

est. 1955 *Airglas* Skis

AIRCRAFT SKIS / POD PRESENTATION

- WE WILL DISCUSS:
- Care of skis for best longevity
- Types of skis.
- General information about use and conditions for landing with skis.
- General information about how to maintain skis.
- Aircraft pods uses and maintenance.
- Question and Answer session will follow this briefing

AIRCRAFT SKIS CARE FOR BEST LONGEVITY

1. While aircraft is parked, we recommend you use a cover to protect the tips of the skis from UV radiation. UV radiation degrades our UHMW bottoms. Use of a garbage bag, cloth, or even tree parts (While in remote locations.

NOTE: The tips are exposed to the UV radiation due to the reflection of the snow bouncing up under the ski.

2. With Hydraulic Systems (GLH3000 & LH4000 Ski), consider hitting the toggle switch to on the GLH3000-7 Switch cover, to get the secondary light (Skis Up/Skis Down) to extinguish. It will only take a momentary energizing of the switch to relieve the pressure. Maintaining peak pressures could result in premature wear of the "O" rings inside the hydraulic cylinders.

TYPES OF AIRCRAFT SKIS: STRAIGHT SKIS:





STRAIGHT SKIS:

Straight skis are wheel replacement skis. The skis replace the wheel and tire. They typically do not have a braking mechanism installed, other than a couple of protruding bolts on bottoms of skis. They are lighter than any other ski type because the wheel & tire and brakes are removed for installation. They generally have very good floatation.

Advantages: Light weight, simple installation, and lowest cost

Disadvantage: Will not work without snow. You must taxi, take-off, land on snow. Getting to fuel pump could be a problem. Lack of tires, reduces cushion properties (Can result in a rough ride on uneven snow)

PENETRATION SKIS:







PENETRATION SKIS:

Wheel penetration skis offer more flexibility than do straight skis. They have the ability to operate on either runways or snow covered surfaces. Penetration skis use standard landing gear, complete with wheels and brake. The skis themselves attach to the landing gear (Often, landing gear requires modification) with axle extensions and attach flanges. Generally, a small "tailwheel" is attached to the rear of the ski to prevent it from dragging on hard surfaces.

Advantages: Reasonably priced and they offer you the ability to use them on either snow covered or bare surfaces, a major advantage over straight skis. They perform extremely well in combination snow and bare ground conditions.

Disadvantages: Heavier than straight skis, in certain snow conditions drag from the protruding wheel can dramatically extend take-off distance.

HYDRAULIC / RETRACTABLE SKIS:



HYDRAULIC / RESTRACTABLE SKIS:

Hydraulic/Retractable wheel skis offer the best of both worlds in many ways. They are straight skis when you need it, and penetration skis when needed.

There are as many types of operating mechanisms for retractable wheel. Some use purely hydraulic retraction systems, some use electro-hydraulic retraction systems, and at least one uses purely mechanical, spring actuated gear, which is capable only of extension, but not retraction.

With Hydraulic/Retractable ski, Prior to landing in snow, the extension system is activated, which extends the ski downward, thus "retracting" the wheels (though the wheels themselves never actually move).

HYDRAULIC / RESTRACTABLE SKIS:

Advantages: They offer you the ability to use on either snow covered or bare surfaces. They do not have the tire drag associated with penetration skis.

Disadvantages: Typically the highest priced , heaviest of all skis, most complex installation.

General Information On Use and Conditions for Landing With Skis:

Snow quality:

Snow varies greatly in both texture and character. The ski pilot must learn to read snow conditions from the air prior to landing and understand their effects on the aircraft's performance.

Many people think of snow as being soft and smooth, but the truth can be far different. Wind moves snow into drifts, and once snow "sets up," it can become incredibly solid, uneven, and irregular. Those of us from Alaska know this very well!!

At near flying speed, even crossing a snow machine track, that has set up, can damage a ski plane.

NOTE: Know what's below the snow. We had a pilot destroy their landing gear & skis running into a 55 gallon drum buried in the snow.

FAA SKI FLYING HANDBOOK

FAA-H-8083-23-4 (Chapter 7) A GREAT SOURCE OF INFORMATION FOR SKI FLYING

This manual provides a great source of information for ski flying. I recommend all new pilots to flying with skis read and understand this information.

Today, I'm only going to discuss a couple of types of snow, and their general appearance.

General Information On Use and Conditions for Landing With Skis (cont.):

TYPES OF SNOW:



Powder Snow—Dry snow in which the water content and ambient temperature are low.

- 1. Characterized by glistening ice crystals on the surface, at least on a sunny day.
- 2. Can have very little support for skis.
- 3. It collapses very easily, due to a lot of open area (Air) in snow.
- 4. Can be extremely deep, making it very difficult to take-off without previous tracks laid down. Aircraft must get ski up on plane, before acceleration can occur.





WIND BLOWN SNOW

- Wind Blown Snow— caused by friction of snow particles during high winds.
- 1. Characterized ripples or jagged edges on the surface.
- 2. Surfaces can be very hard, almost like pavement.
- 3. It can have a very inconsistent surface, fluctuating from hard pack to powder.
- 4. Can be very rough; Can cause damage to aircraft and/or pilots kidneys!





GRANULAR SNOW

 Granular Snow—Wet snow that has had a temperature drop causing the snow to ball up and/or crust.

- 1. Characterized by a granular look.
- 2. This type of snow can be difficult, due to the inconsistency at various locations.
- 3. Can be very rough. It's similar to windblown snow.





WET SNOW

• Wet Snow—Contains high moisture and is associated with warmer temperatures near the freezing point. It's not always easy to see the amount of moisture until you encounter it during your first pass. Following pass, look for wet spots in your tracks.

- 1. Characterized by mixture of water and snow. It is typically is very dense
- 2. This type of snow can be difficult, due to density .
- 3. Weight of snow on skis and other parts of the aircraft can be significant.
- 4. This type of snow is the enemy of the penetration ski.





OVERFLOW

 Overflow is caused by sinking of upper ice due to water melt off or stream flowing on top of existing ice.

- 1. Characterized by mixture of water and snow, which can be very unpredictable.
- 2. Weight of snow on skis and other parts of the aircraft can be significant.
- 3. This type of condition can easily damage landing gear and skis, depending on depth of overflow.



SKIPLANE OPERATIONS

This chapter introduces pilots to the procedures required in the operation of skiplanes. Since most skiplane operations and training are conducted in single-engine airplanes with a conventional gear (tailwheel) configuration, this information is based on operating skiplanes of this type. [Figure 7-1]



CONSTRUCTION AND MAINTENANCE

Modern airplane ski designs are a compromise for the various forms and conditions of snow and ice. For example, a long, wide ski is best for new fallen, powdery, light snow, whereas a sharp, thin blade is best for hard-packed snow or smooth ice. Many ski designs feature a wide, flat ski with aluminum or steel runners on the bottom. Airplane skis may be made from composites, wood, or aluminum, and some have a polyethylene plastic sheathing bonded or riveted to the bottom surfaces. Ski designs fall into two main categories: plain and combination. Plain skis can only be used on snow and ice, while combination skis also allow the wheels to be used to land on runways.

FAA-H-8083-23-4 (Chapter 7) A GREAT SOURCE OF INFORMATION FOR SKI FLYING AND MAINTENANCE

SKI RIGGING BASICS



CHECK CABLE SETS THE ANGLE OF SKI IN FLIGHT (Controls tip from going too far up in flight)

ICE /CRUST CUTTER CABLE PREVENTS DAMAGE TO BUNGEE OR SPRING IN ICE CONDITIONS. IT IS ATTACHED TO BUNGEE

SAFETY CABLE IS THERE FOR TWO REASONS:

- 1. To control how far down the tip can go while taxiing on uneven terrain.
- 2. In case of emergency, when bungee or spring breaks, it holds the tip up enough for a safe landing. If tip were to drop all the way, it would likely cause a nose over, or rollover of ski in-flight.

DAILY INSPECTION OF SKIS

MAINTENANCE OPERATIONAL CHECKS CHECK – Bungees, cables, clevis pins, cotter pins, nuts, bolts and attach fittings for security.



CHECK – Ski Kit for cracks, excessive wear, fractures, abrasions, and delamination.

THESE ARE OBVIOUS CRACKS. IN FACT, THESE SKIS ARE TOAST!!!!



CHECK FOR RUNNER DAMAGE, REPLACE IF EXCESSIVELY WORN!!



CHECK – Tires for proper pressure, If penetration or hydraulic ski installed.

CHECK – Hydraulic pump fluid level and inspect for cylinder for leaks, and loose wiring connections. (If Electro-Hydraulic Pumps Installed)

MAINTENANCE OF SKIS

THE BEST SOURCE FOR MAINTENANCE REQUIREMENTS IS THE SPECIFIC MANUFACTURER'S ICA (INSTRUCTION FOR CONTINUED AIRWORTHINESS)

Airgias, Inc. 🖲

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS INCLUDING INSTALLATION, MAINTENANCE AND SERVICE INSTRUCTIONS



MANUAL NO. GLH3000-105

MODEL GLH3000 Ski Kit For Piper PA-18, PA-12, CC-18, S-18-180 y International, Inc. (Aviat) A-1, A-1A, A-1B, A-1C-180, A-1C-200 Cessna 170, 170A, 170B, 180 thru 180K

April 23, 2015

Cage Code 17564

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Airglas, Inc.

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS INCLUDING INSTALLATION, MAINTENANCE AND SERVICE INSTRUCTIONS



MANUAL NO. LW2500-105 Rev. A

Modei LW2500 Ski Kit For Piper PA-18 "125" (Army L-21A), PA-18 "135" (Army L-218), PA-18A "135", PA-18 "150", PA-18A "150" Sky International, Inc. (Aviat) A-1, A-1A, A-1B, A-1C-180, A-1C-200

Cage Code 17564

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INSTRUCTIONS FOR CONTINUED AIRWORTHINESS INCLUDING MAINTERANCE AND SERVICE INSTRUCTIONS



MANUAL NO. LH4000-106 MODEL LH4000 Ski Kit For Cessna 180 and 185 Aircraft

Cage Code 17584

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MAINTENANCE OF SKIS

IF AN FAA ACCEPTED ICA IS NOT AVAILABLE, THEN THE BEST SOURCE FOR INSPECTION CRITERIA IS AC-43-13-1B CHAPTER 9.

Airglas recommends special emphasis be given to inspection and replacement of axle/gear leg hardware. Skis use can cause tremendous stress to attachment hardware.





Airglas aircraft products are designed to increase utility and capability to each aircraft. Our products are engineered and carefully constructed for the most rugged service. Since 1955 we have been known throughout the world for our exceptional performance and dependability as well as low cost.

- Nose Forks
- Cargo & Fuel Pods
- Skis
- Storage

Airgias rotorcraft skis are designed, engineered and carefully constructed for the most rugged Arctic service. Airgias skis are proven throughout the world for their exceptional performance and dependability as well as low cost.

Airgias provides solutions for soft ground and snow landing conditions for both skid gear and wheel gear rotorcraft of up to 50,000 lbs. Airglus skis provide soft terrain (mud, sand, snow) support for military helicopters from the OH58 Kiowa to the CH47 Chinook. Our light, rugged, and economical wheel penetration skis allow operations from both hard surface and unprepared terrain. Our skid skis provide solutions for soft terrain and can be configured to allow operation of holsts and ground handling equipment without removal of the skis.

Airglas, Inc. is a worldwide manufacturer of aircraft landing skis designed for fixed wing, helicopter and, military aircraft. We manufacture cargo pods for aircraft for added load capacity. Our designs are used in over 30 different countries as we are the world leader in aircraft landing skis, We are AS9100 certified.



Airgins, Inc. 3500 O'Malley Road Anchurage, Alaska 99507





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Product Details

GLH3000: GLH3000 Hydraulic Ski

The GLH3000 is the latest ski developed by Airglas for the Sub 3000 lb airplane market. It uses composite/carbon fiber construction to make a hydraulic wheel ski that has excellent performance both on the snow and on hard surfaces. The ski provides a larger surface area on the snow than its competitors, yet is lighter and less expensive.

STC'd for PA-18, PA-12, CC-18, Dakota Super 18 and Aviat Husky.

Price:

\$14,150.00

Specs:

Specs: Length: 74 In Width: 20 in Weight: 90 Ibs per pair for Piper & Husky. Surface Area: 1435 sq in

Includes:

Includes: All attaching hardware, rigging, & STC.

NOTE: Piper requires 3" extended gear and 8.50 x 6 tires req'd (Husky requires Atlee Dodge Landing gear.

NOTE: Landing gear will require modification, to install skis. All weld-on modifications are performed by Airglas and is included in the price.

NOTE: CESSNA PRICE IS \$14500.00 per set

Email address (so we can get back to you):

Your question/inquiry (required):



Enter the code shown above in the box below

(End Email) Ceril Enel

STC Files for Compatible Aircraft:

STC Files for PA-12 [STC# SA02360AK] STC Files for PA-18-125 [STC# SA2360AK]









SKIPLANE OPERATIONS

This chapter introduces pilots to the procedures required in the operation of skiptunes, Since most skiptune operations and iraning are conducted in single-engine airplanes with a conventional gear (tailwheet) configuration, this information is based on operating skiptanes of this type. [Figure 7-1]



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AC43-13-2B Chapter 5

Airgias, Inc. 🛽

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS INCLUDING INSTALLATION, MAINTENANCE AND SERVICE INSTRUCTIONS



MANUAL NO. GLH3000-105

MODEL GLH3000 Ski Kit For Piper PA-18, PA-12, CC-18, S-18-180 iky International, Inc. (Aviat) A-1, A-1A, A-1B, A-1C-180, A-1C-200 Cessna 170, 170A, 170B, 180 thru 180K

Cage Code 17564

REVISION H

April 23, 2015



STC Files for Compatible Aircraft:

STC Files for PA-12 [STC# SA02360AK]

STC Files for PA-18-125 [STC# SA2360AK]

Ski Flying Excert from FAA-H-8083-23-4..pdf

(Click Desired Files)

You can view or

download any fil

FAA Guidelines on Ski Installations.pdf

Ski Landing Gear Selection Criteria.pdf

SA02360AK STC and AML Rev D.pdf

GLH3000-6 Hydraulic System.pdf

AI-09-12FM Airglas pump signed.pdf

GLH3000 ICA-Rev H.pdf <---

AI-09-2-112 FM Wipaire pump signed.pdf

GLH3000 Wipaire ICA-Rev C.pdf

GLH3000-1-PA18 SHT3 REV D.pdf

GLH3000-1-PA18 sht 2 REV C.pdf

GLH3000-1-PA18 SHT1 REV C.pdf

GLH3000-7 Electrical Schematic Rev C.pdf

STC Files for PA-18-135 [STC# SA2360AK]

STC Files for PA-18A-135 [STC# SA2360AK]



AIRCRAFT POD USES AND MAINTENANCE

THERE ARE THREE TYPES OF PODS THAT AIRGLAS SELLS:

1.CARGO POD

2.CARGO/FUEL POD

3.FUEL POD

CARGO PODS



CARGO PODS

AIRGLAS CARGO PODS ARE FAA APPROVED FOR:

PIPER PA12, PA14, PA18
 AVIAT HUSKY A-1 thru A1C,
 AMERICAN CHAMPION 7 & 8 SERIES
 Piper PA18 (ALL CARBON POD)

The following pod is near FAA STC completion: 1. Cessna 172

CARGO LOADS ARE TYPICALLY LIMITED BY INDIVIDUAL AIRFRAME CAPABILITIES. CARGO WEIGHT RANGES FROM 94-175 lbs.

CARGO/FUEL PODS



CARGO/FUEL PODS

AIRGLAS LTC18 & LTC18-1214 FUEL/CARGO PODS ARE FAA APPROVED FOR:

PIPER PA12, PA14, PA18 (17.5 Gallon Useable Fuel)

The following fuel/cargo pods are in near FAA STC completion: Cessna 172

CARGO CAPACITY IS LIMITED DUE TO WEIGHT OF FUEL

FUEL PODS



AIRGLAS LT32 FUEL POD "ONLY FAA APPROVED FOR PIPER PA18" (31.5 Gallon Usable Fuel)

CARGO POD MAINTENANCE

Interval	Description	Notes
Daily Preflight*	 Check pod retention straps for damage and tension. Check pod for damage. Check pod doors for security. CAUTION: Flight with doors removed is prohibited. 	Replace damaged components before flight.
100 hour or Annual Inspection	 Check pod retention straps for damage and tension. Check pod for damage. Check pod doors for security. Flight with doors removed is prohibited. Verify placards, and airspeed range marks are in accordance with AFMS. 	Repair or replace damaged or leaking components before flight.

* Preventative maintenance, as defined in 14CFR43 Appendix A Section (c), may be performed by an appropriately rated pilot.

FUEL POD MAINTENANCE

THE SPECIFIC POD ICA IS THE BEST SOURCE FOR MAINTENANCE INFORMATION.

IF ICA IS NOT AVAILABLE USE AC43-13-1B Chapter 8 SECTION 2. FUEL SYSTEMS

Interval	Description	Notes
Daily Preflight*	 Drain fuel sump and check for contamination of fuel. Check filler cap for integrity of gasket, and secure installation. Visually inspect pod externally for fuel stains, and leaks. Confirm pump turns on and annunciator light illuminates when switch is activated. Check pod retention straps for damage and tension. Check pod for damage. Check pod doors for security. CAUTION: Flight with doors removed is prohibited. 	Replace damaged or leaking components before flight.
100 hour or Annual Inspection	 Drain fuel sump and check for contamination of fuel. Check fuller cap for integrity of gasket, and secure installation. Visually inspect pod externally for fuel stains, and leaks. Confirm pump turns on and annunciator light illuminates when switch is activated. Check pod retaining straps for wear, corrosion or cracking. Verify pump mount security. Verify wire connections are secure. Verify all wire runs are not chafed or show signs of heat erosion. Clean fuel filter in pump. 	Repair or replace damaged or leaking components before flight.

* Preventative maintenance, as defined in 14CFR43 Appendix A Section (c), may be performed by an appropriately rated pilot