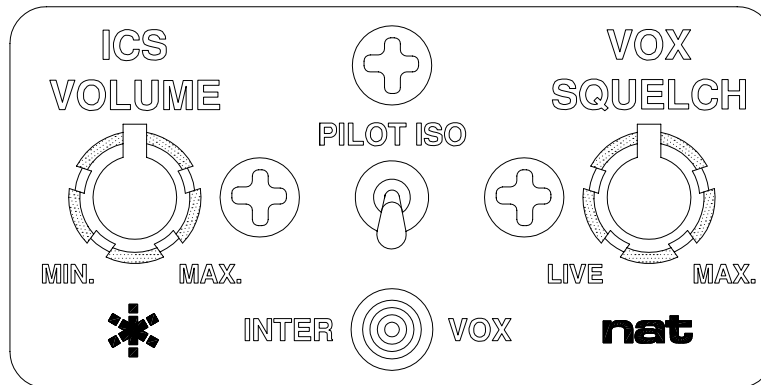




SM08

**AA80 InterVOX
Intercom Systems**



INSTALLATION AND OPERATION MANUAL

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Section 1.0 Description

1.1 Introduction:

The AA80 InterVOX is an advanced cockpit intercom system for general aviation flying. Built to the same exacting standards as NAT's widely accepted AA90/AMS series of audio controllers, the AA80 offers exceptional quality and performance at an attractive price. Since the InterVOX has more than three times the output power of current Sigtronics SPA400 or David Clark Isocom systems, as well as many more pilot convenience features, substantial operational improvements can be made using the AA80 over other systems.

1.2 Purpose of Equipment:

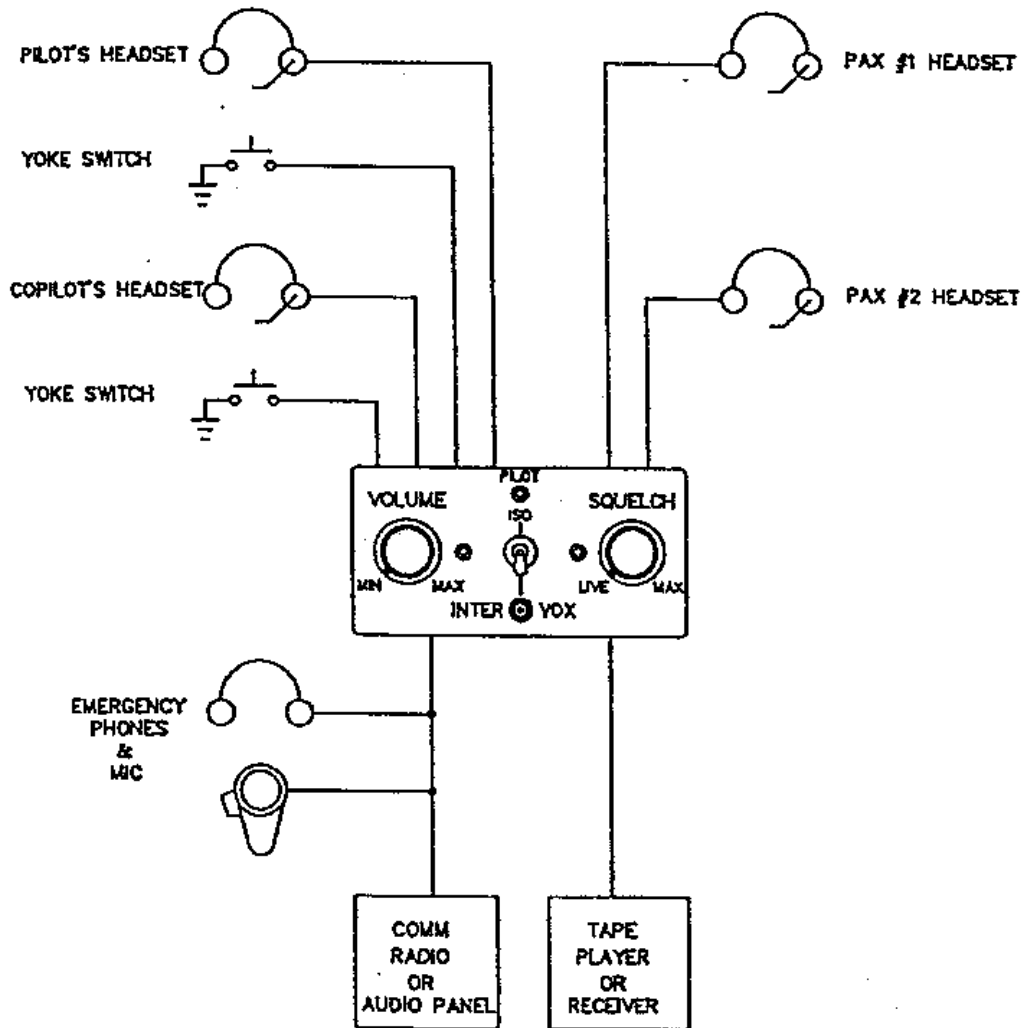
The InterVOX provides full boom-mic transmit and ICS operation for the pilot, co-pilot, and 2 or 4 additional passengers, as well as offering a stereo tape input (AA80-001 only) muted during transmit and ICS operations, and pilot privacy function. Transparent ICS (a standard feature on all NAT systems) allows immediate transmission from the ICS mode without any additional switching. All the features of the AA80 have been geared to reduce the pilot's workload while providing the best possible operating features in flight.

1.3 Design Features:

The InterVOX system employs NAT's unique audio processing system of dynamic noise reduction, and selective bandwidth to produce clean, crisp intercom audio under difficult and noisy conditions. This results in better on-board communication and greatly reduced pilot noise fatigue. The high output power and low distortion of the AA80 insure adequate level for all types of headsets and flying conditions. Split bus operation AND AUTOMATIC EMERGENCY SWITCHING (back to the regular aircraft system) during power failure are standard features. The AA80 has internal overvoltage (>33V) and reverse voltage protection.

Unlike many systems targeted at light aircraft, the InterVOX uses extremely high quality components, including sealed gold contact switches; dry nitrogen filled, high vibration-rated sealed relays; gold contact connectors; and a fully masked, post coated G10 flame retardant circuit board. Each unit is fully temperature cycled and life-tested.

2.6 System Block Diagram: AA80-001 Version



Section 3.0 Operation

3.1 Limitations:

The AA80 intercom system imposes no limitations on the original airframe.

3.2 General:

The AA80 intercom system provides one central control for all the aircraft audio, allowing existing radio and entertainment audio to be mixed with live or voice activated intercom audio. Boom microphone control is also provided for two places (pilot & co-pilot), with pilot priority, and muting of the entertainment audio is provided during ICS (Intercom) or TX (transmit) operation. An emergency/isolation mode is also provided for the pilot.

Control over radio receive level (internal), transmit sidetone level (internal), music level (internal), intercom level (front panel), and VOX threshold (front panel) is provided. The VOX threshold or squelch also allows for a "live" mode, by defeating the squelch, and allowing continuous ICS operation. Units of serial number 3000 and higher also feature an ATC muting adjustment (internal).

Operation of the ICS is transparent, allowing transmit during any ICS mode simply by use of the TX PTT switch.

3.3 Selection of Transmit Functions:

Keying the external TX PTT switch activates the AA80 for transmit, with the pilot's switch having priority in normal or "INTERVOX" mode. Proper TX operation is annunciated by a green light on the front of the AA80.

Sidetone is normally heard from the radio(s) connected to the AA80, but if not available, an internal pot will adjust the level of artificial sidetone generated within the AA80 system for the pilot's convenience. Note that this artificial sidetone is only available through the amplifier in the AA80, and will be lost to the pilot in the "PILOT ISOLATION" mode, and be heard by the passengers.

3.4 Selection of Receive Functions:

Receive audio is always enabled through the AA80, and has a separate internal adjustment to allow balancing of this level to suit the pilot's preference, and equalize iso/normal operation.

An additional input is provided for entertainment audio (tape, etc.), with a separate level adjustment. This line is muted during transmit functions, when the intercom is active, and during reception of radio signals.

If the "ISO" function is selected, the pilot will be connected directly to the radios, while the co-pilot and rear passengers remain on the ICS bus with the entertainment audio. In the "INTERVOX" mode, all stations hear the same audio.

3.5 ICS Functions:

AA80-001 and AA80-060

Intercom audio may be generated in two modes between users, "LIVE" (on constantly), or "VOX" (voice activated). This is selected, along with the squelch threshold of the VOX circuit, by the "VOX SQUELCH" control on the front of the AA80. When the VOX trigger is activated, the front panel indicator will light up amber, indicating that the ICS system is ON.

AA80-020 and AA80-062

Intercom audio may be generated in three modes between users; "LIVE" (on constantly), "VOX" (voice activated), or PTT (push-to-talk). This is selected, along with the squelch threshold of the VOX circuit, by the position of the "VOX SQUELCH" control on the front of the AA80. When the VOX trigger is activated, the front panel indicator will light up amber, indicating that the ICS system is ON.

<u>Mode of Operation</u>	<u>Position of VOX Control</u>
LIVE	Fully counter-clockwise
VOX	Mid-position (typical)
PTT	Fully clockwise

Intercom level or volume is set by the "ICS VOLUME" control on the front of the AA80. It does not affect the level of other audio within the system.

ICS functions are available to all users when the system switch is in the "INTERVOX" mode. When it is in the "PILOT ISOLATION" mode, only the co-pilot and the two passengers have ICS capability

3.6 Emergency Operation:

If power is lost to the AA80 for any reason, it will drop into the power-fail mode, and the pilot will be connected directly to the radios for emergency operation. The external PTT switch will still function. This mode is similar to the "PILOT ISOLATE" mode, except that all co-pilot & passenger functions are lost, since they depend on external power. A power failure has occurred when the panel indicator fails to light under any condition.

If a catastrophic relay failure of the AA80 should occur, or the rear connector becomes loose or disengaged, the designated emergency hand mic and headset jacks will allow operation to continue, as they have no connection directly through the AA80.

The "PILOT ISOLATION" mode requires no power, and will operate even if other circuitry should fail in the AA80. Note that during this mode, the co-pilot's mic IS NOT locked out, and he could transmit, although he could not receive the incoming audio.

All aspects of emergency operation should be confirmed to be working by the pilot before accepting the aircraft into service.