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**FAA Approved**  
**Rotorcraft Flight Manual Supplement**  
**For**  
**Airbus Helicopters**

**Model: AS350 B3**

**Document Number: 19-350-21-008**

**-011 Single Condenser**

**Registration Number: \_\_\_\_\_**

**Serial Number: \_\_\_\_\_**

This supplement must be attached to the FAA approved Rotorcraft Flight Manual, dated May 7, 1998, or later approved revision, when an RSG Products Inc. air conditioning system is installed in accordance with STC No. SH3509SW.

The Information contained herein supplements or supersedes the basic Rotorcraft Flight Manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this document, consult the basic Rotorcraft Flight Manual.

APPROVED: Scott A. Horn DATE: August 18, 2015

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**LOG OF REVISIONS**

<u>REV</u>	<u>Affected Pages</u>	<u>Reason for Change</u>	<u>Date</u>	<u>FAA APPROVED</u>
Original	1-7		2/8/1999	ASW170
A	5-7	<p>Page 5: Section 5: Replaced existing data with performance degradation information.</p> <p>Page 6: System change.            Was: "either"            Is: "high pressure"</p> <p>Page 7: System change.            Was: "2 each 15 amp circuit breakers"            Is: "1 each 15 amp and 1 each 20 amp circuit breakers"</p> <p>Page 7: System change.            Was: "4 seconds"            Is: "15 seconds"</p> <p>Page 7: System change.            Was: "21 amps"            Is: "22 amps"</p> <p>Page 7: Removed callout for (7" Enviro System, Inc. blower)</p> <p>Page 7: Changed component electrical requirement.            Was: "19 amps"            Is: "20 amps"</p> <p>Page 7: Changed total electrical requirement.            Was: "41 amps"            Is: "42 amps"</p>	7/12/2013	Scott Horn Mgr. ASW170 Fort Worth, TX

FAA APPROVED  
 ISSUE DATE : \_\_\_\_\_

**AUG 13 2015**

B	1-10	<p>Reformatted document to RSG Products Template.</p> <p>Page 1: Changed aircraft manufacturer. Was: "Aerospatiale Helicopter Corporation."          Is: "Airbus Helicopters."</p> <p>Page 5/6: Added switch names to normal and emergency procedure instructions.</p> <p>Page 7/8: Added instructions based on A/C configuration descriptions.</p> <p>Page 8: Location of FWD Switch Panel Was: "to the right of the instrument panel."          Is: "on the instrument panel."</p> <p>Page 8: 5 amp circuit breaker location          Was: "below the left air outlet."          Is: "in the instrument panel on the right of the switch assembly."</p>	11/17/2014	<p>          (Signature)</p> <p>Scott A. Horn, Manager          Fort Worth Aircraft          Certification Office, ASW-140          Federal Aviation          Administration          Fort Worth, TX 76177</p> <p><del>AUG 18 2015</del>          (Date)</p>
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NOTE: Revised portions of affected pages are identified by a vertical black line in the margin adjacent to the change.



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### TABLE OF CONTENTS

LOG OF REVISIONS ..... 2

1.0 GENERAL ..... 5

2.0 OPERATING LIMITATIONS ..... 5

3.0 EMERGENCY PROCEDURES ..... 5

4.0 NORMAL PROCEDURES ..... 6

5.0 PERFORMANCE DATA ..... 7

6.0 WEIGHT AND BALANCE ..... 7

7.0 SYSTEMS DESCRIPTION ..... 7

APPENDIX ..... 10

A.0 ELECTRICAL LOADING ..... 10

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ISSUE DATE :     AUG 13 2015    

AUG 13 2015

## **1.0 GENERAL**

The installation consist of a belt drive vapor-cycle air conditioning system.

## **2.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the total electrical load will exceed 150 amps, continuous or if generator is inoperative.
- "MAG" compass deviation may be excessive with air conditioner, "A/C", or fan, "FAN", "ON". Turn air conditioner "OFF" to read "MAG" compass.

## **3.0 EMERGENCY PROCEDURES**

### **3.1 EMERGENCY PROCEDURES**

- In the event of an engine failure, turn air conditioner "MASTER" switch to "OFF".
- In the event of electrical power failure, turn air conditioner "MASTER" switch to "OFF".

### **3.2 EXCESSIVE TEMPERATURE, FIRE, SMOKE**

In the event of any of the following, turn air conditioner "MASTER" switch to "OFF".

1. Cabin or other fire.
2. Presence of smoke.

## **4.0 NORMAL PROCEDURES**

### **4.1 GROUND OPERATIONS**

- Air conditioning system operation: The forward air conditioning control switches are located on the instrument panel.
- To turn the air conditioner "ON" - Move "MASTER" switch to "A/C".
- To turn the air conditioner "OFF" – Move "MASTER" switch to "OFF".
- For air circulation without cooling – Move "MASTER" switch to "FAN".
- For high speed air circulation – Move "FWD FAN" switch to "HI".
- For low speed air circulation – Move "FWD FAN" switch to "LOW".
- For medium speed air circulation – Move "FWD FAN" switch to "MED" (when option is present).

The aft air conditioning control switch is located on the overhead aft cabin (Basic) or on the instrument panel (Tour 1).

- For high speed air circulation – Move "AIR CONDITIONER" or "AFT FAN" switch to "HI".
- For low speed air circulation – Move "AIR CONDITIONER" or "AFT FAN" switch to "LOW".

### **4.2 NORMAL PROCEDURES**

Ground and flight operations:

- Ventilation control – As desired (Close for cockpit/cabin cooling).
- Air conditioning "MASTER" control switch – As desired.
- Air conditioning "FWD FAN" speed control switch – As desired.
- "AIR CONDITIONER" or "AFT FAN" speed control switch – As desired.

## **5.0 PERFORMANCE DATA**

Reduce IGE maximum weight by 25 lbs. above 7500 ft. altitude.

Reduce OGE maximum weight by 25 lbs. above 6000 ft. altitude.

Reduce RFM Rate of Climb by 70 fpm.

## **MANUFACTURER'S DATA**

### **6.0 WEIGHT AND BALANCE**

Weight and Balance must be computed with the air conditioning system installed. Approximate air conditioning weight is 79 lbs. See installation instructions supplied with kit for actual weight.

### **7.0 SYSTEMS DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle (Freon) air conditioning system using R-134a refrigerant.

The air conditioning system provides for cabin comfort during all operations both on the ground and in flight. During ground operations when the engine is running, cooling may be provided. Controls for the air conditioning system are located based on the configuration selected.

#### **For Basic Configuration:**

(Control switches located on instrument panel & overhead aft cabin)

The control switches are located on the instrument panel and overhead in the aft cabin. The switch panel on the instrument panel contains two (2) switches (rocker or toggle depending on configuration selected), the "MASTER" control selector consists of a rocker/toggle type switch, labeled "A/C", "OFF", and "FAN". Selecting the "A/C" position turns on the system's dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker/toggle switch, "FWD FAN", provides "HI" and "LOW" forward evaporator fan speed selection for the cockpit ("MED" speed option is available with rocker switch configuration). Another rocker/toggle switch, "AIR CONDITIONER", is located overhead in the aft cabin and provides "HI" and "LOW" aft evaporator fan speed selection.

MANUFACTURER'S DATA (continued)

**For Tour 1 Configuration:**

(Control switches located on instrument panel)

The control switches are located on the instrument panel. The switch panel on the instrument panel contains three (3) switches, the "MASTER" control selector consists of a rocker type switch, labeled "A/C", "OFF", and "FAN". Selecting the "A/C" position turns on the system's dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch, "FWD FAN", provides "HI", "LOW", and "MED" forward evaporator fan speed selection for the cockpit. The third rocker switch, "AFT FAN", provides "HI" and "LOW" aft evaporator fan speed selection for the cabin.

**Applies to Both Configurations:**

Thermostatic temperature control is not provided. A 5 amp circuit breaker located in the instrument panel on the right of the switch assembly disconnects power to all relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits), disengages the compressor and stops operation of the system in the event of excessive refrigerant pressure. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of high pressure fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

The evaporator fan system may be used anytime air circulation is desired. This is accomplished by placing the "MASTER" rocker/toggle switch in the "FAN" position.





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MANUFACTURER'S DATA (continued)

**Single 7" Vane Axial Condenser Blower (1):**

System electrical protection is provided by 1 each 15 amp, 1 each 20 amp, 1 each 25 amp, and 1 each 1 amp circuit breakers. Labeled "EVAP", "EVAP", "COND", and "RESET" on the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

Electrical "soft start" is provided. When the "A/C" switch is positioned to "ON", both evaporator fan/blowers immediately start causing a 20 amp draw. A timer delays the condenser blower and clutch operation for about 15 seconds, when an additional 22 amps are added to the system load.



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MANUFACTURER'S DATA (continued)

**APPENDIX**

**A.0 ELECTRICAL LOADING**

The maximum electrical requirements of the air conditioning system are as follows:

Condenser Blower	1 each @ 20 amps = 20 amps
Compressor	1 each @ 2 amps = 2 amps
Evaporator Fan (FWD)	1 each @ 7 amps = 7 amps
Evaporator Fan (AFT)	1 each @ 13 amps = <u>13 amps</u>

**TOTAL            42 amps**

Automatic electrical load shedding will not occur if a D.C. generator failure occurs.

Note: \*\*During conditions of high D.C. current use, such as battery recharging after engine start, use of landing lights, etc., it is possible that the electrical power requirements with the air conditioning "ON" may exceed rated output of the generator (150 amps, max.).