

SECTION 9
Pilot's Operating Handbook Supplement AS-21
Mode S Transponder GARMIN GTX 335 / GTX 345


This supplement is applicable and must be inserted into Section 9 of the POH when a GARMIN GTX 335 or GTX 345 Mode S Transponder is installed in the AQUILA AT01-100. The information in this supplement adds to or replaces information in the basic POH.

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0.1 RECORD OF REVISIONS

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0.2 LIST OF CURRENT PAGES

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1. GENERAL

This supplement provides the information necessary for the efficient operation with the Mode S transponder GARMIN GTX 335 / 345. It contains a general description of the transponder and its basic operation and integration into the AQUILA AT01-100. For a detailed description of the GARMIN GTX 335 / 345 and full operating instructions, please refer to the current issue of the GTX 335 / 345 Pilot's Guide.

The information contained in this supplement must be used in conjunction with the complete Pilot's Operating Handbook. Furthermore, the GTX 335 or GTX 345 Pilot's Guide must always be carried on board the aircraft during flight.

2. OPERATING LIMITATIONS

The operating limitations of the basic Pilot's Operating Handbook apply without any changes or restrictions.

NOTE

ADS-B Out functionality of the GTX 335 / 345 Transponder is currently not approved for the installation into the AQUILA and therefore activation is prohibited.

Bluetooth/WiFi functionality of the GTX 335 / 345 Transponder is currently not approved for the installation into the AQUILA and therefore activation is prohibited.

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3. Emergency Procedures

TO TRANSMIT AN EMERGENCY SIGNAL:

- “**ALT**“ Key: PRESS
- Numeric Keys „**0-7**“: Squawk **7700**

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF ALL COMMUNICATION:

- “**ALT**“- Key: PRESS
- Numeric Keys „**0-7**“: Squawk **7600**

TO TRANSMIT A SIGNAL DURING A HIJACKING:

- “**ALT**“ Key: PRESS
- Numeric Keys „**0-7**“: Squawk **7500**

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4. Normal Procedures

NOTE

The range of the GTX 335 / 345 Transponder is limited to "line of sight". Low altitude or shielding of the antenna by the aircraft itself may result in reduced range. Range can be improved by climbing to a higher altitude.

AFTER ENGINE START

- **Avionics** switch: ON
- Transponder Code: Squawk **VFR**
- Transponder Mode: ALT

NOTE

The GTX 335 / 345 Transponder has no GND Mode and always shall be operated in ALT Mode on ground as well as airborne, except as otherwise directed by ATC. The transponder automatically detects (with GPS active) whether the aircraft is on ground or airborne and sends this information to other aircraft and ATC.

It is not necessary to „warm up“ the transponder in SBY Mode.

BEFORE TAKE-OFF

Check, if the Transponder is in Mode ALT and the required Squawk is set.
Attend to directions from ATC.

AFTER LANDING

Leave Transponder in Mode ALT except as otherwise directed by ATC.

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5. Performance

No change to the basic Pilot's Operating Handbook.

6. WEIGHT AND BALANCE

The change in empty weight and the corresponding center of gravity after installation or removal of the GARMIN GTX 335 / 345 Transponder must be determined and recorded in accordance with section 6 of the basic Airplane Flight Manual.

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7. Systems Description

GENERAL

The GARMIN GTX 335 / 345 panel mounted Mode S transponder is a radio transmitter and receiver that operates on radar frequencies. It receives interrogations from ground stations with secondary radar or from active TCAS/TAS/TCAD-systems on board other aircraft with a frequency of 1030 MHz and transmits a coded response back on a frequency of 1090 MHz. The GTX 335 / 345 Transponder is equipped with an IDENT capability that activates the special position identification (SPI) pulse for 18 seconds.

In addition to displaying the selected transponder code, the GTX 335 / 345 screen also displays the REPLY symbol, the current mode of operation, actual pressure altitude and timer function. The unit also features an altitude monitor and a flight timer. A voice or tone audio output announces altitude deviation and count-down timer expiration. The audio output is only available if the aircraft is equipped with an audio panel.

The GTX 335 / 345 transponder is turned on by pressing the **SBY**, **ALT** or **ON** key. After switching on, a start-up page is displayed while the unit performs a self-test. To turn on the transponder, the switch **ALT1 / BAT** as well as the switch **Avionics** must be in the **ON** position.

The GTX 345 Transponder receives ADS-B traffic information from both ground stations and aircraft equipped with the appropriate ADS-B Out systems. Traffic data is received, processed and displayed onto a compatible display and also annunciated acoustically. For more information on the ADS-B IN functionality, see the Garmin GTX 345 Pilot's Guide.

ADS-B Out functionality of the GTX 335 / 345 Transponder is currently not approved for the installation into the AQUILA and therefore activation is prohibited.

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GARMIN GTX 335 / 345 FRONT VIEWTRANSPONDER MODE SELECTION KEYS

- OFF** Switches the GTX 335 / 345 off. Pressing the **SBY**, **ON** or **ALT** keys switches the transponder back on and displays the last active identification code.
- SBY** Selects the standby mode. When in standby mode, the transponder does not reply to any interrogations.
- ON** Sets the transponder to MODE A operation. In this mode, the transponder replies to interrogations, as indicated by the reply symbol ('R'). Replies do not include altitude information.
- ALT** Sets the transponder to operate in MODE A and MODE C. In **ALT** mode, the transponder replies to identification and altitude interrogations, as indicated by the reply symbol ('R'). Replies to altitude interrogations always are referenced to standard pressure altitude 1013 hPa.

NOTE

*Any time the transponder is set to **ON** or **ALT**, it becomes an active part of the air traffic control radar beacon system (ATCRBS). The transponder will also respond to interrogations from TCAS/TAS/TCAD equipped airplanes.*

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SELECTING A TRANSPONDER CODE

Code selection is done via eight numeric keys (**0-7**) providing 4096 active identification codes. Pushing one of these keys begins the code selection sequence. The new code will not be activated until the fourth digit is entered. Pressing the **CLR** key will move the cursor back to the previous digit. Pressing the **CLR** key when the cursor is on the first digit of the code or pressing the **CRSR** key during code entry removes the cursor and cancels data entry, restoring the previous code.

The numbers **8** and **9** are not used for code entry, only for entering a count-down time, adjusting contrast and display brightness, and for data selection in the configuration mode.

NOTE

The identification code should be entered with care, regardless if the code was assigned by ATC or if a standard transponder code is being used.

Common Standard Transponder Codes:

- 1200** - VFR Code in North America (Refer to the ICAO Standards)
- 2000** - VFR Code commonly used in Europe (Refer to the ICAO Standards)
- 7000** - VFR Code commonly used in Europe (Refer to the ICAO Standards)
- 7500** - Hijack
- 7600** - Loss of communications
- 7700** - Emergency

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KEYS FOR OTHER GTX 335 / 345 FUNCTIONS

IDNT	Pressing the IDNT key activates the special position identification (SPI) pulse for 18 seconds, identifying the transponder return from others on the air traffic controller's screen. The word ' IDENT ' will appear in the upper left corner of the display while the IDENT mode is active.
VFR	Sets the transponder code to the VFR code programmed in the configuration mode. Pressing the VFR key again will restore the previous identification code.
FUNC	Changes the page shown on the right side of the display. The data displayed includes Transponder (XPDR) - Timer (TMR) - Altitude (ALT) - System (SYS).
CRSR	The CRSR key activates the cursor for selection in menus and on pages.
CLR	The CLR key deletes selected inputs and leaves a menu.
ENT	The ENT key acknowledges menu selections and inputs by the pilot into the corresponding data fields.
8 (up)	Enters the number eight into Flight ID or the count-down timer. Is also used for page up between functions and settings within a menu.
9 (down)	Enters the number nine into Flight ID or the count-down timer. Is also used for page down between functions and settings within a menu.

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FUNCTION DISPLAY

Scrolling through the menu groups XPDR - TMR - ALT - SYS is done by pressing the **FUNC** key. Within a menu group keys **8** (up) and **9** (down) are used for scrolling through the submenus.

TIMER MENU:

COUNT-UP TIMER:

Controlled by **ENT** and **CLR** keys.

COUNT-DOWN TIMER:

Controlled by **ENT** and **CLR** keys. The count-down time is set with the **0-9** keys.

FLIGHT TIMER:

This Timer measures time since the last take-off of the airplane. It starts automatically when the transponder detects a take-off. With the **ENT** and **CLR** keys start, stop and reset is possible manually.

TRIP TIMER:

This Timer measures time since the last manual reset of the timer. It starts automatically when the transponder detects a take-off. With the **ENT** and **CLR** keys start, stop and reset is possible manually.

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ALTITUDE MENU:**PRESSURE ALT:**

Displays the flight altitude provided from the Altitude Encoder as configured in feet, hundred feet (FL) or in meters.

ALTITUDE MONITOR:

Is selected / deselected by **CRSR**- and **ENT**- keys. If the altitude limit is exceeded a warning will be annunciated acoustically via sound and / or voice.

SAT/DALT:

Display of Static Air Temperature and pressure altitude, if available.

SYSTEM MENÜ (SYS)**BACKLIGHT:**

By pressing **CRSR** and **8** (up) respectively **9** (down) the backlight offset is adjusted.

CONTRAST:

By pressing **CRSR** and **8** (up) respectively **9** (down) contrast is adjusted.

BLUETOOTH:

Bluetooth/WiFi functionality of the GTX 335 / 345 Transponder is currently not approved for the installation into the AQUILA and therefore activation is prohibited.

GPS STATUS:

Shows the status of all configured GPS sources within the GTX 335 / 345. Details to the GPS fixes can be displayed by pressing the **CRSR** key.

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FAILURE ANNUNCIATION

If the transponder unit detects an internal failure, the screen will display a corresponding failure message. For details see the Garmin GTX 335 / 345 Pilot's Guide.

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INTEGRATION INTO THE AQUILA AT01-100

The GARMIN GTX 335 / 345 Mode S transponder is connected to the avionic bus of the aircraft's electrical system and is protected by a 3A circuit breaker. This allows the transponder to be completely disconnected from the aircraft's electrical system. The circuit breaker is labeled "TXP" and is installed on the right hand side of the instrument panel, along with the other circuit breakers.

In addition to the transponder unit which is installed in the avionic rack in the midsection of the instrument panel, the transponder system consists of a transponder antenna and an altitude encoder (no G500 system installed) or an Air Data Computer (G500 system installed). The altitude encoder or Air Data Computer is connected to the on-board static pressure system. The transponder antenna is installed on the bottom of the fuselage, below the co-pilot's seat.

For a detailed description of the integration and installation of the transponder into the AQUILA AT01-100 and its connection to the electrical system, please refer to the current issue of the Maintenance Manual.

8. HANDLING, SERVICE AND MAINTENANCE

In order to increase the service life of the GTX 335 / 345 transponder, it should always be turned off during engine start-up and shut-down, as electrical surges during these phases may damage the unit.

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