GMA 350/350c
pilot's guide

GARMIN

LIMITED WARRANTY

This Garmin product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, Garmin will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alterations or repairs. In addition, Garmin reserves the right to refuse warranty claims against products or services that are obtained and/or used in contravention of the law of any country.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL GARMIN BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you.

Garmin retains the exclusive right to repair or replace the unit or software, or to offer a full refund of the purchase price, at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

To obtain warranty service, contact your local Garmin Authorized Service Center. For assistance in locating a Service Center near you, visit the Garmin Web site at "http://www.garmin.com" or contact Garmin Customer Service at 800-800-1020.

> ⚠️ **CAUTION:** *Incorrect aircraft wiring could short the left channel or both channels to ground if a monaural headset is plugged into the stereo jacks. If wired incorrectly, fail-safe operation will not work.*

Transmitter Grant of Equipment Authorization

FCC ID: IPH-0163700
IC: 1792A-0163700
IC M/N: GMN-00871

NOTE
This device complies with Part 15 of the FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation

NOTE
This device does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could result in permanent damage to the equipment, and void your warranty and your authority to operate this device under Part 15 regulations.

Industry Canada Statement
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes RSS sans licence d'Industrie Canada. Son fonctionnement est soumis aux conditions suivantes: (1) cet appareil ne doit pas causer d'interférences et (2) doit accepter toute interférence, y compris les interférences pouvant entraîner un fonctionnement indésirable de l'appareil.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

FCC Statement for Mobility Device
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

GARMIN™
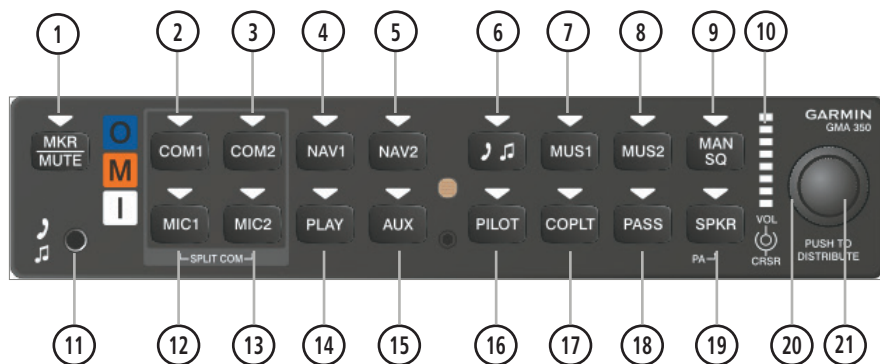
CONTROLS

GMA 350 Controls

GMA 350c (Bluetooth) Controls

> ✅ **NOTE:** *When a key is selected, a triangular annunciator above the key is illuminated.*

① **MKR/MUTE –** Selects marker beacon receiver audio. Mutes the currently received marker beacon receiver audio. Deactivates automatically and marker beacon audio is heard when the next marker beacon signal is received. Also, stops play of recorded COM audio.

(2) **COM1 –** When selected, audio from the #1 COM receiver can be heard. Press and hold to enable/disable monitored COM muting during primary COM reception.

(3) **COM2 –** When selected, audio from the #2 COM receiver can be heard. Press and hold to enable/disable monitored COM muting during primary COM reception.

(4) **NAV1 –** When selected, audio from the #1 NAV receiver can be heard.

(5) **NAV2 –** When selected, audio from the #2 NAV receiver can be heard.

(6) 🎵 **–** Selects and deselects audio from a telephone or entertainment device connected to the Front Panel Jack. Audio from a telephone connected to the rear of the audio panel is used if a device is not connected to the Front Panel Jack. Press and hold to enable/disable 🎵 muting during reception.

(7) **MUS1 –** Selects and deselects music entertainment audio. Press and hold to enable/disable **MUS1** muting during reception.

(8) **MUS2 –** Selects and deselects music entertainment audio. Press and hold to enable/disable **MUS2** muting during reception.

(9) **MAN SQ –** Manual Squelch annunciator. When lit, squelch is controlled manually.

(10) **Volume Indicator –** Indicates volume/squelch setting relative to full scale.

(11) **Front Panel Jack –** Used for an entertainment or telephone input.

(12) **MIC1 –** Selects the #1 transmitter for transmitting. COM1 receive is simultaneously selected when this key is pressed allowing received audio from the #1 COM receiver to be heard. COM2 receive can be added by pressing the **COM2** Key. Selection of a second MIC button initiates Split-COM mode. When in Split-COM mode, the pilot is using COM1, the copilot is using the COM2.

GARMIN

(13) **MIC2 –** Selects the #2 transmitter for transmitting. COM2 receive is simultaneously selected when this key is pressed allowing received audio from the #2 COM receiver to be heard. COM1 receive can be added by pressing the **COM1** Key. Selection of a second MIC button initiates Split-COM mode. When in Split-COM mode, the pilot is using COM1, the copilot is using the COM2.

(14) **PLAY –** Press once to play the latest recorded memory block. Press while audio is playing begins playing the previously recorded memory block. Each subsequent press thereafter plays the previous block of memory.

(15) **AUX –** When selected, audio from the AUX inputs can be heard.

(16) **PILOT –** Controls the pilot intercom system. Press and hold to toggle 3D Audio on/off for all headset positions.

(17) **COPLT –** Controls the copilot intercom system. Press and hold to toggle copilot configuration between crew and passenger.

(18) **PASS –** Controls the passenger intercom system. Press and hold to enable/disable passenger muting during reception.

(19) **SPKR –** Selects and deselects the cabin speaker. COM, NAV, AUX, and MKR receiver audio can be heard on the speaker. Press and hold for 2 seconds for Passenger Address (PA). The **SPKR** key flashes during PA.

(20) **Cursor (CRSR) Control Knob –** Turn to move the cursor (flashing white or blue annunciator) to the desired source.

(21) **Volume (VOL) Control Knob –** Turn the smaller knob to control volume or squelch of the selected source (indicated by the flashing white or blue annunciator). When the volume control cursor is not active press to switch to Blue-Select mode. If the volume control cursor is active, press twice (once to cancel the cursor, twice to activate Blue-Select mode).

(22) **Bluetooth® Connection Annunciator** – (GMA 350c only) A flashing blue annunciator indicates the unit is discoverable. A solid blue annunciator indicates an active Bluetooth connection.

(23) ♪♫ **Key Annunciator** – (GMA 350c only) Assigns the Bluetooth device to the ♪♫ audio source. Press the ♪♫ key until the annunciator turns blue. The key annunciator will cycle from OFF to WHITE to BLUE. WHITE selects the wired audio source and BLUE selects the Bluetooth audio source. **NOTE**: The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and WHITE.

(24) **MUS1 Key Annunciator** – (GMA 350c only) Assigns the Bluetooth device to the **MUS1** audio source. Press the **MUS1** key until the annunciator turns blue. The key annunciator will cycle from OFF to WHITE to BLUE. WHITE selects the wired audio source and BLUE selects the Bluetooth audio source. **NOTE**: The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and WHITE.

(25) **MUS2 Key Annunciator** – (GMA 350c only) Assigns the Bluetooth device to the **MUS2** audio source. Press the **MUS2** key until the annunciator turns blue. The key annunciator will cycle from OFF to WHITE to BLUE. WHITE selects the wired audio source and BLUE selects the Bluetooth audio source. **NOTE**: The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and WHITE.

(26) **Control Knob** Press and Hold – (GMA 350c only) Press and hold for two seconds to enable the GMA 350c as discoverable for pairing. The Bluetooth Annunciator with flash to indicate that the unit is discoverable. The unit will remain discoverable for 90 seconds or until a successful pair is established. Once a successful pair is established, the audio "Bluetooth paired" is played.

GARMIN™

FEATURES AND OPERATION

The GMA 350/350c Audio Panel provides the traditional audio selector functions of microphone and receiver audio selection. The Audio Panel includes an intercom system (ICS), a marker beacon receiver, and a COM clearance recorder. Ambient noise from the aircraft radios is reduced by Avionics Squelch (ASQ). When no audio is detected, ASQ processing further reduces the amount of background noise. The **MAN SQ** Key toggles between manual and automatic intercom system (ICS) squelch. In automatic ICS squelch mode, threshold adjustments are handled automatically by the system. In manual ICS squelch mode, individual threshold adjustments can be made for the pilot, copilot, and passenger microphones by the crew. The ability to adjust individual thresholds for each ICS position further reduces the amount of background noise from the radios.

Pushbutton keys control audio selection. When a key is selected, a triangular annunciator above the key is illuminated. Annunciator brightness is adjusted automatically by photocell dimming. Key brightness is adjusted by the radio dimming bus control. Three Aux inputs are available for additional avionics or audio devices.

Upon installation, the unit may be configured in various ways depending on aircraft type and the needs of the pilot.

POWER-UP

The GMA 350/350c performs a self-test during power-up. During the self-test all Audio Panel annunciator lights illuminate for approximately two seconds. Once the self-test is completed, most of the settings are restored to those in use before the unit was last turned off.

MONO/STEREO HEADSETS

Stereo headsets are recommended when using the GMA 350/350c. Using a monaural headset in a stereo jack shorts the right headset channel output to ground. While this does not damage the Audio Panel, a person listening on a monaural headset hears only the left channel in both ears. If a monaural headset is used at one of the passenger positions, any other passenger using a stereo headset hears audio in the left ear only.

TRANSCEIVERS

NOTE: *Transceiver functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.*

Audio from the #1 or #2 COM receiver can be selected independently by pressing the respective Key(s) (**COM1** or **COM2**).

Pressing MIC1 or MIC2 selects the #1 or #2 transmitter and simultaneously selects the related COM receiver (COM1 or COM2) allowing received audio to be heard. The other COM receiver can be added by pressing the respective key. During reception of audio from the COM radio selected for transmission, audio from the other COM radio is muted.

ENABLING/DISABLING MONITORED COM MUTING

Press and hold **COM1** or **COM2** to enable/disable monitored COM muting during reception of audio from the COM radio selected for transmission. The aural message **"Monitor Mute Enable/Disable"** is heard.

GARMIN.

SPLIT-COM MODE

✓ ***NOTE:*** *Split COM performance is affected by the distance between the COM antennas and the separation of the tuned frequencies. If the selected COM frequencies are too close together, interference may be heard during transmission on the other radio.*

During Split-COM operation, both the pilot and the copilot can transmit simultaneously over separate radios.

Pressing both **MIC** Keys simultaneously initiates Split-COM Mode (i.e., COM1/COM2). The respective COM1/MIC1 or COM2/MIC2 annunciators are illuminated indicating Split-COM operation. Split-COM operation is cancelled by pressing one of the selected MIC Keys again.

In Split-COM mode, the pilot uses COM1 and the copilot uses COM2.

COM2 Radio is Selected

Selecting a COM Radio for Transmit
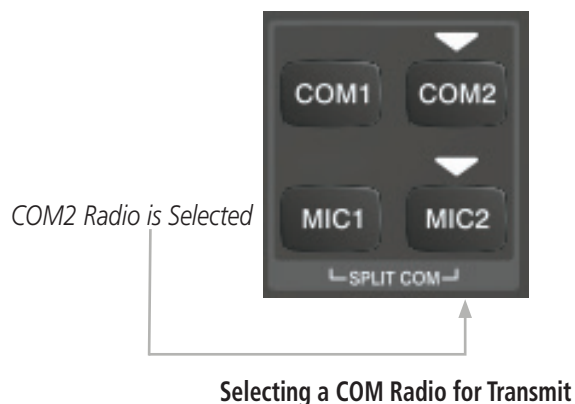
TRANSMIT INDICATIONS

During COM transmission, the active transceiver (MIC1 or MIC2) Key Annunciator flashes approximately once per second.

During Split-COM transmission, the MIC1 annunciator flashes when the pilot's microphone PTT is pressed. The MIC2 annunciator flashes when the copilot's microphone PTT is pressed.

Annunciator Flashes During Transmission
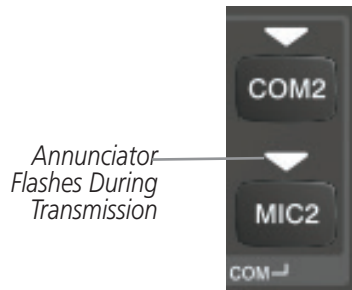
COM Radio Transmit Indication

RECEIVERS

> **NOTE:** *Receiver functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.*

Pressing the **NAV1** and/or **NAV2** Key(s) selects/deselects the receiver audio for the corresponding navigation radio source. The selected audio source can be heard over the headset and the speaker (if selected). All radios can be selected individually or simultaneously.

Selecting a NAV Radio Receiver

MARKER BEACON RECEIVER

The marker beacon receiver detects any marker beacon signal within the reception range of the aircraft.

When a marker beacon signal is detected, the lamps illuminate, and an associated keyed-tone is heard when MKR audio is selected. Marker beacon lamps operate independently of any audio selection and cannot be turned off.

Marker Beacon Key & Lamps

The marker beacon signal sensitivity threshold can be set to High, Low, or User Selectable (toggle switch required).

The receiver detects the three marker tones (outer, middle, and inner).

Audio Frequency	Audio Keying	Lamp Actuated
400 Hz (Outer)	— — — — —	Blue
1300 Hz (Middle)	▪ ▬ ▪ ▬ ▪ ▬ ▪ ▬ ▪ ▬	Amber
3000 Hz (Inner)	▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪	White

The GMA 350/350c provides three states of marker beacon operation; On, Muted, and Deselected. The **MKR/MUTE** key annunciator indicates when marker beacon audio is selected. Marker beacon audio is not heard when the annunciator is off or when the annunciator is on with the marker beacon audio muted.

Turning Marker Beacon Audio On

With the MKR/MUTE annunciator off, press the **MKR/MUTE** Key to activate marker beacon audio and illuminate the MKR/MUTE annunciator.

Muting Marker Beacon Audio

During marker beacon audio reception, press the **MKR/MUTE** Key to mute the audio. The MKR/MUTE annunciator remains lit, but the current marker tone is silenced. Audio muting deactivates automatically and marker beacon audio is heard when the next marker beacon signal is received.

Deselecting Marker Beacon Audio

To deselect marker beacon audio, press the **MKR/MUTE** Key twice during marker beacon reception or once if a marker beacon signal is not detected.

INTERCOM SYSTEM (ICS)

> **NOTE:** *Intercom functions may also be accessed via Voice Recognition commands. Refer to the Voice Recognition section for more information.*

The GMA 350/350c includes a six-position intercom system (ICS), two MUSIC inputs, and one telephone/entertainment input for the pilot, copilot and passengers. The intercom provides Pilot, Copilot, and Passenger audio isolation.

Intercom Controls

GARMIN™

Press the **PILOT**, **COPLT**, and/or **PASS** Keys to distribute as required. If the annunciators are lit, those positions will share intercom audio. If an annunciator is NOT lit that position is isolated from the others.

COPILOT CONFIGURED AS CREW OR PASSENGER

✓ ***NOTE:*** *When the copilot position is configured as a passenger, the **COPLT** Key is disabled and the copilot headset is treated as a 'passenger' for intercom and entertainment audio distribution.*

The copilot position can be configured as crew (**COPLT** Key enabled) or as a passenger (**COPLT** Key disabled). Pressing and holding the **COPLT** Key toggles the copilot position configuration between passenger and crew. The aural message **"Copilot as Passenger"** or **"Copilot as Crew"** is heard.

INTERCOM MODES

✓ ***NOTE:*** *In the following modes the copilot position is configured as crew.*

✓ ***NOTE:*** *In the default ICS configuration, only the pilot and copilot positions can hear aircraft alerts.*

ALL INTERCOM MODE

In 'All Intercom' mode the Pilot, Copilot, and Passengers hear each other and hear the aircraft audio.

Aircraft Audio

ICS Keys   **Mode Operation**
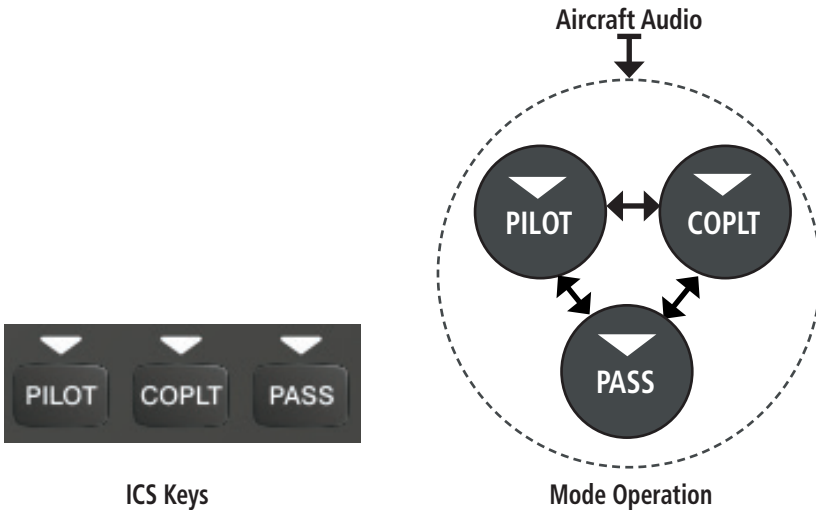
PILOT ISOLATE MODE

In 'Pilot Isolate' mode the Pilot, Copilot, and Passengers hear the aircraft audio. The Copilot and Passengers also hear each other.

Aircraft Audio

ICS Keys   **Mode Operation**

GARMIN™
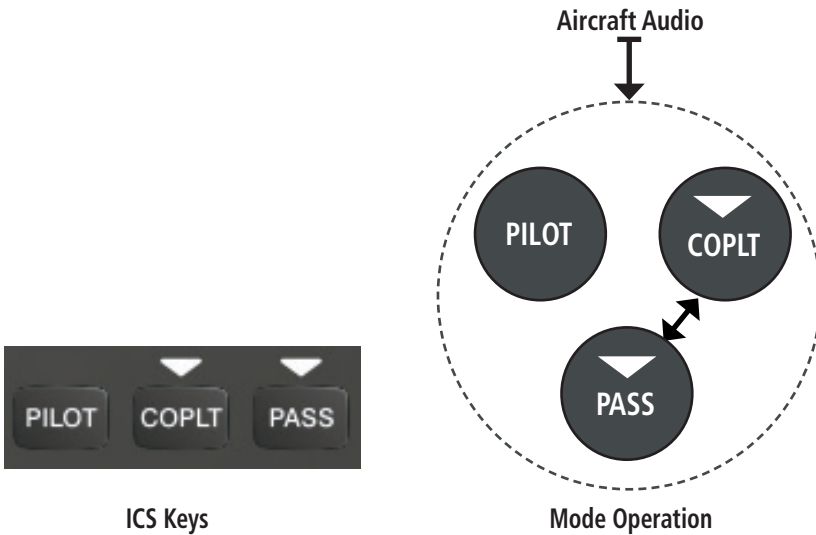
PASSENGER/CREW ISOLATE MODE

In 'Passenger/Crew Isolate' mode the Pilot and Copilot hear the aircraft audio and each other. The Passengers hear each other.

Aircraft Audio

PILOT COPLT PASS

PILOT ↔ COPLT   PASS

ICS Keys　　　　　　　**Mode Operation**
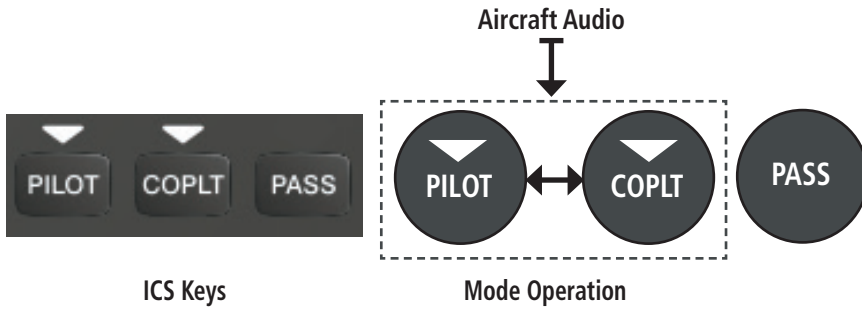
COPILOT ISOLATE MODE

In 'Copilot Isolate' mode the Pilot and Passengers hear the aircraft audio and each other. The Copilot has the option to use Split-COM mode.

Split-COM Mode (Optional)

Aircraft Audio

COPLT

PILOT

PASS

PILOT COPLT PASS

ICS Keys　　　　　　　**Mode Operation**

ALL ISOLATE MODE

In 'All Isolate' mode the Pilot hears the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.

ICS Keys   **Mode Operation**
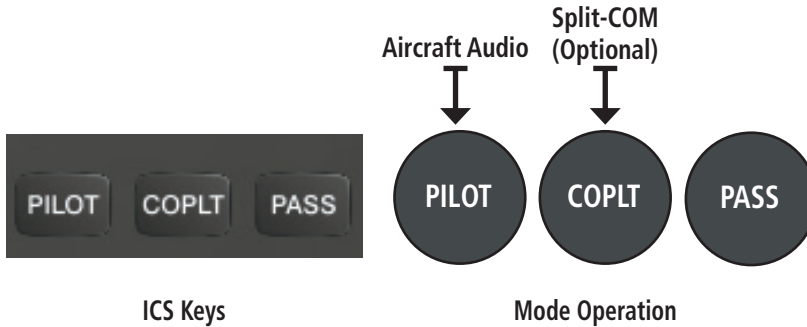
PILOT & COPILOT ISOLATE MODE

In 'Pilot & Copilot Isolate' mode the Pilot and Passengers hear the aircraft audio. The Copilot has the option to use Split-COM mode.

ICS Keys   **Mode Operation**

GARMIN™

PILOT & PASSENGER ISOLATE MODE
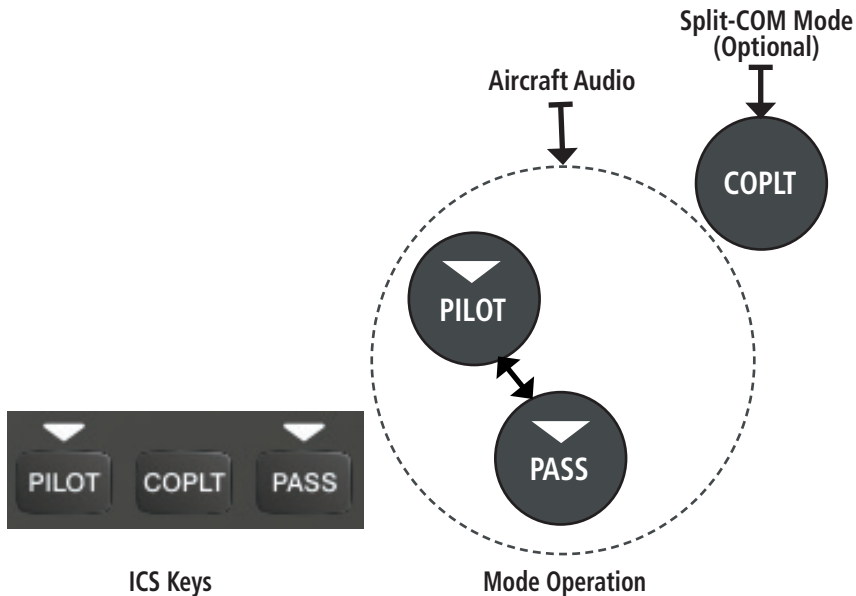
In 'Pilot & Passenger Isolate' mode the Pilot and Copilot hear the aircraft audio. The Passengers hear each other.

Aircraft Audio

ICS Keys

Mode Operation

COPILOT & PASSENGER ISOLATE MODE

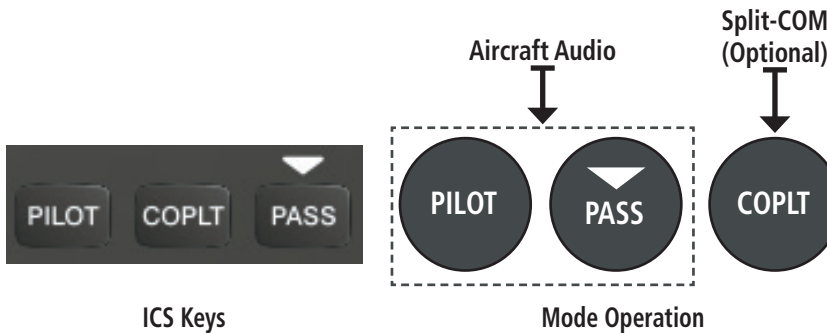In 'Copilot & Passenger Isolate' mode the Pilot can hear the aircraft audio. The Copilot has the option to use Split-COM mode. The Passengers hear each other.

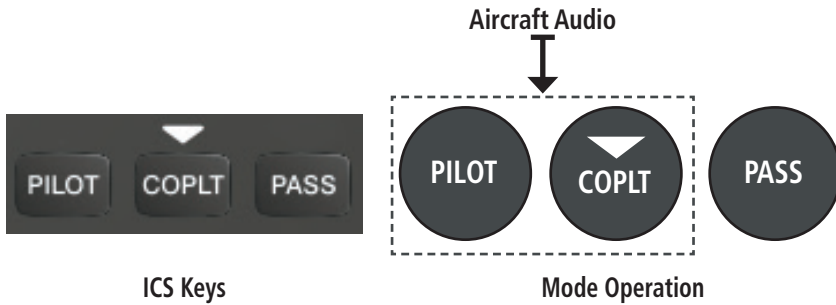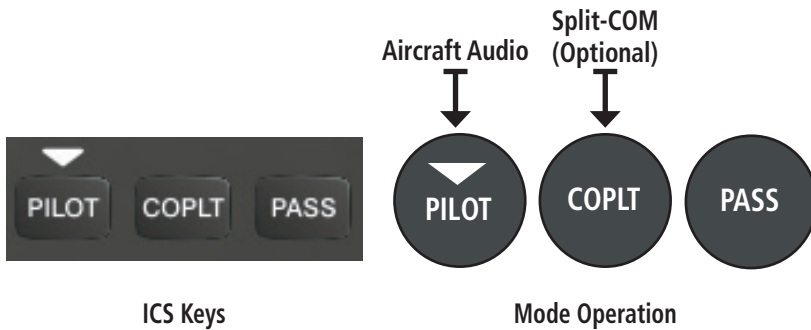**Aircraft Audio**   **Split-COM (Optional)**

ICS Keys

Mode Operation

INTERCOM VOLUME AND SQUELCH

The **VOL/CRSR** Knob controls selection and volume or manual squelch adjustment for audio sources that may not be adjustable anywhere else in the system. The small knob controls the volume or squelch. Turning the large knob activates and/or moves the cursor (flashing white annunciator/ or flashing blue annunciator in Blue-Select Mode) to select the audio source to adjust. The cursor will time-out after a few seconds and the position of the cursor will always default back to the **PILOT** Key. Pressing the small knob cancels the cursor.

BLUE-SELECT MODE (TELEPHONE/ENTERTAINMENT DISTRIBUTION)

The music (MUS1/MUS2) and telephone/entertainment (🎵) audio are distributed using the Blue-Select Mode. The following example indicates that the pilot, copilot, and passengers will all hear the telephone/entertainment audio.

Blue-Select Mode (Telephone/Entertainment Distribution)

The Blue-Select Mode is entered by pressing the small knob when the volume control cursor (flashing white annunciator) is not active. If the volume control cursor is active, press the small knob twice. The first press will cancel the volume control cursor, the second will activate Blue-Select Mode.

The annunciator over the ♪♫ Key will be flashing blue. Any combination of the annunciators over the **PILOT**, **COPLT**, and **PASS** buttons may be blue. Select the desired button to turn the blue annunciator on or off to distribute the telephone/entertainment audio to selected crew/passenger positions. Turn the large knob to select **MUS1** or **MUS2** and select the crew positions to receive the music audio.

Selecting any key other than **PILOT**, **COPLT**, **PASS**, **MUS1, MUS2**, or ♪♫ will cancel Blue-Select Mode. Pressing the small knob will also cancel Blue-Select Mode. After approximately 20 seconds with no input, the Blue-Select Mode will automatically cancel.

ADJUSTING INTERCOM VOLUME

When the cursor is on PILOT, COPLT, or PASS, the Volume Control Knob adjusts the intercom volume for the listener.

ADJUSTING MANUAL SQUELCH

When the cursor is on MAN SQ, the Volume Control Knob adjusts the ICS Squelch Threshold (the volume level that must be exceeded to be heard over the intercom).

ADJUSTING SPEAKER VOLUME

When the cursor is on SPKR, the Volume Control Knob adjusts the speaker volume of the selected sources (COM, NAV, AUX, MKR).

ADJUSTING MKR, AUX, ♪♫, AND MUSIC VOLUME

When the cursor is on MKR, AUX, ♪♫, MUS1 or MUS2, the Volume Control Knob adjusts the individual volume of the selected source.

Manual Squelch Annunciator;
Off for Automatic Squelch, On
for Manual Squelch

Relative Volume/
Squelch Scale

Volume or Manual Squelch   Cursor
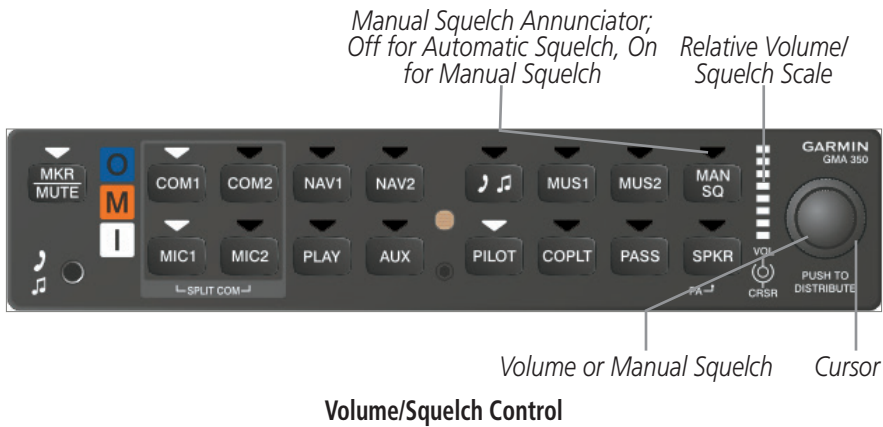
Volume/Squelch Control

SPEAKER

All of the radios can be heard over the cabin speaker. Pressing the **SPKR** Key selects and deselects the cabin speaker. Speaker audio is muted when the PTT is pressed. Certain aural alerts and warnings (autopilot, traffic, altitude) are always heard on the speaker, even when the speaker is not selected.

Speaker Key

PASSENGER ADDRESS MODE (PA MODE)

Press and hold the **SPKR** Key for 2 seconds to initiate Passenger Address Mode. PA Mode is annunciated by a rapid blinking of the SPKR annunciator. When in PA Mode the crew can use the PTT "Push-to-Talk" button to deliver announcements over the speaker, to the passenger headsets, or both depending on configuration.

Split-PA Mode

During Split-PA Mode the pilot can continue to use the radio(s) while the copilot delivers PA announcements. To initiate Split-PA Mode, first enter Split-COM Mode by pressing both **MIC** Keys simultaneously, then press and hold the **SPKR** Key for 2 seconds.

3D AUDIO

3D Audio is useful when multiple audio sources are present. By using different responses in each ear, 3D audio processing creates the illusion that each audio source is coming from a unique location or seat position.

Because this feature uses different signals for left and right channels, it requires wiring for stereo intercom and stereo headsets. If 3D audio is activated when mono headsets are in use, the listener will still hear all audio sources; however, there is no benefit from location separation.

With a single COM selected and 3D Audio enabled, the listener hears the audio source at the 12 o'clock position. If both COMs are selected, the listener hears COM1 at 11 o'clock and COM2 at the 1 o'clock position. All other intercom positions are processed to sound like their relative seat location. By default, the GMA 350/350c assumes the pilot sits in the left seat. A Garmin authorized service center can make changes to the default configuration.

Enabling 3D Audio

Press and hold the **PILOT** Key to toggle 3D audio processing on and off for all headset positions. When 3D Audio is enabled, the aural message "3D audio left" is heard in the left ear followed by "3D audio right" in the right ear. If the aural messages are not heard in only the left and then the right ear respectively, the cause may be aircraft wiring or headset settings. Refer to the following table if a headset or aircraft wiring problem is suspected.

3D Audio Troubleshooting		
Symptom(s)	**Cause(s)**	**Solution(s)**
"3D audio left" message heard in both ears. "3D audio right" message not heard	**1)** Mono headset in use	**1)** Use a stereo headset
	2) Stereo headset in use with mono/stereo switch set to 'mono'	**2)** Set mono/stereo switch on headset to 'stereo'
	3) Aircraft wiring has left audio wired to both left and right channels of stereo headset jack	**3)** If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in both ears, followed by "3D audio right" message heard in both ears	**1)** Mono headset in use	**1)** Use a stereo headset
	2) Stereo headset in use with mono/stereo switch set to mono	**2)** Set mono/stereo switch on headset to 'stereo'
	3) Incorrect aircraft wiring (left/right shorted together)	**3)** If after checking solutions #1 and #2 see a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
Symptom(s)	**Cause(s)**	**Solution(s)**
"3D audio right" message heard in both ears. "3D audio left" not heard	**1)** Incorrect aircraft wiring (right channel used for mono instead of left or left/right swapped)	**1)** See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

3D Audio Troubleshooting		
"3D audio left" message heard in right ear only followed by "3D audio right" message heard in left ear only	**1)** Stereo headset is on backwards	**1)** Verify correct orientation from the left/right indication on each side of the headset or the position of the boom MIC (usually attached on left side). If the headset is backwards, the left/right position information will be swapped.
	2) Incorrect aircraft wiring (left/right channels swapped)	**2)** See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.
"3D audio left" message heard in left ear only, no audio heard in right ear.	**1)** Aircraft wired for mono intercom	**1)** See a service center to wire the installation for stereo headsets.
"3D audio right" message heard in right ear only, no audio heard in left ear	**1)** Incorrect aircraft wiring (right channel used for mono instead of left, or left/right swapped)	**1)** See a service center as soon as possible to inspect/correct wiring. This wiring fault can cause fail-safe audio not to function.

3D Audio Troubleshooting

CLEARANCE RECORDER AND PLAYER

The GMA 350/350c contains a digital clearance recorder that records up to 2.5 minutes of the selected COM radio signal. Recorded COM audio is stored in separate memory blocks. Once 2.5 minutes of recording time have been reached, the recorder begins recording over the stored memory blocks, starting from the oldest block.

Pressing the **PLAY** Key once plays the latest recorded memory block. The Play function can also be accessed via Voice Recognition commands. Refer to the 'Voice Recognition' section for more information.

Pressing the **MKR/MUTE** Key during play of a memory block stops play. If a COM signal is detected during play of a recorded memory block, play is halted.

Pressing the **PLAY** Key while audio is playing begins playing the previously recorded memory block. Each subsequent press of the **PLAY** Key selects the previously recorded memory block.

Powering off the unit automatically clears all recorded blocks.

Stops Play ————

Marker Mute Key
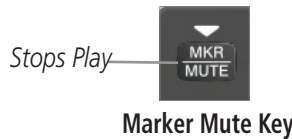
VOICE RECOGNITION

Voice Recognition allows the pilot (and optionally copilot) to control the GMA 350/350c using spoken commands. To activate Voice Recognition, push and hold the Push-to-Command (PTC) button while speaking a command. When the Push-to-Command button is released, the GMA 350/350c will respond.

If a command is correctly interpreted by the GMA 350/350c, a positive acknowledgement chime will be played, and the pilot should verify that the correct button selection is indicated by the triangular annunciator lights. Alternatively, some commands will be indicated by a voice response from the GMA 350/350c. If the desired modes are not indicated by annunciator lights or a voice response, the pilot should repeat the command by using the Push-to-Command button, or by manually using the front panel controls of the GMA 350/350c.

If a command is incorrectly interpreted by the GMA 350/350c, a negative acknowledgement tone will be played. The pilot should repeat the command by using the Push-to-Command button, or by manually using the front panel controls of the GMA 350/350c. In the event of any abnormal Voice Recognition operation, the front panel controls may be used to override Voice Recognition and manually control the GMA 350/350c.

The following table lists the available Voice Recognition commands, the associated actions, and the voice response if applicable:

Control	Example Phrase	Action
COM	"COM one"	Toggles COM1 audio
	"MIC one"	Selects MIC1/COM1 audio
	"COM one MIC"	Selects MIC1/COM1 audio
	"COM two"	Toggles COM2 audio
	"MIC two"	Selects MIC2/COM2 audio
	"COM two MIC"	Selects MIC2/COM2 audio
	"Split COM"	Selects split COM mode
	"Monitored COM mute" OR "Mute Monitored COM"	Mutes monitored COM on primary COM reception (refer to Page 8). Voice Response: "Monitor mute enable".
	"Disable monitored COM mute" "Monitored COM mute disable" "Disable mute monitored COM" OR "Mute monitored COM disable"	Disables monitored COM mute on primary COM reception (refer to Page 8). Voice Response: "Monitor mute disable".
NAV	"NAV one"	Toggles NAV1 audio
	"NAV two"	Toggles NAV2 audio
AUX	"AUX" OR "Auxiliary"	Toggles AUX audio

Control	Example Phrase	Action
	"Telephone" "Phone" OR "Jack"	Toggles ♪♫ (TEL/JACK) input
♪♫	"Telephone mute" "Mute telephone" "Phone mute" "Mute phone" "Jack mute" OR "Mute Jack"	Mutes TEL/JACK on radio reception. Voice Response: "Tel and jack mute enable".
	"Disable telephone mute" "Mute telephone disable" "Disable phone mute" "Mute phone disable" "Disable jack mute" "Mute jack disable" "Telephone mute disable" "Disable mute telephone" "Phone mute disable" "Disable mute phone" "Jack mute disable" OR "Disable mute jack"	Disables TEL/JACK mute on radio reception. Voice Response: "Tel and jack mute disable".
MUSIC	"MUSIC one"	Toggles MUS1 input
	"MUSIC two"	Toggles MUS2 input
	"MUSIC one mute" OR "Mute MUSIC one"	Mutes MUS1 on radio reception Voice Response: "Music one mute enable"
	"Disable MUSIC one mute" "MUSIC one mute disable" "Disable mute MUSIC one" OR "Mute MUSIC one disable"	Disables MUS1 mute on radio reception. Voice Response: "Music one mute disable".

GARMIN™

Control	Example Phrase	Action
MUSIC	"MUSIC two mute" OR "Mute MUSIC two"	Mutes MUS2 on radio reception. Voice Response: "Music two mute enabled".
	"Disable MUSIC two mute" "MUSIC two mute disable" "Disable mute MUSIC two" OR "Mute MUSIC two disable"	Disables MUS2 mute on radio reception. Voice Response: "Music two mute disabled".
ICS Isolation	"Pilot"	Toggles PILOT button
	"Copilot"	Toggles COPLT button
	"Passenger" OR "Pass"	Toggles PASS button
	"Passenger mute" "Pass mute" "Mute passenger" OR "Mute pass"	Mutes passengers during radio reception. Voice Response: "Passenger mute enable".
	"Disable passenger mute" "Disable pass mute" "Disable mute passenger" "Disable mute pass" "Passenger mute disable" "Pass mute disable" "Mute passenger disable" OR "Mute pass disable"	Disables muting of passengers during radio reception. Voice Response: "Passenger mute disable".
Copilot Configuration	"Copilot is passenger" OR "Copilot is pass"	Configures Copilot as a passenger. Voice Response: "Copilot as passenger".
	"Copilot is crew"	Configures Copilot as flight crew. Voice Response: "Copilot as crew".

Control	Example Phrase	Action
Manual Squelch	"Manual squelch" OR "Man squelch"	Toggles manual squelch mode
	"Manual squelch threshold up" "Man squelch threshold up" "Manual squelch volume up" OR "Man squelch volume up"	Increases manual squelch threshold
	"Manual squelch threshold down" "Man squelch threshold down" "Manual squelch voume down" OR "Man squelch volume down"	Decreases manual squelch threshold

NOTE: Finer manual squelch adjustment may be made using the dual concentric knobs on the GMA 350/350c. The voice command "Up" or "Down" is equivalent to three clicks of the inner knob.

| Control	Example Phrase	Action
Speaker (SPKR)	"Speaker"	Toggles SPKR on/off
PA	"P - A"	Toggles PA on/off
Marker Beacon (MKR/MUTE)	"Marker" "Mute marker" OR "Marker mute"	Same action as pressing MKR/MUTE (refer to page 4).
COM Clearance Recorder	"Play" "Read back" OR "Say again"	Same action as pressing PLAY (refer to page 5).
Cursor	"Cursor off" "Cursor cancel" OR "Cancel cursor"	Cancels cursor when cursor is flashing
Volume Adjustments	"(Desired selection*) volume up"	Increases volume of desired selection
	"(Desired selection*) volume down"	Decreases volume of desired selection

Control	Example Phrase	Action
Volume Adjustments	"(Desired selection*) volume	Displays the current volume but does not change it

* Desired selection = "Speaker", "pilot", "copilot", "passenger", "pass", "marker", "aux", "auxiliary", "telephone", "phone", "jack", "music one", or "music two".

NOTE: Finer volume adjustment may be made using the dual concentric knobs on the GMA 350/350c. The voice command "Up" or "Down" is equivalent to three clicks of the inner knob.

Distribution (Blue Mode)	"Distribute telephone to (desired position(s) ******)" OR "Distribute phone to (desired position(s) ******)" OR "Distribute jack to (desired position(s) ******)"	Distributes TEL/JACK to desired positions.
	"Distribute music one to (desired position(s) ******)"	Distributes MUS1 to desired position(s)
	"Distribute music two to (desired position(s)******)"	Distributes MUS2 to desired position(s)

** Desired position(s) = "All", "none", "pilot", "copilot", "passenger", "pass", or any combination of pilot, copilot, passenger, or pass.

NOTE: The word "to" may be omitted from distribution phrases.

3D Audio	"Three-D audio"	Enables 3D audio (refer to page 21) Voice Response: "Three-D audio left, three-D audio right"
	"Standard audio"	Enables standard audio (disables 3D audio) Voice Response: "Standard Audio"

Voice Recognition Commands

ENTERTAINMENT INPUTS

The GMA 350/350c provides three stereo telephone/entertainment inputs:

- The telephone/entertainment (♪♫) Key controls a telephone or entertainment device connected to the rear of the audio panel or to the Front Panel Jack.

- The **MUS1** and **MUS2** Key controls the Entertainment Music audio input.

The Front Panel Jack can be used as an entertainment input or a telephone input (in which case, it operates simultaneously with the rear telephone interface). The Front Panel Jack is a 3.5-mm stereo jack that is compatible with popular portable entertainment devices such as MP3s, CD players, and cell phones. The headphone outputs of the entertainment devices are plugged into the Front Panel Jack.

Distribution of the entertainment inputs are configured in Blue-Select Mode.   Blank Page

TELEPHONE AND ENTERTAINMENT MUTING

Telephone and entertainment muting can be enabled or disabled by the user, however it is always muted during alerts.

ENABLING/DISABLING MUTING

Press and hold the **MUS1**, **MUS2**, or (♪♫) Key for two seconds to toggle muting on and off. The aural message **"Music 1 Mute Enable/Disable"**, **"Tel Mute Enable/Disable",** or **"Bluetooth Mute Enabled/Disabled"** is heard.

BLUETOOTH® (GMA 350c ONLY)

> **NOTE:** *Pairing is only necessary during the first attempt to connect a Bluetooth device to the GMA 350c. Once paired, the GMA 350c and the device will connect automatically.*

PAIRING A BLUETOOTH DEVICE WITH THE GMA 350c

Press and hold the inner knob for two seconds. The Bluetooth Annunciator flashes to indicate the unit is discoverable and the aural message "**Bluetooth discoverable**" is heard. The GMA 350c will remain discoverable for 90 seconds or until a successful pair is established. Once paired, the Bluetooth Annunciator turns steady blue and the aural message "**Bluetooth connected/paired**" is heard.

ASSIGNING AN AUDIO SOURCE TO THE BLUETOOTH DEVICE

Press the ♪ , **MUS1**, or **MUS2** key until the annunciator turns blue (the audio from the Bluetooth source will not be heard until this step is complete). The key annunciator cycles OFF-WHITE-BLUE. WHITE selects the wired audio source. BLUE selects the Bluetooth audio source. The BLUE source assignment will persist through Bluetooth audio connection disruptions. **NOTE**: The Bluetooth audio can only be assigned to one source at a time. Once the Bluetooth audio is assigned to an audio source, the remaining entertainment audio sources will only cycle between OFF and WHITE.

Bluetooth audio will maintain a separate volume level and Blue Select distribution from the wired audio source. If the Bluetooth connection is supporting a phone call, all intercom positions listening to that source can also speak on the call through the headset MICs.

ADDITIONAL BLUETOOTH CONTROL FUNCTIONS

In addition to the 2 second press and hold of the inner knob discussed above, the knob has two additional functions that are intended to be seldom or never used. The following functions are available if needed for troubleshooting:

- Press and hold the inner knob for 5 seconds to turn off the Bluetooth radio. The aural message "**Bluetooth off**" is heard. This function electrically turns off the radio, not just the audio source selection. In the event that Bluetooth radio interference with communication or navigation equipment is suspected, the Bluetooth radio can be powered off without powering off the entire audio panel. A subsequent 5 second press and hold turns the radio back on.

- Press and hold the inner knob for 10 seconds to clear the memory of paired devices (up to 10 are stored). Once cleared, the aural message "**Bluetooth list cleared**" is heard. This function is used as a troubleshooting method when a device is not pairing, or to remove a device that is no longer needed.

CONNECTING BLUETOOTH TO A GARMIN VIRB

The GMA 350c supports Bluetooth wireless delivery of pilot headphone audio to versions of the Garmin VIRB action camera that support Bluetooth mic audio input for recording.

Pairing a Garmin VIRB to the GMA 350c works like pairing other Bluetooth audio devices. Once connected, pilot headphone audio will be delivered to the VIRB via Bluetooth. In a connection to the Garmin VIRB, the GMA is the source. Therefore, selecting an entertainment button is not required. The PILOT annunciator turns blue to indicate this connection.

FAIL-SAFE OPERATION

If there is a failure of the GMA 350/350c or when power is not applied, a fail-safe circuit connects the pilot's headset and microphone directly to the COM1 transceiver. Audio is not available on the speaker during Fail-safe operation.

GARMIN

Garmin International, Inc.
1200 East 151st Street
Olathe, KS 66062, U.S.A.
Toll free: 800.800.1020 or
866.739.5687
p: 913.397.8200
f: 913.397.8282

Garmin AT, Inc.
2345 Turner Road SE
Salem, OR 97302, U.S.A.
Toll free: 800.525.6726
p: 503.391.3411
f: 503.364.2138

Garmin (Europe) Ltd
Liberty House, Bulls Copse Road
Hounsdown Business Park
Southampton, SO40 9RB, U.K.
Toll free (within U.K.) 0808.2380000
p: 44/0870.8501241
f: 44/0870.8501251

Garmin Corporation
No. 68, Jangshu 2nd Road
Shijr, Taipei County, Taiwan
p: 886/2.2642.9199
f: 886/2.2642.9099

www.garmin.com

　　　　　　　　190-01134-12 Rev. G