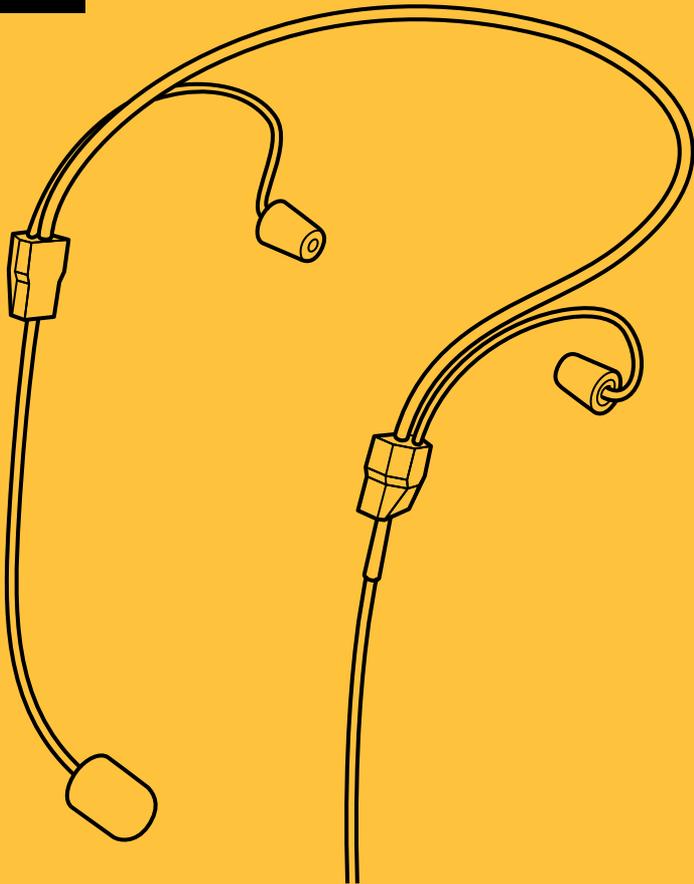


Aviation Headset X1.1

User's Manual



Cautions



Ensure that the headset cable does not conflict with the normal operation and freedom of movement of the aircraft flight controls.



Do not wear the headset with ear tips inserted if you may need to hear noises outside the aircraft. For example, when starting the engine in a general aviation aircraft, do not insert both ear tips until after you have started the engine, so that you can hear noises such as someone yelling to you from outside the aircraft.



Replace your ear tips if they appear to be soiled or contaminated. Do not share your ear tips with other users.



Inspect the ends of your ear tips for any blockages prior to each flight. Ensure the ear tips are firmly attached to the plastic couplers, and the plastic couplers are firmly attached to the acoustic tubes, to prevent the ear tips from detaching in the ear canal. If this occurs, seek medical attention.



Do not store the headset in direct sunlight, such as on the aircraft's dashboard, especially during hot weather.



Please carefully read all information in this manual prior to using the headset. 



If you suspect a problem with the operation of your headset, follow standard lost communications procedures. Always ensure a backup means of communication is available (such as a cockpit handheld mic and speaker, or another spare headset).



Be prepared that some aircraft sounds (such as engine noise or aural warnings) may sound different than they did with headsets you may have previously used.



Use caution to ensure that your volume controls are set to a safe listening volume. Ensure the volume controls are set to the minimum setting prior to plugging in the headset.



The headset contains small parts (such as the foam ear tips) that could pose a choking hazard. Do not allow children under the age of six to access the headset.



Do not attempt to disassemble the headset, including the capsules containing the speakers or the volume control box. Any attempt to disassemble the headset will invalidate the warranty and may result in degraded headset performance.



Due to the lighter-than-normal clamping force of the AXIS headset, we do not recommend its use during aerobatic flight operations.



The headset does not automatically mute the AUX input when there are incoming radio communications. You must ensure that the AUX input volume (e.g., on your phone) is low enough to avoid interference with radio communications.

Document Revisions

Date	Version Number	Document Changes
March 1, 2021	1.0	Initial issuance
April 12, 2022	1.1	Updated accessories provided with headset; updated warranty description to reflect refurbished products; clarified troubleshooting steps.

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Retaining Instructions

Read and understand this manual and its safety instructions before using this product. Follow all the instructions to avoid potential hazards.

The product shall only be used by persons who have fully read and understand the contents of this user manual.

Ensure that each person who uses the product has read these warnings and instructions and follows them.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be voided.

Obtaining Documentation and Information

The latest version of the documentation is available at the following address:

axisheadset.com/manual

Documentation, user instructions and technical information can be ordered by emailing:

support@axisheadset.com

Manuals in other languages are available upon request.

Explanation of safety information on the packaging and product



The CE Marking on the product is the manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislation.



The symbol on the product, the accessories or packaging indicates that this device must not be treated as unsorted municipal waste, but must be collected separately.



Read and understand the manual and its safety instructions before using this product.

Product Overview

The AXIS headset is an ultra-lightweight, in-ear aviation headset. It is designed for use by civilian pilots and passengers.

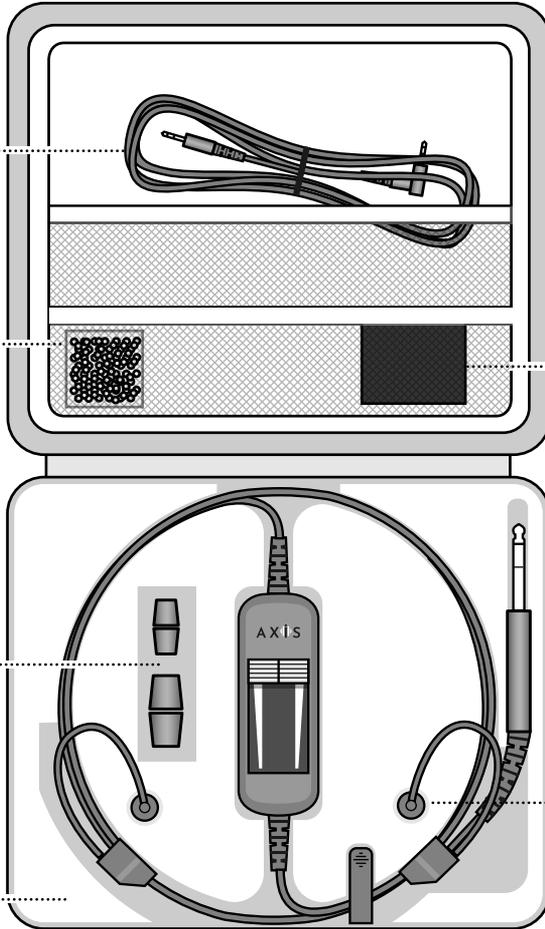
AUX input/output cable

see p. 13

Ear Cushions

see p. 10

Desiccant pack



Comply™ ear tips

see p. 5

Foam insert

for shipping use - remove if desired



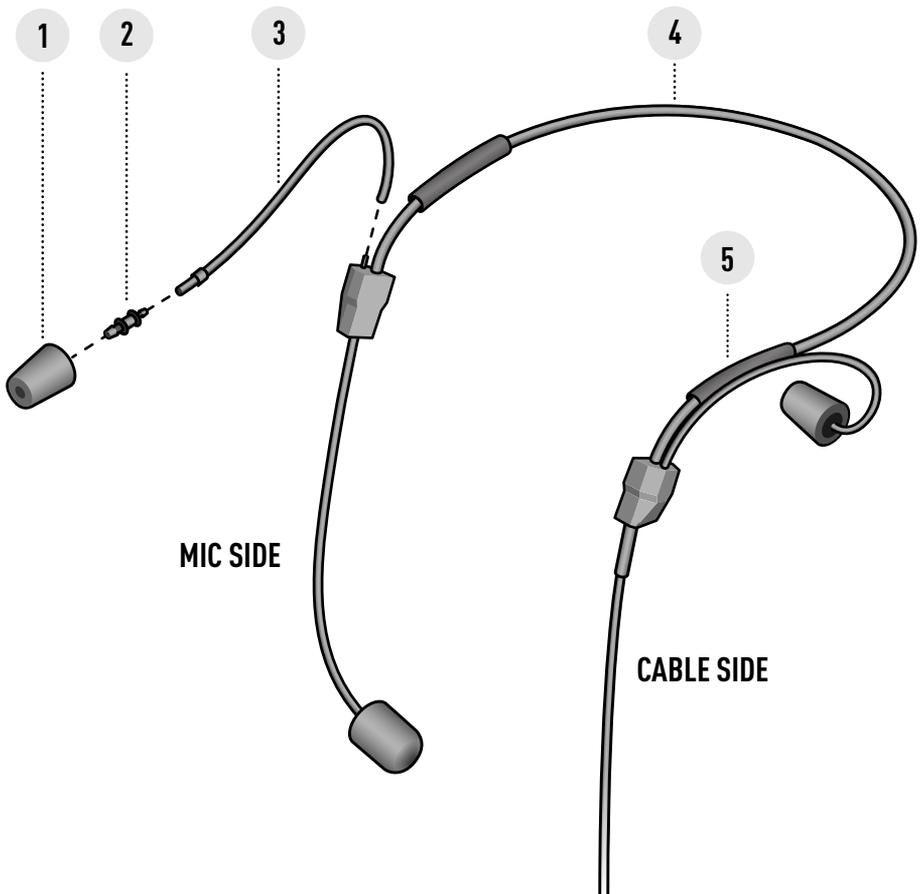
Lapel clip

see p. 10

Medium size Comply™ ear tips

see p. 5

For customization and maintenance purposes, the AXIS separates into the following components:



- 1. Ear tips:** These provide the passive noise reduction
- 2. Couplers:** These are used to attach the ear tips to the acoustic tubes.
- 3. Acoustic tubes:** These transmit the sound from the speaker capsules into the ear tips. We provide normal length and extra-long versions. Each tube contains a small acoustic damper at the end closest to the ear tip.
- 4. Main headset frame**
- 5. Ear cushion (optional)**

Configuration

Ear Tips

TYPES

A variety of ear tips are compatible with the AXIS, allowing you to find your favorite.

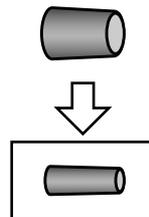
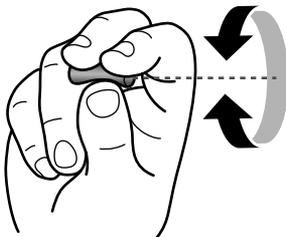
Ear tip	Diameter
 Small 3M™ brown foam ear tip Variety Pack Option	9.7 mm
 Small Comply™ tips (green core)	10.9 mm
 Default - Medium Comply™ tips (red core) <i>Try these first! These tips work best for most users.</i>	12.7 mm
 Medium 3M™ yellow foam ear tips Variety Pack Option	13.7 mm
 Large Comply™ tips (blue core)	14.2 mm
 Large 3M™ yellow foam ear tips Variety Pack Option	17.8 mm

HOW DO I PROPERLY INSERT MY EAR TIPS?

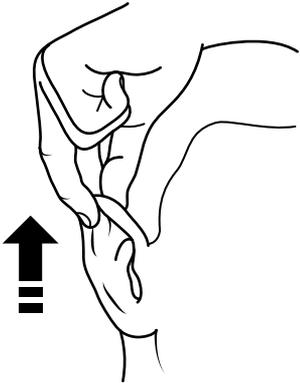
For effective noise reduction, it is **ABSOLUTELY CRITICAL** that you properly insert the ear tips.

It may take some trial and error, but when they're properly inserted, you should get a level of noise reduction that meets or exceeds traditional headsets:

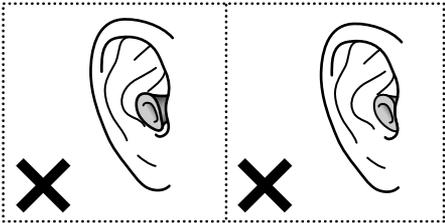
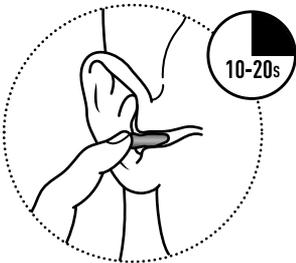
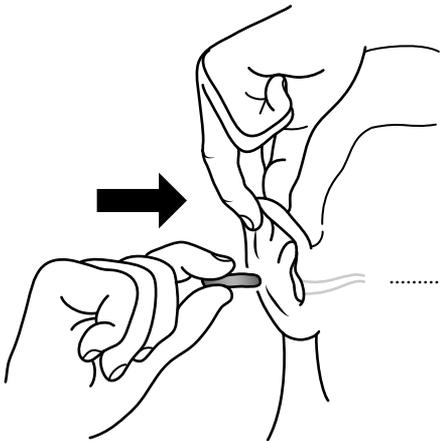
- 1 Roll the ear tip in between your fingers



2 Pull the top of your ear upwards with one hand to straighten out the ear canal



3 While holding your ear up, use your other hand to insert the rolled-up tip deep into the ear (while still maintaining the ability to pull the ear plug out if needed).



✦ VERY IMPORTANT!
Let go of your ear, then hold the ear tip in place while the foam expands in your ear, creating a tight seal. Be patient! This could take 10-20 seconds.

Visit axisheadset.com/eartips to see a video demonstrating the proper technique.

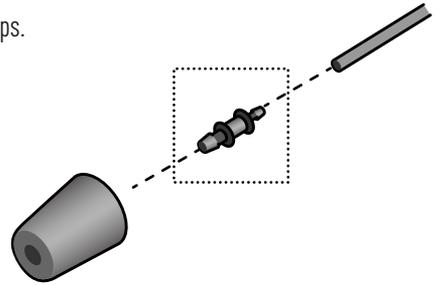
If none of the supplied ear tips provide sufficient noise reduction, please contact us to discuss alternative solutions.

Configuration

HOW DO I CHANGE MY EAR TIPS?

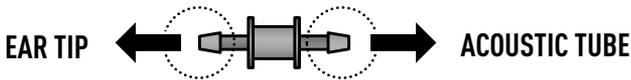
Ensure your hands are clean prior to handling your ear tips.

The ear tips are attached to the end of the acoustic tubes via plastic couplers:



To replace the default Comply™ tip with a 3M™ foam ear tip, note that you must use the smaller sized coupler and follow these steps.

- 1 Pull off the Comply™ tip and its coupler together. It requires some force to remove the coupler from the tube. Don't worry, you won't break it.
- 2 Obtain the smaller coupler provided in the "Foam Eartips - Medium" bag.
- 3 Connect one end of the coupler to the black plastic tube on the yellow eartip, and connect the other end to the black acoustic tube.



- 4 Ensure that the new ear tip is firmly secured to the plastic coupler!

WHEN SHOULD I REPLACE MY EAR TIPS?

The ear tips should be replaced if they no longer compress/expand properly, if they become soiled, or if another person will be using the headset.

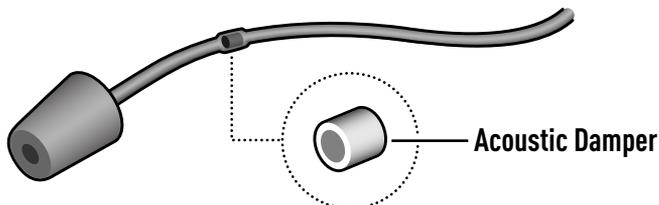
Acoustic Tubing & Dampers

The headset includes set of standard-length acoustic tubes.

The long tubes (available for separate purchase for the standard AXIS, and included by default with the long-mic AXIS) should be used when the headset is worn around the neck.

Within the acoustic tubes, there are dampers that help to eliminate undesirable resonances.

The dampers are located at the end of the tube closest to the ear tips, and can be noted by a small bump in the tube. The dampers were placed during assembly to ensure the proper frequency response of the headset, and should not be removed.



If you disconnect an acoustic tube and then reinstall it, ensure they're inserted in the correct orientation: with the damper closest to the ear tip.

How do I properly wear the headset?

When properly adjusted, the headset should be nearly imperceptible on your head, yet fully stable and secure.

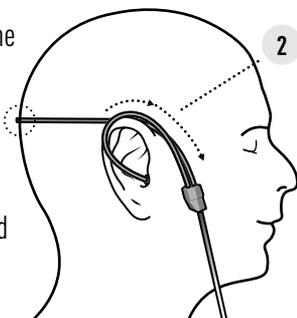
There are two segments of the headset frame that can be adjusted: (1) in front of the ears and (2) around the head.

ADJUSTING FRAME IN FRONT OF EARS

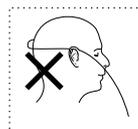
The part of the frame located in front of your ears is fully flexible in all directions, and **must be adjusted** on each side so that the frame "hooks" down in front of your ears, as shown below.

This helps prevent the headset from sliding back and forth on your head. It also allows you to properly place the microphone and avoid seeing the headset wire out of your peripheral vision.

- 1 Pull frame forward until it touches back of your head

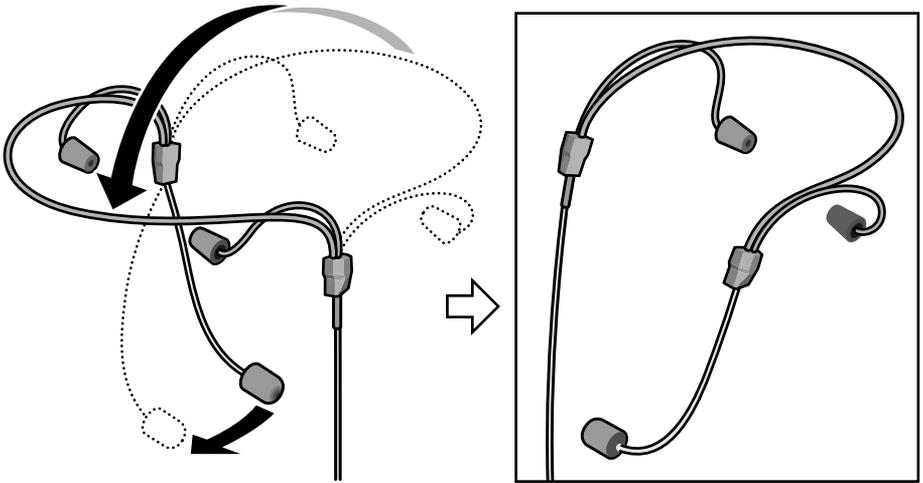


- 2 Bend frame down in front of each ear



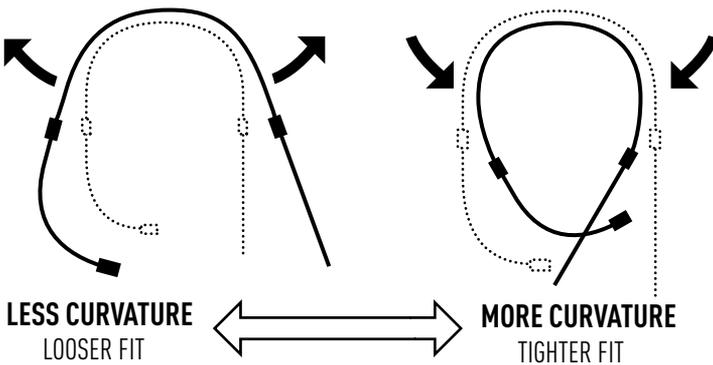
Configuration

If you switch between your aircraft's left and right seats, you can switch the position of the mic to the other side of the headset simply by bending the fully flexible part of the frame as shown below:



ADJUSTING THE HEADBAND

The headband is made from a springy metal, but it can be slightly re-shaped if you prefer more or less clamping pressure on your head.



EAR CUSHIONS

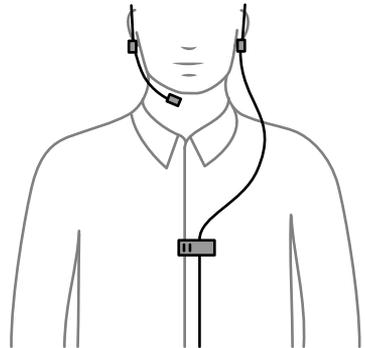
Two cushions are provided that can be attached to the frame over the ears in order to enhance comfort. Wrap the cushion around the frame and secure the velcro by rubbing the outer side several times.

LAPEL CLIP

Optionally, attach the lapel clip to a garment to prevent the cable from tugging on the headset as you move around.

We suggest clipping it somewhere on your shirt with enough slack that you can freely move your head without the headset moving around. Finding the best position for you may take some trial and error.

Some users prefer using the headset without the lapel clip. See what works best for you.



MICROPHONE

Since there is no direct adjustment for the mic boom length, proper placement of the microphone is achieved by bending the mic boom towards or away from your face as needed.

For example:



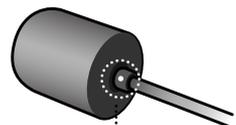
Bend the mic boom away from your head, if you have a smaller head size



Bend the mic boom towards your head, if you have a larger head size

There is a white dot on the microphone indicating the side which must face your mouth. If you can't clearly see it, pull back the mic foam slightly.

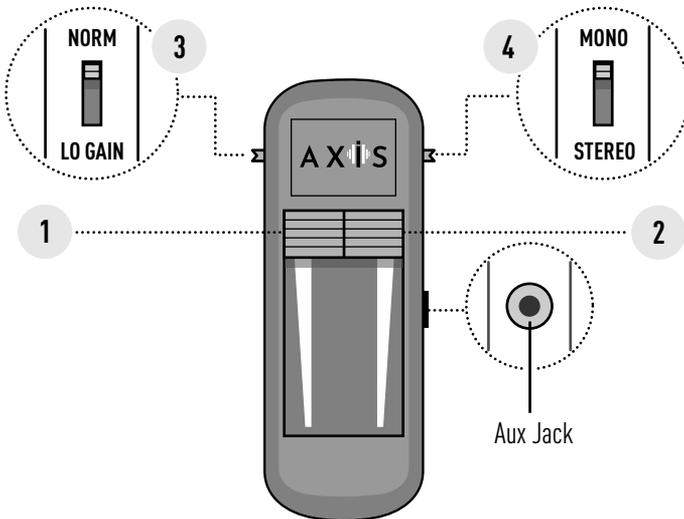
Mic orientation dot



Volume control box

CAUTION

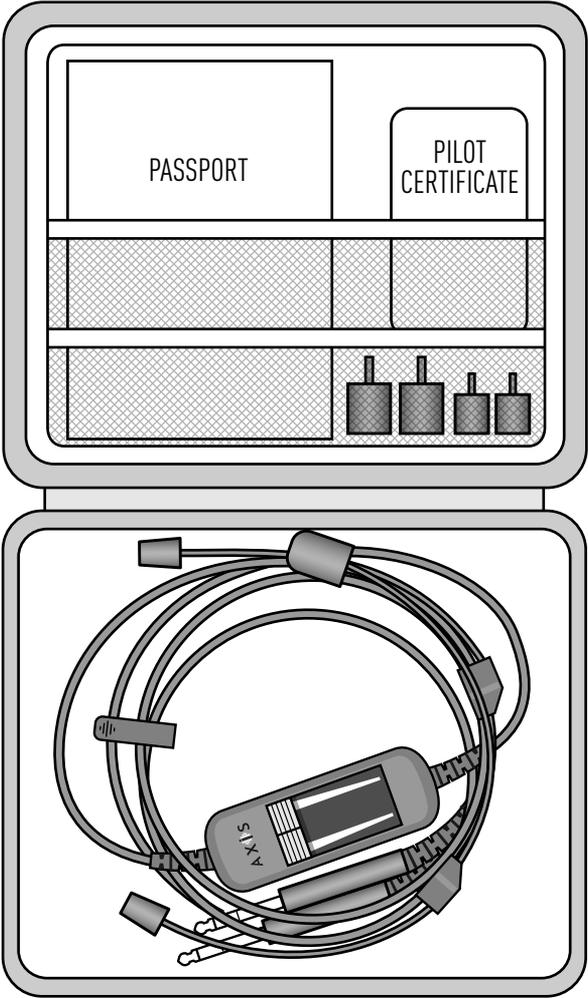
To avoid the risk of hearing damage from excessive sound levels, we recommend initially setting the volume at the minimum level before you insert your ear tips. Then you can slowly raise the volume until a comfortable listening level is reached.



1. The right-hand side volume control corresponds to the speaker on the microphone side of the headset.
2. The left-hand side volume control corresponds to the speaker on the cable side of the headset.
3. Mic gain switch: In aircraft using a HOT mic (for example, the ERJ/CRJ), we recommend keeping the switch set to **LO GAIN**.
4. MONO/STEREO switch: This switch should be set to **MONO**, unless flying an aircraft you are certain has a stereo intercom system.

A paperclip or the tip of your fingernail may be needed to change the positions of the mic gain and MONO/STEREO switches.

Storage



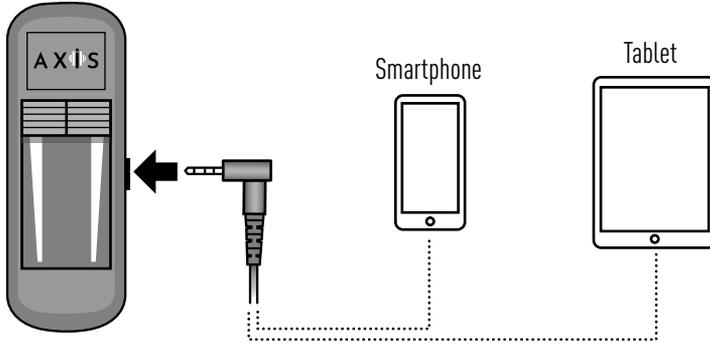
Store the headset in a cool, dry place. Do not leave the headset in direct sunlight or in high heat, or damage could occur.

NOTE
The foam insert provided in the case is intended for shipping, and may be discarded.

Other Features

Listen to external audio input

Using the provided 3.5 mm TRRS AUX input cable, you can stream audio from a smartphone/tablet to your headset.



Ensure that the volume setting of the auxiliary device is set to the minimum level before connecting the device to the headset. After they are connected, you can slowly increase volume to a safe listening level.

ATC audio and AUX input audio will be mixed together.

The headset is fully passive and does not automatically mute the AUX input when there are incoming radio communications. Therefore, you must ensure that the AUX input volume (e.g., on your phone) is low enough to avoid interference with radio communications.

If you want to use the headset as a passenger (such as during a commute) and avoid having a microphone in front of your mouth, you could attach the extra-long tubes and wear the headset around your neck as shown in below:



The headset's high-quality balanced armature speakers provide optimal response for air traffic control speech frequency ranges according to the DO-214A industry standard. As a result, they are not optimized for music. We suggest using an audio equalizer app if adjustment to the auxiliary input audio is desired.

Make phone calls while wearing the AXIS

If you would like to make a call on your cell phone while wearing the headset, then the AUX cable can be used to transmit the headset microphone output into your phone's audio jack.

This feature is compatible only with smartphones which include a 3.5 mm headset jack (either on the phone or by means of an adapter).

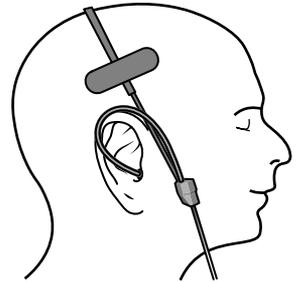
Wearing headset on top of head

Long Mic Variant Only

To wear headset on top of head, attach side pads to the thick part of headset frame. The side pads help to provide stability.

Note that wearing the headset on top of your head may not be stable with all hairstyles.

If you have a long, loose, or layered hairstyle, the AXIS may not be stable when worn over the head with the side pad adapters. However, you can still wear the headset on your ears without issue.



Troubleshooting

Issue	Possible Solutions
The headset does not feel stable on my head.	<p>Ensure that the part of the frame in front of the ears is “hooked down” as described on page 8.</p> <p>You may also try re-shaping the headset band so that the radius of the spring frame is tighter, as described on page 9.</p> <p>If you are wearing the headset with sunglasses, we suggest putting your headset on first, then placing the glasses on top of the headset frame.</p> <p>If the headset is still not stable on your head, contact us for additional tips and stability accessories we can provide.</p>
There is too much clamping force on my head from the headband.	<p>Reshape the headband using light pressure to a larger radius, as described on page 9.</p>
I cannot hear any audio through the headset.	<ol style="list-style-type: none">1. Ensure plugs are fully inserted into aircraft jacks, and the aircraft’s audio control panel volume is properly set2. Check volume control3. Check for possible blockages in the ear tubes
I lost audio in one ear.	<ul style="list-style-type: none">• Try changing the MONO/STEREO switch to the opposite setting. Most aircraft intercom systems use MONO. If the switch was accidentally changed to STEREO, you will only hear audio in one ear.• Verify that the volume controls are set appropriately• If that does not restore audio to both ears, you may have moisture or debris stuck in a single acoustic tubing. Try swapping the left and right tubes to verify if this is the problem. Contact us for a new set of tubes.

Issue	Possible Solutions
Why does my voice sound deeper when using the AXIS?	<p>This can occur when you are wearing ear plugs. Rest assured; others will hear you normally.</p>
I hear too much breathing noise.	<p>Set the MIC GAIN switch to LOW, and ensure you are using the provided high-quality mic foam.</p> <p>Also try several different mic placements, placing the mic:</p> <ul style="list-style-type: none"> • slightly below the mouth • on the side of the mouth • further away from the mouth
I hear too much ambient noise. I don't think the foam ear tips are working properly for me.	<p>Proper insertion is absolutely critical to obtaining optimal noise reduction. Please review the section on proper ear tip insertion (p. 5). Also consider trying a different size of ear tip or using a custom molded ear piece.</p>
I hear static in the earphones.	<ul style="list-style-type: none"> • Try connecting the headset to the other jacks in the aircraft to see if it is a problem with the headset or the jack. • If all jacks exhibit the same behavior, contact AXIS customer service.

Technical Data

SPEAKERS

Type	Balanced Armature
Impedance	Mono: 150 Ohm +/- 20% Stereo: 300 Ohm +/- 20%
Frequency Response	< 15 dB span over 160 ~ 5000 Hz
Sensitivity	100 dBA +/- 3 dB

MICROPHONE

Type	Noise-cancelling amplified electret
Operating Bias Voltage	5 – 24 volts DC
Rated Bias Resistance	470 Ohm +/- 20%
Rated Load Resistance	220 Ohm +/- 20%
Frequency Response	100 Hz ~ 10 kHz
Sensitivity, Normal Gain	-28 dBV re 1 Pa +/- 3 dB
Sensitivity, Low Gain	-38 dBV re 1 Pa +/- 3 dB

MANUFACTURER'S LIMITED WARRANTY

Laminar Concepts, LLC ("Laminar Concepts") warrants the Aviation Headset sold by Laminar Concepts **to be free from all material defects in workmanship and materials for a period of 3 years**, after the date of purchase, as evidenced by the original sales receipt (the "Warranty Period"). This 3-year Limited Warranty ("Limited Warranty") is provided solely for the benefit of the initial purchaser of the Aviation Headset ("Purchaser"), and it excludes all 3rd parties, including distributors, dealers, retailers, subsequent owners, and other users of the Aviation Headset.

Exception for Refurbished Products: Products purchased in refurbished condition shall have a Warranty Period of 1 year (unless an extended warranty option is purchased).

This Limited Warranty is not assignable and remains in full force and effect during the Warranty Period, but only if the Aviation Headset:

- (a) has been properly maintained;
- (b) has not been abused or misused; and
- (c) has not been repaired, altered, or modified without the approval of Laminar Concepts.

This Limited Warranty specifically excludes all taxes, shipping costs, and problems relating to any:

- (1) repair, alteration, or modification not approved by Laminar Concepts;
- (2) abuse or failure to properly maintain the Aviation Headset;
- (3) faulty workmanship by any person, except Laminar Concepts or its approved agent;
- (4) operation of the Aviation Headset, except as specified in its operating manual;
- (5) ordinary wear and tear; or
- (6) finish and appearance item

For each claim made under this Limited Warranty ("Claim"), Purchaser must, within 10 days of discovering an Aviation Headset problem indicating a breach of this Limited Warranty, deliver to Laminar Concepts a written notice that explains in detail the Aviation Headset's specific defect, that shows proof of Purchaser's purchase of the Aviation Headset before the end of the Warranty Period, and that shows proof that this Limited Warranty applies to the New Headset.

"Including" means "including, but not limited to."

HOW TO OBTAIN WARRANTY SERVICE

For warranty returns, email us at support@axisheadset.com, providing a copy of the original invoice or sales receipt and a description of the defect.

Purchaser should ship the Aviation Headset with insurance and signature confirmation. Laminar Concepts accepts no liability for products lost or misplaced in shipment.

Laminar Concepts may, at its sole discretion, choose any of the following exclusive remedies:

- Service or repair the Aviation Headset to conform to the applicable warranty
- Replace the Aviation Headset with a headset that is identical or reasonably equivalent to the warranted headset
- Refund to the buyer the original purchase price less the amount directly attributable to use by the buyer prior to the discovery of the nonconformity

Without paying any amount to Purchaser, Laminar Concepts may keep, sell, or otherwise discard all replaced Aviation Headsets and parts thereof and all Aviation Headsets where Laminar Concepts has refunded the purchase price to Purchaser.

Warranty

In repairing or replacing any Aviation Headset, Laminar Concepts may, at its sole discretion, use new, used, or reconditioned parts or provide a refurbished used headset as a replacement. In connection therewith, Laminar Concepts warrants that all new, used, or reconditioned parts or refurbished used headsets will be free from all material defects in workmanship and materials during the Warranty Period and for a period of up to 90 days thereafter, but only to the extent that such event occurs during the final 90 days of the Warranty Period. Laminar Concepts may hire a third party to repair or replace any new or used headset.

Notice to Buyer

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. You have the right to bring any action at law or equity to resolve disputes concerning or to enforce the provisions of this warranty.

THE TERMS IN THIS DOCUMENT ARE THE ONLY TERMS THAT GOVERN LAMINAR CONCEPTS' WARRANTY OBLIGATIONS FOR ANY NEW OR USED HEADSET OR PART THEREOF. NO ORAL OR OTHER WRITTEN TERM APPLIES. THIS DOCUMENT PROVIDES THE EXCLUSIVE REMEDY FOR ALL CLAIMS AGAINST LAMINAR CONCEPTS WITH RESPECT TO ANY NEW OR USED HEADSET OR PART THEREOF. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY IN THIS LIMITED WARRANTY, LAMINAR CONCEPTS RESERVES THE RIGHT TO MODIFY, AT ANY TIME AND FROM TIME TO TIME IN ITS SOLE DISCRETION, ANY AND ALL TERMS IN THIS LIMITED WARRANTY. EACH SUCH MODIFICATION IS DEEMED EFFECTIVE UPON PUBLICATION ON LAMINAR CONCEPTS' WEBSITE OR OTHERWISE.

LAMINAR CONCEPTS EXPRESSLY DISCLAIMS ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, EXEMPLARY, INDIRECT, LOST PROFIT, PUNITIVE OR SIMILAR DAMAGES. LAMINAR CONCEPTS' LIABILITY IN ALL CIRCUMSTANCES IS LIMITED TO, AND SHALL NOT EXCEED, THE PURCHASE PRICE PAID FOR THE PRODUCT THAT GIVES RISE TO ANY LIABILITY.

BECAUSE SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Send correspondence to:

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AXIS

HEADSET

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