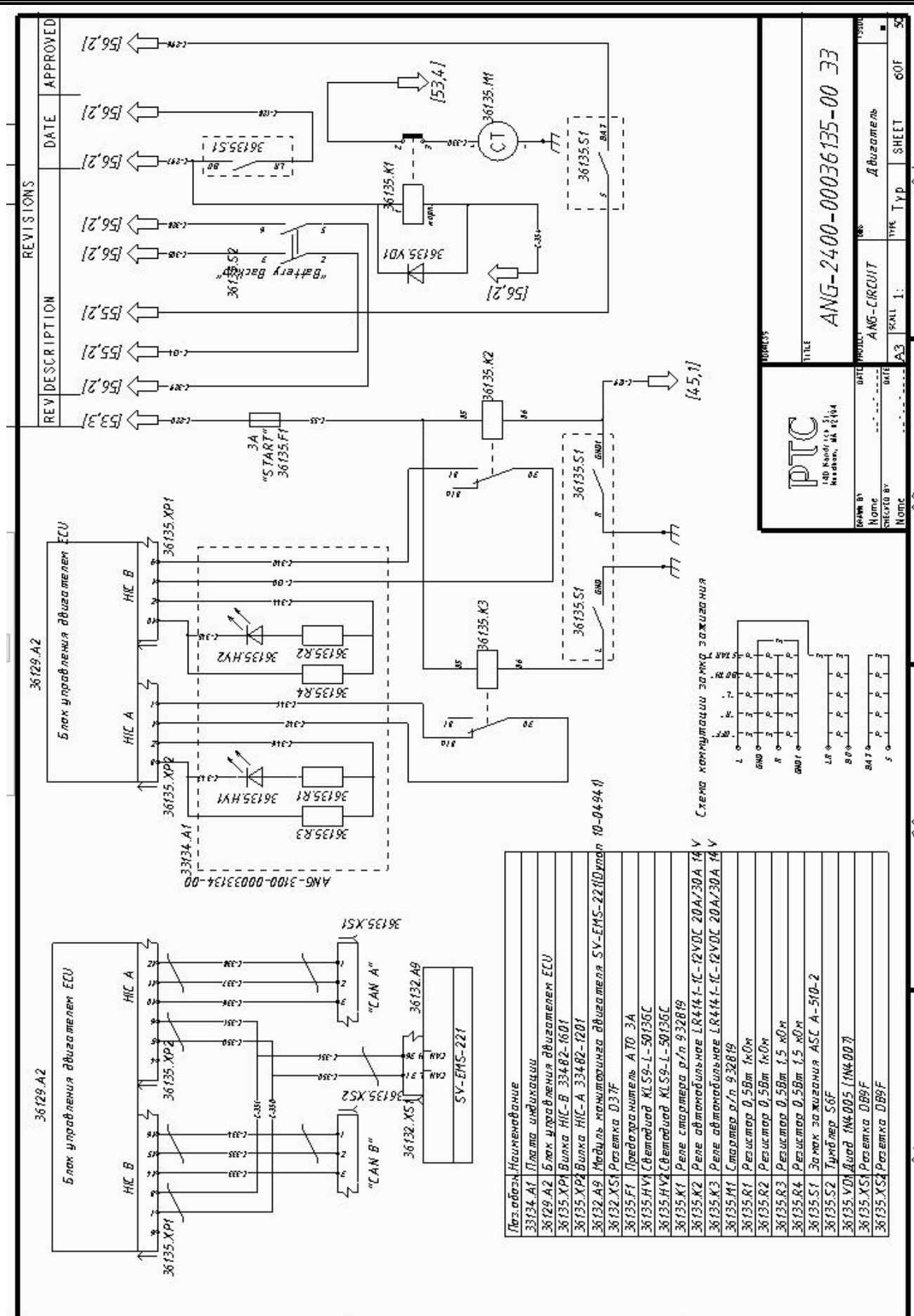


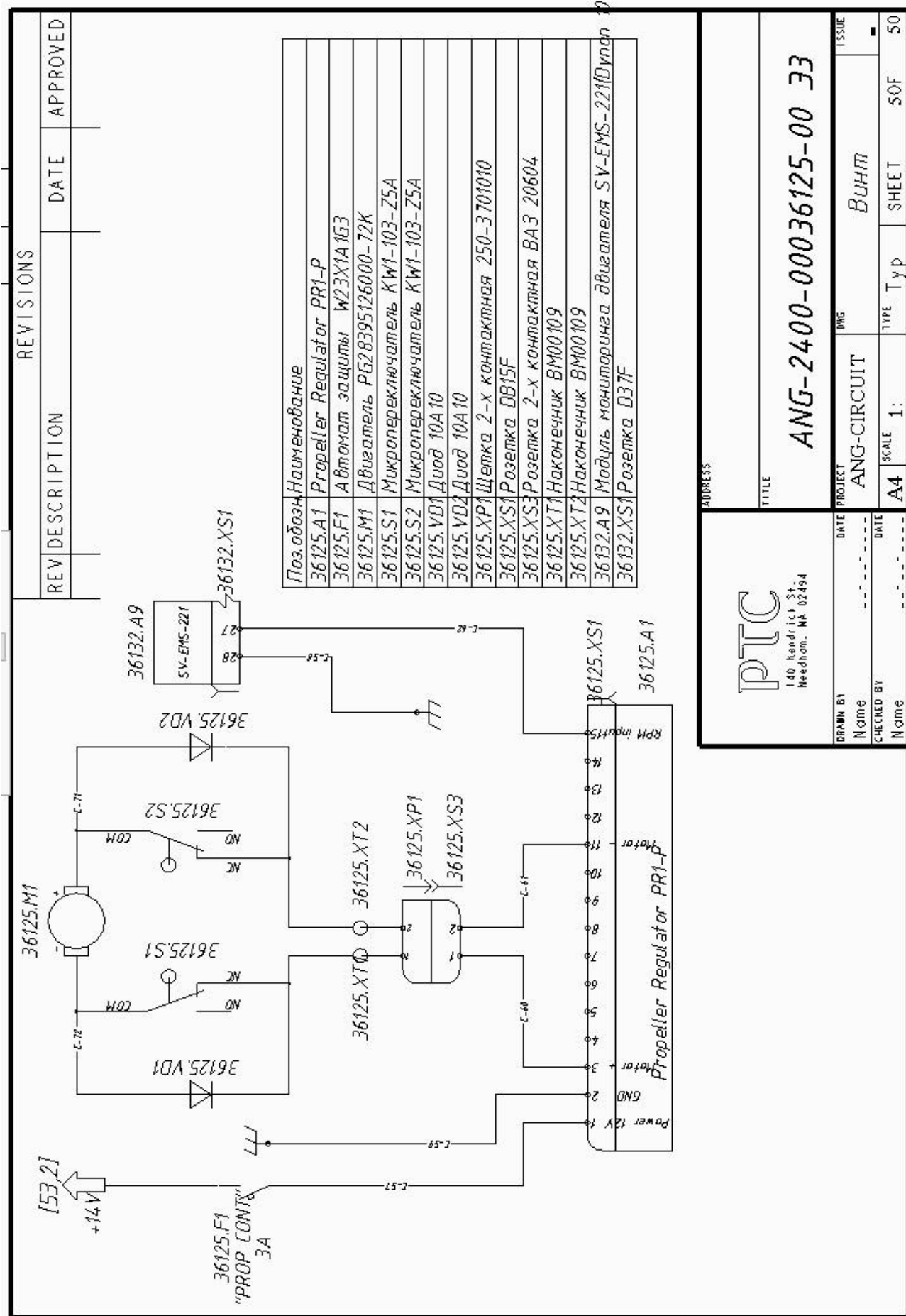












ADDRESS

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Needham, MA 02454

ANG-2400-00036125-00 33

PROJECT	ANG	ISSUE	50
ANG-CIRCUIT	ВУМ	SHEET	50F
A4	SCALE 1:	TYPE	SHEET
DATE	DATE	DATE	DATE
DRAWN BY	CHECKED BY	NAME	NAME

