
REMOS
A I R C R A F T



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.:	268
Built:	2008
Call Sign:	N835FS
Engine-Type:	Rotax 912 ULS
Serial No. Engine:	6785825
Propeller-Type:	Sensenich 2AOR5R7OEN

Manufacturer: REMOS Aircraft GmbH Flugzeugbau
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Introduction

List of Content and List of Effective Pages

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Introduction

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Introduction

Views



1 General Information

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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	
	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	<p>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.</p> <p>Have a frequent look on www.rotax-engines.com and on www.remos.com for the latest information.</p>
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1 General Information

1.7 Propeller

manufacturer	<ol style="list-style-type: none"> 1. Flii. Tonini 2. Woodcomp 3. Sensenich 4. Neuform
type and number of blades	<ol style="list-style-type: none"> 1. GT-169,5/164 2-blade, wood 2. SR38+1 2-blade, wood 3. 2A0R5R70EN 2-blade, composite 4. CR3-65-47-101,6 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

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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

2.5 Never Exceed Speed

never exceed speed VNE = 155 mph = 134 kts

Due to 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)

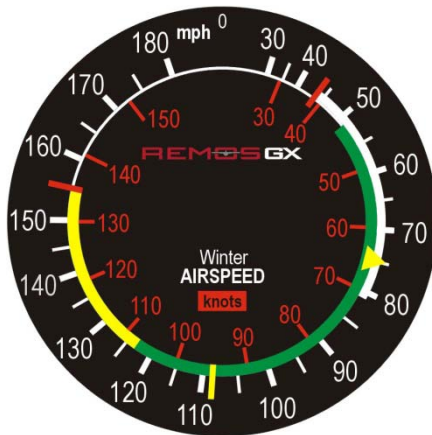
2.17 Engine

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 during cold start	minimum	12 psi (0,8 bar)
	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


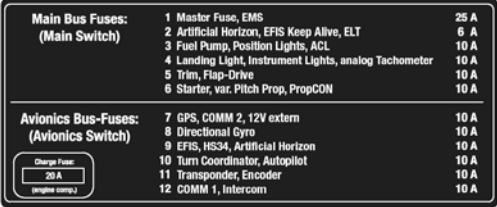



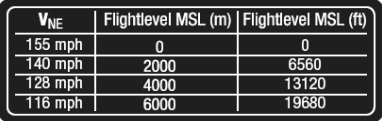
2.19 Placards and Markings

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
		

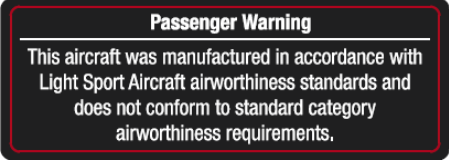
The following list does not define the layout but the content and intent of the placards.

2 Operating Limitations


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

2 Operating Limitations

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

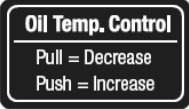

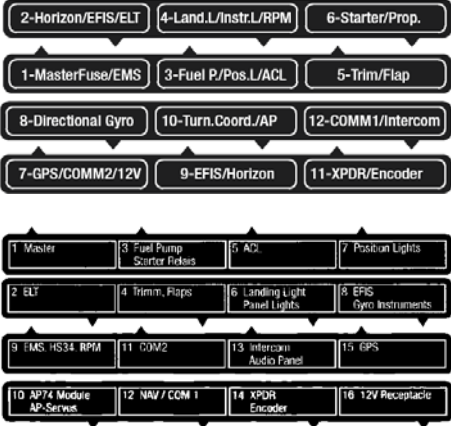
placard	location
 <p>Passenger Warning This aircraft was manufactured in accordance with Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements.</p>	right cockpit

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



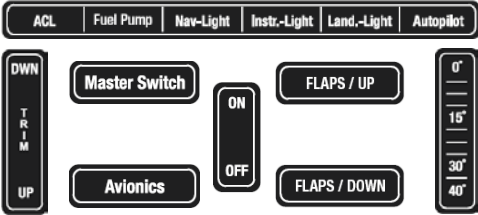
placard	location
 <p>Aerobatics, IMC-Flights, Spins - PROHIBITED!</p>	left cockpit

2 Operating Limitations

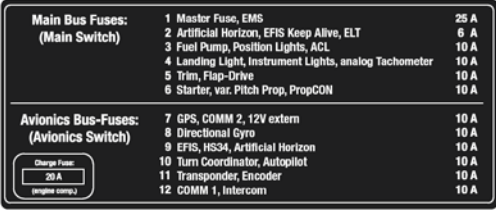
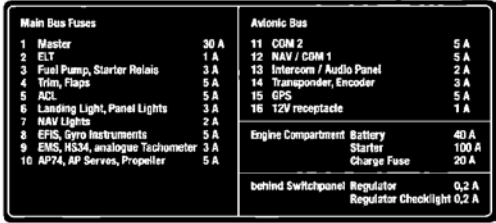
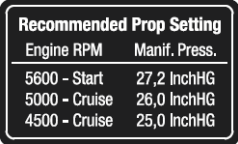


The following information placards and markings are found inside the cabin. Attaching these placards is not mandatory; these placards provide additional information to the pilot.

placards	location
	left cockpit
	right cockpit
	<p>right cockpit</p> <p>until SN377</p> <p>from SN378 on</p>

2 Operating Limitations

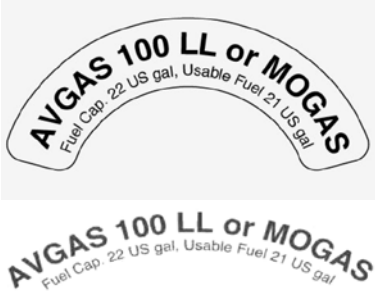
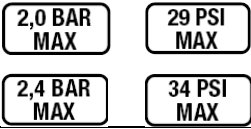

placards	location
 <p>START-UP CHECKLIST</p> <ol style="list-style-type: none"> 1. Preflight Control 2. Fuel Level 3. Fuel Shut-Off Valve "Open" 4. Recovery System Armed 5. Safety Belts "Closed" 6. Doors "Locked" 7. Controls "Checked" 8. Master Switch "ON" 9. Propeller Set to 5600 RPM (if applicable) 10. Flaps in Take-Off Position (15°) 11. Oil Temperature-Control "Pull" 12. Avionics Switch "OFF" 13. Altimeter "Set" 14. Brakes "Locked" 15. Choke "Pull" (Engine Cold) 16. Propeller Clear 17. Starter "Engage" 18. Avionics Switch "ON" 	<p>center console</p>
 <p>Parking Brake release</p> <p>↑</p> <p>→</p> <p>Set</p>	<p>center console</p>
 <p>ACL Fuel Pump Nav-Light Instr.-Light Land.-Light Autopilot</p> <p>DWN</p> <p>T R I M</p> <p>UP</p> <p>Master Switch</p> <p>Avionics</p> <p>ON</p> <p>OFF</p> <p>FLAPS / UP</p> <p>FLAPS / DOWN</p> <p>0°</p> <p>15°</p> <p>30°</p> <p>40°</p>	<p>switchboard</p>

2 Operating Limitations

placards	location																																																																												
 <p>Main Bus Fuses: (Main Switch)</p> <table border="1"> <tr><td>1 Master Fuse, EMS</td><td>25 A</td></tr> <tr><td>2 Artificial Horizon, EFIS Keep Alive, ELT</td><td>6 A</td></tr> <tr><td>3 Fuel Pump, Position Lights, ACL</td><td>10 A</td></tr> <tr><td>4 Landing Light, Instrument Lights, analog Tachometer</td><td>10 A</td></tr> <tr><td>5 Trim, Flap-Drive</td><td>10 A</td></tr> <tr><td>6 Starter, var. Pitch Prop, PropCON</td><td>10 A</td></tr> </table> <p>Avionics Bus-Fuses: (Avionics Switch)</p> <table border="1"> <tr><td>7 GPS, COM2, 12V extem</td><td>10 A</td></tr> <tr><td>8 Directional Gyro</td><td>10 A</td></tr> <tr><td>9 EFIS, HS34, Artificial Horizon</td><td>10 A</td></tr> <tr><td>10 Turn Coordinator, Autopilot</td><td>10 A</td></tr> <tr><td>11 Transponder, Encoder</td><td>10 A</td></tr> <tr><td>12 COM1, Intercom</td><td>10 A</td></tr> </table> <p>Charge Fuse: 20 A (engine comp.)</p>  <table border="1"> <thead> <tr> <th colspan="2">Main Bus Fuses</th> <th colspan="2">Avionic Bus</th> </tr> </thead> <tbody> <tr><td>1 Master</td><td>30 A</td><td>11 COM 2</td><td>5 A</td></tr> <tr><td>2 ELT</td><td>1 A</td><td>12 NAV / COM 1</td><td>5 A</td></tr> <tr><td>3 Fuel Pump, Starter Relais</td><td>3 A</td><td>13 Intercom / Audio Panel</td><td>2 A</td></tr> <tr><td>4 Trim, Flaps</td><td>5 A</td><td>14 Transponder, Encoder</td><td>3 A</td></tr> <tr><td>5 ACL</td><td>5 A</td><td>15 GPS</td><td>5 A</td></tr> <tr><td>6 Landing Light, Panel Lights</td><td>3 A</td><td>16 12V receptacle</td><td>1 A</td></tr> <tr><td>7 NAV Lights</td><td>2 A</td><td></td><td></td></tr> <tr><td>8 EFIS, Gyro Instruments</td><td>5 A</td><td>Engine Compartment Battery</td><td>40 A</td></tr> <tr><td>9 EMS, HS34, analogue Tachometer</td><td>3 A</td><td>Starter</td><td>100 A</td></tr> <tr><td>10 AP24, AP Servos, Propeller</td><td>5 A</td><td>Charge Fuse</td><td>20 A</td></tr> <tr><td></td><td></td><td>behind Switchpanel Regulator</td><td>0,2 A</td></tr> <tr><td></td><td></td><td>Regulator Checklight</td><td>0,2 A</td></tr> </tbody> </table>	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	7 GPS, COM2, 12V extem	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 COM1, Intercom	10 A	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 AP24, AP Servos, Propeller	5 A	Charge Fuse	20 A			behind Switchpanel Regulator	0,2 A			Regulator Checklight	0,2 A	<p>right rocker panel or on main spar carrythrough</p> <p>up to SN377</p> <p>from SN378 on</p>
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<p>optional: constant speed prop</p>  <table border="1"> <thead> <tr> <th colspan="2">Recommended Prop Setting</th> </tr> <tr> <th>Engine RPM</th> <th>Manif. Press.</th> </tr> </thead> <tbody> <tr><td>5600 - Start</td><td>27,2 InchHG</td></tr> <tr><td>5000 - Cruise</td><td>26,0 InchHG</td></tr> <tr><td>4500 - Cruise</td><td>25,0 InchHG</td></tr> </tbody> </table>	Recommended Prop Setting		Engine RPM	Manif. Press.	5600 - Start	27,2 InchHG	5000 - Cruise	26,0 InchHG	4500 - Cruise	25,0 InchHG	<p>switchboard</p>																																																																		
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5000 - Cruise	26,0 InchHG																																																																												
4500 - Cruise	25,0 InchHG																																																																												
<p>optional: glider towing aircraft</p>  <p>Attention! Watch your airspeed for glider towing!</p>  <p>Tow Release</p>	<p>left cockpit</p> <p>left rocker panel</p>																																																																												




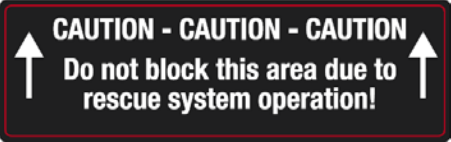


2 Operating Limitations

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
 <p>or</p>	<p>fuel tank filler cap</p>
	<p>wheel fairings</p>
	<p>static port</p>





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

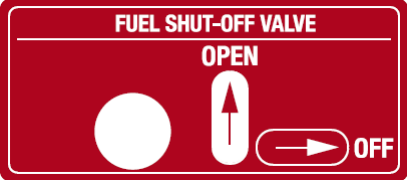


2 Operating Limitations

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
 <p>A red-outlined house-shaped placard with the text "CHECK! Secured Connection of Quick Fastener" and a diagram of a quick fastener.</p>	<p>center of elevator</p>
 <p>A red-outlined rectangular placard with the text "Connect & Secure Quick Fastener" and a diagram of a quick fastener with a red arrow pointing right.</p>	<p>next to the opening for aileron pushrod, covered by wing if not folded</p>
 <p>A red-outlined rectangular placard with the text "Connect & Secure Quick Fastener" and a diagram of a quick fastener with a red arrow pointing down.</p>	<p>center of fixed surface of elevator, covered if elevator is installed</p>
 <p>A red-outlined rectangular placard with the text " ! WARNING ! Before removing wing bolt disconnect aileron rod-connection! "</p>	<p>wing main bolt</p>

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
 <p>A red rectangular placard with white text and symbols. At the top, it reads 'FUEL SHUT-OFF VALVE'. Below this, the word 'OPEN' is centered above a white vertical arrow pointing upwards. To the left of the arrow is a white circle. To the right of the arrow is a white button with a right-pointing arrow and the word 'OFF'.</p>	<p>center console</p>
 <p>A red rectangular placard with white text and a right-pointing arrow. The text reads 'Emergency Jettison'.</p>	<p>door</p>
 <p>A red rectangular placard with white text and arrows. On the left, a white left-pointing arrow is followed by the word 'Open'. On the right, the word 'Close' is followed by a white right-pointing arrow.</p>	<p>door</p>

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
 <p>A red rectangular placard with white text. The text reads 'BALLISTIC RECOVERY SYSTEM'.</p>	<p>recovery system egress area</p>

3 Emergency Procedures

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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 | $V_{APP} = 75 \text{ mph} = 65 \text{ kts}$ |
| 5. max. flap speed | $V_{FE} = 80 \text{ mph} = 70 \text{ kts}$ |
| 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
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

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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 appropriate 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 $\frac{1}{4}$ 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

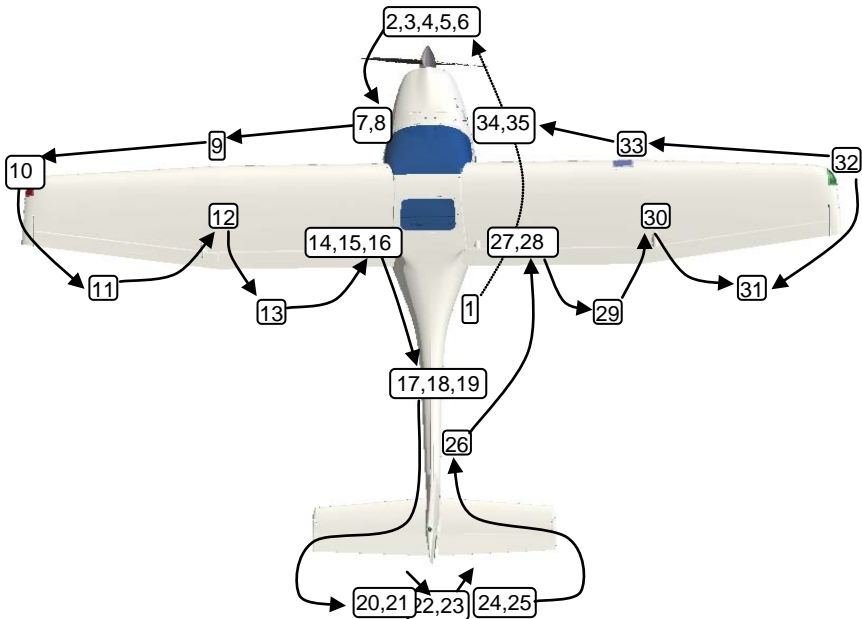
Checks outside the aircraft

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	<ul style="list-style-type: none"> • visibility to the front is very limited • windscreen may need defogging • flight performance is reduced • fuel consumption increases • stall speed increases • 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 | $V_{APP} = 65 \text{ mph} = 57 \text{ kts}$ |
| 2. full flaps airspeed | $V_{FE} = 80 \text{ mph} = 70 \text{ kts}$ |
| 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. $275^{\circ}\text{F} = 135^{\circ}\text{C}$ |
| 11. oil temperature | $120\dots266^{\circ}\text{F} = 50\dots130^{\circ}\text{C}$ |
| 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 | $V_{FE} = 80 \text{ mph} = 70 \text{ kts}$ |
| 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. $275^{\circ}\text{F} = 135^{\circ}\text{C}$ |
| 11. oil temperature | $120\dots266^{\circ}\text{F} = 50\dots130^{\circ}\text{C}$ |
| 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

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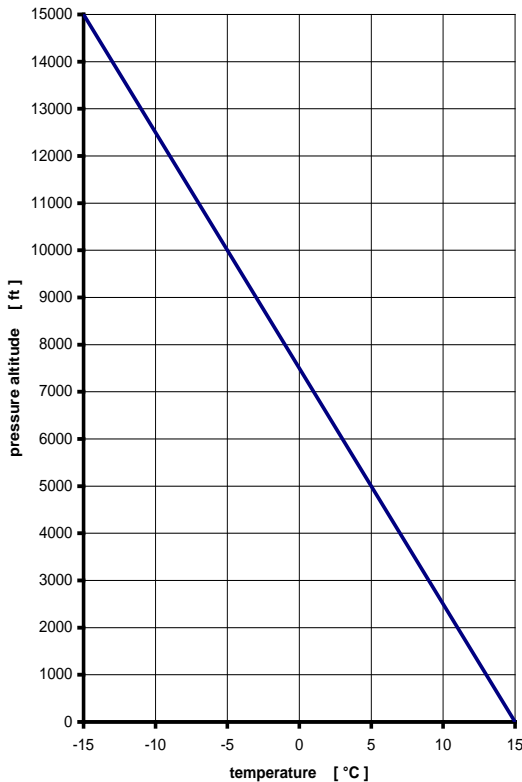
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5 Performance

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:

ISA std. Temperature



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	n/a	495ft 151m
	m		
Take-off air distance (Flaps 0°)	ft	n/a	226ft 69m
	m		
Take-off distance (Flaps 0°)	ft	n/a	721ft 220m
	m		
Take-off roll distance (Flaps 15°)	ft	580ft 177m	525ft 160m
	m		
Take-off air distance (Flaps 15°)	ft	325ft 99m	200ft 61m
	m		
Take-off distance (Flaps 15°)	ft	905ft 265m	725ft 215m
	m		

Landing		all propellers
Landing roll distance (Flaps 40°)	ft	341ft 104m
	m	
Landing air distance (Flaps 40°)	ft	335 102m
	m	
Landing distance (Flaps 40°)	ft	676ft 206m
	m	

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

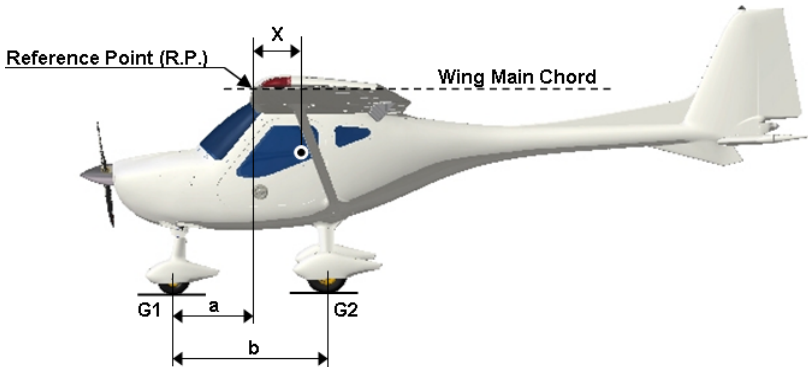
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6 Weight-and-Balance-Information

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”.

$$\text{Moment (lb-inch)} = \text{Weight (lb)} \times \text{Arm (inch)}$$

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

	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

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

7 Airplane and Systems Description

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7 Airplane and Systems Description

7.1 Cockpit Overview

Cockpit example



7 Airplane and Systems Description

7.2 Left Panel – Primary Instruments

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 instrumentation 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

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.

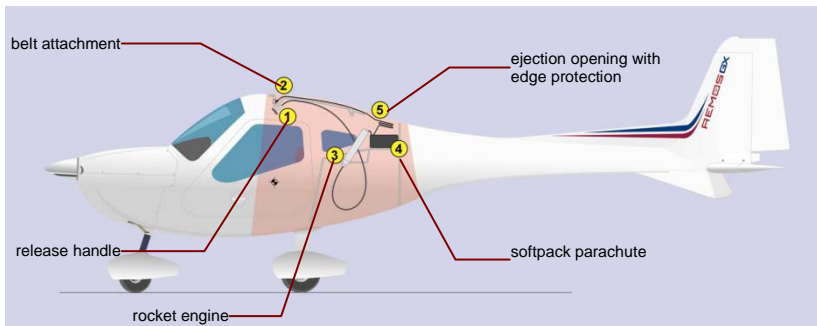
7 Airplane and Systems Description

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	<p>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.</p> <p>Maintenance during the annual condition inspection must be performed according to the recovery system manufacturer's handbook.</p>
----------------	--



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

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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

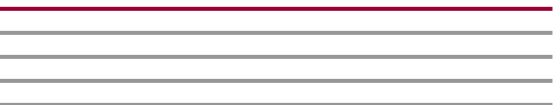
After every day of flight, it is recommended that you clean the surface of the aircraft using pure water and a soft cotton towel only. Take special care when cleaning the windows to use lots of water to loosen and rinse away bugs and dirt and use with only a soft cotton towel, or otherwise you will create 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

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REMOS
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REMOS GX

Supplement Flight Training
Revision general-04



Supplement Flight Training

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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 $V_X = 56 \text{ mph} = 49 \text{ kts}$. 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 $V_Y = 75 \text{ mph} = 65 \text{ kts}$.

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% to 15%.

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% to 15%. 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 you do this exercise only when accompanied by an experienced flight instructor.

10 Touchdown

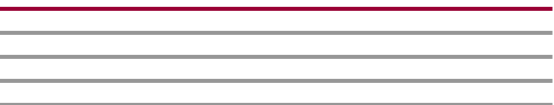
The aircraft has very good low speed characteristics and so is very controllable all the way through the landing phase. After a good approach has been conducted, the REMOS GX does not require much action to land with a perfect touch down. It is important to establish a safe and stable airspeed during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

Imprint

Pilot Operating Handbook REMOS GX
Supplement Flight Training

ASTM Edition

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REMOS GX

Supplement Glider Towing
Revision 05

Supplement Glider Towing

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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 $V_{APP} = 66 \text{ mph} = 58 \text{ kts}$
2. full flaps airspeed $V_{FE} = 80 \text{ mph} = 70 \text{ kts}$
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 | $V_Y = 75 \text{ mph} = 65 \text{ kts}$ |
| 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 | $V_A = 108 \text{ mph} = 94 \text{ kts}$ |
| 5. normal operating speed | $V_{NO} = 123 \text{ mph} = 107 \text{ kts}$ |
| 6. never exceed speed | $V_{NE} = 155 \text{ mph} = 135 \text{ kts}$ |
| 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 |

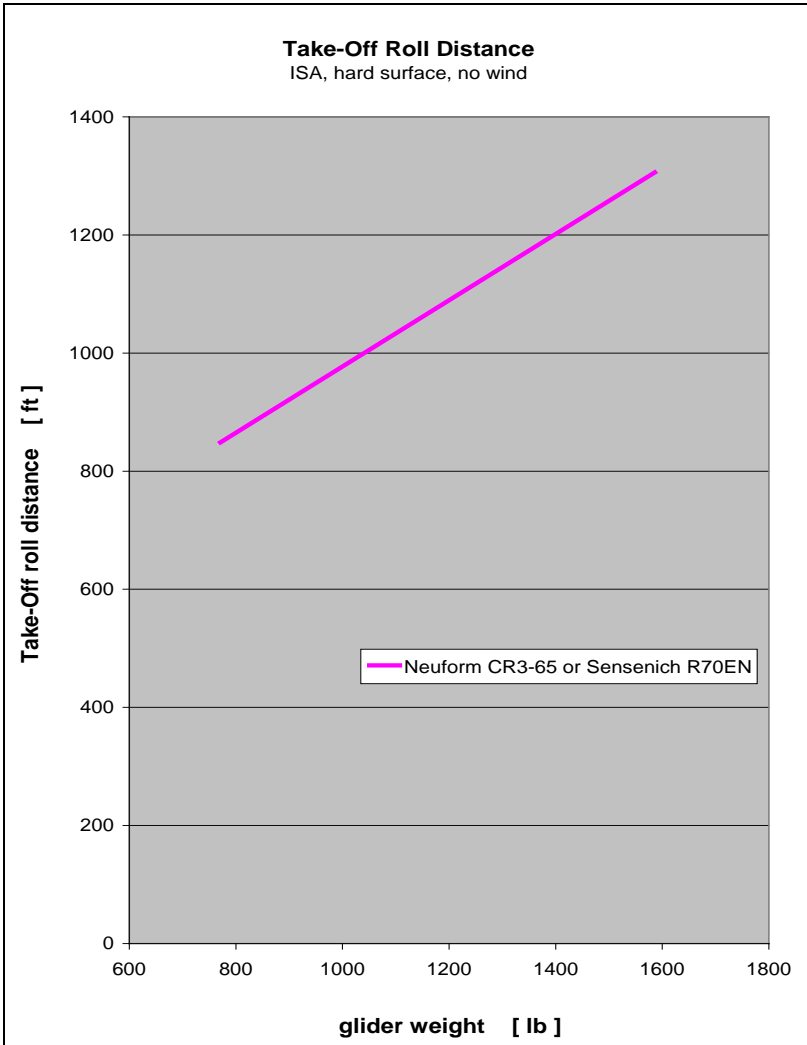
4.6 Landing Procedure

- | | |
|------------------------------------|--|
| 1. approach airspeed | 75 mph = 65 kts |
| 2. full flaps airspeed | $V_{FE} = 80 \text{ mph} = 70 \text{ kts}$ |
| 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

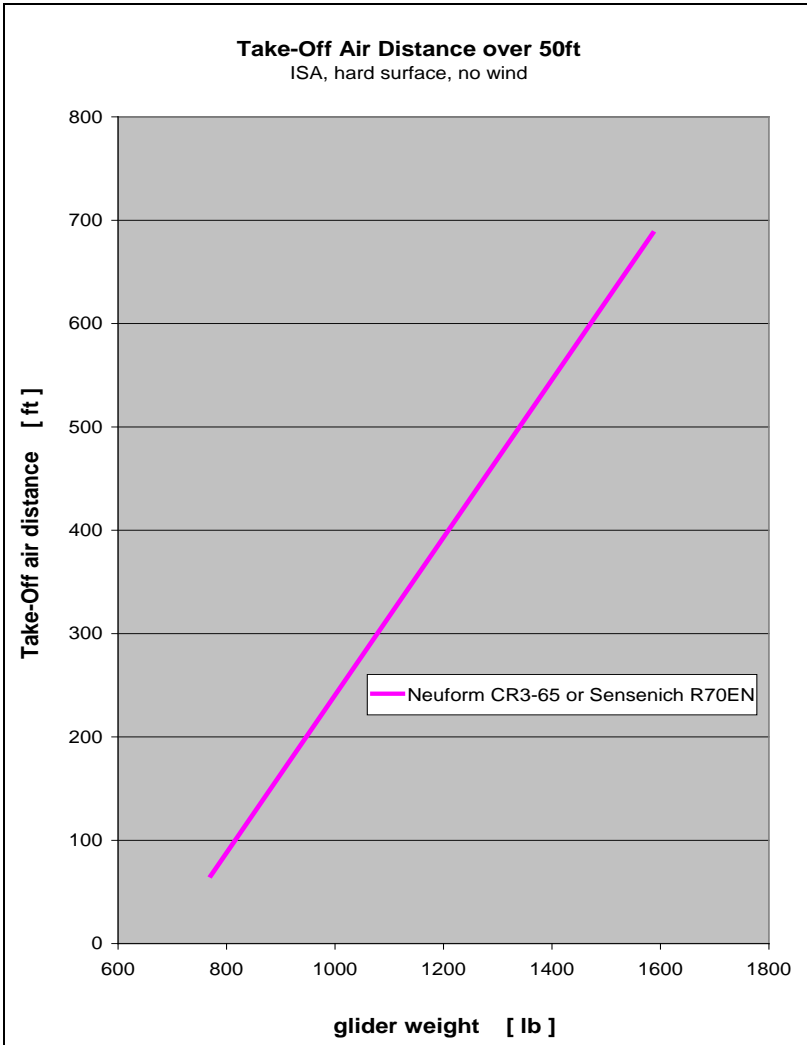
If the REMOS GX is equipped with a Sensenich R70EN or a Neuform CR3-65 propeller, the following take-off roll distances apply (under the conditions of a hard surface runway, ISA conditions, no wind and lift-off at $V_Y = 75 \text{ mph} = 65\text{kts}$).



5 Performance

5.2 Take-Off Air Distance

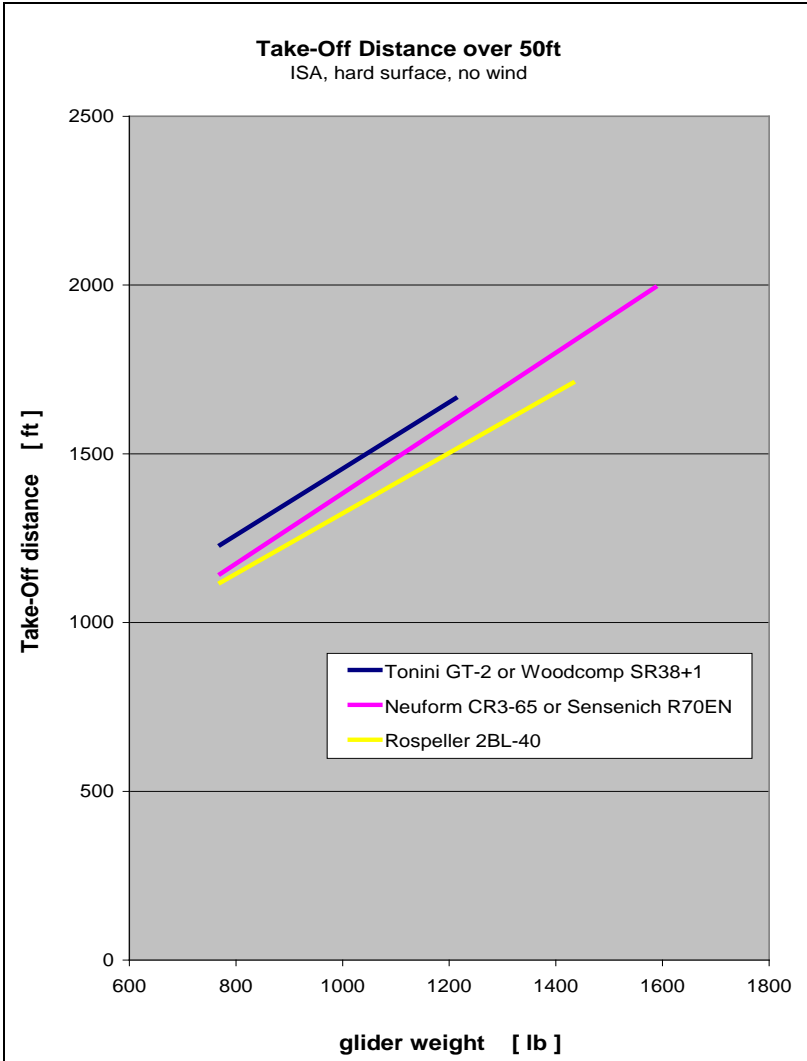
If the REMOS GX is equipped with a Sensenich R70EN or a Neuform CR3-65 propeller, the following take-off air distances apply (under the conditions of a hard surface runway, ISA conditions, no wind and lift-off at $V_Y = 75 \text{ mph} = 65\text{kts}$).



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 $V_Y = 75 \text{ mph} = 65\text{kts}$).



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

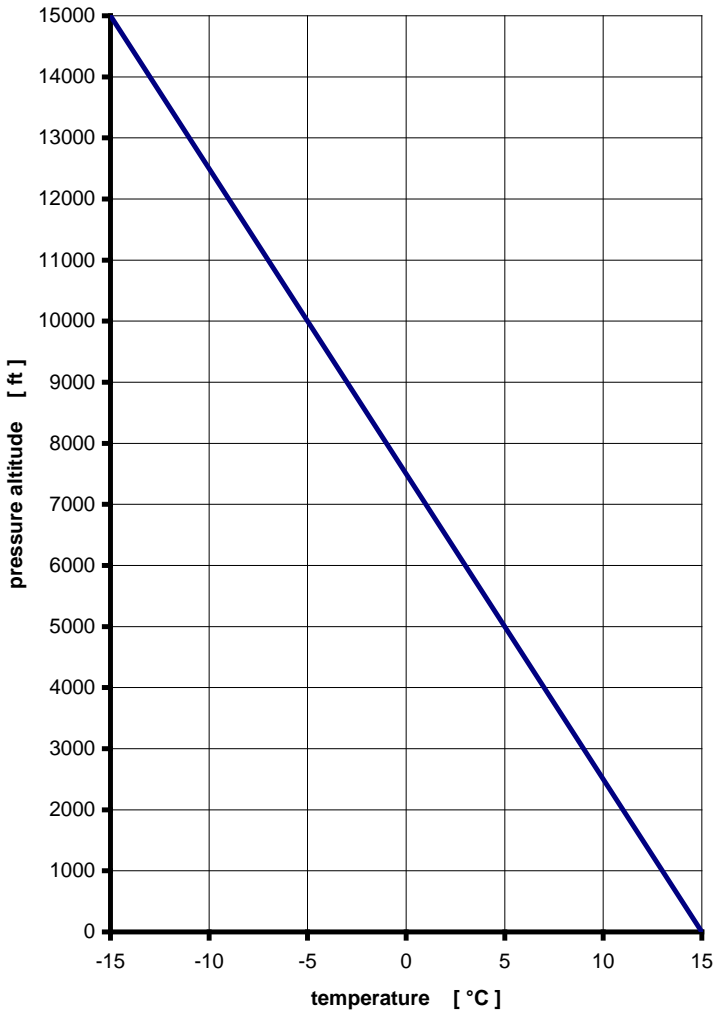
add-ons on take-off air distance	
for dirty wings/raindrops	+ 15%
per 2 knots tailwind component	+ 10%
per 10 knots headwind component	- 10%
for high temperatures above standard	+ 10% per 10°C
for altitude above sea level (density altitude)	+ 5% per 1,000 ft

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.
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5 Performance

ISA std. Temperature



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.
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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!
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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

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