



## Installation Instruction

# Airbus Helicopter **EC120**

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## **Part 0 Manual Administration**

### **0.1 Document Approval**

This document has been established in accordance with an alternative procedure to DOA approved under EASA AP429.

This installation Instruction is applicable for **Airbus EC120** helicopter.



Compiled by: \_\_\_\_\_ 10. Jul. 2019

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Approved by: \_\_\_\_\_ 10. Jul. 2019

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## 0.2 Amendment Record Procedure

The master copy of this document shall be kept electronically as a read only document under the control of Aveo Engineering Group, s.r.o. as Master Copy.

**ALL** amendments to this manual will initiate a raise of issue.

The original issue will be identified by "**01**", and subsequent issues will be numbered sequentially from 02 to 99 in Table 01 - **Issue No.** column.

**ALL** issues of this document will be approved by Head of DO.

Issue No.	Details	Date	Affected Pages
01	Initial Issue	25.Jun.2019	ALL
02	Amend instruction for strobe function installation	10.Jul.2019	9

Table 01: Record of Document Amendments

## 0.3 Affected Pages Procedure

ALL pages affected by ANY raise of issue of this document will be listed in Table 01 - **Affected Pages** Column.

Changes from the previous issue are shown as follows:

- new text is highlighted with yellow shading: **new**
- deleted text is shown with yellow shading and a strike through: ~~deleted~~

## Part 1 Installation Instruction

### 1.1 General

This installation is to be performed in accordance to common practice as described in FAR AC 43.13-2B Chapter 4 and in FAR AC 43.13 1B Chapter 11 Section 15 (Bonding) as published by FAA or general practice section of the **Airbus EC120** Aircraft Maintenance Manual (AMM).

The installer is responsible to follow the installation instructions in the latest revision of the following *installation manuals*:

- FAR AC 43.13-2B Chapter 4
- FAR AC 43.13 1B Chapter 11 Section 15
- AVE-PSPSYW-T-IM
- AVE-WPS-64G-IM
- AVE-RBXP-001-IM
- AVE-H30-002-IM

All drawings applicable for this change are listed in the Drawing List:

- AVE-MOD-030-DL, issue 01

The following appliances carry an ETSO authorization:

- AVE-PSPSYW-T01 – ETSOA 21O.10068603
- AVE-WPSR-64G & AVE-WPSG-64G – ETSOA 21O.10053936
- AVE-RBXPR-001 – ETSOA 21O.10055069

The change is to be performed using the document AVE-MOD-030-MCS in the latest issue.

The aircraft modified according to this instruction may not be released back to service without the EASA design approval certificate being provided.

## 1.2 Continued Airworthiness

The aircraft manuals remain fully valid. The inspection intervals and the procedures of the aircraft override the general statements in the component manuals as listed under §1.1.

For inspection of the new lights themselves follow the procedure of the Aveo Installation Manuals referenced above.

## 1.3 Airworthiness Limitations

No new or changed airworthiness limitations result from this modification.

**The airworthiness limitation section is approved and variations must also be approved.**

## 1.4 Description

This modification rests in the replacement of position, anti-collision, landing lights by lights of LED type.

### 1.4.1 Position and anti-collision lights

Both new position lights (***Ultra Galactica Embedded, PosiStrobe Titania***) feature also a strobe function. The strobe function requires the modification described below. If the modification for the activation of the strobe function will not be installed then the lights can be operated without strobe. For that the two wires for the strobe and the synchronization are to be capped & stowed.

The replacement for the anti-collision light is the ***RedBaron XP Galactica*** which is a red anti-collision light.

#### **Synchronization:**

The **strobe lights** may be synchronized. In order to ensure synchronization function, the blue wires of each light to be synchronized have to be connected. Provided that additional wires are to be installed for this function, these must be installed along the wire bundle in which the lights power wires run. In case the function is not used the blue wires of each light are to be capped and stowed.

### 1.4.2 Landing lights

The ***EC120 helicopter*** can be equipped with a landing light. The replacement is a direct replacement without any change to the aircraft.

## 1.5 Position Lights Installation – Left and Right

Kit Number: ARBB-01

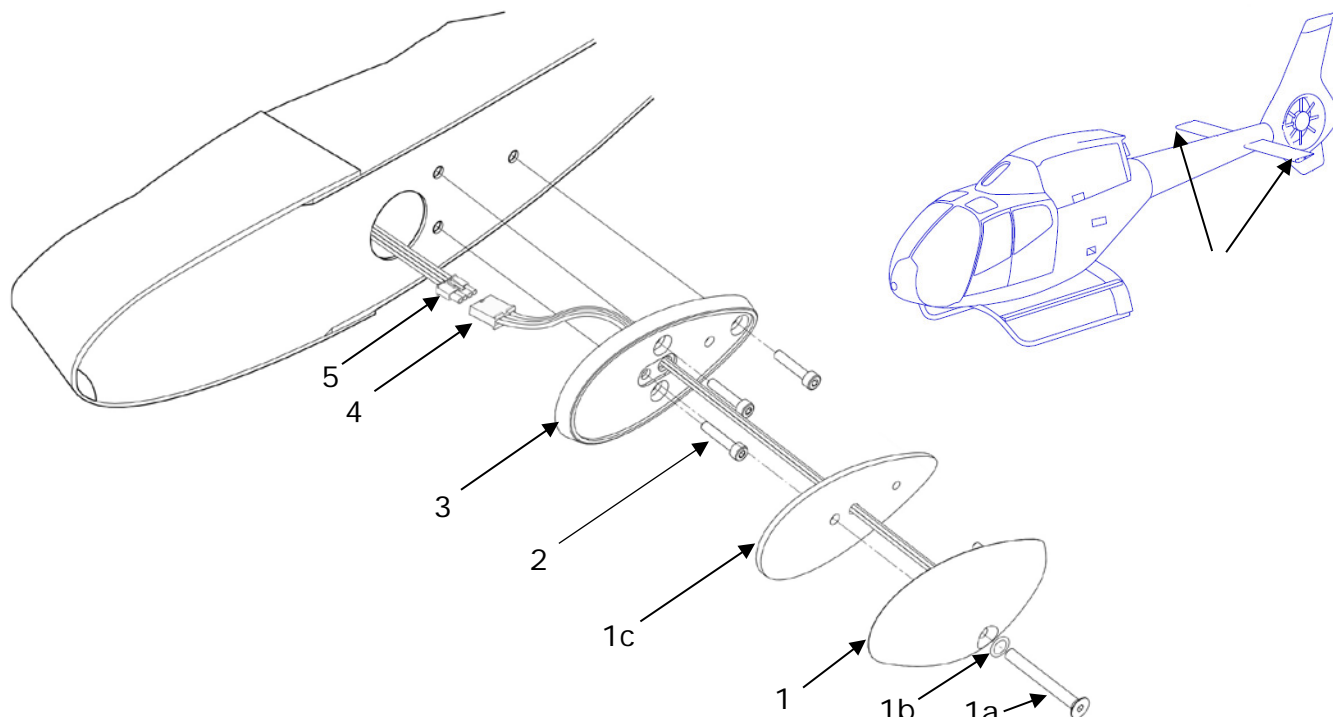


FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	PARTS AVAIL	QTY PER ASSY
1	AVE-WPSR-64G AVE-WPSG-64G	Ultra Galactica Embedded Red Ultra Galactica Embedded Green		1 1
1a	AVS-SCM05045LHS-D0A	Screw		2
1b	AVS-OR00480190N70-D0A	O-Ring		1
1c	AVS-P001290550-A1A	Gasket		1
2	MS-16995-17	Screw		6
3	AVS-P000100175-A60	Ultra Adapter		2
4	Molex 00030092041	4-Pole Connector Housing		2
	Molex 0002091116	Pin Male		4
5	Molex 00030091041	4-Pole Connector Housing		2
	Molex 0002091117	Pin Female		4

### NOTES

1. Remove the original position/strobe light on the left and right hand sides according to AMM.
2. Remove connectors and connect wires using connector C2, C3 (items 4, 5) as per wiring diagram below.
3. Inspect the location for corrosion and if necessary repair according to aircraft SRM.
4. Install the complete light adapter plate (item 1) using the fasteners (item 2). Drill hole for anti-rotation pin and extend hole for wiring on helicopter as required.
5. Install the new light (item 3) using items (4) and (5) as described.
6. If you install a position light with strobe function, remove the strobe power supplies.

**Note:** If the strobe function is not installed, then it needs to be installed according to 1.7 INSTALLATION OF STROBE FUNCTION. Alternatively the strobes may not be activated and hence the yellow and the blue wire remain unconnected.

## 1.6 Position Light Installation – Tail Position

Kit Number: ARBB-02

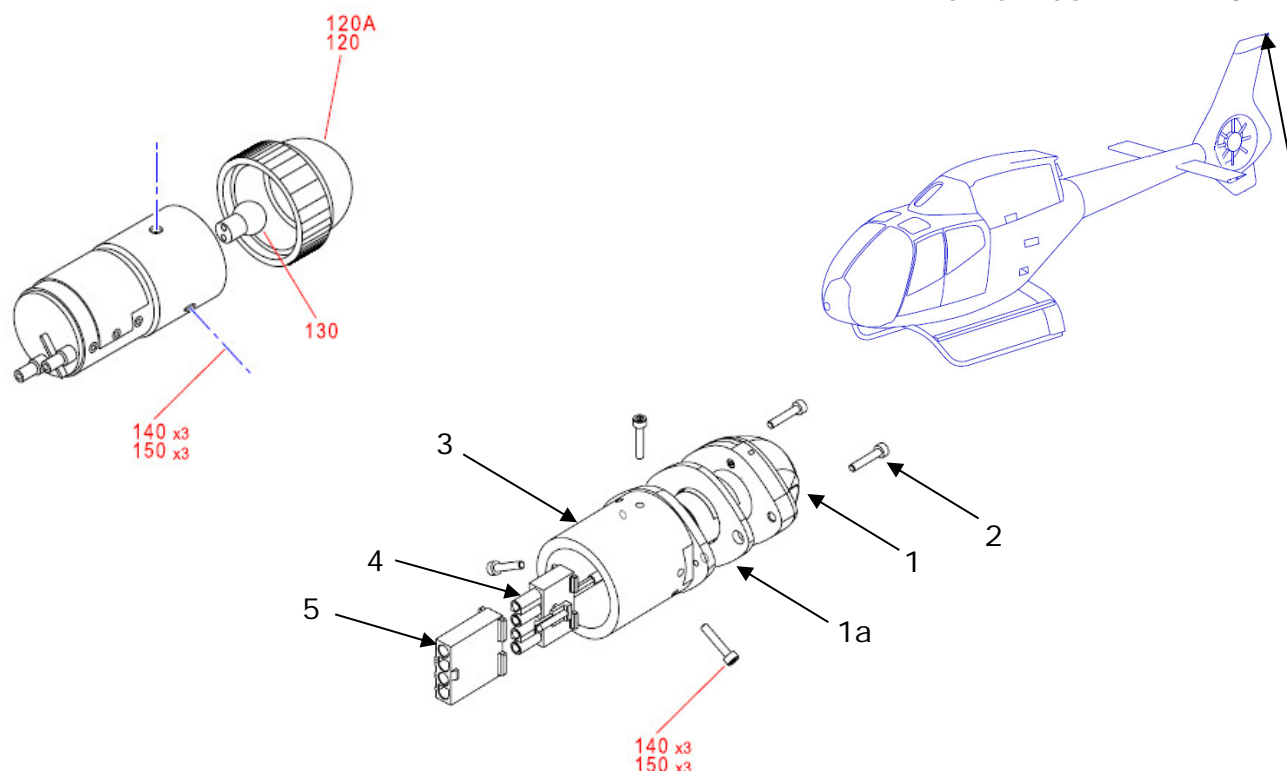


FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	PARTS AVAIL	QTY PER ASSY
1	AVE-PSPSYW-T01	PosiStrobe Titania		1
1a	AVS-P000105638-A10	Gasket		1
2	MS-16995-12	Screw #4-40 Thread, 5/8" SHCS		2
3	AVS-P000107401-A00	PosiStrobe Titania Adapter		1
4	Molex 00030092031	3-Pole Connector Housing		1
	Molex 0002091116	Pin Male		3
5	Molex 00030091031	3-Pole Connector Housing		1
	Molex 0002091117	Pin Female		3
140	Original part	Screw		3
150	Original part	Washer		3

## NOTES

1. Remove the original tail position light according to AMM.
2. Inspect the location for corrosion and if necessary repair according to aircraft SRM.
3. Assemble the new light (item 1) using the fasteners (item 2), gasket (item 1a) and adapter (item 3).
4. Remove connectors and connect wires using connector C3 (items 4, 5) as per wiring diagram below.
5. Install assembly to the helicopter using the original screws (item 140) and washers (item 150).

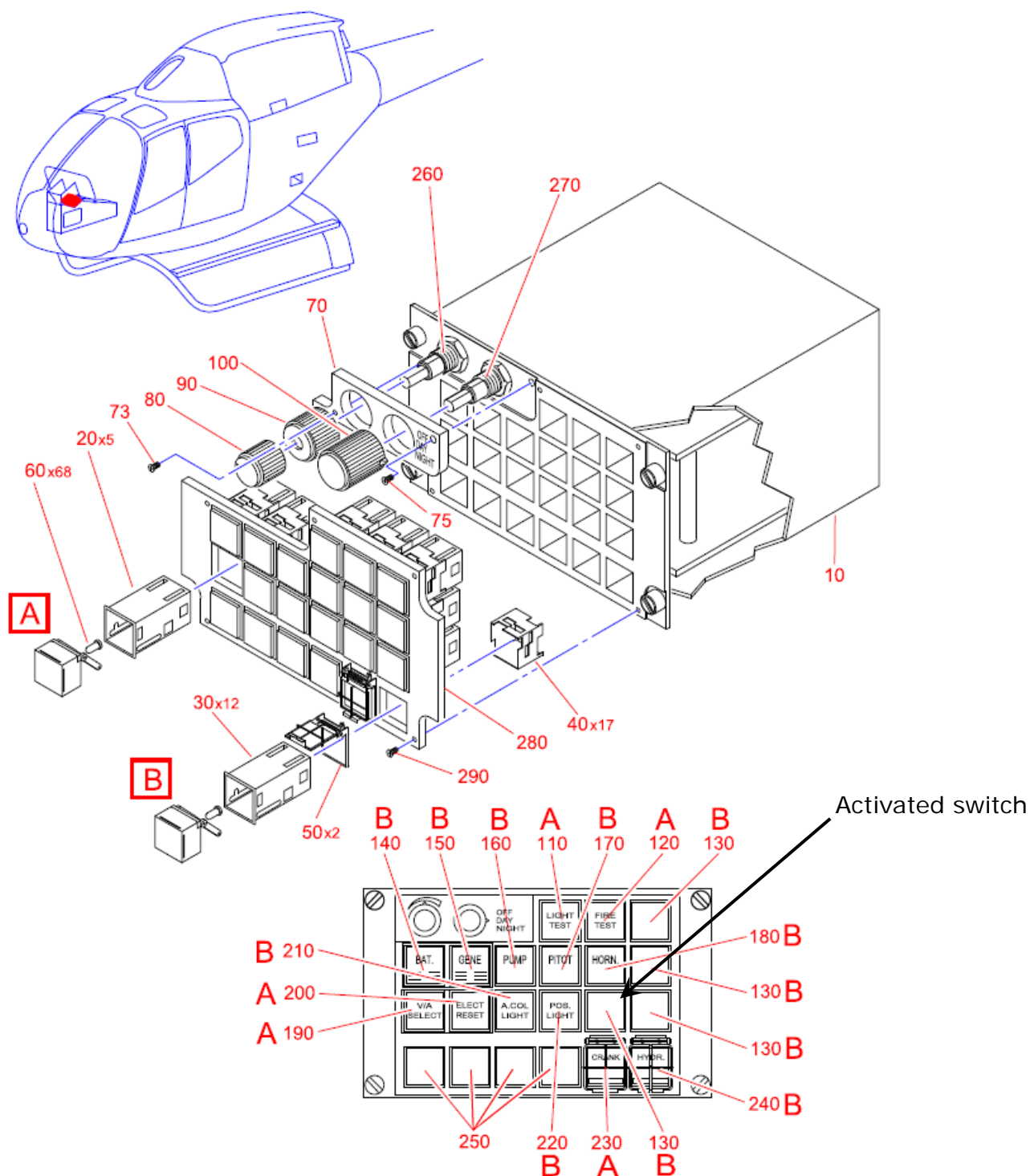
**Note:** If the strobe function is not installed, then it needs to be installed according to 1.7 INSTALLATION OF STROBE FUNCTION. Alternatively the strobes may not be activated and hence the yellow and the blue wire remain unconnected.



## 1.7 Installation of Strobe function

The basic helicopter is not installed with the strobe function. To do so a switch in the LIGHTING AND ANCILLARY CONTROL BOX (LACU) is to be activated. The switch is already provisionally installed. The switch cap is either to be engraved in color and size to the existing switches or a self-adhesive transparent label printed in same color and font than the existing switches is to be applied. The text on the switch is to be "STROBE". Sufficient contrast is to be assured.

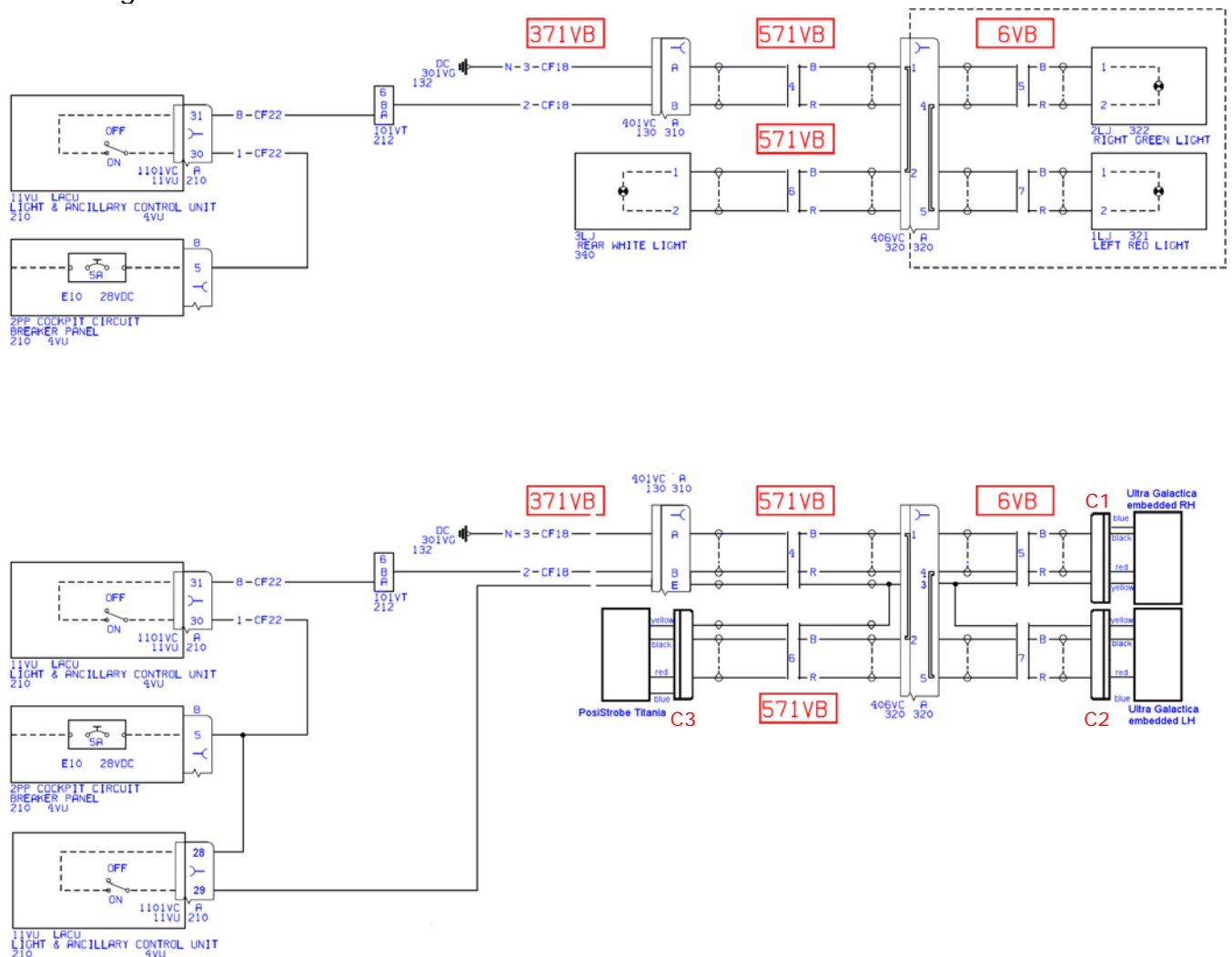
**Note: Assure that the Supplement Rotorcraft Flight Manual, AVE-MOD-030-SUP-RFM is added to Flight Manual.**



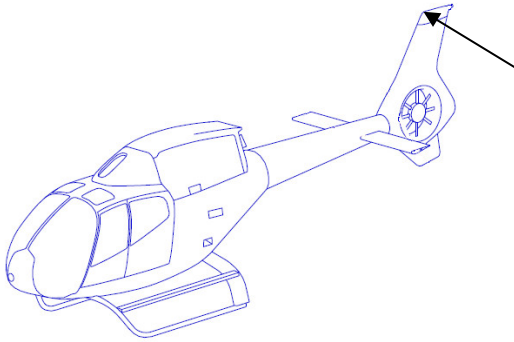
### 1.7.1 Wiring diagram for position lights with optional strobe function

The wiring diagram below shows the wiring before and after the installation of the position lights Ultra Galactica embedded (side) and PosiStrobe Titania (tail). All lights include a strobe function but this requires additional wires and the activation of an additional switch installed as provision in the existing LACU (OEM original). In the case that the strobe function is not activated only the black and the red wire are connected as shown. The additional wire and the activation of the switch are not required then.

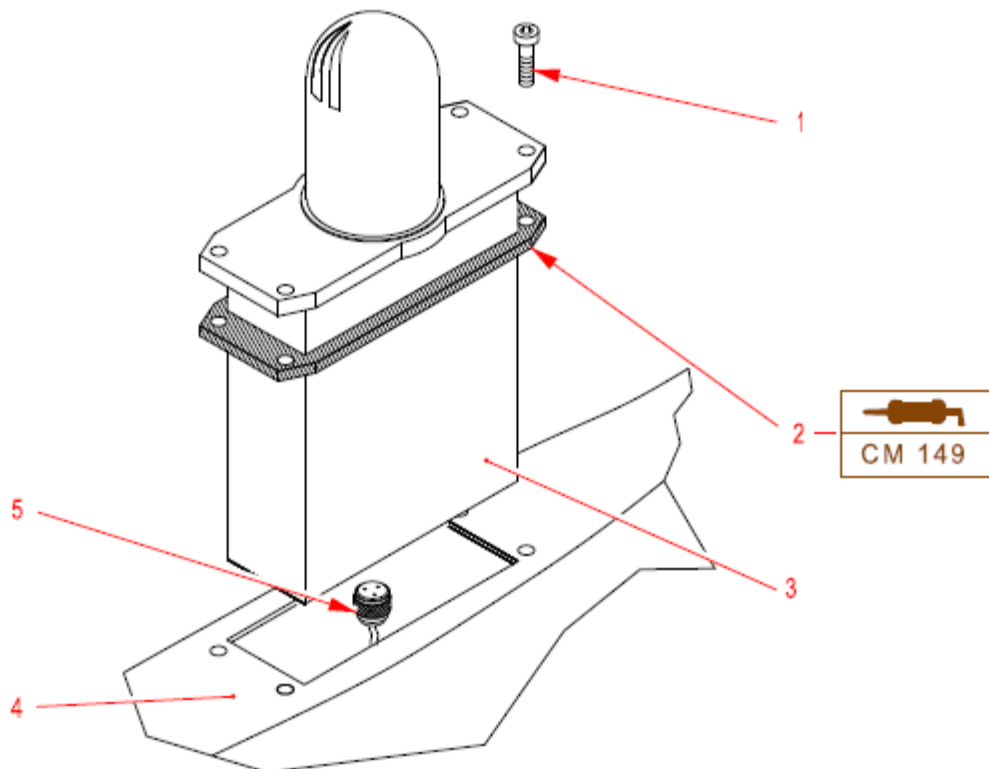
The wiring gage for the strobe is AWG18. Between connector A310 and A320 a shielded wire is to be used as shown on the wiring diagram. If the strobes are to be synchronized, then the blue connection of the three lights are to be connected by a wire gage 22 (not shown). This wire is to be run in parallel to the strobe wire. Shielding is not required. The anticollision light must not be synchronized with the position light strobes.



## 1.8 Anti-collision Light Installation



### *Removal of anti-collision light*



**B –Installation of Anti-Collision Light**

RedBaron XP  
Kit Number: ARBB-03

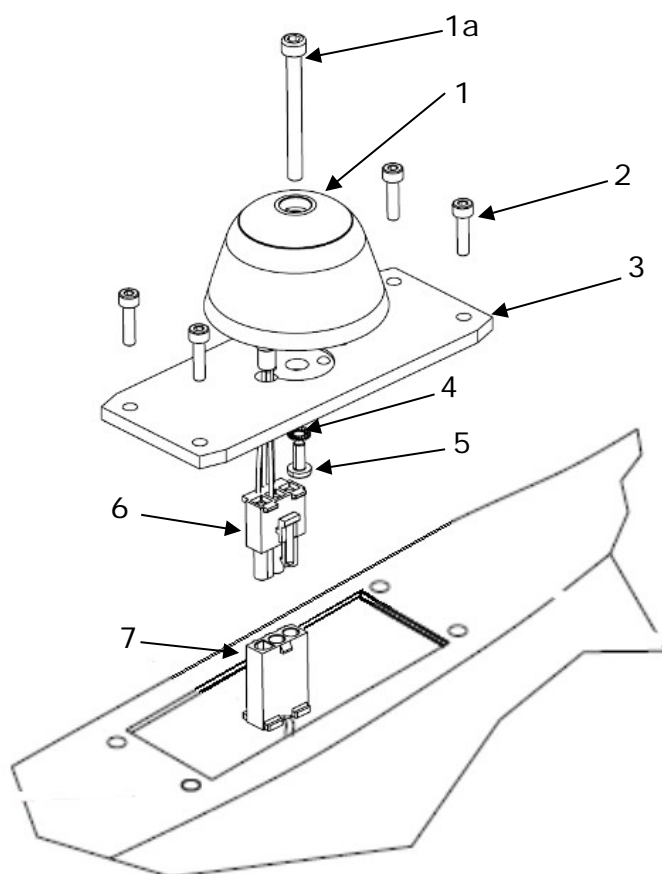


FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	PARTS AVAIL	QTY PER ASSY
	<b>Removal of anti-collision light</b>			
1	Original part	Screw		1
2	Original part	Gasket		1
3	Original part	Power Supply		1
4	Original part	Fairing		1
5	Original part	Connector		1
	-----			
	<b>B - Installation</b>			
1	AVE-RBXPR-001	RedBaron XP Galactica		1
1a	AVS-SCM05050HAS-DOA	Screw		1
2	Original part	Screw		4
3	AVS-P000107404-A00	RedBaron Legacy Light Replacement Adapter		1
4	M4 DIN 6798-A	Washer		1
5	M4x10 DIN 7985	Screw		1
6	19-09-1036	3-Pole Connector Kit - Female		1
7	19-09-2036	3-Pole Connector Kit - Male		1

## NOTES

1. Remove anti-collision according to AMM.
3. Inspect the location for corrosion and if necessary repair according to aircraft SRM.
4. Remove original connector and connect wires using connector C4 (5) as per wiring diagram below.
5. Install the adapter (4) using original fasteners (3) on the tail and attach RedBaron (2) using M5 screw (1). Assure that grounding of the adapter is connected via pin D (C4) and screw (item 5) and washer (item 4).

**Note:** The RedBaron has a blue wire for synchronization but in this case of a red anti-collision light the function is not to be used hence the blue wire remains unconnected.

Wiring diagram for installation of Aveo anti-collision lights:

The diagram illustrates the electrical wiring for two systems, 371VB and 571VB, connected to a 11VU LRU LIGHT AND ANCILLARY CONTROL UNIT.

**371VB System:**

- The 11VU LRU LIGHT AND ANCILLARY CONTROL UNIT (210) has terminals 32 and 33.
- Terminal 32 is connected to a 101VS 210 switch.
- Terminal 33 is connected to a 102VS 210 switch.
- The 101VS 210 switch is connected to a 1-CF1B cable.
- The 102VS 210 switch is connected to a 2-CF1B cable.
- The 1-CF1B cable is connected to a 101VS 222 switch.
- The 101VS 222 switch is connected to a 28VDC CARGO CIRCUIT BREAKER PANEL (B3).

**571VB System:**

- The 11VU LRU LIGHT AND ANCILLARY CONTROL UNIT (210) has terminals 32 and 33.
- Terminal 32 is connected to a 301VG 132 switch.
- Terminal 33 is connected to a 102VS 210 switch.
- The 301VG 132 switch is connected to a 4-CF1B cable.
- The 102VS 210 switch is connected to a 2-CF1B cable.
- The 4-CF1B cable is connected to a 3-PF1B cable.
- The 2-CF1B cable is connected to a 401VN 310 switch.
- The 3-PF1B cable is connected to a 401VN 310 switch.
- The 401VN 310 switch is connected to a 5-CF20 cable.
- The 5-CF20 cable is connected to an ILL ANTI-COLLISION LIGHT (310).

The diagram illustrates the electrical wiring for the Anti-Collision Light RedBaron XP. It is divided into two main sections: the top section for the 371VB and the bottom section for the 571VB.

**Top Section (371VB):**

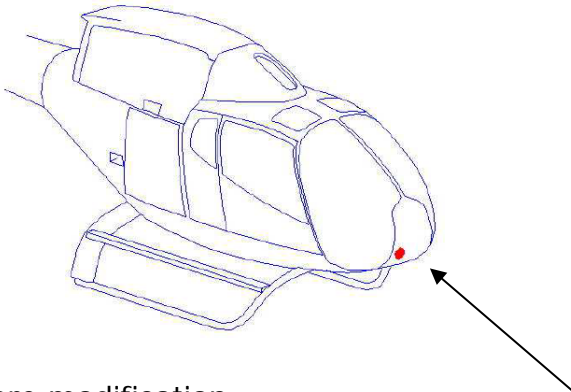
- The **ANTI-COLLISION LIGHT** has an **OFF** position and an **ON** position.
- The **ON** position is connected to a **101VS 210** fuse.
- The circuit then passes through a **371VB** label.
- It continues through a **501VS 222** fuse.
- The circuit then connects to a **2BVDC** component.
- The **2BVDC** component is connected to the **CARGO CIRCUIT BREAKER PANEL 222**.

**Bottom Section (571VB):**

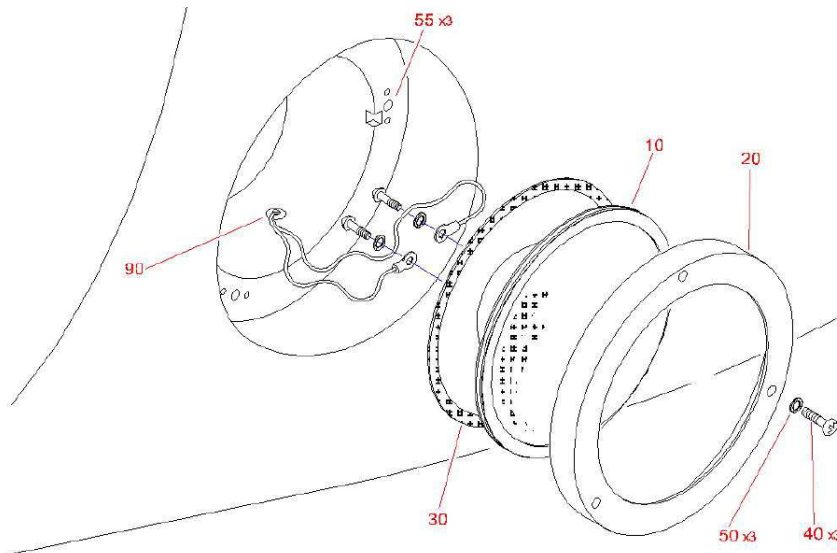
- The **1101VC 111VU** label is connected to a **102VS 210** fuse.
- The circuit then passes through a **371VB** label.
- It continues through a **301VG 132** fuse.
- The circuit then connects to a **571VB** label.
- It continues through a **3 PF1B** fuse.
- The circuit then connects to a **C4** label.
- The **C4** label is connected to the **Anti-Collision Light RedBaron XP**.
- The **Anti-Collision Light RedBaron XP** has a **grounding point on adapter**.

## 1.9 Landing Light Installation

Kit Number: ARBB-05



Before modification:



After modification:

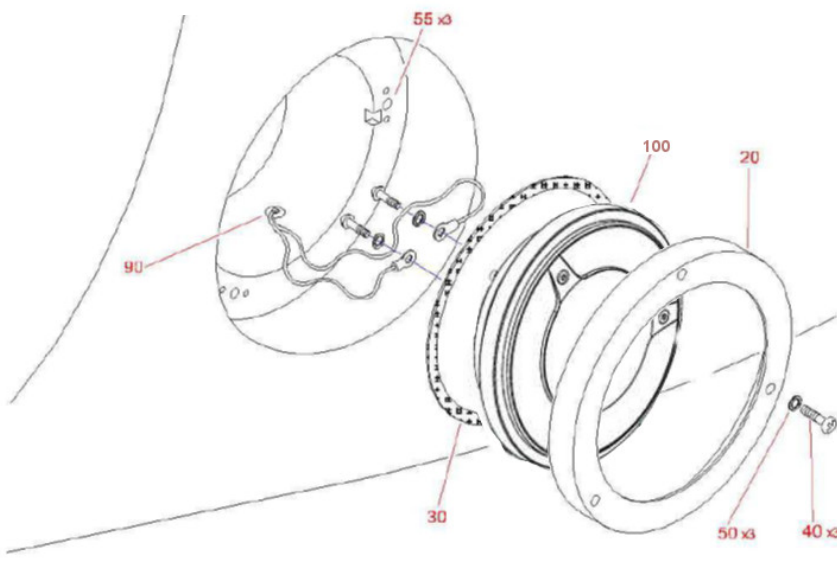


FIGURE AND INDEX NUMBER	PART NUMBER	DESCRIPTION	PARTS AVAIL	QTY PER ASSY
10	4509	Bulb		1
20	Original parts	Retainer		1
30	Original parts	Gasket		1
40	Original parts	Screw		3
50	Original parts	Washer		3
100	AVE- H30TATSNL-TOA	Hercules Drop-In Landing		1
<p>Notes:</p> <p>1) Remove Landing light bulb (item 10) as per AMM</p> <p>2) Install Hercules (item 100) drop-in light as per AMM but regard polarity.</p> <p><u>#100</u> is a Hercules drop-in light with landing lens (narrow beam) and On/Off function, connected via terminal.</p>				



## Part 2 Compliance Demonstration

This document is in relation to the certification program AVE-MOD-014-PFC.  
The compliance is demonstrated for the following certification specification:

Requirements	MoC	Statement of Compliance
CS 27.609 Protection of structure	MoC 0	(a) All parts installed are verified to be suitable. The installation instruction requests the aircraft structure to be inspected for probable corrosion before installing the new lights. (b) Not applicable
CS 27.1301 Function and installation	MoC 0	(a) All navigation and anti-collision lights are ETSO certified. The landing light is qualified according to RTCA DO160 as per AVE-H30-001-CCL. It has been verified, that the tested RTCA DO 160 sections and categories are compliant or exceed what is applicable for this helicopter type. (b) The new strobe function is labeled in the same systematic as the OEM design. The strobe switch is located next to the position light switch which makes the operation self-explanatory. All the equipment is labeled for identification and operating limits. (c) All equipment is installed within their limits. (d) The proper function is determined in a ground check as per MCS. Due to the installation experience on several projects including Robinson helicopter, EC145, C150, C172, RC112, Mooney and King Air B300/350 the risk is concluded so low that the test is delegated to the installer without evidence during the certification process.
CS 27.1353 Electrical equipment and installations	MoC 0	(a) The wiring changes are described in the installation instructions.  It is verified by the EMI maintenance check out according to the aircraft manual that the newly installed equipment does not affect the navigation and communication system.  (b), (c) are not applicable.
CS 27.1383 Landing lights	MoC 0	(a) The configuration of the original installation is not changed. (b) (1) and (2) are not affected as the installation is not changed. The position of the landing light in the helicopter nose is without direct line of sight and therefore no glare can disturb even though the lights are brighter than the original lights. (3) is improved as the new lights are brighter than the

Requirements	MoC	Statement of Compliance
		originally installed. (c) The landing light switches and the landing light configuration are not modified.
CS 27.1529 Instructions for Continued Airworthiness	MoC 0	The modification does not require any changes to the aircraft maintenance procedure which is clearly stated in §1.2 Continued Airworthiness.