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BOSE®
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AVIATION
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HEADSET
—

OWNER'S
—

MANUAL
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BOSE®

Operational Advisories

As with any complex electronic device, it is possible for this headset to experience a failure during operation. Such a failure may include loud tones, distortion and loss of communications signal in the headset when used in the active or "On" position. This could prevent continued use of the headset in the active mode.

These loud tones and the related loss of communications can be eliminated for the duration of the flight simply by switching the interface unit off. Therefore, it is recommended that the interface be positioned in a location where the On/Off switch can be easily reached by the pilot for fail-resistant operation in the bypass mode in the unlikely event of any electronic failure.

With the switch off, the headset will continue to function in the passive mode, maintaining full communication capabilities.

We strongly recommend that as a responsible pilot, you ensure you can hear and recognize typical aircraft sounds while you are using the headset while operating any aircraft.

Limit the volume of your headset to safe levels so it does not interfere with your ability to hear informational sounds, such as those emitted by warning alarms; i.e. stall warning, gear up.

Avoid setting the volume controls at high levels that may affect your hearing during extended periods of headset use.

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Congratulations on your purchase of the Bose® Aviation Headset.

Description

The Bose Aviation Headset uses an advanced combination of electro-acoustical noise reduction circuitry and a patented cushioning system to significantly reduce aircraft noise. The Bose Headset actively reduces noise elements in addition to muffling noise. The patented Clear Comfort™ cushions require only slight pressure to provide high passive noise attenuation. As a result, this Headset can be worn comfortably for extended periods.

For proper operation, all Bose Aviation Headsets must be connected to a Bose Headset Interface. The Interface powers the Headset's active noise reducing electronics and matches the Headset to the aircraft's avionics.

Using the Bose Aviation Headset

ATTENTION: With the Headset's combination of both active and passive attenuation, typical aircraft sounds (for example, those from engines, propellers, warning alarms, and other sound sources) may sound different to you.

We strongly recommend that you ensure you can hear and recognize these sounds while you are using the Bose Aviation Headset while operating any aircraft.

In addition, we are aware that in-flight entertainment systems are available. Therefore, should you choose to listen to this entertainment through a Bose Headset while piloting, we remind you, as a responsible pilot, to **limit the volume to safe levels so that it does not interfere with your ability to hear informational sounds, such as those emitted by warning alarms.**

For proper Headset fit

NOTE: The Headset should be worn with the sloped surfaces of the earcups facing forward. Follow these suggestions to achieve maximum comfort and performance.

Adjust both sides of the headband equally to provide a balanced force on your head. To achieve a good seal, lightly grasp both earcups and position them so that your ears are completely inside the Clear Comfort™ cushions.

If you experience either a hiss or a low rumbling sound, this may indicate an improper fit. Extending the headband slightly should correct this condition. Wearing hats or glasses with thick temples may interfere and cause a problem.

Final adjustment is best accomplished in a noisy environment with the Headset system turned on. Then, reposition both earcups until the Headset seems quietest.

To change the height of the earcups

This adjustment is most easily made with the Headset off your head.

1. Grasp the headband pad in one hand and the pivot block in the other hand (see Figure 1).

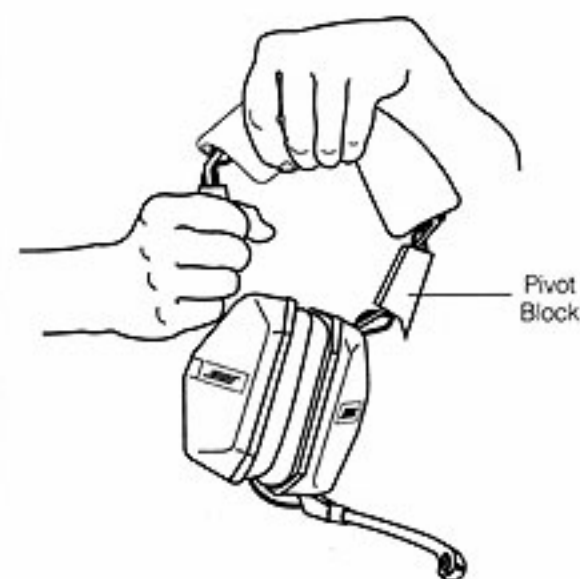


Figure 1

Adjusting the Headset earcups.

2. To raise the earcups, push the headband and pivot block together firmly until you hear the headband click into place. To lower the earcups, pull the headband and pivot block apart until you hear the headband click into place.

NOTE: You may feel some resistance while making either adjustment.

3. Adjust both sides of the headband equally, to provide a balanced force on your head. If done properly, the headband will seem to provide the main support for the Headset.

To adjust the microphone boom

1. Place the Headset on your head and pivot the boom assembly away from your mouth.
2. Bend the flexible boom toward your face (see Figure 2).
3. Pivot the boom back toward your mouth (see Figure 3).



Figure 2

Pivot the boom assembly out and bend the boom toward your face.



Figure 3

Pivot the boom back toward your mouth.

To place the mic for best communication clarity and noise rejection, locate the microphone housing so that it is just brushing your lips. The microphone is properly positioned when the word "TALK" on the mic housing faces your mouth.

The boom is intended to pop out of the clip if the Headset is dropped. To replace the boom, snap the coupling into the clip so that one of the rectangular faces on the coupling is visible when the boom snaps into place. **Also be sure that the coupling sits flush against the flat – not angled – face of the clip.**

Adjusting the volume

The volume for your Headset is controlled by your Interface. Follow the instructions for adjusting the volume in your Interface owner's manual.

Avoid setting your volume controls at high levels that may affect your hearing during extended periods of Headset use.

Fail-resistant operation

The Headset will provide communication and the earcups will block some noise even with the power switch on your Interface turned off, bypassing all active noise reducing electronics. Turn the Interface off if you suspect there may be a problem with the Headset; for more information refer to the section entitled "In Case of Difficulty" on page 10.

Care and Maintenance

Stowing the Headset

Bose® recommends that you do not leave the Headset in your cockpit or in direct sunlight between flights, for several reasons. While the Headset has been designed for storage at temperatures up to 158° F (70° C), cumulative exposure to high temperatures will slowly cause changes in the electret microphone elements in the earcups, reducing their active noise reduction performance. Additionally, the gel in the Clear Comfort™ Cushions stores heat. Wearing the Headset after it has remained in an extremely hot or cold cockpit may be uncomfortable for several minutes.

To assure many years of enjoyment and to protect your investment, take your Headset with you when you leave the aircraft. A lined, drawstring bag has been provided with the system, for stowing the Headset between flights. To stow the Headset:

1. Bend and rotate the boom in the clip so that the boom extends below and then up the side of the opposite earcup (see Figure 4).
2. Coil the Headset cable; do not wrap the cable around the yoke arms. This avoids pulling the cushions together and compressing them.

3. Place the Headset in its storage position with the earcups resting cushion-to-cushion in the drawstring bag.

NOTE: If you place the Portable Interface in the bag as well, be careful not to scratch the finish on the Headset.

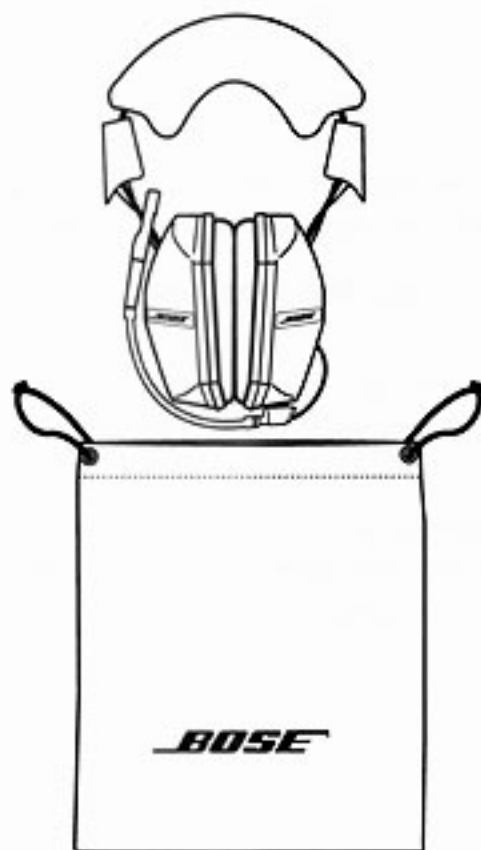


Figure 4

The boom should extend up the side of the opposite earcup for stowing the Headset in its drawstring bag.

Cleaning instructions

Clean the Headset exterior and cushions by wiping them with a moist cloth. Mild soap may be used if necessary. Do not immerse the Headset in water. The headband cover may be removed and washed by hand in mild soap and cool water if it becomes soiled. To remove it, extend the headband to maximum height, unsnap the cover at each end, and peel the Velcro apart along the top flap. After washing, allow the cover to air dry before placing it on the headband. Replace the headband cover with the opening to the rear.

Clear Comfort™ cushion replacement and maintenance

To order a replacement cushion kit, call the Bose® Aviation Headset Order Department, 1-800-242-9008. Before ordering, remove the cushions and inspect the earcup foam liner. If you note significant deterioration in the liners, please order a liner replacement also.

To remove the cushion and liner

1. Place the Headset with the yoke arms crossed, so that the cushions are facing outward on both sides (see Figure 5).
2. Unsnap the black trim ring on one earcup by prying the middle rear with the edge of your finger. Do not use a hard object such as a screwdriver, which can mar the

earcup. Once the trim ring has popped free in back, work your way around the earcups until the trim ring is completely free.

3. Lift the old cushion off. If you will be installing a new liner, proceed to the next section. Otherwise skip to "To replace the cushion" on page 6.



Figure 5

The yoke arms should be crossed so the cushions face outward.

To install a new liner

Lift the old foam liner out of the earcup. Place the new foam liner in the earcup cavity.

NOTE: The left and right foam liners are different. With the correct liner in place, nesting along the walls of the cavity, its half-moon shaped opening should cover the microphone, and the small opening in the foam should cover the small hole (see Figure 6).

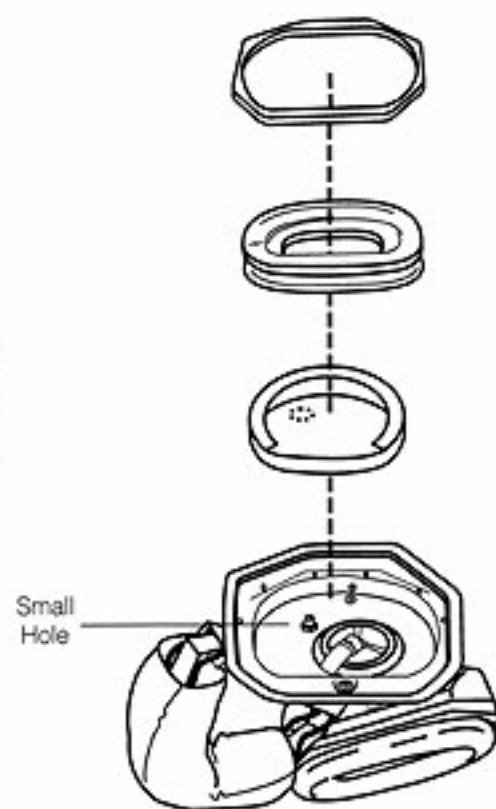


Figure 6

Carefully align each liner so that the small round opening in the foam covers the small hole.

To clean the cushion

Using a baby wipe or a cloth moistened with isopropyl alcohol, gently wipe the side of the cushion that touches the ear. Let the cushion air dry, then dust with talcum powder.

To replace the cushion

1. Place the new cushion inside the trim ring. Align the cushion/trim ring, with its flat edge forward, to the earcup.
NOTE: The small holes in back of the cushion should nest on the posts on the earcup. If both old cushions have been removed, note that there are left and right trim rings. The left ring will not fit on the right earcup.
2. Snap the trim ring down firmly along its circumference. Make sure that the trim ring is not grabbing the side of the cushion at any spot. If it is, pull the skin of the cushion free at that spot.
3. Replace the foam liner and cushion on the other earcup in the same manner.

Headset Orientation

Headset cable routing

The Headset cable can be routed to descend from either the left or right earcup. The cable should be re-routed if it crosses your chest or interferes with your movements in flight.

To re-route the cable

1. Remove the headband cover by extending the headband to maximum height. Unsnap each end of the headband cover and peel apart the Velcro seam.
2. Unwind the Headset cable from the earcup cable. Release the Headset cable from the groove at the back of the pivot block (see Figure 7).



Figure 7

Unwind the cable and remove it from the groove.

3. If you are changing it from right side to left, route the cable in a small loop to the right of the molded block in the center of the headband, then to the left and along the back of the headband (see Figure 8). This step prevents excessive strain on the cable.

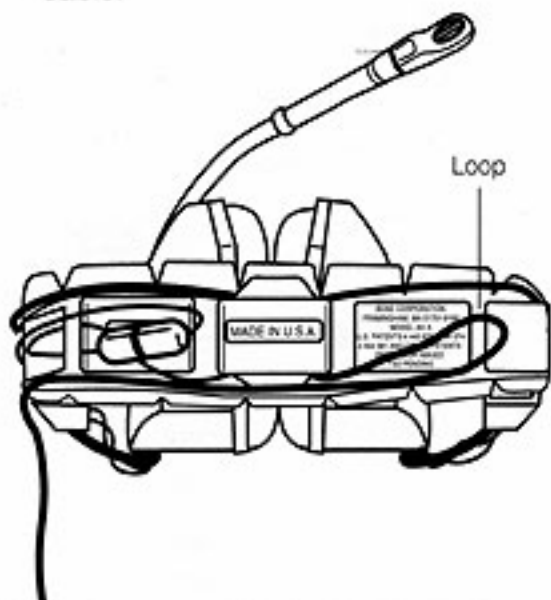


Figure 8

Route the cable in a loop to prevent strain.

4. Thread the cable through the groove in the back of the other pivot block.
5. Wrap the cable around the other earcup cable by passing the end between the yoke arm and earcup cable twice, from back to front.
6. Place the foam pad in the headband cover (see Figure 9). Wrap the cover around the headband with the opening toward the rear. Smooth the Velcro down and snap the cover together at both ends.

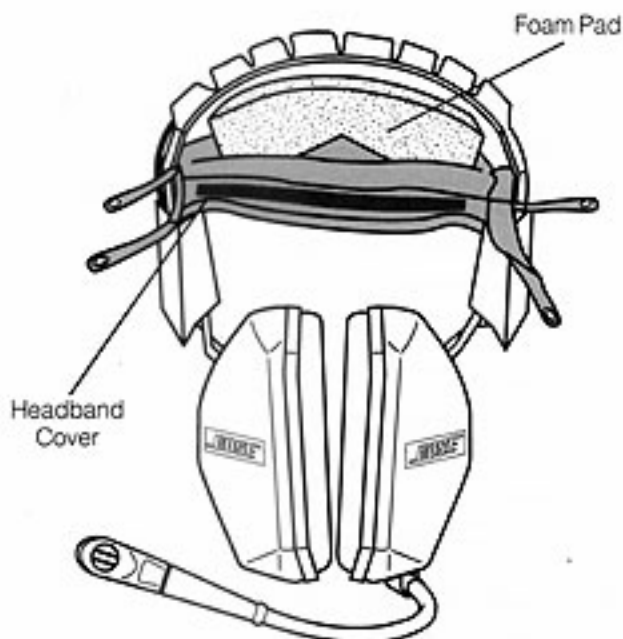


Figure 9

Replace the headband cover and foam pad.

Microphone boom relocation

To suit your personal preference, the Headset boom can be moved from one earcup to the other. This requires the use of a small screwdriver and can be accomplished as follows:

1. Remove the headband cover by extending the headband to maximum height. Unsnap each end of the headband cover and peel apart the Velcro seam.
2. Remove the boom from the clip by pulling the boom down just in front of the clip to snap it out (see Figure 10).
3. Use a small screwdriver to remove the screw holding the clip. The screw is held captive by an E-ring, which must be in place for the assembly to work correctly.
4. Using the same screw, fasten the clip to the other earcup (see Figure 11). Be sure the E-ring is in place and seated. The angled face of the clip should be positioned toward the rear. Tighten the screw until it bottoms. Do not continue to tighten. Friction in turning this screw ensures that the screw does not loosen over time.
5. Unwind the boom and cable from the earcup cable. Remove the boom cable from the groove at the rear of the pivot block.



Figure 10

Pull the boom down in front of the clip to snap it out.



Figure 11

With the E-ring in place, screw the clip to the other earcup.

6. Route the boom cable to the earcup on which the boom is to be installed. If the boom is to be installed on the right earcup, do not route the cable sharply from the molded block in the center of the headband. Route the cable in a small loop to the left of this block, then in back to the right (see Figure 12).

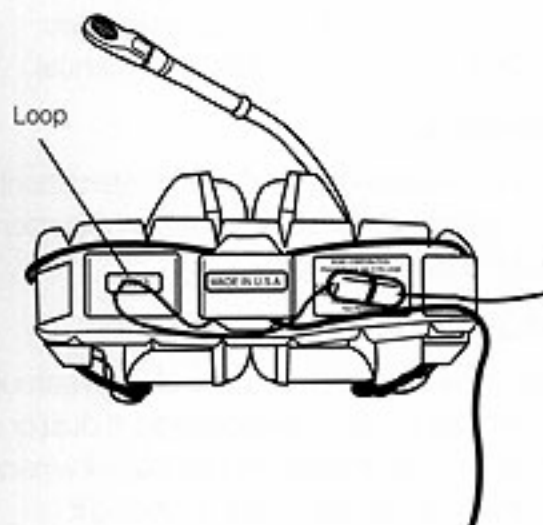


Figure 12

Route the cable to the left and then in back to the right of the block.

7. Place the connector to the side of the molded block closest to the earcup on which the microphone will be installed.
8. Thread the mic cable through the groove in the pivot block.
9. Wrap the boom and cable around the earcup cable three times by passing the boom between the yoke arm and earcup cable, from back to front.
10. Snap the boom firmly into the clip so that one of the rectangular faces on the coupling is visible when the boom snaps into place (see Figure 13). Be sure that the word "TALK" on the microphone faces the mouth.



Figure 13

Make sure the rectangular face shows when the boom snaps into place.

11. Replace the foam pad and wrap the cover around the headband with the opening to the rear. Snap it at both ends and seal the Velcro (see Figure 9 on page 7).

In Case of Difficulty

Experience in using the Headset will help establish your sense of how it should sound. If you notice a problem, the following outline should help you diagnose and solve it. If problems persist, call Bose® Corporation to arrange for service (refer to "Service" on page 11).

Problem

Communication but no active noise reduction in both ears.

What to do

- Make sure that your Interface is powered, and that the power switch is "ON."
- Check the fuse or breaker. The fuse in the lighter plug provided with your Bose Interface can be reached by unscrewing the knurled metal tip.
- Clean the contacts of the Headset/Interface connectors with isopropyl alcohol.
- If using batteries, refer to the "In case of difficulty" section of the battery owner's manual.

Problem

Active noise reduction but no (or very low volume) communication in both ears.

What to do

Check to see if the volume control is turned too low (full counter clockwise).

Problem

No communication in one ear or from radio or intercom.

What to do

- Clean the contacts of the Headset/Interface connectors with isopropyl alcohol.
- If your Interface has been converted to stereo operation, you may have connected it to a mono intercom or audio system. Consult your Interface owner's manual.

Problem

Reduced active noise reduction, intermittent clicking sounds, or communication distortion in loud noise environment.

What to do

Check the holes at the bottom of each earcup to make sure they are not blocked. If dust or dirt has built up here, carefully use a small wire or the end of a bent paper clip to unclog it.

Problem

Low rumbling sound with Headset turned on in a quiet environment.

What to do

- Adjust the earcup fit to create a better seal to your head. Be sure that eyeglasses or a hat do not interfere with the seal.
- Inspect the seal between the cushion and the earcup. The cushion should seat on the earcup evenly, without any gaps.
- Check the holes at the bottom of each earcup to make sure they are not blocked. If dust or dirt has built up here, carefully use a small wire or the end of a bent paper clip to unclog it.

Problem

Popping sound audible with Headset turned on in a loud environment.

What to do

- Adjust the earcup fit to eliminate the sound.
- Inspect the seal between the cushion and the earcup. The cushion should seat on the earcup evenly, without any gaps.

Problem

Squealing, whistling, or chirping sound when the system is turned on.

What to do

- Check to see if the ear cavity foam liner is missing or severely damaged. If so, refer to "Clear Comfort" cushion maintenance and replacement within the "Care and Maintenance" section, page 4.

Do not attempt to disassemble or service the inside of the earcups or other parts of the Headset. Only the microphone, boom assembly, Clear Comfort cushions, trim rings, earcup foam liner, headband cover and foam pad are designed for replacement by the user. For instructions on how to care for your Headset and how to replace the cushions, see the "Care and Maintenance" section, page 4.

Service

If problems persist, contact the Bose Aviation Headset Service Department. In the U.S., call 1-800-637-8781. In Canada, call 1-508-879-7330. Bose Corporation will make every effort to remedy any problem within the terms of the limited warranty, at minimum inconvenience to you.

Warranty Period

The Bose Aviation Headset system is covered by a two-year limited warranty.

Limited Warranty Bose® Product

What is covered

All parts defective in material or workmanship.

For how long

At least one year from the purchase date, or longer if specified in your owner's guide or manual, but not longer than five years from the purchase date.

What we will do

We will, at our sole option, repair or replace any defective parts free of charge.

What we will not do

Pay shipping or transportation charges from you to us.

What you must do

1. Return product personally with proof of purchase from an authorized Bose dealer to your authorized Bose dealer, or
2. Return product personally with proof of purchase from an authorized Bose dealer to the nearest Bose Service Agency, or
3. Return product personally with proof of purchase from an authorized Bose dealer directly to the Bose organization in your country. If you elect to return the product directly to a Bose organization,
 - A. Contact the Bose organization in your country for specific return and shipping instructions;
 - B. Properly pack the product in the original carton for shipping. If you need a new

carton, contact the Bose organization in your country for a new carton available at a nominal charge;

- C. Label and ship, freight prepaid, to the address provided by the Bose organization in your country, and
- D. **Place any necessary return authorization number** prominently on the outside of the carton. (Cartons not bearing a return authorization number, where required, will be refused.)

Other conditions

This warranty is fully transferable provided the current owner furnishes the original proof of purchase from an authorized Bose dealer. THE PROVISIONS OF THIS WARRANTY ARE IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BOSE'S MAXIMUM LIABILITY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID BY YOU FOR THE PRODUCT. IN NO EVENT SHALL BOSE BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR INDIRECT DAMAGES. This warranty does not cover a defect that has resulted from improper or unreasonable use or maintenance, accident, improper packing, or unauthorized tampering, alteration, or modification as determined solely by us. This warranty is void if the label bearing the serial number has been removed or defaced.

Other Law Rights

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or country to country. Some places do not allow limitations on implied warranties or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Technical Information

The specifications below describe a complete system consisting of a Headset connected to an Interface. Sound pressure levels (SPL) are relative to 20 micro Pascal.

Earphones

Damage could occur to avionics equipment if it was manufactured for use only with 600 ohm headsets. If in doubt, consult the avionics equipment manufacturer.

Impedance

400 ohms (on) and 150 ohms (off) at 1 kHz (comparable to commonly used conventional headsets). Earphones are parallel wired. Audio impedance less than 150 ohms recommended for optimum frequency response.

Frequency Response

100 Hz - 20 kHz, +/- 5 dB measured on flat plate coupler

Sensitivity

90 dB SPL (on), 80 dB SPL (off) measured at 1 mW, 1 kHz, full volume on flat plate coupler

Microphone

Bias Required:

8 to 16 volts DC through 220 to 2200 ohms

Sensitivity:

Depends upon bias and radio AC input impedance. Typical output is 300 mV at 114 dB SPL. To assure optimal modulation of your radio, it is recommended that you have your avionics technician adjust its input to match the output of your Headset's microphone.

Active Noise Reduction

Active Noise Reduction Bandwidth:

30 - 700 Hz

Noise Floor

35 dBA SPL

Maximum Ambient Noise Level

Approximately 118 dB SPL at full cancellation

Voltage

12-32 VDC

Current

100 milliamps typical, 200 mA maximum
operating

Fuse/Breaker Recommended

1/2 amp fast blow (AGC 1/2 fuse)

Headset Weight

18 oz

Temperature and Altitude

Operating Temperature:

+5 to +131° F (-15 to +55° C)

Storage Temperature:

-67 to +158° F (- 55 to +70° C)

Altitude:

25,000 ft. maximum pressure altitude for full
cancellation

