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#### 4.1 Introduction

Section 4 describes operations and recommended procedures for normal operation of the airplane. Normal procedures following from system installation and optional equipment, which require supplementation of these Instructions, are shown in section 9 - Supplements.

#### 4.2 Recommended Speeds for Normal Procedures

##### 4.2.1 Take-off

Climbing speed up to 50 ft (flaps in <b>TAKE-OFF</b> pos. - 15°)	57 KIAS (106 km/h IAS)
Best rate-of-climb speed $V_Y$ (flaps in <b>TAKE-OFF</b> pos. - 15°)	57 KIAS (106 km/h IAS)
Best rate-of-climb speed $V_Y$ (flaps retracted - 0°)	65 KIAS (120 km/h IAS)
Best angle-of-climb speed $V_X$ (flaps in <b>TAKE-OFF</b> pos. - 15°)	54 KIAS (100 km/h IAS)
Best angle-of-climb speed $V_X$ (flaps retracted - 0°)	56 KIAS (104 km/h IAS)

##### 4.2.2 Landing

Approaching speed for normal landing (flaps in <b>LANDING II</b> position - 50°)	60 KIAS (111 km/h IAS)
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#### 4.3 Assembly and Disassembly

Description of assembly and disassembly is given in the Airplane Maintenance Manual for SportStar MAX airplane.



#### 4.4 Pre-flight Check

Carry out pre-flight check according to the following procedure:

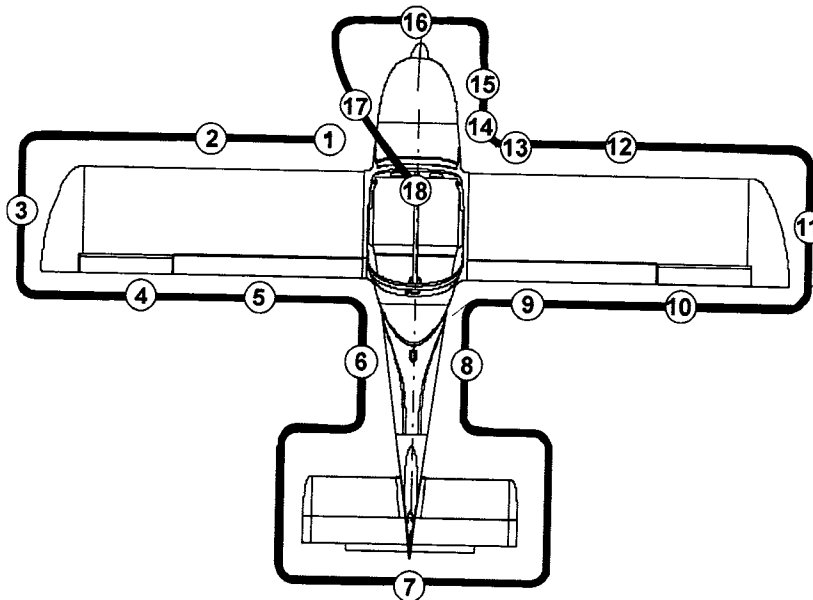


Figure 4-1

**WARNING**

**CHECK BEFORE PRE-FLIGHT CHECK THAT  
IGNITION IS SWITCHED OFF!**

**NOTE**

The word "condition", used in procedures of pre-flight check, means visual check of surface, damage, deformation, scratches, attrition, corrosion, icing or other effects decreasing flight safety.



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Normal Procedures

1. Left landing gear leg - check
  - landing gear leg attachment and condition
  - attachment of brake system hose
  - landing gear wheel condition
  - condition and attachment of wheel covers
  - no contamination in the draining reservoirs of the pitot-static system
2. Left wing - check
  - wing surface condition
  - closing of the fuel tank cap
  - wing leading edge condition
  - condition of the Pitot tube
3. Left wing tip - check
  - surface condition
  - attachment check
  - fuel tank vent - cleanness
  - condition and attachment of the position lights and the anti-collision beacon
4. Left aileron - check
  - surface condition
  - attachment
  - free movement
  - condition of trim tab, condition and security of rudder trim tab control rods
5. Left wing flap - check
  - surface condition
  - attachment
  - drain fuel tank (see Section 8, para 8.5.2)
6. Rear part of fuselage - check
  - surface condition
  - condition of antennas
7. Tail units - check
  - tail skid condition
  - surface condition
  - condition of rudder and elevator attachment
  - freedom of rudder and elevator movement



- condition of trim tab, condition and security of elevator trim tab control rods
- 8. Rear part of fuselage - check
  - surface condition
- 9. Right wing flap- see 5
- 10. Right aileron- see 4 – except trim tab
- 11. Right wing tip - see 3
- 12. Right wing - see 2 - except Pitot tube
- 13. Right landing gear leg - see 0
- 14. Front part of the fuselage - right hand side - check
  - tilting canopy attachment and condition
  - condition and attachment of GPS antenna
  - condition and cleanness of air intakes
  - condition of the nose landing gear leg and nose wheel
  - condition of the nose wheel control rods
- 15. Engine
  - Checks before the first flight of day - it is necessary to remove upper engine cowling:
    - condition of engine bed
    - condition of engine attachment
    - condition of exhaust system
    - condition of engine cowlings
    - visual check on fuel and electrical system condition
    - check on cooling liquid volume in the expansion tank on the engine body (replenish as required up to max. 2/3 of the expansion tank volume)
    - check on cooling liquid level in the overflow bottle (volume should be approx. 0.42 pints (0.2 liter))
  - Checks before every flight:
    - cleanness of air intakes
    - check on oil level (between marks - flattening on the dip stick; difference between min. – max. marks is 0.5 l)
    - proper closing of the upper engine cowling



- 16. Propeller - check
  - attachment
  - condition of blades, hub and spinner
- 17. Front part of fuselage - left hand side - check
  - cleanness of air intakes
  - tilting canopy attachment and condition
- 18. Cockpit - check

**NOTE**

Canopy is unlocked if a latch next to lock is visible under the glass, otherwise it is locked. Unlock it first with key.

- **MASTER SWITCH** ..... **ON**
- Check canopy OPEN/CLOSE indication on Integra's display.
- All switches ..... **OFF**
- Instrument equipment ..... check on condition
- Check of safety belts condition and attachment
- Check pressure in the portable fire extinguisher (if available)
- Check on presence of loose object in the cockpit
- Check on adjusting and securing the rudder pedals (see Section 7, para 7.3.3)

**WARNING**

**RIGHT AND LEFT PEDAL OF RUDDER CONTROL  
MUST BE SET TO THE SAME POSITIONS AND  
WELL SECURED!**

- POH and other required documents ..... check on completeness and validity



## 4.5 Normal Procedures and Checklist

### 4.5.1 Before Engine Starting

1. Pre-flight check and check on weight and centre of gravity position ..... done
2. Safety harnesses ..... check, fasten
3. Rudder pedals ..... free
4. Control stick ..... free
5. Wing flaps ..... function check
6. **THROTTLE** lever ..... **ON**
7. Trim tabs ..... function check
8. **PARKING BRAKE** handle ..... release brakes
9. Brakes ..... function check
10. **MASTER SWITCH** ..... **ON**
11. EFIS right screen ..... **ON**
12. Ignition ..... **OFF**
13. Canopy ..... close

### 4.5.2 Engine Starting

1. Fuel gauge indicators ..... check of fuel quantity
2. **FUEL** selector ..... **LEFT**  
Pull the safety button on the fuel selector, turn the handle to the left and then release safety button. Now the handle can be freely moved between left and right position. Safety button prevents unintentionally switch the selector to **OFF** position.
3. Electric fuel pump ..... **ON**
4. **THROTTLE** lever ..... idle
5. **CHOKE** ..... as necessary
6. Space in the propeller area ..... free
7. **BEACONS** ..... **ON** (if necessary)
8. Brakes ..... apply





- 9. Ignition.....**START** (see CAUTION)  
after starting up **BOTH**

**CAUTION**

ACTIVATE STARTER FOR 10 SEC. AS A MAXIMUM, AND THEN LET IT COOL DOWN FOR 2 MINUTES.

AFTER STARTING UP ENGINE, DO NOT CARRY OUT SUDDEN RPM CHANGES, AFTER POWER DECREASE WAIT FOR ABOUT 3 SEC. IN ORDER TO REACH CONSTANT RPM BEFORE REACCELERATION.

- 10. THROTTLE lever.....as necessary (see NOTE)
- 11. Oil pressure .....up to 10 sec. min. pressure

**NOTE**

After starting up engine, adjust throttle for smooth engine running at about 2500 RPM. Check oil pressure. Pressure must increase within 10s. Increase engine RPM until oil pressure is stabilized over 2 bar (29 PSI).

- 12. Engine parameters .....check
- 13. **CHOKE**.....as necessary
- 14. Engine warming up.....see NOTE

**NOTE**

Begin warming up with engine running at 2000 RPM. For about 2 minutes, continue at 2500 RPM. Warming time depends on outside air temperature until oil temperature reaches 50°C.

- 15. **FUEL** selector.....**RIGHT**  
Verify proper engine feeding from the right tank for approx. 1 minute.
- 16. **FUEL** selector.....**LEFT** or **RIGHT**
- 17. **AVIONICS SWITCH**.....**ON**
- 18. Radio station / avionics.....**ON**
- 19. Other electrical equipment.....**ON** as necessary



**CAUTION**

AFTER ENGINE STARTING AND FLYMAP DL SWITCHING-ON IT IS NECESSARY TO MATCH EFIS ALTIMETER WITH ANALOG ALTIMETER (SEE EFIS MANUAL - SETUP - ALT ADJ).

IT IS RECOMMENDED TO ON THE INTERCOM EVEN FOR SOLO FLIGHTS. THIS IS BECAUSE THE EMS D-120 ENGINE MONITORING SYSTEM AUDIO ALARMS OUTPUT IS CONNECTED THROUGH THE INTERCOM AND WITH THE INTERCOM OFF, THE PILOT WOULD NOT HEAR THE ALARMS IN CASE OF EXCEEDING ENGINE LIMITS. THIS MAY REDUCE SAFETY OF FLIGHT.

**4.5.3 Before Taxiing**

1. Transponder ..... **SBY**
2. Outside lights ..... as necessary

**4.5.4 Taxiing**

1. **THROTTLE** lever ..... as necessary
2. Brakes ..... check by depressing
3. Rudder pedals ..... function check
4. Direction of taxiing control by rudder pedals (these are mechanically connected with nose wheel control), possibly by slacking up left and right wheel of the main landing gear.

**4.5.5 Before Take-off**

1. Brakes ..... apply
2. Ignition check ..... carry out, see NOTE

**NOTE**

Carry out ignition check in the following way:  
Set engine speed to 4000 RPM. Switch ignition gradually to **L, BOTH, R** position and return to **BOTH**.

RPM drop with one ignition circuit switched off must not exceed 300 RPM. Maximum RPM difference at using one of the L or R circuits is 120 RPM.

3. Control stick ..... free



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4. Wing flaps ..... **TAKE-OFF** position (15°)
5. Trim tabs..... **NEUTRAL**
6. Fuel gauge indicator ..... check on fuel quantity
7. **FUEL** selector..... **LEFT**
8. Electric fuel pump ..... **ON**
9. **CARBURET. PREHEAT.** ..... check function then **OFF**

#### NOTE

If **CARBURET. PREHEAT.** knob is switched **ON**, then engine RPM drop reaches approximately 50 RPM.

10. Engine parameters ..... check
11. Flight instrument ..... check
12. Radio station / avionics ..... check, set
13. Ignition ..... check **BOTH**
14. **CHOKE** ..... **CLOSED** (in inserted position)
15. Safety harness ..... tighten up
16. Canopy ..... closed
17. **ELT** ..... **ARM**
18. Transponder ..... **ON** or **ALT**



#### 4.5.6 Take-off

1. THROTTLE lever ..... max. take-off power
2. During take-off run smoothly lighten up the nose landing gear until airplane take-off occurs.
3. After take-off accelerate airplane to ..... 57 KIAS (106 km/h IAS)
4. Main landing gear wheels ..... brake
5. After reaching 150 ft, set flaps to ..... retracted position 0°
6. Accelerate airplane to ..... 65 KIAS (120 km/h IAS)
7. Trim ..... as necessary

**WARNING**

**TAKE-OFF IS PROHIBITED:**

- IF ENGINE RUNNING IS IRREGULAR
- IF CHOKE IS OPEN
- IF VALUES OF ENGINE PARAMETERS ARE NOT WITHIN THE REQUIRED RANGE

#### 4.5.7 Climb

1. THROTTLE lever ..... max. continuous power
2. Airspeed .....  $V_Y = 65$  KIAS (120 km/h IAS)  
.....  $V_X = 56$  KIAS (104 km/h IAS)
3. Engine parameters ..... check
4. Trim ..... as necessary
5. Electric fuel pump ..... OFF



**4.5.8 Cruise**

1. **THROTTLE** lever.....as necessary
2. Airspeed .....as necessary
3. Engine parameters .....check
4. Fuel quantity .....check

**CAUTION**

FUEL GAUGES DISPLAY TRUE FUEL QUANTITY ONLY ON GROUND AND IN A LEVEL FLIGHT. TO READ TRUE FUEL QUANTITY AFTER TRANSITION FROM CLIMB/DESCENT WAIT APPROX. 2 MINUTES TO FUEL TO LEVEL.

**NOTE**

It is recommended to alternately switch the tanks during cruise to equally consume fuel from both tanks and minimize airplane tendency to bank with unbalanced tanks.

Do not fly with the fuel selector set to **RIGHT** if the left tank is full to avoid fuel bleed from left tank vent.

When the left tank fuel gauge indicates approx. 1/8 of fuel quantity then switch to the right tank to consume remaining fuel and then switch back the left tank to complete the flight at left tank.

If the engine conks out due to fuel consumption from either tank, then immediately switch the fuel selector to other tank and engine run will be recovered within 7 seconds.

5. **CARBURET. PREHEAT.** knob .....as necessary



#### 4.5.9 Descent

1. **THROTTLE** lever ..... as necessary
2. Airspeed ..... as necessary
3. Trim ..... as necessary
4. Engine parameters ..... check
5. **CARBURET. PREHEAT.** knob ..... as necessary

**CAUTION**

AT LONG APPROACHING AND DESCENDING FROM HIGH ALTITUDE IT IS NOT SUITABLE TO REDUCE THROTTLE TO MINIMUM FOR THE REASON OF POSSIBLE ENGINE UNDERCOOLING AND SUBSEQUENT LOSS OF POWER. PERFORM DESCENDING AT INCREASED IDLE AND CHECK OBSERVANCE OF THE ALLOWED VALUES ON ENGINE INSTRUMENTS.

#### 4.5.10 Before Landing

1. Fuel quantity ..... check

**CAUTION**

FUEL GAUGES DISPLAY TRUE FUEL QUANTITY ONLY ON GROUND AND IN A LEVEL FLIGHT. TO READ TRUE FUEL QUANTITY AFTER TRANSITION FROM CLIMB/DESCENT WAIT APPROX. 2 MINUTES TO FUEL TO LEVEL.

2. **FUEL** selector ..... **LEFT**
3. Engine ..... check
4. Brakes ..... check by depressing pedals
5. Safety harnesses ..... tighten up
6. Free area of landing ..... check
7. **CARBURET. PREHEAT.** knob ..... **ON**
8. Approaching speed ..... 60 KIAS (111 km/h IAS)
9. Flaps ..... **TAKE-OFF** position (15°)
10. Trim ..... as necessary



- 11. **PARKING BRAKE** ..... check for lever down
- 12. Electric fuel pump ..... **ON**

**FINAL – NORMAL LANDING**

- 1. Flaps ..... **LANDING** positions  
(30° or 50°)
- 2. Maintain airspeed ..... 60 KIAS (111 km/h IAS)
- 3. Trim ..... as necessary
- 4. **CARBURET. PREHEAT.** knob ..... **OFF**

**4.5.11 Bailed Landing**

- 1. **THROTTLE** lever ..... max. take-off power
- 2. Flaps ..... **TAKE-OFF** position (15°)
- 3. Airspeed ..... 56 KIAS (104 km/h IAS)
- 4. Flaps at altitude of 150 ft ..... **RETRACTED** position (0°)
- 5. Climb at speed ..... 65 KIAS (120 km/h IAS)
- 6. Trim ..... as necessary
- 7. **THROTTLE** lever ..... max. continuous power
- 8. Instruments ..... check

**4.5.12 Landing**

- 1. **THROTTLE** lever ..... idle
- 2. Touch-down on main landing gear wheels ..... carry out
- 3. Brakes after nose landing gear  
wheel touch-down ..... as necessary

**4.5.13 After Landing**

- 1. Flaps ..... **RETRACTED** position (0°)
- 2. Trims ..... **NEUTRAL**
- 3. Outside lights ..... **OFF**
- 4. Transponder ..... **OFF**
- 5. Electric fuel pump ..... **OFF**



**4.5.14 Engine Shut-off**

1. **THROTTLE** lever ..... idle
2. Engine parameters ..... check
3. Radio station / avionics ..... **OFF**
4. **AVIONICS SWITCH** ..... **OFF**
5. Other electrical equipment ..... **OFF**
6. Ignition ..... **OFF**
7. EFIS ..... **OFF**
8. **BEACONS** ..... **OFF**
9. **MASTER SWITCH** ..... **OFF**

**4.5.15 Airplane Parking**

1. Ignition ..... check **OFF**
2. **MASTER SWITCH** ..... check **OFF**
3. **FUEL** selector ..... **OFF**  
Pull the safety button on the fuel selector, turn the handle to the **OFF** position and then release safety button. Now the handle is blocked in the **OFF** position. Safety button prevents unintentionally switch the selector from the **OFF** position.
4. Parking brake handle ..... brake as necessary
5. Fix the control stick using safety harnesses during long-time parking.
6. Canopy ..... close,  
lock as necessary

**NOTE**

It is recommended to use parking brake for short-time parking only, between flights during a flight day. After ending the flight day or at low temperatures of ambient air, do not use parking brake, but use the wheel chocks instead.





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**Section 5**  
Performance

## 5.1 Introduction

Section 5 provides data for airspeed calibration, stall speeds, take-off performance and additional information, provided by the airplane type certificate owner.

**CAUTION**

THE PERFORMANCE STATED IN THIS SECTION IS  
VALID FOR ROTAX 912 ULS (100 HP) TOGETHER  
WITH WOODCOMP KLASSIC 170/3/R PROPELLER  
INSTALLED IN THE AIRPLANE.



**5.2 Performance Data**

**5.2.1 Airspeed Indicator System Calibration**

**NOTE**

Assumed zero instrument error. Valid for airplane take-off weight 600 kg.

	RETRACTED		TAKEOFF 15°	LANDING I 30°	LANDING II 50°
	IAS [km/h]	CAS [km/h]	CAS [km/h]	CAS [km/h]	CAS [km/h]
VS0	72				80
	75			84	83
	78		87	87	85
VS1	80	91	89	88	87
	83	94	92	91	90
	90	99	98	97	96
	95	103	102	101	100
	100	107	106	105	104
	105	111	110	109	109
	110	115	115	114	113
VFE	115	119	119	118	117
	120	123	123	122	122
	125	128	128	126	126
	130	132	132	131	131
	140	140			
	150	149			
	160	158			
VA	170	167			
	180	176			
	190	186			
	200	195			
	210	205			
VNO	213	208			
	220	215			
	230	225			
	240	235			
	250	245			
VNE	260	255			
	270	266			



	RETRACTED		TAKEOFF	LANDING I	LANDING II
	KIAS	KCAS	15° KCAS	30° KCAS	50° KCAS
VS0	39				43
	40				44
	41			46	45
	42		47	47	46
VS1	43	49	48	48	47
	44	50	49	48	48
	45	51	50	49	48
	50	55	54	53	53
	55	59	58	58	57
	60	63	62	62	62
	65	67	67	66	66
VFE	70	71	71	70	70
	75	75			
	80	80			
	85	84			
VA	90	89			
	95	93			
	100	98			
	105	103			
	110	107			
VNO	115	112			
	120	117			
	125	122			
	130	127			
	135	132			
VNE	140	138			
	<b>146</b>	<b>144</b>			



### 5.2.2 Stall Speed

- Conditions:**
- wing level stall - engine at idle power
  - turning flight stall - engine at 75% max. continuous power
  - airplane weight - 600 kg

**NOTE**

The stated stall speeds are valid for all flight altitudes. Altitude losses shown in the table present max. values determined on the basis of flight tests using average piloting technique.

600 kg 1323 lb	Flaps position	Stall speed		Altitude loss ft
		IAS [km/h]	CAS [km/h]	
Wing level flight	Retracted (0°)	80	91	200
	Take-off (15°)	78	87	
	Landing (50°)	72	80	
Turn flight (coordinated turn 30° bank)	Retracted (0°)	92	105	200
	Take-off (15°)	90	100	
	Landing (50°)	83	92	

600 kg 1323 lb	Flaps position	Stall speed		Altitude loss ft
		KIAS	KCAS	
Wing level flight	Retracted (0°)	43	49	200
	Take-off (15°)	42	47	
	Landing (50°)	39	43	
Turn flight (coordinated turn 30° bank)	Retracted (0°)	49	56	200
	Take-off (15°)	48	54	
	Landing (50°)	45	50	



**5.2.3 Take-off Distance**

- Conditions:**
- engine
  - flaps
  - carburetor preheater
  - airplane weight
  - ambient air temperature
  - max. take-off power
  - Take-off position (15°)
  - OFF
  - 600 kg
  - ISA

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Takeoff Run		Distance over 50 ft obstacle		Takeoff Run		Distance over 50 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	15,0	59	190	620	440	1440	220	720	470	1540
2000 ft ISA	11,0	52	210	690	500	1640	250	820	530	1740
4000 ft ISA	7,1	45	240	790	560	1840	280	920	600	1970
6000 ft ISA	3,1	38	270	890	630	2070	310	1020	670	2200
8000 ft ISA	-0,8	30	310	1020	710	2330	360	1180	760	2490
10000 ft ISA	-4,8	23	350	1150	810	2660	400	1310	860	2820

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Takeoff Run		Distance over 50 ft obstacle		Takeoff Run		Distance over 50 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	25,0	77	200	660	470	1540	240	790	500	1640
2000 ft ISA	21,0	70	230	750	530	1740	270	890	570	1870
4000 ft ISA	17,1	63	260	850	600	1970	300	980	640	2100
6000 ft ISA	13,1	56	290	950	680	2230	340	1120	720	2360
8000 ft ISA	9,2	48	330	1080	770	2530	380	1250	820	2690
10000 ft ISA	5,2	41	370	1210	870	2850	430	1410	930	3050

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Takeoff Run		Distance over 50 ft obstacle		Takeoff Run		Distance over 50 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	35,0	95	220	720	500	1640	250	820	540	1770
2000 ft ISA	31,0	88	240	790	570	1870	280	920	610	2000
4000 ft ISA	27,1	81	280	920	640	2100	320	1050	680	2230
6000 ft ISA	23,1	74	310	1020	720	2360	360	1180	770	2530
8000 ft ISA	19,2	66	350	1150	820	2690	410	1350	880	2890
10000 ft ISA	15,2	59	400	1310	930	3050	470	1540	1000	3280

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Takeoff Run		Distance over 50 ft obstacle		Takeoff Run		Distance over 50 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	5,0	41	180	590	410	1350	200	660	440	1440
2000 ft ISA	1,0	34	200	660	480	1510	230	750	490	1610
4000 ft ISA	-2,9	27	220	720	520	1710	260	850	550	1800
6000 ft ISA	-6,9	20	250	820	590	1940	290	950	620	2030
8000 ft ISA	-10,8	12	290	950	660	2170	330	1080	710	2330
10000 ft ISA	-14,8	5	320	1050	750	2460	370	1210	800	2620

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Takeoff Run		Distance over 50 ft obstacle		Takeoff Run		Distance over 50 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	15,0	59	190	620	440	1440	220	720	470	1540
2000 ft ISA	11,0	52	210	690	500	1640	250	820	530	1740
4000 ft ISA	7,1	45	240	790	560	1840	280	920	600	1970
6000 ft ISA	3,1	38	270	890	630	2070	310	1020	670	2200
8000 ft ISA	-0,8	30	310	1020	710	2330	360	1180	760	2490
10000 ft ISA	-4,8	23	350	1150	810	2660	400	1310	860	2820

- Corrections:**
- Influence of wind: Add 4% on every 1 kt (0.5 m/s) of tail wind
  - RWY inclination: Add 8% of the take-off run distance on 1% of runway inclination up the slope



### 5.2.4 Landing Distance

- Conditions:**
- engine - idle
  - flaps - LANDING II position (50°)
  - carburetor preheating - OFF
  - airplane weight - 600 kg
  - ambient air temperature - ISA

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Landing Run		Distance over 60 ft obstacle		Landing Run		Distance over 60 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	15.0	59	180	590	400	1310	160	520	380	1250
2000 ft ISA	11.0	52	190	620	420	1380	170	560	400	1310
4000 ft ISA	7.1	45	200	660	450	1480	180	590	430	1410
6000 ft ISA	3.1	38	220	720	480	1570	190	620	450	1480
8000 ft ISA	-0.8	30	230	750	510	1670	200	660	480	1570
10000 ft ISA	-4.8	23	240	790	540	1770	220	720	510	1670

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Landing Run		Distance over 60 ft obstacle		Landing Run		Distance over 60 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	25.0	77	190	620	410	1350	170	560	390	1280
2000 ft ISA	21.0	70	200	660	440	1440	180	590	420	1380
4000 ft ISA	17.1	63	210	690	470	1540	190	620	440	1440
6000 ft ISA	13.1	56	220	720	500	1640	200	660	470	1540
8000 ft ISA	9.2	48	240	790	530	1740	210	690	500	1640
10000 ft ISA	5.2	41	250	820	560	1840	220	720	530	1740

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Landing Run		Distance over 60 ft obstacle		Landing Run		Distance over 60 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	35.0	95	190	620	430	1410	170	560	410	1350
2000 ft ISA	31.0	88	200	660	450	1480	180	590	430	1410
4000 ft ISA	27.1	81	220	720	480	1570	190	620	460	1510
6000 ft ISA	23.1	74	230	750	510	1670	210	690	490	1610
8000 ft ISA	19.2	66	250	820	550	1800	220	720	520	1710
10000 ft ISA	15.2	59	260	860	580	1900	230	760	550	1800

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Landing Run		Distance over 60 ft obstacle		Landing Run		Distance over 60 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	5.0	41	170	560	390	1280	150	490	370	1210
2000 ft ISA	1.0	34	180	590	410	1350	160	520	390	1280
4000 ft ISA	-2.9	27	200	660	430	1410	170	560	410	1350
6000 ft ISA	-6.9	20	210	690	460	1510	180	590	440	1440
8000 ft ISA	-10.8	12	220	720	490	1610	200	660	470	1540
10000 ft ISA	-14.8	5	230	750	520	1710	210	690	500	1640

Airport altitude	Temperature		CONCRETE				GRASS			
	Temperature		Landing Run		Distance over 60 ft obstacle		Landing Run		Distance over 60 ft obstacle	
	TH [°C]	TH [°F]	[m]	[ft]	[m]	[ft]	[m]	[ft]	[m]	[ft]
0 ft ISA	-5.0	23	170	560	370	1210	150	490	350	1150
2000 ft ISA	-9.0	16	180	590	390	1280	160	520	370	1210
4000 ft ISA	-12.9	9	190	620	420	1380	170	560	400	1310
6000 ft ISA	-16.9	2	200	660	440	1440	180	590	420	1380
8000 ft ISA	-20.8	-5	210	690	470	1540	190	620	450	1480
10000 ft ISA	-24.8	-13	230	750	500	1640	200	660	480	1570

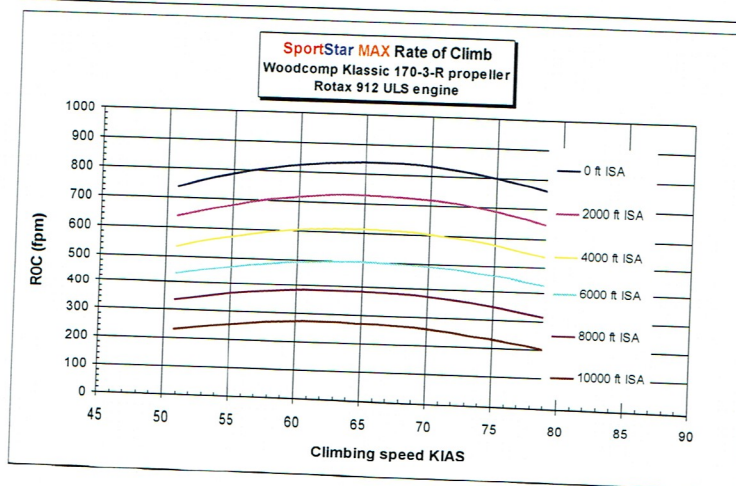
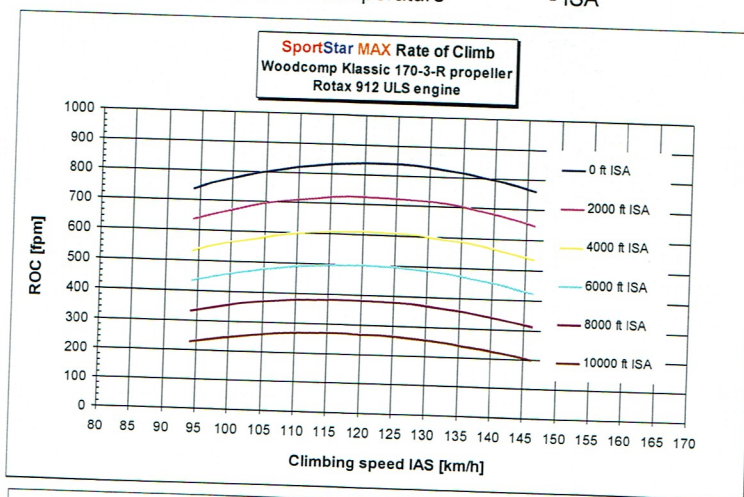
- Corrections:**
- Add 4.5 % on every 1 kt (0.5 m/s) of tail wind
  - RWY inclination: Add 8% of the landing run distance on 1% of runway inclination down the slope





**5.2.5 Climb Performance**

- Conditions:
- engine - maximum take-off power
  - flaps - retracted (0°)
  - carburetor preheating - OFF
  - airplane weight - 600 kg
  - ambient air temperature - ISA





Best rate of climb for various altitudes is mentioned in the following table:

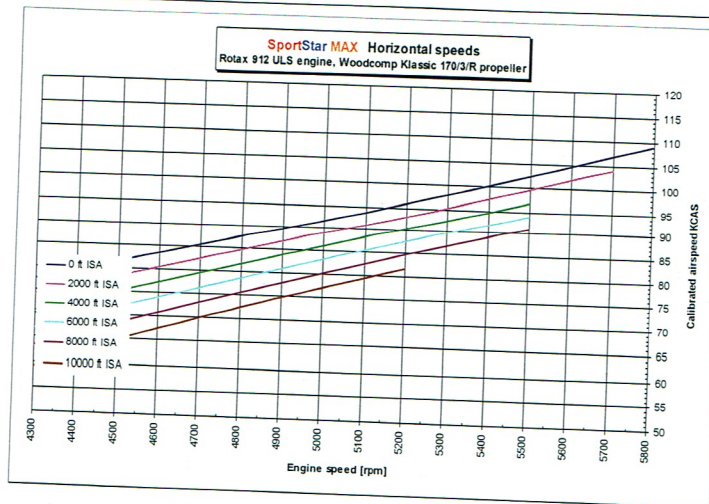
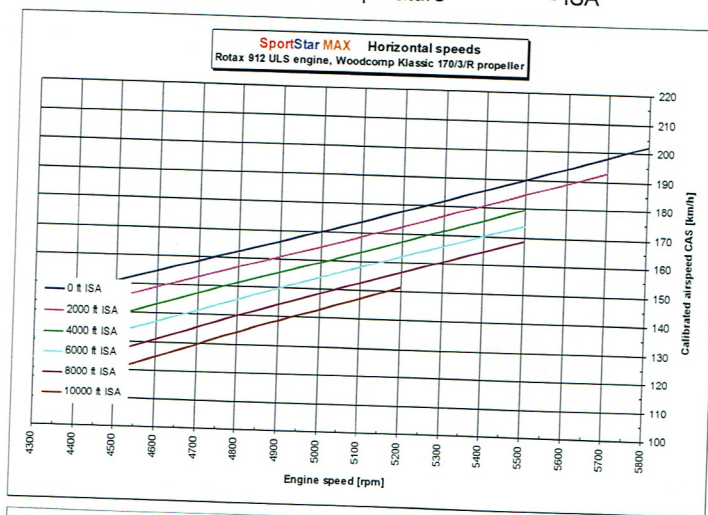
Altitude	Best Rate of Climb Speed			Max.ROC
	km/h	KIAS	mph	[fpm]
0 ft ISA	122	66	76	841
1000 ft ISA	121	66	75	788
2000 ft ISA	121	65	75	727
3000 ft ISA	121	65	75	681
4000 ft ISA	120	65	75	613
5000 ft ISA	120	65	74	559
6000 ft ISA	119	64	74	499
7000 ft ISA	119	64	74	434
8000 ft ISA	118	64	73	365
9000 ft ISA	117	63	73	322
10000 ft ISA	116	63	72	272



### 5.3 Additional information

#### 5.3.1 Cruise

- Conditions:
- flaps
  - carburetor preheating
  - airplane weight
  - ambient air temperature
  - retracted (0°)
  - OFF
  - 600 kg
  - ISA





### 5.3.2 Horizontal Speeds

In the following table states Indicated airspeeds (IAS), corresponding calibrated air speeds (CAS) and true air speeds (TAS) versus altitude, all for various engine speeds.

			55% MTV	65% MTV	75% MTV	MCP Maximum Continuous Power	MTP Maximum Takeoff Power (5 min.)
			4300 rpm	4800 rpm	5000 rpm	5500 rpm	5800 rpm
0 ft ISA	IAS [km/h]		149	170	179	201	214
	CAS [km/h]		143	162	170	190	202
	TAS [km/h]		143	162	170	190	202
2000 ft ISA	IAS [km/h]		141	164	173	195	
	CAS [km/h]		137	157	165	185	
	TAS [km/h]		141	161	170	190	
4000 ft ISA	IAS [km/h]		134	157	167	189	
	CAS [km/h]		131	151	159	179	
	TAS [km/h]		139	160	169	190	
6000 ft ISA	IAS [km/h]		126	151	160	183	
	CAS [km/h]		124	146	154	174	
	TAS [km/h]		136	159	168	190	
8000 ft ISA	IAS [km/h]		118	145	154	177	
	CAS [km/h]		117	140	148	169	
	TAS [km/h]		132	158	167	190	
10000 ft ISA	IAS [km/h]		110	138	148		
	CAS [km/h]		109	134	143		
	TAS [km/h]		127	156	166		

			55% MTV	65% MTV	75% MTV	MCP Maximum Continuous Power	MTP Maximum Takeoff Power (5 min.)
			4300 rpm	4800 rpm	5000 rpm	5500 rpm	5800 rpm
0 ft ISA	KIAS		80	92	96	108	116
	KCAS		77	88	92	102	109
	KTAS		77	88	92	103	109
2000 ft ISA	KIAS		76	88	93	105	
	KCAS		74	85	89	100	
	KTAS		76	87	92	103	
4000 ft ISA	KIAS		72	85	90	102	
	KCAS		70	82	86	97	
	KTAS		75	87	91	103	
6000 ft ISA	KIAS		68	82	87	99	
	KCAS		67	79	83	94	
	KTAS		73	86	91	103	
8000 ft ISA	KIAS		64	78	83	96	
	KCAS		63	76	80	91	
	KTAS		71	85	90	103	
10000 ft ISA	KIAS		59	75	80		
	KCAS		59	72	77		
	KTAS		69	84	90		



**5.3.3 Endurance**

- Conditions:
- flaps
  - carburetor preheating
  - airplane weight
  - ambient air temperature
  - retracted (0°)
  - OFF
  - 600 kg
  - ISA

LOAD LIMITS			
Max. take-off weight	600 kg	1323 lb	
Empty weight	335 kg	739 lb	
Max. baggage weight	25 kg	55 lb	

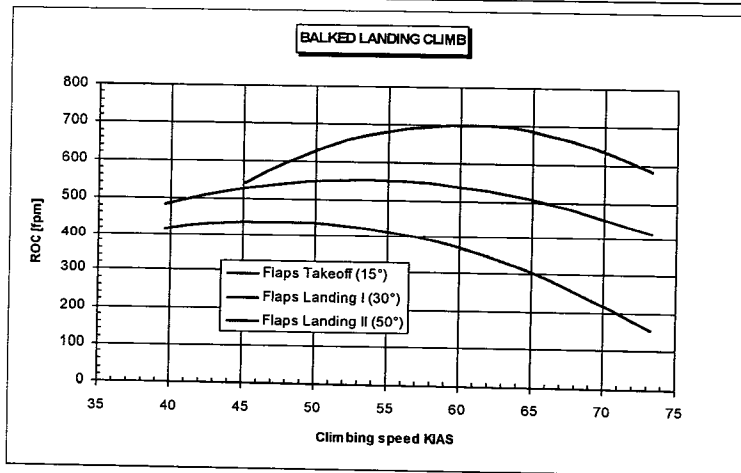
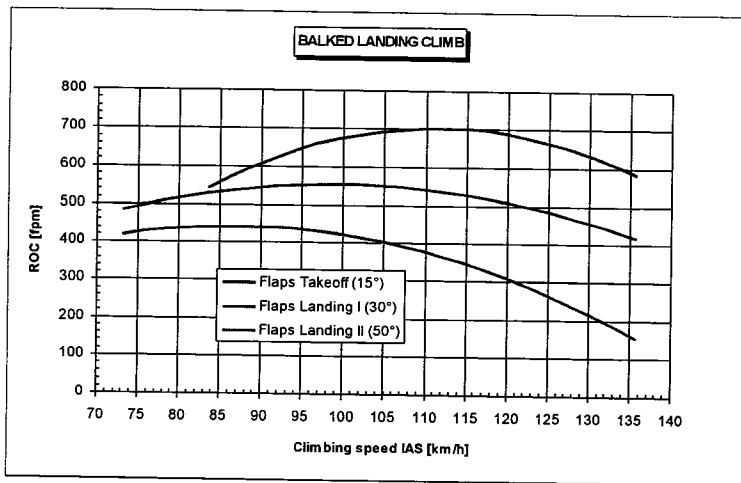
PERMITTED CREW WEIGHT						
		120,0 l	100,0 l	75,0 l	50,0 l	25,0 l
Baggage max.		31,7 USGAL	26,4 USGAL	19,8 USGAL	13,2 USGAL	6,6 USGAL
		26,4 UKGAL	22,0 UKGAL	16,5 UKGAL	11,0 UKGAL	5,5 UKGAL
		25 kg	154 kg	168 kg	186 kg	204 kg
Baggage 1/2	13 kg	166 kg	181 kg	199 kg	217 kg	235 kg
No baggage	0 kg	179 kg	193 kg	211 kg	229 kg	247 kg
Baggage max.		55 lb	339 lb	370 lb	410 lb	450 lb
		28 lb	366 lb	398 lb	438 lb	477 lb
		0 lb	394 lb	425 lb	465 lb	505 lb
Baggage 1/2						517 lb
No baggage						545 lb

ENDURANCE AND RANGE Altitude 2000 ft ISA		55% MCP	65% MCP	75% MCP	MCP Max. Continuous Power
Engine speed	[rpm]	4300	4800	5000	5500
Fuel consumption	[l/h]	14,1	18,6	20,5	25,1
	[USgal/h]	3,7	4,9	5,4	6,6
	[UKgal/h]	3,1	4,1	4,5	5,5
IAS	[km/h]	141	164	173	195
	[knots]	76	88	93	105
	[mph]	88	102	107	121
CAS	[km/h]	137	157	165	185
	[knots]	74	85	89	100
	[mph]	85	97	102	115
TAS	[km/h]	141	161	170	190
	[knots]	76	87	92	103
	[mph]	88	100	105	118
Endurance at	120,0 l [h:m]	8:30	6:26	5:50	4:46
Range at	120,0 l [km]	1200	1040	990	910
	31,7 USGAL [NM]	648	562	535	491
	26,4 UKGAL [miles]	746	646	615	565
Endurance at	100,0 l [h:m]	7:05	5:22	4:52	3:59
Range at	100,0 l [km]	1000	870	830	760
	26,4 USGAL [NM]	540	470	448	410
	22,0 UKGAL [miles]	621	541	516	472
Endurance at	75,0 l [h:m]	5:19	4:01	3:39	2:59
Range at	75,0 l [km]	750	650	620	570
	19,8 USGAL [NM]	405	351	335	308
	16,5 UKGAL [miles]	466	404	385	354
Endurance at	50,0 l [h:m]	3:32	2:41	2:26	1:59
Range at	50,0 l [km]	500	430	410	380
	13,2 USGAL [NM]	270	232	221	205
	11,0 UKGAL [miles]	311	267	255	236
Endurance at	25,0 l [h:m]	1:46	1:20	1:13	0:59
Range at	25,0 l [km]	250	220	210	190
	6,6 USGAL [NM]	135	119	113	103
	5,5 UKGAL [miles]	155	137	130	118



### 5.3.4 Balked Landing Climb

- Conditions:**
- engine
  - flaps
  - carburetor preheating
  - airplane weight
  - ambient air temperature
  - maximum take-off power
  - LANDING II position (50°)
  - OFF
  - 600 kg
  - ISA





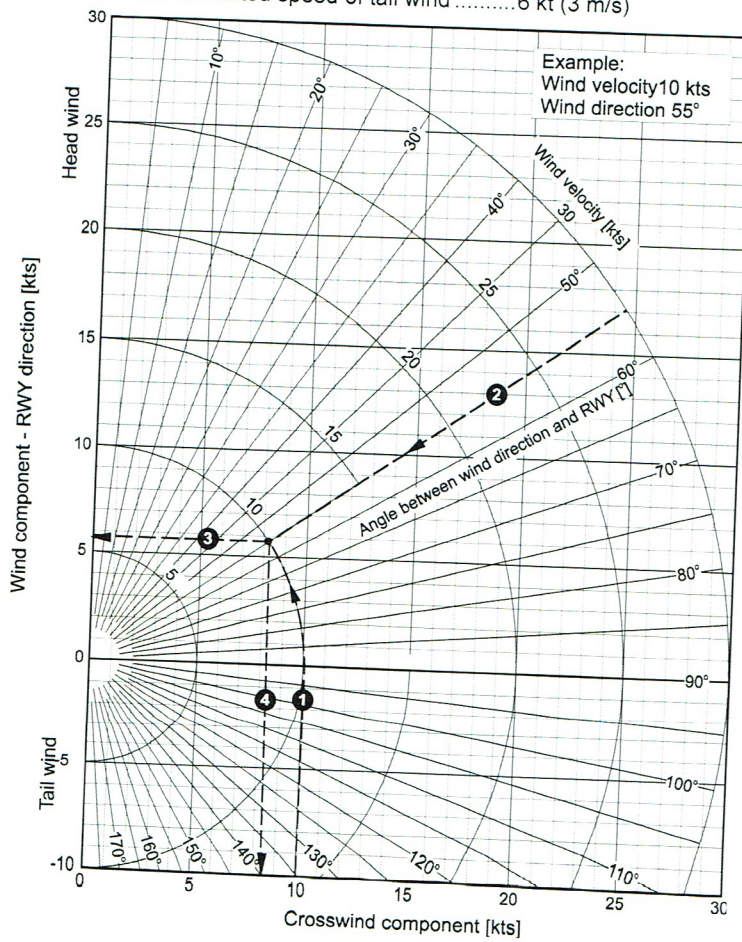
**5.3.5 Effect on Flight Performance and Characteristics**

Flight performances and characteristics are not considerably affected by rain or insect stuck on the airplane surface.

**5.3.6 Demonstrated Crosswind Performance**

Maximum demonstrated speed of cross wind for take-off and landing ..... 18 kt (9 m/s)

Maximum demonstrated speed of tail wind ..... 6 kt (3 m/s)





**5.3.7 Ceiling**

Service ceiling ..... 12 910 ft

**5.3.8 Noise data**

Not measured.