



## Part-21

### DOCUMENTATION PACKAGE





# Installation of Lead-Acid Main Battery

on

Airbus Helicopters AS350 B, BA, B1, B2 and B3

Mod.: DO-350-24-101

(Package DP-350-24-101-02 Rev. 0)

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**AIRLIFT AS**


Førde Airport, N-6977 Bygstad, Norway

**EASA.21J.315** [design@airlift.no](mailto:design@airlift.no)

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EO-350-24-101-01	Engineering Order
EO-350-24-101-02	Engineering Order
EO-350-24-101-03	Engineering Order

For documentation revision status please refer to Approval Form document list.

Approval Form No. :	<b>AF-350-24-101-02</b>	Revision:	<b>0</b>	Date:	<b>30.07.2013</b>
Document Title :	Change Approval Form				
Modification No. :	<b>DO-350-24-101</b>				
Modification Title :	Installation of Lead-Acid Main Battery				
Original T.C. Holder :	Eurocopter	Type Certificate Nr :	EASA.TCDS.R.008		
Aircraft Type :	AS350 B, BA, B1, B2 and B3	Serial Number(s) :	ALL (See Limitation section).		
Applicable Requirements :	Definition of the applicable Airworthiness and Environmental Protection Requirements is contained in the Design Order (Form AL/DOM 2.2) DO-350-24-101, which is retained by Airlift Design Organisation.				
Compliance Documents :	All Compliance Documents have been filed in the Master Document List (Form AL/DOM 2.15) MDL-350-24-101 Rev. 0 (or later approved revisions), and are retained by Airlift Design Organisation.				
<p>Design Organization:</p> <p><b>Airlift A/S</b> Førde Lufthavn 6977 Bygstad Norway</p> <p><b>Approval No. EASA.21J.315</b></p> <p>On behalf of Airlift I hereby declare that the type design change defined by DO-350-24-101 is complying with the requirements set forth in the certification base in the Design Order and with the procedures established in Airlift Design Organization Manual.</p> <p><b>This change was classified as MAJOR, according to Part 21 subpart D, and approved under EASA Supplemental Type Certificate No. 10044362</b></p> <p>Airlift will undertake responsibilities as Supplement Type Certificate Holder for the change as laid down in the Part 21 regarding incident and deficiency reporting, record keeping and Instructions for Continued Airworthiness.</p> <p>This Certificate shall remain valid unless otherwise surrendered or revoked.</p> <p>Signed:</p> <p></p> <p>_____</p> <p>Head of Design Organisation</p> <p style="text-align: right;">_____</p> <p style="text-align: right;">30.07.2013 Date:</p>					

Associated Technical Documentation :	Accomplishment-, Operational- and Continued Airworthiness Instructions associated to the change are identified in the Table 1. below.
Limitations and Conditions :	<p>This Approval is limited to the aircraft serial number(s) authorised and identified in "Aircraft Effectivity List for EASA STC 10044362" (Appendix 1 to AF-350-24-101-02)</p> <p>Based on the requirements of EASA Part 21A.3, Airlift, as holder of the STC is requested to collect information from all known operators / users with regards to this modification. You are therefore requested to notify Airlift Design Organisation accomplishment of this modification by use of the Feedback Form available at the end of the Engineering Order.</p> <p>Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will not introduce any adverse effect upon the airworthiness of the product.</p>

**Table 1. - LIST OF THE ASSOCIATED TECHNICAL DOCUMENTATION**

Report No.	Report Title	Revision	Notes
EO-350-24-101-01	Engineering Order	0	Single RG-355 installation
EO-350-24-101-02	Engineering Order	1	Single RG-350 installation
EO-350-24-101-03	Engineering Order	0	Dual RG-350 installation
ICA-350-24-101-01	Instructions for Continued Airworthiness	1	
FMS-350-24-101-01	Flight Manual Supplement	1	

**\*\* END OF DOCUMENT \*\***

# Aircraft Effectivity List for AF-350-24-101-02 (EASA STC 10044362)

Aircraft Model: **Airbus Helicopters AS350 B, BA, B1, B2 and B3.**

Manufacturer Serial Numbers:

2020, 2378, 2514, 3064, 3563, 3679, 3712, 3942, 4106, 4116, 4117, 4255,  
4258, 4278.\*END OF LIST\*

Updated: **01.Aug.2013**

Please visit [www.airlift-doa.com](http://www.airlift-doa.com) or contact [design@airlift.no](mailto:design@airlift.no)  
for downloading the complete documentation package or the last revision of this list.



## SUPPLEMENTAL TYPE CERTIFICATE

**10044362**

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to

### **AIRLIFT A/S**

**Førde Lufthavn  
6977 BYGSTAD  
NORWAY**

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

**Original Type Certificate Number : EASA R.008**  
**Type Certificate Holder : EUROCOPTER**  
**Type Design - Model : AS 350 B, AS 350 BA**  
**Type Design - Model : AS 350 B1, AS 350 B2**  
**Type Design - Model : AS 350 B3**

#### **Description of Design Change:**

Installation of Concorde RG-350 or RG-355 Lead-Acid aircraft battery as replacement for the original Nickel-Cadmium battery.

#### **EASA Certification Basis:**

The Certification Basis (CB) for the original product remains applicable to this certificate/ approval. The requirements for environmental protection and the associated certified noise and/ or emissions levels of the original product are unchanged and remain applicable to this certificate/ approval.

See Continuation Sheet(s)

**For the European Aviation Safety Agency,**

**Date of issue: 08 April 2013**

  
**Massimo MAZZOLETTI**  
**Certification Manager**  
**Rotorcraft, Balloons, Airships**

**Note:**

The following numbers are listed on the certificate:  
EASA current Project Number: 0010020646-001

SUPPLEMENTAL TYPE CERTIFICATE - 10044362 - AIRLIFT A/S



**Associated Technical Documentation:**

Flight Manual Supplement FMS-350-24-101-01, Rev. 1  
or later revisions of the above listed documents approved by EASA.  
Airlift A/S Master Document List DO-350-24-101 , Rev 0, date 14 February 2013  
Instructions for Continued Airworthiness ICA-350-24-1 01-01, Rev. 1

**Limitations/Conditions:**

Prior to installation of this design change it must be determined that the interrelationship between this design change and any other previously installed design change and/ or repair will introduce no adverse effect upon the airworthiness of the product.

- end -

Note:  
The following numbers are listed on the certificate:  
EASA current Project Number: 0010020646-001

SUPPLEMENTAL TYPE CERTIFICATE - 10044362 - AIRLIFT A/S

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## CERTIFICADO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

**NÚMERO** 2013S11-07  
(Number)

**Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,**  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

**é conferido ao (à):** Airlift A/S  
(is granted to:) Førde Lufthavn  
6977 Bygstad  
Norway

**por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições**  
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)  
**especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.**  
(specified hereon, met the applicable airworthiness requirements.)

**Produto Original - Número do Certificado de Tipo:** \* See attached ANAC Approved Model List (AML), Rev. I.R.,  
(Original Product - Type Certificate No:.) dated 11 Nov. 2013, or later approved revision.

**Fabricante:** \*  
(Manufacturer:)

**Modelo(s):** \*  
(Model(s):)

### DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO: (Description of Type Design Change:)

Installation of Concorde RG-350 OR RG-355 Lead-Acid aircraft battery as replacement for the original Nickel-Cadmium battery in accordance with Airlift A/S Master Document List DO-350-24-101, Rev. 0, dated 14 Feb. 2013, or later approved revisions.

This CST validates in Brazil the STC No. 10044362, issued by EASA (Europe).

### LIMITAÇÕES E CONDIÇÕES: (Limitations and Conditions:)

See continuation sheet for applicable data.

### DATAS: (Dates of:)

**Do Requerimento:** 03 Sep. 2013  
(Application:)

**Da emissão:** 11 Nov. 2013  
(Issuance:)

**Da reemissão:**  
(Reissuance:)

**Da emenda:**  
(Amendment:)

  
**HÉLIO TARQUÍNIO JÚNIOR**  
Gerente-Geral, Certificação de Produto Aeronáutico  
(General Manager, Aeronautical Product Certification)

  
**DINO ISHIKURA**  
Superintendente de Aeronavegabilidade  
(Airworthiness Superintendent)

F-400-01G (04.12)

*Nelson Eisaku Nagamine*  
General Manager - Acting  
Aeronautical Product Certification Branch

Fl. 01 de 02  
(Sheet) (of)

*Hélio Tarquínio Júnior*  
Superintendente Substitute  
Superintendência de Aeronavegabilidade

H.02-4179-0



Folha de Continuação ao  
(Continuation Sheet to)

## CERTIFICADO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

**NÚMERO 2013S11-07**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

- I. The approval of this type design change should not be extended to other rotorcraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that rotorcraft.
- II. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.
- III. Operation must be performed in accordance with EASA approved Flight Manual Supplement, document No. FMS-350-24-101-01, Rev. 1, dated 08 Apr. 2013, or later approved revision.
- IV. Instructions for Continued Airworthiness (ICA), document No. ICA-350-24-101-01, Rev. 1, dated 13 Feb. 2013 or later FAA accepted revision, is required for this installation.
- V. A copy of this Certificate and the Supplement referred on item III above shall be maintained as part of the permanent records of the modified rotorcraft.

-----END-----



**ANAC APPROVED MODEL LIST  
FOR CST 2013S11-07**

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL (S)	TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS
1	Eurocopter France	AS350B	R.008 (EASA)	14 CFR part 27
2	Eurocopter France	AS350B1, AS350B2, AS350B3 and AS350BA	8812 (ANAC)	RBAC 27

ANAC Approved:

**Hélio Tarquínio Júnior**

Gerente-Geral, Certificação de Produto Aeronáutico  
(General Manager, Aeronautical Product Certification)

ANAC Approved Date:

**11 Nov. 2013**

Revision:

**I.R.**



Transports Canada

Transport Canada

Aircraft Certification - NAHI  
700, Leigh Capreol Street  
Dorval (Quebec)  
H4Y 1G7

Septembre 25, 2013

Votre référence - Your file

Notre référence - Our file  
NAHI 5010-13-0117

Mr. Massimo Mazzoletti  
Certification Manager Rotorcraft, Balloons and Airships  
**EUROPEAN AVIATION SAFETY AGENCY**  
Postfach 10 12 53  
D-50452 Cologne  
Germany

**SUBJECT: ACCEPTANCE OF EASA STC 10044362**

Dear Sir;

This letter is issued in response to an application made by **AIRLIFT A/S**. It is requested that you transmit this letter to the holder on our behalf.

In accordance with the TC policy relative to the familiarization of EASA STC's, some STC's applicable to certain categories of aircraft may be accepted solely on the basis of their EASA certification and do not require the issuance of a corresponding certificate by Transport Canada. The referenced STC falls within that criteria.

The subject STC will be entered in the national index of STC's that have been familiarized or accepted by Transport Canada for installation on Canadian registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

Yours truly

Jean-Claude Dalexis  
Senior Engineer  
Aircraft Certification  
Quebec Region

c.c.: **Mr. Bjarte Teigen**  
**AIRLIFT A/S**  
Forde Lufthavn  
6977 BYGSTAD  
NORWAY

**EASA APPROVED**

**AIRCRAFT**

**FLIGHT MANUAL SUPPLEMENT**

**FOR**

***Eurocopter AS350***

**WITH**

***Lead-Acid Main Battery***

Reg. No. \_\_\_\_\_

Ser. No. \_\_\_\_\_

**IMPORTANT NOTE**

This supplement must be attached to the Approved Aircraft Flight Manual when the Lead Acid Main Battery is installed in accordance with Airlift DO-350-24-101. The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement; consult the basic Aircraft Flight Manual.

EASA APPROVAL REF.: **10044362**

DATE: **08 April 2013**

LOG OF REVISIONS

<u>Revision</u>	<u>Page (s)</u>	<u>Description</u>	<u>Approval/Date</u>
0	All	Original Issue	Revised before approval
1	All	Supplement for initial STC issue	See Cover



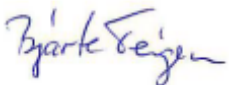
	Name:	Signature:	Date:
Written By:	Marco Pacagnella		13.02.2013
Checked By:	Bjarte Teigen		14.02.2013
CVE Approval:	Bjarte Teigen		14.02.2013

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## SECTION I      GENERAL

A Concorde RG-350 / RG-355 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery is installed as Main Battery in place of the original Nickel-Cadmium battery.

The installation is a replacement of existing SAFT batteries installed in AS350 helicopters without any further any structural or electrical modification.

Concorde valve regulated sealed recombinant gas (RG) Turbine Starting RG-350/RG-355 aircraft batteries, FAA TSO-C173 approved, are contained in a fully sealed aluminum container, avoiding spillage, fitted with silver plated brass M8 terminals. The Valve Regulated Sealed Lead-Acid design of the battery avoid the need of any water replenishment requiring lower maintenance requirements than the original Ni-Cd batteries.

RG-350 and RG-355 are electrically identical and features different container dimensions to fit the different attachments of the different types of the original AS350 Nickel-Cadmium batteries.



## **SECTION II      LIMITATIONS**

The limitations specified in the Basic Flight Manual and in the Supplements used remain applicable.

## **Section III      EMERGENCY PROCEDURES**

The emergency procedures specified in the Basic Flight Manual and in the Supplements used remain applicable and are complemented or modified by the following:

- 3.A.** The “BATT TEMP” (battery overheat) warning system is INOPERATIVE as a result of the Lead-Acid Battery installation. Therefore electrical emergency procedure related to the “BATT TEMP” warning of the basic Flight Manual is no longer applicable.

The following placard is placed on the instrument panel:

BATT TEMP WARNING DISABLED  
HELICOPTER EQUIPPED WITH SEALED LEAD ACID  
BATTERY

## **SECTION IV      NORMAL PROCEDURES**

No change

## **SECTION V      PERFORMANCE**

No change

**SECTION VI WEIGHT & BALANCE**

Weight and Moment of Equipment Items of the Basic Flight Manual is amended as follows:

<b>Equipment</b>	<b>Weight</b>	<b>Arm</b>
1st battery (RG-350/RG-355) (*)	18,6/18,8 kg	unchanged (**)
2nd battery (RG-350), <i>if installed</i> (*)	18,6 kg	unchanged (**)

- (\*) Battery model, and single/dual battery installation depending on aircraft configuration.
- (\*\*) Please refer to the Basic Flight Manual of your aircraft for Arm value of the battery installation.



**AIRLIFT**  
HELIKOPTERSELSKAP

Førde Airport, N-6977 Bygstad, Norway – [design@airlift.no](mailto:design@airlift.no)

EASA Part-21 Approved Design Organisation - DOA No. EASA.21J.315

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# INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

## *Installation of Lead-Acid Main Battery Eurocopter AS350*




**ICA-350-24-101-01**  
(Rev. 1)

Ref.  
Engineering Order    **EO-350-24-101-xx (various)**  
Modification No    **DO-350-24-101**

# INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

## LOG PAGE

### AUTHORIZATIONS

	Name:	Signature:	Date:
Written By:	Marco Pacagnella		13.02.2013
Checked By:	Bjarte Teigen		14.02.2013
CVE Approved:	Bjarte Teigen		14.02.2013

### LIST OF REVISIONS

Pages	Rev. No.	Date	Reason	Author	Approved By
All	0	15.11.12	Initial issue	Marco Pacagnella	Bjarte Teigen
1-2, 5	1	13.02.13	Removed EC130	Marco Pacagnella	Bjarte Teigen

**Note on revisions:** At any new revision all pages are re-issued, therefore all page shall show the latest revision status above indicated.

### AIRCRAFT EFFECTIVITY

**Eurocopter AS350**, limited to serial numbers indicated in the relative change's Approval Form (Form AL/DOM 2.1.1) released from AIRLIFT AS (DOA EASA.21J.315) to the customer.

It is furthermore understood that any a/c modified without the above mentioned written permission releases AIRLIFT AS, as the approval holder, from any responsibility or obligation defined in EASA Part-21, there including the provision of valid installation and continuing airworthiness instructions.

Helicopters **POST-Mod AIRLIFT DO-350-24-101** (Installation of Lead-Acid Main Battery) fitted with single or dual Concorde RG-350 or RG-355 main battery installation.

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### **ATTACHMENT 1 – CUSTOMER FEEDBACK**

## ABBREVIATIONS

A:	Basic Inspection with a calendar interval
ALF:	Check After the Last Flight of the day
ALL MP/N:	All Manufacturer's Part Numbers
BFF:	Check Before the First Flight of the day
C:	Major Inspection with a calendar interval
CL:	Classification of the maintenance tasks
CHK:	Condition check; Airworthiness Limitations
CSS:	Chapter/Section/Subject
D:	Day
E:	Maintenance due time
EXC:	Except
FC:	Functional Check (quantitative)
G:	Major Inspection according to the number of flying hours
GRP:	Group
H:	Hour
HT:	Hard Time
INF:	Infinite Service Life
M:	Month
MET:	Maintenance Manual
MP/N:	Manufacturer's Part Number
ND:	Not Described
NDT:	Non-Destructive Testing
OC:	On-Condition Maintenance
OpC:	Operational Check (qualitative)
OPT:	Optional
OTL:	Operating Time Limit
SLL:	Service Life Limit; Airworthiness Limitations
S/N:	Serial Number
T:	Basic Inspection with an interval in flying hours
TL:	Type of limit
TA:	Turn-Around check
TBO:	Time Between Overhauls
TSI:	Time Since Installation
TSM:	Time Since Manufacture
U:	Operating cycle
WC:	Work Card
Y:	Year
//:	or (at the first limit reached)

## DEFINITIONS

Definitions of maintenance terms used in this document are as per Eurocopter standard.

## CHAPTER 1 – INTRODUCTION (01-00-00)

### 01.01. - INTRODUCTION

This “**Instructions for Continued Airworthiness**” has been issued to define the necessary information to service, maintain and inspect the change appliances introduced by **Airlift’s Engineering Order EO-350-24-101-xx** (corresponds to **Airlift’s MOD. DO-350-24-101**).

It is furthermore understood that the normal maintenance requirements defined by the Type Certificate holder into the aircraft maintenance manual remain applicable and are completed by this document.

This document fulfills the requirement defined in CS27/29.1529 and CS27/29 Appendix A (and FAR27/29.1529, FAR 27/29 Appendix A). It has been prepared in accordance with guidelines indicated in AC29-2 Appendix A.

### 01.02. - GENERAL DESCRIPTION OF CHANGE

Installation of Concorde RG-350 or RG-355 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original Nickel-Cadmium battery.

The change introduces a direct replacement of existing SAFT batteries installed in AS350 helicopters without the need to perform any structural or electrical modification.

Concorde valve regulated sealed recombinant gas (RG) Turbine Starting RG-350/RG-355 aircraft batteries, FAA TSO-C173 approved, are contained in a fully sealed aluminum container, avoiding spillage, fitted with silver plated brass M8 terminals. The Valve Regulated Sealed Lead-Acid design of the battery avoid the need of any water replenishment requiring lower maintenance requirements than the original Ni-Cd batteries.

RG-350 and RG-355 are electrically identical and features different container dimensions to fit the different attachments of the different types of the original AS350 Nickel-Cadmium batteries.

The following table introduces the battery model effectivity for the different helicopter configurations:

Aircraft Model	Original Battery (Ni-Cd Fitted)	New Lead-Acid Battery
<b>AS350 B, BA, B1 and B2</b> (Pre-072769)	SAFT 1606-1	Concorde RG-355 Installed with EO-350-24-101-01
<b>AS350 B, BA, B1, B2</b> (Post-072769) and <b>AS350 B3</b>	SAFT 151CH1	Concorde RG-350 Installed with EO-350-24-101-02
<b>AS350 B, BA, B1, B2 and B3</b> (Post Eurocopter SB 24.00.01) (*)	Two SAFT 151CH1	Two Concorde RG-350 Installed with EO-350-24-101-03

(\*) SB 24.00.01 corresponds to Mods 070300, 070511, OP2779, OP2780, OP3826 (B2 only), OP3827 (B2, B3 only) and OP3828 (B3 only).

## 01.03. - CUSTOMER FEEDBACK

Based on the requirements of EASA Part 21A.3, the holder of a design is requested to collect information from all known operators / users with regards to his product / modification.

Your information is valuable to us. It provides us important data which we will use in a data base to track and monitor the reliability of our installations.

We therefore we require you to notify us:

- Any occurrence which may involve failures, malfunctions or defects to this product / modification covered in this Design Order;
- Airlift Engineering Order accomplishment (Aircraft Modified in respect to our Change);
- A/C demodification in respect of our Change;
- A/C change of ownership;
- Owner/operator Change of data such as address, contact phone number, etc.

Please use the form shown in Attachment 1 to this ICA to notify such information.

## 01.04. - DESIGN ORGANIZATION RESPONSIBILITY

Airlift's design organization undertakes to maintain and update this document as long as any product which incorporates the design is airworthy.

Updates will be provided to all known operators and to Part 145 organisations upon request.



## CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)

### NOTE

The Airworthiness Limitations Section is EASA approved  
and variations must also be EASA approved

**No Airworthiness limitations associated with this type design change.**

## CHAPTER 5 – INSPECTION REQUIREMENTS AND OVERHAUL SCHEDULE (05-00-00)

### NOTE

Margins to the intervals defined in this chapter can be applied in the terms defined by Eurocopter Maintenance Program (MSM).

### 05.10. – TIME LIMITS

Not applicable. No component is subject to Operating Time Limit (OTL) nor Time Between Overhaul (TBO).

### 05.20. – SCHEDULED MAINTENANCE OPERATIONS

INTERVAL	DESCRIPTION	OPERATION REF. NUMBER
Initial Threshold: 1000 FH // 1 Y Following intervals: See (*)	Capacity Test  After verifying residual capacity after test, define following schedule as outlined in note (*) below.  <u>If residual capacity is LESS than 85% remove battery from service.</u>	CMM 24-30-71 (Concorde doc. 5-0171)

(\*): After initial Capacity Test reduce test intervals as follows:

500 FH // 6 M	as long as the capacity (verified in test) is above 90%
250 FH // 3 M	if capacity (verified during test) is between 85 and 90%.

### 05.50. – UNSCHEDULED MAINTENANCE CHECKS

Not applicable

## CHAPTER 11 – PLACARD AND MARKINGS (11-00-00)

### 11.00 PLACARD ASSOCIATED TO LEAD-ACID MAIN BATTERY

#### 11.00.00.000. - PLACARD AND MARKINGS ASSOCIATED TO LEAD-ACID MAIN BATTERY

On the instrument panel in clear view of the pilot:

BATT TEMP WARNING DISABLED  
HELICOPTER EQUIPPED WITH SEALED LEAD ACID BATTERY

**Placard a. – Instrument panel.**

## CHAPTER 12 – SERVICING (12-00-00)

The RG-350/RG-355 Valve Regulated Sealed Lead-Acid batteries do NOT require any servicing.

## CHAPTER 24 – ELECTRICAL POWER (24-00-00)

### 24.101 LEAD-ACID MAIN BATTERY

#### 24.101.00. – CONCORDE RG-350/RG-355 LEAD-ACID MAIN BATTERY

##### 24.101.00.000. – COMPONENT INFORMATION

For description, testing, fault isolation, disassembly, cleaning, repair, list and storage of the Concorde RG-350 and RG-355 Sealed Lead Acid Batteries please refer to the following Component Maintenance Manual (CMM):

**CMM 24-30-71 (Concorde Battery Corporation Doc. 5-0171)**

The latest revision of this CMM can be found in PDF format on manufacturer website for download ([www.concordebattery.com](http://www.concordebattery.com)).

##### 24.101.00.401. - LEAD-ACID MAIN BATTERY REMOVAL / INSTALLATION

Ref. AMM 24-33-00, 4-1

Disregard the instruction to disconnect/reconnect the temperature probe connector.

## ATTACHMENT 1 – CUSTOMER FEEDBACK

Ref.: **MOD. AIRLIFT DO-350-24-101** introduced with **Airlift Engineering Order EO-350-24-101-\_\_\_**.

**Aircraft Type, Version** \_\_\_\_\_ **Manufacturer S/N** \_\_\_\_\_

**Type of acknowledge:**

- Notification of occurrence** (failures, malfunctions or defects to the product introduced with the modification at Ref.)
- Aircraft Modified** (i.a.w. doc. at ref.)       **Aircraft De-Modified**
- Aircraft Change of Ownership**       **Update of owner data**

Notification or Operator / owner name & address (use more pages if needed)

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Operator / owner representative

Name \_\_\_\_\_ Title \_\_\_\_\_

Sign. \_\_\_\_\_ Date \_\_\_\_\_

Send this page to:

**Airlift Design Organisation**  
**Førde Lufthavn**  
**N-6977 Bygstad**  
**NORWAY**

**Phone: +47 57 71 81 00**  
**Fax: +47 57 71 81 01**  
**e-mail: [design@airlift.no](mailto:design@airlift.no)**



# AIRLIFT

HELIKOPTERSELSKAP

Førde Airport, N-6977 Bygstad, Norway – [design@airlift.no](mailto:design@airlift.no)

EASA Part-21 Approved Design Organisation - DOA No. EASA.21J.315

**Eurocopter AS350**  
Version(s): **B, BA, B1 and B2**

# ENGINEERING ORDER

**EO-350-24-101-01**  
(Rev. 0)

**Subject:** **Installation of Lead-Acid Main Battery**  
Installation of Concorde RG-355 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original SAFT 1606-1 Nickel-Cadmium battery on aircraft PRE-Mod. 072769.

Corresponds to Airlift's MOD **DO-350-24-101**

	Name:	Signature:	Date:
Written By:	Marco Pacagnella		15.11.2012
Checked By:	Bjarte Teigen		15.11.2012
CVE Approved:	Bjarte Teigen		15.11.2012

Pages	Rev. No.	Date	Reason	Author	Approved By
All	0	15.11.12	Initial issue	Marco Pacagnella	Bjarte Teigen

**Note on revisions:** At any new revision all pages are re-issued, therefore all page shall show the latest revision status above indicated.

For detailed effectivity see Paragraph 1.A.

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4.C.	Design Organization Responsibility
Attch. 1	Customer Feedback Form

## 1. PLANNING INFORMATION

### 1.A. EFFECTIVITY

**Eurocopter AS350 B, BA, B1 and B2**, limited to serial numbers indicated in the relative change's Approval Form (Form AL/DOM 2.1.1) released from AIRLIFT AS (DOA EASA.21J.315) to the customer.

It is furthermore understood that any a/c modified without the above mentioned written permission releases AIRLIFT AS, as the approval holder, from any responsibility or obligation defined in EASA Part-21, there including the provision of valid installation and continuing airworthiness instructions.

Helicopters **PRE-Mod. 072769** (Battery Installation), i.e. fitted with single SAFT 1606-1 main battery.

### 1.B. ASSOCIATED REQUIREMENTS

This modification is approved in conjunction with operating and maintenance instructions defined at paragraph 2.D.

Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product.

### 1.C. REASON

Installation of Concorde RG-355 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original Nickel-Cadmium battery.

### 1.D. DESCRIPTION

The change introduces a direct replacement of existing SAFT batteries installed in AS350 helicopters without the need to perform any structural or electrical modification.

Concorde valve regulated sealed recombinant gas (RG) Turbine Starting RG-355 aircraft batteries, FAA TSO-C173 approved, are contained in a fully sealed aluminum container, avoiding spillage, fitted with silver plated brass M8 terminals. The Valve Regulated Sealed Lead-Acid design of the battery avoid the need of any water replenishment requiring lower maintenance requirements than the original Ni-Cd batteries.

### 1.E. COMPLIANCE

Compliance of this Engineering Order remains at operator's initiative.



## **1.F. APPROVAL**

The Change introduced with this Engineering Order is approved under the authority of DOA No. EASA.21J.315.

## **1.G. MANPOWER**

Avionic technician: 2 hours

## **1.H. WEIGHT AND BALANCE**

The weight change introduced by the installation of the RG-355 (in place of Saft 1606-1) is +1,2 kg.  
The weight of the RG-355 battery is 18,8 kg.

## **1.I. EFFECT ON ELECTRICAL LOAD**

No effect.  
The RG-355 battery has a rated capacity of 17 AH.

## **1.J. SOFTWARE MODIFICATION EMBODIMENT STATE**

Not applicable

## **1.K. REFERENCES**

For documents revision status refer to Approval Form.

ICA-350-24-101-01, Instructions for Continued Airworthiness.

The RG-355 battery component continued airworthiness information are contained in Component Maintenance Manual CMM 24-30-71 (Concorde Battery Corporation Doc. 5-0171).

## **1.L. OTHER DOCUMENTS CONCERNED**

The information contained in the following manuals remain valid and are completed by the set of documents listed at paragraph 1.K as far as the helicopter is Post modification AIRLIFT DO-350-24-101.

Aircraft Maintenance Manual (AMM)  
Illustrated Parts Catalogue (IPC)  
Weight and balance Document  
Aircraft Flight Manual

**1.M. TOOLING AFFECTED**

Refer to CMM 24-30-71 (ref. § 1.K.) for list of tools necessary for battery testing.

**1.N. INTERCHANGEABILITY OR MIXABILITY OF PARTS**

Not applicable.



2.A.2. – General & Safety Instructions	Sign
<p><b>STANDARD PRACTICES</b>  MTC.20.02.07.101-407 for Electrical bonding procedures  MTC.20.07.02.201 for safety instructions with helicopter inside the hangar  MTC.20.07.02.206 for handling batteries on the ground safety instructions  MTC.20.07.03.406 for instructions applicable when working on the electrical system  MTC.20.07.03.408 for Post modification check</p>	
<p><b>NOTE</b>  In case of missing information or doubt on interpretation of the instructions here contained or referred to, please contact Airlift Design Organisation (DOA Ref. EASA.21J.315)</p>	

## 2.B. OPERATIONAL PROCEDURE

2.B.1. – Preliminary Steps	Sign
<p><b>a.</b> Deenergize electrical power and unplug battery connector. Refer to AMM 24-00-00, 2-1.</p>	
<p><b>b.</b> Follow General Safety Instructions for Electrical Power defined in AMM 24-00-00, 3-1.</p>	

2.B.10. – Procedure	Sign
<p><b>a.</b> Disconnect and remove the existing Nickel-Cadmium main battery according AMM 24-33-00, 4-1.</p>	
<p><b>b.</b> Endcap and stow battery temperature probe connector.</p>	
<p><b>c.</b> Clean the battery mounting area i.a.w. AMM 24-33-00, 2-1.</p>	
<p><b>d.</b> Install Lead Acid battery (1) i.a.w. AMM 24-33-00, 4-1. Disregard the instruction to reconnect the temperature probe connector.</p>	
<p><b>e.</b> Fabricate and install Placard shown in Figure 2.B.10.1. (below) on the instrument panel in clear view of the pilot.</p>	

<p><b>BATT TEMP WARNING DISABLED  HELICOPTER EQUIPPED WITH SEALED LEAD ACID BATTERY</b></p>
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**Figure 2.B.10.1. - Placard**

**2.C. TESTING PROCEDURE**

Not applicable

**2.D. IDENTIFICATION**

<b>2.D.1. – Identification and recording.</b>		<b>Sign</b>
<b>a.</b>	Record embodiment of Mod. <b>AIRLIFT DO-350-24-101</b> through application of this Engineering Order in the aircraft documents.	
<b>b.</b>	Insert Airlift's Flight Manual Supplement <b>FMS-350-24-101-01</b> into Aircraft Flight Manual.	
<b>c.</b>	Update maintenance procedures and maintenance schedule with instructions for continued airworthiness identified in <b>ICA-350-24-101-01</b> .	
<b>d.</b>	Calculate total Weight & balance change by data indicated at section 1.H. Update the helicopter Weight & balance record.	
<b>e.</b>	Acknowledge Airlift DOA of modification accomplishment filling out "customer feedback" form (Attachment 1 to Instructions for Continued Airworthiness).	

**2.E. OPERATING AND MAINTENANCE INSTRUCTIONS**

**2.E.1. – Operating Instructions**

Changes to the operating instructions intended for flight crews are identified in **Airlift's Flight Manual Supplement FMS-350-24-101-01**.

**2.E.2. – Maintenance Instructions and Airworthiness Limitations**

Additional maintenance requirements and airworthiness limitations introduced by this Change are identified in **Airlift's Instructions for Continued Airworthiness ICA-350-24-101-01**.

Maintenance requirements connected to the Ni-Cd Battery installation are no longer applicable.

### 3. MATERIAL INFORMATION

#### 3.A. BASIC INFORMATION

The list of material required to ensure compliance with this Engineering Order has been drawn up for one helicopter.

#### 3.B. MATERIAL REQUIRED

##### 3.B.1. – Material List

Item	Q.ty	P/N	Description	Vendor
1.	1	RG-355	Valve Regulated Sealed Lead-Acid Battery	Concorde

##### 3.B.2. – Wiring List

Not applicable

#### 3.C. SPECIAL TOOLS REQUIRED

Not applicable

#### 3.D. PROCUREMENT CONDITIONS

Part(s) can be provided by the indicated vendor.

## 4. APPENDIX

### 4.A. MECHANICAL DRAWINGS AND WIRINGS

Not applicable.

### 4.B. CUSTOMER FEEDBACK

Based on the requirements of EASA Part 21A.3, the holder of a design is requested to collect information from all known operators / users with regards to his product / modification.

Your information is valuable to us. It provides us important data which we will use in a data base to track and monitor the reliability of our installations.

We therefore we require you to notify us:

- Any occurrence or problem encountered during application of this Engineering Order;
- Any occurrence which may involve failures, malfunctions or defects to this product / modification covered in this Design Order;
- Airlift Engineering Order accomplishment (Aircraft Modified in respect to our Change);
- A/C demodification in respect of our Change;
- A/C change of ownership;
- Owner/operator Change of data such as address, contact phone number, etc.

Please use the form shown in Attachment 1 to this EO to notify such information.

### 4.C. DESIGN ORGANISATION RESPONSIBILITY

Airlift's design organization undertakes to maintain and update this document as long as any product which incorporates the design is airworthy.

Updates will be provided to all known operators and to Part 145 organisations upon request.

## ATTACHMENT 1 – CUSTOMER FEEDBACK

Ref.: **MOD. AIRLIFT DO-350-24-101** introduced with **Airlift Engineering Order EO-350-24-101-01**.

**Aircraft Type, Version** \_\_\_\_\_ **Manufacturer S/N** \_\_\_\_\_

**Type of acknowledge:**

- Notification of occurrence** (problems encountered during application of this EO, failures, malfunctions or defects to the product introduced with the modification at Ref.)
- Aircraft Modified** (i.a.w. doc. at ref.)       **Aircraft De-Modified**
- Aircraft Change of Ownership**       **Update of owner data**

Notification or Operator / owner name & address (use more pages if needed)

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Operator / owner representative

Name \_\_\_\_\_ Title \_\_\_\_\_

Sign. \_\_\_\_\_ Date \_\_\_\_\_

Send this page to:

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**N-6977 Bygstad**  
**NORWAY**

**Phone: +47 57 71 81 00**  
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# AIRLIFT<sup>AS</sup>

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EASA Part-21 Approved Design Organisation - DOA No. EASA.21J.315

**Eurocopter AS350**  
Version(s): **AS350 B, BA, B1, B2, B3**

# ENGINEERING ORDER

**EO-350-24-101-02**  
(Rev. 1)

**Subject:**                    **Installation of Lead-Acid Main Battery**  
Installation of Concorde RG-350 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original SAFT 151CH1 Nickel-Cadmium battery on AS350 B, BA, B1, B2 (Post-Mod. 072769) and AS350 B3.

Corresponds to Airlift's MOD **DO-350-24-101**

	Name:	Signature:	Date:
Written By:	Marco Pacagnella		13.02.2013
Checked By:	Bjarte Teigen		14.02.2013
CVE Approved:	Bjarte Teigen		14.02.2013

Pages	Rev. No.	Date	Reason	Author	Approved By
All	0	15.11.12	Initial issue	Marco Pacagnella	Bjarte Teigen
1, 3	1	13.02.13	Removed EC130	Marco Pacagnella	Bjarte Teigen

**Note on revisions:** At any new revision all pages are re-issued, therefore all page shall show the latest revision status above indicated.

For detailed effectivity see Paragraph 1.A.

## ENGINEERING ORDER CONTENTS

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1.J.	Software Modification Embodiment State
1.K.	References
1.L.	Other Documents Concerned
1.M.	Tooling Affected
1.N.	Interchangeability or Mixability of Parts
<b>2.</b>	<b>ACCOMPLISHMENT INSTRUCTIONS</b>
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2.B.	Operational Procedure
2.C.	Testing Procedure
2.D.	Identification
2.E.	Operating and Maintenance Instructions
<b>3.</b>	<b>MATERIAL INFORMATION</b>
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3.B.	Material required
3.C.	Special Tool required
3.D.	Procurement Conditions
<b>4.</b>	<b>APPENDIX</b>
4.A.	Mechanical Drawings and Wirings
4.B.	Customer Feedback
4.C.	Design Organization Responsibility
Attch. 1	Customer Feedback Form

## 1. PLANNING INFORMATION

### 1.A. EFFECTIVITY

**Eurocopter AS350 B, BA, B1, B2 and B3**, limited to serial numbers indicated in the relative change's Approval Form (Form AL/DOM 2.1.1) released from AIRLIFT AS (DOA EASA.21J.315) to the customer.

It is furthermore understood that any a/c modified without the above mentioned written permission releases AIRLIFT AS, as the approval holder, from any responsibility or obligation defined in EASA Part-21, there including the provision of valid installation and continuing airworthiness instructions.

Eurocopter AS350 B3 fitted with single SAFT 151CH1 main battery.

Eurocopter AS350 B, BA, B1 and B2 **POST-Mod. 072769** (Battery Installation), fitted with single SAFT 151CH1 main battery.

### 1.B. ASSOCIATED REQUIREMENTS

This modification is approved in conjunction with operating and maintenance instructions defined at paragraph 2.D.

Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product.

### 1.C. REASON

Installation of Concorde RG-350 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original Nickel-Cadmium battery.

### 1.D. DESCRIPTION

The change introduces a direct replacement of existing SAFT batteries installed in AS350 helicopters without the need to perform any structural or electrical modification.

Concorde valve regulated sealed recombinant gas (RG) Turbine Starting RG-350 aircraft batteries, FAA TSO-C173 approved, are contained in a fully sealed aluminum container, avoiding spillage, fitted with silver plated brass M8 terminals. The Valve Regulated Sealed Lead-Acid design of the battery avoid the need of any water replenishment requiring lower maintenance requirements than the original Ni-Cd batteries.

### 1.E. COMPLIANCE

Compliance of this Engineering Order remains at operator's initiative.

## **1.F. APPROVAL**

The Change introduced with this Engineering Order is approved under the authority of DOA No. EASA.21J.315.

## **1.G. MANPOWER**

Avionic technician: 2 hours

## **1.H. WEIGHT AND BALANCE**

The weight change introduced by the installation of the RG-350 (in place of Saft 151CH1) is 3,6 kg.  
The weight of the RG-350 battery is 18,6 kg.

## **1.I. EFFECT ON ELECTRICAL LOAD**

No effect.  
The RG-350 battery has a rated capacity of 17 AH.

## **1.J. SOFTWARE MODIFICATION EMBODIMENT STATE**

Not applicable

## **1.K. REFERENCES**

For documents revision status refer to Approval Form.

ICA-350-24-101-01, Instructions for Continued Airworthiness.

The RG-350 battery component continued airworthiness information are contained in Component Maintenance Manual CMM 24-30-71 (Concorde Battery Corporation Doc. 5-0171).

## **1.L. OTHER DOCUMENTS CONCERNED**

The information contained in the following manuals remain valid and are completed by the set of documents listed at paragraph 1.K as far as the helicopter is Post modification AIRLIFT DO-350-24-101.

Aircraft Maintenance Manual (AMM)  
Illustrated Parts Catalogue (IPC)  
Weight and balance Document  
Aircraft Flight Manual

**1.M. TOOLING AFFECTED**

Refer to CMM 24-30-71 (ref. § 1.K.) for list of tools necessary for battery testing.

**1.N. INTERCHANGEABILITY OR MIXABILITY OF PARTS**

Not applicable.



2.A.2. – General & Safety Instructions	Sign
<p><b>STANDARD PRACTICES</b>  MTC.20.02.07.101-407 for Electrical bonding procedures  MTC.20.07.02.201 for safety instructions with helicopter inside the hangar  MTC.20.07.02.206 for handling batteries on the ground safety instructions  MTC.20.07.03.406 for instructions applicable when working on the electrical system  MTC.20.07.03.408 for Post modification check</p>	
<p><b>NOTE</b>  In case of missing information or doubt on interpretation of the instructions here contained or referred to, please contact Airlift Design Organisation (DOA Ref. EASA.21J.315)</p>	

## 2.B. OPERATIONAL PROCEDURE

2.B.1. – Preliminary Steps	Sign
<p><b>a.</b> Deenergize electrical power and unplug battery connector. Refer to AMM 24-00-00, 2-1.</p>	
<p><b>b.</b> Follow General Safety Instructions for Electrical Power defined in AMM 24-00-00, 3-1.</p>	

2.B.10. – Procedure	Sign
<p><b>a.</b> Disconnect and remove the existing Nickel-Cadmium main battery according AMM 24-33-00, 4-1.</p>	
<p><b>b.</b> Endcap and stow battery temperature probe connector.</p>	
<p><b>c.</b> Clean the battery mounting area i.a.w. AMM 24-33-00, 2-1.</p>	
<p><b>d.</b> Install Lead Acid battery (1) i.a.w. AMM 24-33-00, 4-1. Disregard the instruction to reconnect the temperature probe connector.</p>	
<p><b>e.</b> Fabricate and install Placard shown in Figure 2.B.10.1. (below) on the instrument panel in clear view of the pilot.</p>	

<p><b>BATT TEMP WARNING DISABLED  HELICOPTER EQUIPPED WITH SEALED LEAD ACID BATTERY</b></p>
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**Figure 2.B.10.1. - Placard**

## 2.C. TESTING PROCEDURE

Not applicable

## 2.D. IDENTIFICATION

<b>2.D.1. – Identification and recording.</b>		<b>Sign</b>
<b>a.</b>	Record embodiment of Mod. <b>AIRLIFT DO-350-24-101</b> through application of this Engineering Order in the aircraft documents.	
<b>b.</b>	Insert Airlift's Flight Manual Supplement <b>FMS-350-24-101-01</b> into Aircraft Flight Manual.	
<b>c.</b>	Update maintenance procedures and maintenance schedule with instructions for continued airworthiness identified in <b>ICA-350-24-101-01</b> .	
<b>d.</b>	Calculate total Weight & balance change by data indicated at section 1.H. Update the helicopter Weight & balance record.	
<b>e.</b>	Acknowledge Airlift DOA of modification accomplishment filling out "customer feedback" form (Attachment 1 to Instructions for Continued Airworthiness).	

## 2.E. OPERATING AND MAINTENANCE INSTRUCTIONS

### 2.E.1. – Operating Instructions

Changes to the operating instructions intended for flight crews are identified in **Airlift's Flight Manual Supplement FMS-350-24-101-01**.

### 2.E.2. – Maintenance Instructions and Airworthiness Limitations

Additional maintenance requirements and airworthiness limitations introduced by this Change are identified in **Airlift's Instructions for Continued Airworthiness ICA-350-24-101-01**.

Maintenance requirements connected to the Ni-Cd Battery installation are no longer applicable.



### 3. MATERIAL INFORMATION

#### 3.A. BASIC INFORMATION

The list of material required to ensure compliance with this Engineering Order has been drawn up for one helicopter.

#### 3.B. MATERIAL REQUIRED

##### 3.B.1. – Material List

Item	Q.ty	P/N	Description	Vendor
1.	1	RG-350	Valve Regulated Sealed Lead-Acid Battery	Concorde

##### 3.B.2. – Wiring List

Not applicable

#### 3.C. SPECIAL TOOLS REQUIRED

Not applicable

#### 3.D. PROCUREMENT CONDITIONS

Part(s) can be provided by the indicated vendor.

## 4. APPENDIX

### 4.A. MECHANICAL DRAWINGS AND WIRINGS

Not applicable.

### 4.B. CUSTOMER FEEDBACK

Based on the requirements of EASA Part 21A.3, the holder of a design is requested to collect information from all known operators / users with regards to his product / modification.

Your information is valuable to us. It provides us important data which we will use in a data base to track and monitor the reliability of our installations.

We therefore we require you to notify us:

- Any occurrence or problem encountered during application of this Engineering Order;
- Any occurrence which may involve failures, malfunctions or defects to this product / modification covered in this Design Order;
- Airlift Engineering Order accomplishment (Aircraft Modified in respect to our Change);
- A/C demodification in respect of our Change;
- A/C change of ownership;
- Owner/operator Change of data such as address, contact phone number, etc.

Please use the form shown in Attachment 1 to this EO to notify such information.

### 4.C. DESIGN ORGANISATION RESPONSIBILITY

Airlift's design organization undertakes to maintain and update this document as long as any product which incorporates the design is airworthy.

Updates will be provided to all known operators and to Part 145 organisations upon request.

## ATTACHMENT 1 – CUSTOMER FEEDBACK

Ref.: **MOD. AIRLIFT DO-350-24-101** introduced with **Airlift Engineering Order EO-350-24-101-02**.

**Aircraft Type, Version** \_\_\_\_\_ **Manufacturer S/N** \_\_\_\_\_

**Type of acknowledge:**

- Notification of occurrence** (problems encountered during application of this EO, failures, malfunctions or defects to the product introduced with the modification at Ref.)
- Aircraft Modified** (i.a.w. doc. at ref.)       **Aircraft De-Modified**
- Aircraft Change of Ownership**       **Update of owner data**

Notification or Operator / owner name & address (use more pages if needed)

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---



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Operator / owner representative

Name \_\_\_\_\_ Title \_\_\_\_\_

Sign. \_\_\_\_\_ Date \_\_\_\_\_

Send this page to:

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**N-6977 Bygstad**  
**NORWAY**

**Phone: +47 57 71 81 00**  
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# AIRLIFT<sup>AS</sup>

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Førde Airport, N-6977 Bygstad, Norway – [design@airlift.no](mailto:design@airlift.no)

EASA Part-21 Approved Design Organisation - DOA No. EASA.21J.315

**Eurocopter AS350**  
Version(s): **B, BA, B1, B2 and B3**

# ENGINEERING ORDER

**EO-350-24-101-03**  
(Rev. 0)

**Subject:**                    **Installation of Lead-Acid Main Battery**  
Installation of two Concorde RG-350 24V 17Ah Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original dual SAFT 151CH1 Nickel-Cadmium battery on AS350 B, BA, B1, B2 and B3 Post SB 24.00.01 (starting in very cold weather).

Corresponds to Airlift's MOD **DO-350-24-101**

	Name:	Signature:	Date:
Written By:	Marco Pacagnella		15.11.2012
Checked By:	Bjarte Teigen		15.11.2012
CVE Approved:	Bjarte Teigen		15.11.2012

Pages	Rev. No.	Date	Reason	Author	Approved By
All	0	15.11.12	Initial issue	Marco Pacagnella	Bjarte Teigen

**Note on revisions:** At any new revision all pages are re-issued, therefore all page shall show the latest revision status above indicated.

For detailed effectivity see Paragraph 1.A.

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1.G.	Manpower
1.H.	Weight and Balance
1.I.	Effect on Electrical Load
1.J.	Software Modification Embodiment State
1.K.	References
1.L.	Other Documents Concerned
1.M.	Tooling Affected
1.N.	Interchangeability or Mixability of Parts
<b>2.</b>	<b>ACCOMPLISHMENT INSTRUCTIONS</b>
2.A.	General
2.B.	Operational Procedure
2.C.	Testing Procedure
2.D.	Identification
2.E.	Operating and Maintenance Instructions
<b>3.</b>	<b>MATERIAL INFORMATION</b>
3.A.	Basic Information
3.B.	Material required
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<b>4.</b>	<b>APPENDIX</b>
4.A.	Mechanical Drawings and Wirings
4.B.	Customer Feedback
4.C.	Design Organization Responsibility
Attch. 1	Customer Feedback Form

## 1. PLANNING INFORMATION

### 1.A. EFFECTIVITY

**Eurocopter AS350 B, BA, B1, B2 and B3**, limited to serial numbers indicated in the relative change's Approval Form (Form AL/DOM 2.1.1) released from AIRLIFT AS (DOA EASA.21J.315) to the customer.

It is furthermore understood that any a/c modified without the above mentioned written permission releases AIRLIFT AS, as the approval holder, from any responsibility or obligation defined in EASA Part-21, there including the provision of valid installation and continuing airworthiness instructions.

Eurocopter AS350 B, BA, B1 B2 and B3 with dual SAFT 151CH1 main battery according to Eurocopter **SB 24.00.01** (Starting in very cold weather). SB 24.00.01 corresponds to Mods 070300, 070511, OP2779, OP2780, OP3826 (B2 only), OP3827 (B2, B3 only) and OP3828 (B3 only).

### 1.B. ASSOCIATED REQUIREMENTS

This modification is approved in conjunction with operating and maintenance instructions defined at paragraph 2.D.

Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product.

### 1.C. REASON

Installation of dual Concorde RG-350 24V 17Ah (each) Valve Regulated Sealed Lead-Acid (VRSLA) aircraft battery as Main Battery in place of the original Nickel-Cadmium battery.

### 1.D. DESCRIPTION

The change introduces a direct replacement of existing SAFT batteries installed in AS350 helicopters without the need to perform any structural or electrical modification.

Concorde valve regulated sealed recombinant gas (RG) Turbine Starting RG-350 aircraft batteries, FAA TSO-C173 approved, are contained in a fully sealed aluminum container, avoiding spillage, fitted with silver plated brass M8 terminals. The Valve Regulated Sealed Lead-Acid design of the battery avoid the need of any water replenishment requiring lower maintenance requirements than the original Ni-Cd batteries.

### 1.E. COMPLIANCE

Compliance of this Engineering Order remains at operator's initiative.

## **1.F. APPROVAL**

The Change introduced with this Engineering Order is approved under the authority of DOA No. EASA.21J.315.

## **1.G. MANPOWER**

Avionic technician: 2 hours

## **1.H. WEIGHT AND BALANCE**

The weight change introduced by the installation of two RG-350 (in place of two Saft 151CH1) is 7,2 kg.  
The weight of the RG-350 battery is 18,6 kg (each).

## **1.I. EFFECT ON ELECTRICAL LOAD**

No effect.  
Each RG-350 battery has a rated capacity of 17 AH.

## **1.J. SOFTWARE MODIFICATION EMBODIMENT STATE**

Not applicable

## **1.K. REFERENCES**

For documents revision status refer to Approval Form.

ICA-350-24-101-01, Instructions for Continued Airworthiness.

The RG-350 battery component continued airworthiness information are contained in Component Maintenance Manual CMM 24-30-71 (Concorde Battery Corporation Doc. 5-0171).

## **1.L. OTHER DOCUMENTS CONCERNED**

The information contained in the following manuals remain valid and are completed by the set of documents listed at paragraph 1.K as far as the helicopter is Post modification AIRLIFT DO-350-24-101.

Aircraft Maintenance Manual (AMM)  
Illustrated Parts Catalogue (IPC)  
Weight and balance Document  
Aircraft Flight Manual

**1.M. TOOLING AFFECTED**

Refer to CMM 24-30-71 (ref. § 1.K.) for list of tools necessary for battery testing.

**1.N. INTERCHANGEABILITY OR MIXABILITY OF PARTS**

Not applicable.





2.A.2. – General & Safety Instructions	Sign
<p><b>STANDARD PRACTICES</b>  MTC.20.02.07.101-407 for Electrical bonding procedures  MTC.20.07.02.201 for safety instructions with helicopter inside the hangar  MTC.20.07.02.206 for handling batteries on the ground safety instructions  MTC.20.07.03.406 for instructions applicable when working on the electrical system  MTC.20.07.03.408 for Post modification check</p>	
<p><b>NOTE</b>  In case of missing information or doubt on interpretation of the instructions here contained or referred to, please contact Airlift Design Organisation (DOA Ref. EASA.21J.315)</p>	

## 2.B. OPERATIONAL PROCEDURE

2.B.1. – Preliminary Steps	Sign
<p><b>a.</b> Deenergize electrical power and unplug battery connector. Refer to AMM 24-00-00, 2-1.</p>	
<p><b>b.</b> Follow General Safety Instructions for Electrical Power defined in AMM 24-00-00, 3-1.</p>	

2.B.10. – Procedure	Sign
<p><b>a.</b> Disconnect and remove the existing Nickel-Cadmium main batteries according AMM 24-33-00, 4-1.</p>	
<p><b>b.</b> Endcap and stow battery temperature probe connector.</p>	
<p><b>c.</b> Clean the battery mounting area i.a.w. AMM 24-33-00, 2-1.</p>	
<p><b>d.</b> Install two Lead Acid batteries (1) i.a.w. AMM 24-33-00, 4-1. Disregard the instruction to reconnect the temperature probe connector.</p>	
<p><b>e.</b> Fabricate and install Placard shown in Figure 2.B.10.1. (below) on the instrument panel in clear view of the pilot.</p>	

**BATT TEMP WARNING DISABLED  
HELICOPTER EQUIPPED WITH SEALED LEAD ACID BATTERY**

**Figure 2.B.10.1. - Placard**

## 2.C. TESTING PROCEDURE

Not applicable

## 2.D. IDENTIFICATION

<b>2.D.1. – Identification and recording.</b>		<b>Sign</b>
<b>a.</b>	Record embodiment of Mod. <b>AIRLIFT DO-350-24-101</b> through application of this Engineering Order in the aircraft documents.	
<b>b.</b>	Insert Airlift's Flight Manual Supplement <b>FMS-350-24-101-01</b> into Aircraft Flight Manual.	
<b>c.</b>	Update maintenance procedures and maintenance schedule with instructions for continued airworthiness identified in <b>ICA-350-24-101-01</b> .	
<b>d.</b>	Calculate total Weight & balance change by data indicated at section 1.H. Update the helicopter Weight & balance record.	
<b>e.</b>	Acknowledge Airlift DOA of modification accomplishment filling out "customer feedback" form (Attachment 1 to Instructions for Continued Airworthiness).	

## 2.E. OPERATING AND MAINTENANCE INSTRUCTIONS

### 2.E.1. – Operating Instructions

Changes to the operating instructions intended for flight crews are identified in **Airlift's Flight Manual Supplement FMS-350-24-101-01**.

### 2.E.2. – Maintenance Instructions and Airworthiness Limitations

Additional maintenance requirements and airworthiness limitations introduced by this Change are identified in **Airlift's Instructions for Continued Airworthiness ICA-350-24-101-01**.

Maintenance requirements connected to the Ni-Cd Battery installation are no longer applicable.

### 3. MATERIAL INFORMATION

#### 3.A. BASIC INFORMATION

The list of material required to ensure compliance with this Engineering Order has been drawn up for one helicopter.

#### 3.B. MATERIAL REQUIRED

##### 3.B.1. – Material List

Item	Q.ty	P/N	Description	Vendor
1.	2	RG-350	Valve Regulated Sealed Lead-Acid Battery	Concorde

##### 3.B.2. – Wiring List

Not applicable

#### 3.C. SPECIAL TOOLS REQUIRED

Not applicable

#### 3.D. PROCUREMENT CONDITIONS

Part(s) can be provided by the indicated vendor.

## 4. APPENDIX

### 4.A. MECHANICAL DRAWINGS AND WIRINGS

Not applicable.

### 4.B. CUSTOMER FEEDBACK

Based on the requirements of EASA Part 21A.3, the holder of a design is requested to collect information from all known operators / users with regards to his product / modification.

Your information is valuable to us. It provides us important data which we will use in a data base to track and monitor the reliability of our installations.

We therefore we require you to notify us:

- Any occurrence or problem encountered during application of this Engineering Order;
- Any occurrence which may involve failures, malfunctions or defects to this product / modification covered in this Design Order;
- Airlift Engineering Order accomplishment (Aircraft Modified in respect to our Change);
- A/C demodification in respect of our Change;
- A/C change of ownership;
- Owner/operator Change of data such as address, contact phone number, etc.

Please use the form shown in Attachment 1 to this EO to notify such information.

### 4.C. DESIGN ORGANISATION RESPONSIBILITY

Airlift's design organization undertakes to maintain and update this document as long as any product which incorporates the design is airworthy.

Updates will be provided to all known operators and to Part 145 organisations upon request.

## ATTACHMENT 1 – CUSTOMER FEEDBACK

Ref.: **MOD. AIRLIFT DO-350-24-101** introduced with **Airlift Engineering Order EO-350-24-101-03**.

**Aircraft Type, Version** \_\_\_\_\_ **Manufacturer S/N** \_\_\_\_\_

**Type of acknowledge:**

- Notification of occurrence** (problems encountered during application of this EO, failures, malfunctions or defects to the product introduced with the modification at Ref.)
- Aircraft Modified** (i.a.w. doc. at ref.)       **Aircraft De-Modified**
- Aircraft Change of Ownership**       **Update of owner data**

Notification or Operator / owner name & address (use more pages if needed)

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Operator / owner representative

Name \_\_\_\_\_ Title \_\_\_\_\_

Sign. \_\_\_\_\_ Date \_\_\_\_\_

Send this page to:

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