

RF 8001 SKIS

HUSKY A-1 & derivatives

SNOWBIRD

APPENDIX SKI

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Document # RF8001FAAICA

Instructions for Continued Airworthiness

Total pages incl. this cover page 11

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HUSKY SNOWBIRD CONVERSION

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Note: The airworthiness limitation section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of the Federal Aviation Regulations unless an alternate program has been FAA approved.

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Section I

Basic Information about the Snowbird Conversion

The Snowbird Conversion is a Husky A-1, A-1A, A-1B , A-1C-180 or an A-1C-200 aircraft using RF 8001 retractable Skis.

The A-1B with 160 HP engine is excluded.

The use of 800 X 6 or 850X6 tires is approved, the use of the larger 850X6 tire is strongly recommended. No other tire size is may be used.

To install the RF8001 Skis, the airplane must be equipped with fittings on the landing gear as used for the Aero R2800 skis. Aero Ski gears & Fittings are available from Aviat Aircraft Inc.

All limitation shown in the AFM of the aircraft as well as the procedures of the aircrafts Instructions for continued airworthiness, apply to the Snowbird Conversion. This manual only points out the specific items relevant to the Conversion.

The skis offer with 4 " a good ground clearance, if the 850X6 tires are used, so that operation on unimproved fields can be performed, without damaging the ski bottom.

The skis are retracted and extended by an electric Hydraulic pump. A separate manual pump is integrated in the pump to allow pumping the Skis in the gear down position, in case of an electrical failure.

Description & operation of the skis and the Hydraulic system.

Skis

The Skis are made of Composite fiberglass & carbon, the bottom of the skis is a downhill racing material, to minimize the risk of frozen skis and to minimize drag when taxiing on snow. This downhill racing bottom needs waxing for best performance.

The skid plates under the skis are made out of HMW plastic and will protect the ski from major damage, if an unintentional landing on concrete with the skis down occurred. However, such landings should be avoided at best and the skid plates need replacement after such a landing.

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Hydraulic system

The hydraulic system, operating the skis, is driven by an electric 12V DC motor. The pump is located on the RH side of the cockpit floor and it is driving both cylinders through the same circuit. The direction of pumping is selected by reversing the motors turning direction. The pump features internal pressure relief valves. The system holds no pressure in the Ski-up or Ski-down position.

The hand-pump is connected directly to the hydraulic pump. To operate the hand pump, open the relieve valve, pump a few strokes (3-5) and then close the relief valve. This will position the internal shuttle valve in the desired position for the hand pump. The hand pump will now pump the skis from the ski down to the ski up (wheels down) position. This takes about 100 strokes. Hand-pumping the skis from up to down is not possible.

The electric motor is controlled by the "DO switch". The Do Switch internally has two release / reset mechanisms. A fast reacting magnetic type one and a thermal type one, as used in many circuit breakers.

For the ski transition a low current is flowing. As soon as the hydraulic cylinders are at the stop the pump will build up higher pressure until reaching the pressure which is set in the internal relieve valves. This causes a higher current, which is sensed by the magnetic release of the DO switch, causing it to reset.

Installation

The primary installation of the RF8001 Skis incl. the Hydraulic and electrical equipment is detailed described in the Installation manual Document#8001INSI.

After the Skis have been installed initially, the following procedure applies to the pilot to mount the skis. Hydraulic pump, hydraulic hoses, electrical switches etc. remain installed. The following sequence of removing or installing parts must be followed to insure a trouble free installation.

Changing from SKI TO WHEELS after primary installation.

1. Disconnect rear cable, safety cable and bungee.
2. Lower the skis, by running the pump in the direction "gear up" for 2-3 seconds.
3. Disconnect hydraulic lines at the quick connectors. Do not make sharp bends with the hoses. Disconnect main ski attachment bolts and move the skis forward till the rear cable hits the tire. Push aircraft backwards over the rear cable Make sure there is sufficient room..
4. Replace the tailwheel with the ski attached, by a normal ski-less tailwheel assembly or remove tail ski.
5. Reinstall wheel fairings, if applicable on (8.00 X 6, 850 X 6 & 26" Goodyear tires)

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Changing from WHEELS TO SKI after primary installation.

1. Remove wheelpants, place skis in front of the main wheels. Pull airplane forward over rear cable and insert the rod ends of the ski-jokes into the ski brackets of the landing gear. **Mount bolts, that the threaded side of the bolts faces the tire.**
2. Hook up the bungees after checking their condition and connect the safety cable.
3. Connect hydraulic lines to the actuators.
4. Attach rear cable
5. Check for right function and for leaks in the hydraulic system.
6. Check entire setup for general condition and hydraulic fluid level.
7. Make sure the aircraft has 2 ft room to taxi forward, without hitting any object. Perform test cycle until both skis touch the ground, then return to the "Wheels down" position.
8. If the aircraft is on 8.50X 6 tires inflated to 30 PSI with a Scott 3200 Tail wheel inflated to 40 PSI, the mainski front-tip should be 42 – 45 cm, (16.5 – 17,7 inch) above the ground
Make sure both skis are set at the same angle. +/- ½ inch. d to 40 PSI. Skis need to be checked for symmetry under these conditions. Allowed difference in tip-height above the ground ½ inch.

Handling, Service & Maintenance

T.Dietrich, RF skis, will issue Service Bulletins for the Snowbird conversion, when field experience indicates the need for special service and maintenance information. These Service Bulletins should be complied with promptly. They will be published on the website www.rf-skis.com

Ground Handling

In the Wheels down position, the Snowbird handles like the Husky on wheels. Avoid taxiing over obstacles higher than 2" to avoid ski bottom damage.
Do not put load on the skis by taxiing into snow deeper than 4" on wheels.

When on skis and in the snow, be aware that the Snowbird has no more brakes. That results in a larger turning radius than on wheels. Never taxi into snow walls or with the ski tips into ice-rocks.

Takeoff and landing performance of the Snowbird depend a lot on the snow conditions and may vary a lot from the values published in the AFM. On good conditions, take-off performance is similar to the wheel-plane, while landing distance then will be substantially longer, due to the lack of brakes.

Handling in flight

Fly the Snowbird as you will fly an Airplane with retractable landing gear. The skis have less drag when in the ski down position. In addition to this, the skis put fewer loads on the landing gear when retracted. Do not operate the skis from a Ski down to a ski up position, when flying faster than 120 mph IAS.

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Service

Tire Service

Main tires must be inflated to a minimum of 1,4 bar or 20 P.S.I., 30 PSI is recommended. Lower tire pressure may damage the skis.

Ski Service

The ski bottoms should be serviced with an all weather downhill wax, to have lower friction in the snow and less possibility of freezing.

Hydraulic Service

The Hydraulic pump is located below the right arm of the pilot. The pump reservoir is integrated in the pump and holds 250ml fluid. The reservoir is transparent and it can be checked visually for the level of the hydraulic fluid. The pump is placarded with a "Hydraulic FILL" placard at the filler neck screw. The screw needs to be removed for filling and closed after filling. The reservoir is placarded with Min and Max marks.

Use Hydraulic fluids with one of the following specs:

DTD	585B
AIR	3520
MIL	H 5606C
NATO	H 515

Example : **SHELL FLUID #4 red aircraft Hydraulic fluid. Petroleum based.**

When actuators are retracted (ski DOWN), refill hydraulic reservoir up to the MAX mark.

Drain & replace Hydraulic fluid every 5 years or together with the aircraft's brake system.

Keep the Hydraulic quick connectors either connected or sealed with the supplied caps, to avoid that dirt will enter the hydraulic circuit.

Bungee Service

The bungees are located between the cowling and the side of the skis.

Check bungees for good condition, replace as necessary. There is no time limit on the bungees.

Cleaning

Use water & mild soap to clean the skis

The Ski tops may be treated with any car / aircraft wax for better looks.

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SECTION II

Maintenance instructions / Inspection Schedules

Daily inspection

Check tires to be inflated to a minimum of 20 PSI or 1,4 bar
Check Skis for general condition
Check the bottom for enough wax, if in doubt, apply wax with a rag
Check bottom to be free from frozen mud & ice
Check bungees for tension & condition
Check fluid level in the reservoir to be full in ski down position or not less than half full in the ski up position.
Check vent hole in Ski bulkhead to be open and unobstructed.
Check cables to be in place and for condition.
Check hydraulic lines for condition and leaks
Check all parts for condition and cracks

Annual Inspection

All components to be installed with this STC must be inspected at the annual inspection of the aircraft. This inspection includes the schedule for daily inspection, 25 hr inspection, hard landing inspection.

25h Inspection May be performed by the Pilot

Same as Daily Inspection plus the following item:

Grease bearings and connections
Perform a full cycle of the hydraulics on the ground

Hard Landing inspection

Same as 25h check
Thoroughly inspect jokes and gear fittings for cracks and condition.

Maintenance Schedules

Annual inspection
Daily Inspection
25 hrs Inspection
Hard landing inspection.

Perform Hard Landing Inspections also, after hitting unexpected or hard objects on takeoff.

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Troubleshooting

Trouble

Electric Pump not running

Possible cause: Gear selector in Neutral position, DO Switch in OFF position, power cable loose.
Disconnect Cable at the pump and check supplied voltage. If Voltage is supplied, replace pump motor

Trouble

Electric Pump running, but no Hydraulic action:

Check Hydraulic level in reservoir & refill
Check Hydraulic hoses, cylinders & connectors for leaks

Trouble

Hand pump inoperative

Check , manual relieve valve open, pump a few strokes, close relief valve
Check & refill fluid level

Trouble

Ski in Ski up position is not pulled up by the bungee in flight.

Rigging of skis to flat, adjust by lengthening rear cable at turnbuckle
Bungee weak / replace

Precautions

Never disconnect the Jokes from the landing gear with the Bungees installed.
Bungees need to be released, before jokes get removed.
Do not replace a hydraulic hose, while the pump is running.
No other precautions need to be taken, when servicing or replacing products.

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SECTION III

Special Inspection Information

After hard Landing or after hard takeoffs in frozen snow:

Perform Hard Landing Inspection as outlined in Section II

Special Inspection Techniques

There are no special techniques required to maintain the Skis in an airworthy condition.

Structural Fasteners & Torque values

Torque values for the bolts & fasteners are shown in AC 43.131A Chapter 5, Fig 5.2

Special Tools

There are no special tools required to install & maintain the Snowbird conversion to a Husky Aircraft.

RIGGING INFORMATION

For planes equipped with 850X6 tires and inflated to 30 PSI and a 3200 Tailwheel inflated to 40 PSI, The front ski-tips should be 42- 45 cm (16.5-17,7 inch) above the ground. Skis need to be checked for symmetry under these conditions. Allowed difference in tip-height above the ground ½ inch.

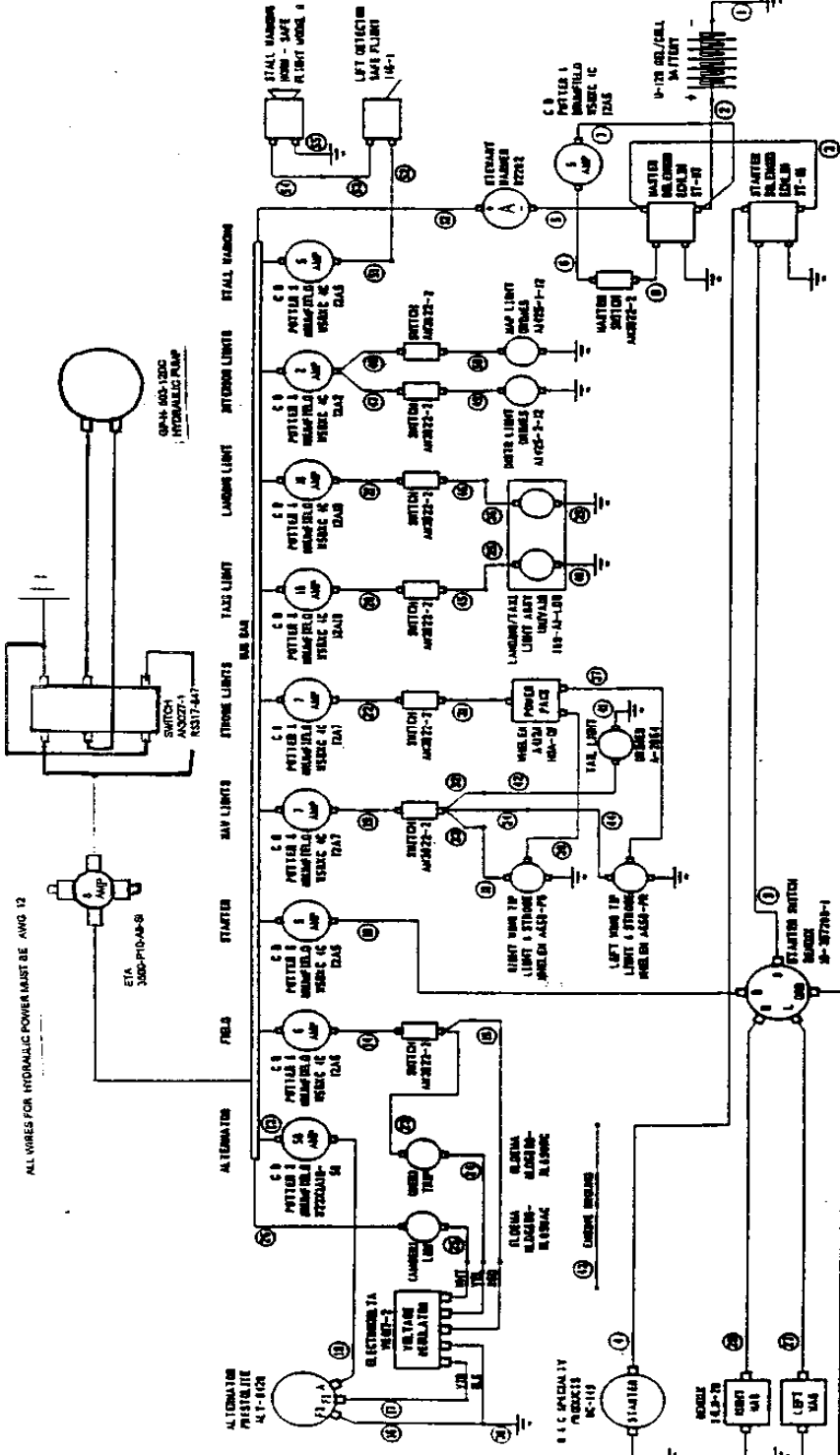
Lifting

It is not necessary to lift the aircraft to mount or disconnect or service the skis.

Weight and Balance

Use actual weight of the Skis. Arm for the Mainskis is FS 61.0", Tailski FS 261", Pump & Switches FS 56.2" weight 7,5 lbs

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Section IV Airworthiness Limitations

At the present time the Snowbird Conversion (RF 8001 Skis on Husky Aircraft) does not incorporate any items that have a time limit from a service standpoint.

The airworthiness limitation section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of the Federal Aviation Regulations unless an alternate program has been FAA approved.

Revision Letter	Pages affected	Description of Change	Approved & date
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FAA approved

Date