REMOS AIRCRAFT

# REMOS GX

## Pilot Operating Handbook for LSA

Edition for standard Cockpit  Revision general-05

# Introduction

## Light Sport Aircraft REMOS GX

The REMOS GX was manufactured in accordance with the Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.

**Serial No.:** _____

**Built:** _____

**Call Sign:** _____

**Engine-Type:** _____

**Serial No. Engine:** _____

**Propeller-Type:** _____

**Manufacturer:** REMOS Aircraft GmbH Flugzeugbau
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# Introduction

## List of Content and List of Effective Pages

This POH consists of the following listed pages and sections. You will find a marking indicating the revision and date of issue at the top border of each page. Insert the latest changed pages.

# Introduction

## List of Revisions

| sect. | description | part | rev. |
|---|---|---|---|
| 0 | Introduction | general | 05 |
| 1 | General Information | general | 05 |
| 2 | Operating Limitations | general | 05 |
| 3 | Emergency Procedures | general | 05 |
| 4 | Normal Procedures | general | 05 |
| 5 | Performance | general | 05 |
| 6 | Weight and Balance | general | 04 |
| 7 | Systems | general | 04 |
| 8 | Handling and Servicing | general | 04 |

# Introduction

## Remarks and Alterations

Please make a notation below if any changes have been made to this manual or to the plane. This manual is an important document for the pilot in command to ensure safe operation of the aircraft. Therefore it is recommended to keep this Operating Handbook updated with the newest information available. You can get the latest updates of this manual from your dealer or directly from the manufacturer's homepage.

| no. | page | concern | date | sign |
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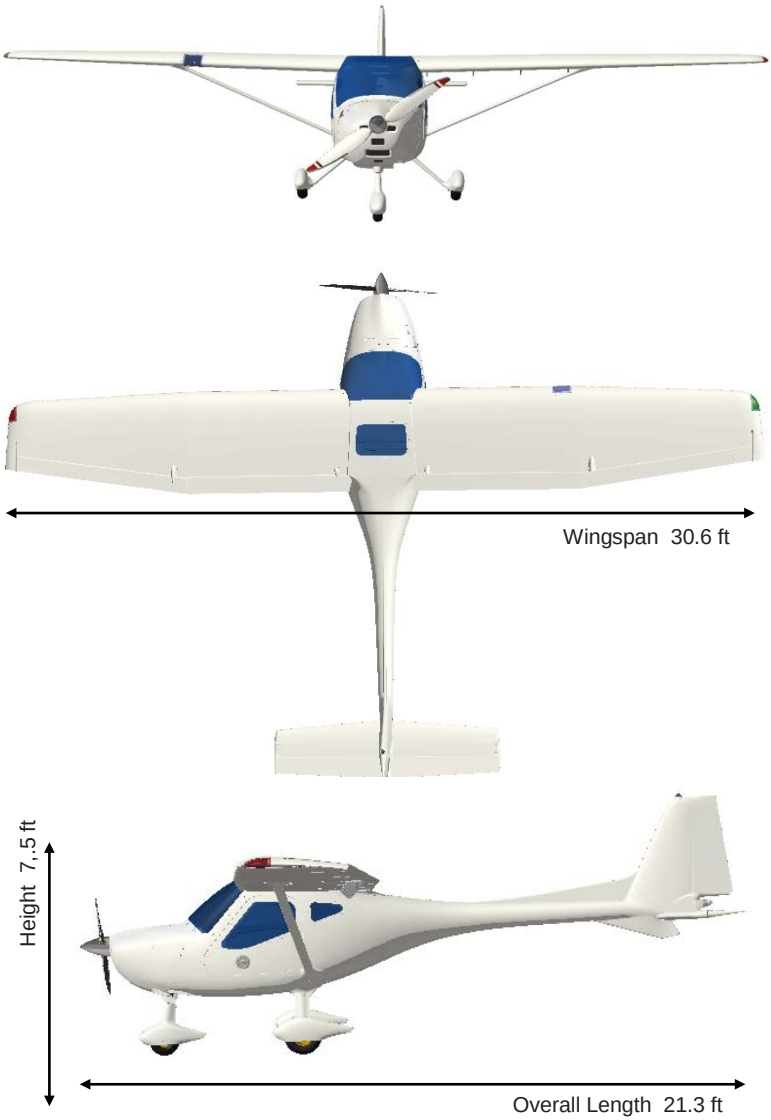
# Introduction

## Views



# 1 General Information

## Table of Contents

# 1 General Information

## 1.1 Introduction

This Operating Handbook is designed to help enable a safe and successful completion of each flight with the REMOS GX. It provides you with all necessary information for regular maintenance and operation of the aircraft. Therefore we recommend that the pilot keep this Operating Handbook updated with the newest information available. You can get the latest version of this Handbook from your local dealer or directly from the manufacturer's homepage.

## 1.2 Certification

The REMOS GX was manufactured in accordance with the Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.

## 1.3 Continued Airworthiness

Technical publications for continued airworthiness are released on the REMOS website www.remos.com and they may be downloaded free of charge.

Bombardier-Rotax releases technical publications on their website www.rotax-aircraft-engines.com from which they may be downloaded free of charge. Documentation update for avionics may be downloaded on www.dynonavionics.com and www.garmin.com.

It is the responsibility of the owner/operator of the aircraft to keep the aircraft and its documentation up to date and to comply with all technical publications.

# 1 General Information

## 1.4 Quick Reference

Type: Full composite carbon fiber aircraft with two seats.

Design: High wing design with struts, front mounted engine and propeller, traditional stabilizer concept, differential ailerons. Electrically operated flaps (0° to 40°), electric elevator trim, three-wheel landing gear with steerable nose wheel. Main gear with hydraulic disc brakes. The cabin is equipped with two seats side by side and can be entered and exited by doors on the left and right side of the fuselage.

Layout: Main components are built in half shells from composite fiber material, which are bonded together (carbon fiber, Kevlar and glass fiber).

## 1.5 Technical Specifications

| | |
|---|---|
| wingspan | 30 ft 6 in |
| length | 21 ft 3 in |
| height | 7 ft 5 in |
| wing area | 118 sq ft |
| | |
| MTOW | 1,320 lb |
| wing loading | 11 lb /sq ft |

# 1 General Information

## 1.6 Engine

| | | |
|---|---|---|
| **manufacturer** | | Bombardier-Rotax |
| **engine type** | | 912 UL-S |
| **max. power** | **take-off** | 73.6 kW / 100 HP |
| | **max. cont.** | 69.9 kW / 95 HP |
| **fuel qualities** | | AVGAS, MOGAS or min. AKI 91, ideally free of ethanol |
| **usable fuel quantity** | | 21 US gallons |
| **total fuel quantity** | | 22 US gallons |
| **engine oil** | | synthetic or semi-synthetic |
| **oil rating** | | API-SG or higher |
| **engine oil capacity** | | min. 2.1 qts<br>max. 3.1 qts |
| **recommended oil** | | AeroShell Sport PLUS 4 10W-40 |
| **coolant** | | BASF Glysantin Protect Plus/G48 |
| **mixing ratio** | | 1:1 (Glysantin : water) |

| | |
|---|---|
| **NOTE** | Please refer to REMOS notification NOT-001 and ROTAX SI-912-016/SI-914-019 for further information on fuel containing ethanol and on suitable engine oils.<br><br>Have a frequent look on www.rotax-engines.com and on www.remos.com for the latest information. |

# 1 General Information

## 1.7 Propeller

| | |
|---|---|
| **manufacturer** | 1. FIii. Tonini<br>2. Woodcomp<br>3. Sensenich<br>4. Neuform |
| **type and number of blades** | 1. GT-169,5/164<br>2-blade, wood<br>2. SR38+1<br>2-blade, wood<br>3. 2A0R5R70EN<br>2-blade, composite<br>4. CR3-65-47-101,6<br>3-blade, composite |
| **gear ratio** | 2.43 : 1 |
| **slipper clutch** | optional |

## 1.8 ICAO Designator

ICAO Designator: GX (as per ICAO Doc. 8643)

## 1.9 Noise Certification

According to noise requirements for Ultralight aircraft (LS-UL) dated August 1996, the REMOS GX is certified to a noise level of 60 dB (A).

# 2 Operating Limitations

## Table of Contents

# 2 Operating Limitations

## 2.1 Reference Airspeeds

| speed | | IAS | description |
|---|---|---|---|
| $V_{NE}$ | Never exceed speed | 155 mph (134 kts) | Airspeed which may never be exceeded |
| $V_{NO}$ | Maximum speed in turbulence | 123 mph (107 kts) | Airspeed which shall not be exceeded in gusty weather conditions |
| $V_A$ | Maneuvering speed | 108 mph (94 kts) | Maximum airspeed for all permissible maneuvers |
| $V_{FE}$ | Speed range flaps fully extended | 81 mph (70 kts) | Airspeed which may never be exceeded in flaps down configuration |
| $V_{APP}$ | Approach airspeed | 75 mph (65 kts) | Recommended airspeed for approach with full payload |
| $V_X$ | Airspeed for best angle of climb | 56 mph (49 kts) | Airspeed for the greatest altitude gain in the shortest horizontal distance |
| $V_Y$ | Airspeed for best rate of climb | 75 mph (65 kts) | Airspeed for the greatest altitude gain in the shortest time |
| $V_{S1}$ | Minimum airspeed flaps retracted (0°) | 51 mph (44 kts) | Minimum permissible airspeed in flaps up configuration |
| $V_{S0}$ | Minimum airspeed flaps extended (40°) | 44 mph (38 kts) | Minimum permissible airspeed in flaps down configuration |

# 2 Operating Limitations

## 2.2 Stalling Speeds at Maximum Takeoff Weight

| | |
|---|---|
| stall speed with flaps extended | VS0 = 44 mph = 38 kts |
| stall speed with flaps retracted | VS1 = 51 mph = 44 kts |

## 2.3 Flap Extended Speed Range

For deflected flaps following speed restrictions apply as a function of airspeed:

| δ [ deg ] | VFE [ mph ] | VFE [ kts ] |
|---|---|---|
| 10 | 155 | 134 |
| 15 | 132 | 115 |
| 20 | 115 | 100 |
| 30 | 94 | 81 |
| 40 | 81 | 70 |

With flaps set to any deflection the safe load factor is limited to 2.

## 2.4 Maximum Maneuvering Speed

| | |
|---|---|
| maximum maneuvering speed | VA = 108 mph = 94 kts |

# 2 Operating Limitations

## 2.5 Never Exceed Speed

never exceed speed VNE = 155 mph = 134 kts

Due do the reduced density of air at altitude, true airspeed is higher than calibrated or indicated airspeed. Therefore VNE is limited to 155 mph = 134 kts true airspeed in order to prevent flutter. With increasing altitude VNE is limited to lower values than indicated by redline according to the following table.

| **altitude** [ ft ] | **IAS** [ mph ] | **IAS** [ kts ] |
|---|---|---|
| 0 | 155 | 135 |
| 5,000 | 147 | 128 |
| 10,000 | 137 | 119 |
| 15,000 | 125 | 110 |

## 2.6 Maximum Wind Velocity for Tie-Down

max. wind velocity for tie-down in the open VR = 44 mph = 38 kts

## 2.7 Crosswind and Wind Limitations

maximum demonstrated cross wind component for take-off and landing 15 knots

The maximum demonstrated crosswind component is not a limitation. The pilot may exceed this demonstrated crosswind component on his or her own discretion. In case the pilot operates the aircraft in crosswind components higher than demonstrated he or she shall be aware of the fact that this flight regime has not been tested.

A general wind limitation is not defined for the REMOS GX.

# 2 Operating Limitations

## 2.8 Maximum Parachute Deploy Airspeed

| | |
|---|---|
| maximum parachute deploy airspeed | 138 mph = 120 kts |

## 2.9 Service Ceiling

| | |
|---|---|
| service ceiling | 15,000 ft |

## 2.10 Load Factors

| | |
|---|---|
| safe load factors | +4.0 g / -2.0 g |

With flaps set to any deflection the safe load factor is limited to 2.

## 2.11 Maximum Structure Temperature

| | |
|---|---|
| max. certified structure temperature | 130°F = 54°C |

## 2.12 Prohibited Maneuvers

Flight maneuvers not permitted

- aerobatics
- spins
- flight in icing conditions

## 2.13 Permissible Flight Maneuvers

The following maneuvers are permitted

- all non-aerobatic maneuvers,
  including stalls and departure stalls
- flight with the doors off

# 2 Operating Limitations

## 2.14 Weight and Balance

| | | |
|---|---|---|
| **front limit of C.G.** | 9.6 in | (245 mm) |
| **rear limit of C.G.** | 16.3 in | (415 mm) |

| | | |
|---|---|---|
| **maximum take-off weight (MTOW)** | 1,320 lb | (600 kg) |
| **typical empty weight** | 710 lb | (322 kg) |
| **max. baggage in baggage compartment** | 66 lb | (30 kg) |
| **max. baggage in each bin** | 4.4 lb | (2 kg) |
| **max. fuel** | 126 lb | (57 kg) |

## 2.15 Crew

The REMOS GX is certified to be operated with a minimum of 1 occupant (the pilot in command) and a maximum of 2 occupants.

If not otherwise defined by regulations or by the owner/operator, the pilot in command is normally seated on the left.

## 2.16 Flight Conditions and Minimum Equipment List

| operation | minimum equipment |
|---|---|
| Day-VFR | as per D-VFR Minimum Equipment List |
| Night-VFR | as per N-VFR Minimum Equipment List |
| IFR in IMC | not approved |
| IFR in VMC | as per IFR/VMC Minimum Equipment List |
| Aerobatics | not approved |

# 2 Operating Limitations

**D-VFR minimum equipment list**

- engine ROTAX 912 UL-S
- silencer
- airbox
- propeller as defined in chapter 2
- carburetor heating system
- compass with compass card
- altimeter
- airspeed indicator
- safety belts
- ELT
- electrical system including circuit breakers
- master, avionics and engine kill (ignition) switch
- engine instruments (Rotax FlyDAT, Dynon EMS D-10, Dynon EMS D-120, or Dynon FlightDEK D-180)
- position lights (REMOS N-VFR or AeroLEDs Pulsar NS90)
- taillight (AeroLEDs SUNTAIL or Kunzleman)
- anti collision light on rudder and belly (Thiessen ACL or Thiessen ACL-3)
- in case of AeroLEDs NS90 position lights, use taillight AeroLEDs SUNTAIL only, and do not use additional anti collision light of any kind in this case

**N-VFR Minimum equipment list**

- as per D-VFR minimum equipment list, plus
- electrical artificial horizon (DYNON EFIS D-100, DYNON FlightDEK D-180, or analogue)
- instrument panel lighting
- landing light (HELLA, AeroLEDs AEROSUN 1600 or AeroLEDS AEROSUN X-TREME)
- communication radio (Garmin SL40 or SL30)
- transponder (Garmin GTX327, GTX328, or GTX330)

# 2 Operating Limitations

**IFR/VMC Minimum equipment list**

- as per N-VFR minimum equipment list, plus
- navigation radio (Garmin SL30) and Dynon HS-34 or analogue CDI with Glideslope
- audio panel (Garmin GMA340 including marker antennas)

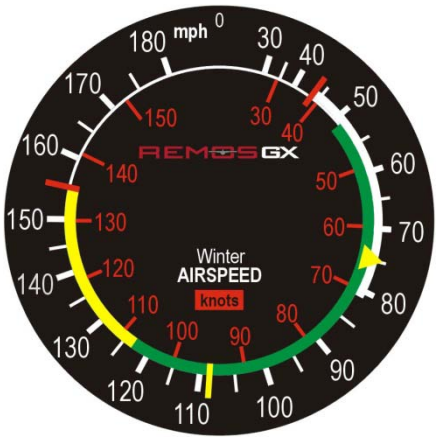
## 2.17 Engine

| | | |
|---|---|---|
| **engine manufacturer** | | Bombardier-Rotax |
| **engine type** | | 912 UL-S |
| **max. power** | **take-off** | 73.6 kW / 100 HP |
| | **continuous** | 69.9 kW / 95 HP |
| **max. engine speed** | **take-off** | 5,800 rpm |
| | **continuous** | 5,500 rpm |
| **idle speed** | | 1,400…1,600 min-1 |
| **cylinder head temperature** | **minimum** | not defined |
| | **maximum** | 275°F (135°C) |
| **oil temperature** | **minimum** | 120°F (50°C) |
| | **maximum** | 266°F (130°C) |
| **oil pressure** | **minimum** | 22 psi (1,5 bar) |
| | **maximum** | 73 psi (5,0 bar) |
| **oil pressure below 3,500 rpm** | **minimum** | 12 psi (0,8 bar) |
| **during cold start** | **maximum** | 101 psi (7,0 bar) |
| **max. fuel pressure** | | 6 psi (0,4 bar) |

# 2 Operating Limitations

## 2.18 Airspeed Indicator Range and Markings

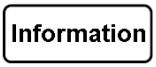
| Marking | IAS Airspeed / Range | | Description |
|---|---|---|---|
| Red Line, low | 44 mph | $V_{S0}$ | Minimum airspeed with flaps extended |
| White Arc | 44 to 81 mph | $V_{S0}$ - $V_{FE}$ | Airspeed range for flaps extended |
| Yellow Line | 108 mph | $V_A$ | Maximum airspeed for full maneuverability |
| Green Arc | 51 to 123 mph | $V_{S1}$ - $V_{NO}$ | Normal use |
| Yellow Arc | 123 to 155 mph | $V_B$ - $V_{NE}$ | Caution in gusty conditions |
| Red Line, high | 155 mph | $V_{NE}$ | Maximum permissible airspeed |
| Yellow Triangle | 75 mph | $V_{APP}$ | Recommended airspeed for approach and best angle of climb |



# 2 Operating Limitations

## 2.19 Placards and Markings

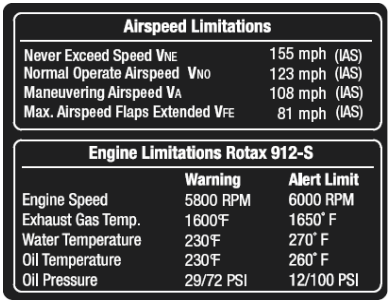
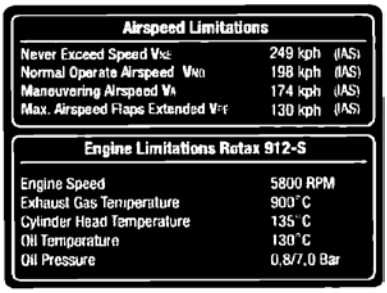
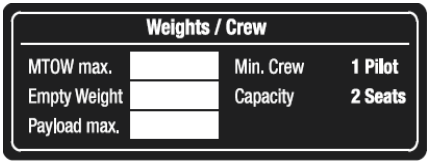
From SN298 on, the required placards and markings are created with the following color codes. For previous aircraft, placards had a different color code, but are still in effect.

| Type | Inside | Outside |
|---|---|---|
| Information | white lettering on a black background - white framed | black lettering on a white background - black framed |
| |   |   |
| Safety | white lettering on a black background - red framed | red lettering on a white background - red framed |
| |   |   |
| Warning | white lettering on a red background - white framed | red lettering on a white background - red framed |
| |   |   |

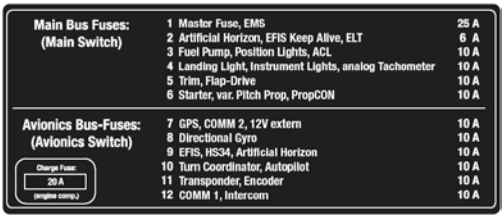
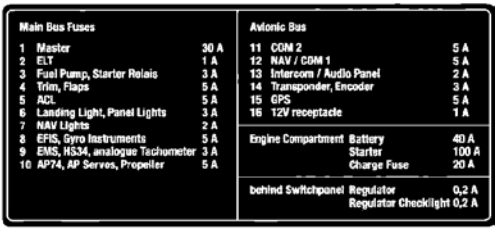
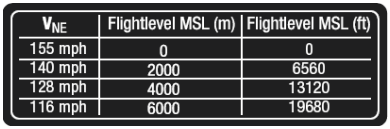
The following list does not define the layout but the content and intent of the placards.

# 2 Operating Limitations

The following placards are mandatory and define operational limitations. They are located on the instrument panel.

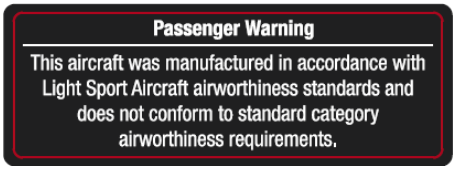
| placards | location |
|---|---|
|  or | right cockpit |
|  <br>  | center console<br>or |
|  | center console |

# 2 Operating Limitations

| placards | location |
|---|---|
|  | center console |
|  <br><br>  | right rocker panel or on main spar carrythrough<br><br>up to SN377<br><br>from SN378 on |
|  | baggage compartment |
|  | cockpit |

# 2 Operating Limitations

The following safety placard is located on the right side of the panel. This placard is mandatory.

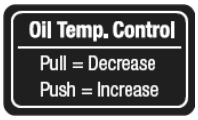
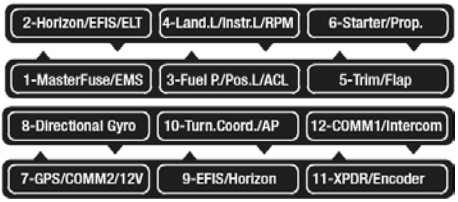
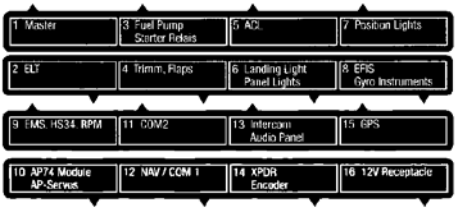
| placard | location |
|---|---|
|  | right cockpit |

The following safety placard is located on the left side of the panel. This placard is mandatory.

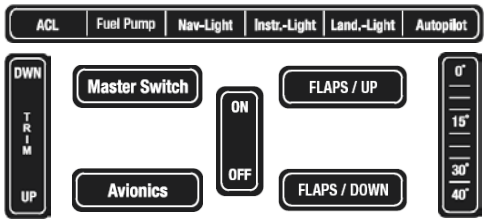
| placard | location |
|---|---|
|  | left cockpit |

# 2 Operating Limitations

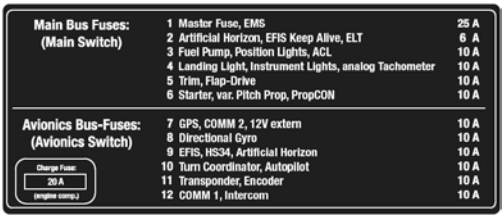
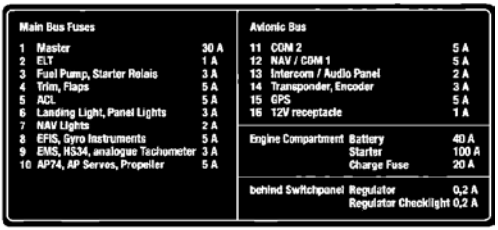
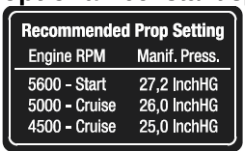
The following information placards and markings are found inside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  | left cockpit |
|  | right cockpit |
|  | right cockpit<br>until SN377 |
|  | from SN378 on |

# 2 Operating Limitations

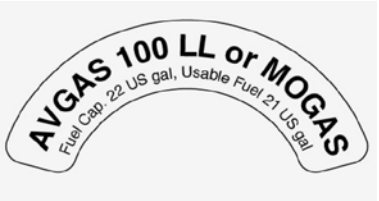
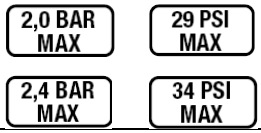
| placards | location |
|---|---|
|  | center console |
|  | center console |
|  | switchboard |

# 2 Operating Limitations

| placards | location |
|---|---|
|  | right rocker panel or on main spar carrythrough<br>up to SN377 |
|  | from SN378 on |
| **optional:** constant speed prop<br>  | switchboard |
| **optional:** glider towing aircraft<br>  | left cockpit |
|  | left rocker panel |

# 2 Operating Limitations

The following information placards and markings are found outside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  or  | fuel tank filler cap |
|  | wheel fairings |
|  | static port |

# 2 Operating Limitations

The following safety placards and markings are found inside the cabin. Attaching these placards is not mandatory ; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  | center stack |
|  | aileron pushrod |
|  | cabin side at aileron pushrod cut out |
|  | baggage compartment |
|  | baggage compartment |
|  | fuel tank sight hose |

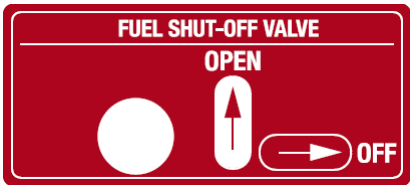
# 2 Operating Limitations

The following safety placards and markings are found outside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  | center of elevator |
|  | next to the opening for aileron pushrod, covered by wing if not folded |
|  | center of fixed surface of elevator, covered if elevator is installed |
|  | wing main bolt |

# 2 Operating Limitations

The following warning placards and markings are found inside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  | center console |
|  | door |
|  | door |

The following warning placards and markings are found outside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

| placards | location |
|---|---|
|  | recovery system egress area |

# 3 Emergency Procedures

## Table of Content

# 3 Emergency Procedures

## 3.1 Definitions

**Procedures**

are instructions that must be performed in the given sequence, as far as possible without interruption.

**Checklists**

are lists for items to be checked in the applicable phase of flight (taxi, take-off, climb, etc.). Timing and sequence of the steps to be executed may vary according to the individual flight.

**Briefings**

are guidelines for upcoming procedures. With the help of briefings, the pilot and passenger should recapitulate those procedures.

# 3 Emergency Procedures

## 3.2 Jettison of Doors — Procedure

| | | |
|---|---|---|
| 1. | door lock | OPEN |
| 2. | hinge pin | PULL |
| 3. | door | JETTISON |

## 3.3 Spin Recovery — Procedure

| | | |
|---|---|---|
| 1. | control stick | NEUTRAL |
| 2. | rudder | OPPOSITE SPIN DIRECTION |
| 3. | after stopping of rotation | RECOVER |

## 3.4 Recovery System — Procedure

| | | |
|---|---|---|
| 1. | engine | STOP |
| 2. | recovery system | RELEASE |
| 3. | fuel valve | CLOSE |
| 4. | declare emergency | MAYDAY MAYDAY MAYDAY |
| 5. | master switch | OFF |
| 6. | safety belts | TIGHTEN |

# 3 Emergency Procedures

## 3.5 Voltage Drop Procedure

1. engine speed MORE THAN 4.000 RPM
2. non essential systems OFF
3. land on appropriate airfield

| | |
|---|---|
| **NOTE** | During day VFR Operations, nonessential systems are all systems except for the radio and intercom. During night VFR or IFR operations, essential systems also include transponder, areal navigation (GPS or SL30 and HS34), instrument lights, position lights, ACL and the artificial horizon (also applicable are Dynon D-100 or D-180 instead of the artificial horizon). |

## 3.6 Engine Stoppage during Take-Off Procedure

**during take-off run (aborted take-off)**

1. engine speed IDLE
2. brakes AS REQUIRED
3. engine OFF

**during climb out (altitude below 500ft)**

1. AVIATE – NAVIGATE – COMMUNICATE
2. engine speed IDLE
3. engine OFF
4. fuel valve CLOSE
5. declare emergency MAYDAY MAYDAY MAYDAY
6. master switch OFF
7. safety belts TIGHTEN
8. emergency landing APPROPRIATE TERRAIN

| | |
|---|---|
| **NOTE** | No course deviations should be made in excesss of 30° to the left or right. Do not return to the airfield. |

# 3 Emergency Procedures

## 3.7 Engine Stoppage in Flight Procedure

**case 1: altitude not enough for engine re-start**

1. AVIATE – NAVIGATE – COMMUNICATE
2. landing site IDENTIFY
3. engine OFF
4. fuel valve CLOSE
5. declare emergency MAYDAY MAYDAY MAYDAY
6. master switch OFF
7. safety belts TIGHTEN
8. emergency landing APPROPRIATE TERRAIN

**case 2: altitude sufficient for engine re-start**

1. AVIATE – NAVIGATE – COMMUNICATE
2. landing site IDENTIFY
3. carburetor heat PULL
4. electric fuel pump ON
5. choke OFF
6. starter ENGAGE
7. if engine does not start continue with case 1
8. if engine starts, continue flight and land at the nearest appropriate airfield to determine the reason for engine failure

## 3.8 Carburetor Icing Procedure

1. carburetor heat PULL
2. electric fuel pump ON
3. power setting FULL POWER

# 3 Emergency Procedures

## 3.9 ENGINE ON FIRE Procedure

| | | |
|---|---|---|
| 1. | AVIATE – NAVIGATE – COMMUNICATE | |
| 2. | landing site | IDENTIFY |
| 3. | fuel valve | CLOSE |
| 4. | carburetor heat | PULL |
| 5. | electric fuel pump | OFF |
| 6. | power setting | FULL until ENGINE STOPS |
| 7. | declare emergency | MAYDAY MAYDAY MAYDAY |
| 8. | master switch | OFF |
| 9. | slip | AS REQUIRED |
| 10. | safety belts | TIGHTEN |
| 11. | emergency landing | APPROPRIATE TERRAIN |

| NOTE | Never release the recovery system in case of fire. |
|---|---|

## 3.10 Emergency Landing on Land Procedure

| | | |
|---|---|---|
| 1. | AVIATE – NAVIGATE – COMMUNICATE | |
| 2. | landing site | IDENTIFY |
| 3. | direction of wind | IDENTIFY |
| 4. | approach airspeed | $V_{APP}$ = 75 mph = 65 kts |
| 5. | max. flap speed | $V_{FE}$ = 80 mph = 70 kts |
| 6. | flaps | DOWN |
| 7. | trim | AS REQUIRED |
| 8. | declare emergency | MAYDAY MAYDAY MAYDAY |
| 9. | master switch | OFF |
| 10. | safety belts | TIGHTEN |
| 11. | landing direction | INTO THE WIND<br>or UPHILL |
| 12. | touchdown with full elevator on main wheels first | |
| 13. | after landing, release safety belts and vacate aircraft | |

# 3 Emergency Procedures

## 3.11 Emergency Landing on Water Procedure

1. AVIATE – NAVIGATE – COMMUNICATE
2. direction of wind IDENTIFY
3. approach airspeed $V_{APP}$ = 75 mph = 65 kts
4. max. flap speed $V_{FE}$ = 80 mph = 70 kts
5. flaps DOWN
6. trim AS REQUIRED
7. declare emergency MAYDAY MAYDAY MAYDAY
8. master switch OFF
9. safety belts TIGHTEN
10. doors JETTISON
11. touchdown with full elevator on water surface
12. after landing release safety belts and vacate aircraft

# 4 Normal Procedures

## Table of Content

# 4 Normal Procedures

## 4.1 Definitions

**Procedures**

are instructions that must be performed in the given sequence, as far as possible without interruption.

**Checklists**

are lists for items to be checked in the apropriate phase of flight (taxi, take-off, climb, etc.). Timing and sequence of the steps to be executed may vary according to the individual flight.

**Briefings**

are guidelines for upcoming procedures. With the help of briefings, the pilot and passenger should recapitulate those procedures.

# 4 Normal Procedures

## 4.2 Fuel Draining Procedure

Since auto fuel contains a significant amount of ethanol nowadays, draining of the fuel system is more and more important. Draining of the aircraft must be performed before moving the aircraft at all. After re-fueling the aircraft, draining is also required. Give the fuel several minutes to rest after filling it up and do not move the aircraft prior to draining.

The drainer is located underneath the belly, just behind the main landing gear. From the outside only a plastic hose with 0.5 in diameter is visible. To drain the fuel tank, press on the plastic hose. Capture the released fuel and analyze it for water.

If AVGAS or MOGAS is used, water will clearly deposit underneath the fuel. Continue draining until no more water can be detected.

In the case of auto fuel containing ethanol, water can be absorbed by the fuel up to a certain amount, so no water will be detected during draining. If the fuel looks like a milky dispersion, the fuel is saturated with water. In this case dump all of the fuel, do not use this fuel for flying! After dumping fuel, fill up the fuel tank completely with fuel without ethanol.

To dump fuel, press in the plastic drainer hose and turn it counter-clockwise (as seen from bottom) about ¼ of a turn. To close the drainer, turn the plastic hose back. Be sure the drainer is properly closed. If dust or dirt particles get inside the drainer, the drainer will not close properly. In this case, open the drainer again to clean the drainer.

When draining the aircraft take care that no fuel contaminates the environment. Dispose of drained or dumped fuel in an environmental correct manner.

For further information about fuel containing ethanol please refer to the REMOS Notification NOT-001-ethanol-fuel.

# 4 Normal Procedures

## 4.3 Preflight Check Checklist

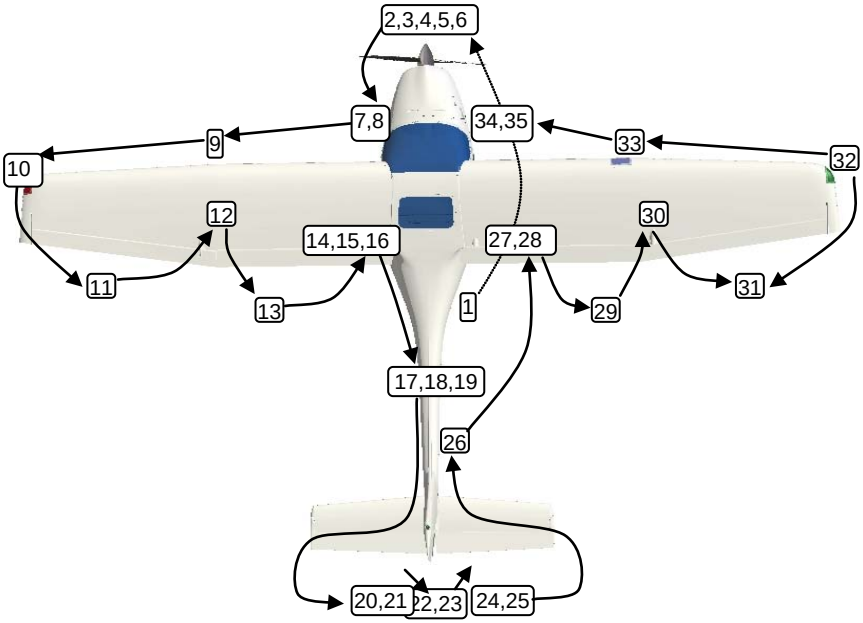
**Checks outside the aircraft**

1. fuel system drained before moving the aircraft at all
2. engine oil level (between min. and max. markings)
3. level of engine coolant (between min. and max. markings)
4. cowling is closed and properly secured
5. propeller has no damage or wear
6. nose gear and wheel/tire have no damage or wear, air pressure is correct and suspension is free
7. static port is clean
8. main wing bolt properly secured with Fokker needle
9. pitot tube is clean and properly fixed
10. wingtip and cover glass are securely mounted and not damaged
11. aileron, linkage and hinges have free travel and no damage, counterweights are securely fixed
12. upper wing strut attachment is secured
13. flap, linkage and hinges have no damage, rubber stops (flutter damper) on outer hinges are in place
14. lower wing strut attachment is secured
15. belly top antennas are securely mounted and free of damage
16. left main gear and wheel/tire have no damage or wear, air pressure is correct and suspension is free
17. cover of ejection opening has no damage
18. top antennas are securely mounted and free of damage
19. fuselage has no damage
20. horizontal tail, elevator, linkage and hinges have free travel and no damage
21. trim actuator linkage securely mounted and not damaged
22. elevator quick-fastener is securely locked
23. rudder linkage and hinges have free travel and no damage
24. horizontal tail attachment bolts are secured
25. horizontal tail, elevator, linkage and hinges have free travel and no damage
26. fuselage has no damage

# 4 Normal Procedures

27. right main gear and wheel/tire have no damage or wear, air pressure is correct and suspension is free
28. lower wing strut attachment is secured
29. flap, linkage and hinges have no damage, rubber stops (flutter damper) on outer hinges are in place
30. upper wing strut attachment is secured
31. aileron, linkage and hinges have free travel and no damage , counterweights are securely fixed
32. wingtip and cover glass are securely mounted and not damaged
33. landing light glass is not damaged
34. static port is clean
35. main wing bolt properly secured with Fokker needle

It is suggested to perform the outside check according to the following flow diagram:




**Insecurely connected, improper operation of control surfaces or insecurely locked fasteners will lead to loss of control of the aircraft!!**

# 4 Normal Procedures

1. aileron quick-fasteners are securely locked

2. enough fuel on board for the flight
3. both seats are properly secured in intended position
4. both doors can be locked
5. check proper functioning of the flap drive and gauge

**Insecurely connected, improper operation of control surfaces or insecurely locked fasteners will lead to loss of control of the aircraft!!**

# 4 Normal Procedures

## 4.4 Before Start-Up Checkliste

| | | |
|---|---|---|
| 1. | doors | LOCKED |
| 2. | safety belts | FASTENED |
| 3. | parking brake | SET |
| 4. | recovery system | ARMED |
| 5. | fuel valve | OPEN |

## 4.5 Engine Start Procedure

**cold engine**

| | | |
|---|---|---|
| 1. | master switch | ON |
| 2. | anti-collision-light (ACL) | ON |
| 3. | oil cooler flap | CLOSED |
| 4. | electric fuel pump | ON |
| 5. | engine power | CRACKED OPEN |
| 6. | choke | PULL |
| 7. | propeller | FREE |
| 8. | starter | ENGAGE max.10 sec. |

**warm engine**

| | | |
|---|---|---|
| 1. | master switch | ON |
| 2. | anti-collision-light (ACL) | ON |
| 3. | oil cooler flap | AS REQUIRED |
| 4. | electric fuel pump | ON |
| 5. | engine power | CRACKED OPEN |
| 6. | choke | OFF |
| 7. | propeller | FREE |
| 8. | starter | ENGAGE max.10 sec. |

| | |
|---|---|
| **NOTE** | Do not hold the key in the “START” position for more than 10 seconds, in order to avoid overheating the starter. If the engine does not start, release the key to position "0", wait 2 minutes and repeat the procedure. |

# 4 Normal Procedures

## 4.6 After Start-Up Procedure

| | |
|---|---|
| 9. engine has started | STARTER DISENGAGE |
| 10. choke | OFF |
| 11. oil pressure | OK |
| 12. position-lights | ON |
| 13. avionics switch | ON |
| 14. intercom | ON |
| 15. radios | ON and FREQUENCY SET |
| 16. transponder | AS REQUIRED |
| 17. electric fuel pump | OFF |
| 18. engine speed for warm-up | 2,500 rpm |

| | |
|---|---|
| **NOTE** | By having the electric fuel pump switched off after starting the engine, only the mechanical pump is providing the engine with fuel. Make sure that the engine is running without the electric pump for at least two minutes. In that time, the engine burns all fuel in the fuel system behind the mechanical fuel pump. If the engine keeps running, the mechanical fuel pump is operational. |

## 4.7 Engine Run Up Checklist

| | |
|---|---|
| 1. oil temperature | min. 50°C / 120°F |
| 2. engine speed | 4,000 rpm |
| 3. magneto check | max. 300 rpm DROP |
| 4. carburetor heat | TEMPERATURE RISES |
| 5. engine speed | IDLE |
| 6. electric fuel pump | ON |

# 4 Normal Procedures

## 4.8 Taxi Procedure

| | | |
|---|---|---|
| 1. | landing light | RECOMMENDED |
| 2. | parking brake | RELEASE |
| 3. | engine speed | AS REQUIRED |
| 4. | control on ground | VIA PEDALS |
| 5. | min. turn radius | ca. 20 ft = 7 m |
| 6. | braking | AS REQUIRED |
| 7. | taxi speed | APPROPRIATE |

## 4.9 Departure Briefing

| | | |
|---|---|---|
| 1. | wind, weather, visibility | OK |
| 2. | ATIS | CHECKED |
| 3. | runway | CORRECT DIRECTION |
| 4. | traffic pattern | ALTITUDE and ROUTING |

# 4 Normal Procedures

## 4.10 Take-Off Procedure

**short field take-off**

| | | |
|---|---|---|
| 1. | oil cooler flap | AS REQUIRED |
| 2. | carburetor heat | OFF |
| 3. | electric fuel pump | ON |
| 4. | brakes | SET |
| 5. | flaps | UP, ON GRASS 15 deg |
| 6. | elevator trim | 2/3 UP |
| 7. | rudder and aileron | NEUTRAL |
| 8. | engine power | FULL POWER |
| 9. | brakes | RELEASE |
| 10. | rotate and lift-off | VX = 56 mph = 49 kts |
| 11. | steepest climb | VX = 56 mph = 49 kts |
| 12. | best climb | VY = 75 mph = 65 kts |

| | |
|---|---|
| **NOTE** | Take-off distances given in chapter 5 have been determined with this procedure. It is required to rotate and lift off the aircraft with significant elevator input. Take care not to stall the aircraft during this maneuver. |

| | |
|---|---|
| **NOTE** | It is recommended to keep the electric fuel pump switched on during the entire flight. |

| | |
|---|---|
| **NOTE** | Full power engine speed on ground is approx. 4,900 rpm with the Sensenich prop and approx. 5,000 rpm with the Tonini and Neuform props. |

| | |
|---|---|
| **NOTE** | Take-off with reduced power is possible, though not recommended. No take-off shall be performed with engine speed lower than 4,000 rpm. A drastically reduced take-off performance must be taken into account. |

# 4 Normal Procedures

**comfort take-off**

| | | |
|---|---|---|
| 1. | oil cooler flap | AS REQUIRED |
| 2. | carburetor heat | OFF |
| 3. | electric fuel pump | ON |
| 4. | flaps | UP, ON GRASS 15 deg |
| 5. | elevator trim | 2/3 UP |
| 6. | rudder and aileron | NEUTRAL |
| 7. | engine power | FULL POWER |
| 8. | rotate | 49 mph = 43 kts |
| 9. | lift-off | 62 mph = 54 kts |
| 10. | best climb | VY = 75 mph = 65 kts |

| | |
|---|---|
| **NOTE** | Take-off distance with this procedure can easily be two times or more longer than the short field take-off, but is much more comfortable. |

| | |
|---|---|
| **NOTE** | It is recommended to keep the electric fuel pump switched on during the entire flight. |

| | |
|---|---|
| **NOTE** | Full power engine speed in ground is approx. 4,900 rpm with the Sensenich prop and approx. 5,000 rpm with the Tonini and Neuform props. |

| | |
|---|---|
| **NOTE** | Take-off with reduced power is possible, though not recommended. No take-off shall be performed with engine speed lower than 4,000 rpm. A drastically reduced take-off performance must be taken into account. |

# 4 Normal Procedures

## 4.11 Best Angle of Climb Speed (VX) Checklist

| | | |
|---|---|---|
| 1. | flaps | CLEAN |
| 2. | electric fuel pump | ON |
| 3. | steepest climb | VX = 56 mph = 49 kts |
| 4. | engine power | FULL POWER |
| 5. | carburetor heat | OFF |
| 6. | oil cooler flap | AS REQUIRED |
| 7. | CHT | max. 275°F = 135°C |
| 8. | oil temperature | 120…266°F = 50…130°C |

## 4.12 Best Rate of Climb Speed (VY) Checklist

| | | |
|---|---|---|
| 1. | flaps | CLEAN |
| 2. | electric fuel pump | ON |
| 3. | best climb | VY = 75 mph = 65 kts |
| 4. | engine power | FULL POWER |
| 5. | carburetor heat | OFF |
| 6. | oil cooler flap | AS REQUIRED |
| 7. | CHT | max. 275°F = 135°C |
| 8. | oil temperature | 120…266°F = 50…130°C |

# 4 Normal Procedures

## 4.13 Cruise Checklist

| | | |
|---|---|---|
| 1. | flaps | CLEAN |
| 2. | landing light | OFF |
| 3. | engine speed | AS REQUIRED |
| 4. | maneuvering speed | VA = 108 mph = 94 kts |
| 5. | normal operating speed | VNO = 123 mph = 107 kts |
| 6. | never exceed speed | VNE = 155 mph = 135 kts |
| 7. | max. cont. engine speed | 5,500 rpm |
| 8. | carburetor heat | OFF |
| 9. | oil cooler flap | AS REQUIRED |
| 10. | CHT | max. 275°F = 135°C |
| 11. | oil temperature | 120…266°F = 50…130°C |

| NOTE | It is recommended to keep the electric fuel pump switched on during the entire flight. |
|---|---|

**reasonable cruise configurations**

**with Tonini or Woodcomp fixed pitch propeller:**

With an engine speed of 4,800 rpm, an airspeed of 99 mph = 86 kts is achieved at 3,000ft. Fuel consumption is approx. 4.8 US gal.

**with Sensenich ground adjustable propeller:**

With an engine speed of 4,800 rpm, an airspeed of 112 mph = 97 kts is achieved at 3,000ft. Fuel consumption is approx. 4.8 US gal.

**with Neuform ground adjustable propeller:**

With an engine speed of 4,800 rpm, an airspeed of 112 mph = 97 kts is achieved at 3,000ft. Fuel consumption is approx. 4.8 US gal.

# 4 Normal Procedures

## 4.14 Flying in Rain — Checklist

| | | |
|---|---|---|
| 1. | electric fuel pump | ON |
| 2. | carburetor heat | ON |
| 3. | engine speed | AS REQUIRED |
| 4. | oil cooler flap | AS REQUIRED |
| 5. | CHT | max. 275°F = 135°C |
| 6. | oil temperature | 120…266°F = 50…130°C |

| | |
|---|---|
| **NOTE** | • visibility to the front is very limited<br>• windscreen may need defogging<br>• flight performance is reduced<br>• fuel consumption increases<br>• stall speed increases<br>• braking efficiency during landing is reduced |

## 4.15 Flying Without Doors — Procedure

| | | |
|---|---|---|
| 1. | door lock | OPEN |
| 2. | gas spring on door | DETACH |
| 3. | hinge pin | PULL |
| 4. | door | TAKE OUT CAREFULLY |

| | |
|---|---|
| **NOTE** | VNE is reduced to 115 mph = 100 kts when flying without doors. |

| | |
|---|---|
| **NOTE** | Flying without doors leads to high wind velocities inside the cabin. |

| | |
|---|---|
| **NOTE** | For flight without doors, either one door or both doors must be taken out before flight. |

| | |
|---|---|
| **NOTE** | Unlocking and opening doors in flight is prohibited. |

# 4 Normal Procedures

## 4.16 Recovery from Stall Procedure

| | | |
|---|---|---|
| 1. | stick back pressure | RELEASE |
| 2. | rudder | OPPOSITE to BANK |
| 3. | aileron | NEUTRAL |
| 4. | engine power | AS REQUIRED |

## 4.17 Descent Checklist

| | | |
|---|---|---|
| 1. | flaps | CLEAN |
| 2. | engine speed | AS REQUIRED |
| 3. | electric fuel pump | ON |
| 4. | maneuvering speed | VA = 108 mph = 94 kts |
| 5. | normal operating speed | VNO = 123 mph = 107 kts |
| 6. | never exceed speed | VNE = 155 mph = 135 kts |
| 7. | max. cont. engine speed | 5,500 rpm |
| 8. | carburetor heat | RECOMMENDED |
| 9. | oil cooler flap | AS REQUIRED |
| 10. | CHT | max. 275°F = 135°C |
| 11. | oil temperature | 120…266°F = 50…130°C |

# 4 Normal Procedures

## 4.18 Approach Briefing

| | | |
|---|---|---|
| 1. | wind, weather, visibility | OK |
| 2. | ATIS | CHECKED |
| 3. | runway | CORRECT DIRECTION |
| 4. | traffic pattern | ALTITUDE and ROUTING |
| 5. | radios | ON and FREQUENCY SET |
| 6. | transponder | AS REQUIRED |
| 7. | full flaps | BELOW 81 mph = 70kts |
| 8. | electric fuel pump | ON |
| 9. | airspeed in pattern | 95…125 mph = 80…110 kts |
| 10. | approach airspeed | AS RECOMMENDED |

The approach airspeed marked on the airspeed indicator refers to a max. take-off weight of 1,320lb = 600 kg. The recommended approach airspeed varies with the actual aircraft weight. Please refer to the following table to select the correct approach airspeed.

| aircraft weight | recommended approach speed |
|---|---|
| 880 lb | 58 mph = 50 kts |
| 990 lb | 62 mph = 54 kts |
| 1,100 lb | 66 mph = 58 kts |
| 1,200 lb | 70 mph = 61 kts |
| 1,320 lb | 75 mph = 65 kts |

# 4 Normal Procedures

## 4.19 Landing Procedure

**short field landing**

1. approach airspeed $V_{APP}$ = 65 mph = 57 kts
2. full flaps airspeed $V_{FE}$ = 80 mph = 70 kts
3. flaps DOWN
4. landing light RECOMMENDED
5. engine power AS REQUIRED
6. elevator trim AS REQUIRED
7. electric fuel pump ON
8. carburetor heat RECOMMENDED
9. oil cooler flap AS REQUIRED
10. CHT max. 275°F = 135°C
11. oil temperature 120…266°F = 50…130°C
12. touch down on main wheels first with very little flare.
13. brakes IMMEDIATELY

| | |
|---|---|
| **NOTE** | Landing distances given in chapter 5 have been determined with this procedure. Hold the nose landing gear just clear of the ground and touch down with very little flare. Take care not to overload the landing gear during this maneuver. |

# 4 Normal Procedures

**normal landing**

| | | |
|---|---|---|
| 1. | approach airspeed | AS RECOMMENDED |
| 2. | full flaps airspeed | $V_{FE}$ = 80 mph = 70 kts |
| 3. | flaps | DOWN |
| 4. | landing light | RECOMMENDED |
| 5. | engine power | AS REQUIRED |
| 6. | elevator trim | AS REQUIRED |
| 7. | electric fuel pump | ON |
| 8. | carburetor heat | RECOMMENDED |
| 9. | oil cooler flap | AS REQUIRED |
| 10. | CHT | max. 275°F = 135°C |
| 11. | oil temperature | 120…266°F = 50…130°C |

12. touch down on main wheels first with elevator fully held back.

| | |
|---|---|
| **NOTE** | Landing distance with this procedure can easily be two times or more longer than the short field landing, but is much more comfortable. |

| | |
|---|---|
| **NOTE** | In high wind or gusty conditions or for training purposes, less than full flap setting or clean flaps permitted. |

# 4 Normal Procedures

## 4.20 Balked Landing Procedure

| | | |
|---|---|---|
| 1. | engine power | FULL POWER |
| 2. | carburetor heat | OFF |
| 3. | flaps | RETRACT |
| 4. | steepest climb | VX = 56 mph = 49 kts |
| 5. | best climb | VY = 75 mph = 65 kts |
| 6. | electric fuel pump | ON |
| 7. | oil cooler flap | AS REQUIRED |
| 8. | CHT | max. 275°F = 135°C |
| 9. | oil temperature | 120…266°F = 50…130°C |

## 4.21 After Landing Checklist

| | | |
|---|---|---|
| 1. | landing light | RECOMMENDED |
| 2. | flaps | UP |
| 3. | electric fuel pump | OFF |
| 4. | radio and transponder | AS REQUIRED |

## 4.22 Shutdown Procedure

| | | |
|---|---|---|
| 1. | avionics switch | OFF |
| 2. | landing light | OFF |
| 3. | position lights | OFF |
| 4. | engine | OFF |
| 5. | ACL | OFF |
| 6. | cockpit lights | OFF |
| 7. | master switch | OFF |
| 8. | recovery system | SECURED |
| 9. | parking brake | SET |

| | |
|---|---|
| **NOTE** | It is permissible to switch avionics (GPS, radio, transponder, intercom) together with the avionics switch rather than separately. |

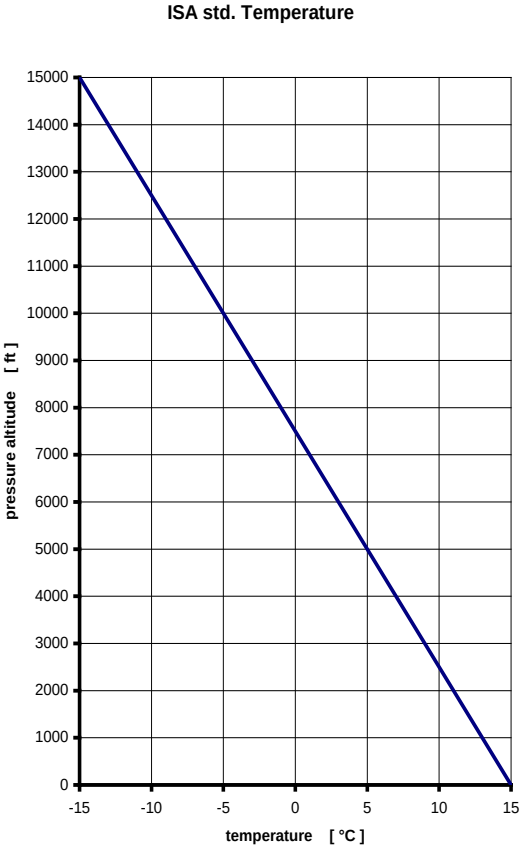
# 5 Performance

## Table of Contents

# 5 Performance

## 5.1 General

All flight performance data are given for ISA standard atmosphere at sea level and standard temperature. To determine temperature in relation to ISA conditions please refer to the following chart:




Flight performance can vary significantly due to tolerances, setting of propeller and engine, flight without doors, deviation of temperature and air density from standard ISA conditions, etc.

Range applies to the 22 gallon fuel tank system (21 gallons usable) without reserve, within the ICAO standard atmosphere at given altitude.

# 5 Performance

## 5.2 Take-Off and Landing Distances

| Take-Off | | Woodcomp or Tonini | Sensenich or Neuform |
|---|---|---|---|
| Take-off roll distance (Flaps 0°) | ft<br>m | n/a | 495ft<br>151m |
| Take-off air distance (Flaps 0°) | ft<br>m | n/a | 226ft<br>69m |
| Take-off distance (Flaps 0°) | ft<br>m | n/a | 721ft<br>220m |
| Take-off roll distance (Flaps 15°) | ft<br>m | 580ft<br>177m | 525ft<br>160m |
| Take-off air distance (Flaps 15°) | ft<br>m | 325ft<br>99m | 200ft<br>61m |
| Take-off distance (Flaps 15°) | ft<br>m | 905ft<br>265m | 725ft<br>215m |

| Landing | | all propellers |
|---|---|---|
| Landing roll distance (Flaps 40°) | ft<br>m | 341ft<br>104m |
| Landing air distance (Flaps 40°) | ft<br>m | 335<br>102m |
| Landing distance (Flaps 40°) | ft<br>m | 676ft<br>206m |

| | |
|---|---|
| **NOTE** | Take-off/landing conditions have been determined at ISA standard conditions at mean sea level and over a virtual 50ft obstacle. |

| | |
|---|---|
| **NOTE** | Short field procedures apply. Diverting from the short field procedures defined in section 4 will lead to significant longer take-off and landing distances. |

# 5 Performance

Performance data apply under ISA conditions on a dry, hard runway surface. Various circumstances have an effect on take-off and landing performance. According to ICAO-circular 601AN/55/2, it is recommended to use following add-ons on roll- and air distances:

| **add-ons on take-off roll distance** | |
|---|---|
| for dry grass | + 20% |
| for wet grass | + 30% |
| for soft surface | + 50% |
| per 2 knots tailwind component | + 10% |
| per 10 knots headwind component | - 10% |
| for high temperatures above standard | + 10% per 10°C |
| for altitude above sea level (density altitude) | + 5% per 1,000 ft |

| **add-ons on take-off air distance** | |
|---|---|
| for dirty wings/raindrops | + 15% |
| per 2 knots tailwind component | + 10% |
| per 10 knots headwind component | - 10% |
| for high temperatures above standard | + 10% per 10°C |
| for altitude above sea level (density altitude) | + 5% per 1,000 ft |

## 5.3 Rate of Climb

| **Propeller** | | **Woodcomp or Tonini** | **Sensenich** | **Neuform** |
|---|---|---|---|---|
| best angle of climb | mph | 56 | 56 | 56 |
| airspeed $V_X$ | kts | 49 | 49 | 49 |
| best rate of climb | mph | 75 | 75 | 75 |
| airspeed $V_Y$ | kts | 65 | 65 | 65 |
| best rate of climb at MSL | fpm | 600 | 710 | 710 |

climb is flown with flaps retracted, see section 4

# 5 Performance

## 5.4 Cruise Speed, RPM, Fuel Consumption, Range

**Rotax 912 UL-S, 100 hp engine, Woodcomp or Tonini Fixed Pitch Prop**

| Engine Speed rpm | Fuel Consumption gph | True Airspeed 3,000 ft, mph / kts | Maximum Endurance hr | Maximum Range NM |
|---|---|---|---|---|
| 5,400 | 6.7 | 113 / 98 | 3.2 | 311 |
| 5,200 | 6.0 | 109 / 95 | 3.5 | 332 |
| 5,000 | 5.4 | 104 / 91 | 3.9 | 353 |
| 4,800 | 4.9 | 100 / 87 | 4.3 | 375 |
| 4,600 | 4.4 | 95 / 83 | 4.8 | 401 |
| 4,400 | 3.9 | 91 / 79 | 5.4 | 425 |
| 4,200 | 3.5 | 86 / 75 | 6.0 | 446 |

**Rotax 912 UL-S, 100 hp engine, Sensenich Ground Adjustable Prop**

| Engine Speed rpm | Fuel Consumption gph | True Airspeed 3,000 ft, mph / kts | Maximum Endurance hr | Maximum Range NM |
|---|---|---|---|---|
| 5,400 | 6.7 | 130 / 113 | 3.2 | 362 |
| 5,200 | 6.0 | 123 / 107 | 3.5 | 375 |
| 5,000 | 5.4 | 117 / 102 | 3.9 | 398 |
| 4,800 | 4.9 | 111 / 97 | 4.3 | 417 |
| 4,600 | 4.4 | 105 / 91 | 4.8 | 437 |
| 4,400 | 3.9 | 98 / 85 | 5.4 | 459 |
| 4,200 | 3.5 | 92 / 80 | 6.0 | 480 |

**Rotax 912 UL-S, 100 hp engine, Neuform Ground Adjustable Prop**

| Engine Speed rpm | Fuel Consumption gph | True Airspeed 3,000 ft, mph / kts | Maximum Endurance hr | Maximum Range NM |
|---|---|---|---|---|
| 5,400 | 6.7 | 130 / 113 | 3.2 | 362 |
| 5,200 | 6.0 | 123 / 107 | 3.5 | 375 |
| 5,000 | 5.4 | 117 / 102 | 3.9 | 398 |
| 4,800 | 4.9 | 111 / 97 | 4.3 | 417 |
| 4,600 | 4.4 | 105 / 91 | 4.8 | 437 |
| 4,400 | 3.9 | 98 / 85 | 5.4 | 459 |
| 4,200 | 3.5 | 92 / 80 | 6.0 | 480 |

# 5 Performance

## 5.5 Low Airspeed and Stall

If the center of gravity is within the permissible range, the aircraft will be fully controllable until reaching the stall speed. If stall speed is reached, the pilot should lower the nose of the aircraft to re-establish a safe airspeed.

**level stall**

CG at most rearward position (airspeeds at IAS)

| Flap Position | 0° | 15° | 30° | 40° |
|---|---|---|---|---|
| $V_{min.}$ at idle | 51 mph (44 kts) | 47 mph (41 kts) | 45 mph (39 kts) | 44 mph (38 kts) |
| $V_{min.}$ at full power | 50 mph (43 kts) | 47 mph (41 kts) | 44 mph (38 kts) | 44 mph (38 kts) |

CG at most forward position (airspeeds at IAS)

| Flap Position | 0° | 15° | 30° | 40° |
|---|---|---|---|---|
| $V_{min.}$ at idle | 50 mph (43 kts) | 46 mph (40 kts) | 44 mph (38 kts) | 43 mph (37 kts) |
| $V_{min.}$ at full power | 47 mph (41 kts) | 46 mph (40 kts) | 44 mph (38 kts) | 43 mph (37 kts) |

# 5 Performance

**stall in turns**

CG at most rearward position (airspeeds at IAS), 30° bank

| Flap Position | 0° | 15° | 30° | 40° |
|---|---|---|---|---|
| $V_{min.}$ at idle | 51 mph (44 kts) | 47 mph (41 kts) | 44 mph (38 kts) | 44 mph (38 kts) |
| $V_{min.}$ at full power | 53 mph (46 kts) | 47 mph (41 kts) | 44 mph (38 kts) | 44 mph (38 kts) |

CG at most forward position (airspeeds at IAS), 30° bank

| Flap Position | 0° | 15° | 30° | 40° |
|---|---|---|---|---|
| $V_{min.}$ at idle | 53 mph (46 kts) | 49 mph (42 kts) | 45 mph (39 kts) | 44 mph (38 kts) |
| $V_{min.}$ at full power | 54 mph (47 kts) | 50 mph (43 kts) | 46 mph (40 kts) | 44 mph (38 kts) |

As the aircraft approaches the stall speed, this will be indicated by slight aerodynamic buffeting. The stall speed is reached when the aircraft becomes unstable in flight, but should still be controllable. It is also possible to perform a stall while in a turn, but the stall speed will increase (see table above).

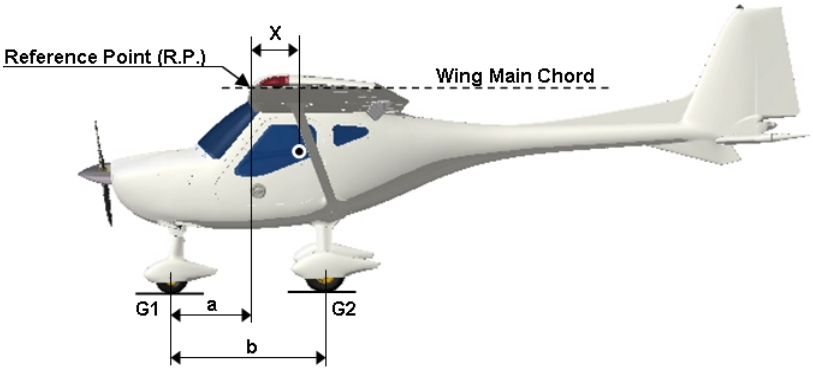
# 6 Weight-and-Balance-Information

## Table of Contents

# 6 Weight-and-Balance-Information

## 6.1 Center of Gravity Range and Determination

To determine “CG”, put the aircraft on 3 weighing scales, positioned on a level surface. Before weighing, a level wing main chord has to be established (use pads between main wheels and scale beneath). A check-mark reference point (R.P.) on the leading edge of the left wing, adjacent to the wing root, is provided to ease examination. To level the wing main chord, use a flexible clear hose, filled with water, as a spirit level. The total weight **G** = **G1** + **G2**, has to be used for calculating “CG”, located at the distance “X” behind R.P.



# 6 Weight-and-Balance-Information

## 6.2 CG-Calculation

The following procedure must be used to correctly calculate the center of gravity “CG”.

**Moment (lb-inch) = Weight (lb) x Arm (inch)**

$$\text{Center of Gravity (inch)} = \frac{\text{Moment Total (lb-inch)}}{\text{Weight Total (lb)}}$$

| | **Weight** lb | **Arm** Inch | **Moment** lb-Inch |
|---|---|---|---|
| Empty Weight | ____ | ____ | ____ |
| Occupants | ____ | 8.3 | ____ |
| Fuel | ____ | 37.8 | ____ |
| Baggage | ____ | 37.4 | ____ |
| **Weight Total:** | ____ | **Moment Total:** | ____ |

| **NOTE** | The permissible CG range, measured from R.P., must be within the limits of 9.6 to 16.3 Inches. |
|---|---|

# 6 Weight-and-Balance-Information

## 6.3 Calculation Example

The following example is given to show how to calculate the center of gravity “CG“. Do not use the weights and the empty C.G. in this example for your own flight preparation.

| | **Weight** lb | **Arm** Inch | **Moment** lb-Inch |
|---|---|---|---|
| Empty Weight | 670 | 12.5 | 8,375 |
| Occupants | 175 | 8.3 | 1,453 |
| Fuel | 120 | 37.8 | 4,536 |
| Baggage | 30 | 37.4 | 1,122 |
| **Weight Total:** | 995 | **Moment Total:** | 15,486 |

$$\textbf{Center of Gravity (inch)} = \frac{\textbf{Moment Total (lb-inch)}}{\textbf{Weight Total (lb)}} = \textbf{15.6 inch}$$

# 6 Weight-and-Balance-Information

## 6.4 Aircraft Specific Weights

Below are noted the aircraft specific data. Pilots must use this information to ensure a correct weight and balance calculation prior to every flight. This is essential for safe flight.

| empty weight | payload | C.G. | date of weighing | date of list of equipment | sign |
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# 7 Airplane and Systems Description

## Table of Contents

# 7 Airplane and Systems Description

## 7.1 Cockpit Overview

### Cockpit example

# 7 Airplane and Systems Description

## 7.2 Left Panel – Primary Intruments

**Traveller / Explorer until SN297**

Instrumentation in the base-equipped Traveller or Explorer consists of an airspeed indicator, vertical speed indicator, altimeter, slip indicator and Rotax FLYdat.


Traveller / Explorer until SN297, shown with base equipment

# 7 Airplane and Systems Description

The Rotax ***FLYdat*** is a multifunction instrument, specially developed for the Rotax engine for indication and acquisition of engine operating data. The operating data is continuously compared with the specific engine operating limits. If any value exceeds its operating limit, the ***FLYdat*** will display a warning.

The ***FLYdat*** features the following readings: engine speed, CHT, oil pressure and temperature, exhaust gas temperature and hours of operation.

For maintenance and analysis of engine issues, the ***FLYdat*** stores all data. To read out and reset the warning messages, the **FLYdat** can be connected to a PC.


If any value approaches its limit, it starts blinking. If the limit is exceeded the red STATUS light will light up red.

# 7 Airplane and Systems Description

**Traveller / Explorer from SN298 on**

The aircraft is equipped with an airspeed indicator, vertical speed indicator, altimeter, slip indicator and analogue engine tachometer, all located in the left panel. Optional equipment consists of a directional gyro, an artificial horizon and a turn/bank indicator (instead of the slip indicator).


Traveller / Explorer from SN298 on, shown with base equipment

# 7 Airplane and Systems Description

**Voyager / Aviator-I until SN297**

Instead of conventional gauges, primary flight intrumentation is displayed on a Dynon EFIS D-100. Engine instrumentation is displayed by a Rotax ***FLYdat***. Furthermore backup instrumentation, consisting of the airspeed indicator and altimeter, is installed in the left panel as well. The expansion module HS34 is available as an option.


Voyager / Aviator-I until SN297, shown with optional HS34 module

# 7 Airplane and Systems Description

**Voyager / Aviator-I from SN298 on**

Primary flight and engine instrumentation is displayed on a Dynon FlightDEK D-180. This is a highly-integrated avionics system, unifying an “Electronic Flight Information System” and an “Engine Monitoring System. This means that primary and secondary flight and navigation instrumentation is displayed on a color display. The following functions are integrated into the FlightDEK D-180:

Airspeed indicator, altimeter, vertical speed indicator, turn and slip indicator, magnetic compass, artificial horizon, CDI, HSI, Glideslope for ILS approaches (in combination with SL-30 NAV/COM only), voltmeter, ammeter, g-meter, true airspeed, OAT, engine tachometer, manifold pressure, oil pressure, oil temperature, CHT, EGT (2x), fuel consumption, fuel pressure, fuel on board, timer, checklists, etc.

An optional HS34 module extends the functionality of the D-180 with an HSI. By using this instrument, precise aerial navigation is possible.


Voyager / Aviator-I, shown with optional HS34

# 7 Airplane and Systems Description

**Cruiser and Aviator-II (all serial numbers)**

This top of the line avionics suite is equipped with a full set of glass screens. All primary and secondary flight instrumentation is displayed on an “Electronic Flight Information System” Dynon EFIS D-100. All engine instruments are displayed on an “Engine Monitoring System” Dynon EMS D-120. Additionally an HS34 is installed.


Cruiser / Aviator-II, all SN

# 7 Airplane and Systems Description

The Dynon EFIS D-100 is an “Electronic Flight Information System”; it displays all primary and secondary flight instruments. The following functions are integrated into the system: Airspeed indicator, altimeter, vertical speed indicator, turn and slip indicator, magnetic compass, artificial horizon, CDI, HSI, Glideslope for ILS approaches (in combination with SL-30 NAV/COM only), voltmeter, ammeter, g-meter, true airspeed and OAT.

Engine data is displayed on the “Engine Monitoring System” Dynon EMS D-120. The following functions are integrated into the system: engine tachometer, manifold pressure, oil pressure, oil temperature, CHT, EGT (2x), fuel consumption, fuel pressure, fuel on board, timer, checklists, etc.

The HS34 module extends the functionality of the D-180 with an HSI. By using this instrument, precise aerial navigation is possible.

# 7 Airplane and Systems Description

## 7.3 Center Stack – NAV/COM Section

**Aircraft until SN297**

Three different center stacks are available, providing space for a GPS, up to two radios, an intercom and a transponder. The following matrix gives an overview of which avionics suite provides which equipment for each model of aircraft.

| equipment | Traveller | Explorer | Voyager | Aviator-I | Cruiser | Aviator-II |
|---|---|---|---|---|---|---|
| Garmin GPS 296 | ● | ● | ---- | ---- | ---- | ---- |
| Garmin GPS 495 | ○ | ○ | ---- | ---- | ---- | ---- |
| Garmin GPS 496 | ○ | ○ | ● | ● | ---- | ● |
| FlymapL GPS | ○ | ---- | ○ | ---- | ● | ---- |
| PM-1000 intercom | ● | ● | ● | ● | ● | ---- |
| Garmin GMA340 Audio Panel | --- | ---- | ---- | ---- | ---- | ● |
| Garmin SL30 NAV/COM | --- | ---- | ○ | ○ | ● | ● |
| Garmin SL40 COM | ● | ● | ● | ● | ---- | ● |
| Garmin GTX327 XPDR | ---- | ● | ---- | ● | ---- | ● |
| Garmin GTX328 XPDR | ● | ---- | ● | ---- | ● | ---- |
| Garmin GTX 330 XPDR | ---- | ○ | ---- | ○ | ---- | ○ |

○ optional ● basic equipment --- not available

# 7 Airplane and Systems Description

center stack, all variants shown

**Aircraft from SN298 on**

Three different center stacks are available, providing space for a GPS, up to two radios, an intercom and a transponder. The following matrix gives an overview which avionics suite provides which equipment for each model of aircraft.

| equipment | Traveller | Explorer | Voyager | Aviator-I | Cruiser | Aviator-II |
|---|---|---|---|---|---|---|
| Garmin GPS 495 | ○ | ○ | ---- | ---- | ---- | ---- |
| Garmin GPS 496 | ● | ● | ● | ● | ---- | ● |
| FlymapL GPS | ○ | ---- | ○ | ---- | ● | ---- |
| Garmin GMA240 Audio Panel | ● | ● | ● | ● | ● | ---- |
| Garmin GMA340 Audio Panel | --- | ---- | ---- | ---- | ---- | ● |
| Garmin SL30 NAV/COM | --- | ---- | ○ | ○ | ● | ● |
| Garmin SL40 COM | ● | ● | ● | ● | ---- | ● |
| Garmin GTX328 XPDR | ● | ● | ● | ● | ● | ● |
| Garmin GTX 330 XPDR | ---- | ○ | ---- | ○ | ---- | ○ |

○ optional ● basic equipment --- not available

# 7 Airplane and Systems Description

center stack, all variants shown

## 7.4 Right Panel – Backup and Engine Instruments

**Aircraft until SN297**

Depending on the primary instrumentation, various instruments are installed in the right panel. The figures below show the available variants. Traveller/Explorer and Voyager/Aviator-I are equipped with OAT, fuel gauge and fuel pressure, volt meter, compass and manifold pressure (if equipped with variable pitch propeller). For the Cruiser or Aviator-II, the backup altimeter and airspeed indicator are found in the right panel, as well as a compass and a fuel gauge.

Traveller/Explorer and Voyager/Aviator-I with option manifold pressure

# 7 Airplane and Systems Description

Cruiser and Aviator-II

**Aircraft from SN298 on**

Depending on the primary instrumentation, various instruments are installed in the right panel. The figures below show the available variants. Traveller and Explorer have an Engine Monitoring System Dynon EMS D-10 installed. Voyager and Aviator-I do not have any instruments on the right side. In the case of the Cruiser or Aviator-II, a backup altimeter and airspeed indicator are found in the right panel. The magnetic compass is always installed on top of the panel for the lowest deviation.

Traveller or Explorer

# 7 Airplane and Systems Description

Voyager or Aviator I

Cruiser or Aviator II

# 7 Airplane and Systems Description

## 7.5 Switch Panel

**Aircraft up to SN297**

The major controls and switches to operate the aircraft are combined on the central control panel. All switches are labeled.


The switch panel incorporates the following:

- electric trim control lever (blue)
- flap control lever (white)
- anti collision light (ACL)
- electric fuel pump
- navigation lights
- instrument lights
- landing light
- autopilot engage
- trim position indicator (LED, left)
- flap position indicator (LED, right)
- throttle control with friction lock
- charge check light
- master and avionics switches
- ignition lock

# 7 Airplane and Systems Description

**Aircraft from SN298 on**

The major controls and switches to operate the aircraft are combined on the central control panel. All switches are labeled.


The switch panel incorporates the following:

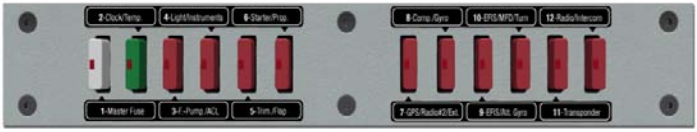
- flap control lever
- anti collision light (ACL)
- electric fuel pump
- navigation lights
- instrument lights
- landing light
- autopilot engage
- trim position indicator (LED, left)
- flap position indicator (LED, right)
- throttle control with friction lock
- charge check light
- master and avionics switches
- ignition lock

# 7 Airplane and Systems Description

## 7.6 Circuit Breakers

**Aircraft up to SN377**

The electrical system of the REMOS GX consists of a BUS system, split into master-BUS and avionics-BUS. All electrical equipment are secured with circuit breakers (CB). The fuse for the charge control check light is located behind the switch panel. An additional fuse for the regulator is located in front of the firewall, beneath the battery bracket.




All the circuit breakers are labelled; additionally the placard shown below is applied inside the cockpit to give more detailed information. Here you can find detailed information about the rating of each CB.

| | | |
|---|---|---|
| **Main Bus Fuses: (Main Switch)** | 1 Master Fuse, EMS | 25 A |
| | 2 Artificial Horizon, EFIS Keep Alive, ELT | 6 A |
| | 3 Fuel Pump, Position Lights, ACL | 10 A |
| | 4 Landing Light, Instrument Lights, analog Tachometer | 10 A |
| | 5 Trim, Flap-Drive | 10 A |
| | 6 Starter, var. Pitch Prop, PropCON | 10 A |
| **Avionics Bus-Fuses: (Avionics Switch)** | 7 GPS, COMM 2, 12V extern | 10 A |
| | 8 Directional Gyro | 10 A |
| | 9 EFIS, HS34, Artificial Horizon | 10 A |
| | 10 Turn Coordinator, Autopilot | 10 A |
| | 11 Transponder, Encoder | 10 A |
| | 12 COMM 1, Intercom | 10 A |
| Charge Fuse: 20 A (engine comp.) | | |

If a CB has been tripped, the lip points out of the front side. To reset the CB, push in the lip. To release a CB manually, it must be pulled out of its socket.

# 7 Airplane and Systems Description

**Aircraft from SN378 on**

The electrical system of the REMOS GX consists of a BUS system, split into master-BUS and avionics-BUS. All electrical equipment are secured with circuit breakers (CB). The fuse for the charge control check light is located behind the switch panel. An additional fuse for charging and for the regulator is located in front of the firewall, beneath the battery bracket.

All the circuit breakers are labelled; additionally the placard shown below is applied inside the cockpit to give more detailed information. Here you can find detailed information about the rating of each CB.

| Main Bus Fuses | | | Avionic Bus | | |
|---|---|---|---|---|---|
| 1 | Master | 30 A | 11 | COM 2 | 5 A |
| 2 | ELT | 1 A | 12 | NAV / COM 1 | 5 A |
| 3 | Fuel Pump, Starter Relais | 3 A | 13 | Intercom / Audio Panel | 2 A |
| 4 | Trim, Flaps | 5 A | 14 | Transponder, Encoder | 3 A |
| 5 | ACL | 5 A | 15 | GPS | 5 A |
| 6 | Landing Light, Panel Lights | 3 A | 16 | 12V receptacle | 1 A |
| 7 | NAV Lights | 2 A | | | |
| 8 | EFIS, Gyro Instruments | 5 A | Engine Compartment | Battery | 40 A |
| 9 | EMS, HS34, analogue Tachometer | 3 A | | Starter | 100 A |
| 10 | AP74, AP Servos, Propeller | 5 A | | Charge Fuse | 20 A |
| | | | behind Switchpanel | Regulator | 0,2 A |
| | | | | Regulator Checklight | 0,2 A |

If a CB has been tripped, the black knob points out; in addition to this a white ring is visible. To reset the CB, push in the knob. To release a CB manually, push on it.

# 7 Airplane and Systems Description

## 7.7 Electrical System

The electrical system of the REMOS GX is powered by an alternator, which is capable of 250W at engine speeds of at least 4,000 RPM. At lower engine speeds the output of the alternator is lower. Below a certain engine speed the alternator is not able to support the power demand for all electrical equipment. The exact engine speed is not easily defined and varies base on the equipment installed. The critical engine speed is around 2,500 RPM.

If your REMOS GX is operated in an environment where you have long taxiways or you operate the aircraft a longer time with low RPM, switch off electrical equipment that are not essential in order to conserve battery power. The following table gives an overview of the power consumption of your electrical equipment.

| consumer | power [ W ] | current @ 12V [ A ] |
|---|---|---|
| Dynon D100 | 15 | 1,3 |
| Dynon D120 | 12 | 1,0 |
| Dynon HS34 | 5 | 0,4 |
| FlymapL | 42 | 3,5 |
| Garmin GPS496 | 5 | 0,4 |
| Garmin SL30 (standby) | 11 | 0,9 |
| Garmin SL30 (TX) | 50 | 4,2 |
| Garmin SL40 (standby) | 5 | 0,4 |
| Garmin SL40 (TX) | 40 | 3,3 |
| Garmin GTX328 | 20 | 1,7 |
| Garmin GMA240 | 10 | 0,8 |
| PM1000 | 10 | 0,8 |
| ACL (LED) | 37 | 3,1 |
| ACL (XENON) | 52 | 4,3 |
| position lights | 12 | 1,0 |
| cockpit lights | 6 | 0,5 |
| landing light (LED) | 24 | 2,0 |
| landing light (Halogen) | 50 | 4,2 |
| electric fuel pump | 20 | 1,7 |
| elevator trim | 4 | 0,3 |
| flap drive | 25 | 2,1 |
| 12V receptacle | 12 | 1,0 |

# 7 Airplane and Systems Description

If the aircraft is equipped with an ammeter the energy balance can be read. The ammeter is installed in a way that only the current into and out of the battery is indicated. Below the critical engine speed the battery will be discharged, indicated by negative current. When reaching the critical engine speed the indicated current will become zero. Above that speed the battery is charged, indicated by positive current.

| | |
|---|---|
| **NOTE** | With engine idling or when taxiing with low RPM the alternator is definitely not able to cover the electric power consumption and the battery will be discharged. |

**Recommendations**

Charge your battery on a regular basis, especially in the cold time of the year. Take the battery out of the aircraft in winter time if you do not fly and stow it in a dry place at room temperature.

Aircraft owners that operate their REMOS GX throughout the entire year, even in the cold winter time, are strongly recommended to use at least a 16Ah battery and to install a TANIS heater system for both the battery and the engine. Contact REMOS or your dealer for certified installation of the heater systems.

Charge your battery on a regular basis. Take care to use the correct charger. Aircraft up to SN377 are equipped with lead batteries. Aircraft from SN378 on or retrofitted aircraft are equipped with LiFePo4 batteries. Each type of battery needs a different kind of charger. To avoid damage to the battery, do not use inappropriate or inexpensive chargers. Contact REMOS for recommendations of appropriate charging systems.

# 7 Airplane and Systems Description

## 7.8 Cockpit Lighting

The REMOS GX cockpit features an effective LED panel lighting system, which can be dimmed independently from the instrument lights. It is a dazzle-free system designed for Night-VFR use.

The dim control knob is located on the upper left side of the cockpit frame. The system is activated when the instrument lighting switch located on the switchboard is switched on.

# 7 Airplane and Systems Description

## 7.9 Option Panel

Two extension panels are located to the left and to right of the cockpit frame which are used as follows:


**Left Panel**

The oil temperature control is installed in the upper position. Push to increase temperature, pull to decrease temperature.

The dual throttle control is located in the lower position. The left throttle lever does not feature a friction lock.

**Right Panel (not shown)**

The 12V receptacle for external use is installed in the upper position. The inner contact is the plus pole. The current is limited to 1A.

Aircraft up to SN377 are equipped with two audio-in synch jacks in this panel or in the center stack beneath the intercom. From SN378 on a standard 3.5mm jack is installed.

**Update Jacks**

Aircraft up to SN297 are equipped with an update SUB-D 9-pin connector behind the panel. Aircraft between SN298 and SN377 are equipped with a SUB-D 9-pin connector located in the right option panel to be used as a PC interface for connecting installed devices to a personal computer. From SN378 all aircraft are equipped with update jacks behind the panel.

# 7 Airplane and Systems Description

## 7.10 Inflight Entertainment

**Aircraft with PM-1000 intercom**

Two cynch jacks are installed next to the PM-1000 intercom for external audio sources.

| | |
|---|---|
| **NOTE** | The audio signal will fade each time a radio call comes in or out, during alerts by the Dynon System and when the pilot and copilot talk to each other. Music is not transmitted during radio calls. The GPS will not put out any warnings or alerts if its audio wire is disconnected. |

| | |
|---|---|
| **WARNING** | Listening to music during flight may lead to inattention. Take care that you are always aware of the situation of the flight and stay ahead of the aircraft. If in doubt, switch off the audio entertainment, especially during take-off, landing and while talking with ATC. |

**Aircraft Garmin GMA240 intercom**

The right additional panel is equipped with RCA jacks for audio in. For aircrafts equipped with GMA 240 audio panel, activate the audio-in signal by pressing “MUSIC” and then selecting “♫1”. To adjust the volume, pull the right knob and rotate it.

| | |
|---|---|
| **NOTE** | The audio signal will not fade if a radio call comes in or when the pilot and copilot talk to each other. Audio is faded only during alerts by the Dynon System. The music is not transmitted during radio calls. |

| | |
|---|---|
| **WARNING** | Listening to music during flight may lead to inattention. Take care that you are always aware of the situation of the flight and stay ahead of the aircraft. If in doubt, switch off the audio entertainment, especially during take-off, landing and while talking with ATC. |

# 7 Airplane and Systems Description

**Advice for Headsets in Combination with Garmin GMA240 intercom**

The GARMIN GMA240 is a Stereo intercom designed to be used in combination with stereo headsets. The wiring of the aircraft is designed to use stereo headsets, too.

If mono headsets are plugged in, the signal for the right channel will short out with ground. The jacks in the REMOS GX do not provide an automated shutdown of the right channel if mono headsets are plugged in.

Shorting out the right channel with ground may lead to damage of the intercom, as described in the GARMIN GMA240 manual. Furthermore the radio may be damaged. Therefore, only use stereo headsets. If you own mono headsets only and want to continue to use them, use adaptors from the mono jack to the stereo connector. Be sure that those connectors do not short out signal and ground. Adaptors such as this may be obtained at local commercial electronics distributors. The intercom may be damaged, too, if the headset is plugged in or pulled or out while the intercom is switched on. Always shut down the intercom when connecting or disconnecting headsets.

From SN378 on all aircraft are equipped with stereo/mono switches. In this case mono headsets are approved without any adaptors. Make sure the stereo/mono switch is in the correct position, otherwise you still may damage the intercom. Also make sure that the intercom is switched off when you plug in or pull out the headsets.

| | |
|---|---|
| **NOTE** | The warranty does not apply if the intercom or the radio fail when using mono headsets without the appropriate stereo/mono adaptor, during operation with the incorrect position of the stereo/mono switch or when plugging in or disconnecting headsets while the intercom is switched on. |

# 7 Airplane and Systems Description

**Aircraft equipped with Garmin GMA340 audio panel**

Limited audio functionality is provided on aircraft equipped with only the GMA 340. GPS and audio-in cannot be put through the intercom at the same time. If audio is played, the 3.5mm jack of the Garmin GPS must be disconnected. Take out the GPS from the AirGIZMO, disconnect the audio wire and reinstall the GPS in the AirGIZMO.

| | |
|---|---|
| **NOTE** | The audio signal will fade each time a radio call comes in or out, during alerts by the Dynon System and when the pilot and copilot talk to each other. Music is not transmitted during radio calls. The GPS will not put out any warnings or alerts if its audio wire is disconnected. |

| | |
|---|---|
| **WARNING** | Listening to music during flight may lead to inattention. Take care that you are always aware of the situation of the flight and stay ahead of the aircraft. If in doubt, switch off audio entertainment, especially during take-off, landing and while talking with ATC. |

# 7 Airplane and Systems Description

## 7.11 Center Console

The following controls are located on the center console:

- Choke – green
- Carburetor heat – yellow
- Fresh air control – blue
- Cabin heat – red
- Fuel valve
- Brake lever including fluid reservoir
- Parking brake valve

All controls are labeled. On the center console you will find all important placards, which post the operational limits for a safe operation of the aircraft. In addition a start-up checklist is provided.

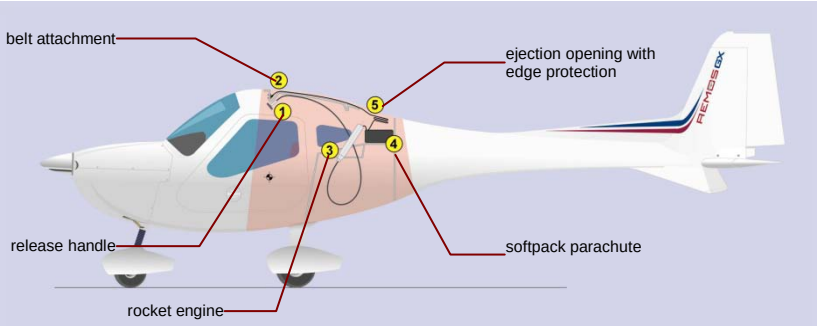
# 7 Airplane and Systems Description

## 7.12 Recovery System

The recovery system must be installed according to the approved procedures. The belts of the system are attached to the wing's main spar attachment fittings. They are protected against environmental conditions and are maintenance free. A check is neither required nor possible, as the belts are hidden within the airplane's structure.

The main belt is hanging inside the cabin. In case of an installed recovery system the parachute is connected to this belt by means of a snap hook.

| | |
|---|---|
| **WARNING** | Any modification of the installation of the recovery system and any of its components is not authorized and will immediately lead into loss of certification of the airplane.<br><br>Maintenance during the annual condition inspection must be performed according to the recovery system manufacturer's handbook. |



# 7 Airplane and Systems Description

## 7.13 Special Equipment and Customizing

The aircraft may be equipped with special or additional equipment on customer's demand. The installation of this equipment must be certified and listed in the equipment list.

Avionics other than those mentioned in this manual may be installed on customer's demand. These avionics systems may replace the equipment mentioned in this manual in part or whole. The installation of this equipment must be certified and listed in the equipment list.

For operating instructions please refer to the manuals belonging to the equipment installed.

| | |
|---|---|
| **NOTE** | The owner of the aircraft is responsible to keep the aircraft airworthy and comply with all applicable regulations. |

# 8 Aircraft Ground Handling and Servicing

## Table of Content

# 8 Aircraft Ground Handling and Servicing

## 8.1 Maintenance

Maintenance procedures are defined in the maintenance manual that is specific to the individual aircraft. All maintenance shall be performed according to the REMOS Service and Maintenance Checklist, available directly at REMOS or on the website www.remos.com

## 8.2 Servicing Fuel, Oil and Coolant

**Checking Oil and coolant**

The REMOS GX is designed to be easily serviceable. Access to all components which have to be lubricated or checked regularly is possible without detaching any panels. A flap in the upper cowling allows checking coolant and oil without removing the cowling.

**Fuelling the aircraft**

The fuel filler cap is located on the right-hand side of the fuselage behind the wing. After removing the lockable fuel filler cap, refuelling is easily possible.

Aircraft up to SN377 must be fuelled very carefully in order to prevent spilling of fuel. From SN378 on the fuel system has been modified to allow more rapid refuelling without spilling.

The fuel tank vent line is also the overflow line and is located on the belly of the airplane. If the fuel tank is full (recognizable by the fuel nozzle shutting down), further filling of the tank will lead the fuel to overflow.

The fuel tank is equipped with a sight tube to check fuel level. The sight tube can be found inside the cabin between the two seats. Do not overfill the fuel tank.

# 8 Aircraft Ground Handling and Servicing

## 8.3 Towing and Tie-Down Instructions

Due to the low weight of the REMOS GX, it is very easy to move the aircraft by hand on the ground. That's why there is no special equipment for towing provided. Do not attempt under any circumstances to tow the aircraft by attaching any kind of towing equipment to the nose wheel!

To tie down the aircraft we recommend the use of three ropes (left wing, right wing, and tail). Tie down each wing by attaching the rope to the lug located on the upper strut bracket. Another rope connection point is provided on the tail skid of the aircraft. When necessary, a fourth rope can be slid around the propeller/gear drive shaft at the nose of the aircraft.

Aircrafts from SN380 are equipped with a thread on the lower side of the wing near the wingtips and are provided with bolt-in lugs. If required, bolt in the lugs and tie down the aircraft there. Do not fly with the tie-down lugs installed!

Secure the control stick by use of the safety belt to prevent the control surfaces from being slammed from stop to stop by the wind.

| | |
|---|---|
| **NOTE** | The maximum wind velocity to leave a tied down aircraft in the open is 38 kts. |

# 8 Aircraft Ground Handling and Servicing

## 8.4 Rigging a Folded Aircraft

The REMOS GX is manufactured to the highest quality standards. All components are very precise and provide the maximum aerodynamic quality. It is therefore strongly recommended that you be very careful when assembling or disassembling components such as the wings, stabilizer and other parts. The following instructions will provide you with all the necessary information.

| | |
|---|---|
| **NOTE** | Folding or unfolding the wings and attaching or detaching the horizontal tail is a two person procedure. Do not to try this alone. Severe damage to the aircraft may result. |

**Tools, equipment and preparation**

- bolt release tool (provided with the aircraft)
- screwdriver (Philips head)
- grease for bolts

- place the stabilizer behind the aircraft protective support
- remove both stabilizer bolts from their bushings
- remove both wing bolts from their bushings

# 8 Aircraft Ground Handling and Servicing

**Connecting folded wings to the fuselage**

1. Unlock the fairings between the strut and the wing/fuselage and slide them along the strut.
2. Withdraw the main wing securing bolt from the wing and place it nearby. Ensure that the bolt stays clean until remounted.
3. Remove the wing support aid bracket while a second person supports the wing at the wing tip.
4. Now the second person at the wing tip moves the wing slowly forward while ensuring that the wing does not spin around its axis. The weight of the wing is supported by its strut, therefore, the wing must never be lifted or pushed down from the top.
5. When the wing has reached its maximum forward position, the person at the fuselage position must rotate the wing to align both connection latches. Care must be taken that the surface of the wing is not damaged by the fuselage connecting latches.
6. When the connecting latches between the fuselage and wing are aligned, the wing must be lifted by the person at the wing tip. The person at the fuselage must ensure that the flap drive connection fits correctly into the bushing on the fuselage.
7. If all latches have engaged and the wing fits properly to the fuselage, the main bolt can be pushed into its support tube. To install the main bolt correctly, please use the special installation tool which comes with the aircraft. Now secure the bolt with the securing pin. The person at the wing tip can now release the pressure supporting the wing tip.
8. Inside the cabin, the pushrod quick fasteners MUST properly be connected and secured.

**Insecure connection, improper operation of control surfaces or insecurely locked fasteners will lead to loss of control of the aircraft!! When in doubt contact your local REMOS dealer or service center.**

9. Proceed in the same order with the second wing.

# 8 Aircraft Ground Handling and Servicing

**Installing the horizontal tail**

1. Hold the horizontal tail in place so that the bushings in the fuselage match up with those in the horizontal tail.
2. Apply the attachment bolts from left to right into their bushings. The forward bolt is marked by a "V", the rearward bolt by "H".
3. Align the hole of the attachment bolt with the one in the right bushing and secure the bolts with Fokker needles.
4. Connect the cable plug for the electric trim actuator
5. The pushrod quick fasteners MUST be connected properly and secured.

**Insecure connection, improper operation of control surfaces or insecurely locked fasteners will lead to loss of control of the aircraft!! When in doubt contact your local REMOS dealer or service center.**

6. Attach the tail cover and secure it with the screws provided. Connect the electric jack for the taillight.

**After rigging the aircraft perform a preflight check.**

## 8.5 Folding a Rigged Aircraft

To disassemble the aircraft, perform the above described procedures in reverse order.

# 8 Aircraft Ground Handling and Servicing

## 8.6 Transportation of the Aircraft

If you intend to store the aircraft with the wings folded, we recommend using REMOS folding wing supports (ask your local dealer). With these supports mounted, the wings are secured properly and handling of the aircraft will be much easier.

When the aircraft has to be moved by trailer, please ask your authorized REMOS dealer for advice. When placed on a trailer in a wrong way, serious damage could result.

## 8.7 Cleaning and Care

After every day of flight, it is recommended that you clean the surface of the aircraft using pure water and a soft cotton towel only. Take special care when cleaning the windows to use lots of water to loosen and rinse away bugs and dirt and use with only a soft cotton towel, or otherwise you will create scratches. If cleaned regularly, you may not need to use any special cleaning products. If for any reason special cleaning products need to be used, please contact your dealer for advice. For polishing you can use almost any car polish but be sure that no silicone is used in that product.

# Imprint

Pilot Operating Handbook REMOS GX

ASTM Edition

REMOS AIRCRAFT

# REMOS GX

## Supplement Flight Training

Revision general-04

# Supplement Flight Training

## Table of Content

# 1 Introduction

This chapter should enable you to familiarize yourself with the flight performance and flight characteristics of the REMOS GX. To complete these instructions, please refer to the appropriate sections in the POH.

The following pages describe flight characteristics experienced during various flight configurations and weather conditions:

- Take-off
- Climb
- Cruise
- Stall
- Slip
- Glide
- Descent
- Approach
- Touch down

| | |
|---|---|
| **NOTE** | This chapter was introduced as an additional guide to experience the capabilities of the aircraft, It is not a substitute for flight school training! If you are not yet familiar with the aircraft, we strongly recommend that you follow these instructions only when accompanied by a skilled flight instructor. |

# 2 Take-Off

**Take-off under normal conditions**

1. After the pre-flight check has been completed, extend flaps to 15° for a grass runway. On a hard surface runway, take-off with clean flaps.
2. Ensure that the elevator trim is in the correct position.
3. Whenever possible, take-off directly into the wind. The maximum demonstrated crosswind component for take-off is 15 kts.
4. Smoothly apply full throttle (fully forward) and maintain runway heading.
5. As the aircraft accelerates, gently pull back on the control stick to raise the nose slightly until the aircraft becomes airborne.
6. Once airborne, slowly release the back pressure on the control stick to allow the airspeed to increase to $V_X$ = 56 mph = 49 kts. Maintain this speed and avoid making any climbing turns until a sufficiently safe altitude has been reached.
7. When all obstacles have been cleared, retract the flaps (if they were deployed) and accelerate to $V_Y$ = 75 mph = 65 kts.

**Take-off under tailwind conditions**

Similar to normal take-off except that the take-off distance will be extended. Ensure that you determine the take-off distance required to ensure you have sufficient runway length prior to take-off.

**Take-Off in rain or with a dirty aircraft**

Surface conditions, high density altitude and temperatures, raindrops and bugs affect the performance of the aircraft. Be aware that in these conditions the performance figures will not meet the published figures, as they apply to a clean aircraft under standard atmospheric conditions. Expect a significant drop in performance.

# 3 Climb

### Climb with Best Angle of Climb

With engine set to full power, establish $V_X$, which is an indicated airspeed of 56 mph (49 kts). At this airspeed the aircraft will achieve the steepest angle of climb. During climb it is essential to monitor oil and water (CHT) temperatures. Adjust the oil temperature regulation flap as required.

### Climb with Best Rate of Climb

With engine set to full power, establish $V_Y$, which is an indicated airspeed of 75 mph (65 kts). At this airspeed the aircraft will achieve the best rate of climb. During climb it is essential to monitor oil and water (CHT) temperatures. Adjust the oil temperature regulation flap as required.

### Climb while in cruise

If you wish to climb in cruise, select an airspeed between 90 to 100 mph (78 to 86 kts). At these speeds, the aircraft will climb between 600 to 800 ft/min, depending on the weather conditions, altitude and weight of the aircraft.

It is strongly recommended that you monitor oil and water (CHT) temperatures. Under no circumstances should any of the engine temperature limits be exceeded, otherwise, an engine failure may result.

### Climb in rain or with a dirty aircraft

Raindrops and bugs affect the performance of the aircraft. Be aware that in these conditions the performance figures will not meet the published figures, as they apply for a clean aircraft under standard atmospheric conditions. Expect a performance loss of 10% to15%.

# 4 Cruise

**Normal cruise**

An economical cruise is flown at engine speeds of 4,400 RPM to 4,800 RPM. With the Sensenich or Neuform propeller this will result in airspeeds between 98mph (85kts) and 111mph (97kts) with a fuel flow between 4 and 5 gph

High speed cruise is done with engine speeds between 5,000 RPM and 5,400 RPM. With the Sensenich or Neuform propeller this will result in airspeeds between 117mph (102kts) and 130mph (113kts) with a fuel flow between 5 and 7 gph.

If required, the aircraft is capable of achieving an airspeed up to 137 mph (119 kts) at full power settings. If doing so, always monitor the engine speed. The maximum continuous engine speed is 5,500 RPM and may only be sustained for 5 minutes. Do not exceed the maximum engine speed of 5,800 RPM.

**Cruise in gusty conditions**

When flying in gusty weather conditions, the normal operating airspeed $V_{NO}$ = 123 mph (107 kts) should not be exceeded for safety reasons. The REMOS GX offers very stable flight characteristics even in heavy weather conditions.

**Cruise in rain or with dirty aircraft**

Raindrops and bugs affect the performance of the aircraft. Be aware that in these conditions the performance figures will not meet the published figures, as they apply for a clean aircraft under standard atmospheric conditions. Expect a performance loss of 10% to15%. When flying in rain always activate the carburetor heat.

# 5 Stall

The REMOS GX is fully controllable when flying at a wide range of airspeeds. At airspeeds below the lower speed limit, the aircraft will display very stable stall characteristics. If the airspeed is reduced by the pilot gradually pulling back on the control stick, aerodynamic buffet will occur, indicating that the aircraft is approaching the stall speed. Should the aircraft then be allowed to stall, the aircraft still will remain controllable. The aircraft can be stalled with flaps both extended or retracted.

Conducting a stall maneuver does not require special skills. However, if you are not yet familiar with the aircraft, we recommend you do this exercise only when accompanied by an experienced flight instructor.

# 6 Slip

The slip is a very stable flight condition and is also very easy to perform. This maneuver is used to increase aerodynamic drag to enable a high rate of descent.

Before establishing a slip, you have to ensure that the airspeed is within the required limits. The maximum maneuvering speed $V_A$ = 108 mph (94 kts) should not be exceeded. If performing a slip with flaps extended, a maximum indicated airspeed of $V_{FE}$= 81 mph (70 kts) must be maintained. You will achieve the maximum rate of descent when slipping with flaps fully extended and flying at $V_{FE}$.

Conducting a slip does not require special skills. However, if you are not yet familiar with the aircraft, we recommend to do this exercise only when accompanied by an experienced flight instructor.

# 7 Gliding

The aircraft can glide well with the engine off. Best glide ratios are achieved within an indicated airspeed of 75 mph (65 kts). These speeds will establish a glide ratio of about 1:10 with the flaps retracted (0° position).

# 8 Descent

When descending from level flight it is important to monitor engine temperatures. During descent, the temperatures will decrease, which could cause engine failure or carburetor icing to develop. therefore we strongly recommend that you not exceed the lower limits of these temperatures. Engage carburetor heat before beginning the descent.

# 9 Approach

**Approach under normal conditions**

Always land on the most suitable runway, taking into consideration wind direction, length of runway, obstacles on the approach, etc. The recommended airspeed for approach at MTOW is 75 mph (65 kts).

**Approach under tailwind conditions**

When on final approach with a tailwind component, the REMOS GX does not require different approach or flare procedures than those used in calm or headwind conditions. However, you do have to keep in mind that the landing distance will increase significantly.

**Approach in crosswind conditions**

Crosswinds do not have a big effect on the flight characteristics of the REMOS GX, as long as the cross-wind component stays within the maximum demonstrated speed of up to 15 kts. Performing a crosswind landing does not require above-average piloting skills. Nevertheless, if not yet familiar with the aircraft, we recommend that you perform crosswind landings only when accompanied by an experienced flight instructor until sufficient experience has been gained.

**Approach in turbulent weather conditions**

The recommended airspeed for approach is 75 mph (65 kts) in turbulent conditions. This will give you a reserve airspeed to balance any unexpected deviations in altitude and heading. In more gusty conditions it may be beneficial to stabilize the glide slope by keeping the flap setting to the 15° position.

**Approach in rain showers**

Raindrops on the wing surfaces influence the aerodynamic characteristics of the airfoil; drag will increase while lift decreases. The airfoil used on the REMOS GX features stable flight characteristics in rainy conditions. Therefore, there are no special advisories for flights within rain. we recommend that you operate the aircraft as you would in turbulent weather conditions (see "Approach in turbulent weather conditions). When flying in rain always activate the carburetor heat.

# 9 Approach

**Approach in the slip configuration**

If a high descent rate is required on final, we recommend that you conduct a slip maneuver. Conducting an approach in the slip configuration does not require special skills, however, if you are not yet familiar with the aircraft we recommend that yo do this exercise only when accompanied by an experienced flight instructor.

# 10 Touchdown

The aircraft has very good low speed characteristics and so is very controllable all the way through the landing phase. After a good approach has been conducted, the REMOS GX does not require much action to land with a perfect touch down. It is important to establish a safe and stable airspeed during the approach.

# Imprint

Pilot Operating Handbook REMOS GX
Supplement Flight Training

ASTM Edition

REMOS AIRCRAFT

# REMOS GX

## Supplement Glider Towing

Revision 05

# Supplement Glider Towing

## Table of Content

# 1 General Information

## 1.1 Introduction

This supplement is to be used only in addition to the REMOS GX Pilot Operating Handbook!

## 1.2 Certification

The REMOS GX is manufactured in compliance with the rules of the Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.

## 1.3 Quick Reference

For use as a glider towing aircraft, the REMOS GX is equipped with the TOST E85 tow release clutch, which is connected to the fuselage tail by a specially developed mounting frame. To release the tow rope a release lever is located on the left hand side of the pilot seat (colored yellow). Additionally, a rear view mirror must be installed inside the aircraft, above the pilot seat.

# 2 Operating Limitations

## 2.1 Towing Speed

| | |
|---|---|
| max. towing speed | $V_T$ of glider |
| min. towing speed | $1{,}3V_{S1}$ of glider, at least 56 mph (49 kts) |

## 2.2 Tow Ropes

| | |
|---|---|
| length of tow rope | 130 to 200 ft |
| weak link | max. 300 dN |

## 2.3 Maximum Glider Take-Off Weight

The maximum permissible take-off weight of the glider to be towed varies with the propeller mounted to the REMOS GX. The following operating limitations may not be exceeded:

| Propeller | Glider |
|---|---|
| Tonini GT-2 | 1,210 lb [550kg] |
| Woodcom SR38+1 | 1,210 lb [550kg] |
| Sensenich R70EN | 1,580 lb [720kg] |
| Neuform CR3-65 | 1,580 lb [720kg] |
| Rospeller | 1,430 lb [650kg] |

## 2.4 Crew

During glider towing operations the REMOS GX must be operated only by one pilot (no passenger allowed, except for training/instruction). In all cases, the total take-off weight (towing aircraft + glider) must not exceed 2,900 lb.

# 2 Operating Limitations

## 2.5 Minimum Equipment List

- as per D-VFR minimum equipment list, plus
- TOST tow release clutch type E85
- REMOS mounting frame for tow release clutch
- yellow colored release handle
- rear view mirror placed on main spar carrythrough

## 2.6 Flying Without Doors

not permitted during towing operations

## 2.7 Required Placards and Markings

Adjacent to the airspeed indicator:


Adjacent to the tow release handle:


At the release clutch bracket:

# 3 Emergency Procedures

## 3.1 Engine Failure Procedure

**Case 1: altitude not enough for engine re-start**

1. AVIATE – NAVIGATE – COMMUNICATE
2. landing site IDENTIFY
3. glider pilot NOTIFIED
4. glider pilot RELEASE ROPE
5. engine OFF
6. fuel valve CLOSE
7. declare emergency MAYDAY MAYDAY MAYDAY
8. master switch OFF
9. safety belts TIGHTEN
10. tow rope RELEASE
11. emergency landing APPROPRIATE TERRAIN

**Case 2: altitude sufficient for engine re-start**

1. AVIATE – NAVIGATE – COMMUNICATE
2. landing site IDENTIFY
3. glider pilot NOTIFIED
4. glider pilot RELEASE ROPE
5. carburetor heat PULL
6. electric fuel pump ON
7. choke OFF
8. starter ENGAGE
9. if engine does not start continue with case 1
10. if engine starts, continue flight and land on an airfield

# 3 Emergency Procedures

## 3.2 Abnormal Flight Attitude Procedure

1. AVIATE – NAVIGATE – COMMUNICATE
2. glider pilot NOTIFIED
3. engine REDUCE POWER
4. glider pilot RELEASE ROPE
5. recover gently and return to an airfield

| | |
|---|---|
| **NOTE** | If the glider pilot cannot recover from the abnormal flight attitude and does not or cannot release the tow rope, the REMOS GX pilot must release the tow rope to recover from the abnormal flight attitude. |

| | |
|---|---|
| **NOTE** | If the abnormal flight attitude cannot be recovered from at all, the tow rope cannot be released, or the weak link does not break, activate the recovery system. |

## 3.3 Failure of the Release Clutch Procedure

1. approach airspeed $V_{APP}$ = 66 mph = 58 kts
2. full flaps airspeed $V_{FE}$ = 80 mph = 70 kts
3. flaps DOWN
4. variable pitch prop 5,600 rpm
5. engine power AS REQUIRED
6. elevator trim AS REQUIRED
7. electrical fuel pump ON
8. touchdown on main wheels first with elevator fully held back.

| | |
|---|---|
| **NOTE** | The rope will hang down significantly from the aircraft due to its own weight. Therefore it can become tangled with obstacles, plants, wires, vehicles, persons, etc. |

# 4 Normal Procedures

## 4.1 Preflight Check Checklist

1. Perform standard preflight check
2. Check tow release clutch and test-release a tow rope

## 4.2 Take-Off Procedure

| | | |
|---|---|---|
| 1. | oil cooler flap | OPEN |
| 2. | carburetor heat | OFF |
| 3. | electric fuel pump | ON |
| 4. | landing light | RECOMMENDED |
| 5. | flaps | 15 degrees |
| 6. | elevator trim | 2/3 UP |
| 7. | rudder and aileron | NEUTRAL |
| 8. | variable pitch prop | 5,600 rpm |
| 9. | taxi forward | ROPE STRAIGHT |
| 10. | engine power | FULL POWER |
| 11. | rotate | 62 mph = 54 kts |
| 12. | lift-off | 75 mph = 65 kts |
| 13. | best climb | $V_Y$ = 75 mph = 65 kts |
| 14. | flaps | RETRACT |

| | |
|---|---|
| **NOTE** | During take-off, special care must be taken that the climb rate and airspeed are compatible with the required values of the towed glider. Watch your rate of climb immediately after take-off (do not exceed the glider's climb capability). |

| | |
|---|---|
| **NOTE** | To maintain permissible water and oil temperatures during climb and descent, the aircraft must be equipped with an oil temperature regulation flap. During climb the operating lever of this flap should be in the "open/cooler" position. |

# 4 Normal Procedures

## 4.3 Climb Briefing

Flight tests have been conducted with various glider airplanes. These tests revealed that modern composite gliders, especially when loaded with water ballast, must be towed faster than older wooden sailplanes.

The modern gliders are usually towed with airspeeds of 75 mph = 65 kts or possibly above that with flaps retracted. Older sailplanes can be towed with airspeeds as low as 48 mph = 56 kts; in that case select the 15 degrees flap setting.

## 4.4 Descent Checklist

| | | |
|---|---|---|
| 1. | flaps | CLEAN |
| 2. | engine speed | AS REQUIRED |
| 3. | electric fuel pump | ON |
| 4. | maneuvering speed | $V_A$ = 108 mph = 94 kts |
| 5. | normal operating speed | $V_{NO}$ = 123 mph = 107 kts |
| 6. | never exceed speed | $V_{NE}$ = 155 mph = 135 kts |
| 7. | max. cont. engine speed | 5,500 rpm |
| 8. | carburetor heat | RECOMMENDED |
| 9. | landing light | RECOMMENDED |
| 10. | oil cooler flap | AS REQUIRED |
| 11. | CHT | max. 275°F = 135°C |
| 12. | oil temperature | 120…266°F = 50…130°C |

| | |
|---|---|
| **NOTE** | Special care must be taken to keep all temperatures within the permissible range. To keep temperatures within the proper operation levels, the throttle may be left at a setting just above the idle position. Do not allow the oil temperature to drop rapidly. |

# 4 Normal Procedures

## 4.5 Approach Briefing

| | | |
|---|---|---|
| 1. | wind, weather, visibility | OK |
| 2. | ATIS | CHECKED |
| 3. | runway | CORRECT DIRECTION |
| 4. | traffic circuit | ALTITUDE and ROUTING |
| 5. | radios | ON and FREQUENCY SET |
| 6. | transponder | AS REQUIRED |
| 7. | full flaps | BELOW 81 mph = 70kts |
| 8. | electric fuel pump | ON |
| 9. | airspeed in pattern | 95 to 125 mph = 80 to 110 kts |
| 10. | approach airspeed | 75 mph = 65 kts |

## 4.6 Landing Procedure

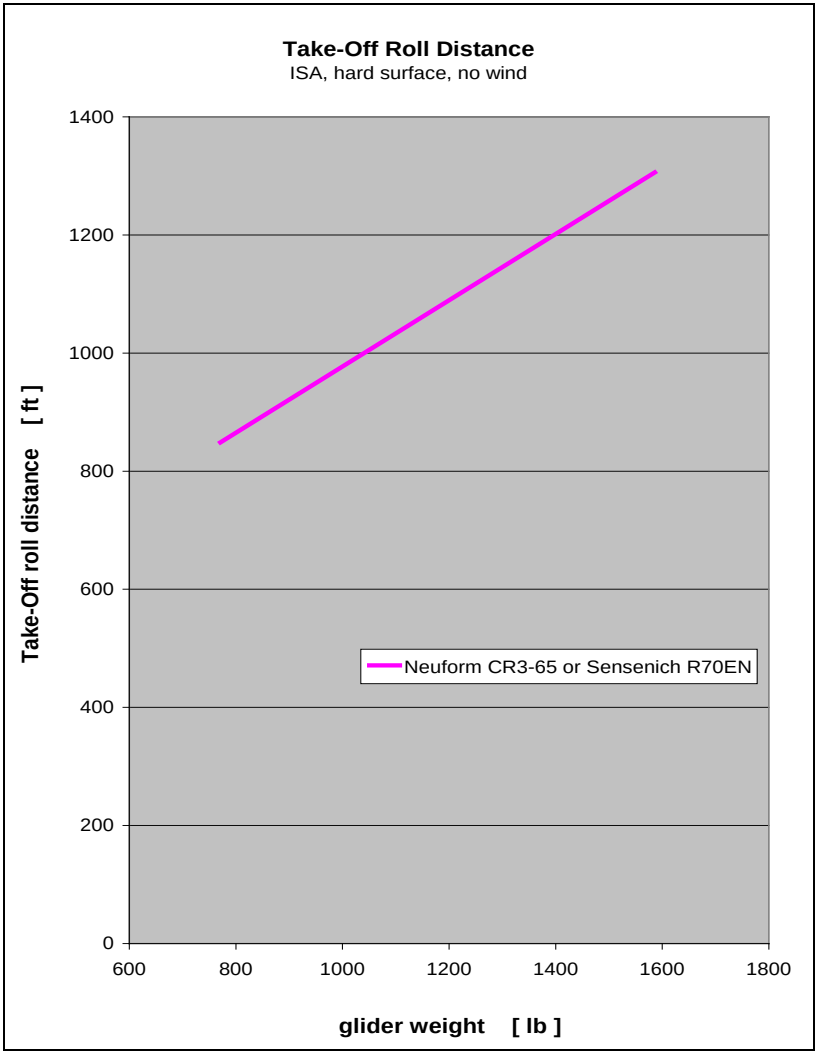
| | | |
|---|---|---|
| 1. | approach airspeed | 75 mph = 65 kts |
| 2. | full flaps airspeed | $V_{FE}$ = 80 mph = 70 kts |
| 3. | flaps | DOWN |
| 4. | landing light | RECOMMENDED |
| 5. | variable pitch prop | 5,600 rpm |
| 6. | engine power | AS REQUIRED |
| 7. | elevator trim | AS REQUIRED |
| 8. | electric fuel pump | ON |
| 9. | carburetor heat | RECOMMENDED |
| 10. | oil cooler flap | AS REQUIRED |
| 11. | CHT | max. 275°F = 135°C |
| 12. | oil temperature | 120 to 266°F = 50 to 130°C |
| 13. | tow rope | RELEASE ON THRESHOLD |

14. touchdown on main wheels first with elevator fully held back.

# 5 Performance

## 5.1 Take-Off Roll Distance

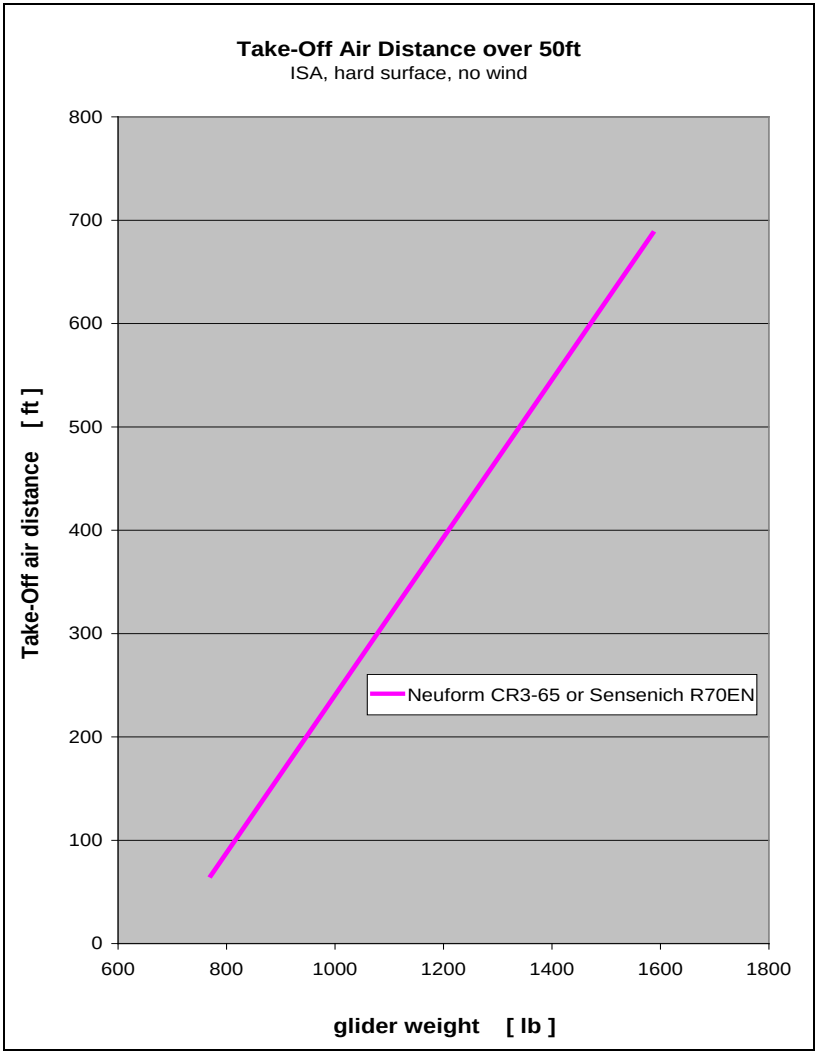
If the REMOS GX is equipped with a Sensenich R70EN or a Neuform CR3-65 propeller, the following take-off roll distances apply (under the conditions of a hard surface runway, ISA conditions, no wind and lift-off at $V_Y$ = 75 mph = 65kts).



# 5 Performance

## 5.2 Take-Off Air Distance

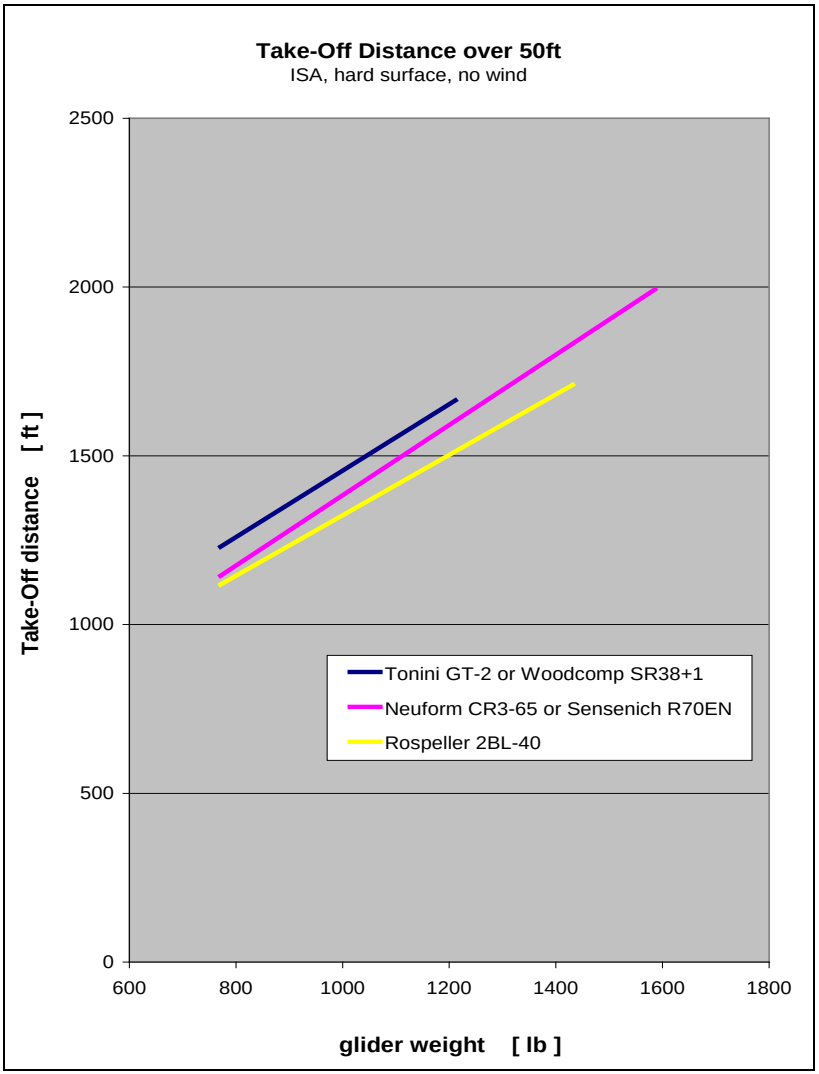
If the REMOS GX is equipped with a Sensenich R70EN or a Neuform CR3-65 propeller, the following take-off air distances apply (under the conditions of a hard surface runway, ISA conditions, no wind and lift-off at $V_Y$ = 75 mph = 65kts).



# 5 Performance

## 5.3 Take-Off Distance over 50ft

The following diagram presents the total take-off distance over 50ft (under the conditions of a hard surface runway, ISA conditions, no wind and lift-off at $V_Y$ = 75 mph = 65kts).



# 5 Performance

## 5.4 Effects on Take-Off Distance

Take-off distances given apply for ISA conditions and a dry, hard runway surface. Various circumstances have an effect on take-off and landing performance. According to ICAO-circular 601AN/55/2, it is recommended to use following add-ons for roll and air distances:

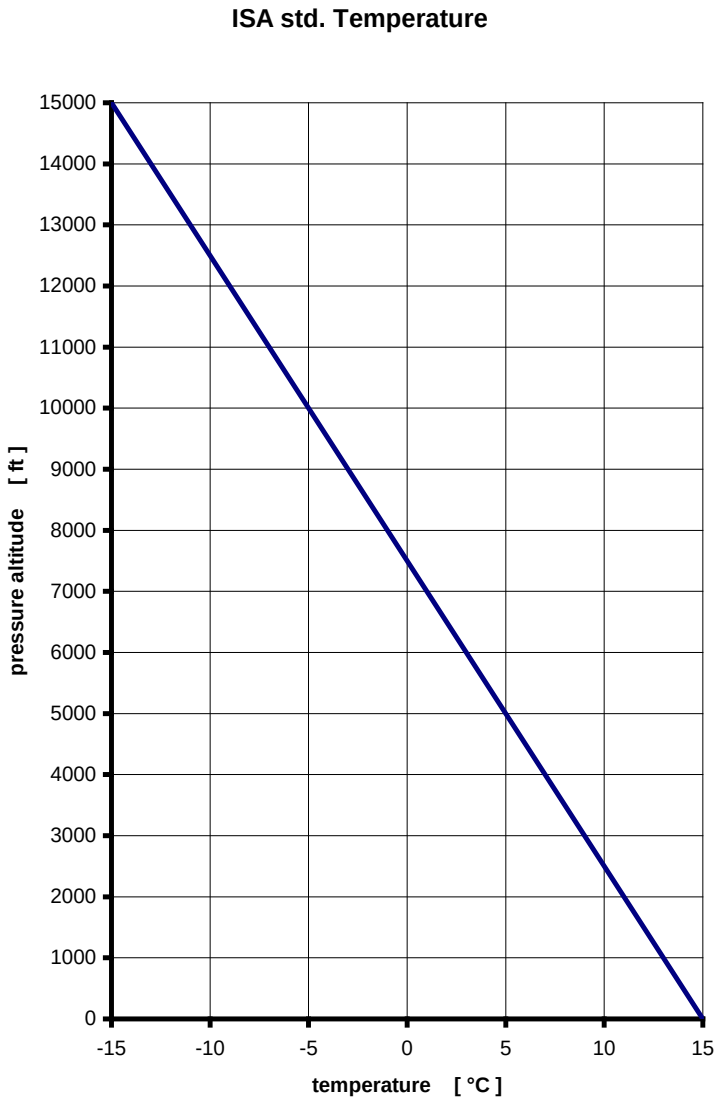
| **add-ons on take-off roll distance** | |
|---|---|
| for dry grass | + 20% |
| for wet grass | + 30% |
| for soft surface | + 50% |
| per 2 knots tailwind component | + 10% |
| per 10 knots headwind component | - 10% |
| for high temperatures above standard | + 10% per 10°C |
| for altitude above sea level (density altitude) | + 5% per 1,000 ft |

| **add-ons on take-off air distance** | |
|---|---|
| for dirty wings/raindrops | + 15% |
| per 2 knots tailwind component | + 10% |
| per 10 knots headwind component | - 10% |
| for high temperatures above standard | + 10% per 10°C |
| for altitude above sea level (density altitude) | + 5% per 1,000 ft |

All flight performance data are given for ISA standard atmosphere at sea level and standard temperature. To determine temperature in relation to ISA conditions please refer to the following chart.

| | |
|---|---|
| **NOTE** | Especially in glider towing the take-off distances can vary significantly with precise flying habits and the drag of the glider. |

# 5 Performance



# 5 Performance

## 5.5 Tested Glider Configuration

The following gliders have been towed during flight tests:

LS-1, LS-4, Baby-III, Astir and Twin Astir, Hornbach, Junior, Jantar, Pirat, Puchacz, Discus and DuoDiscus, Blanik, DG-100/300/500, DG-1000, ASK-21 and ASW-24, Nimbus and Cirrus, Cobra, PIK-20.

## 5.6 Remarks

Based on the rules of the Light Sport Aircraft airworthiness standards, the maximum dimension is defined by the weight of the glider to be towed, without consideration of glider aerodynamics. During the flight test with the DG-1000T, a maximum permissible glider weight of 1,580 lb has been demonstrated.

For gliders with a maximum permissible glider weight of 1,580lb, but less favourable aerodynamics than the DG-1000T, a lower climb rate and significantly longer take-off distance are to be expected.

| | |
|---|---|
| **NOTE** | Inexperienced pilots should start with a one person lightweight glider and increase the glider weight step by step. |

# 6 Weight and Balance

## 6.1 General

When the aircraft is used for glider towing, the weight and balance calculations for the standard configuration are valid also for towing operations. Concerning payload, there are some restrictions which have to be observed, see also Section 3 within this supplement.

## 6.2 Required Equipment

The following additional equipment is required to use aircraft the for glider towing, and must be taken into account in the weight and balance:

- TOST tow release clutch, type E 85
- REMOS mounting frame for tow release clutch
- release handle (colour yellow)
- REMOS oil temperature regulation flap
- rear view mirror

The following equipment is not part of the center of gravity calculation, but is also necessary for glider towing:

- towing rope with ring connector
- weak link 300 daN (green)

| | |
|---|---|
| **NOTE** | The pilot has to ensure that the required weak link is attached to the tow rope; otherwise the structure of the aircraft may become overloaded! |

# 7 Systems

The tow release handle is installed inside the cabin of the REMOS GX. The handle is located on the left hand side of the pilot seat, colored yellow. Pulling the handle releases the tow rope. The handle should provide a free play of 1/2 to 1 Inch.

# 8 Aircraft Ground Handling and Service

During regular servicing intervals, the tow release clutch must be cleaned, lubricated and checked to assure proper operation.

A general overhaul of the release clutch must be conducted every 4 years or 4,000 towing operations, whatever comes first. For further information refer to the separate operator's manual of the manufacturer.

# Imprint

Pilot Operating Handbook REMOS GX
Supplement Glider Towing

ASTM Edition