

SERVICE BULLETIN

**Kawasaki BK117**

TITLE: Upgrade to Underwater Locater Beacon (ULB) of Data Acquisition Flight Recorder (DAFR)

1. EFFECTIVITY

(1) Helicopters Affected:

<u>Model</u>	<u>Mfg. Serial No.</u>
KAWASAKI-BK117 C-2	4001, 4007, 4025, 4026, 4028, 4029, 4030, 4031, 4033, 4038, 4039, 4040, 4043, 4046

(2) Parts Affected:

<u>Part Number</u>	<u>Part Name</u>	<u>Remarks</u>
D51615-202-021	Data Acquisition Flight Recorder (DAFR)	Version: Issue 4, Mod 1 and after

NOTE: If the version is prior to Issue 4, Mod 1, contact KHI. In such cases, the internal memory module of the DAFR must be updated by the manufacturer.

2. PURPOSE

Penny & Giles (CURTISS-WRIGHT), the original manufacturer of the Data Acquisition Flight Recorder (hereafter, "DAFR"), has issued Service Bulletin SB D51615-31-19 regarding an upgrade to the Underwater Locater Beacon (hereafter, "ULB"), which emits an acoustic signal when the DAFR is submerged. This upgrade increases the continuous signal emission period from 30 days or more to 90 days or more. This Service Bulletin (KSB-117-477) implements the content of the aforementioned Penny & Giles (CURTISS-WRIGHT) Service Bulletin to update the continuous signal emission period of the ULB to 90 days or more when submerged.

Implementation of this Service Bulletin changes the part number of the DAFR from D51615-202-021 to D51615-202-021-090.

3. CATEGORY

OPTIONAL

4. COMPLIANCE

The implementation of this Service Bulletin is determined by the customer.

5. JCAB APPROVAL

This Service Bulletin does not require JCAB approval.

6. LOGBOOK ENTRY

Make an entry in the Aircraft Logbook stating that the work has been accomplished in accordance with KSB-117-477.

7. MAN-HOUR REQUIRED

Approximately 2 man-hours (for reference only) will be required.

8. WEIGHT AND BALANCE CHANGE

Weight change: 0.5 kg

Balance change: +1445.64 kg·mm

9. ACCOMPLISHMENT INSTRUCTIONS

NOTE: When implementing this Service Bulletin, verify that the version of DAFR

D51615-202-021 is as follows.

- Issue 4, Mod 1 or later

(1) Preparation

- a. If an external power supply is connected to the helicopter, disconnect the external power supply in accordance with AMM 24-00-00, 2-1.
- b. If the battery is connected, disconnect the battery in accordance with AMM 24-00-00, 2-2.
- c. Remove the DAFR in accordance with AMM31-34-00, 4-1. Discard the removed bolts.

(2) Replacement of ULB

- a. Replace the ULB in accordance with Penny & Giles (CURTISS-WRIGHT) Service Bulletin SB D51615-31-19, Revision 10 (refer to the attachment to KSB-117-477).

(3) Close Up

- a. Install the DAFR with the newly replaced ULB In accordance with AMM31-34-00, 4-1A.
- b. Conduct an operational test of the DAFR In accordance with AMM31-34-00, 5-1.
- c. As necessary, connect the battery in accordance with AMM 24-00-00, 2-2.
- d. Complete this Service Bulletin by making an entry in the Aircraft Logbook stating that the work has been accomplished in accordance with KSB-117-477.

10. PARTS AND MATERIAL INFORMATION

(1) Required Parts for One Helicopter

Part Number	Part Name	Qty	Remarks
KSB-117-477-1	Modification Kit	1	
Details of Modification Kit			
SA112457	Beacon Bracket Assembly, LH	1	
- P112281	Bracket, LH	1	Component of SA112457
- P112454	Connecting Plate	1	Component of SA112457
- P112456	Connecting Plate	1	Component of SA112457
- 435845026	Screw	2	Component of SA112457
P112282	Beacon Bracket, RH	1	
P112297	Retention Plate	1	
P112298	Retention Foot, RH	1	
P112304	Retention Screw	2	
P112305	Retention Foot, LH	1	
220000084 or 220000102	Dukane ULB Type DK120/90 or Dukane ULB Type DK290-11	1	
250208135	Roll Pin 1.5 mm Dia × 10 mm Long	2	
230180180	Fluorosilicone, 0.070 mm Thick	100 mm	
435890009	Screw M5×10 mm	2	
680150161	Washer M5	6	
W107841/0530	Screw M5×30 mm	2	
W107841/0540	Screw M5×40 mm	2	
P112536	Identification Nameplate	1	
MS27039-4-10	Screw	4	Used when installing on helicopter.

(2) Required Materials for One Helicopter

Specification	Nomenclature	Qty	Remarks
LOCTITE 222	Loctite	AR	CM621 (NOTE)
FED TT-N-95 Type II or equivalent	Naphtha	AR	CM222 (NOTE) Used for cleaning after removing existing nameplates or the like.

NOTE: CM numbers indicate consumable material CM numbers listed in the MAINTENANCE MANUAL.

(3) Parts to be Removed

Part Number	Part Name	Qty	Remarks
220000040 (DK140)	Underwater Locater Beacon (ULB) (30-Day Type)	1	
P110318	Beacon Mounting Bracket - Top	1	
P109552	Beacon Mounting Bracket - Bottom	1	
435350483	Screw M5×45 mm	4	
435890002	Screw M5×12 mm	2	
680150161	Washer M5	6	
230180180	Fluorosilicone, 0.070 mm Thick	1	
SA111463	Mounting Foot Assembly	2	
P111405	Identification Nameplate	1	
W107350	MOD Recording Label	1	
P110280	Software Version Label	1	
AN4-5A	Bolt	4	For attachment to the helicopter

11. SPECIAL TOOLS REQUIRED

Part Number	Part Name	Remarks
Model PM or equivalent	Manual Pin Inserter Press	Spirol Use as necessary.
CXD or equivalent	Pin Driving Chuck	Spirol Use as necessary.

12. REFERENCE TECHNICAL DATA

KAWASAKI BK117 C-2 AIRCRAFT MAINTENANCE MANUAL (AMM)

Penny & Giles (CURTISS-WRIGHT) Service Bulletin SB D51615-31-19, Revision 10 (Attached)

13. AVAILABILITY OF KIT

Information on availability of the parts and materials required for the accomplishment of this Service Bulletin is provided on request by KHI Civil Helicopter Business Section II.

When making inquiries, please send a photograph of the DAFR identification nameplate.

Prepared by: KAWASAKI HEAVY INDUSTRIES, LTD.
AEROSPACE SYSTEMS COMPANY
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Gifu Prefecture, 504-8710, Japan



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SERVICE BULLETIN

INDICATING/RECORDING SYSTEMS

DATA ACQUISITION FLIGHT RECORDER (DAFR) TYPE D51615-202-XXX AND DUAL INPUT DATA ACQUISITION FLIGHT RECORDER (DIDAFR) TYPE D51615-203-XXX REPLACEMENT UNDERWATER LOCATOR BEACON (90-DAY) UPGRADE KIT P/N KIT112814

DOCUMENT No.: SB D51615-31-19
DATE OF ISSUE: 29th June 2017
REVISION: Revision 10
DATE OF REVISION: 17th November 2021
CLASSIFICATION: INFORMATION

NOTE:

Before performing any of the tasks defined by this Service Bulletin, please ensure that you are using the latest (current) version of this document. Check the revision/issue status by accessing the following link:

<https://www.curtisswrightds.com/support/technical/christchurch.html>

You will be able to view the Technical Publications Registers and, if necessary, request a copy of the current revision/issue.

Jurisdiction	Classification	Date	Re-Export Only?
USA	7E994	17 Nov 2021	≠ N
UK	Not Listed	17 Nov 2021	≠ N

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SECTION 1: PLANNING INFORMATION

1.1 Effectivity

This Service Bulletin is only applicable to the following Product Types:

Part Number	Build Standard (and Later)
D51615-202-005	Issue 1
D51615-202-006	Issue 1 Mod 1
D51615-202-011	Issue 1
D51615-202-013	Issue 1
D51615-202-021	Issue 4 Mod 1
D51615-202-031	Issue 1 Mod 1
D51615-203-006	Issue 2 Mod 1
D51615-203-007	Issue 2 Mod 0
D51615-203-012	Issue 2 Mod 0

NOTE:

Units manufactured before 2013 may not suitable for this upgrade and may require further upgrades of the Crash tube (subject to a full evaluation of the unit).

1.2 Concurrent Requirements

None.

1.3 Reason

This Service Bulletin has been created to inform all operators using Penny & Giles Aerospace Limited DAFR or DIDAFR recorder types that, in accordance with FAA Directive TSO C121b which came into force on the 1st March 2015, P&G are introducing an Underwater Locator Beacon (ULB) which has an operational life in excess of 90 days.

1.3.1 General

This Service Bulletin details the ULB installation fitted to a DAFR (Type D51615-202-XXX) and DIDAR (Type D51615-203-XXX) series of flight recorders. The ULB location procedure will be similar for the D51615 series of flight recorders.

1.3.2 Existing 30-Day Beacons

Customers with existing 30-day ULB's fitted to their recorders with types listed in Para. 1.1 may upgrade their units to fit the 90-Day ULB Upgrade Kit P/N KIT112814.

Contact Curtiss-Wright (Penny & Giles Aerospace Limited) Customer Services team (CSAerospace@curtisswright.com) for price and lead time information.



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SERVICE BULLETIN

1.4 Description

To resolve transportation issues relating to the Lithium content of Type DK120/90 ULBs, Penny & Giles (Curtiss-Wright) have introduced the Type DK290-11 ULB. The dimensions of both ULB types are identical, therefore, the installation procedure detailed in this Service Bulletin is applicable to both types of ULB.

The new 90-day ULB is approximately 1 inch (25mm) longer than the existing 30-day ULB currently in use. As a result, the mounting brackets which secure the ULB to the recorder have been re-designed and the ULB mounting arrangement has been rotated by 90 degrees to fit the existing size envelope of the recorder unit and ULB combined.

To accommodate the new ULB mounting arrangement, it has been necessary to amend the design of the rear mounting feet of the recorder to aircraft structure as follows:

- The two existing mounting feet attached to the recorder outer casing have been replaced by two (handed) foot fittings attached to the recorder rear casing using the existing screw locations.
- The recorder is secured to the aircraft structure with a retention plate which is mounted on the aircraft structure and secured to the two new foot fittings on the rear of the recorder by two cap-head screws.

1.5 Compliance Recommendation

This Service Bulletin may be accomplished at the next suitable planned maintenance period.

1.6 Approval

This Service Bulletin has been issued by Penny & Giles Aerospace Limited (an agent of Curtiss-Wright Controls (UK) Limited) under the terms of the Company's international Quality Approvals.

1.7 Manpower

Approximately two hours.

1.8 Weight and Balance

The 90-day ULB Upgrade Kit P/N KIT112814 will increase the weight of the Flight Recorder assembly from approximately 3.3kg to approximately 3.8kg (maximum).

1.9 Electrical Load

Not changed.

1.10 Software Accomplishment Summary

Not applicable.



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SERVICE BULLETIN

1.11 References

FAA Directive TSO C121b

Penny & Giles Aerospace (P&G) Installation & Operating Manual PIM 434-I, Dated: January 2021

P&G Installation & Operating Manual PIM 454-I, Dated: January 2021

Dukane Seacom Technical Manual 03-TM-0063 (Revision A) for the Type DK120/90 ULB

Dukane Seacom Technical Manual 03-TM-0090 (Revision A) for the Type DK290-11 ULB

NOTE:

Persons wishing to obtain further information relating to the Dukane ULB's Type DK120/90 or DK290-11 should contact Curtiss-Wright (Penny & Giles Aerospace Ltd.) for a copy of the relevant document.

1.12 Other Publications Affected

None.

1.13 Interchangeability or Interminability of Parts

Not Applicable.

SECTION 2: MATERIAL INFORMATION

2.1 Material, Price and Availability

90-Day ULB Upgrade Kit p/n: KIT112814 is required to accomplish this Service Bulletin (see *Table 1*).

Price and availability of the Upgrade Kit are available on request.



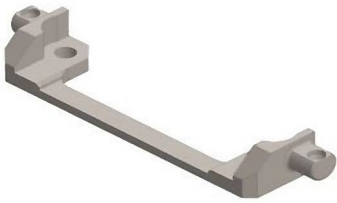



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SERVICE BULLETIN

Table 1 Components of 90-Day ULB Upgrade Kit p/n: KIT112814





<i>Part No.</i>	<i>Description</i>	<i>Qty</i>	<i>Image</i>
SA112457	Beacon Bracket Assy LH Comprising: Bracket LH p/n: P112281 Connecting Plate p/n: P112454 Connecting Plate p/n: P112456 Screw, Pozi-Drive p/n: 435845026	1 1 1 1 2	
P112282	Beacon Bracket RH	1	
P112297	Retention Plate	1	
P112298	Retention Foot RH (ULB end of Recorder Unit)	1	



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SERVICE BULLETIN

Part No.	Description	Qty	Image
P112304	Retention Screw. Torque tighten to between 4.5 – 5.0Nm	2	
P112305	Retention Foot LH (ULB end of Recorder Unit)	1	
220000084	Dukane ULB Type DK120/90	1	
220000102	Dukane ULB Type DK 290-11 (Alternative to the DK120/90)	1	
250208135	Roll Pin 1.5mm Dia x 10mm Long	2	
230180180	0.070mm Section Fluorosilicone	100mm	
435890009	Screw M5 x 10mm TORX ST ST (to secure Retention Feet P112298 & P112305 to Recorder Unit). Torque tighten to between 3.9 – 4.3Nm	2	
680150161	Washer M5 Plain	6	

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SB D51615-31-19
Page 6 of 16



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SERVICE BULLETIN

<i>Part No.</i>	<i>Description</i>	<i>Qty</i>	<i>Image</i>
W107841 /0530	Screw M5 x 30mm HI-TENS STL SKT CAP HD. Torque tighten to between 6.5 – 7.0Nm	2	
W107841 /0540	Screw M5 x 40mm HI-TENS STL SKT CAP HD. Torque tighten to between 6.5 – 7.0Nm	2	
W107350	Modification Label (D51615-202-005-090 and D521615-202-011-090 only)	1	
P112536 (DAFR) or P112555 (DIDAFR)	Main Identification Label (customer must supply details of existing Ident. Label i.e. Unit Serial No. Date of Manufacture etc.)	1	
Total weight of 90-Day ULB assembly = 510.6g (increase in weight of 261.8g)			
Overall weight increase (DAFR & DIDAFR) from 3.3kg to 3.8kg			



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SERVICE BULLETIN

2.1.1 Materials to be Removed

The items which need to be removed/discarded are as detailed in *Table 2* below:

Table 2 Materials to be Removed

<i>Part Number</i>	<i>Description</i>	<i>Quantity</i>
220000040	Beacon – 30-Day	1
P110318	Beacon Mounting Bracket - Top	1
P109552	Beacon Mounting Bracket - Bottom	1
435350483	Screw, M5 x 45mm, Cap Head, HI TENS STL	4
435890002	Screw, M5x12, Button Head, ST STL	2
680150161	Washer, M5, ST STL	6
230180180	0.070mm Section Fluorosilicone	1
SA111463	Mounting Foot Assembly	2
A/R	Unit Main Identification Label	1
W107350	MOD Record Label	1
P110280	Software Version Label	1

2.2 Industry Support Information

All new Type D51615-202-XXX-090 DAFR units and Type D51615-203-XXX-090 DIDAFR units will have a 90-Day ULB fitted during manufacture.

2.3 Material Necessary for Each Component

Available on request.

2.4 Tooling, Price and Availability

Available on request.

SECTION 3: ACCOMPLISHMENT INSTRUCTIONS

3.1 Equipment Required

Table 3 details the equipment required to accomplish this Service Bulletin.



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SERVICE BULLETIN

Table 3 Equipment Required

<i>Item</i>	<i>Equipment</i>	<i>Manufacturer</i>	<i>Part Number</i>
1	90-Day ULB upgrade	P&G	KIT112814
2	Manual Pin Inserter Press	Spirol	Model PM
3	Pin Driving Chuck	Spirol	CXD
4	Fixture	Spirol	
5	Pliers – Needle Nosed	CFE	CFE
6	Hammer	CFE	CFE
7	Scalpel or Craft Knife	CFE	CFE
8	Cleaning Fluid	LRM Label Remover	CFE
9	Loctite 222	CFE	CFE

3.2 Accomplishment Procedure

Changes to ULB's fitted to existing (in-service) recorders may be performed by the customer on the provision that they have adequate facilities in order to carry out the modification.

NOTE:

A photograph of the existing DAFR / DIDAFR unit's Identification label must be supplied to P&G prior to the issue of the 90-Day ULB Upgrade Kit. This will enable us to supply the printed replacement label with the correct information (serial No. etc.).



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SERVICE BULLETIN

3.2.1 Removal of the Existing ULB

NOTE:

Refer to *Figure 1*.

- (1) Remove and retain the four screws and washers which secure the recorder to the aircraft structure
- (2) Remove the recorder from the Aircraft
- (3) Remove and discard the four existing mounting screws (P/N 435890007) which secure the current ULB top and bottom mounting brackets
- (4) Remove and discard the existing ULB and mounting bracket assembly
- (5) Remove and discard the two screws and washers (P/N 435890001 & 680150161) which secure the two mounting foot assemblies (P/N SA111463) (ULB end) to the recorder external casing
- (6) Remove and discard the two mounting foot assemblies
- (7) Using a scalpel or craft knife (Table 3, Item 7), gently lift one corner of the following labels:
 - Main Identification Label (this will be replaced by a new Ident. label as part of the ULB kit supplied)
 - MOD Record Label (A new MOD Record Label is provided as part of the Kit for Type D51615-202-005-090 and D51615-202-011-090 units)
 - Software Version Label (software version will be included in the new Main Ident. label)

NOTE:

Take care not to damage the paintwork.

- (8) Remove the labels from the Front Cover of the Recorder unit
- (9) Remove any adhesive residue using cleaning fluid (Table 3, Item 8)

SERVICE BULLETIN

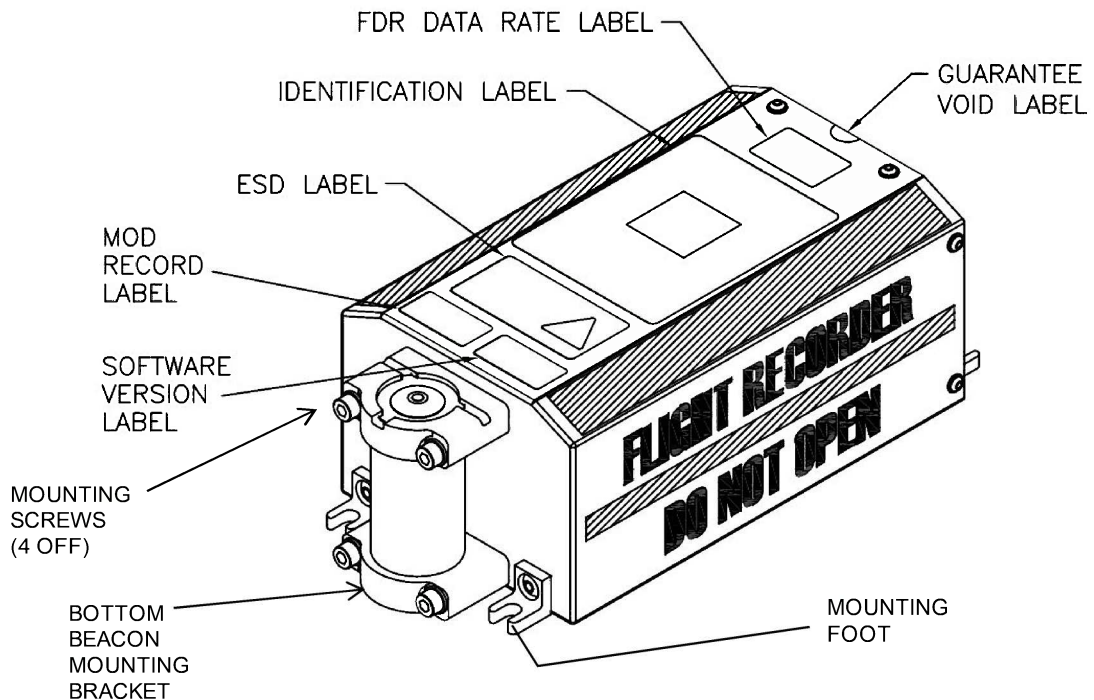


Figure 1 Existing 30-Day Beacon Mounting and Label layout

3.2.2 Fitting the Roll Pins to the Retaining Feet

NOTE:

Refer to Figure 2.

- (1) **Option One (Preferred):** Using a *Pin Press* and a *Pin-Driving Chuck*, place the Retaining Foot (40) face down onto the fixture, and insert a new Roll Pin (30) into the *Pin Driving Chuck*. Locate the pin with the hole in the rear face of the Retaining Foot (40), press the Roll Pin into the Retaining Foot Fixture
- (2) Repeat the above procedure for the Retaining Foot (80) and Roll Pin (30)
- (3) **Alternative to Option One:** Place the Retaining Feet (40 & 80) face down on the workbench. Using a pair of needle-nosed pliers and a suitable hammer, gently tap the new Roll Pins (30) into the locating holes on the rear face of the Retaining Feet



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SERVICE BULLETIN

3.2.3 Fitting the 90-Day ULB Upgrade Kit p/n: KIT112814

NOTE:

Refer to Figure 2.

- (1) Using screws (60) and washers (50), fit Retaining Feet & Roll Pin assemblies into position on the rear face of the Recorder unit
- (2) Apply Loctite 222 to the threads and torque tighten screws to 3.9 - 4.3Nm

NOTE:

The fittings are 'handed' so ensure that the correct location is selected before securing.

- (3) Secure the RH bracket assembly (10) to the recorder using one of the longer fixing screws (110) and washers (50) in the upper location
- (4) Secure the RH bracket assembly to the recorder using one of the shorter fixing screws (90) and washers (50) in the lower location

NOTE:

Apply a small amount of Loctite 222 to both screws before tightening.

- (5) Decide on the orientation of the ULB (130)

NOTE:

The 90-Day ULB Types DK120/90 and DK290-11 are identical in dimension, so the fitting of either type is the same. If installing the Type DK120/90, the ULB may be fitted with the Water Switch end of the beacon in either left or right orientation, however, it is important that the fluorosilicone seal is located at the opposite end of the beacon to the water switch.

Ensure that the ULB is positioned such that the Battery Replacement date is clearly visible on the identification label.

- (6) Fit the fluorosilicone seal (140) into the bore of the appropriate mounting bracket into which the base of the beacon (130) is to be located (refer to Figure 2)
- (7) Slide the ULB into the bracket firmly up against the seal
- (8) Secure LH bracket (120) to the recorder using screws (90), (110) and washers (50). See steps 3 & 4 above

NOTE:

Apply a small amount of Loctite 222 to both screws before tightening.

Ensure all ULB mounting bracket parts are correctly located before tightening the beacon bracket retaining screws (90) & (110) to between 6.5 and 7.0Nm.

SERVICE BULLETIN

3.2.4 Identification of Recorder with 90-Day ULB Fitted

All units:

Carefully apply the new identification label (supplied as part of the 90-Day ULB Upgrade Kit) to the top surface of the Main Cover centrally, approximately 61mm from the bottom edge of the Main Cover (see *Figure 2*). Ensure the identification label is securely fitted.

Type D51615-202-005 & D51615-202-011 (DAFR) units only:

Carefully apply the Modification label centrally below the ESD label, approximately 5mm from the bottom edge and 43mm from the side face of the Main Cover (see *Figure 3*).

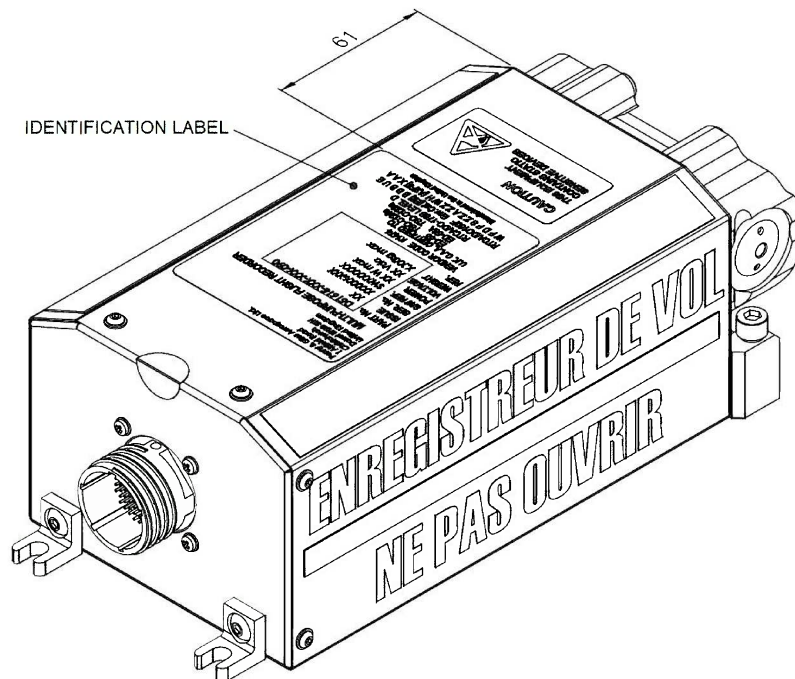


Figure 2 Identification Label Placement

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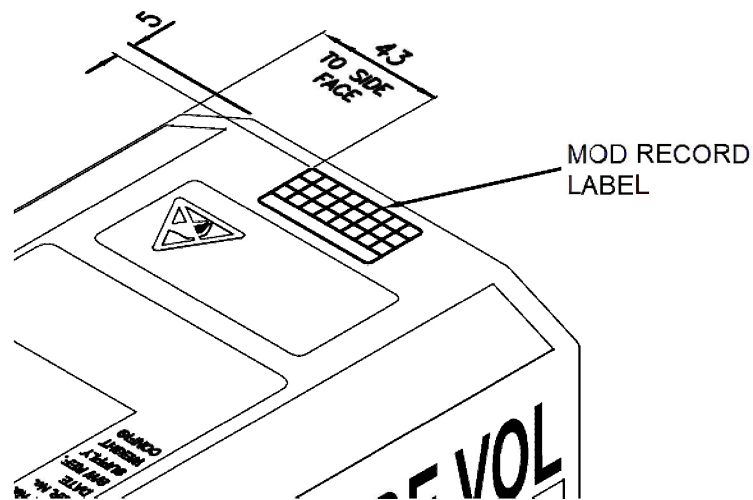


Figure 3 MOD Record Label Placement

3.2.5 Fitting the Modified Flight Recorder to the Aircraft

- (1) Fit the retention plate (70) to the aircraft structure using two of the cap-head screws (6.35mm Dia.) and washers removed in *Section 3.2.1, Step (1)*
- (2) Locate the foot retention fittings (40) and (80) into the retention plate (70)
- (3) Apply a small amount of Loctite 222 to the threads of the screws (20)
- (4) Secure the Retention assembly with the two screws (20) and torque tighten the screws to between 4.5 and 5.0Nm
- (5) Secure the two existing recorder foot fittings to the aircraft structure using the remaining two cap head screws and washers removed in *Section 3.2.1, Step (1)*

SERVICE BULLETIN

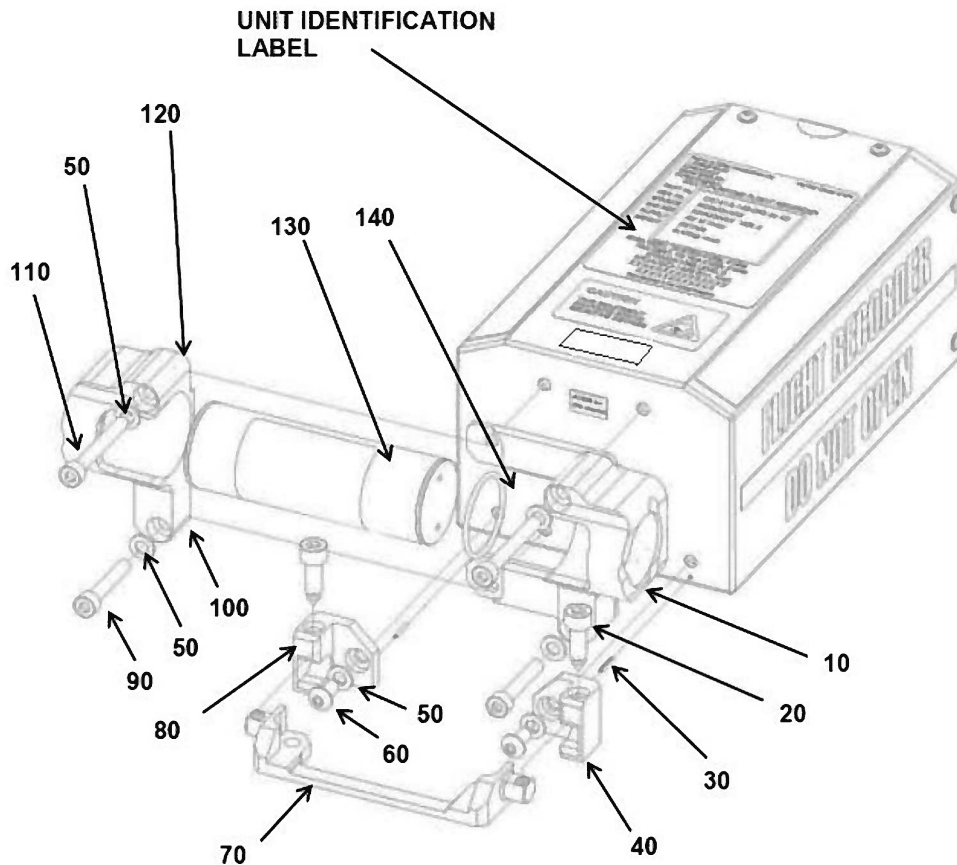


Figure 4 90-Day Beacon Mounting and Label Arrangement

3.3 Marking

Recorders modified with a 90-Day ULB will be identified by the Part Number suffix "-090" (e. g. D51615-202-005-090) indicated on the unit identification label located on the top cover of the recorder Unit.

Units upgraded from D51615-202-005 or D51615-202-011 Issue 1 MOD 0 Build Standard will require a strike through of MOD 10 on the MOD Record Label to indicate this upgrade.

NOTE:

Type D51615-202-005 and Type D51615-202-011 units at Issue 1, MOD 1 will require a replacement MOD Record Label P/N: W107350 in addition to the 90-Day ULB Kit. Please contact Penny & Giles for more information.

Customers modifying the recorder with the new 90-Day ULB will have replaced the identification label as part of the procedure.



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SERVICE BULLETIN

SECTION 4: CONTACT INFORMATION

For further information in relation to this Service Bulletin, please contact the following:

Customer Support (Technical Services)

Penny & Giles Aerospace Limited
Curtiss-Wright
15 Enterprise Way,
Aviation Park West,
Bournemouth International Airport,
Christchurch,
Dorset, BH23 6HH
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Telephone: +44.1202.034000

Email: CS_Technical_Services@curtisswright.com