# PILOT'S OPERATING HANDBOOK

## MODEL A5

## FOUNDER'S EDITION

*WARNING - This document is a sample only. This document is not specific to an aircraft, may not be current, and CANNOT be used as an official and approved Pilot's Operating Handbook. This document is only for general informational purposes.*

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ICON Aircraft / 2141 ICON Way, Vacaville, CA 95688

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# RECORD OF MANUAL/HANDBOOK REVISIONS

This section gives a record of the Pilot's Operating Handbook revisions in the current issue series (Issue A, Issue B, etc.). Further description of the revisions by issue and chapter can be found below.

| Issue | Date | Chapter(s) | Added By |
|---|---|---|---|
| A | 02 August 2017 | All | ICON Aircraft |
| A1 | 16 February 2018 | 3,4,7,9 | ICON Aircraft |
| A2 | 11 April 2018 | 2,3,4,7,9 | ICON Aircraft |
| A3 | 22 August 2018 | 2,4,7,8,9 | ICON Aircraft |

## ISSUE A3

The following are a list of revisions for Issue A3.

Chapter 2
- Corrected typo in the word 'supplying' in the warning for Minimum Load Rating of Cargo Restraints (Pilot Supplied)
- Updated text of Environmental Limitations
- Revised reference to FAA exemption number
- Corrected graphic font error in Secure Loose Objects placard
- Updated the ELT Remote Switch placard

Chapter 4
- Updated text of Step Taxi/Normal Takeoff – Water

Chapter 7
- Updated text of Flight Controls
- Updated placard in ELT Remote Control and Audio Alert Indicator

Chapter 8
- Updated text of Cleaning and Care related to Corrosion Inhibitor

Chapter 9
- Updated FAA Exemption

## ISSUE A2

The following are a list of revisions for Issue A2.

Chapter 2
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

Chapter 3
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

Chapter 4
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

Chapter 7
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

Chapter 9
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

## ISSUE A1

The following are a list of revisions for A1.

Chapter 3
- Small formatting changes
- Updated Electrical Fire in Flight
- Added Box-Canyon Reversal

Chapter 4
- Updated Before Cockpit Entry

Chapter 7
- Correct typos
- Updated ICON Parachute System

Chapter 9
- Updated ICON Parachute System

## ISSUE A

The following are a list of revisions for Issue A.

All Chapters

- Initial release of Founder's Edition POH

# LIST OF EFFECTIVE CHAPTERS

The table below shows the current, effective chapters and dates in this revision of the handbook (see previous section). The applicable handbook issue is listed at the bottom corner of this page for reference.

| Chapter | Change | Date |
|---|---|---|
| 0. Introduction | A0 | 02 August 2017 |
| 1. General Information | A0 | 02 August 2017 |
| 2. Limitations | A2 | 22 August 2018 |
| 3. Emergency Procedures | A2 | 11 April 2018 |
| 4. Normal Procedures | A3 | 22 August 2018 |
| 5. Performance | A0 | 02 August 2017 |
| 6. Weight, Balance, and Equipment List | A0 | 02 August 2017 |
| 7. Description of Airplane and Systems | A3 | 22 August 2018 |
| 8. Handling and Servicing | A1 | 22 August 2018 |
| 9. Supplements | A3 | 22 August 2018 |

# Table of Contents

**CHAPTER**

# 00

# Chapter 00

## INTRODUCTION



### 0.1 ASTM STANDARDS

FAA-accepted consensus standards are utilized for the design, construction, and continued airworthiness of the ICON A5. This aircraft complies with the following ASTM standards:

**F2245**

Standard Specification for Design and Performance of a Light Sport Aircraft

**F2295**

Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

**F2746**

Standard Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane

**F2972**

Standard Specification for Light Sport Aircraft Manufacturer's Quality Assurance System

This Pilot's Operating Handbook is in compliance with ASTM Standard F2746.

## 0.2 CONTACT INFORMATION

The following is the name and contact information of the manufacturer of the ICON A5.

ICON Aircraft, Inc.
2141 ICON Way
Vacaville, CA 95688
+001 707 564 4000

https://www.iconaircraft.com

## 0.3 DATA LOCATION INFORMATION

Below is the data location and contact information for recovery of certification documentation, should ICON Aircraft lose its ability to support the aircraft.

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2141 ICON Way
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## 0.4 HANDBOOK REVISIONS

This handbook utilizes section-level revision control. Each page of the handbook contains a revision indication in the lower, inside corner. Revision indicators are consistent within an entire section, but can vary from section to section.

A major release of the handbook is called an “Issue”. The issue letter and its effective date are listed on the title page of the handbook using a letter code; for example, “Issue A”.

Updates and changes to the handbook are called “Revisions” and are designated using an issue prefix followed by a number; for example, “Revision A2” is the second revision of “Issue A”. These revisions are listed on the Record of Manual/Handbook Revisions page near the front of the handbook. Owners are responsible for keeping this page updated when handbook revisions are issued by ICON.

Updates and changes to sections of the handbook are called “Changes” and are designated using the issue prefix followed by a number; for example, “Change A0” is the original release of a

section in Issue A and “Change B3” is the third revision of a section in Issue B of the entire handbook. The “List of Effective Sections” near the front of the handbook documents the applicable section “Changes” associated with a given handbook revision.

Revisions to this Pilot’s Operating Handbook will be distributed to all owners of relevant aircraft registered with ICON. Distribution will include new pages for the sections that have changed, a new List of Effective Sections, and any necessary instructions. Revisions should be examined immediately upon receipt and incorporated into this handbook per the instruction provided.

It is the responsibility of the owner to maintain this POH in a current state when it is being used for operational purposes. Owners should contact ICON whenever the revision status of their POH is in question.

## 0.5 SYMBOLS

For a full list of Symbols, Abbreviations, and Terminology, see Chapter 9, Supplements.

This handbook uses the following symbols and definitions to emphasize important information.

*WARNING:* *Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.*

*CAUTION:* *Indicates a potentially hazardous situation or instruction which, if not avoided or followed, may result in minor or moderate injury or severely damage the aircraft.*

*NOTE:* *Indicates supplementary information that may be needed to fully complete or understand an instruction.*

# 01

# Chapter 01



## GENERAL INFORMATION



## 1.1 AIRPLANE INTRODUCTION

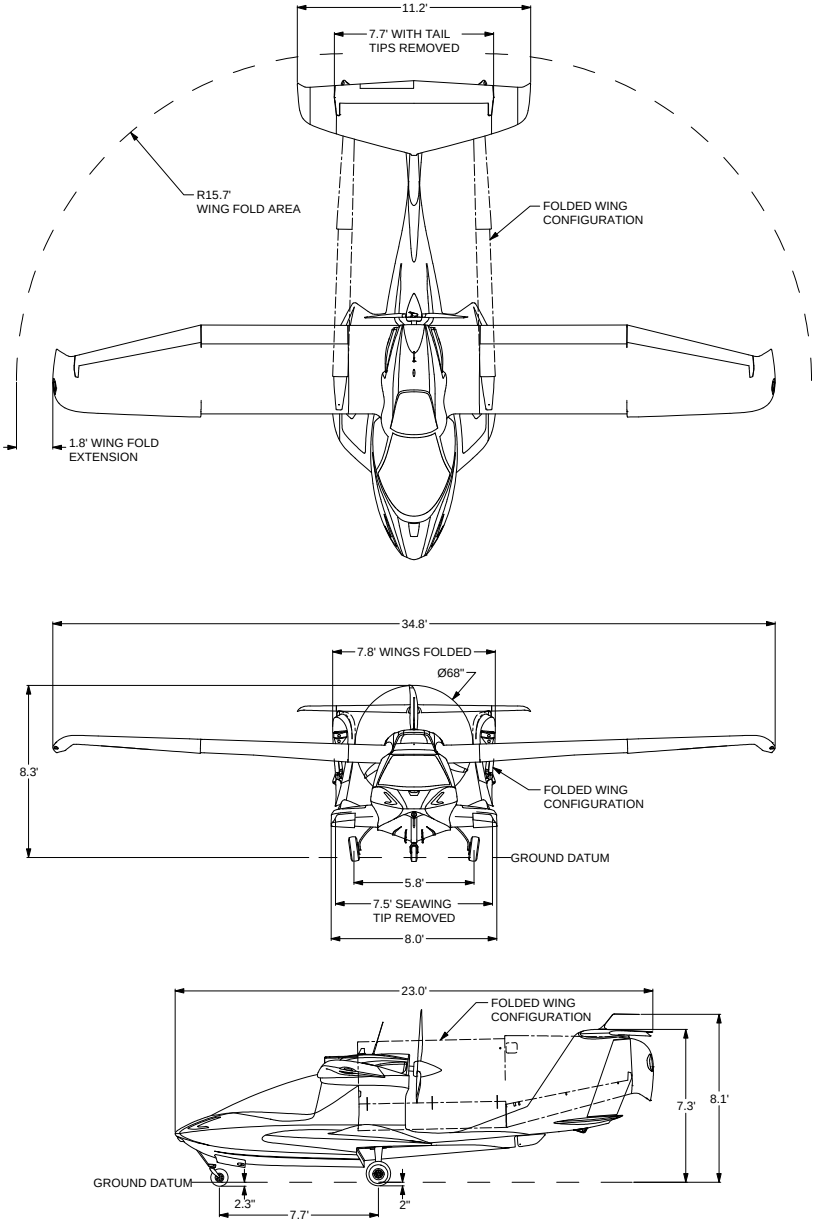
The ICON A5 is a two-seat, single-engine, amphibious Light Sport Aircraft. The A5 has a conventional high wing, tail-aft configuration with ailerons, flaps, elevator, rudder and water rudder control surfaces. The wings are manually foldable with the flight controls (ailerons and flaps) connecting automatically. The tricycle landing gear is retractable. The A5 is equipped with a Rotax 912iS Sport, 4-cylinder, horizontally-opposed, reciprocating engine of 100 horsepower. Installed equipment provides for flight in day and night VFR conditions. Fuel is contained in a single fuselage-mounted tank. Flight controls employ conventional push-pull tubes, torque tubes and cables. The primary flight controls are conventional sticks and rudders (with toe brakes) for each seat. An electrically operated pitch trim tab is controlled from the pilot's (left seat) stick only.

### 1.1.1 DESCRIPTIVE DATA

| Parameter | Value |
|---|---|
| Wing Span | 34.8 ft |
| Wing Area | 135 $ft^2$ |
| Aspect Ratio | 9.0 |
| Overall Length | 23.0 ft |
| Overall Height at Ground Attitude | 7.5 ft |
| Wheel Base | 7.7 ft |
| Main Landing Gear Track Width | 5.8 ft |
| Draft at Gross Weight, Landing Gear Up | 14 in |
| Draft at Gross Weight, Landing Gear Down | 26 in |

## 1.2 ILLUSTRATIONS

### FIGURE 1-1
AIRCRAFT 3-VIEW DRAWING



## 1.3 SUMMARY OF PERFORMANCE SPECIFICATIONS

| Parameter | Value |
|---|---|
| Gross Weight | 1510 $lb_f$ |
| Top Speed at SL, $V_H$ (MCP, 5500 RPM) | 95 KTAS |
| Cruise Speed, 5000 RPM, 8000 ft | 84 KTAS |
| Range (5000 RPM, 8000 ft, including takeoff and climb from SL) | 427 nm (with 45 min reserve) |
| Best Angle of Climb Speed, $V_X$ (Flaps 0°) | 54 KIAS |
| Best Angle of Climb Speed, $V_X$ (Flaps 15°/30°) | 50 KIAS |
| Best Rate of Climb Speed, $V_Y$ | 58 KIAS |
| Rate of Climb at $V_X$ (SL) | 616 ft/min |
| Rate of Climb at $V_Y$ (SL) | 629 ft/min |
| Stall Speed, $V_S$ (Flaps and landing gear up) | 45 KIAS |
| Stall Speed, $V_{S0}$ (Flaps and landing gear down) | 39 KIAS |
| Total Fuel Capacity | 20.1 US gallons |
| Total Usable Fuel | 20 US gallons |
| Approved Types of Fuel | Unleaded automotive fuel with up to 10% maximum ethanol content meeting ASTM D4814 with minimum RON 95 (minimum Anti-Knock Index 91)<br>Grade 100LL aviation gasoline (AVGAS) meeting ASTM D910 |
| Max Engine Power at SL | 100 hp at 5800 RPM (5 min max) |
| Max Demonstrated Direct Crosswind Component – Land and Water (not a limitation) | 12 knots |
| Service Ceiling at Gross Weight (100 ft/min Climb Rate) | 15,000 ft |

# 02

# Chapter 02



## LIMITATIONS



### 2.1 INTRODUCTION

This section includes the operating limitations necessary for the safe operation of the airplane.

### 2.2 AIRSPEED LIMITATIONS

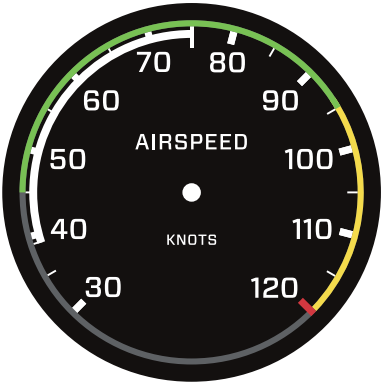
| | Speed | KIAS | Remarks |
|---|---|---|---|
| $V_{S0}$ | Stall Speed, MTOW, Flaps 30° | 39 | Idle power |
| $V_S$ | Stall Speed, MTOW, Flaps 0° | 45 | Idle power |

| | Speed | KIAS | Remarks |
|---|---|---|---|
| $V_{FE}$ and $V_{LE}$ | Maximum Flap and Landing Gear Extended Speed | 75 | Operation and extended speeds are the same. |
| $V_{O\text{-}min}$ | Operating Maneuvering Speed, 1145 $lb_f$, Min Flight Weight | 76 | Do not make full or abrupt control movements above this speed. |
| $V_{O\text{-}max}$ | Operating Maneuvering Speed, MTOW | 87 | Do not make full or abrupt control movements above this speed. |
| $V_{NO}$ | Max Structural Cruising Speed | 95 | Do not exceed this speed except in smooth air. |
| $V_{NE}$ | Never Exceed Speed | 120 | Do not exceed this speed in any operations. |



## 2.3 AIRSPEED INDICATOR MARKINGS

**FIGURE 2-1**
AIRSPEED INDICATOR



| Marking | KIAS Range | Significance |
|---|---|---|
| White Arc | 39-75 | Full flap operating range. Lower limit is maximum weight stall speed in landing configuration. Upper limit is maximum speed permissible with flaps and landing gear extended. |
| Green Arc | 45-95 | Normal operating range. Lower limit is maximum weight stall speed with flaps retracted. Upper limit is the maximum structural cruising speed. |
| Yellow Arc | 95-120 | Operations must be conducted with caution, and only in smooth air. |
| Red Line | 120 | Maximum speed for all operations. |



## 2.4 SERVICE CEILING

The service ceiling (the maximum altitude at which a climb rate of 100 ft/min can be maintained) is 15,000 ft at MTOW, standard conditions.

## 2.5 HUMAN LOAD LIMITATIONS

### Maximum Human Weight

250 $lb_f$ per person

The carbon structure of the A5 though strong, can be damaged if loaded in an unintended manner. The A5 is designed to support a person of up to 250 $lb_f$ total weight wearing normal soft-soled shoes. High load concentrations that can be created by things such as stylish shoes, heels, knees, and elbows must be avoided by all people, particularly if heavy.

Surfaces approved for standing, sitting, or kneeling:

- Cockpit floors

- Top surface of each Seawings™ forward of the aft limit of the step pad
- Seats
- Canopy jambs

Surfaces approved for sitting only:

- Top surface of the left and right wings in the area bounded by the wing leading edge, side of engine cowling, station of the forward edge of the IPS cut out, and wing fold joint



All surfaces of the fuselage, Seawings™, wings, and horizontal tail other than those specified above are not approved for standing, kneeling, or sitting regardless of the weight of the individual.

*CAUTION: The seats, interior, Seawings™ step areas and safety restraints are designed to support a person of 250 $lb_f$ maximum weight. Do not exceed this limit. Exceeding the maximum human weight limit or loading the aircraft in an unapproved manner could result in an unsafe condition and damage to the aircraft.*

*NOTE: The above limit makes no statement about weight and balance. Always perform a weight and balance procedure for any new loading condition.*

## 2.6 BAGGAGE/CARGO LIMITATIONS

### Maximum Baggage/Cargo Weight

60 $lb_f$

*WARNING: Loading a concentrated weight fully aft in the baggage area may cause an unsafe aft CG condition.*

### Minimum Number of Anchor Loops

At least three (3) out of the six (6) provided anchor loops must be used in order to safely restrain the full baggage/cargo load.

### Minimum Load Rating of Cargo Restraints (Pilot Supplied)

1000 $lb_f$

*WARNING: The pilot is responsible for properly restraining the baggage/cargo. At least three (3) out of the six (6) provided anchor loops must be used in order to safely restrain the load. The pilot is responsible for supplying a properly rated cargo restraint to interface with the anchor loops built into the A5.*



## 2.7 LOAD FACTORS

**Design Maneuvering Limit with flaps at 0° and 1510 $lb_f$ aircraft weight**

+4, -2 g

**Design Maneuvering Limit with flaps at 15°/30° and 1510 $lb_f$ aircraft weight**

+2 g

**Landing Gear Extension/Retraction**

+1.5 g

*NOTE: Do not extend or retract the landing gear with more than this load on the aircraft.*

**Engine**

Limit of engine operation at zero gravity and in negative gravity conditions.

**Maximum of 5 seconds at maximum -0.5 g.**

*NOTE: These are not operational limits (-2 g is for structural load purposes).*

## 2.8 WATER SPEED LIMITATIONS

**Maximum water speed for landing gear extension/retraction**

4 knots (idle power setting)

**Maximum water speed with water rudder extended**

10 knots

## 2.9 APPROVED MANEUVERS

### 2.9.1 IN FLIGHT:

All aerobatic maneuvers are prohibited. The aircraft is not certified for aerobatics, inverted flight, or sustained zero 'g' or negative 'g' flight.

Intentional or attempted spins are prohibited.

Prolonged periods in stalled flight are to be avoided.



### 2.9.2 ON THE WATER:

Low speed taxiing turns on the water while off the step in displacement or plowing modes are approved. Gentle turns while on the step and up to takeoff speeds are also approved.

Aggressive turns while on the step and up to takeoff speeds should be avoided and may induce a water loop. Water loops are not approved and could cause damage to the nose gear doors or Seawings™.

*WARNING: Contacting the wing tip with the water while in motion can create a dangerous situation and must be avoided. The planing wing tip design is intended as a safety precaution for inadvertent wing tip water contact and should never be used intentionally or relied upon for safety.*

## 2.10 FUEL LIMITATIONS

**Total Fuel Capacity**

20.1 US gallons

**Total Usable Fuel**

20 US gallons

## Approved Types of Fuel

a) Unleaded automotive fuel with up to 10% maximum ethanol content meeting ASTM D4814 with minimum RON 95 (minimum Anti-Knock Index 91)

b) Grade 100LL aviation gasoline (AVGAS) meeting ASTM D910

*NOTE: Use of leaded gasoline decreases the maintenance interval for changing the oil filter, cleaning the oil tank, and replacing spark plugs. See the A5 Maintenance Manual for further information.*

*NOTE: Anti-Knock Index is (RON+MON)/2. RON is Research Octane Number and MON is Motor Octane Number.*

*CAUTION: Due to various environmental, economic, and political reasons, fuels with different blends of ethanol, oxygenators, and other additives may be encountered when using automotive gasoline. Be careful to use only fuel suitable for your operational climate zone since there is a risk of fuel vapor formation if using winter-blend, or other high vapor pressure fuel, in summer-type weather or at high altitude. Vapor formation can result in fuel pump cavitation, low fuel pressure, and engine power loss. This phenomenon is most likely to be encountered in a full throttle climb at high altitude and in hot weather. An occasional flash of the fuel pressure annunciator light is acceptable, but if the fuel pressure light flashes frequently, continuously, or if any sort of power loss, stumbling or surging is observed, land as soon as practical and contact ICON Owner Support. The problem may be poor fuel quality or an inappropriate blend of automotive fuel. If these are the case then 100LL Aviation fuel should be used until a suitable type of automotive fuel can be sourced.*

### Mixing of Fuel Types

The A5 fuel system is designed to allow mixing of automotive fuel and AVGAS.

## 2.11 ENGINE OIL LIMITATIONS

### Approved Oil Specifications



Viscosity – SAE 10W-40 multi-grade

API classification SG or higher

Registered brand heavy-duty four-stroke motorcycle oil with gear additives

*CAUTION: Do not use oils containing friction modifier additives as this could result in clutch slippage.*

*CAUTION: Do not use conventional a.d. (ashless dispersant) aircraft oils.*

*CAUTION: Do not use oils intended primarily for diesel engines.*

*CAUTION: Do not use any oil additives.*

### Recommended Oil

Shell brand AeroShell Sport Plus 4

## 2.12 ENGINE COOLANT LIMITATIONS

The engine coolant must be a mixture of 50% ethylene glycol based antifreeze and 50% distilled water. The antifreeze portion of the coolant mixture should be a low silicate and nitrite-free formula.

A list of approved antifreeze is included in the table below:

| Brand | Description |
|---|---|
| BASF | Glysantin Protect Plus/G48 |
| CASTROL | Antifreeze All-Climate |
| CASTROL | Antifreeze Anti-Boil |
| OMB | OMB Coolant Plus |
| PETROL | Antifreeze Concentrate/ Antifreeze G11 |

| Brand | Description |
|---|---|
| PRESTONE | DEX-COOL extended life |
| PRESTONE | 50/50 prediluted DEX COOL extended life |
| SHELL | DEX-COOL |
| SHELL | Antifreeze Concentrate |
| TEXACO | Havoline Extended Life Antifreeze |
| VELVANA FRIDXE | G49 |
| YACCO | LR-35 |



## 2.13 ENGINE

One Rotax 912iS Sport, 4-stroke, 4-cylinder horizontally opposed, spark ignition

### Maximum Rated Power at Sea Level, Standard Day

100 hp at 5800 RPM

*NOTE: Per the Rotax Manual, the engine should only be run at this setting for a maximum of 5 minutes.*

### Ignition Switch

Operate Starter for a no more than 10 seconds, continuous cranking, followed by a cooling period of 2 minutes before next attempt

### Maximum Continuous Power

97 hp at 5500 RPM

### Idle Speed

1700 ± 75 RPM (A5 requirement)

## 2.14 ENVIRONMENTAL LIMITATIONS

### Aircraft Temperature Limitations

The design temperature ranges for the aircraft are as follows:
Storage: -40°F and 150°F
Operations in dry conditions: -20°F to ICAO+50°F (109°F at sea level)

Operations in wet conditions: 40°F to ICAO+50°F (109°F at sea level)

*NOTE: The paint scheme was chosen to minimize solar absorptivity to prevent critical structures from exceeding 150°F.*

*NOTE: The low temperature limit in wet conditions is to help avoid water freezing in critical systems.*



## Visible Moisture

Avoid flying in visible moisture at air temperatures below 40°F/5°C. The air filter may ice up and ice may collect on the aircraft and create an unsafe condition.

*CAUTION: Do not operate the aircraft in freezing temperatures if water is present on the airframe. Freezing water can impair the function of critical systems such as instrumentation, flight controls, and landing gear.*

## Water Operations Limitations

Maximum suggested wave height (from crest to trough): 12 inches.

Salt water operations are approved. Rinse with fresh water afterward per the procedure in Chapter 8.

The A5 uses aerospace paint, not marine paint. The paint can withstand 96 hours of continuous direct contact with water. Exceeding the 96 hours or securing aircraft where it may come in contact with rocks or other abrasive objects may result in visible degradation or permanent damage to paint and/or hull structure.

During non-operational continuous direct contact with water the aircraft should be checked at least every 24 hours for a purge bilge light. If purge bilge light is illuminated, run the bilge to remove acquired water. This is necessary as the A5 does not have an automatic bilge pump and is not designed for prolonged storage in water.

### Open Canopy Wind Limitations

The maximum design wind speed for opening the canopy is 25 knots.

*NOTE: Be cautious when opening the cockpit canopy in windy conditions to avoid losing control of it. Do not leave the aircraft unattended with the canopy open.*



## 2.15 VFR AND IFR USE LIMITATIONS

### VFR Flight

This airplane is equipped for day and night VFR operations only. Operate in VMC only.

### IMC Flight

IMC flight is prohibited.

## 2.16 ICON PARACHUTE SYSTEM (IPS) LIMITATIONS

There are no restrictions on the use of the IPS. Optimal IPS actuation is from level flight above 500 ft AGL.

## 2.17 SPIN-RESISTANT AIRFRAME (SRA) LIMITATIONS

The aircraft must be operated with the following items in place to maintain SRA compliance:

Wing stall strips – quantity 2 (1 per side)

Wing vortex generators – 34 pair (17 pair per side)

*NOTE: Up to 3 wing vortex generators are allowed to be missing on each wing so long as there are at least 3 good vortex generators between any two missing ones.*

Fuselage vortex generators – quantity 10 (5 per side)

Flap fences – quantity 2 (1 per side)

When flying with side windows removed, a wind deflector must be installed on each A-pillar, just above the lower window jamb. Install

one deflector on the left A-pillar and one on the right A-pillar. Flight with only one side window installed is not approved.

## 2.18 EXEMPTION REQUIRED EQUIPMENT LIMITATIONS

Per FAA exemption number 10829B, all interior panels, floorboards, and other covers must be installed for flight. In addition, the AOA and ballistic recovery parachute systems must be functional.



## 2.19 PLACARDS

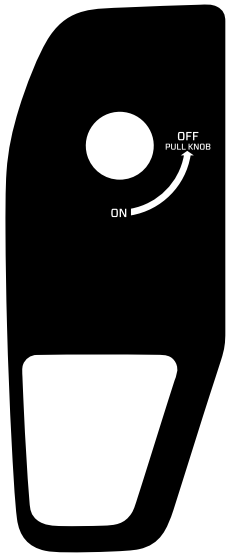
### 2.19.1 GENERAL INFORMATION

The placards shown in this section are safety, operational, or standards-required placards and must be installed on the aircraft at all times. Labels and markings on other instruments and controls are not given.

### 2.19.2 INTERIOR

#### Fuel Shutoff

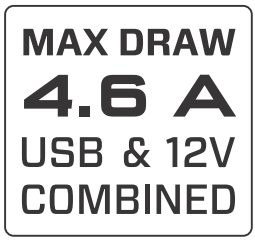
Located on the overhead console.






### Max Amperage for USB and 12V Accessory Port

Located inside of arm rest in center console.




### Maneuvering Speed

Located on the left side above the ignition and master switch.




### Baggage Area

Located in the baggage compartment aft of the occupant seats.


### Secure Loose Objects

Located on the window jamb beneath the removable windows (only visible when window is removed). There are two per aircraft – one on the right side and one on the left side.


### Parking Brake

Located next to the parking brake.


### Window Removal Procedure

Located on the removable window. There are two per aircraft – one on the right side and one on the left side.

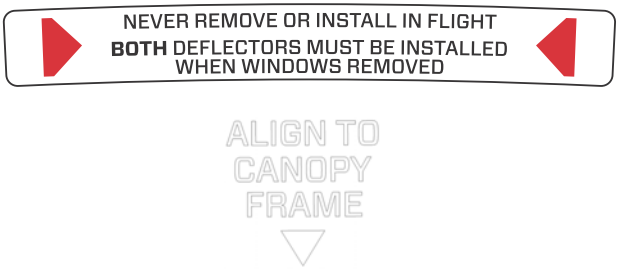

### Window Installation Procedure

Located on the window jamb beneath the removable windows (only visible when window is removed). There are two per aircraft – one on the right side and one on the left side.




### Wind Deflector Alignment and Instructions

Located on the wind deflector. There are two per aircraft – one on the right side and one on the left side (when installed).

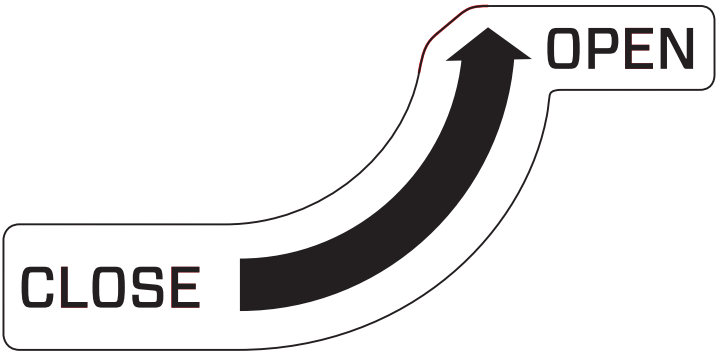



### Keep Hands Clear

Located on the canopy jamb. There are two per aircraft – one on the right side and one on the left side.

## Open Canopy

Located above the occupant seats under the canopy latch handle.




## Passenger Warnings and Kinds of Operation

Located near the front of the overhead canopy.


## Registration Numbers

Located on center console of cockpit.


*NOTE: Registration numbers are for illustration only. Your aircraft registration number will be different.*

### Fuselage Station

Located in cockpit above the baggage compartment on the forward face of the wing spar and beneath the headliner panel.

FORWARD FACE OF
SPAR = **FS 154.75**



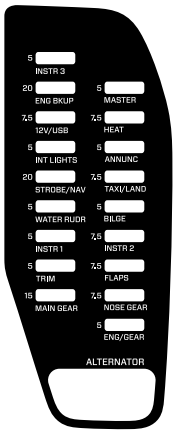
### Do Not Jump Start

Located under battery charging terminals on right, inside surface of fuselage near passenger rudder pedals.

BATTERY CHARGING TERMINALS
DO NOT JUMP START

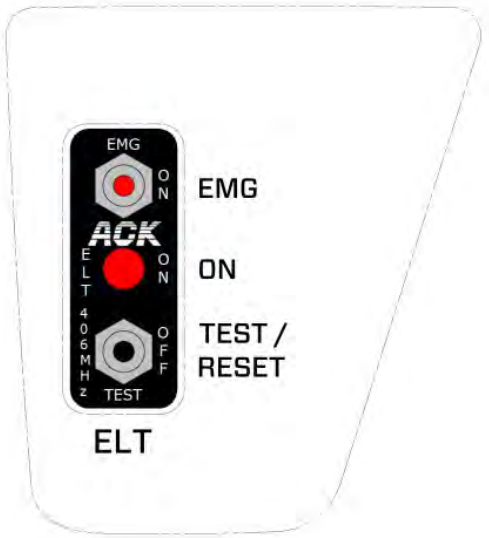
### Fuses

Located on overhead console.




### ELT Remote Switch

Located on overhead console on ELT remote control.




### Parachute Handle

Located on the parachute handle.

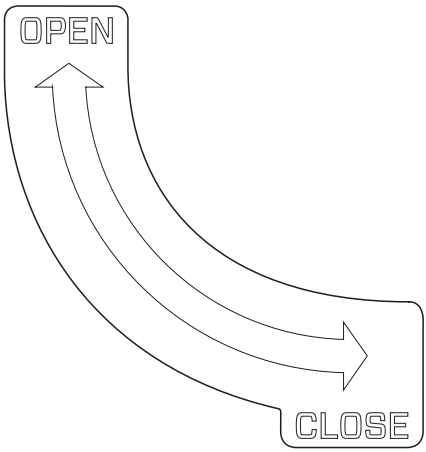

### Parachute Activation Instructions

Located on the overhead console just in front of the parachute activation handle.

## 2.19.3 EXTERIOR

### Canopy Handle

Located on the center of the canopy; top side, next to the canopy release lever.




### Danger Explosive

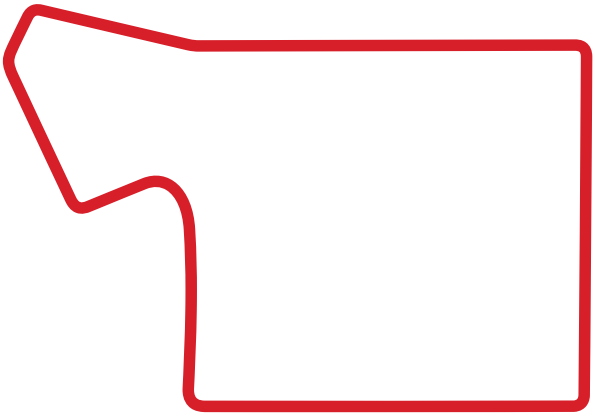
Located on the parachute egress panel adjacent to the engine on the root of the right wing.

### Ballistic Parachute Passenger Warning

Located near each entrance to the cockpit.


### Parachute Egress

Located around the perimeter of the parachute installation adjacent to the engine on the root of the right wing.



### Wing Release

Located on both wing tips near the trailing edge on top and bottom surfaces (total of four locations).




### Wing Lock

Located on bottom, center wing near wing fold joint forward of the locking handle. There are two per aircraft – one on the right side and one on the left side.


### Tire Pressure

Located on main and nose landing gear legs.


### Keep Static Port Clear

Located on both sides of the vertical tail.

### Aircraft Data Plate

Located on the left rear of the empennage below the vertical tail.


*NOTE: Serial number is for illustration only. Your aircraft serial number will be different.*



### Registration Numbers

Located on the left and right sides of the empennage.


*NOTE: Registration numbers are for illustration only. Your aircraft registration number will be different.*

### Light Sport

Located on right and left sides of aircraft nose.


*NOTE: Color shown for reference only.*

### Oil Type

Located on the inside of the oil door of the engine cowling.

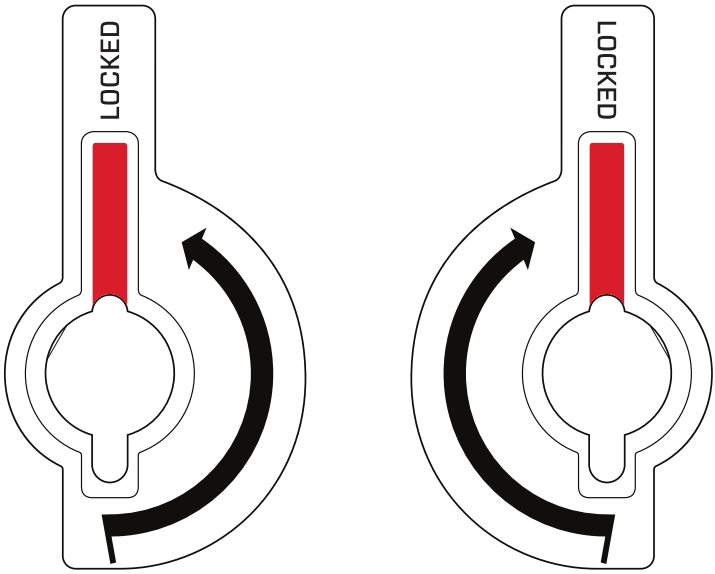



### No Step Wing

Located on the upper center wing, left and right side toward the leading edge.


### Horizontal Stabilizer Tip Locks

Located on the underside of the horizontal tail tips, left and right sides.

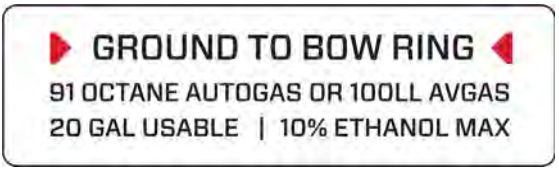


### Keep AOA Port Clear

Located next to the AOA ports on the left wing, top and bottom leading edge.


### Fueling Information

Located behind the canopy on the pilot side near the fuel filler cap.




### Propeller Warnings

Located on either side of the propeller on the flap fence and on the trailing edges of the Seawings™ below the propeller.

Left Hand Side


Right Hand Side

On Right Hand, Top, Trailing Edge of Seawings™ Below Propeller


On Left Hand, Top, Trailing Edge of Seawings™ Below Propeller

# 03

# Chapter 03

## EMERGENCY PROCEDURES





### 3.1 GENERAL INFORMATION

This section provides checklists and procedures for coping with emergencies that may occur. Emergencies caused by airplane

malfunctions are rare if proper preflight inspections and maintenance are practiced. En-route weather emergencies may be minimized by careful flight planning and good judgment when unexpected weather is encountered. Should an emergency arise, the basic guidelines in this section should be considered and applied as necessary to correct the problem.

The A5 has a series of annunciator lights that assist the pilot in assessing the criticality of various situations. (See “Annunciator Panel” on page 7-16.)

The following terminology is used to categorize the level of urgency to land the aircraft during an abnormal or emergency situation:



**Land as soon as practical**

Extended flight is not recommended. The landing site and duration of flight is at the discretion of the pilot. Flying to a nearby airport with support services is recommended.

**Land as soon as possible**

Fly toward the nearest normal landing area (runway or water) while being prepared to execute the “Engine Failure In-Flight” on page 3-8 to an emergency landing site (e.g. road).

## 3.2 AIRSPEEDS FOR EMERGENCY OPERATIONS

| Condition | Airspeed |
|---|---|
| Engine Failure After Takeoff | AOA-Pitch for white line (~60 KIAS) |
| Engine Failure In-Flight | AOA-Pitch for white line (~60 KIAS) |
| Precautionary Landing with Engine Power | AOA-Pitch for white line (~60 KIAS) |
| Operating Maneuvering Speed – 1510 $lb_f$ | 87 KIAS |
| Operating Maneuvering Speed – 1145 $lb_f$ | 76 KIAS |
| Best Glide Speed | AOA-Pitch for white line (~60 KIAS) |
| Emergency Descent Speed for Rapid Descent | Max 120 KIAS |

## 3.3 ANNUNCIATOR PANEL CAUTION LIGHTS

The annunciator panel caution lights are amber in color.

| Caution | Cause/Remarks | Corrective Action |
|---|---|---|
| **BATTERY** | 1. Low battery voltage.<br>2. Battery not charging with engine running.<br>3. Aircraft systems are discharging battery. | 1. Confirm Master Switch ON.<br>2. Turn off non-critical equipment.<br>3. If accompanied by ALTERNATOR light, consider lowering landing gear while battery is still strong. |
| **ALTERNATOR** | 1. Low voltage on main bus.<br>2. If flying, ALT B failure.<br>3. Battery not charging with engine running. | 1. Reset 30 Amp circuit breaker if tripped. If trips again then:<br>2. Turn off non-critical equipment.<br>3. Consider lowering landing gear while battery is still strong. |
| **ENGINE** | 1. Engine component/sensor failure/exceedance detected.<br>2. Engine limits may have been exceeded; check gauges.<br>3. 10 hours max flight time recommended. | 1. Land as soon as practical for trouble-shooting. |
| **FUEL PRESS** | 1. Excessively low or high fuel pressure. | 1. Land as soon as practical for trouble-shooting.<br>2. Power reduction may help. |

## 3.4 ANNUNCIATOR PANEL WARNING LIGHTS

The annunciator panel warning lights are red in color.

| Warning | Cause/Remarks | Corrective Action |
|---|---|---|
| **PURGE BILGE** | 1. At least 1 gallon of water in bilge.<br>2. Could create weight or CG out of limits. | 1. Bilge pump – ON.<br>If light remains on:<br>1. Do not takeoff. |
| **SECURE WING/TAIL** | 1. One or more sensors indicate unlocked.<br>2. Does not identify affected sensor. | On ground:<br>1. Do not takeoff.<br>2. Confirm wings/tails locked.<br>In flight:<br>1. Minimize maneuvering.<br>2. Land as soon as practical. |
| **LAND AIRCRAFT**<br>**+ FUEL PRESS** | 1. Critically low or high fuel pressure. | 1. Land as soon as possible. |
| **LAND AIRCRAFT**<br>**+ ENGINE** | 1. Critical engine component or sensor failure. | 1. Land as soon as possible. |
| **LAND AIRCRAFT**<br>**+ ENGINE**<br>**+ ALTERNATOR** | 1. Low voltage on main bus.<br>2. If flying, ALT A failure. | 1. Turn off non-critical equipment.<br>2. Land as soon as possible.<br>3. Consider lowering landing gear while battery still strong. |

| Warning | Cause/Remarks | Corrective Action |
|---|---|---|
| **LAND AIRCRAFT**<br>**+ ALTERNATOR**<br>**+ BATTERY** | 1. Excessively low battery.<br>2. If flying, Alt B failure.<br>3. Battery not charging with engine running.<br>4. ALT A may also have failed. | 1. Confirm Master Switch ON.<br>2. Turn off non-critical equipment.<br>3. Land as soon as possible.<br>4. Lower landing gear now if land landing.<br>*NOTE: Battery life may limit engine run time.* |
| **LAND AIRCRAFT**<br>**+ ENGINE**<br>**+ ALTERNATOR**<br>**+ BATTERY** | 1. Excessively low battery.<br>2. If flying, Alt A failure.<br>3. Battery not charging with engine running.<br>4. ALT B may also have failed. | 1. Confirm Master Switch ON.<br>2. Turn off non-critical equipment.<br>3. Land as soon as possible.<br>4. Lower landing gear now if land landing.<br>*NOTE: Battery life may limit engine run time.* |



## 3.5 ABNORMAL ENGINE VIBRATION

1. Throttle – Reduce to minimum practical
2. Assess Vibration – Take action

| Option | Actions |
|---|---|
| If vibration stops. | 1. Land as soon as practical |
| If vibration continues. | 1. Land as soon as possible (suitable landing area) |

## 3.6 ICON PARACHUTE SYSTEM (IPS) ACTUATION

IPS actuation is recommended for any of the following:

- Loss of Aircraft Control
- Engine Failure and < 1000 ft AGL with NO SUITABLE landing area

- Pilot Incapacitation or inability to cope with situation or flight conditions

**Parachute Deployment**

1. Safety Pin – CONFIRM REMOVED, Remove if necessary
2. Parachute Handle – PULL HARD
3. Ignition Key – OFF

### 3.6.1 NOTES:

Approximately 48 $lb_f$ of force is required to actuate the IPS.

Optimal IPS actuation is from level flight above 500 ft AGL.

Descent rate under parachute will be approximately 1200 ft/min.

Landing gear will automatically extend following IPS actuation. Once extended, it cannot be raised.

Seat belts should remain secure during descent until contact with the surface and all motion stops.

At pilot's discretion, consider unlocking canopy and removing windows during descent.

Exit the aircraft after all motion stops.

The ELT may not activate during IPS deployment or touchdown. It is therefore recommended to manually activate the ELT during the descent.

## 3.7 COOLANT TEMPERATURE HIGH

### 3.7.1 GROUND

1. Throttle – ADVANCE to 3000-4000 RPM (if feasible)

**If high coolant temperature persists:**

2. Shutdown as soon as practical

   *NOTE: Use of cabin heater may help reduce coolant temperature.*

### 3.7.2 IN FLIGHT

1. Throttle – REDUCE power to minimum required
2. Airspeed – INCREASE

**If high coolant temperature persists:**

3. Land as soon as possible

## 3.8 EMERGENCY RAPID DESCENT

1. Throttle – IDLE
2. Flaps – UP
3. Airspeed – 120 KIAS max in smooth air or 90 KIAS max in rough air



## 3.9 ENGINE FAILURE DURING TAKEOFF PRIOR TO LIFTOFF

1. Throttle – IDLE
2. Brakes – AS REQUIRED

## 3.10 ENGINE FAILURE AFTER TAKEOFF

1. AOA – White line
2. Landing Area – Select, land within 45° of straight ahead unless sure of sufficient altitude for a turn

## 3.11 ENGINE FAILURE IN-FLIGHT

1. AOA – white line
2. Landing Site – SELECT
3. Confirm:
    a. Throttle – above idle
    b. Master Switch – ON
    c. Ignition – BOTH
    d. Fuel Valve – ON

4. Evaluate Landing Site Options and Take Action

| Option | Actions |
|---|---|
| Suitable water or soft surface is available for landing. | 1. Landing Gear – UP<br>2. Flaps – FULL (landing assured) |
| Suitable hard surface is available for landing. | 1. Landing Gear – DOWN |
| Less than 1,000 ft AGL with no suitable landing area. | 1. IPS Handle – PULL HARD<br>2. Ignition Key – OFF |



## 3.12 ENGINE FIRE ON GROUND/START

1. Ignition – OFF
2. Master Switch – OFF
3. Egress Airplane

## 3.13 ENGINE FIRE IN FLIGHT

1. Ignition – OFF
2. Master Switch – OFF
3. Fuel Valve – OFF
4. Land As Soon As Possible

## 3.14 ELECTRICAL FIRE IN FLIGHT

1. Master Switch – OFF
2. Alternator Circuit Breaker – PULL (in overhead console)
3. Land As Soon As Possible

## 3.15 INADVERTENT SPIN

1. IPS Handle – PULL HARD
2. Ignition Key – OFF

## 3.16 ICING ENCOUNTER

1. Exit Icing Conditions

   *CAUTION: The presence of even small amounts of ice on the airframe may increase stall speed, decrease stall angle of attack and reduce performance including climb rate.*

## 3.17 BOX-CANYON REVERSAL

1. Power – Full
2. Pitch – slightly up (~5-10° above horizon)
3. Immediately roll and pull (in most open direction)
4. AOA – pull mid yellow (or stall horn)
5. Keep nose above horizon (out of buffet)



## 3.18 LANDING GEAR FAILS TO RETRACT – ON WATER

1. Speed – Idle taxi
2. Landing Gear Handle – DOWN
3. Fuses – CHECK Landing Gear Fuses and REPLACE as required
4. Landing Gear – CHECK nose wheel centered; debris/seaweed clear of all landing gear
5. Landing Gear handle – UP
6. If Landing Gear Does Not Retract:
   a. Landing Gear Handle – DOWN
   b. Aircraft – SECURE on ramp, beach or dock for further troubleshooting

## 3.19 LANDING GEAR FAILS TO RETRACT – IN FLIGHT

1. Landing Gear Handle – DOWN

2. Evaluate Landing Gear Position and Landing Site Options – Take action

| Option | Actions |
|---|---|
| If the landing gear position indicates down. | 1. Land on suitable hard surface for troubleshooting |
| If the landing gear fails to extend. | 1. Proceed to Landing Gear Fails to Extend |
| If water landing is the only option and the landing gear must be raised. | 1. Leave landing gear handle in DOWN position<br>2. CHECK/REPLACE overhead landing gear fuses as needed<br>3. Landing Gear Handle – UP |



## 3.20 LANDING GEAR FAILS TO EXTEND

1. Landing Gear handle – UP
2. Evaluate Landing Gear Position and Landing Site Options – Take action

| Option | Actions |
|---|---|
| If the landing gear position indicates up and suitable water is available. | 1. Land on water for further trouble-shooting |
| If no suitable water is available for landing. | 1. Landing Gear Handle – DOWN<br>2. CHECK/REPLACE overhead landing gear fuses as needed |
| If the landing gear fails to extend. | 1. Landing Gear Handle – UP<br>2. CHECK/REPLACE overhead landing gear fuses as needed<br>3. Landing Gear Handle – DOWN |
| If the landing gear still fails to extend and suitable water is unavailable. | 1. Perform gentle, minimum speed, full flap, runway landing<br>*NOTE: Use of a grass runway may reduce hull damage if forced to land with landing gear not fully down.* |

## 3.21 LOSS OF CONTROL

1. IPS Handle – PULL HARD
2. Ignition Key – OFF

## 3.22 LOSS OF PRIMARY INSTRUMENTS

1. Land as soon as practical
2. Use GPS for speed and altitude (if needed)

## 3.23 OIL PRESSURE-LOW/HIGH (IN THE RED)

### 3.23.1 GROUND

1. Throttle – IDLE
2. Ignition – OFF as soon as practical

### 3.23.2 IN FLIGHT

1. Throttle – Reduce
2. Land as soon as possible

## 3.24 OIL TEMPERATURE HIGH

### 3.24.1 GROUND

1. Throttle – ADVANCE to 3000-4000 RPM (if feasible)

**If high oil temperature persists:**

2. Shutdown as soon as possible

### 3.24.2 IN FLIGHT

1. Throttle – REDUCE
2. Airspeed – INCREASE

**If high oil temperature persists:**

3. Land as soon as possible

## 3.25 OVERVOLTAGE

1. Land as soon as possible

*NOTE: The A5 has no overvoltage indicator, but smoke or an acid smell in the cockpit is an indication of overvoltage. (See "Electrical Fire in Flight" on page 3-9.)*

## 3.26 PRECAUTIONARY LANDING WITH ENGINE POWER

1. AOA – White line (~60 KIAS)
2. Landing Area – SELECT
3. Landing Gear and Flaps – As required for type of landing
4. Communicate intentions (time permitting, as required)
5. AOA – mid-yellow prior to touchdown



## 3.27 WHEEL BRAKE FAILURE

*NOTE: Wheel brakes are needed for steering at low speeds. Failure in-flight would be indicated by low or no brake pedal resistance.*

1. If possible, land with cross wind from side of failed brake
2. Rudder Pedal – MAINTAIN directional control
3. Wheel Brake (Operable) – LIGHT APPLICATION as needed
4. Shut down engine and tow back

# 04

# Chapter 04

## NORMAL PROCEDURES

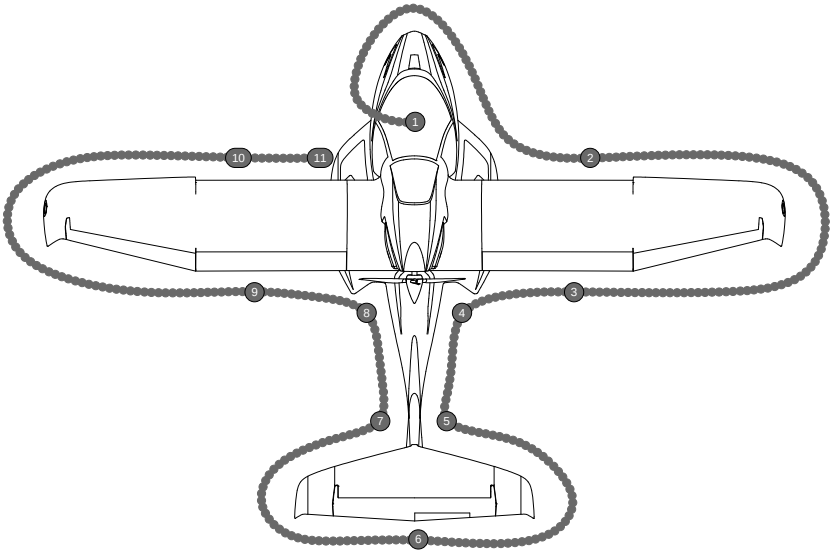




## 4.1 PREFLIGHT INSPECTION

Prior to flight, the aircraft should be inspected in accordance with the following checklists and in the sequence shown in the diagram. Carefully verify that the airplane is in a condition for safe operation.

**FIGURE 4-1**
PREFLIGHT INSPECTION PROCESS






### 4.1.1 (1) CABIN

1. Baggage Area – SECURE stored items
2. Throttle Lever – CHECK freedom of motion
3. Controls – CHECK freedom of motion to all stops
4. Landing Gear Switch – VISUALLY CHECK DOWN (land)/UP (water)
5. Rudder Pedal Area and Parking Brake – CHECK clear and no fluid leaks
6. Master Switch – ON
7. Strobe Lights – VERIFY all lights illuminate
8. Fuel Quantity – CHECK/CONFIRM
9. Landing Gear Position Indicator – VISUALLY VERIFY DOWN (land)/UP (water)
10. Bilge Pump – ON (verify operation & bilge empty)/OFF
11. Water Rudder – VISUALLY inspect and VERIFY operation
12. Circuit Breakers and Fuses – CHECK IN and NONE LIT
13. Master Switch – OFF

14. Canopy Frame, Seal, and Latch – CHECK CONDITION
15. Canopy/Windows – CHECK general condition
16. Fuselage Left Nose – CHECK CONDITION
17. Fresh Air Vent Scoop – CLEAR
18. Nose Gear Strut and Mechanism – CHECK CONDITION
19. Aft Nose Gear Doors – CHECK CONDITION and CONFIRM locked in down position
20. Fuselage Right Nose – CHECK CONDITION

### 4.1.2 (2) RIGHT WING LE AND TIP

1. Seawings™ LE – CHECK CONDITION and SECURE
2. Wing Lock Handle – CHECK LOCKED and SECURE
3. Wing Inspection Panels (2) – CHECK SECURE
4. Wing Stall Strip – CHECK SECURE
5. Wing Tie Down Fitting – REMOVE
6. Wing LE and HT Hanger Fitting – CHECK CONDITION
7. Wing Vortex Generators (17 Pair) – CHECK SECURE
8. Wing Tip and Lights – CHECK CONDITION



### 4.1.3 (3) RIGHT WING TE

1. Aileron and Hinges – CHECK FREE and SECURE
2. Top of Wing – CHECK for DAMAGE
3. Flap, Hinges, and Root Fence – CHECK CONDITION

### 4.1.4 (4) RIGHT INBOARD WING AND ENGINE

1. Parachute Cover – CHECK SECURE
2. Main Landing Gear – CHECK CONDITION
3. Tires – CHECK CONDITION, wear
4. Brakes – CHECK CONDITION, wear, fluid leaks
5. Seawings™ and Hull Step – NO DAMAGE
6. Fuselage Vortex Generators (5) – CHECK SECURE

7. Aft Cowl and Exhaust – SECURE, NO CRACKS
8. Coolant Overflow Bottle – VERIFY LEVEL between min and max
9. Propeller and Spinner – SECURE, NO NICKS
10. Cooling Outlet and Fan – CLEAR, GOOD CONDITION

### 4.1.5 (5) RIGHT TAIL BOOM

1. Firewall Drain – CHECK CLEAR
2. Top of Tail Boom Under Propeller – CLEAR OF WATER/DEBRIS
3. Tail Boom and Hull – CHECK CONDITION and CLEAR OF DEBRIS
4. Water Rudder and Access Panel – SECURE, NO DAMAGE
5. Tail One Access Panel – SECURE
6. Tail Tie Down – CHECK CONDITION and UNTIE



### 4.1.6 (6) TAIL SURFACES

1. Vertical Tail and HT/VT Joint – CHECK CONDITION and SECURITY
2. Right HT and Tip – VERIFY CONDITON and LOCKED
3. Rudder – CHECK FREE and in GOOD CONDITION

   *NOTE: The rudder is spring-centered with a minor offset to the right. This is normal and should not be adjusted.*

4. Static Ports (2) – CHECK CLEAN with CRESCENTS IN PLACE
5. Elevator, Hinges, and Pushrod – CHECK FREE and SECURE
6. Trim Tab and Pushrod – CHECK CONDITION and WITHOUT EXCESSIVE PLAY
7. Left HT and Tip – VERIFY CONDITON and LOCKED

### 4.1.7 (7) LEFT TAIL BOOM

1. Tail Boom and Hull – CHECK CONDITION

### 4.1.8 (8) LEFT INBOARD WING

1. Aft Cowl and Exhaust – SECURE, NO CRACKS
2. Seawings™ and Hull Step – NO DAMAGE
3. Fuselage Vortex Generators (5) – CHECK SECURE
4. Main Landing Gear – CHECK CONDITION
5. Tires – CHECK CONDITION, wear
6. Brakes – CHECK CONDITION, wear, fluid leaks

### 4.1.9 (9) LEFT WING TE

1. Flap, Hinges, and Root Fence – CHECK CONDITION
2. Top of Wing – CHECK for DAMAGE
3. Aileron and Hinges – CHECK FREE and SECURE

### 4.1.10 (10) LEFT WING TIP AND LE

1. Wing Tip and Lights – CHECK CONDITION
2. Wing Vortex Generators (17 pair) – CHECK SECURE
3. Wing LE and HT Hanger Fitting – CHECK CONDITION
4. AOA Ports (2) – CHECK CLEAR
5. Wing Tie Down Fitting – REMOVE
6. Wing Stall Strip – CHECK SECURE
7. Wing Inspection Panels (2) – CHECK SECURE
8. Fuel Vent – CHECK CLEAR
9. Wing Lock Handle – CHECK LOCKED and SECURE
10. Pitot Tube – CHECK CLEAR
11. Seawings™ LE – CHECK CONDITION
12. Bilge Outlet – CHECK CLEAR

### 4.1.11 (11) FUEL AND ENGINE OIL

1. Fuel Cap – REMOVE
2. Fuel – SUMP via access port and INSPECT fuel
3. Fuel Cap – SECURE (tab swings down)

4. Ignition Switch – OFF and key REMOVED
5. Oil Filler Cap – REMOVE via access door
6. Propeller – TURN SLOWLY CCW (behind prop facing forward) several times by hand, holding pressure for several seconds against each compression stroke, until oil 'burps'
7. Oil Level – CHECK, SERVICE as necessary, then secure cap and door
8. Cowling – CHECK condition/VERIFY secure
9. Engine Inlet – CLEAR

## 4.2 BEFORE COCKPIT ENTRY

1. Chocks and Tie Downs – VERIFY REMOVED
2. Aircraft Documents – VERIFY/REVIEW
3. Preflight Planning – COMPLETE
4. Takeoff Data – CALCULATE as required
5. Life Vest(s) – GOOD CONDITION/DON (as required)
6. Windows – BOTH IN or BOTH REMOVED
7. Wind Deflectors – BOTH INSTALLED (if windows removed)



## 4.3 AFTER COCKPIT ENTRY

1. Canopy – LOWERED to detent or CLOSED
2. Belts/Harnesses – FASTEN
3. Headsets – CONNECTED
4. Landing Gear Switch – DOWN (land)/UP (water)
5. Electrical Switches – ALL OFF (or as required)
6. Master Switch – ON
7. Annunciator Panel – PRESS to test; VERIFY all lights illuminate
8. Landing Gear Position Indicator – DOWN (land)/UP (water)
9. Bilge Pump – On (verify operation & bilge empty)/OFF
10. Fuel Valve – ON
11. IPS Safety Pin – REMOVE and stow

## 4.4 ENGINE START

1. Strobes – ON
2. Brakes – TEST and SET
3. Throttle – OPEN 1/2”
4. Area Around Aircraft – CLEAR
5. Ignition Switch – SMOOTHLY ROTATE to start; RELEASE as engine fires

   *NOTE: Max crank time is 10 seconds, followed by 2 minutes off*

6. Throttle – ADJUST to 2000 RPM
7. Annunciator Panel – LAND AIRCRAFT and ENGINE lights OUT

   *NOTE: If lights not out, switch may have been rotated too rapidly. Shutdown and restart.*

8. Oil Pressure – MONITOR; shutdown if not up in 10 seconds



## 4.5 BEFORE TAXI

1. Throttle – ADVANCE above 2500 RPM until ALTERNATOR light out
2. Radio and Transponder – ON ALT (VFR 1200)
3. AWOS – RECORD as required
4. Altimeter – SET/VERIFY
5. GPS – SET as required
6. Exterior Lights – ON as required
7. Engine Instruments – CHECK
8. Parking Brake – RELEASE

## 4.6 TAXIING

### 4.6.1 LAND

1. Brakes – CHECK
2. Steering – CHECK

### 4.6.2 WATER

1. Steering – CHECK
2. Water Rudder – DOWN as necessary for improved authority

## 4.7 ENGINE RUN-UP



1. Throttle – ADVANCE TO 4000 RPM
2. Ignition Switch – B (pause until LAND AIRCRAFT AND ENGINE lights illuminate)
3. Ignition Switch – A (pause 6 seconds)
   a. RPM: 180 max drop from original
   b. FUEL PRESSURE Annunciator – OUT
4. Ignition Switch – B (pause 6 seconds)
   a. RPM – 180 max drop from original
   b. FUEL PRESSURE Annunciator – OUT
5. Ignition Switch – BOTH
6. Annunciator Panel – ALL LIGHTS OUT
7. Engine Instruments – CHECK
8. Throttle – RETARD to idle

*NOTE: During the ignition check, the RPM may increase when operating on a single lane. This is normal; the original RPM will be restored after a short time operating on both lanes.*

## 4.8 BEFORE TAKEOFF

1. Flight Controls – FREE and CORRECT

2. Flaps – CHECK operation
3. Trim – SET for takeoff
4. Instruments – CHECK
5. Canopy – LATCHED

## 4.9 NORMAL TAKEOFF – LAND

1. Flaps – UP (0°)
2. Throttle – MAX
3. Stick – Rotate at 50 KIAS
4. Landing Gear – RETRACT when safely airborne (<75 KIAS)

## 4.10 STEP TAXI/NORMAL TAKEOFF – WATER

*CAUTION: Takeoff distance will be extended with less than full flap set.*

*WARNING: Contacting the wing tip with the water while in motion can create a dangerous situation and must be avoided.*

1. Bilge Pump – ON (verify bilge empty) / OFF
2. Landing Gear – UP, indicating up
3. Flaps – FULL (30°)
4. Water Rudder – UP
5. Throttle – MAX
6. Stick – POSITION for minimum water drag
7. Flaps – RETRACT when safely airborne above 50 KIAS (<75 KIAS)

## 4.11 CLIMB

1. Airspeed – 58 KIAS for best rate of climb
2. Instruments – MONITOR

## 4.12 CRUISE

1. Cruise Power – SET
2. Fuel Quantity – MONITOR
3. Instruments – MONITOR

## 4.13 APPROACH

### 4.13.1 DESCENT

1. Throttle – AS REQUIRED
2. Landing Gear – AS REQUIRED

### 4.13.2 BEFORE LANDING – LAND

1. Landing Gear – DOWN for the runway (<75 KIAS), indicating down
2. Flaps – UP (0°), or as desired for type of landing
3. Water Rudder – UP
4. Brakes – CHECK for firmness and parking brake OFF
5. AOA – WHITE LINE

### 4.13.3 BEFORE LANDING – WATER

*WARNING: Confirm landing gear up for water landing. Aircraft may flip inverted if landed on water with landing gear extended.*

1. Landing Gear – UP for water, indicating up
2. Flaps – FULL (30°, <75 KIAS)
3. Water Rudder – UP
4. AOA – WHITE LINE

## 4.14 NORMAL LANDING

### 4.14.1 LAND

1. Throttle – IDLE
2. Braking – MINIMUM REQUIRED

### 4.14.2 WATER

*NOTE: Normal water landing and short field water landing procedures are identical.*

1. Throttle – IDLE
2. Stick – FULL AFT, after touchdown if desired for maximum hydrodynamic braking



## 4.15 BALKED LANDING PROCEDURES

1. Throttle – MAX
2. AOA – white line
3. Flaps – RETRACT after positive rate of climb

## 4.16 BEFORE BEACHING

*NOTE: Select a beaching surface that will not damage the hull and arrive at the beach with little or no speed.*

1. Water Rudder – UP
2. Ignition – OFF

## 4.17 BEFORE TAXI FROM WATER TO RAMP

1. Throttle – IDLE taxi
2. Landing Gear – DOWN

*CAUTION: Ramping with landing gear not fully down will damage the landing gear.*

3. Water Rudder – UP

## 4.18 SHORT FIELD TAKEOFF

1. Flaps – HALF (15°)
2. Brakes – HOLD
3. Throttle – smoothly advance to MAX
4. Flight Instruments – CHECK
5. Brakes – RELEASE
6. Stick – ROTATE at 45 KIAS
7. Landing Gear – UP once safely airborne and climbing
8. Climb at $V_X$ (50 KIAS) until obstacles cleared (if required)
9. Flaps – UP climbing through 100 ft AGL



## 4.19 SOFT FIELD TAKEOFF

1. Flaps – HALF (15°)
2. Stick – FULL AFT
3. Throttle – smoothly advance to MAX
4. Flight Instruments – CHECK
5. At Nosewheel Liftoff – Modulate stick to avoid excessively steep climb angle
6. Landing Gear – UP once safely airborne and climbing
7. Climb at $V_X$ (50 KIAS) until obstacles cleared (if required)
8. Flaps – UP climbing through 100 ft AGL

## 4.20 SHORT FIELD LANDING

1. Landing Gear – DOWN for the runway (<75 KIAS), indicating down
2. Flaps – FULL (30°, <75 KIAS) before short final
3. Water Rudder – UP

4. AOA – YELLOW LINE
5. After Touchdown – apply brakes as needed

## 4.21 SOFT FIELD LANDING

1. Landing Gear – DOWN for the runway (<75 KIAS), indicating down
2. Flaps – FULL (30°, <75 KIAS) before short final
3. Water Rudder – UP
4. AOA – YELLOW LINE
5. After Touchdown – Apply back stick to hold nose off ground
6. Minimize braking and maintain AFT stick during roll out

## 4.22 GLASSY WATER LANDING



1. Locate suitable shoreline visual reference
2. GPS – Select HSI/panel display for VSI reference (if on-board and desired)
3. Final Approach Path – as close to visual reference as practical
4. Wheels – UP for water, indicating up
5. Flaps – FULL (30°,<75 KIAS)
6. Water Rudder – UP

**No later than last visual reference:**

7. AOA – YELLOW LINE
8. Throttle – Set RPM to establish 100-150 ft/min decent (approx 3700-4000 RPM)
9. After Touchdown – throttle to idle

## 4.23 SHUTDOWN

1. Brakes – HOLD (on land)
2. Flaps – UP
3. Trim – SET takeoff
4. Engine – STABILIZE at idle (2 minutes in hot conditions)

5. Ignition Switch – OFF
6. Radio and Transponder – OFF
7. Lights – ALL OFF
8. Master Switch – OFF
9. Parking Brake – SET (if desired)
10. IPS Safety Pin – INSTALL

## 4.24 POST-FLIGHT INSPECTION

1. Propeller – CHECK for nicks, water damage
2. Bilge Pump – RUN until no water; then confirm bilge pump and master switch OFF
3. Tie Downs and Chocks – AS REQUIRED
4. General Aircraft Condition – INSPECT

# 05

# Chapter 05

## PERFORMANCE





## 5.1 SUMMARY OF PERFORMANCE SPECIFICATIONS

| Parameter | Value |
|---|---|
| Gross Weight | 1510 $lb_f$ |
| Top Speed at SL, $V_H$ (MCP, 5500 RPM) | 95 KTAS |
| Cruise Speed, 5000 RPM, 8000 ft | 84 KTAS |
| Range (5000 RPM, 8000 ft, including takeoff and climb from SL) | 427 nm (with 45 min reserve) |
| Best Angle of Climb Speed, $V_X$ (Flaps 0°) | 54 KIAS |
| Best Angle of Climb Speed, $V_X$ (Flaps 15°/30°) | 50 KIAS |
| Best Rate of Climb Speed, $V_Y$ | 58 KIAS |
| Rate of Climb at $V_X$ (SL) | 616 ft/min |
| Rate of Climb at $V_Y$ (SL) | 629 ft/min |
| Stall Speed, $V_S$ (Flaps and landing gear up) | 45 KIAS |

| Parameter | Value |
|---|---|
| Stall Speed, $V_{S0}$ (Flaps and landing gear down) | 39 KIAS |
| Total Fuel Capacity | 20.1 US gallons |
| Total Usable Fuel | 20 US gallons |
| Approved Types of Fuel | Unleaded automotive fuel with up to 10% maximum ethanol content meeting ASTM D4814 with minimum RON 95 (minimum Anti-Knock Index 91)<br>Grade 100LL aviation gasoline (AVGAS) meeting ASTM D910 |
| Max Engine Power at SL | 100 hp at 5800 RPM (5 min max) |
| Max Demonstrated Direct Crosswind Component – Land and Water (not a limitation) | 12 knots |
| Service Ceiling at Gross Weight (100 ft/min Climb Rate) | 15,000 ft |

## 5.2 AIRSPEED CALIBRATION

### Conditions

Level flight

Assumed zero instrument error



| Flap Setting | Airspeeds | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Flaps 0° | KIAS | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| | KCAS | 51 | 61 | 71 | 80 | 90 | 100 | 109 | 119 |
| Flaps 15° | KIAS | 45 | 50 | 55 | 60 | 65 | 70 | 75 | – |
| | KCAS | 46 | 51 | 55 | 60 | 65 | 70 | 74 | – |
| Flaps 30° | KIAS | 45 | 50 | 55 | 60 | 65 | 70 | 75 | – |
| | KCAS | 45 | 50 | 54 | 59 | 64 | 68 | 73 | – |

## 5.3 TEMPERATURE CONVERSION CHART

**FIGURE 5-1**
TEMPERATURE CONVERSION BETWEEN FAHRENHEIT AND CELSIUS




## 5.4 STALL SPEEDS

### Conditions

1510 $lb_f$

Power idle

Most forward center of gravity

Assumed zero instrument error

| Flap Setting | | Angle of Bank | | | |
|---|---|---|---|---|---|
| | | 0° | 30° | 45° | 60° |
| 0° | KIAS | 45 | 48 | 54 | 64 |
| 15° | KIAS | 41 | 44 | 49 | 58 |
| 30 | KIAS | 39 | 42 | 46 | 55 |

## 5.5 NORMAL RUNWAY TAKEOFF PERFORMANCE

### Conditions

1510 $lb_f$

Landing gear – DOWN

Level and dry asphalt runway

Zero wind

POH normal takeoff and climb technique except for full throttle prior to brake release

### Corrections

Decrease distances by 10% for each 8 knots of headwind.

Increase distances by 10% for each 4 knots of tailwind.

Increase ground roll distance by 15% for operation on grass runway.



| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total to Clear 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 0 | 520 | 1220 |
| | 20 | 560 | 1320 |
| | 40 | 600 | 1410 |
| | 60 | 640 | 1510 |
| | 80 | 690 | 1620 |
| | 100 | 740 | 1730 |
| 2000 | 0 | 640 | 1500 |
| | 20 | 690 | 1630 |
| | 40 | 750 | 1750 |
| | 60 | 800 | 1890 |
| | 80 | 860 | 2030 |
| | 100 | 920 | 2180 |
| 4000 | 0 | 810 | 1890 |
| | 20 | 880 | 2060 |
| | 40 | 950 | 2230 |
| | 60 | 1030 | 2420 |
| | 80 | 1110 | 2620 |
| | 100 | 1200 | 2820 |

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total to Clear 50 ft Obstacle (ft) |
|---|---|---|---|
| 6000 | -20 | 950 | 2240 |
| | 0 | 1050 | 2460 |
| | 20 | 1150 | 2700 |
| | 40 | 1250 | 2950 |
| | 60 | 1370 | 3220 |
| | 80 | 1490 | 3520 |
| 8000 | -20 | 1280 | 3010 |
| | 0 | 1420 | 3340 |
| | 20 | 1570 | 3710 |
| | 40 | 1740 | 4110 |
| | 60 | 1930 | 4550 |
| | 80 | 2140 | 5040 |

## 5.6 WATER TAKEOFF PERFORMANCE

### Conditions

1510 $lb_f$

Full throttle from 4 knots water speed

Glassy water

Zero wind

POH step taxi/takeoff technique except for full throttle from 4 knots water speed and climb at 50 KIAS

*NOTE: Normal Water Takeoff performance data is the same as Short Field Water Takeoff performance data.*

### Corrections

Decrease distance by 10% for each 8 knots of headwind.

Increase distances by 10% for each 4 knots of tailwind.

Water run distance may reduce slightly with wave conditions more favorable than glassy.

| Press Alt (ft) | Temp (°F) | Water Run (ft) | Total to Clear 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 20 | 720 | 1260 |
| | 40 | 780 | 1360 |
| | 60 | 840 | 1470 |
| | 80 | 900 | 1580 |
| | 100 | 970 | 1690 |
| 2000 | 20 | 910 | 1590 |
| | 40 | 990 | 1730 |
| | 60 | 1070 | 1880 |
| | 80 | 1160 | 2030 |
| | 100 | 1250 | 2190 |
| 4000 | 20 | 1190 | 2080 |
| | 40 | 1300 | 2280 |
| | 60 | 1430 | 2490 |
| | 80 | 1560 | 2720 |
| | 100 | 1700 | 2970 |
| 6000 | 20 | 1630 | 2860 |
| | 40 | 1810 | 3170 |
| | 60 | 2010 | 3510 |
| | 80 | 2220 | 3890 |
| | 100 | 2460 | 4310 |
| 8000 | 20 | 2420 | 4240 |
| | 40 | 2750 | 4810 |
| | 60 | 3120 | 5470 |
| | 80 | 3560 | 6230 |
| | 100 | 4070 | 7120 |



## 5.7 SHORT FIELD RUNWAY TAKEOFF PERFORMANCE

### Conditions

1510 $lb_f$

Level and dry asphalt runway

Zero wind

POH short field takeoff technique

### Corrections

Decrease distances by 10% for each 8 knots of headwind.

Increase distances by 10% for each 4 knots of tailwind.

Increase ground roll distance by 15% for operation on grass runway.

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total to Clear 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 0 | 420 | 920 |
| | 20 | 450 | 990 |
| | 40 | 480 | 1060 |
| | 60 | 520 | 1130 |
| | 80 | 550 | 1210 |
| | 100 | 590 | 1290 |
| 2000 | 0 | 510 | 1120 |
| | 20 | 550 | 1210 |
| | 40 | 600 | 1310 |
| | 60 | 640 | 1410 |
| | 80 | 690 | 1510 |
| | 100 | 740 | 1620 |
| 4000 | 0 | 640 | 1410 |
| | 20 | 700 | 1540 |
| | 40 | 760 | 1660 |
| | 60 | 820 | 1800 |
| | 80 | 880 | 1950 |
| | 100 | 950 | 2100 |
| 6000 | -20 | 760 | 1670 |
| | 0 | 830 | 1830 |
| | 20 | 910 | 2010 |
| | 40 | 1000 | 2190 |
| | 60 | 1090 | 2390 |
| | 80 | 1180 | 2610 |
| 8000 | -20 | 1010 | 2230 |
| | 0 | 1120 | 2480 |
| | 20 | 1250 | 2750 |
| | 40 | 1380 | 3040 |
| | 60 | 1520 | 3360 |
| | 80 | 1680 | 3710 |



## 5.8 RATE OF CLIMB

### Conditions

1510 $lb_f$

Flaps – 0°

Full throttle

$V_Y$ – 58 KIAS

| Press Alt (ft) | Rate of Climb (ft/min) | | | | | |
|---|---|---|---|---|---|---|
| | 0°F | 20°F | 40°F | 60°F | 80°F | 100°F |
| Sea Level | 682 | 663 | 646 | 629 | 614 | 598 |
| 1000 | 644 | 626 | 609 | 592 | 577 | 562 |
| 2000 | 607 | 589 | 571 | 555 | 540 | 525 |
| 3000 | 569 | 551 | 534 | 518 | 503 | 488 |
| 4000 | 532 | 514 | 497 | 481 | 466 | 451 |
| 5000 | 494 | 477 | 460 | 444 | 429 | 415 |
| 6000 | 457 | 439 | 423 | 407 | 392 | 377 |
| 8000 | 381 | 363 | 346 | 330 | 314 | 300 |
| 10000 | 303 | 285 | 268 | 252 | 237 | 223 |
| 12000 | 224 | 207 | 191 | 175 | 160 | 146 |

## 5.9 CRUISE PERFORMANCE

### Conditions

1510 $lb_f$

Windows installed



| | | STD Temp - 20°F | | | STD Temp | | | STD Temp + 20°F | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Press Alt (ft) | RPM | KTAS | FF[1] | Econ[2] | KTAS | FF[1] | Econ[2] | KTAS | FF[1] | Econ[2] |
| Sea Level | 4000 | 76 | 3.54 | 21.5 | 75 | 3.41 | 22.1 | 75 | 3.29 | 22.8 |
| | 5000 | 86 | 4.67 | 18.5 | 86 | 4.46 | 19.3 | 86 | 4.27 | 20.1 |
| | 5500 | 95 | 8.10 | 11.8 | 95 | 6.92 | 13.7 | 95 | 5.80 | 16.4 |
| 2000 | 4500 | 75 | 3.35 | 22.4 | 75 | 3.22 | 23.1 | 74 | 3.07 | 24.0 |
| | 5000 | 86 | 4.37 | 19.7 | 86 | 4.16 | 20.6 | 85 | 3.97 | 21.4 |
| | 5500 | 95 | 6.36 | 14.9 | 95 | 5.18 | 18.3 | 95 | 4.92 | 19.2 |
| 4000 | 4500 | 74 | 3.15 | 23.6 | 73 | 2.99 | 24.6 | 73 | 2.84 | 25.6 |
| | 5000 | 85 | 4.07 | 21.0 | 85 | 3.87 | 22.0 | 85 | 3.68 | 23.0 |
| | 5500 | 95 | 5.05 | 18.8 | 94 | 4.77 | 19.8 | 94 | 4.51 | 20.9 |
| 6000 | 4500 | 73 | 2.91 | 25.1 | 72 | 2.76 | 26.2 | 71 | 2.65 | 26.9 |
| | 5000 | 85 | 3.77 | 22.5 | 84 | 3.57 | 23.6 | 84 | 3.41 | 24.6 |
| | 5500 | 94 | 4.64 | 20.3 | 94 | 4.36 | 21.6 | 94 | 4.14 | 22.6 |

| | | STD Temp - 20°F | | | STD Temp | | | STD Temp + 20°F | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Press Alt (ft) | RPM | KTAS | FF[1] | Econ[2] | KTAS | FF[1] | Econ[2] | KTAS | FF[1] | Econ[2] |
| 8000 | 4500 | 72 | 2.70 | 26.5 | 70 | 2.58 | 27.3 | 69 | 2.53 | 27.2 |
| | 5000 | 84 | 3.49 | 24.1 | 84 | 3.32 | 25.2 | 93 | 3.20 | 26.0 |
| | 5500 | 94 | 4.26 | 22.1 | 94 | 4.02 | 23.3 | 93 | 3.85 | 24.3 |
| 10000 | 4500 | 70 | 2.56 | 27.2 | 68 | 2.49 | 27.2 | 66 | 2.44 | 27.0 |
| | 5000 | 83 | 3.26 | 25.6 | 83 | 3.13 | 26.5 | 82 | 3.00 | 27.4 |
| | 5500 | 94 | 3.94 | 23.8 | 93 | 3.76 | 24.8 | 93 | 3.59 | 25.9 |
| 12000 | 4500 | 67 | 2.47 | 27.1 | 65 | 2.41 | 26.9 | 63 | 2.35 | 26.8 |
| | 5000 | 83 | 3.07 | 26.9 | 82 | 2.93 | 27.9 | 81 | 2.81 | 29.0 |
| | 5500 | 93 | 3.67 | 25.4 | 93 | 3.49 | 26.6 | 93 | 3.32 | 27.9 |

1. Fuel Flow (gal/hr)
2. Economy (nm/gal)

## 5.10 TIME, FUEL, AND DISTANCE TO CLIMB

### Conditions

1510 $lb_f$

Flaps – 0°

Full throttle

$V_Y$ – 58 KIAS

Zero wind

Standard temperature

### Corrections

Add 0.2 gallons of fuel for engine start, taxi and takeoff allowance.

Increase time, fuel and distance by 5% for each 20°F above standard temperature.

| Press Alt (ft) | STD Temp (°F) | From Sea Level | | |
|---|---|---|---|---|
| | | Time (min) | Fuel Used (gal) | Distance (nm) |
| Sea Level | 59 | 0.0 | 0.0 | 0.0 |
| 1000 | 55 | 1.6 | 0.2 | 1.6 |
| 2000 | 52 | 3.4 | 0.3 | 3.3 |
| 3000 | 48 | 5.2 | 0.5 | 5.2 |

| Press Alt (ft) | STD Temp (°F) | From Sea Level | | |
|---|---|---|---|---|
| | | Time (min) | Fuel Used (gal) | Distance (nm) |
| 4000 | 45 | 7.1 | 0.6 | 7.2 |
| 5000 | 41 | 9.2 | 0.8 | 9.4 |
| 6000 | 37 | 11.5 | 0.9 | 11.8 |
| 8000 | 30 | 16.6 | 1.3 | 17.3 |
| 10000 | 23 | 22.9 | 1.6 | 24.3 |
| 12000 | 16 | 31.1 | 2.1 | 33.7 |

## 5.11 RANGE AND ENDURANCE

### Conditions

1510 $lb_f$ and Forward CG

Flaps – 0°

Landing gear – UP

Windows installed

Zero wind

Includes 0.2 gal for engine start, taxi, and takeoff.

Includes fuel and distance to climb to the given altitude.

Includes 45 minutes fuel reserve at 4500 RPM at the given altitude.



| | | STD Temp - 20°F | | | STD Temp | | | STD Temp + 20°F | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Press Alt (ft) | RPM | KTAS | Endurance (hrs) | Range (nm) | KTAS | Endurance (hrs) | Range (nm) | KTAS | Endurance (hrs) | Range (nm) |
| Sea Level | 4500 | 76 | 4.8 | 369 | 75 | 5.1 | 381 | 75 | 5.3 | 394 |
| | 5000 | 86 | 3.7 | 317 | 86 | 3.9 | 332 | 86 | 4.1 | 348 |
| | 5500 | 95 | 2.1 | 202 | 95 | 2.5 | 237 | 95 | 3.0 | 284 |
| 2000 | 4500 | 75 | 5.1 | 384 | 75 | 5.3 | 398 | 74 | 5.6 | 417 |
| | 5000 | 86 | 3.9 | 337 | 86 | 4.1 | 354 | 85 | 4.3 | 372 |
| | 5500 | 95 | 2.7 | 257 | 95 | 3.3 | 316 | 95 | 3.5 | 334 |
| 4000 | 4500 | 74 | 5.3 | 403 | 73 | 5.7 | 424 | 73 | 6.0 | 444 |
| | 5000 | 85 | 4.1 | 360 | 85 | 4.4 | 379 | 85 | 4.6 | 400 |
| | 5500 | 95 | 3.3 | 322 | 94 | 3.6 | 343 | 94 | 3.8 | 364 |
| 6000 | 4500 | 73 | 5.7 | 429 | 72 | 6.1 | 453 | 71 | 6.4 | 466 |
| | 5000 | 85 | 4.4 | 386 | 84 | 4.7 | 408 | 84 | 4.9 | 427 |
| | 5500 | 94 | 3.6 | 350 | 94 | 3.8 | 374 | 94 | 4.1 | 395 |

| | | STD Temp - 20°F | | | STD Temp | | | STD Temp + 20°F | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Press Alt (ft) | RPM | KTAS | Endurance (hrs) | Range (nm) | KTAS | Endurance (hrs) | Range (nm) | KTAS | Endurance (hrs) | Range (nm) |
| 8000 | 4500 | 72 | 6.1 | 454 | 70 | 6.4 | 470 | 69 | 6.6 | 471 |
| | 5000 | 84 | 4.7 | 414 | 84 | 5.0 | 435 | 83 | 5.2 | 451 |
| | 5500 | 94 | 3.9 | 381 | 94 | 4.1 | 404 | 93 | 4.3 | 422 |
| 10000 | 4500 | 70 | 6.4 | 465 | 68 | 6.5 | 466 | 66 | 6.7 | 467 |
| | 5000 | 83 | 5.0 | 438 | 83 | 5.2 | 456 | 82 | 5.4 | 473 |
| | 5500 | 94 | 4.1 | 409 | 93 | 4.3 | 429 | 93 | 4.5 | 449 |
| 12000 | 4500 | 67 | 6.4 | 462 | 65 | 6.6 | 463 | 63 | 6.8 | 463 |
| | 5000 | 83 | 5.2 | 460 | 82 | 5.4 | 478 | 81 | 5.7 | 498 |
| | 5500 | 93 | 4.3 | 435 | 93 | 4.6 | 457 | 93 | 4.8 | 480 |

## 5.12 NORMAL RUNWAY LANDING PERFORMANCE

### Conditions

1510 $lb_f$

Flaps – 0°

Level and dry asphalt runway

Reasonable braking

Zero wind

POH approach and normal landing technique except speed at 50 ft is 58 KIAS

### Corrections

Decrease distance by 10% for each 8 knots of headwind.

Increase distances by 10% for each 3 knots of tailwind.

Increase ground roll distance by 30% on dry grass.

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total Distance from 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 0 | 540 | 1620 |
| | 20 | 560 | 1670 |
| | 40 | 580 | 1720 |
| | 60 | 590 | 1770 |
| | 80 | 610 | 1820 |
| | 100 | 630 | 1870 |

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total Distance from 50 ft Obstacle (ft) |
|---|---|---|---|
| 2000 | 0 | 570 | 1710 |
| | 20 | 590 | 1760 |
| | 40 | 610 | 1810 |
| | 60 | 630 | 1870 |
| | 80 | 640 | 1920 |
| | 100 | 660 | 1980 |
| 4000 | 0 | 600 | 1800 |
| | 20 | 620 | 1860 |
| | 40 | 640 | 1920 |
| | 60 | 660 | 1980 |
| | 80 | 680 | 2040 |
| | 100 | 700 | 2090 |
| 6000 | -20 | 620 | 1840 |
| | 0 | 640 | 1910 |
| | 20 | 660 | 1970 |
| | 40 | 680 | 2030 |
| | 60 | 700 | 2100 |
| | 80 | 720 | 2160 |
| 8000 | -20 | 650 | 1950 |
| | 0 | 680 | 2020 |
| | 20 | 700 | 2090 |
| | 40 | 720 | 2160 |
| | 60 | 740 | 2230 |
| | 80 | 770 | 2290 |



## 5.13 WATER LANDING PERFORMANCE

### Conditions

1510 $lb_f$

Glassy water

Zero wind

POH approach and normal landing technique except speed at 50 ft is 50 KIAS

*NOTE: Short field and normal landing data for water are identical.*

### Corrections

Decrease distances by 10% for each 8 knots of headwind.
Increase distance by 10% for each 3 knots of tailwind.

| Pressure Altitude (ft) | Temp (°F) | Water Run (ft) | Total Distance from 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 20 | 670 | 2020 |
| | 40 | 690 | 2080 |
| | 60 | 700 | 2140 |
| | 80 | 720 | 2190 |
| | 100 | 740 | 2250 |
| 2000 | 20 | 700 | 2130 |
| | 40 | 720 | 2190 |
| | 60 | 740 | 2250 |
| | 80 | 760 | 2310 |
| | 100 | 780 | 2370 |
| 4000 | 20 | 740 | 2240 |
| | 40 | 760 | 2300 |
| | 60 | 780 | 2370 |
| | 80 | 800 | 2440 |
| | 100 | 830 | 2500 |
| 6000 | 20 | 780 | 2360 |
| | 40 | 800 | 2430 |
| | 60 | 830 | 2500 |
| | 80 | 850 | 2580 |
| | 100 | 870 | 2650 |
| 8000 | 20 | 820 | 2500 |
| | 40 | 850 | 2570 |
| | 60 | 870 | 2650 |
| | 80 | 900 | 2730 |
| | 100 | 920 | 2800 |



## 5.14 SHORT FIELD RUNWAY LANDING PERFORMANCE

### Conditions

1510 $lb_f$

Level and dry asphalt runway

Reasonable braking

Zero wind

POH short field landing technique except speed at 50 ft is 50 KIAS

*NOTE: Short and normal landing data for water are identical. See Water Landing Performance for more information.*

## Corrections

Decrease distances by 10% for each 8 knots of headwind.

Increase distances by 10% for each 3 knots of tailwind.

Increase ground roll distance by 30% on dry grass.

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total Distance from 50 ft Obstacle (ft) |
|---|---|---|---|
| Sea Level | 0 | 440 | 1460 |
| | 20 | 450 | 1510 |
| | 40 | 460 | 1550 |
| | 60 | 480 | 1590 |
| | 80 | 490 | 1630 |
| | 100 | 500 | 1680 |
| 2000 | 0 | 460 | 1540 |
| | 20 | 470 | 1580 |
| | 40 | 490 | 1630 |
| | 60 | 500 | 1680 |
| | 80 | 520 | 1720 |
| | 100 | 530 | 1770 |
| 4000 | 0 | 490 | 1620 |
| | 20 | 500 | 1670 |
| | 40 | 510 | 1720 |
| | 60 | 530 | 1770 |
| | 80 | 540 | 1820 |
| | 100 | 560 | 1870 |
| 6000 | -20 | 500 | 1650 |
| | 0 | 510 | 1710 |
| | 20 | 530 | 1760 |
| | 40 | 540 | 1810 |
| | 60 | 560 | 1870 |
| | 80 | 570 | 1920 |

| Press Alt (ft) | Temp (°F) | Ground Roll (ft) | Total Distance from 50 ft Obstacle (ft) |
|---|---|---|---|
| 8000 | -20 | 520 | 1750 |
| | 0 | 540 | 1800 |
| | 20 | 560 | 1860 |
| | 40 | 570 | 1920 |
| | 60 | 590 | 1970 |
| | 80 | 610 | 2030 |

# 06

# Chapter 06

## WEIGHT, BALANCE, AND EQUIPMENT LIST



### 6.1 INTRODUCTION

This section describes the procedure and provides relevant reference information to determine the weight and balance of the ICON A5. Additionally, a discussion of the aircraft equipment list is included.

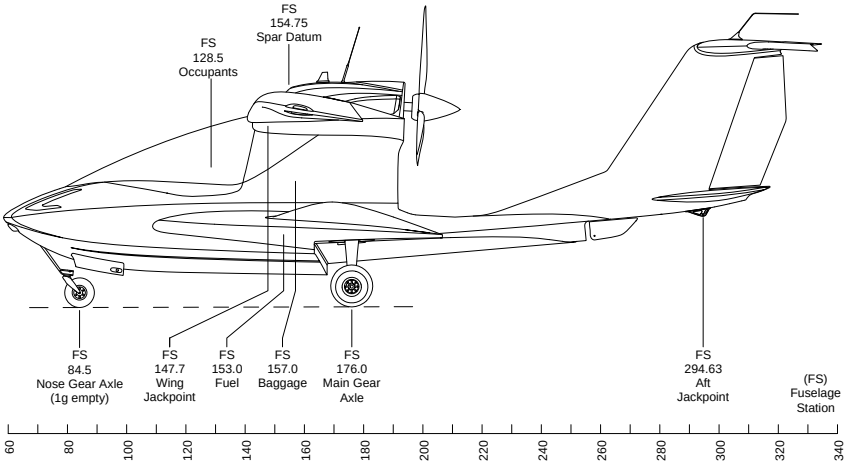
The A5 design places the cockpit forward of the flight center of gravity range. A change of occupant weight will therefore also change the CG location. It is possible to be outside the forward CG limit with a heavy total occupant weight and to be outside the aft CG limit with a light occupant. It is therefore imperative for all pilots to become familiar with the weight and balance of the specific aircraft they will fly, and their own specific loading condition. Specific details about weight, moment, and center of gravity for this airplane can be found accompanying this POH.

*WARNING: It is the responsibility of the pilot to make sure the airplane is loaded properly. Operation outside of the approved weight and balance limitations could result in an accident and serious or fatal injury.*

## 6.2 AIRCRAFT DIMENSIONAL DATA

### 6.2.1 AIRCRAFT REFERENCE DATUMS

**FIGURE 6-1**
AIRCRAFT REFERENCE DATUMS




CHAPTER 6

## 6.3 WEIGHT AND BALANCE RECORD

The aircraft empty weight and CG are determined prior to delivery. The first entry is made in this Weight and Balance Record. For any change of equipment, repair, or alteration that affects empty weight, the CG position and moment of the net addition/removal must be entered in the Weight and Balance Record included with this POH. Always ensure that you are using the latest weight and balance information when performing a weight and balance calculation.

| ICON A5 Serial No. | | | | | | |
|---|---|---|---|---|---|---|
| Date | Description of Changes | Weight Change Added (+) or Removed (-) | | | Running Totals | |
| | | Wt ($lb_f$) | FS (in) | Moment ($lb_f$-in) | Wt ($lb_f$) | Moment ($lb_f$-in) |
| | As Delivered | | | | | |
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## 6.4 OPERATING WEIGHTS AND LOADING

### Maximum Human Weight

250 $lb_f$ per person

### Maximum Baggage/Cargo Weight

60 $lb_f$

*WARNING: Loading a concentrated weight fully aft in the baggage area may cause an unsafe aft CG condition.*

### Minimum Number of Anchor Loops

At least three (3) out of the six (6) provided anchor loops must be used in order to safely restrain the full baggage/cargo load.

### Minimum Load Rating of Cargo Restraints (Pilot Supplied)

1000 $lb_f$

### Full Usable Fuel Weight

120 $lb_f$ (20 US gal at 6 $lb_f$ per US gal)

### Removable Side Window Weight and Fuselage Station

7.18 $lb_f$ (total both windows)

FS 127.6

### Removable Wind Deflector Weight and Fuselage Station

0.3 $lb_f$ (total both deflectors)

FS 113.4



## 6.5 EMPTY WEIGHT AND CG MEASUREMENT WHILE ON GEAR

The airplane empty weight includes engine oil and coolant, unusable fuel, hydraulic brake fluid, and installed equipment for the aircraft.

The airplane must be weighed and leveled in a level area. The weighing area should also be calm or indoors to prevent wind from affecting the readings.

Check the calibration of the scales used to ensure accurate results.

Check the oil dipstick to verify at least 3.17 quarts (three liters) of oil. Service as necessary. The difference between the max and the min marks is approximately 0.5 quarts (0.47 l).

Usable fuel must be pumped out of the fuel tank. See the Maintenance Manual.

Retract flaps to the 0° position.

Center all controls to the neutral, static position.

Install removable side windows.

Close and latch the canopy.

Ensure all inspection covers and panels are installed.

1. Install three platform scales under the two main gear and nose gear.

   *NOTE: Remove the floor boards as described in the Maintenance Manual. Set the floor boards back in place after leveling.*

2. Shim or block up the aircraft so that the bubble level beneath the right side floor board indicates a level condition.
3. Record the weight readings on the scales under the nose gear, main gear RH, and main gear LH.
4. Complete the Empty Weight and CG Calculation Form and perform the calculations to obtain the total empty weight and CG position.



Fill out blank cells in table below.

| Scale Position | Weight, Wt ($lb_f$) | Arm, FS (in) | Moment, M=Wt x Arm ($lb_f$-in) |
|---|---|---|---|
| Nose Gear | | 84.5 | |
| Right Main Gear | | 176.0 | |
| Left Main Gear | | 176.0 | |
| Total | | | |

| Total Weight ($lb_f$) | CG Position – FS (in) |
|---|---|
| | |

Calculate the FS location of the CG by dividing the total moment by the total weight.

Total Wt (from above)=_____ lbs

Aircraft CG Location, FS (Total M/Total Wt)=_____ in

Verify that the above readings and calculations make sense by comparing them with the Weight and Balance Record. Enter the new weight and balance information as a new baseline into the Weight and Balance Record.

## 6.6 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

It is the pilot's responsibility to ensure that the aircraft is properly loaded and operated within the prescribed weight and CG limits. The following steps should be used to calculate the airplane weight and CG for flight. The Weight and Balance Loading Form gives one method to complete this procedure.

Moment = Weight x FS

1. Empty Weight – Enter the empty weight and moment from the airplane "Weight and Balance Record" on page 6-4.
2. Pilot – Enter the weight and calculate and enter moment of the pilot.
3. Passenger – Enter the weight and calculate and enter moment of the passenger or enter zero if there will be no passenger.
4. Usable Fuel – Enter the total weight and calculate and enter moment of usable fuel loaded into the airplane.

   *NOTE: 1 gallon of fuel = 6 pounds*

5. Baggage/Cargo – Enter the total combined weight and calculate and enter moment of baggage loaded into the baggage area.
6. If side windows are removed (and completely out of the airplane) and deflectors installed, include this line item in the totals, which accounts for both items.
   a. If side windows are to be carried as baggage for flight, include their weight and moment arm (see Operating Weights and Loading) as Baggage/Cargo in addition to this line item.
7. Garmin aera 796 Accessory – If carrying the unit onboard, include this line item in the totals.
8. Other – Additional space for other items, if needed. Note that FS must be determined.

9. Other – Additional space for other items, if needed. Note that FS must be determined.
10. Totals – Total the weights and moments and determine CG Position (FS).
    a. Transfer the weight total to the Total Weight box.
    b. Calculate the CG Position (FS) by dividing Total Moment by Total Weight and enter into the box.
11. Verify that the weight and CG are within acceptable limits as depicted in. See Figure 6-2.

## 6.6.1 WEIGHT AND BALANCE LOADING FORM

| | Position | | Weight, Wt ($lb_f$) | Arm, FS (in) | Moment M=Wt x Arm ($lb_f$-in) |
|---|---|---|---|---|---|
| 1. | Empty Weight (See Weight & Balance Record) | | | | |
| 2. | Pilot | | | 128.5 | |
| 3. | Passenger | | | 128.5 | |
| 4. | Usable Fuel | | | 153.0 | |
| 5. | Baggage/Cargo | | | 157.0 | |
| 6. | If Side Windows Removed & Deflectors Installed (Net) | | -6.88 | | -882.1 |
| 7. | If Garmin 796 Will Be Used | | 1.7 | 109.7 | 186.5 |
| 8. | Other | | | | |
| 9. | Other | | | | |
| 10. | | Totals: | | | |

| Total Weight ($lb_f$)[1] | CG Position – FS (in)[2] |
|---|---|
| | |

1. Not to exceed 1510 $lb_f$
2. See Weight and CG Envelope Limits

## 6.6.2 CG LIMITS AND STATION INFORMATION

### Maximum Takeoff Weight (MTOW)

1510 $lb_f$

### Reference Datum

FS 154.75 (located on forward face of wing spar carry-through)

**Forward CG Limit**

FS 153.0

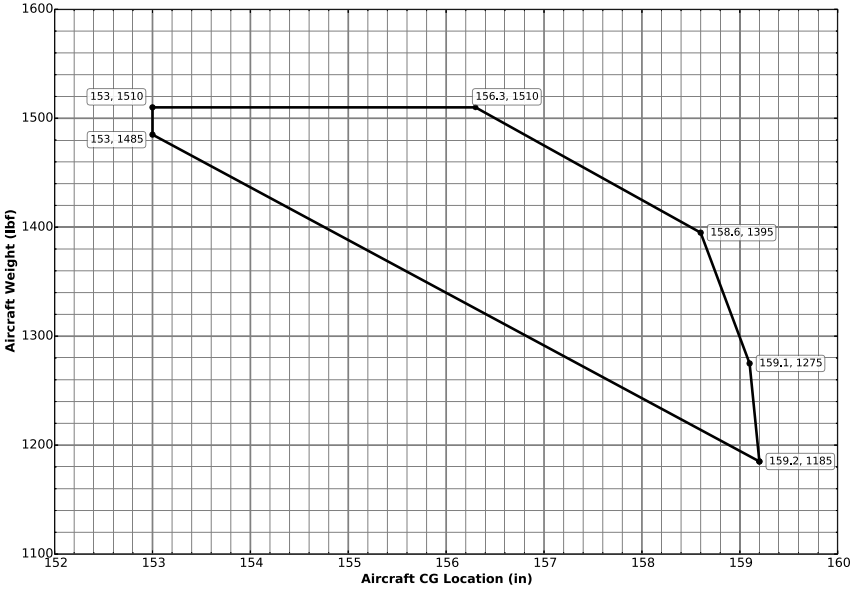
**Aft CG Limit**

FS 159.2

*NOTE: See the Weight and CG Envelope Limits figure for further details on the acceptable operating envelope.*

## 6.6.3 CENTER OF GRAVITY LIMITS

**FIGURE 6-2**
WEIGHT AND CG ENVELOPE LIMITS




CHAPTER 6

## 6.7 INSTALLED OPTIONAL EQUIPMENT LIST

At this time, the ICON A5 has no equipment options or maintenance procedures allowed that affect weight and balance. Any modifications to the aircraft equipment require the prior approval of ICON Aircraft. Should such work be necessary, ICON will supply any needed weight and balance information and instructions through

the Major Repair and Alteration (MRA) process, which is part of the A5 maintenance program.

# 07

# Chapter 07

## DESCRIPTION OF AIRPLANE AND SYSTEMS



## 7.1 GENERAL INFORMATION

The ICON A5 is a two-seat, single-engine, amphibious Light Sport Aircraft. The A5 has a conventional high wing, tail-aft configuration with ailerons, flaps, elevator, rudder and water rudder control surfaces. The wings are manually foldable with the flight controls (ailerons and flaps) connecting automatically. The tricycle landing gear is retractable. The A5 is equipped with a Rotax 912iS Sport, 4-cylinder, horizontally-opposed, reciprocating engine of 100 horsepower. Installed equipment provides for flight in day and night VFR conditions. Fuel is contained in a single fuselage-mounted tank. Flight controls employ conventional push-pull tubes, torque tubes and cables. The primary flight controls are conventional sticks and

rudders (with toe brakes) for each seat. An electrically operated pitch trim tab is controlled from the pilot's (left seat) stick only.

## 7.2 AIRFRAME

### 7.2.1 SPIN RESISTANT AIRFRAME

The A5 incorporates numerous features to help control the dynamics of stall and improve spin resistance, including blended wing shapes, stall strips, and wing cuffs. Stall characteristics depend on a number of factors, the most important being rate of stall onset, which can affect the dynamics of stall progression along the span. The A5 remains controllable throughout these various stall progressions up to 30° bank angles, even when fully stalled. Lateral stick and rudder remain effective, although response is more sluggish than during normal flight.

### 7.2.2 MANUAL WING FOLD SYSTEM

The manual wing fold system allows the wings to be rotated and folded back along the fuselage, reducing the A5 width from approximately 35 feet to 8 feet for trailering and storage.

### 7.2.3 SEAWINGS™ PLATFORMS

The A5 includes multipurpose Seawings™ in the fuselage and hull design. For water operations, the Seawings™ provide excellent lateral stability for safe and intuitive water operations. For docking operations, the Seawings™ provide for convenient entry and exit from the aircraft.

The tips of the Seawings™ platforms are easily replaceable by the owner in case they are damaged during docking or other operations. When removed, they decrease the aircraft width for easier ground transport or shipping.

The A5 Maintenance Manual includes instructions for removal and replacement of the Seawings™ tips.

### 7.2.4 DRAINS

The A5 airframe is not entirely water tight. Water that does enter is directed overboard or into the bilge through a series of drain paths and holes. Examples of these holes can be seen at the root end of control surfaces and wing panels. The side nose gear doors have drain holes. The low point of the firewall beneath the engine has a drain that is directed through a hose to the exterior of the aircraft on the right side of the tail boom just aft of the propeller. The interior fuselage bulkheads have drain passages at their low points to allow water to flow into the bilge. All drain provisions should be kept clear to allow water to flow.

## 7.3 FLIGHT CONTROLS

The primary flight controls consist of the elevator, ailerons, and air rudder. Secondary flight controls consist of the electrically controlled trailing edge wing flaps, elevator trim tab, and water rudder. The flight control system is fully mechanical, providing direct feedback of control surface loads to the pilot throughout the flight envelope on the water and in the air.

The rudder pedals are adjustable fore/aft for occupant convenience and comfort. The pedals are spring loaded in the aft direction and are released by raising a handle on the outboard, front face of each seat. Before adjusting the pedals, place one heel on the black rudder pedal adjustment bumper located between the rudder pedals at floorboard level. When ready to adjust the pedals, raise and hold the release handle and then push or release pressure on the bumper until the desired location is achieved. Releasing the adjustment lever locks the pedals at the current position. After the adjustment is complete, ensure that the pedals are locked by applying pressure to the adjustment bumper. The pedals can be locked at any location within the rudder pedal adjustment limits.



### 7.3.1 PITCH TRIM SYSTEM

Pitch trim is achieved through the actuation of a tab incorporated in the elevator trailing edge. The tab is deflected by an electro-mechanical actuator powered through a slide switch at the top of the pilot's (left) control stick grip. There is no pitch trim control on the passenger control stick.

### 7.3.2 ROLL TRIM SYSTEM

Should it be needed, roll trim is achieved with a fixed tab on the bottom of the inboard end of one of the aileron trailing edges. Trim is adjusted by changing the length of the tab. If the airplane tends to roll to the right, a tab is added to the left aileron and vice versa. The tab length is selected at the factory and should not require adjusting.

### 7.3.3 WING FLAP SYSTEM

The A5 incorporates single-slotted flaps in the wing trailing edge. The flaps serve to lower stall speed and also add aerodynamic drag. Extending flaps also decreases pitch attitude, aligning the hull for minimum hydrodynamic drag and maximum pitch stability.

The wing flap system is electrically actuated using a flap-shaped switch on the center console. The system moves the flaps between 0°, 15°, and 30° settings. The flap surfaces are driven down by an electro-mechanical actuator and driven up by individual gas springs, one per surface. It is possible to deflect the flap by hand during pre-flight inspections by grasping the flap trailing edge, moving the surface downward, then allowing the spring to return the surface to neutral.

*NOTE: When moving a flap by hand, it is possible that the flap will stick at the extreme limit of its travel. This is normal; raise the flap slightly and the spring will return it to neutral.*

*NOTE: When taxiing or parking with a strong tailwind, it is possible that one or both flaps will deflect and bang against the stops. This situation can be alleviated by fully extending the flaps when in a strong tailwind. Use of gust locks are recommended while parked or tied down.*



## 7.4 LANDING GEAR SYSTEM

The A5 features a retractable tricycle landing gear with self-centering 360° castering nose wheel. Simple fiberglass gear legs provide shock absorption. Hydraulic disk brakes are used on

each of the main wheels. Steering is accomplished by differential braking.

The retraction system is controlled by a two-position electrical switch on the center stack of the instrument panel. The switch commands two electro-mechanical actuators, one for the nose gear and one for the main gear, that move the gear to the intended position, either up or down. The switch is of the “lift-lock” type that must be pulled slightly away from the panel before it can be moved. The handle of the switch is shaped like a wheel for easy identification. The gear up position is indicated with the illumination of a blue aircraft with wavy line graphic on the landing gear switch plate. The landing gear down position is indicated by an amber aircraft with straight line graphic. Any time the landing gear is neither all up nor all down, a red in-transit graphic will illuminate.


The landing gear requires about seven seconds to retract or extend. In the event of IPS deployment, the landing gear will automatically extend to absorb additional energy at touchdown. There is no backup or auxiliary landing gear extension system.

*CAUTION: The landing gear of the A5 can be repositioned at any time, including while on the ground. Initiating landing gear retraction while the aircraft is on the ground, supported by the landing gear, may result in damage to the aircraft.*

The self-centering, full 360° castering nose wheel, allows for ease of movement when pushing the A5 on the ground and when brake steering. The self-centering feature ensures that the nose wheel is aligned correctly for retraction whenever the nose wheel is clear of the ground, whether after takeoff or after it enters the water.

## 7.4.1 WHEELS AND BRAKES

### Tires

Each landing gear leg assembly is equipped with one wheel and tire.

The main landing gear tires are size 5.00-5, 6-ply aircraft tires with a maximum load rating of 1285 $lb_f$ each.

The nose gear tire is size 10x3.50-4, 4-ply aircraft tire with a maximum load rating of 460 $lb_f$.

### Wheel Brakes and Steering

Each main wheel is equipped with a hydraulically-actuated disk brake controlled by a hydraulic master cylinder mounted to the hinged top portion of each rudder pedal. These “toe brakes” can be used either collectively to slow the aircraft, or individually to steer the aircraft when on the ground. Decelerate first by reducing power; once idle is reached, smoothly apply both brakes to further decelerate as needed. Avoid dragging the brakes while power is above idle. Steer by applying brake pedal force to the side of the desired turn. Power application may be used at the same time as differential brake so as to maintain speed. Very tight turns can be accomplished at low speed by applying one brake in addition to throttle.

### Hydraulic Parking Brake

The braking system includes a hydraulic parking brake operated by a lever just above the floorboard on the left sidewall in front of the pilot’s seat.

To set the parking brake, apply pressure to both brakes via the pedals and hold, then move the lever to the “ON” position. The pedal pressure can then be released and the parking brake will hold the set level of braking. Alternately, the brake can be set by first moving the lever forward, then pressing and releasing the brake pedals. The system will then hold the applied brake pressure.

*CAUTION: The parking brake is intended only for short-term use (<10 minutes) while completing tasks such as folding/unfolding the wings. Never leave the aircraft unattended with just the parking brake set.*

To release the parking brake, move the lever to the “OFF” position.

*CAUTION: Never set the parking brake in flight. Before landing, always check that the parking brake has not been inadvertently set.*

## 7.5 INSTRUMENT PANELS

### 7.5.1 OVERHEAD CONSOLE

**FIGURE 7-1**
OVERHEAD CONSOLE


### Fuse Panel and Spare Fuses

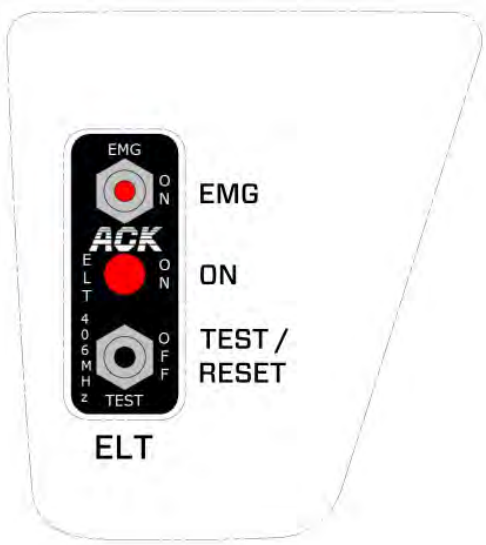
The circuit protection system is comprised of eighteen fuses, one for each system, and a 30 A, manually reset circuit breaker (1). The fuse panel (2) contains the operational fuses for the electrical systems on the aircraft. The spare fuse area (3) contains readily accessible spare fuses for use as needed.

There are four fuse ratings: 5 A, 7.5 A, 15 A and 20 A. A minimum of three spare fuses of each rating value are located in the spare fuse panel area (3).

### Fuel Shutoff Valve

The fuel shutoff valve (4) is the main shutoff for the fuel system. It has a detent into the 'ON' position and the locking knob must be pulled and handle rotated simultaneously in order to turn off the fuel.

### ELT Remote Control and Audio Alert Indicator




The ELT remote control (5) interfaces with the ACK Technologies, Inc. model E-04 406 MHz emergency locating transmitter. There are two buttons and a red LED indicator on this control. The red 'ON' button activates the ELT. The black 'OFF/TEST' button deactivates the ELT if it is activated. If not activated, the black 'OFF/TEST' button initiates an ELT self-test during which the ELT transmits on 121.5 MHz for 1 second, (3 audio sweeps), then transmits a 406 MHz test burst for 550 ms, and then returns to the armed mode. The red LED indicator flashes when the ELT is activated.

### Parachute Activation Handle

The parachute activation handle (6) is used for deploying the IPS in an emergency. See the description of the IPS for further details about the operation.

### Interior Lighting

The interior of the A5 aircraft is illuminated by an interior lighting system consisting of the following lights.

- Two red LEDs, located on the forward LH side of the overhead console (7), illuminate the instrument panel and center stack console, and are individually controlled by the two dimmers on the forward LH side of the overhead console labeled “INSTR” (8) and “CONSOLE” (9), respectively.
- Two red LEDs, located in the headset hangers in the baggage compartment, illuminate the overhead console and are controlled by a single dimmer labeled “OVER-HEAD” (10) also located on the forward LH side of the overhead console.
- A single white LED, located on the forward RH side of the overhead console (11), illuminates the center stack console and is controlled by a dimmer labeled “CONSOLE” (12) on the forward RH side of the overhead console.
- A dome light, located on the center of the overhead console and consisting of a string of white LEDs (13), illuminates the cabin and baggage compartment and is controlled by a switch labeled “DOME” (13) located just aft of the light itself.

### Stall Warning Horn

The stall warning horn is located on the forward side of the overhead console. The horn activates approximately three knots above stall speed (Mid-Yellow AOA) in unaccelerated flight. The horn is disabled below 33 knots to minimize horn activation when on land or water.

## 7.5.2 CENTER CONSOLE

**FIGURE 7-2**
CENTER CONSOLE


**(1) Trig TC90 VHF radio control unit**

**(2) Trig TC20 Mode S transponder control unit**

**(3) Landing gear control and position indicator**

**(4) Flap control**

**(5) Pitch trim position indicator** with markings for DOWN, T/O and UP

**(6) Strobe light switch**

**(7) Nav light switch**

**(8) Taxi light switch**

**(9) Landing light switch**

**(10) Bilge pump switch** with indicator light for ON

**(11) Heater control**

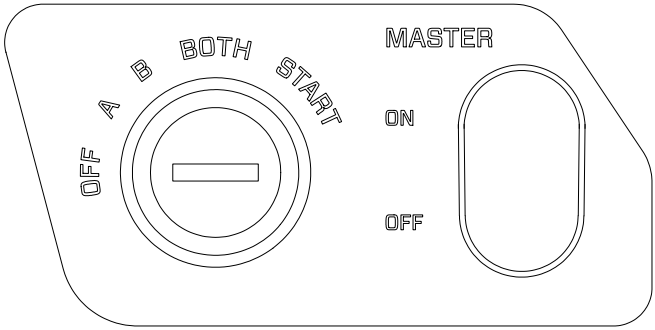
**(12) Water rudder control** with indicator light for EXT (water rudder extended)

**(13) Engine throttle control**

**(not shown) Hour meter** located beneath the center arm rest

### 7.5.3 MASTER SWITCH AND KEY

**FIGURE 7-3**
MASTER SWITCH AND KEY PANEL




The master switch and key panel is located to the lower left of the flight instrument cluster. It contains the key switch for selecting between 'A' and 'B' and 'BOTH' on the engine electrical and control systems as well as engaging the starter. The master switch is the main electrical switch for the entire aircraft electrical system.

*NOTE: In the event it becomes necessary to turn off the master switch in flight, the engine will continue to run.*

## 7.6 INSTRUMENTS

### 7.6.1 GENERAL INFORMATION

**FIGURE 7-4**
INSTRUMENT STACK


The flight, engine, and fuel instruments in the A5 have been located according to their priority for controlling the aircraft. The most prominent instruments used for aircraft control form the Primary Cluster across the top of the instrument stack. These include the angle of attack (AOA) gauge (1), airspeed indicator (2), and altimeter (3). The AOA gauge collects data from ports located on the leading edge of the left wing. The face of the gauge incorporates a unique ICON design employing green, yellow, and red segments to clearly indicate available lift margin above stall at all times. The airspeed indicator and altimeter are electric gauges connected to the pitot-static system. In the remote event of a complete electrical failure each gauge has a backup battery that will power the gauge for a minimum of 30 minutes. If the backup battery is allowed to fully charge under normal use, the altimeter digital displays will remain illuminated for approximately 30 minutes once the master switch is

turned off. This time may be shorter if the battery is not allowed to fully charge.

A digital attitude indicator (AI)(9) is centrally located for simple reference in the middle of the instrument panel, providing aircraft pitch information to ±30°, bank to ±60°, and magnetic direction indication. The AI includes two buttons just below that will dim (left button) or brighten (right button) the display screen when pressed individually. Pressing and holding both buttons simultaneously changes screen modes. For more details on operating the AI, see Kelly Manufacturing Company Publication 1404 for the KMC 2000-2 digital attitude indicator.

*NOTE: The magnetic direction indicator can be re-calibrated using the procedure detailed in the A5 Maintenance Manual.*

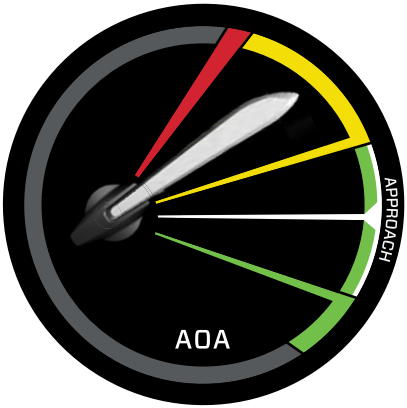
Instruments used for engine and fuel monitoring form the Secondary Cluster along the bottom row of the stack. These include the fuel quantity (4), tachometer (5), oil temperature (6), oil pressure (7), and water/coolant temperature (8) gauges. All secondary instruments contain a red LED light that will illuminate whenever a redline limit is reached.

An annunciator panel (10) is located near the center of the instrument console between the Primary Cluster and Secondary Cluster. (See “Annunciator Panel” on page 7-16.)

Not shown in the figure is the panel dimmer knob which is just below the water/coolant temperature gauge (8). The dimmer is used for adjusting the brightness of the instrument lighting.

## 7.6.2 ANGLE OF ATTACK SYSTEM

**FIGURE 7-5**
AOA GAUGE WITH A MID-YELLOW INDICATION




The AOA gauge provides a visual indication of how hard the wing is working to generate lift and how much more lift it can supply at any given time. AOA is related to stick position, and so the AOA gauge can also provide an approximate indication of the current stick position and how much farther aft it can move before the wing will stall.

The AOA system works by using static ports to measure the difference in pressure from the top and bottom of the left wing near the leading edge. These values are compared and computed to drive the AOA indicator electrically.

The horizontal line on the gauge depicts optimum AOA during approach for landing and also maximum lift-to-drag ratio which can be used for best range performance and best glide. The AOA gauge can also be used to help guide control inputs to achieve specific performance objectives during nearly every phase of flight. The ability to reference AOA during each of these phases allows much more precise inputs and also provides direct information about how the wing is performing at any given time. During a turn, the AOA system provides a direct indication of margin above stall in all phases of flight. This permits optimization of turn performance safely and efficiently. For cruise, AOA allows for efficient flight by providing a simple cue for optimum range performance. The AOA gauge is disabled at airspeeds below 30 knots.

### 7.6.3 ANNUNCIATOR PANEL

An Annunciator Panel (10) displaying Warning and Caution indications is located near the center of the instrument console between the primary and secondary instrument clusters. It is designed to provide simple visual indications of aircraft conditions that require corrective pilot action.


The upper row indications are Warning Lights, which illuminate in red to draw pilot attention to take action on critical safety of flight issues. The bottom row indications are Caution Lights, which illuminate in amber to draw pilot attention to aircraft system status or failures that may warrant action.

At the right side of the panel is a 'TEST' button. To verify that all LEDs are functional while the button is pressed, all annunciators should illuminate until the button is released.

For detailed meaning of, and response to, the annunciator lights, see Emergency Procedures.

### 7.6.4 FUEL GAUGE

The fuel gauge is accurate to within one gallon in coordinated, straight and level, unaccelerated flight. The low fuel indicator, operated by a separate sensor, illuminates when there are approximately two gallons remaining.

## 7.7 AVIONICS

The A5 aircraft is equipped with a Trig TY91 VHF communication radio, a Trig TT21 Mode S transponder, and an ACK E-04 406 MHz emergency locator transmitter (ELT).

The VHF radio, supplied by Trig Avionics, allows two-way communication and the monitoring of two frequencies at the same time. The TY91 VHF remote transceiver is installed remotely inside the left-hand side of the nose of the aircraft and is controlled through a TC90 controller unit, located in the center stack console,

and the push-to-talk buttons on both the pilot and passenger control sticks. The antenna with VHF radio is located on top of the horizontal tail of the aircraft. For more details on operating the TY91 and TC90, see Trig Avionics Limited Publication 00839-00-AF (TY91 and TY92 VHF Radio Installation Manual).

The TT21, also supplied by Trig Avionics, is a remote mounted Mode S transponder, installed inside the left side of the nose of the aircraft next to the VHF radio, and is controlled through a TC20 controller unit, located in the center stack console. The antenna for the transponder is located on top of the engine cowling. For more details on operating the TT21 and TC20, see Trig Avionics Limited Publication 00559-00-AF (TT21 and TT22 Mode S Transponder Operating Manual).

The ELT, supplied by ACK Technologies, is installed below the center console and sends out a distress signal when manually or automatically activated. The ELT can be manually activated through the remote control located on the left-hand side of the overhead console. The antenna for ELT is located on the engine cowling aft of the transponder antenna.

## 7.8 ENGINE

The A5 is powered by a Rotax 912iS Sport fuel injected 4-cylinder engine, rated at 100 hp (73.5 kW) at 5800 RPM. The 912iS is based on the proven 912 ULS engine with significant upgrades to improve performance and reliability. It is equipped with an electric starter, dual-redundant ignition system, and a fully digital Engine Control Unit (ECU) that automatically adjusts fuel/air mixture throughout flight to maintain optimal performance, efficiency and low emissions, thereby reducing fuel consumption and overall operating costs. The ECU also obviates the need for a carburetor and associated mixture controls in the cockpit, making operation of the engine fully automatic for the pilot and eliminating the threat of carburetor icing. The 912iS Sport is both liquid cooled (cylinders heads) and air-cooled (cylinders) with a dry sump forced lubrication system and separate oil tank. It can run on either Aviation Gasoline (AVGAS), motor gasoline (MOGAS), or a combination of both. Engine cooling on the A5 is augmented by a fan located on the propeller shaft ahead of the spinner. Best cooling on the ground is achieved with engine set from 3000 to 4000 RPM.

Commanded throttle position is sensed and transmitted to the ECU as a pilot request for specific power output. This signal is then combined with environmental inputs to provide the commanded response. The interface is simple and seamless for the pilot, automating the process of adjusting fuel/air mixture and ensuring optimal performance. Move the throttle and the engine does the rest.

Engine power is displayed as RPM on the tachometer gauge on the right lower flight instrument cluster. Fuel flow is directly proportional to this RPM, although actual power output and useful thrust delivered is a function of both RPM and aircraft density altitude. Normal operating range is from 1700 to 5500 RPM with a redline of 5800 RPM.

## 7.9 PROPELLER

The A5 uses a Sensenich, 3-blade propeller. The blade construction is hollow carbon fiber and fiberglass with UV protection. The blade leading edges are equipped with metal erosion shields. The two-piece hub is made from anodized aluminum.

*NOTE: Although the propeller is ground adjustable, ICON does not permit propeller pitch adjustments.*

## 7.10 ELECTRICAL SYSTEM

The electrical system on the A5 is powered by the Rotax 912iS Sport engine's integrated internal alternator, charging a 12VDC, 24Ah battery located in the nose of the aircraft. The alternator has two isolated coils, creating a redundant charging system (a 16 amp alternator A and a 30 amp alternator B). The engine voltage regulation is performed by two three-phase short rectifier regulators located on the Rotax-supplied fuse box. The output voltage of each regulator is 14.2 V ± 0.3.

During engine startup, the engine management system (EMS) is powered by the battery. With sufficient speed, (2500 RPM) alternator B takes over this function. After the EMS system check, alternator A takes over the supply of the EMS system (engine), if the switching threshold is exceeded. Alternator B is then used to charge the battery and to power the aircraft systems, including all avionics and instruments, exterior and interior lights, landing gear, water

rudder, flaps, pitch trim, bilge pump, cabin heat, master solenoid, two USB outlets and a 12 VDC outlet. The outlets are located in the center console under the armrest and have a maximum current draw of 4.6A combined. Alternator B also powers the relay panel, which is located aft of the baggage compartment on the RH side and controls the logic for several of the systems listed above. Both the battery and alternator B share the same electric bus.

## 7.11 EXTERIOR LIGHTING

The A5 has navigation and strobe lights on each wing tip. In the nose of the aircraft, there are narrow-beam, high-intensity landing lights as well as a wide-angle, low-intensity light for taxiing. All of the lights are controlled by switches on the center console. The aft wing tip strobe and white navigation lights have two fences installed on the inboard and outboard edges of the light housing.

## 7.12 SEAT BELTS AND SHOULDER HARNESSES

Both seat positions are equipped with retractable three-point integrated seat belt/shoulder harnesses with inertia reels.

To use the seat belts/shoulder harness, position the adjustable metal link on the harness at about shoulder level, pull the link and harness downward, and insert the link into the lower seat belt buckle. Adjust belt tension across the lap by pulling upward on the shoulder harness. Release the belt by pressing inward on the red release button, which will allow the inertia reels to pull the harness back into the retracted position.



## 7.13 FUEL SYSTEM

Fuel is contained in a single 20-gallon tank located under the baggage floor behind the seats. The fuel quantity indicating system uses an auto-calibrating float-type fuel level sensor that is accurate to within one gallon in coordinated, straight and level, unaccelerated flight. A separate optical fuel low level sensing system will activate a red LED warning light on the fuel quantity gauge when less than two gallons of fuel remain.

A fuel filler cap is located on the left side of the fuselage exterior, just aft of the cockpit. There is small tube within the fuel filler neck

that allows fuel to be drawn up from the sump at the bottom of the tank for removal of contaminants and inspection.

A fuel shutoff valve is located in the overhead console. The valve is normally left open, but can be closed during certain emergency situations. Two electric fuel pumps, one powered and controlled by each lane (A & B) of the Engine Management System (EMS) provide redundant positive-pressure fuel flow from the tank to the 912iS engine. A fuel quantity gauge calibrated from 0 to 20 gallons is mounted on the lower left portion of the secondary instrument cluster.

*NOTE: Do not run the electric boost pumps (i.e. do not turn the ignition key) with the fuel shutoff valve in the closed position or pump damage could result.*

Fuel feeds by gravity to the bottom of the fuel tank where the sump and fuel pickup for the engine are located. The fuel tank is shaped to minimize the amount of unusable fuel throughout the range of normal aircraft attitudes and accelerations. Fuel delivery to the engine will be interrupted if the fuel moves away from the sump as could happen in negative-g flight or in extreme attitudes. For this reason, extreme attitudes and lateral accelerations must be avoided. In addition, climbs slower than $V_Y$ (58 KIAS) and intentional side slips are prohibited with less than 2 gallons of fuel (low-level light illuminated).

*WARNING: Do not climb slower than $V_Y$ or perform intentional sideslips with a fuel level of less than two gallons (low-level light illuminated). Doing so could cause the engine to stop, resulting in a dangerous situation.*



## 7.14 CANOPY

The A5 features a large, forward-tilting canopy. The canopy latches at the top-center from either outside or inside. The canopy is supported by a gas spring, which assists with opening the canopy and holds it fully open. A detent is located in the motion of the canopy that serves to hold it slightly open for improved ventilation when needed while not in flight.

## 7.15 CABIN HEATING AND VENTILATION

### 7.15.1 REMOVABLE SIDE WINDOWS

The canopy incorporates detachable side windows which can be removed prior to flight using a simple one-handed latch on the frame. The windows must either be both in or both out – no single window operations are permitted. Verify latching during installation by listening to and feeling the spring-loaded latch click into place. Installed windows must be correctly latched before flight.

Once the side windows are removed, install the two wind deflectors provided in the A5 Fly-Away Kit. One wind deflector attaches to each A-pillar, just above the lower window jamb ("A-pillar" refers to the frame at the forward side of the window opening with the window removed). To install, first rest the forward edge of the deflector on the windshield, then rotate the clip portion of the deflector around the back of the A-pillar until it snaps into place. The deflector should be located as low as possible on the A-pillar, with the deflector's lower edge just clear of the painted surface of the lower window jamb. Flight with windows removed is only permitted with both wind deflectors correctly installed.

Extreme care must be observed so that objects do not pass through the side windows in flight. The air flowing across the window opening creates suction within the cockpit that draws air out. This air flow can entrain loose objects from any location in the cockpit and can snatch things from the grasp of the unwary. Secure all loose articles. Wrist lanyards should be used to secure hand held devices such as phones and cameras.

*WARNING: An object dropped from an open window in flight can be struck by the propeller and may result in propeller failure, power loss, or other extremely hazardous situations.*



### 7.15.2 FRESH AIR VENTS

The A5 has two fresh air vents – one on each side of the instrument panel. They are hand operated and can be adjusted or closed completely as needed by turning the knurled rim of each vent.

Vent air entering the aircraft is exhausted through several holes in the structure ahead of the rudder up near the horizontal tail. This

exhaust location aids in the ventilation of all the internal bays of the fuselage and vertical tail.

### 7.15.3 CABIN HEATER

The cabin heater utilizes engine coolant as its heat source. The fan and coil are located between the pilot and passenger rudder pedals. The control is located on the center console. When the control is off, the coolant valve is closed and the fan is off. When the control is turned clockwise, the coolant valve opens fully and the fan turns on. Further rotation of the control clockwise increases the fan speed providing additional heat to the cabin.

## 7.16 WATER RUDDER

A water rudder is provided to aid steering on the water at taxi speeds. It is connected to the air rudder and moves with it through operation of the pilot's rudder pedals. It can be extended or retracted by a switch on the center console. Extension and retraction are by an electric actuator and require about three seconds in each direction.

Water rudder steering is effective in the retracted position, but the extended position should be used if more control authority is desired, such as when taxiing in a crosswind. The water rudder should be retracted at speeds above idle taxi, if operating in shallow water, or when beaching or ramping the aircraft so as to minimize the chance of damage. The water rudder is spring loaded in the extended position, so if inadvertent contact with an object occurs, it will self-retract with little damage. The water rudder should never be extended in flight.

## 7.17 ICON PARACHUTE SYSTEM

The ICON Parachute System (IPS), made by Ballistic Recovery Systems, Inc. (BRS), is a deployable aircraft parachute system that can be used to safely recover the A5 in an emergency situation when other means are not feasible. The parachute is housed in a bay on top of the right wing where it joins the fuselage and is attached to the main wing spar and the aft wing spar by a Kevlar® harness. The parachute is deployed by an actuation T-handle located in the cockpit overhead console. The parachute will deploy

within 1.7 seconds of actuation and fully inflate within seven seconds. The A5 parachute system is coupled to a landing gear interconnect that automatically extends the landing gear to help cushion the touchdown. Descent rate of the aircraft after parachute deployment is approximately 1200 ft/min (20 ft/sec).

### 7.17.1 ICON PARACHUTE SYSTEM (IPS) ACTUATION

IPS actuation is recommended for any of the following:

- Loss of Aircraft Control
- Engine Failure and < 1000 ft AGL with NO SUITABLE landing area
- Pilot Incapacitation or inability to cope with situation or flight conditions

**Parachute Deployment**

1. Safety Pin – CONFIRM REMOVED, Remove if necessary
2. Parachute Handle – PULL HARD
3. Ignition Key – OFF

**Notes:**

Approximately 48 $lb_f$ of force is required to actuate the IPS.

Optimal IPS actuation is from level flight above 500 ft AGL.

Descent rate under parachute will be approximately 1200 ft/min.

Landing gear will automatically extend following IPS actuation. Once extended, it cannot be raised.

Seat belts should remain secure during descent until contact with the surface and all motion stops.

At pilot's discretion, consider unlocking canopy and removing windows during descent.

Exit the aircraft after all motion stops.

The ELT may not activate during IPS deployment or touchdown. It is therefore recommended to manually activate the ELT during the descent.

# 08

# Chapter 08

## HANDLING AND SERVICING



### 8.1 INTRODUCTION

This chapter contains ICON recommended practices for ground handling, tie-down, servicing of fluids, and general care of your A5.

Note that all maintenance, repairs, or alterations of this aircraft must be performed in accordance with the aircraft Maintenance Manual. Maintenance tasks for which no instructions are given in the Maintenance Manual must be coordinated and approved by ICON through the Major Repair and Alteration process. Other maintenance tasks or procedures are not permitted.

### 8.2 GROUND HANDLING

#### 8.2.1 TRAILERING

While the A5 with its folding wings and removable horizontal tail tips is designed for trailering, it must be transported only on a type-specific ICON A5 trailer. The suspension of ICON's A5 trailers has been designed, prototyped, tested, revised, and retested to ensure that the shock and vibrations from the trailer stay below the design limits for all components of the airplane. Trailering the airplane on a trailer other than the one ICON designed for the A5

will have unknown and possibly severe consequences for the airworthiness of the A5 and therefore is prohibited.

### 8.2.2 TOWING

The A5 has no provisions for towing with a tow-bar or tug. The aircraft is very easily maneuvered on the ground by hand. The full castering nose wheel makes maneuvering simple. The recommended method for pushing or pulling the A5 is through use of the handle on the bow (nose). The nose of the aircraft is very sturdy and can be readily used for pushing, pulling, or turning on the ground.

*CAUTION: The handles built into the wing tips are to be used for wing folding only. They must not be used for ground handling purposes or pushing/pulling the entire aircraft.*

*WARNING: This aircraft should not be used for towing, including but not limited to glider towing, banner towing, target towing or towing electrical receivers or emitters.*

**FIGURE 8-1**
APPROPRIATE GROUND HANDLING TECHNIQUE

## 8.2.3 PARKING AND MOORING

### Tie-Down Provisions

The A5 is equipped with six external tie-down points as follows:

1) Left side of fuselage just behind cockpit opening. This point is mainly used for water operation when approaching a dock. An adapter is required for this tie-down point.

2) Right side of fuselage just behind cockpit opening. This point is mainly used for water operation when approaching a dock. An adapter is required for this tie-down point.

3) Underside of right wing toward leading edge at mid-span. An adapter is required for this tie-down point.

4) Underside of left wing toward leading edge at mid-span. An adapter is required for this tie-down point.

5) The bow handle on the nose of the aircraft.

6) The tail skid.

*CAUTION: The nose of the aircraft can be very light, especially if the wings are folded. Careful consideration should be given when choosing the front or rear tie-down points.*

### Land

The A5 is equipped with a parking brake, which is located just in front of the pilot's seat near the floorboard. This brake is intended for use for short-term operations (<10 minutes) while the aircraft is attended. For any long-term, outdoor parking, the aircraft must be secured using the tie-down points and/or wheel chocks as appropriate.

### Water

The A5 uses aerospace paint, not marine paint. The paint can withstand 96 hours of continuous direct contact with water. Exceeding the 96 hours or securing aircraft where it may come in contact with rocks or other abrasive objects may result in visible degradation or permanent damage to paint and/or hull structure.

For instructions on beaching, ramping, docking, mooring, and anchoring please reference the ICON Sport Flying Operations Manual.

### 8.2.4 JACKING

The A5 has three built-in jacking points – two on the undersides of the wings and one at the tail skid. See the A5 Maintenance Manual for further details regarding jacking of the aircraft.

### 8.2.5 HOISTING

There are currently no provisions built into the aircraft to accommodate hoisting.

## 8.3 MANUAL WING FOLD SYSTEM

The manual wing fold system allows the wings to be rotated and folded back along the fuselage, reducing the A5 width from approximately 35 feet to 8 feet for trailering and storage.The wing fold mechanism was designed to be simple, allowing one person to complete the task in a few minutes with no tools using the following simple procedures.

*WARNING: The handles built into the wing tips are to be used for wing folding only. They must not be used for ground handling purposes or pushing/pulling the entire aircraft.*

### 8.3.1 FOLDING THE WING FOR STORAGE

1) Set the parking brake or chock the wheels of the aircraft.

2) Flaps should be fully retracted prior to wing fold.

3) At the red wing lock handle, press the spring-loaded handle latch inboard, then pull the lock handle down, 90° from its up and locked position.

4) At wing tip, place one hand on the wing fold handle and the other on the tip trailing edge. Using a smooth, fluid motion, step away from the aircraft pulling the wing out of the fuselage until the stop is reached, approximately 21 inches.

*NOTE: Pulling the wing away from the fuselage will require lifting the wing tip and slight vertical motion in order to take the weight off wing.*

5) As wing moves outward, be careful not to drop the wing as structural damage will occur.

6) Rotate wing leading edge up 90 degrees to the vertical position.

*NOTE: Due to camber of upper wing surface, bottom of wing will appear to be vertical while top of wing will appear to be past vertical.*

7) Walk the wing aft to the horizontal tail while being careful to keep the wing lower surface aligned vertically in order to prevent contact with the Seawings™ platform.

8) Approaching the horizontal tail, stop with the wing leading edge directly below the tail pin.

9) Slide wing approximately 21 inches forward to the stop, being careful to keep the wing vertical to maintain clearance from the Seawings™ platform.

10) Lift the wing tip to connect socket with tail pin, being certain to align the two together.

*NOTE: There will be a recognizable and positive sound and feel when the tail pin is securely seated in the wing leading edge socket.*

### 8.3.2 EXTENDING THE WING FOR FLIGHT

1) Set the parking brake or chock the wheels of the aircraft.

2) Inspect the condition of wing fold joint mechanism and ensure that the pins and sockets are clean.

3) Ensure red wing lock handle is seated in the down (90 degrees) position.

4) Place forward hand on wing tip handle, rear hand underneath the trailing edge of the wing tip.

5) Using lower hand, press the release button and lower wing to carry position.

*NOTE: Be prepared to hold the weight of the wing when the Release Pin is pushed. Failure to hold the wing up may result in the wing tip contacting the ground, causing structural damage.*

6) Pull the wing aft to the stop approximately 19 inches.

*NOTE: Ensure proper vertical alignment so as to avoid impacting the Seawings™ with flap trailing edge.*

7) Walk the wing forward with the leading edge facing upwards until it is in the forward position.

8) Rotate wing leading edge forward and downward 90 degrees to the horizontal position.

9) Line up wing with fuselage, ensuring both fore/aft and up/down position is correct.

10) Push wing in to the stop, noting that slight fore/aft & vertical motion may be required to fully seat wing.

*CAUTION: The wing pins must be fully engaged in the corresponding fuselage fittings prior to releasing the weight of the wing at the tip. Damage could result if the wing tip is released with the pins not fully engaged.*

11) Immediately rotate the red wing lock handle into the locked position.

*NOTE: If wing is not fully seated, wing lock handle will not rotate into the locked position.*



### 8.3.3 ADDITIONAL INFORMATION

- With both wings folded, the aircraft is light on the nose (tail heavy). Therefore, the wings should not be folded on an incline or the aircraft may tip onto its tail. Placing ballast on the floor-boards of the passenger compartment can help offset this characteristic.
- Under certain conditions, the second wing being extended can be hard to slide home with that wing's aileron fully trailing edge

down. If experiencing this difficulty, move aileron to neutral by hand before sliding wing home.

- Finding the correct wing alignment during the final step of wing extension can be tricky. It helps to position the hand holding the wing tip handle on the extended center line of the wing spar tunnel prior to rotating the wing to horizontal. Keep this hand in this position in space during the rotation of wing to horizontal and subsequent slide home.
- The wing fold lock handle has three mechanical latch mechanisms – one latch and two ball detents.
- There are two switches on each wing for the wing lock handle position annunciator logic.
- There are two switches on each tail pin – one tip position indicator and one lock handle position.
- A three-pin locking design ensures the wings remain locked in place during operations and automatic aileron and flap connection eliminate the need to manually adjust aileron and flap positions before wing fold and after wing extension.
- Folding and unfolding of the wings must be done with the weight of the aircraft on the wheels. The wings cannot be folded while the aircraft is floating on water.
- Even though the propeller arc clears the folded wing surfaces, ICON does not recommend running the engine or taxiing with wings folded.
- An annunciator panel light in the cockpit will warn the pilot when the wing lock system is unlocked.
- Folding and unfolding the wings in winds above 10 knots is not recommended.

## 8.4 HORIZONTAL TAIL

The horizontal tail tips are removable for trailering or shipping purposes. The tips have two switches – one to detect that the tip is fully installed and the second to detect that the latch is secured. The removable tip latches are located on the underside of the horizontal tail and are placarded to show operation.

*WARNING: The latch for the removable horizontal tail tip must fully cover the red portion of the placard*

*in order for the tail to be locked. An annunciator panel light in the cockpit will warn the pilot when either of the tips is unlocked or not installed correctly.*

**To remove the tip:**

1) Pull downward on the tip lock latch to remove it from the detent position and rotate the latch approximately 180°.

2) Grasp the tip and slide it away from main horizontal tail until the cylindrical spar clears the structure.

**To install the tip:**

1) Grasp the tip and slide the cylindrical spar fully into the main horizontal tail taking care that the locating pin near the leading edge aligns properly. Ensure that the tip is fully engaged by pressing it firmly into position.

2) Rotate the latch back into the locked position ensuring that it snaps upward into the detent position.

3) With the master switch on, verify that the 'SECURE WING/TAIL' light on the annunciator panel has extinguished.

## 8.5 WATER IN WING TIPS

In the event of inadvertent submersion of the wing tip, there is a possibility that water has passed through the wing light seals or through the aileron pushrod opening and collected in the hollow wing tip where it cannot naturally drain out. Water can be detected by unlatching the wing lock, pulling the wing fully outboard, then rotating it leading edge up and down so as to induce an audible sloshing. If water is found or is suspected to be in the wing tip, perform the steps below.



1) Unlock the wing and pull it outward.

2) Rotate the wing about 180° until the top surface of the wing faces down and is horizontal to the ground. Hold the wing tip high.

   Water can then drain out of the tip and into the main part of the wing.

3) Rotate the wing back in the opposite direction from Step 2 (to avoid twisting the light wiring and/or AOA or fuel drain tubing).

4) Re-lock the wing into flying position.

Water removed from the tip is now free to drain from the holes at the wing root.

## 8.6 SERVICING OPERATIONAL FLUIDS

### 8.6.1 FUEL

A fuel filler cap is located on the left side of the fuselage exterior, just aft of the cockpit. Lift the lever on the cap and rotate counter clockwise to open it and the reverse to lock it. It is best to orient the lever facing downward so that gravity will help hold it closed.

The fuel system also has a sump at the lowest point of the fuel system that can collect water or sediment. Fuel sumping to test for water or sediment is accomplished via a sump line that is inside the fuel filler neck and is accessed through the fuel cap. This sumping line is routed to the lowest portion of the sump in the fuel tank. ICON supplies a fuel sumping tool with the aircraft for this purpose.

Following are the instructions for sumping the fuel tank.

1) Remove the fuel filler cap and place on pilot's seat.

2) Connect the flexible rubber tube of Fuel Sumping Tool to adapter located inside fuel cap fitting.

*NOTE: The adapter is inside the fuel cap fitting on the left side.*

3) Pull back on the plunger handle to obtain a vacuum for removal of the fuel from the fuel tank. Examine the contents of the Fuel Sumping Tool (syringe) for water or contaminants. If necessary, disconnect the Fuel Sumping Tool from the aircraft and discharge water or contaminants into a suitable container before re-attaching the tool to the adapter on the aircraft.

4) Repeat Step 3 to sump all water and contaminants until none remain inside the fuel tank.

5) Remove the tube and syringe.

6) Empty the syringe and clean for the next use.

7) Install the fuel filler cap.

*NOTE: The latch on the fuel cap should swing downward or aft when properly aligned.*

Use the following procedure to fuel the aircraft:

1) Position the aircraft on a level surface with parking brake set or chocks in place.
2) Attach a suitable grounding cable to the bow ring.
3) Open the canopy and turn on the master switch.
4) Remove the fuel filler cap and place on pilot's seat.
5) Insert the fuel filler nozzle completely into the filler neck, being careful not to damage the sumping tube.
6) Dispense fuel to the desired level while watching the fuel gauge. Do not fuel to more than a 20-gallon indication. Stop fueling if fuel is observed rising up the filler neck.
7) Remove the nozzle and install fuel filler cap.
8) Turn off the master switch and remove the grounding cable.

### 8.6.2 OIL

The A5 has an access door on the engine cowling for servicing the engine oil system. The oil door is accessed by standing on the left hand Seawings™ platform. Underneath the oil tank cap on the oil tank, there is a dipstick for checking the oil level. See "(11) Fuel and Engine Oil" on page 4-6.

If the engine has not been run previously in the day, the oil must first be pumped from the engine sump into the oil tank before the level can be measured. Do this by rotating the propeller by hand. Grasp one propeller blade at a time and slowly rotate the propeller in its normal direction of rotation several times (counter clockwise as viewed from the rear). The speed of rotation is not important. The pressure generated in the engine will pump oil from sump to tank so that the level in the tank can be measured. This process is finished when air instead of oil flows to the tank as evidenced by a gurgling (burp) sound emanating from the tank. Check the oil level with the dipstick, then replace the dipstick. Replace the cap and latch the oil door when finished.

*NOTE: Never rotate the propeller in the reverse direction of normal rotation.*

The oil level should be between the “MIN” and “MAX” level lines. If the oil is below the “MIN” level, replenish the oil by adding the recommended oil until the level is within the limits.

The distance between these two lines represents 0.5 quarts (0.47 l).

### 8.6.3 ENGINE COOLANT

The A5 engine coolant expands and contracts into and out of a coolant overflow bottle located near the aft, right side of the engine compartment. This overflow bottle can be seen by looking between the blades of the engine cooling fan. At all times, the coolant level in this bottle should be between the ‘MIN’ and ‘MAX’ level lines. If the coolant level is below the ‘MIN’ level when the engine is completely cold, replenish the coolant by adding a 50:50 mix of antifreeze and distilled water until the level is within the limits. See “Engine Coolant Limitations” on page 2-9.

### 8.6.4 BRAKE FLUID

The differential braking system on the A5 uses dual fluid reservoirs mounted to the back side of the passenger rudder pedals. If the fluid level is below the maximum level marked on the reservoir, then add mineral brake fluid to bring the level to maximum. Refer to ICON A5 Maintenance Manual for brake fluid servicing instructions.

*CAUTION: It is critical that only Mineral fluid (or equivalent compatible) is used. Do not use DOT4 brake fluid. The correct fluid type is marked on the fluid reservoir. Use of the incorrect fluid type may lead to brake failure.*

## 8.7 APPROVED FUEL GRADES AND SPECIFICATIONS

See “Fuel Limitations” on page 2-7.

## 8.8 APPROVED OIL GRADES AND SPECIFICATIONS

See “Engine Oil Limitations” on page 2-9.

## 8.9 CLEANING AND CARE

All exterior surfaces of the aircraft can be cleaned using a clean, moist cloth with mild detergents.

The interior of the aircraft should be vacuumed periodically with careful inspection beneath floorboards to ensure there is no debris that could interfere with control system functionality.

The instrument panel can be cleaned with a clean, moist cloth.

The canopy and windows can be cleaned using a clean, soft cloth and any aviation-approved windshield cleaner.

The propeller can be cleaned with a moist cloth and should be checked regularly for nicks, dents, or other damage.

### 8.9.1 RINSE AFTER SALT WATER OPERATIONS

The structure and many other parts of the A5 are constructed of corrosion proof composite materials. There are, however, many small fittings made up of nickel-plated steel, anodized aluminum, and stainless steel. These fittings are corrosion resistant but not corrosion proof. Salt water operations and continuous, or frequent, use and storage in hot, humid environments can lead to oxidation and damage of metal parts.

The Corrosion Prevention Schedule and procedures given below are the minimum preventative maintenance needed to minimize corrosion related problems. The levels represent progressively more aggressive operational environments and the associated minimum rinse procedures. More attention to rinsing operations will further improve the long-term results.

In general, the aircraft should be rinsed as soon as practical after every salt water operation. Landing in fresh water should not be considered a substitute for a thorough rinse as described in this section. Any visible salt should be rinsed off as soon as practical.



**Corrosion Prevention Schedule**

**Level 1**

Aircraft used in fresh water only and stored mainly in dry, indoor environment

### Level 2

Aircraft used mainly in fresh water with occasional salt water use and stored in a periodically humid environment

### Level 3

Aircraft used mainly in salty or brackish water and stored near an ocean or in a hot, humid environment

| | Level 1 | Level 2 | Level 3 |
|---|---|---|---|
| "Overall Exterior Rinse" on page 8-14 | Normal aircraft wash cycle | End of each day of salt water ops | End of each day of salt water ops |
| "Interior Rinse" on page 8-15 | Not Required | End of each month of salt water ops | End of each week of salt water ops |
| "Wing Fold Rinse" on page 8-15 | Not Required | End of each month of salt water ops | End of each week of salt water ops |
| "Horizontal Tail Tips Rinse" on page 8-16 | Not Required | End of each month of salt water ops | End of each week of salt water ops |
| "Salt-Away Rinse" on page 8-16 | Not Required | Not Required | Optional for severe conditions |
| "Corrosion Inhibitor" on page 8-16 | 1-2 times per year | Each month | End of each week of salt water ops |

## Overall Exterior Rinse

Rinse entire exterior of the aircraft with fresh water from a garden hose set to low pressure.

*CAUTION: Do not use a high pressure sprayer. This could force water into bearings or pry apart joints.*

*CAUTION: Do not direct water into the pitot tube or static and AOA ports.*

1. Start at the top of aircraft and work down. Include areas above the normal waterline and spray line like the horizontal tail, which can be exposed to salt mist.
2. If salt water may have entered the engine inlet, direct water into the engine inlet and through the oil cooler and radiator. This water will drain out the cowling outlet and through the drain at the low point of the firewall.

3. Rinse all exposed metal parts (nose, main landing gear, control surface hinges, and water rudder) a second time.
4. (Optional) Dry the aircraft. A terry towel, micro cloth, or chamois can be used in addition to air drying.

### Interior Rinse

1. Remove floor boards and seat cushions. Remove nozzle attachments from garden hose. Adjust water flow to a low and gentle rate like that of water being poured from a glass.
2. Turn aircraft bilge pump on. Carefully direct flow of water over heater core, rudder pedal assemblies, rudder lateral torque tubes, and other areas with salt deposits.
3. Turn the bilge pump off once bilge empties. Blot excess water with a towel. Leave floor boards out until exposed surfaces are dry.
4. Remove the aft-most inspection panel (under the air rudder). Direct flow of water into this bay to rinse the rudder bellcrank for 1 minute.
5. Replace inspection panel. Run bilge pump until bilge is empty.
6. Remove the water rudder inspection panel. Direct flow of water into bay to rinse the water rudder bellcrank for 1 minute.
7. Replace inspection panel. Run bilge pump until bilge is empty.

### Wing Fold Rinse

1. Unlatch and pull out wing as if to fold it, but do not rotate or walk it back to tail.
2. Set the wing tip on the ground.

   *NOTE: A folded towel, pad, sawhorse, or other elevated surface should be used to rest the wing tip on.This may help reduce the chance of getting water in the interior of the wing.*

3. Remove nozzle attachments from garden hose and set water flow to a low gentle rate.

4. Carefully direct the flow of water over all metal parts, taking care not to get water into the interior of the wing or wing center section.
5. Use a towel to dry surfaces. Leave wings extended until all surfaces have dried.

### Horizontal Tail Tips Rinse

1. Remove the horizontal tail tips.
2. Remove nozzle attachments from garden hose and set water flow to a low gentle rate.
3. Direct flow of water over all metal parts on each side of the joint.
4. Use a towel to dry surfaces.

### Salt-Away Rinse

1. Use Salt-Away product per the manufacturer's instructions to rinse aircraft using "Overall Exterior Rinse" on page 8-14.

### Corrosion Inhibitor

After aircraft has been rinsed, an application of a water-displacing, corrosion inhibiting oil such as Corrosion Zero, LPS 3®, or CRC Marine Heavy Duty™ can be used. Apply corrosion inhibiting oil liberally to the metal parts of the aircraft. After application, wipe away any excess oil with a rag or paper towel. Use the list below as an application guide.

- Nose gear fork and steering pivot assembly
- Nose gear aft door retraction linkages
- Nose gear self-centering actuator and cam
- Nose gear retraction bellcrank and drag link
- Nose gear leg pivot, forward door pivot, and spring
- Main gear axle and brake caliper

*CAUTION: Do not apply oil to the brake disk or pads.*

- Water rudder hinge, sector, and retraction cable
- Air rudder lower hinge and drive lugs
- All HT tip joint metal parts
- All wing fold metal parts
- Canopy latch
- Brake line B-Nuts and Master cylinder rod ends

# 09

# Chapter 09

## SUPPLEMENTS

## 9.1 SYMBOLS, ABBREVIATIONS, AND TERMINOLOGY

### General Airspeed Terminology

**CAS**

**Calibrated Airspeed** is the indicated airspeed of the aircraft, corrected for position and instrument error. At sea level and standard atmosphere, calibrated airspeed is equal to true airspeed.

**KCAS**

**Knots Calibrated Airspeed** is calibrated airspeed expressed in knots.

**IAS**

**Indicated Airspeed** is the uncorrected airspeed of an aircraft.

**KIAS**

**Knots Indicated Airspeed** is indicated airspeed expressed in knots.

**TAS**

**True Airspeed** is the airspeed of an aircraft relative to undisturbed air which is CAS corrected for altitude, temperature, and compressibility.

**KTAS**

**Knots True Airspeed** is true airspeed expressed in knots.

**$V_H$**

**Maximum Speed in Level Flight** with maximum continuous power (corrected for sea level standard conditions).

**$V_O$**

**Operating Maneuvering Speed** is the speed above which full application of any single flight control may generate a load greater than the aircraft's structural limitations.

**$V_S$**

**Stalling Speed or the minimum steady flight speed** at which the airplane is controllable with flaps retracted (clean).

**$V_{SO}$**

**Stalling Speed or the minimum steady flight speed** at which the airplane is controllable in the landing configuration at the forward-most center of gravity.

**$V_X$**

**Best Angle of Climb Speed** is the airspeed at which delivers the greatest gain of altitude in the shortest possible horizontal distance.

**$V_Y$**

**Best Rate of Climb Speed** is the airspeed at which delivers the greatest gain in altitude in the shortest possible time.

### Meteorological Terminology

**OAT**

**Outside Air Temperature** is the free static air temperature, obtained either from in flight temperature indications or ground meteorological sources, adjusted for instrument error and compressibility effects

**Standard Temperature**

**Standard Temperature** is 59 °F (15 °C) at sea level pressure altitude and decreases by 3.6 °F (2 °C) for each 1000 feet of altitude.

**VMC**

**Visual Meteorological Conditions** are weather conditions within the minimum for flight under visual flight rules – also referred to as VFR conditions.

**IMC**

**Instrument Meteorological Conditions** are weather conditions below the minimum for flight under visual flight rules – also referred to as IFR conditions.

### Engine Power Terminology

**Horsepower (hp)**

**Horsepower** is the power developed by the engine.

**MCP**

Maximum Continuous Power

**RPM**

**Revolutions Per Minute** is the engine speed at the propeller shaft.

**Static RPM**

**Static RPM** is engine speed attained during a full-throttle engine run-up when the airplane is on the ground and stationary.

### Airplane Performance and Flight Planning Terminology

**AGL**

**Above Ground Level** is an altitude measured with respect to the underlying ground surface.

**IFR**

**Instrument Flight Rules** are a set of regulations established to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to cockpit instruments and navigation is accomplished by reference to electronic signals. IFR flight in the ICON A5 is prohibited.

**MSL**

**Mean Sea Level** is the sea level halfway between the mean levels of high and low water.

**SL**

**Sea Level** refers to an average level surface of one or more of Earth's ocean's from which heights such as elevations may be measured.

**Usable Fuel**

**Usable Fuel** is the fuel available for flight planning.

**Unusable Fuel**

**Unusable Fuel** is the quantity of fuel that cannot be safely used in flight.

### VFR

**Visual Flight Rules** are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow a pilot to see where the aircraft is going and remain clear of other airborne or surface traffic.

## Weight and Balance Terminology

### Center of Gravity (CG)

**Center of Gravity** is the point about which an airplane or other equipment, would balance if suspended from that point.

### Empty Weight

**Empty Weight** is the weight of the airplane, including all operational equipment that is installed in the airplane: weight of the airframe, powerplant, required equipment, optional and specific equipment, fixed ballast, full engine coolant and oil, hydraulic fluid, and unusable fuel.

### Fuselage Station (FS)

**Fuselage Station** is a location along the airplane fuselage from front to back given in inches and measured from Reference Datum.

### Gross Weight

### Maximum Takeoff Weight (MTOW)

### Maximum Weight

The maximum weight approved for the start of the takeoff run.

### Reference Datum

**Reference Datum** is an imaginary vertical plane from which all horizontal distances are measured for balance purposes.

### Useful Load

**Useful Load** is the difference between gross weight (MTOW) and empty weight.

## Other Terminology

### IPS

**ICON Parachute System** is the ballistic, whole-aircraft parachute recovery system for the A5.

**HT**

Horizontal Tail

**LE**

Leading Edge

**TE**

Trailing Edge

## 9.2 OPERATION OF OPTIONAL EQUIPMENT OR ACCESSORIES

The sections below summarize helpful information about optional equipment and accessories for the A5.

### 9.2.1 GARMIN AERA 796

The Garmin aera 796 is an accessory for the ICON A5. The aera 796 presents GPS-derived analog flight instrumentation, position, navigation, and hazard avoidance information to the pilot using a 7" WVGA high brightness display with a capacitive touch screen.

Since it is an accessory, the aera 796 is not included in the empty weight of the aircraft. For reference with weight and balance calculations, the unit weighs 1.7 $lb_f$ and mount at approximately FS 109.7.

For details on operation and use of the aera 796, see the following documents which are supplied with your aircraft:

Garmin Part Number 190-01194-00 – aera models 795/796 Pilot's Guide

Garmin Part Number 190-01194-01 – aera models 795/796 Quick Reference Guide

## 9.3 FLIGHT TRAINING SUPPLEMENT (FTS)

Due to the unique capabilities of the A5, ICON requires that all A5 pilots complete a factory-approved training course. ICON has developed a complete ground and flight training program for both beginning and existing pilots that includes the following elements.

### 9.3.1 FLIGHT TRAINING PROGRAM

ICON has developed a flight training program which includes a Flight Training Manual.

**Ground Academics Introduction**

Learning to fly and the essence of sport flying. The ICON pilot philosophy and aircraft intro.

**Basic Aero**

Lift, weight, thrust, drag, maneuvering forces and load factor, V-n diagram, weight and balance

**Basic Aircraft Control**

3 axes, control surfaces and pilot controls, aircraft control fundamentals, engine/propeller, flight instruments, aircraft location and orientation

**Flying Environment**

The atmosphere, airspace, airport, water and terrain environments

**Aircraft Performance**

Surface maneuvering, takeoff, climb, cruise, turn, descent glide, landing performances

**Aeromedical Factors**

Critical self-analysis, spatial disorientation, visual illusions, motion sickness, hypoxia

**Flight Operations Introduction**

Flight ops overview, checklists and cockpit flows

**Airport Ops**

Airport taxi ops, takeoffs, climb, landings, uncontrolled airport communication

**Cruise and Maneuvering**

Straight and level flight, exchange of controls, VFR scan techniques, level accelerations/decelerations, range and endurance cruise flight, turns, descents, slow flight maneuvering, stalls, ground reference maneuvers, instrument flight techniques

**Water Ops**

Fundamentals, feet wet checks, seamanship, leaving the dock/ramp/beach, surface maneuvering, takeoffs, landings, sailing, beaching, ramping, docking, anchoring, mooring, advanced techniques and remote area ops

### 9.3.2 SPIN RESISTANT AIRFRAME

The A5 incorporates numerous features to help control the dynamics of stall and improve spin resistance, including blended wing shapes, stall strips, and wing cuffs. Stall characteristics depend on a number of factors, the most important being rate of stall onset, which can affect the dynamics of stall progression along the span. The A5 remains controllable throughout these various stall progressions up to 30° bank angles, even when fully stalled. Lateral stick and rudder remain effective, although response is more sluggish than during normal flight.

### 9.3.3 ICON PARACHUTE SYSTEM

The ICON Parachute System (IPS), made by Ballistic Recovery Systems, Inc. (BRS), is a deployable aircraft parachute system that can be used to safely recover the A5 in an emergency situation when other means are not feasible. The parachute is housed in a bay on top of the right wing where it joins the fuselage and is attached to the main wing spar and the aft wing spar by a Kevlar® harness. The parachute is deployed by an actuation T-handle located in the cockpit overhead console. The parachute will deploy within 1.7 seconds of actuation and fully inflate within seven seconds. The A5 parachute system is coupled to a landing gear interconnect that automatically extends the landing gear to help cushion the touchdown. Descent rate of the aircraft after parachute deployment is approximately 1200 ft/min (20 ft/sec).

## 9.4 IMPROVEMENTS OR CORRECTIONS

If you have suggestions for improvement or corrections to this POH, please take the time to fill out a copy of the included 'Manual Improvement or Correction Form' and mail or email to ICON Aircraft. You can also contact ICON using the phone numbers or email address shown at the bottom of the form. This form is also available in the owner area of the ICON website.

2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – www.iconaircraft.com

# MANUAL IMPROVEMENT OR CORRECTION FORM

**CONTACT INFORMATION**

| | | |
|---|---|---|
| **NAME:** | First | Last |
| **COMPANY:** | | |
| **ADDRESS:** | Street Address | |
| | Street Address 2 | |
| | City | State |
| | Postal / Zip Code | Country (USA) |
| **PHONE NO.:** | Main | Alternate |
| **EMAIL ADDRESS:** | | |

**AIRCRAFT INFORMATION**

| | | | |
|---|---|---|---|
| **MODEL:** | A5 | **SERIAL NUMBER:** | |
| **REGISTRATION NUMBER:** | | | |
| **ENGINE TACH TIME:** | | | |
| **TOTAL TIME:** | | | |

**DESCRIPTION OF IMPROVEMENT OR CORRECTION:**

☐ Maintenance Manual ☐ Pilot's Operating Handbook (POH) ☐ Other

| | |
|---|---|
| | |
| **SIGNATURE** | **DATE** |

Please forward this form and any supporting information to ICON Owner Support at:
ICON Aircraft
2141 ICON Way
Vacaville, CA 95688
(855) FLY-ICON (359-4266)
support@iconaircraft.com

ICA009722-D PAGE 1 of 1

CHAPTER 9

*SAMPLE DOCUMENT ONLY - Not For Use For Aircraft Operation, Actual Pilot's Operating Handbook, Or Flight Planning.*

## 9.5 CONTINUED OPERATIONAL SAFETY REPORTING

Aircraft owners are responsible for reporting Continued Operational Safety concerns to ICON Aircraft. To notify ICON Aircraft of operational or other safety concerns, please call or email. ICON Customer Service and Support can also be reached via the following channels:

ICON Aircraft, Inc
Attention: Customer Service & Support
2141 ICON Way
Vacaville, California 95688

1-855-FLY-ICON (359-4266)

Email: support@iconaircraft.com

## 9.6 OWNER CHANGE OF ADDRESS/OWNERSHIP NOTICE

Aircraft owners are responsible for keeping their address information up-to-date with ICON Aircraft in order to receive proper support. To notify ICON Aircraft of a change of address or aircraft ownership, please fill out a copy of the included 'Change of Address/Ownership Form' and mail or email to ICON Aircraft. You can also contact ICON using the phone numbers or email address shown at the bottom of the form. This form is also available in the owner area of the ICON website.

2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – www.iconaircraft.com

# CHANGE OF ADDRESS/OWNERSHIP FORM

**AIRCRAFT INFORMATION**

**MODEL:** A5 **SERIAL NUMBER:**

**REGISTRATION NUMBER:**

**OLD INFORMATION**

**NAME:** First Last

**COMPANY:**

**ADDRESS:** Street Address

Street Address 2

City State

Postal / Zip Code Country (USA)

**PHONE NO.:** Main Alternate

**EMAIL ADDRESS:**

**NEW INFORMATION**

**NAME:** First Last

**COMPANY:**

**ADDRESS:** Street Address

Street Address 2

City State

Postal / Zip Code Country (USA)

**PHONE NO.:** Main Alternate

**EMAIL ADDRESS:**

Please forward this form to ICON Owner Support at:
ICON Aircraft
2141 ICON Way
Vacaville, CA 95688
(855) FLY-ICON (359-4266)
support@iconaircraft.com

ICA009721-D PAGE 1 of 1

## 9.7 FAA EXEMPTION

This supplement contains a copy of the United States Department of Transportation Exemption No. 10829B. Per the exemption, a copy must be in the aircraft at all times.

U.S Department
of Transportation
**Federal Aviation Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

June 22, 2018

Exemption No. 10829B
Regulatory Docket No. FAA-2012-0514

Mr. Kirk Hawkins
CEO & Founder
ICON Aircraft
12511 Beatrice Street
Los Angeles, CA 9006

Dear Mr. Hawkins:

This letter is to inform you that we have granted your petition to extend Exemption No. 10829, as amended. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption.

**The Basis for Our Decision**

By letter dated February 28, 2018, you petitioned the Federal Aviation Administration (FAA) on behalf of ICON Aircraft (ICON) for an extension of Exemption No. 10829, as amended. That exemption from §§ 21.181(a)(3), 21.190(a), 43.3(c), 43.7(g), 61.89(c), 61.303(a), 61.315(a), 61.411(a), 61.415, 61.429(b), and 65.107(b) and (c) of Title 14, Code of Federal Regulations (14 CFR) allows:

- ICON A5 aircraft with a maximum takeoff weight (MTOW) of 1,680 pounds to be eligible for issuance of a special airworthiness certificate in the light-sport category.
- Persons exercising the privileges of a sport pilot certificate or student pilots seeking a sport pilot certificate to operate the ICON A5 and to permit flight time obtained in the ICON A5 to be considered flight time obtained in a light-sport aircraft.
- Persons exercising the privileges of a flight instructor certificate with a sport pilot rating to provide flight training in the ICON A5.

ACE-18-120368-E

2

- Holders of sport pilot certificates and repairman certificates (light-sport aircraft) with a maintenance rating or an inspection rating to perform maintenance and preventive maintenance on ICON A5 aircraft as authorized within those sections.

In your petition, you indicate that there has been no change in the conditions and reasons relative to public interest and safety that were the basis for granting the original exemption.

**Our Decision**

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested extension of the exemption, as amended, would not set a precedent, and any delay in acting on this petition would be detrimental to ICON.

The FAA has determined that Exemption No. 10829A, which amended Exemption 10829, erroneously noted that Exemption 10829 provided relief from those sections of the Federal Regulations from which ICON originally requested an exemption. This amendment correctly notes those sections for which actual relief is required and granted, as stated in the original exemption.

The FAA has determined that the conditions and limitations of Exemption No. 10829, as amended by Exemption No. 10829A, require further amendment as follows:

1. Condition and Limitation No. 5 has been satisfied by the completion of the required audit prior to the issuance of a special airworthiness certificate in the light-sport category for the first ICON A5 certificated under the provisions of Exemption No. 10829 and is deleted.

2. Condition and Limitation No. 6 has been satisfied by the completion of the required inspection of the model A5 aircraft prior to issuance of a special airworthiness certificate in the light-sport category for the first ICON A5 certificated under the provisions of Exemption No. 10829 and is deleted.

3. Condition and Limitation No. 11 is revised to change the office designation of the Small Airplane Directorate to the Small Airplane Standards Branch to reflect the current office designation assigned by the FAA Office of Certification (AIR) Transformation realignment.

4. Other Conditions and Limitations of this exemption are renumbered accordingly based on the above changes.

The FAA has determined that the justification for the issuance of Exemption No. 10829, as amended, remains valid with respect to this exemption and is in the public interest. Therefore, under the authority provided by 49 U.S.C. § 106(f), 40113, and 44701, which the FAA Administrator has delegated to me, I hereby grant ICON Aircraft (ICON) an exemption from §§ 21.181(a)(3), 21.190(a), 43.3(c), 43.7(g), 61.89(c), 61.303(a), 61.315(a), 61.411(a),

3

61.415, 61.429(b), and 65.107(b) and (c) of Title 14, Code of Federal Regulations (14 CFR) to the extent necessary to allow:

- ICON A5 aircraft with a maximum takeoff weight (MTOW) of 1,680 pounds to be eligible for issuance of a special airworthiness certificate in the light-sport category.
- Persons exercising the privileges of a sport pilot certificate or student pilots seeking a sport pilot certificate to operate the ICON A5 and to permit flight time obtained in the ICON A5 to be considered flight time obtained in a light-sport aircraft.
- Persons exercising the privileges of a flight instructor certificate with a sport pilot rating to provide flight training in the ICON A5.
- Holders of sport pilot certificates and repairman certificates (light-sport aircraft) with a maintenance rating or an inspection rating to perform maintenance and preventive maintenance on ICON A5 aircraft as authorized within those sections.

This grant of exemption is subject to the following conditions and limitations.

**Conditions and Limitations**

1. This exemption applies to the ICON Aircraft model number A5, serial numbers 00001 – 99999.
2. ICON may issue the manufacturer's statement of compliance required by 14 CFR § 21.190(b)(1)(iii) for its model A5 aircraft indicating a maximum takeoff weight (MTOW) of up to 1,680 pounds (762 kilograms), provided the aircraft meets all applicable requirements of 14 CFR § 21.190 and the conditions and limitations specified in this exemption.
3. ICON must supply each purchaser of an ICON A5 certificated under the provisions of this exemption with a copy of the exemption. A copy of this exemption must be carried on board each aircraft during its operation.
4. The manufacturer's statement of compliance required by 14 CFR § 21.190(b)(1)(iii) must:

   (a) State that the aircraft meets the provisions of the applicable consensus standard and the design requirements specified in these conditions and limitations.

   (b) State that the aircraft meets the spin resistance standards of 14 CFR § 23.221(a)(2) without exceeding the pilot force limits of ASTM F2245 for temporary application.

   (c) State that the following safety design features have been incorporated into the aircraft:

4

(1) An angle of attack (AOA) indicator that includes an indication of sensed AOA rate, allowing the pilot to identify margin above stall.

(2) Aerodynamic characteristics and reversible flight controls that provide stall recovery capability and spin resistance without the use of a stick pusher or other automatic flight control system.

(3) Design features that allow recovery from a wings-level, power-off stall with an altitude loss of 300 feet or less.

(4) Aerodynamic characteristics that limit the vertical descent rate to 20 ft/s (1,200 ft/min) or less during a fully developed wings-level, power-off stall.

(5) Interior panels separating and protecting occupants from flight controls, cables, and other systems.

(6) A ballistic recovery complete-aircraft parachute system in compliance with the latest FAA-accepted revision of ASTM International Standard F2316.

(7) Compliance with ASTM International Standard F2245-12c until superseded by a later FAA-accepted revision of F2245.

5. Any person who holds a sport pilot certificate who does not have airplane category and single-engine land and sea class privileges and seeks to obtain privileges to operate the ICON A5 aircraft must receive the logbook endorsements, successfully complete the proficiency check and complete the application specified in 14 CFR § 61.321.

6. Any person who holds a sport pilot certificate and seeks privileges to operate the ICON A5 aircraft at an airport within, or in airspace within, Class B, C, and D airspace, or in other airspace with an airport having an operational control tower must receive and log the ground and flight training and obtain the endorsement specified in 14 CFR § 61.325.

7. Any person who holds a sport pilot certificate and seeks to operate the ICON A5 aircraft must receive and log the ground and flight training and obtain the endorsement specified in 14 CFR § 61.327(b).

8. Any person who performs maintenance or preventive maintenance on the ICON model A5 aircraft under the provisions of this exemption must include a reference to this exemption in the maintenance record entry required to be made under the provisions of 14 CFR §§ 43.9 or 43.11, as applicable.

5

9. ICON must maintain a record of all failures, malfunctions, or defects of the ICON model A5 spin resistant airframe and report any failure, malfunction, or defect of the airframe and any stall or spin related accident or incident involving the model A5 to the Small Airplane Standards Branch within 48 hours after learning of the occurrence.

**The Effect of Our Decision**

This exemption terminates on June 30, 2023, unless sooner superseded or rescinded.

Sincerely,
/s/
David W. Hempe
Deputy Executive Director for Regulatory Operations
Aircraft Certification Service

Enclosures:

1. Exemption Number 10829A
2. Exemption Number 10829