

SECTION 9

Pilot's Operating Handbook Supplement AS-14

Mode S Transponder Trig TT-22



This supplement is applicable and must be inserted into Section 9 of the POH when the Trig TT-22 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

Issue	Reason for Change	Effected Pages	Date of Issue
A.01	Initial Issue	All	28.05.2013
A.02	Editorial Changes	All	15.10.2013

0.2 LIST OF CURRENT PAGES

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1 – 10	A.01	28.05.2013
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1. GENERAL

This supplement provides the information necessary for the efficient operation of the AQUILA AT01-100 with the Mode S transponder Trig TT-22 installed. 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 Trig TT-22 Mode S transponder and full operating instructions, please refer to the current issue of the Trig TT-22 Operating Manual.

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

2. OPERATING LIMITATIONS

The operating limitations of the basic POH apply without any changes or restrictions.

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3. EMERGENCY PROCEDURES

TO TRANSMIT AN EMERGENCY SIGNAL:

Set Emergency Code 7700

- **FN button:** To select squawk code.
- **Right knob:** To select first digit of the code and change it
- **ENT:** To advance to the next digit / enter the last digit

TO TRANSMIT A SIGNAL REPRESENTING LOSS OF COMMUNICATION

Set Loss of Communication Code 7600

- **FN button:** To select squawk code.
- **Right knob:** To select first digit of the code and change it
- **ENT:** To advance to the next digit / enter the last digit

TO TRANSMIT A SIGNAL REPRESENTING HIJACKING

Set Hijack Code 7500

- **FN button:** To select squawk code.
- **Right knob:** To select first digit of the code and change it
- **ENT:** To advance to the next digit / enter the last digit

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4. NORMAL PROCEDURES

NOTE

The expected coverage of the Trig TT-22 is limited to "line of sight". Flying at a 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. switch **Avionic** **ON**
2. 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/C (identification and altitude) to interrogations from ATC SSR and TCAS-equipped aircraft.

NOTE

Selecting mode "**ON**" activates only the 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 POH.

6. WEIGHT AND BALANCE

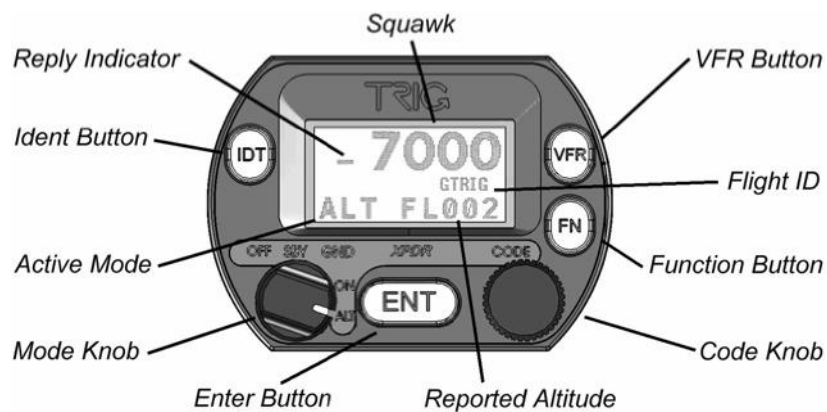
The change in empty weight and the corresponding center of gravity, after the installation or removal of the Trig TT-22 transponder, must be determined and recorded in accordance with section 6 of the basic POH.

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7. SYSTEMS DESCRIPTION

GENERAL

The Trig TT-22 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. For Mode S functions, the transponder also transmits on 1090 MHz and receives with 1030 MHz.



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.

Mode Selector Knob

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

- OFF Transponder is turned off.
- SBY The transponder is on, but does not reply to 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 responds to all interrogations. Altitude information is included

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In flight, the transponder should always be set to ALT, unless otherwise directed by Air Traffic Control. While taxiing, 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 FN button changes the display between the squawk code, the Flight ID and the ADS-B position monitor (depending on installed equipment).
- VFR Pressing the VFR button sets the transponder to a pre-programmed code. Pressing the button again restores the previous squawk code.
- ENT The ENT button is used to enter the digits for the transponder code.

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 highlights 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 replaces the previous one. If a digit is not entered within 7 seconds, the changes are ignored and the previous code is restored.

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

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, enter blanks to fill up the spaces at the end.

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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 may be several minutes. It is recommended to switch the transponder on (usually to GND mode) before taxiing to the runway. This is to ensure that the sensor is operating before you become airborne.

Operating at Low Temperatures

The transponder is certified to operate correctly at temperatures as low as -25 °C (-13°F). At these temperatures it is possible that the performance of the display may be reduced. The display tends to return to normal operation when the cockpit warms up.

Warning Messages

If the transponder detects a problem, “**Warning**” will be displayed on the screen along with a brief statement of the problem. Depending on the nature of the problem, the transponder may not reply 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 remains, 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. The transponder will no longer respond to interrogations. Some **FAULT** indications can be resolved by switching the transponder off and back on again. None the less, a **FAULT** code implies that there is a major problem 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 aircrafts other systems, the aircraft category, and the pre-programmed values for the VFR squawk code. To view or change these settings, the transponder must be started up in the Configuration Mode.

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

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INTEGRATION OF THE MODE S TRANSPONDERS INTO THE AQUILA AT01-100

The Trig TT-22 Mode S transponder is connected to the aircraft power supply through the avionic bus and is protected by a 3A circuit breaker. This enables the transponder to be completely disconnected from the electrical system. The circuit breaker is labeled "TXP" and is 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 and an antenna. The Receiver/Transmitter unit is installed below the cabin floor on the right side and the transponder antenna is 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 turned off during engine start-up and shut-down. Voltage peaks during start-up and shut-down can damage the unit.

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