

Fastfind & Fastfind Plus personal location beacon



Owner's manual

WARNING

Use only in situations of grave and imminent danger

Register PLB with national authority before use

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IMPORTANT

Please take time to read this manual carefully and to understand its contents fully, so that you can maintain your PLB and operate it correctly in case of an emergency



Recommendations and Safety Notices

This Fastfind or Fastfind Plus Personal Location Beacon (PLB) is an emergency radio beacon for use only in situations of grave and imminent danger.

False alarms cause expensive disruption to search and rescue services, and may endanger lives. Deliberate misuse of the PLB can result in a severe penalty.

WARNING: Some countries have restrictions or prohibitions on the use of PLBs; make sure you are aware of the appropriate regulations.

Make sure you read this manual and understand how to activate/de-activate your PLB, and how to change the battery packs. Ensure that the PLB is registered with your national authority. Failure to register may lead to prosecution.

The PLB and battery pack contain no user-serviceable parts. Do not dismantle the PLB or the battery pack. Battery packs contain lithium batteries. Do not incinerate, puncture, deform, or short-circuit. Dispose of spent battery packs safely and in accordance with local waste disposal regulations.

The PLB is a radio transmitter, and as such emits radio frequency radiation when activated. This radiation is classified as harmless because of the levels and duty cycles; however it is advisable not to handle the antenna while the unit is transmitting.

Registration and licensing

Each PLB is programmed with a unique digital identity before reaching the customer. This 15 digit hexadecimal number appears on the programming information label located on the back of the PLB (visible when the battery pack is removed), and is pre-printed on the registration card included in the PLB pack. This is the identity which is transmitted to the satellite system when the PLB is activated.

The registration form must be completed, signed, and forwarded to your national authority by fax or mail as soon as possible. (In some countries the registration form will have been completed at the point of sale, and no further action is necessary.) Wherever possible, the registration forms are pre-printed with the correct mailing address and fax number. If your form does not have a registration address, contact your supplier.

It is usual to receive confirmation when you register. In some countries (eg USA, UK) you will be sent a sticker which must be attached to the PLB. A space for this is provided on the PLB body underneath the battery pack. (See "Battery Packs" section for details of how to remove the pack). The information you provide on the registration form is used only for search and rescue purposes. A second form is enclosed with the PLB to register any change of ownership details.

Licensing regulations vary from nation to nation. Remember to apply for a licence if one is required for 406 MHz PLBs in your country of residence. Your supplier should be able to advise on licensing, or you can contact your national communications licensing authority.

Quick Checklist

Do:

- Test the PLB before taking it on a trip
- Ensure that the PLB is registered with the Search and Rescue Authority
- Ensure that if necessary you have a valid radio licence for the PLB
- Make sure that you know how to activate and position the PLB in an emergency
- Check the battery expiry date

Don't:

- Activate the PLB unless there is a genuine emergency
- Tamper with the red cover or antenna
- Test the PLB too frequently

Introduction

Congratulations on your discerning purchase of this Fastfind 406MHz PLB. This beacon has been designed to ensure your peace of mind by providing you with many years trouble-free service.

If you have any problems or require further help and advice, please do not hesitate to contact your retailer, distributor or McMurdo directly.

The Fastfind and Fastfind Plus PLBs are Personal Location Beacons. In an emergency, activating the beacon causes an alarm to be transmitted to the rescue services through the COSPAS-SARSAT satellite array. This alarm enables the user's location to be established; the PLB also transmits a local homing signal to direct the rescue mission.

The Fastfind PLB uses the satellite system to establish the position of the emergency; the Fastfind Plus incorporates a GPS (Global Positioning System) module which pinpoints the user's position directly and sends this information to the satellite for onward transmission.

Preparation for Use

List of contents

- PLB
- Belt Pouch with integral lanyard
- Registration Card
- Warranty Card
- User manual (this document)

Open the box and check all the contents. Take out the PLB and record its Serial Number, its (15 digit) Hex ID code and its purchase date in the spaces provided on the back cover of this manual. Fill in the Registration card and send this off immediately; more information is on Page 1 of this manual. Fill in the Warranty card and return it to McMurdo; keep your proof of purchase safe.

Test the PLB in accordance with the instructions in the next section of this manual.

Belt Pouch

The belt pouch is for carrying the PLB hands-free. Fit the pouch to the belt, remove the free end of the lanyard from the pouch and attach it to the PLB as shown below, then place the PLB in the pouch and close the self-sealing cover. To remove the PLB, pull open the cover and extract the PLB.

Operation

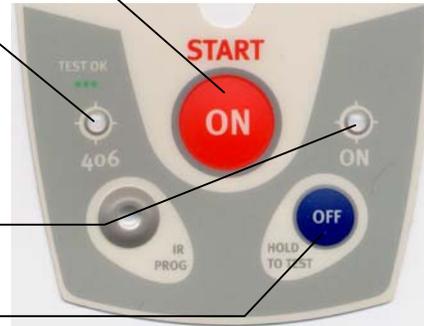
Self-test

Emergency ON
button

Green lamp

Red lamp

Self-test/OFF
button



PLB control panel (Fastfind shown)

The PLB should be tested before setting out, but testing should be limited to about 12 times per year to minimise the total power taken from the battery. Self-test should generally only be carried out in the first five minutes of any hour, although this recommendation may vary from country to country.

Open the flip-top lid. Do NOT pull off the red anti-tamper cover.

Self-test uses the OFF/Test button, located under the flexible handle of the red anti-tamper cover on the right side as shown above.

Slide a finger under the flexible handle of the anti-tamper cover to operate the switch. Press the switch and **HOLD IT DOWN** until the self-test sequence is completed. This will take about 8 seconds. While the button is held down and the self-test sequence is in progress the red indicator light marked "ON" (above the switch) will illuminate.

**Self-test**

On successful completion of the self-test sequence, the green light on the left will flash 3 times and the buzzer will sound 3 times. The PLB will switch itself off after completing a self-test, even if the OFF button is still held down. Release the button and close the flip-top lid.

If the self-test fails, repeat it. If the problem persists, check the battery expiry date. Do not use the PLB; return it to a dealer.

Emergency operation

Important: DO NOT pull off the red anti-tamper cover unless you are activating the PLB in an emergency. Make sure the PLB is firmly anchored to lifejacket, clothing, or person (eg with a strap) before activating.

Raise the flip-up lid to expose the red anti-tamper cover. Once opened, the flip-up lid can be pulled off the PLB and discarded if necessary. Grasp the handle part of the red anti-tamper cover, and pull sharply away from the PLB body. This uncovers the START/ON button. The aerial will spring into an upright position as soon as the anti-tamper cover is removed.

Locate and press the large START/ON button located in the centre of the PLB switch panel. THE START/ON BUTTON MUST BE HELD DOWN FOR ABOUT 1 SECOND.

The indicator lights will show the status of the PLB. When the indicator lights are flashing, the PLB is transmitting. A full table of the status indications is given in the section "Indicators". The PLB will continue to transmit for a minimum of 24 hours.

Important: Transmissions do not start until the PLB has been active for 2 minutes. This is to allow time to switch the unit off in the event of accidental activation, preventing a false alert being sent to the search and rescue services. During this period the red indicator light comes on continuously on both the Fastfind and Fastfind Plus models.



Pulling anti-tamper cover from PLB

Antenna erected

Switching off

To switch off the PLB after it has been activated in an emergency (eg when rescue has been effected), press the OFF button and hold it down until the indicator lights go off and the buzzer stops sounding.

A five second delay is built in to the operation of the OFF switch to prevent inadvertent de-activation during an emergency situation. After operating the OFF button, confirm that both indicator lights are extinguished and that the buzzer has stopped.



PLB antenna erected

Using the PLB in an emergency**Do:**

- **Keep PLB flat**
- **Try to place PLB where it has a clear view of the sky**

Don't:

- **Obscure or hold the antenna**
- **Place PLB next to large metal objects**
- **Submerge antenna**

Indicators

Fastfind (non-GPS version)

PLB SELF-TEST		
Event	Self-test button pressed and held	Self-test completed and passed
Red Light	On while self-test sequence in progress (approx 8 seconds)	Off
Green Light	Off	Flashes 3 times
Buzzer	Off	Sounds 3 times

EMERGENCY OPERATION			
Event	First 2 minutes	After 2 minutes	
		Start/On button pressed	121.5MHz homing transmitter on.
Red Light	On continuously for first 2 minutes	Flashes every 2.5 seconds except during a 406 MHz burst transmission	Off
Green Light	Off	Off	Long flash for 2 seconds every 50 seconds, then off.
Buzzer	Sounds approx every 2.5 seconds		

Event	DIAGNOSTIC INDICATIONS				SPECIAL MODES
	Self-test button pressed and held	Self-test completed	During operation		Protocol Programming
Red Light	Off	Flashes 3 times	Does not flash	Flashes every 2.5 seconds	Flashes continually.
Green Light	Off	Off	Long flash for 2 seconds every 50 seconds, then off.	Does not flash	-
Buzzer	Off	Off	-	-	-
Meaning	No power to PLB	Self-test failure	No 121.5MHz signal	No 406 MHz signal	Programming mode.
Action to be taken	Check battery pack is secure. Replace battery pack. Return unit to dealer if problem persists.	Do not use. Return unit to dealer.	None. Unit is still broadcasting 406MHz signal.	None. Unit is still broadcasting 121.5MHz signal.	Programming can only be carried out by an authorised dealer using special equipment.

Fastfind Plus (integral GPS version)

PLB SELF-TEST		
Event	Self-test button pressed and held	Self-test completed and passed
Red Light	On while self-test sequence in progress (approx 8 seconds)	Off
Green Light	Off	Flashes 3 times
Buzzer	Off	Sounds 3 times

EMERGENCY OPERATION					
	First 2 minutes	After 2 minutes			
Event	Start/On button pressed	121.5MHz homing transmitter on.	406 MHz burst transmission	406 MHz burst transmission with GPS data less than 20 minutes old	406 MHz burst transmission with GPS data more than 20 minutes old
Red Light	On continuously for first 2 minutes	Flashes every 2.5 seconds	Long flash for 2 seconds every 50 seconds. Then flashes every 2.5 seconds.	Long flash for 2 seconds every 50 seconds. Then flashes every 2.5 seconds.	Long flash for 2 seconds every 50 seconds. Then flashes every 2.5 seconds.
Green Light	Off	Off	Off	On for 2 seconds every 50 seconds. Then flashes every 2.5 seconds. Comes on in time with red light.	On for 2 seconds every 50 seconds (approx), then off.
Buzzer		Sounds approx every 2.5 seconds			

DIAGNOSTIC INDICATIONS						SPECIAL MODES
Event	Self-test button pressed and held	Self-test completed	During operation			Protocol Programming
Red Light	Off	Flashes 3 times	Only flashes for 2 seconds every 50 seconds	Flashes every 2.5 seconds, but no long (2 second) flash	-	Flashes continually.
Green Light	Off	Off	-	-	Does not flash	-
Buzzer	Off	Off	-	-	-	-
Meaning	No power to PLB	Self-test failure	No 121.5MHz signal	No 406 MHz signal	GPS has not been able to acquire a fix since switch-on	Programming mode.
Action to be taken	Check battery pack is secure. Replace battery pack. Return unit to dealer if problem persists.	Do not use. Return unit to dealer.	None. Unit is still broadcasting 406MHz signal.	None. Unit is still broadcasting 121.5MHz signal.	If possible, make sure GPS view of the sky is not impaired. Flashing red light shows status of 121.5 & 406 MHz transmissions.	Programming can only be carried out by an authorised dealer using special equipment.

False Alarms and Complete Deactivation

If the PLB has been accidentally activated, or if rescue has been effected before arrival of the rescue services:

Attempt to contact the rescue services, coastguard, or police by radio or telephone to advise them of the situation.

Only switch off the PLB if you cannot make contact with the authorities, otherwise leave it on until instructed by the rescue services or authorities to turn it off.

The PLB may be completely deactivated by removing the battery pack, as described in the **Service and Maintenance** section.

Because the PLB is completely sealed against the environment only when the battery pack is fitted, deactivating the unit by removing the pack is not advisable unless:

The PLB cannot be switched off because of damage sustained during the emergency.

On instruction from the authorities or rescue services.

Service and Maintenance

WARNING: If the PLB has been used in an emergency, the battery pack must be replaced. It is advisable to return the PLB to a dealer for a complete service.

Before use

If the PLB has not been examined for more than 1 month, check the battery expiry date. Run the self-test. Examine the PLB for any signs of cracks or other damage.

After use

If the PLB has not been activated, clean it using fresh water, wipe dry and examine for any damage. Store in a cool dry place until next needed.

Inadvertent Activation

If you accidentally damage the tear-off cover or the tamper seal or if you deploy the antenna, the PLB should be returned to a dealer for repair and examination.

Battery Packs

The PLB may be fitted with either of 2 battery packs, which can be changed by the user. Both types of pack will operate in temperatures up to +55°C (+131°F), and may safely be stored in temperatures up to +70°C (+158°F).

The larger battery pack will provide 24 hours continuous operation at a minimum temperature of -40°C (-40°F), making the PLB compliant with COSPAS-SARSAT Class 1 beacon requirements. The smaller battery pack provides 24 hours continuous operation at a minimum temperature of -20°C (-4°F). With this pack fitted, the PLB complies with COSPAS-SARSAT Class 2 beacon requirements. Make sure that the battery fitted to the PLB is suitable for the environment in which it may be used.

A new battery pack must be fitted when the expiry date has been reached. Only use branded battery packs designed specifically for the Fastfind and Fastfind Plus products.

Do not remove and replace the battery pack unnecessarily: this may jeopardise the integrity of the o-ring seals which prevent water ingress around the battery connections between the battery pack and the PLB.

To change the battery pack, simply loosen the battery pack securing screw using a flat-bladed screwdriver until the pack can be lifted out of position. Note that at the opposite end to the screw there is a lug on the pack which locates into a recess in the PLB body. When fitting a replacement pack, ensure the connector o-ring seals are in place. Locate the lug into the recess in the PLB, gently push the pack into position. Fit the lanyard attachment block into the slot and secure it with the pack securing screw. **REMEMBER TO TIGHTEN THE BATTERY PACK SECURING SCREW**, but do not over-tighten.

Battery packs

**-20°C Class 2
Battery Pack
Part No. 85-720**



**-40°C Class 1
Battery Pack
Part No. 85-740**

Spare Parts

Battery pack, Class 1, -40°C	85-765-040
Battery pack, Class 2, -20°C	85-765-020
Replacement pouch	85-736-004
Replacement cover FastFind	85-764-004
Replacement cover FastFind Plus	85-764-504

Service

The PLB contains no user-serviceable parts. It must be returned to a dealer or Service Agent if it requires service.

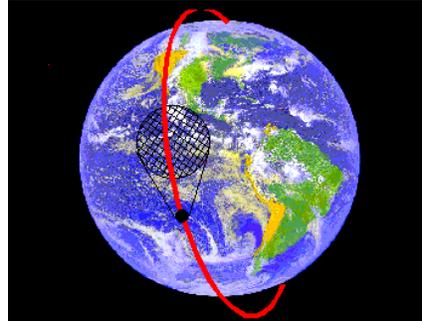
A list of dealers and service Agents is on the McMurdo web site, www.mcmurdo.co.uk, and on the Pains Wessex site, www.pwss.com

If the PLB is returned by post, if possible the original packing should be used. Postage must be paid. Ensure that the name and address of the owner is enclosed with the PLB.

What happens when you activate your PLB

Your PLB transmits a repetitive message on the special distress frequency of 406.028MHz. This frequency is monitored by the COSPAS-SARSAT satellite system specifically to identify and locate distress transmissions.

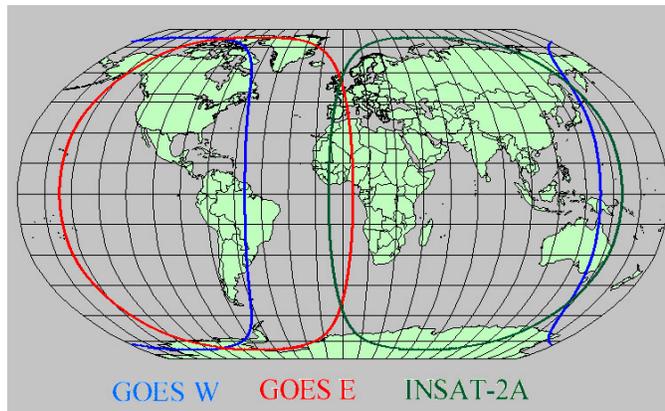
There are two satellite arrays carrying the COSPAS-SARSAT system. The principal array is LEOSAR (Low Earth Orbit Search and Rescue) which has seven satellites in polar and near-polar orbits. The orbits of these satellites are arranged to scan the entire surface of the Earth; on average, a satellite comes into view every 45 minutes.



LEOSAR satellite path and scan footprint
(satellite graphics courtesy of COSPAS-SARSAT)

Distress transmissions from PLBs are picked up by the satellites and retransmitted to ground receiving stations, which then pass the message to the appropriate rescue organisation. On average, the total delay from activation of a PLB to the message being received by the rescue services is 90 minutes.

COSPAS-SARSAT is in an advanced stage of commissioning the second satellite array, GEOSAR (Geostationary Search and Rescue). This array uses geostationary satellites which are always in view (over their area of coverage), so that reception of the PLB signal is instantaneous.



GEOSAR coverage

Rescue organisations are alerted to the position and identity of the distress transmission; it is then their responsibility to allocate suitable resources to investigate and if necessary to effect a rescue.

The Global Positioning System (GPS)

The GPS system is a satellite array which enables a receiver located anywhere on Earth to determine its exact position to within 30m. The Fastfind Plus PLB incorporates this information into its distress transmission, so enabling the rescue organisation to localise the rescue effort into a very small area and thus minimise the resources required whilst greatly increasing the effectiveness of the operation.

Specification

General

Approved to	COSPAS-SARSAT T.007 Class 1
Complies with	EN 60945 RTCM 5-97 SC110-STD Version 1
Operating temperature range	-40°C to +55°C with Class 1 battery fitted, -20°C to +55°C with Class 2 battery fitted
Storage temperature range	-50°C to +70°C
Operational life, Class 1	24 hours minimum at -40°C
Operational life, Class 2	24 hours minimum at -20°C
Battery type, Class 1	12V lithium sulphur dioxide
Battery type, Class 2	11V lithium iron disulphide
Battery expiry	5 years from date of manufacture

Electrical

406.028MHz transmitter

Frequency	406.028MHz \pm 1kHz
Output power	5W \pm 2dB
Data encoding	Bi-phase L
Modulation	Phase modulation; 1.1rads \pm 0.1rads
Transmission time	520ms \pm 1% GPS, 440ms \pm 1% non-GPS
Repetition period	50secs \pm 2.5secs

121.5MHz transmitter

Frequency	121.5MHz +3kHz
Output power	50mW \pm 3dB PERP
Transmit duty cycle	100%
Modulation format	3K20A3X
Modulation frequency sweep	1300Hz to 350Hz
Modulation duty cycle	41% \pm 5%
Sweep repetition rate	3Hz \pm 1Hz
Sweep direction	Programmable UP or DOWN

GPS receiver/engine

	(Fastfind Plus only)
Centre frequency	Band L1 1.57542GHz
Received signal sensitivity	-175dBW minimum
Maximum number of satellites tracked	12

Transmit antenna

Type	Flexible vertical tape monopole
Characteristics	Vertically polarised, omni-directional

Receive antenna	(Fastfind Plus only)	
Type	Ceramic dielectric patch	
Characteristics	RH circular polarised, gain +3dBi nominal	
External interfaces		
Programming interface	IR link to PC serial port	
Manual activation	Sealed membrane switch with tamper cover	
Self test/Manual deactivation	Sealed membrane switch	
Physical characteristics		
Weight, Class 1	411g	
Weight, Class 2	300g	
Length	146mm	
Width	78mm	
Buoyancy	Buoyant with Class 2 battery	
Sealing	Waterproof to 5m immersion	
Communications		
Time to first transmission	2 minutes	
Typical time to alert	LEOSAR:	90 minutes*
	GEOSAR:	05 minutes*
Position accuracy	Fastfind Plus:	60m
	Fastfind:	5km*
* COSPAS-SARSAT published figures		

Owner Notes

McMurdo Limited Product Warranty

Subject to the provisions set out below McMurdo Limited warrants that this product will be free of defects in materials and workmanship for a period of 12 months from the date of purchase.

McMurdo Limited will not be liable to the buyer under the above warranty:-

- for any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow McMurdo Limited's instructions (whether oral or in writing) including a failure to install properly and/or to use batteries recommended and/or supplied by McMurdo Limited, misuse or alterations or repair of the product by persons other than McMurdo Limited or an Approved Service Agent;
- for parts, materials or equipment not manufactured by McMurdo Limited in respect of which the buyer shall only be entitled to the benefit of any warranty or guarantee given by the manufacturer to McMurdo Limited;
- for the battery storage life which is specifically excluded from this warranty;
- if the total price for the product has not been paid.

McMurdo Limited does not make any other promises or warranties (express, implied or statutory) about the product except where the product is sold to a consumer in which case the statutory rights of a consumer are not to be affected.

In order to be valid, claims must be made under the above warranty in writing as soon as practicable after discovery of the defect or failure and within the warranty period referred to above. Proof of purchase will be required. The claim should be sent together with the product in question to the address set out below or to an Approved Service Agent.

Following a valid warranty claim McMurdo Limited shall be entitled to repair or replace the product (or part) in question free of charge, or at McMurdo Limited's sole discretion to refund to the buyer the price of the product (or a proportional part of the price). McMurdo Limited shall not be liable to a buyer who is not a consumer for any other loss or damage (whether indirect, special or consequential loss of profit or otherwise) costs, expenses or other claims for compensation which arise out of or in connection with this product. In the case of a consumer McMurdo Limited shall only be liable where other loss or damage is foreseeable.

Nothing shall limit McMurdo Limited's liability for death or personal injury caused by its negligence.

This warranty is to be interpreted under English law.

All enquiries relating to this warranty or Approved Service Agents should be sent to:

McMurdo Limited

Silver Point, Airport Service Road, Hampshire, PO3 5PB, United Kingdom

Telephone: Int + 44 (0) 23 9262 3900

Fax: Int + 44 (0) 23 9262 3999

Web: www.mcmurdo.co.uk

Email: sales@mcmurdo.co.uk



Record Serial No.:	_____
PLB Hex ID:	_____
Date of Purchase:	_____

Dealer Stamp

McMurdo Ltd

Silver Point
Airport Service Road
Portsmouth
Hampshire
United Kingdom
PO3 5PB

A member of Chemring Group PLC
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