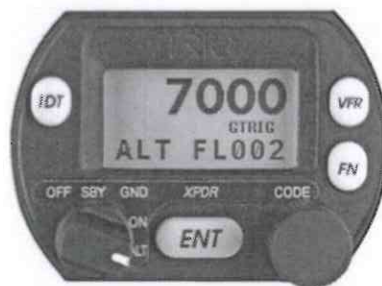


SECTION 9

Airplane Flight Manual Supplement AVE 34

Mode-S Transponder Trig TT-22

This AFM supplement is applicable and must be inserted into Section 9 of the Airplane Flight Manual when the Trig TT-22 Mode S Transponder is installed in the AQUILA AT01. The information in this supplement adds to or replaces information in the basic Airplane Flight Manual.



The technical content of this Airplane Flight Manual supplement is approved under the authority of DOA No. EASA.21J.025.

Schönhagen, 12.11.2012


Office of Airworthiness

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0.1 List of Revisions and Amendments

Revision	Reason for Amendment/Revision	Affected Pages	Date of Issue
A.01	Initial	all	09/11/2012

0.2 List of Effective Pages

Page	Revision	Date
AVE34-1 to AVE34-11	A.01	09/11/2012

Page	Revision	Date

0.3 Table of Contents of AFM-Supplement AVE 34

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1. GENERAL

This supplement provides the information necessary for the efficient operation of the AQUILA AT01 when the Mode S transponder Trig TT-22 is installed. It contains a general description of the transponder and its basic operation and integration into the AQUILA AT01. For a detailed description of the Mode S transponder Trig TT-22 and full operating instructions, refer to the effective issue of the Trig TT-22 Operating Manual, P/N 005 59-0 0-AE.

The information contained in this supplement must be used in conjunction with the complete Airplane Flight Manual. Furthermore, the Trig TT-22 Operating Manual must always be carried on board the aircraft during flight.

2. OPERATING LIMITATIONS

The operating limitations of the basic Airplane Flight Manual apply without any changes or restrictions.

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3. EMERGENCY PROCEDURES

TO TRANSMIT AN EMERGENCY SIGNAL:

Set Emergency Code 7700

- **FN button:** Select squawk code.
- **Right knob:** Select first Digit of Code and change it.
- **ENT** advance to next digit/enter on last digit

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF COMMUNICATION

Set Loss of Communication Code 7600

- **FN button:** Select squawk code.
- **Right knob:** Select first Digit of Code and change it.
- **ENT** advance to next digit/enter on last digit

TO TRANSMIT A SIGNAL REPRESENTING HIJACKING

Set Hijack Code 7500

- **FN button:** Select squawk code.
- **Right knob:** Select first Digit of Code and change it.
- **ENT** advance to next digit/enter on last digit

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4. NORMAL PROCEDURES

NOTE

The expected coverage of the Trig TT-22 is limited to "line of sight". Low altitude or aircraft antenna shielding by the aircraft itself may result in reduced range. Range can be improved by climbing to a higher altitude.

AFTER ENGINE START

- 1. Avionic Master switch **ON**
- 1. Transponder mode selection knob **SBY or GND**

BEFORE TAKE-OFF

- 1. Transponder mode selection knob **ALT**

In this mode, the transponder will respond in Mode A and Mode C operation (identification and altitude) to interrogations from ATC and TCAS-equipped aircraft.

NOTE

Selecting mode "**ON**" activates only Mode A operation of the transponder. The transponder will respond to interrogations with the identification code only. Replies do not include altitude information.

AFTER LANDING

- 1. Transponder mode selection knob **STBY/GND or OFF**

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5. PERFORMANCE

No change to the basic Airplane Flight Manual.

6. WEIGHT AND BALANCE

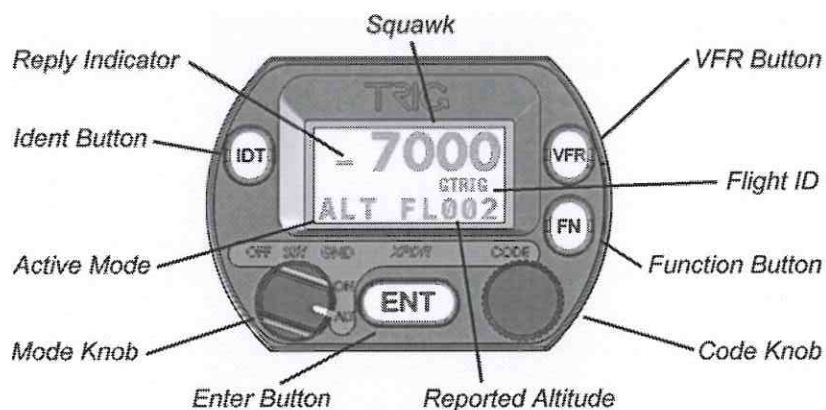
The change in empty weight and the corresponding center of gravity after the installation or removal of the Trig TT-22 transponder must be determined and recorded in accordance with section 6 of the basic Airplane Flight Manual.

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7. SYSTEMS DESCRIPTION

GENERAL

The Trig TT-22, non-diversity Mode S transponder is a radio transmitter and receiver that operates on radar frequencies, receiving ground radar or TCAS interrogations at 1030 MHz and transmitting a coded response of pulses to ground-based radar on a frequency of 1090 MHz. The TT-22 is equipped with IDENT capability that activates the special position identification (SPI) pulse for 18 seconds. Mode S transmit/receive capability also requires 1090 MHz transmitting and 1030 MHz receiving for Mode S functions.



Display

The display shows the operating mode of the transponder, the reported pressure altitude, and the current squawk code and Flight ID. The reply indicator is active when the transponder replies to interrogations.

The pressure altitude is displayed as a Flight Level, which is the pressure altitude in hundreds of feet. When non-standard atmospheric conditions apply, this may not match the altimeter indicated altitude, but will be correctly displayed by the ATC radar.

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Mode Selector Knob

The left hand knob controls the power to the transponder and the operating mode.

- OFF Power is removed from the transponder.
- SBY The transponder is on, but will not reply to any interrogations.
- GND The transponder will respond to Mode S ground interrogations from surface movement radar.
- ON The transponder will respond to all interrogations, but altitude reporting is suppressed.
- ALT The transponder will respond to all interrogations.

When airborne, the transponder should always be set to ALT unless otherwise directed by Air Traffic Control. When you are taxiing on the ground, the transponder should be set to GND.

Push Buttons

- IDT Press the IDT button when ATC instructs you to "Ident" or "Squawk Ident". This activates the SPI pulse in the transponder replies for 18 seconds. IDT will appear in the display.
- FN Pressing the FUNC button provides access to changing the Flight ID and the ADS-B position monitor (depending on installation).
- VFR Pressing the VFR button sets the transponder to the pre-programmed conspicuity code. Pressing the button again restores the previous squawk code.
- ENT The ENT button enters a digit in the code selector.

Code Selector Knob

The right hand knob is used to set squawk codes and the Flight ID. The FN button selects which will be updated. Turning the knob will highlight the first digit on the display, and the digit can be changed as required. Press the ENT button to advance to the next digit. When ENT is pressed on the last digit, the new squawk code or Flight ID will replace the previous value. If the code entry is not completed within 7 seconds, the changes are ignored and the previous code restored.

- 1200 VFR code
- 7000 VFR code commonly used in Europe
- 7500 Hijack code
- 7600 Loss of communications
- 7700 Emergency code

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The Flight ID should correspond to the aircraft call sign entered on your flight plan. If no flight plan is active, the aircraft registration should be used as your Flight ID. Use only letters and digits. If the Flight ID is less than 8 characters long, entering a blank character will end it.

Altitude Encoder Warm Up

The built in altitude encoder uses a sensor that is temperature dependent. A small internal heater circuit keeps the sensor at the correct temperature. When the ambient temperature is below 0°C there may be a delay between switching on the transponder and seeing an altitude reported. In very cold weather this delay can be several minutes. You should always switch on the transponder (usually to GND mode) before taxiing to the runway, to ensure that the sensor is operating before you become airborne.

General Low Temperature Operation

The transponder is certified to operate correctly down to -25C, but at low temperatures the display may be impaired. On a cold day you may need to wait for the cockpit to warm up to ensure normal operation.

ADS-B Monitor

The ADS-B Monitor is only available on installations that include an ADS-B position source. The ADS-B Monitor provides a display of the position information that is being transmitted in ADS-B position reports. This can provide confirmation that the correct information is being transmitted, particularly where the GPS source is remote from the transponder.

In the event that valid position information is NOT available from the GPS, the latitude and longitude display will be replaced by dashes; if no valid latitude and longitude is shown then ADS-B position information is NOT being transmitted.

Loss of ADS-B position information will also result in a WARNING message being displayed.

Warning Messages

If the transponder detects a problem, the screen will indicate WARNING and a brief statement of the problem. Depending on the nature of the problem, your transponder may not be replying to interrogations. Note the message on the screen and pass that information to your avionics maintenance organisation. Press ENT to clear the message, if the fault is still present the message will reappear.

Fault Annunciation

If the transponder detects a catastrophic internal failure, the screen will indicate FAULT and a brief statement of the problem. No replies will be made to interrogations when a fault has been detected.

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Some FAULT indications can be recovered by switching the transponder off and back on again, although in all cases a FAULT code implies that there is a fault with the transponder or the installation. Note the FAULT message at the bottom of the screen and pass that information to your avionics maintenance organization.

Configuration Mode

The system is configured when it is first installed by your avionics supplier. Configuration items include the Mode S aircraft address, the interface to the other aircraft systems, the aircraft category, and the pre-programmed values for VFR squawk code. To view or change these settings you must use Configuration Mode.

Do not use Configuration Mode in flight. Check with your avionics installer before changing the configuration.

To enter configuration mode, hold down the FN button whilst switching on the transponder. Configuration items can be changed using the Code Knob and the ENT button. Pressing FN advances to the next configuration item.

When configuration is complete, switch the transponder off. When it is switched back on the transponder will use the new configuration.

The configuration data is stored in the controller unit, not in the remote transponder. In the event that you have exchanged the remote transponder unit, but have not changed the controller, no further configuration will be required. If you change the controller unit in an aircraft, you must re-program all the configuration data as described above.

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INTEGRATION INTO THE AQUILA AT01

The electrical circuits of the Mode S transponder Trig TT-22 are connected to the avionic bus of the on-board electrical power supply and protected by a 3A circuit breaker which enables the complete disconnection of the transponder unit from electric power. The circuit breaker is labeled "TXP" and installed in the right section of the instrument panel with the other circuit breakers.

In addition to the Transponder Controller Unit (with integrated altitude encoder) which is installed in the instrument panel, the transponder system consists of a Transponder Receiver/Transmitter unit, installed below the cabin floor on the right side and a transponder antenna installed on the lower surface of the cockpit structure below the co-pilot's seat. The altitude encoder is connected to the on-board static pressure system.

8. HANDLING, SERVICE AND MAINTENANCE

In order to increase the service life of the Trig TT-22 Mode S transponder, it should always be deactivated during engine start-up and shut-down as electrical surges during start-up and shut-down may damage the unit.

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