1.1 FUSELAGE AND ITS EQUIPMENT

The fuselage is a half-shell construction - duralumin cover and duralumin reinforcements. The fuselage cross-section is in the central part between the front and rear beam of the wing rectangular with a rounded cabin. Manufacturing is composed of the front lower part, which also includes a wing wing part, from the rear. The rear part of the fuselage has an oval cross section increasing its carrying capacity. The cabin is fitted with organic glass in a composite frame.

Pilot seats are in the center wing area. Seats are made of composite sandwich. There is a luggage compartment behind the seats.

The cabin is heated by ram air from the air exchanger on the exhaust silencer, into the cabin by a pipe distribution system equipped with a shutter and a flap to regulate the amount of warm air into the footwell and the windshield.

1.2 WING

The wing is all-metal, rectangular center wing and trapezoidal outer part. It is a single beam construction, consisting of leading, middle and rear ribs, auxiliary rear beam and cover. The main beam is formed by a web, upper and lower flange formed by plates with gradually reduced cross- section over the wing span. The connection of the center wing to the outer wing is double-sheared and is solved by one upper and two lower bolts. The rear auxiliary beam is formed by a web and reinforcing angles that distribute the load from the rear wing hinge. The connection of the rear wing girder to the rear wing girder is realized by one bolt. The wings are finished with composite end arches.

About two-thirds of the wingspan occupy slotted wing flaps, one-third of the aileron. The flaps and wings are all-metal construction with ribs and cover. Two flap hinges are riveted to the rear ribs of the wing. The wings are hung on two hinges. The ailerons are not equipped with a balancing pad.

An integral fuel tank is located between the ribs 2 to 5 in the leading portion of the outer wing. Each tank includes a lockable filler neck, vent, drainage valve, coarse dirt strainer at the tank outlet to the fuel system, and a float for sensing the fuel level in the tank.

1.3 TAILS

The horizontal tail is formed by a stabilizer and a rudder. The stabilizer is a two-beam all-metal shell provided with composite end bends. For installation in the fuselage are two hinges on the front and two on the rear beam. The elevator is continuous. It is attached to the stabilizer by three hinges. The rudder construction is all-metal, consisting of ribs and a cover. Like the stabilizer, the rudder is equipped with composite end bends. The elevator is also equipped with an electrically operated balancing pad that occupies more than a quarter of the span. The plate is all-metal, composed of ribs and cover. Suspension is by piano hinge.

The vertical tail consists of a keel of two-beam construction, which is an integral part of the rear fuselage and all-metal rudder composed of beam, ribs and cover, which is hinged to the keel in two hinges. The end of the keel and rudder is composed of composite arches.

1.4 AIRPLANE CONTROL

1.4.1 Manual steering

The aircraft has double hand control that controls elevator and ailerons. It is mechanical drawbar. The main element is a body with control levers from which the elevator and gear levers are controlled. All rods have adjustable spherical plain bearings, geared

the levers are fitted with slotted bushings. A common stop of the two control levers for the control of the elevator in the sense of "pulled" and "suppressed" is on the stick body. The aileron control stops are adjustable on the stick body.

1.4.2 Foot control

The foot control of the rudder is also dual and is rope. Steel cables are suspended between the inner pedals and the eyes of the rudder control pattern located on the keel. The directional control is connected to the nose wheel control via rods. Directional ropes are routed freely.

1.4.3 Flap control

The flaps are electric. Both right and left flap are controlled by a common torsion bar. At both ends of the torsion bar are adjustable rods that connect the left and right flap on the root rib of the flap.

1.4.4 Balancing pad control

The deflection of the balancing pads is adjusted by means of buttons located on the pilot's control lever (or elsewhere in the cabin, according to the customer's wish). The position of the balancing pads is indicated by LED indicators located on the dashboard in the pilot's field of vision.

1.5 LANDING GEAR

The aircraft has a solid three-wheel landing gear with steerable nose wheel. The main chassis wheels are equipped with hydraulic brakes controlled by the brake lever from the cab.

The front wheel consists of a two-piece rim, two ball bearings and a tire. The wheels of the main undercarriage are attached to the shaft of the laminate leg. The wheels have a split rim, two ball bearings and a brake caliper with a caliper. The brake caliper consists of one hydraulic cylinder with two brake pads. The brake cylinder is connected to the hydraulic cylinder by means of a plastic fluid distribution.

1.6 POWER UNIT - CONTROL

Engine power is controlled by the throttle control lever on the center console between the seats. The lever is connected to the carburetor flap by means of a cable guided in the Bowden.

On the dashboard there is a switch box that serves to start the engine and as a switch of both ignition circuits.

1.7 FUEL SYSTEM

Fuel tanks located in the leading part of the wing have a total capacity of 120 liters. The tanks are riveted from duralumin sheet. It is filled with a throat fitted with a lockable closure. The valve at the lowest point of the tank serves to drain and drain the fuel. The fuel is routed from the tank to the fuel cock, which can switch between the left and right tanks and stop the fuel supply to the engine. From the fuel cock the fuel is led through a fire barrier to a sludge separator fitted with the prescribed fuel screen, from where the fuel is sucked by an electric pump into the carburetors. The relative amount of fuel is measured by an electric fuel gauge with a float in the tank and is indicated by a dashboard indicator.

1.8 ELECTRICAL SYSTEM

The electrical installation is single-conductor with grounded negative pole. The mains supply is supplied by a generator with a rectifier and a maintenance-free battery 12V / 14Ah. The onboard network is protected by a main circuit breaker. Individual appliances are switched on by separate switches and protected by separate fuses located on the dashboard.

A separate part of the electrical installation is the double contactless ignition of the engine. By adjusting the ignition key to the appropriate position, each ignition circuit can be switched off independently.

Generator power: 250 W (single phase) Main circuit breaker value: 25 A

1.9 EQUIPMENT

1.9.1 Description

The dashboard includes flight instruments, motor instruments, radio communication equipment, electrical equipment and switches, signal lights, ignition switch, fuses, fuel gauge, ventilation and heating control linkage, engine throttle control. It can also be supplemented with other flight instruments and radio navigation equipment according to the user's wishes. Where applicable, instruments, controls and switches are marked with labels explaining their function and direction of movement.

Pilot seats are composite sandwich plates that can be removed if necessary without compromising the stiffness of the fuselage.

The seat belts are four-point as standard. The headphone sockets are located behind the pilot's seats.

The side parts of the cockpit are equipped with composite panels fitted with upholstered armrests with pockets for small aids such as maps.

1.9.2 Basic instrumentation

Flight instruments:

- Speedometer,
- altimeter,
- compass,
- variometer,
- turn indicator,

Engine instruments:

- oil thermometer,
- cylinder head thermometer,
- oil pressure gauge,
- tachometer,
- fuel level indicator.
- exhaust gas thermometer,
- HOBBS,

Customized equipment:

- G-metr,
- artificial horizon,
- transverse inclinometer,
- EFIS,
- GPS different types,
- radio stations of various types,
- transponders,
- height encoders,
- emergency locators.

Note: This equipment increases the empty weight of the airplane at the expense of payload.

2 AIRPLANE TECHNICAL SPECIFICATIONS

2.1 WING

Table 3.1: Description of basic wing geometry.

Total margins	b_{real}	8,4487	m
Margin effective	b	8,26	m
Depth of center wing	c_R	1,4	m
End profile depth	c_T	1,024	m
Wing area	S	10,385	m^2
Medium geometric chord	c_{SGT}	1,257	m
Slenderness wings	Ar	6,57	-
Narrowing the center wing	η_{CW}	1	-
Narrowing of the outer wing	ηW	1,37	-
End profile twist angle (Y=4,13m)	α_{zkr}	-1,91	°
Center wing deflection angle	Γ_{CW}	0	°
Outside wing deflection angle	ΓW	5,5	°

Center wing arrow angle (25%)	χ_{CW}	0	°
Outside wing arrow angle (25%)	χW	0	°
Angle of the root profile	φ_R	+2,0	°
Depth of center aerodynamic chord of wing	C_{SAT}	1,2695	m
Position of the main root-end beam	$X_{HI.N}$	28,1-29,0	%
Position of the rear root-end beam	$X_{Z.N}$	69,2-69,0	%

2.2 FLAP

Table 3.2: Description of the basic flap geometry.

Flap area	S_{KL}	0,735	m^2
Flap span	b_{KL}	1935	m
Flap root depth	c_{RKL}	414,1	m
Flap depth cSATKL	c_{SATKL}	380,9	m
Flap end depth	c_{TKL}	2925	m
Relative damper depth - cSATKL	c_{SATKL}	29,58	%
Deflection flaps for take-off	δ_{KL}	+20	°
Flap deflection for landing		+40	°

2.3 AILERON

Table 3.3: Description of aileron's basic geometry.

Span	b_{KR}	1170,1	m
Depth of aileron - root	c_{RKR}	324,8	m
Depth cSAT ailerons	c_{SATKR}	305,5	m
Aileron depth - final	c_{TKR}	285,4	m
Relative aileron depth - cSATKR	c_{SATKR}	27,8	%
Aileron area	S_{KR}	0,357	m
Wind deflection - down	δ_{KR}	+22±2	°
Wing deflection - up	δKR	-15±2	°

2.4 VERTICAL TAIL

Tabulka 3.4: Popis základní geometrie SOP.

Actual height	$b_{SOPREAL}$	1,1410	m

Replacement height	b_{SOP}	1,1174	m
Depth of root cut	c_{RSOP}	0,9777	m
Depth SAT	c_{SATSOP}	0,7367	m
End cut depth	c_{TSOP}	0,4210	m
SOP area	S_{SOP}	0,781	m^2
Slenderness SOP (geometric)	Ar_{SOP}	1,60	-
SOP slenderness (effective)	Ar_{SOPEF}	3,86	-
Narrowing the SOP	η_{SOP}	2,32	-
Arrow angle to 25% of depth	χ_{SOP}	32,7	°

2.5 HORIZONTAL TAIL

Table 3.5: Description of GTC basic geometry.

The real margin	$b_{VOPREAL}$	2,6991	m
Spare span	b_{VOP}	2,677	m
Depth of root cut	c_{RVOP}	0,8623	m
Depth of center aerodynamic chord of GTC	c_{SATVOP}	0,7399	m
End cut depth	c_{TVOP}	0,6021	m
Area GTC	S_{VOP}	1,96	m^2
Slenderness of GTC	Ar_{VOP}	3,656	-
Narrowing GTC	η_{VOP}	1,43	
Arrow angle to 25%	χ_{VOP}	4,2	°
Angle of buckling GTC	Γ_{VOP}	0	°
Angle setting GTC to ZRT	φ_{VOP}	-2	°

2.6 HULL

Table 3.6: Description of the basic fuselage geometry.

Maximum torso width	b_{TR}	1,105	m
Maximum torso height	h_{TR}	1,140	m
Total frontal area of the hull	S_{TR}	1,35	m^2

2.7 CHASSIS

Table 3.7: Description of basic chassis geometry.

Gauge	b_G	1,817	m
Wheelbase	L_G	1,435	m

2.8 BALANCE

Tabulka 3.8: Centráže.

Front flight center	CG	20	%cSAT
Rear flight center	CG	35	%cSAT

2.9 WEIGHTS

Table 3.9: Aircraft definition masses.

Empty weight without rescue system	m_E	295	kg
Empty weight with rescue system	m_E	317,5	kg
Minimum pilot weight	m_{PILmin}	55	kg
Maximum pilot weight	m_{PILmax}	110	kg
Maximum take-off mass	m_{min}	350	kg
Maximum fuel weight (120 liters)	m_{PAL}	90	kg
Maximum luggage weight	m_{BAG}	15	kg
Luggage in each wing	m_{BAG}	20	kg
Maximum take-off weight	m_{max}	600	kg

2.10 POWERPLANT

Table 3.10: Powerplant.

Engine type:	Rotax 912 ULS
Engine manufacturer:	Rotax Engines
Stroke	61 mm
Drilling	84 mm
A compression ratio	10,5:1
Total volume	1352 cm^3
Reduction ratio	2,43

Table 3.11: Engine modes.

Regime	**P [kW]**	**RPM**	**MK [Nm]**
Max. takeoff power	73,5	5800	121

Max. continuous power	69,0	5500	119,8
Max. krut	66,0	5100	128

2.11 PROP.

Tabulka 3.12: Údaje o vrtuli.

Manufacturer		E - PROP
Type		On ground adjustable
Diameter	D_P[mm]	1665
Number of pages	i_P [-]	3
Mass	m_P [kg]	3.95
Material		kompozit
Max RPM		2600
Direction of rotation (view from pilot)		CCW

2.12 PREDICTED FLIGHT PERFORMANCE

Power ratings are based on the DW200 under MSA and a maximum take-off weight of 600kg and a Rotax 912ULs engine

Table 3.13: Flight performance.

Take-off weight	600kg
Take-off distance up to 15m from asphalt:	166m
Take-off distance up to 15m from grass:	175m
Maximum horizontal speed VH	225km/h
Maximum climb speed V_Z/600kg	5.8 m/s
Stall speed on flaps V_{S0}/600kg	66 km/h
Stall speed without flaps V_{S1}/600kg	73 km/h

Note: stall speeds will be verified by flight tests.

2.13 OPERATING RESTRICTIONS

The airplane is capable of daily ground visibility (VFR) flights. IFR flights and icing operations are prohibited.
The aircraft is not designed for aerobatic operation. Acrobatics and intentional corkscrews are prohibited. The operation for which the airplane is intended includes:

1. all maneuvers possible on a normal flight,
2. training of falls,
3. sharp turns up to 60 °..

The aircraft is designed to operate with an outside temperature in the range of + 40 ° C to -25 ° C

Table 3.14: Operating speed and multiples limits.

Maximum speed limit (90% vD)	v_{NE}	256	km/h
Maximum operating speed with the flaps fully extended	v_{FE}	135	km/h
Maximum positive	n_1	+4,0	-
Maximum negative	n_4	-2,0	-

2.14 OPERATING FLUIDS

Fuel

Super-leaded petrol according to DIN 516000, Ö-NORM C 1103
EUROSUPER RON 95 unleaded according to DIN 51607, Ö-NORM
1100 BA 95 Natural is recommended for the Czech Republic
AVGAS 100 LL

Oil

Any type of engine oil, for example for 4-stroke motorcycle engines, but not aviation oil.
Power classification SF, SG according to API.

3 CONCLUSION

This document is intended to provide basic technical information about the DW200 and is subject to revision in the event of any change to the data relating to the parameters in this report.