



**HEADSET  
AND HELMET**

**INSTRUCTIONS**

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**Thank you for purchasing the Lynx Relai System.**

**IMPORTANT**

The following instructions have been prepared to provide users of the Lynx Relai Communications System with the necessary information to enable safe and correct use.

Please read this booklet carefully and take time to familiarise yourself with your new equipment and its mode of operation before attempting to use it during flight.

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## INTRODUCTION

The Lynx Relai System Headset and Helmet have been purposely designed for use in the high-noise environment of open-cockpit aviation where noise attenuation and microphone noise cancellation are primary concerns. When connected to a suitable radio transceiver the Relai System allows high quality radio communication while also providing the user with hearing and head protection.



Built to exacting standards, the Relai System is designed to offer the user the very latest in technology in a product intended to provide many years of rugged and reliable service.



## Relai System Headset

The Relai System Headset is intended for direct connection to a hand-portable radio and can be configured to work with all common types of radio transceiver. The headset (fig 1) is manufactured utilising the most recent developments in micro-electronics and contains a high-specification electret noise-cancelling microphone, an interchangeable Radio Module and high-efficiency fixed-coil speakers. To provide for convenient operation, two 'Push-To-Transmit' switches and a volume control are also included on the headset.

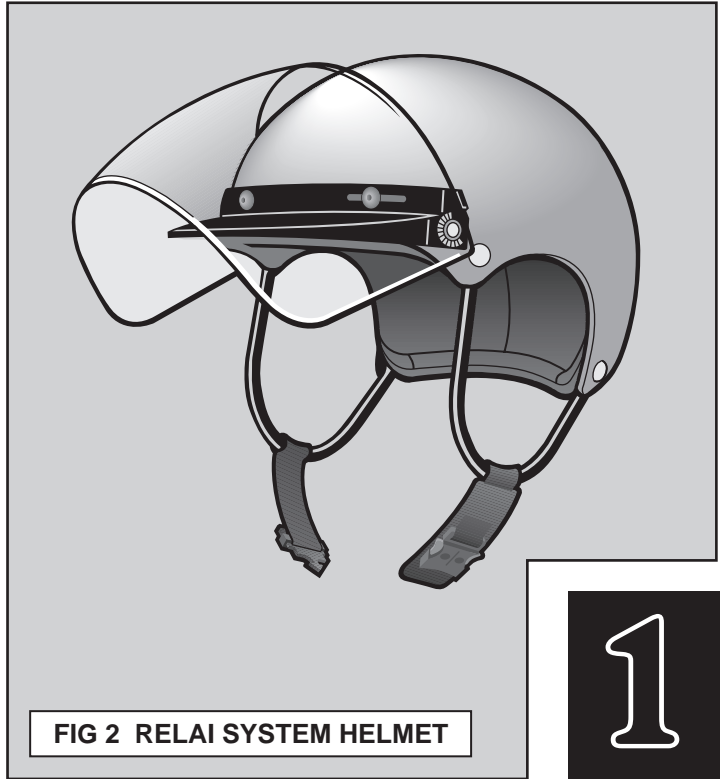
The design and construction of the ear defenders provide noise attenuation and hearing protection in noise levels up to 110 dB(A). The liquid-ring ear seals combine with the adjustable headband to give total comfort over periods of extended use.

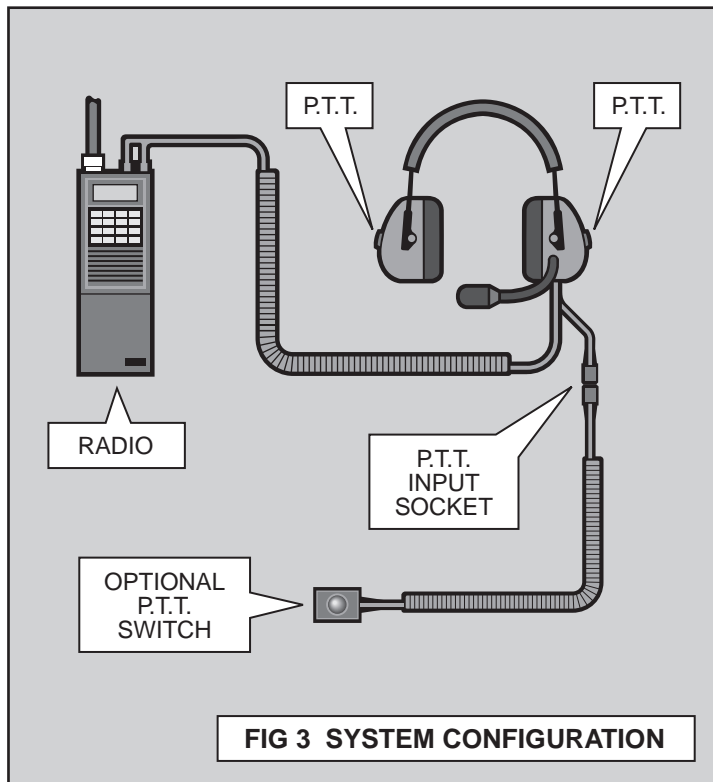
## Relai System Helmet

The Relai System Helmet (fig 2) is designed to mate with the headset to provide a degree of head protection in the event of an accident. Manufactured from Antracol Polycarbonate, the shell is light and extremely strong. The Styrene inner liner is formed to accommodate the headset and is supplied in a range of sizes to ensure an accurate and comfortable fit. The helmet can be used with either goggles or a visor, to protect the eyes from the elements and small flying objects.

The full-face visor is manufactured from scratch-resistant Lexan Polycarbonate and is securely attached to the helmet shell using machine fasteners and a foam sealing strip.

The Lynx Relai System Helmet is only intended for aviation use and is not approved for any other application.





## SYSTEM CONFIGURATION

The Lynx Relai System concept is intended to simplify considerably the configuration and operation of communication equipment within the open-cockpit environment. The Relai Headset connects directly to the transceiver and radio transmissions are controlled using either a built-in 'Push To Transmit' (P.T.T.) switch or a separate switch.

### Radio Connection

The headset is fitted with a standard hand-portable radio connector which will connect directly to most available transceivers. The headset electronics, however, are always configured to work with a specific make and model of radio.

The headset radio configuration is set by installing a Radio Module inside the headset. Each headset is supplied fitted with a module and configured for use with the type of radio specified when ordering.

Before using a headset with a radio, it is important to establish that the headset is correctly configured, as connecting and using a headset which is not fitted with the appropriate Radio Module may damage the headset or the radio. For information on changing the Radio Module and configuring the headset to work with different types of radio, refer to Section 6 on page 11 of this booklet.

### Push-To-Transmit

The P.T.T. switches built-in to the headset are used to switch the radio from receive to transmit when a headset is connected. A headset P.T.T. switch must be used to control radio transmissions when using a headset as the transmit switch fitted to the radio will only allow transmissions from the radio's microphone.

## Push-To-Transmit Switch

In addition to the built-in P.T.T. switches, a P.T.T. input socket is also provided on the headset (fig 3). This facility allows a separate switch to be connected which is hand-held or fixed in position on an aircraft. Several types of 'Push-To-Transmit' switch are available from Lynx for direct connection to the Relai headset and for use in different applications (fig 4).

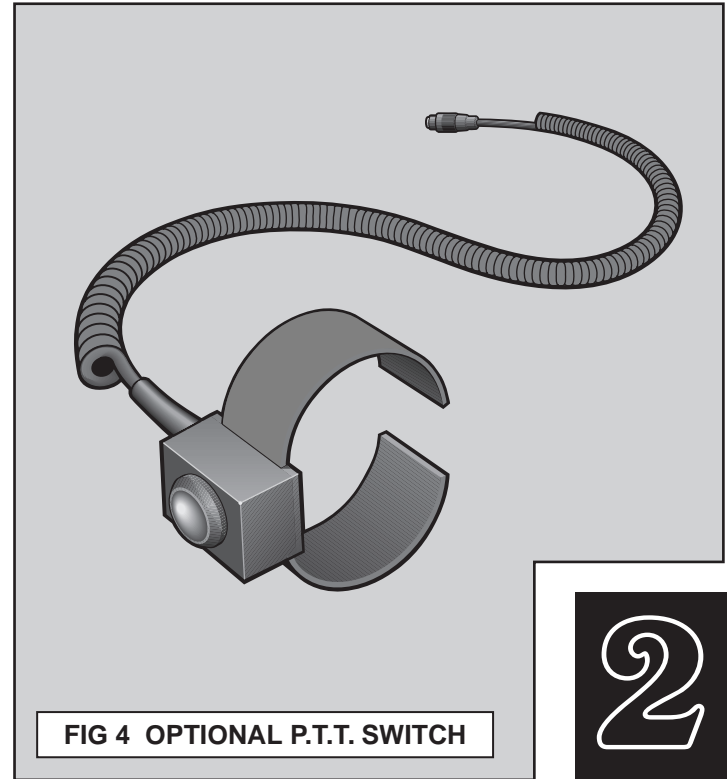
When using an additional P.T.T. switch the connection to the headset should be bayonet locked and correct operation of the equipment should always be established, by a radio check, before flight. For more information on bayonet locking the P.T.T. connection, refer to Section 5 on page 9 of this booklet.

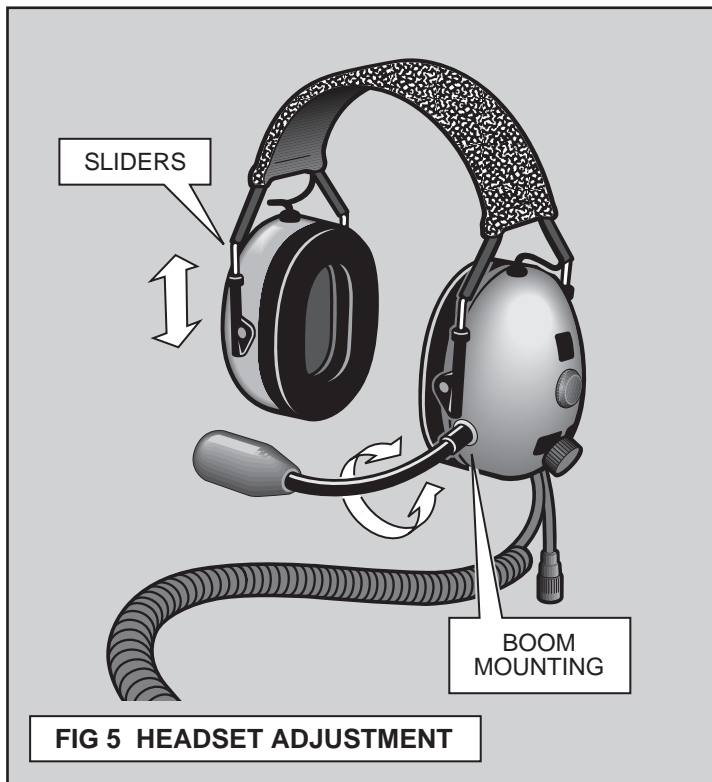
## Power Supply

The Relai headset is driven directly from the radio and does not need a separate power supply. The headset uses less power than the radio's built-in speaker and will actually allow the radio to function for a longer period before recharging.

## Antenna Connection

The antenna connected to a radio greatly affects the performance of the radio, both during reception and transmission. While it is possible to operate a hand-portable radio in an aircraft using the short helical antenna this practice is not recommended. The fitting of a 1/4-wave whip antenna to the aircraft effectively increases the power of a radio, in comparison to the helical antenna, and allows transmission and reception over a much greater range.





## OPTIMUM OPERATION

In order to gain maximum benefit from your Relai System Headset, and to ensure ease of operation, it is advisable to study the simple techniques described below.

### Headset Fitting

The headset headband is adjustable to allow for variations in head shape and size. Adjustment is made possible by the inclusion of sliders at the connection between the headband and the ear defender (fig 5). The simplest means of fitting correctly is to place the headset on the head and then slide the ear defenders downwards until they completely cover the ears. To obtain the best possible noise attenuation, remove as much hair as possible from beneath the ear seals and ensure that the headset is a tight and comfortable fit.

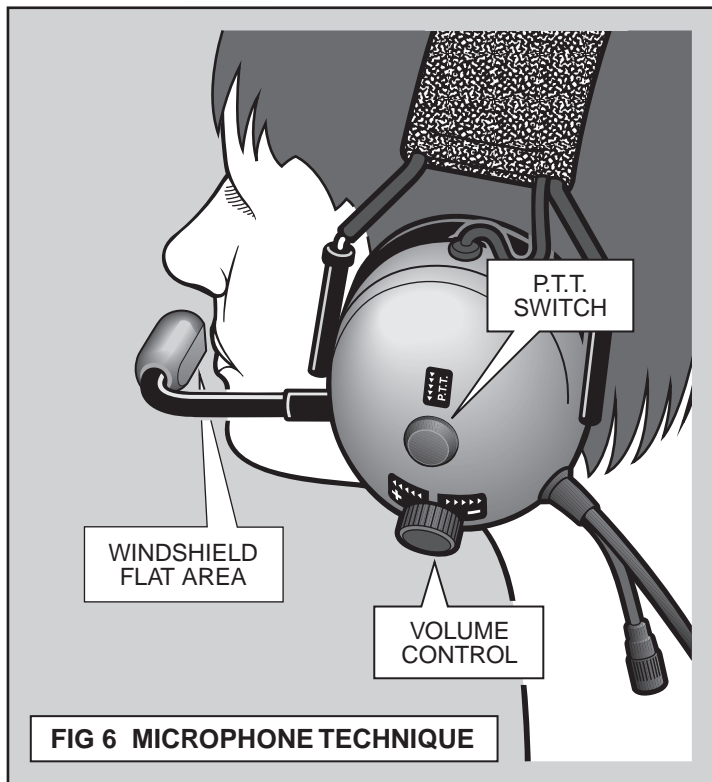
### Microphone Technique

The microphone is mounted on the end of a flexible boom arm and is protected from the elements by a foam wind-shield. A flat area on the shield indicates where the sound should enter the microphone and must always face directly towards the mouth (fig 6). For best results the flat area should also be positioned as close as possible to the lips but without actually touching. Once the boom arm has been set in position it may be swung out of the way and returned to the same position by simply rotating it about the boom mounting (fig 5).

### Volume Setting

The Relai Headset is fitted with a volume control allowing the speaker output in the headset to be adjusted (fig 6). The headset volume can





**FIG 6 MICROPHONE TECHNIQUE**

only be set accurately by carrying out a radio check and adjusting the audio level whilst receiving a radio transmission.

Whilst undertaking radio checks it is important to note that the headset volume control only affects the output of the headset speakers. The level of audio received by the radio should be adjusted separately using the radio volume control. For more detailed information on radio operation refer to the relevant transceiver operating instructions.

Initially the headset volume control should be set halfway and the radio volume control should be used to obtain a comfortable level. Once the radio volume control is set, the headset volume control can be used to increase or decrease the audio level during use.

### **Push-To-Transmit**

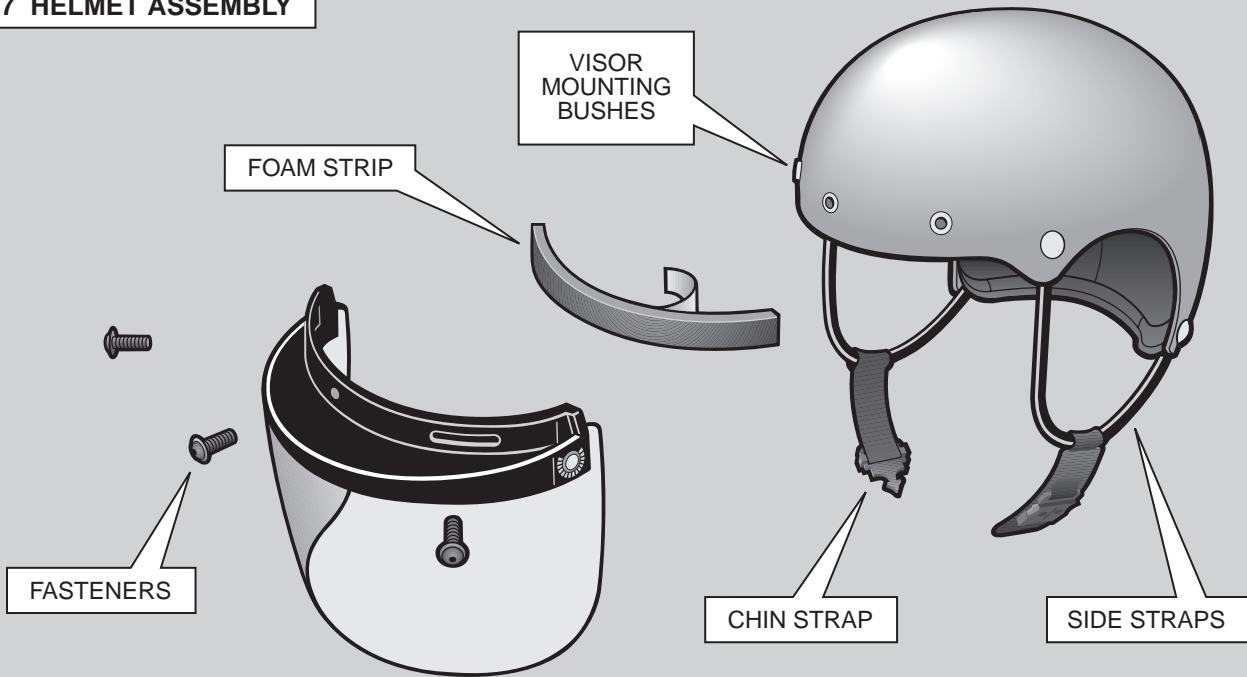
Incorrect operation of a 'Push-To-Transmit' switch (fig 6) may result in the loss of either the first or the last spoken syllable. This effect is known as 'Clipping'. To avoid clipping the transmission always pause after pressing the P.T.T. switch and before speaking. It is also equally important to pause again, after your message, before releasing the switch.

### **Storage**

Relai System headsets should not be stored in temperatures exceeding 40°C (104°F) and they should not be left in direct sunlight for any period of time. Subjecting the headset to temperatures above 40°C may damage the plastic component parts and, in particular, the liquid-ring ear seals.



**FIG 7 HELMET ASSEMBLY**



## HELMET ASSEMBLY AND FITTING

The Lynx Helmet is designed specifically for aviation use and is intended to be used only in conjunction with a Lynx Headset. The outer shell and inner liner are formed to accept the shape of the headset and combine with it to provide an integrated assembly.

### Helmet Size

Lynx Helmets are manufactured in a range of sizes in order to provide individuals with comfortable and securely-fitting head protection. If you are in any way concerned as to the suitability of the size of helmet supplied to you, do not hesitate to contact your supplier for advice.

### Visor

The Lynx Helmet can be used with or without a visor attached. For open-cockpit applications however, the fitting of a visor is recommended (fig 7). The visor is supplied with a foam sealing strip, fixing screws and a hexagon drive key.

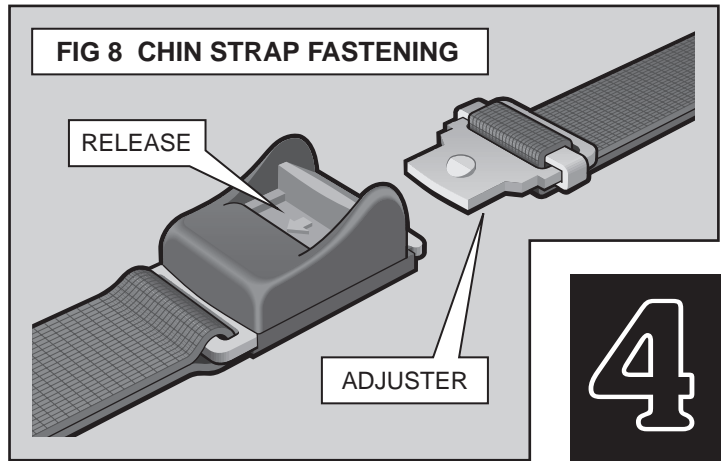
To fit the visor, first remove the backing from the self-adhesive sealing strip and apply the strip to the helmet in such a way as to cover the three visor mounting bushes. Once in place, make a hole through the strip into each bush in order to help locate the fixing screws. Position the visor in relation to the bushes and, taking care not to cross-thread the screws, fasten securely in place.

### Helmet Fitting

The helmet should be fitted after the headset is comfortably in place on the head. Raise the visor and hold the helmet using both hands to grip the side straps. With one half of the chin strap in the palm of each

hand lift the helmet above the head and lower it over the headset by pulling the side straps slightly outwards to clear the ear defenders. The helmet liner is relieved inside to accommodate the headset headband and it is important to align these two features before fastening the chin strap. It is also important to make sure that the helmet is positioned on the head so that it fully protects the forehead; do not place the helmet too far to the back of the head.

The chin strap should be adjusted to fit the helmet to each individual user. Always make sure that the chin strap is correctly adjusted and securely fastened before use (fig 8).



## SAFETY IN USE

The Lynx Relai System is intended to provide the pilot with both hearing and head protection. The following points on safety are included here as a guide to the safe and correct method of use.

### Headset Care

The headset should be fitted, adjusted and maintained in strict accordance with the instructions in this booklet. If these recommendations are not adhered to, the hearing protection afforded by the headset may be impaired.

The headset and, in particular, the ear seals may become damaged with use and they should be checked at frequent intervals for cracks or noise leakage. Replacement ear seals and fitting instructions are available from Lynx Avionics.

The headset is made from Acrylonitrile Butadiene Styrene and Polyvinyl Chloride, both these substances may be severely affected by the application of paint, adhesive stickers, cleaning fluids and other solvents. Use only a damp cloth and mild detergent to clean a headset and do not immerse the headset in water; for more detailed information on this subject contact Lynx Avionics.

### Noise Attenuation

To provide full hearing protection, the headset should be worn at all times in noisy environments. The headset is of the ear-defender type and is designed to prevent as much external noise as possible from reaching the ears. Always remember that, when the headset is worn but not switched on, the unit prevents normal hearing to the extent that verbal instructions or warnings may be inaudible.

### Cable Routing

The Relai System Headset is fitted with a coiled cable and jack plug connectors. When connecting the headset to the radio it is important to ensure that there is sufficient slack in the cable to prevent the jack plugs from being pulled out during use.

Always check before flight that the cable routing does not interfere with any of the flying controls especially the hand throttle, control column or any of the various control linkages.

Be aware at all times that a snagged cable may restrict the freedom of movement of the user as well as the controls of the machine.

### Bayonet Locking

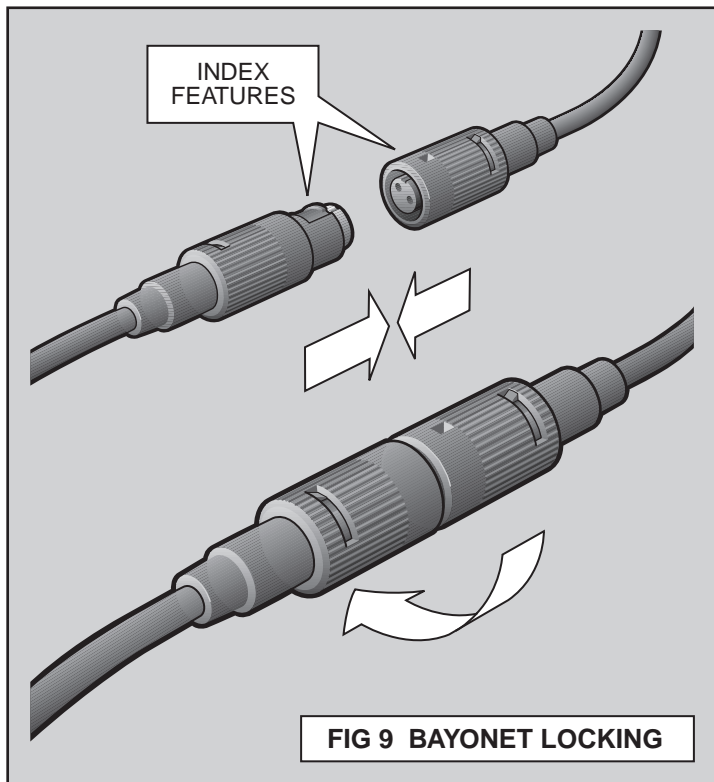
The Relai headset includes a P.T.T. input socket which allows an external 'Push-To-Transmit' switch to be connected. Both the headset and the switch are fitted with bayonet locking connectors which enable the connection to be locked during flight.

When making the P.T.T. connection it is important to align the index features of the bayonet locks before pushing the connectors together (fig 9). Never force the connection as this may result in damage to the connector pins.

Always utilise the bayonet-locks to prevent accidental separation and always check that they are engaged before use.

### Helmet Care

The Relai System Helmet is made to absorb some of the energy of an impact by partial destruction of its component parts. If a helmet is



subject to a violent impact during use, or receives similar abuse, it should be discarded even though damage may not be apparent.

The helmet shell is manufactured from Polycarbonate and the helmet liner from Polystyrene, both these substances may be severely affected by the application of paint, adhesive stickers, cleaning fluids and other solvents. Use warm water and mild detergent to clean a helmet and only apply stickers as supplied by Lynx Avionics.

### Visor Care

The visors supplied for fitting to Relai System Helmets are not guaranteed shatterproof and are only intended to protect the face and eyes from the elements and small flying objects.

The visor is manufactured from Lexan Polycarbonate and can be severely damaged by the application of paint, adhesive stickers, cleaning fluids and other solvents. Use only warm water and mild detergent to clean the visor and a soft cloth to wipe it dry.

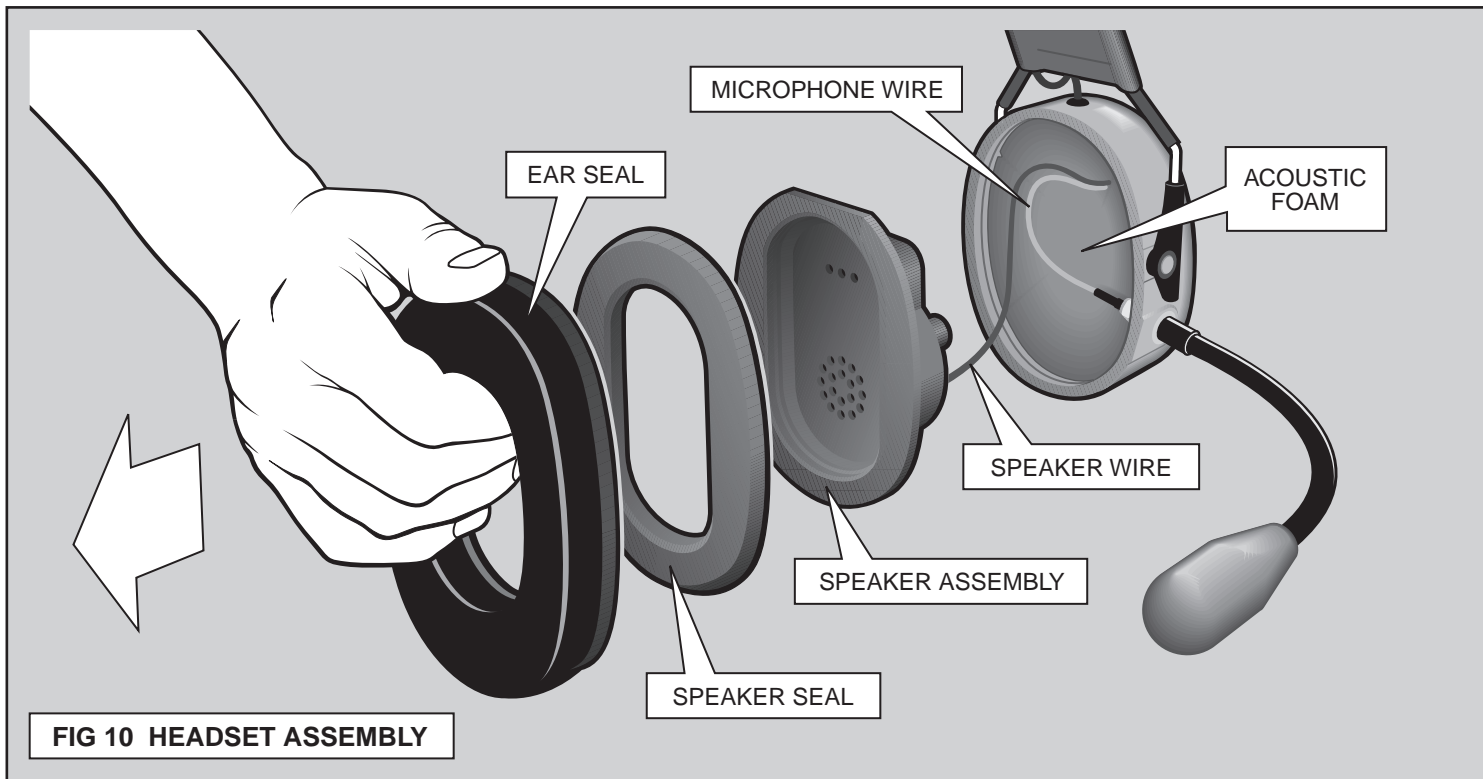
Care should be taken when using a helmet fitted with a visor, and looking over the shoulder in high wind speeds, as it is possible that a visor may lift unexpectedly due to wind pressure.

If a visor is damaged, or begins to show signs of wear, it should be replaced immediately.

### Damaged Equipment

If your Lynx communications equipment is damaged in any way or for any reason becomes unserviceable, please contact Lynx Avionics for advice.





# HEADSET CONFIGURATION

The Relai System Headset can be configured to work with different types of radio by changing a small plug-in Radio Module.

## Radio Module

The Radio Module is an electronic circuit which is fitted inside the headset and adapts the headset electronics for use with different radios. The headset is always supplied fitted with a module which allows the headset to operate with a specific make and model of radio.

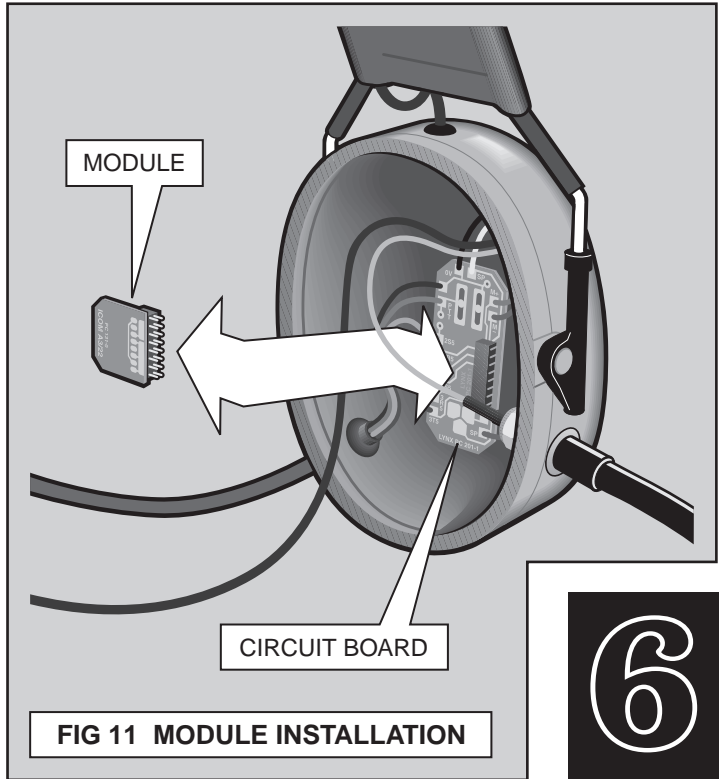
## Changing The Radio Module

To change the Radio Module, it is necessary to partially disassemble the left-hand headset ear-cup. Only disassemble the headset ear-cup when absolutely necessary as repeated access may damage the headset wiring.

Remove the liquid-ring ear seal by placing three fingers inside the seal and gently lifting one side (fig 10). Lift out the speaker seal and speaker assembly and make a mental note of the wiring layout before removing the acoustic foam (fig 10). Finally, remove the acoustic foam to provide access to the headset circuit board beneath.

Carefully slide out the existing Radio Module and insert the replacement module making sure that all the connecting pins are located correctly (fig 11).

Replace the acoustic foam beneath the speaker and microphone leads (fig 10) and re-assemble the headset.



**FIG 11 MODULE INSTALLATION**

