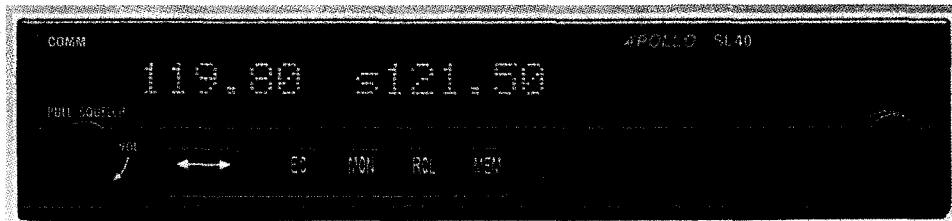


**SECTION 9**

**Airplane Flight Manual Supplement AVE 21**

**COM Transceiver GARMIN SL 40**

If the GARMIN SL40 COM Transceiver is installed into the AQUILA AT01, this AFM-Supplement is applicable and must be inserted into Section 9 of the Airplane Flight Manual. The Information in this AFM-Supplement adds or replaces information of 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.

Schönhausen, 17/12/2007

*[Signature]*  
D. Krappel  
Office of Airworthiness

EASA-Approval: EASA.A.A. 01748 Date: 28 August 2008  
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## 0.1 LIST OF REVISIONS AND AMENDMENTS

Revision	Reason for Amendment/Revision	Affected Pages	Date of Issue
A.11	Publication of AVE 16 to 21 (minor change AT01-00245)	all	30/11/2007

## 0.2 LIST OF EFFECTIVE PAGES

Page	Revision	Date
AVE21-1 to AVE21-10	A.11	30/11/2007

Page	Revision	Date

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## 1. GENERAL

This Airplane Flight Manual Supplement provides a general description of the COM Transceiver GARMIN SL40, its basic operation and its integration into the AQUILA AT01. For a more detailed description of the GARMIN SL40 and full operating instructions, refer to the effective issue of the SL40 User's Guide, P/N 560-0954-XX.

The information contained within this Supplement is to be used in conjunction with the complete Airplane Flight Manual. Furthermore, the SL40 User's Guide should always be carried on board of the aircraft during flight.

## 2. OPERATING LIMITATIONS

The GARMIN SL40 COM Transceiver is installed as optional equipment whose failure is uncritical under all operational conditions. The operating limitations of the basic Airplane Flight Manual apply without any changes or restrictions.

## 3. EMERGENCY PROCEDURES

The present section defines standard procedures which have to be observed in the case of a failure of the COM Transceiver as well as for the transmission of radio messages on the international emergency frequency. All emergency procedures defined in the basic Airplane Flight Manual continue to remain valid without any restrictions and are only supplemented by the following defined emergency procedures. Particularly in the case of fire in electrical systems or cable burnings, the relevant emergency procedures defined in the basic Airplane Flight Manual have to be observed.

### FAILURE OF THE COM TRANSCEIVER

In the case of a failure of the SL40 COM Transceiver, proceed in accordance with the standard emergency procedure defined in the basic Airplane Flight Manual using Transponder Code **7600** and the corresponding flight practices.

### TRANSMITTING ON THE INTERNATIONAL EMERGENCY FREQUENCY 121.5 MHZ

In the case of an emergency during flight, a radio message may be transmitted on the international emergency frequency 121.5 MHz. This standard emergency channel is stored in the COM memory of the SL40 and may be selected in different ways as described on the next page.

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MANUAL SELECTION (121.5 MHZ):

- Manually tune in the emergency frequency using the Frequency Selector knobs.
- Press the **Frequency Flip/Flop** button to activate the emergency frequency.
- Transmit radio messages as required/desired.

DIRECT SELECTION FROM COM FREQUENCY MEMORY:

- Press the **EC** button, the emergency frequency appears in the STANDBY frequency position.
- Press the **Frequency Flip/Flop** button to activate the emergency frequency.
- Transmit radio messages as required/desired.

**MALFUNCTIONS OF THE SL40 COM TRANSCEIVER**

In the case of malfunctions of the SL40 COM Transceiver, refer to the SL40 User's Guide, P/N 560-0954-XX, for trouble-shooting and corrective actions. Possibly necessary maintenance activities or repairs have to be conducted and certified by an authorised maintenance/repair organisation or the manufacturer of the equipment.

**4. NORMAL PROCEDURES**

No change to the basic Airplane Flight Manual. A short description regarding the operation of the SL40 COM transceiver is contained in section 7 of this supplement.

**5. PERFORMANCE**

No change to the basic Airplane Flight Manual.

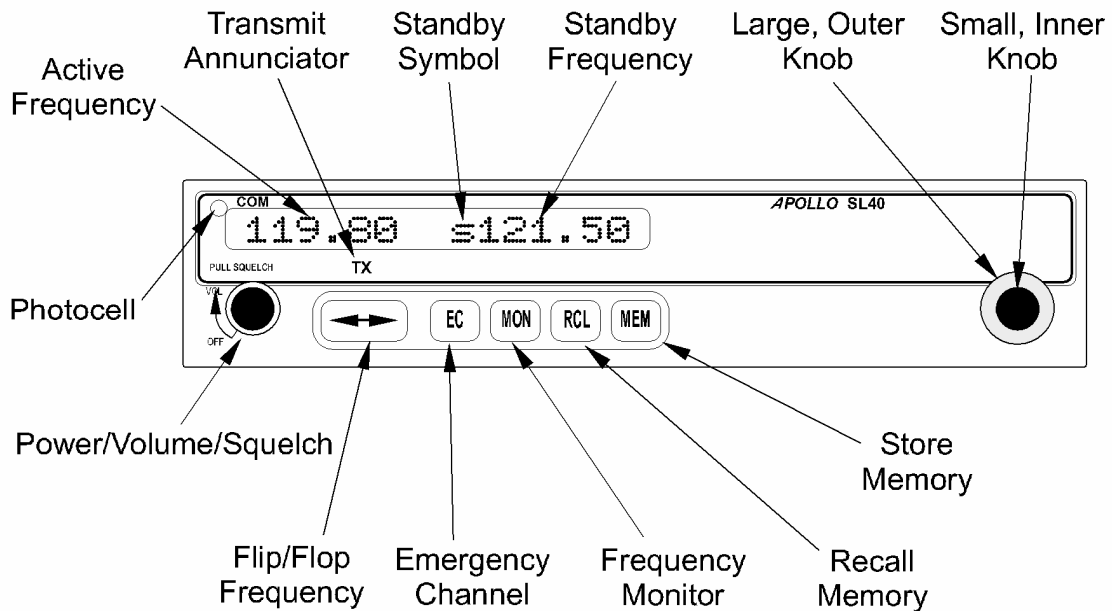
**6. WEIGHT AND BALANCE**

The change of the empty weight and corresponding centre of gravity after the installation or removal of the GARMIN SL40 has to be determined and recorded in accordance with section 6 of the basic Airplane Flight Manual.

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## 7. SYSTEMS DESCRIPTION

### GARMIN SL 40 FRONT VIEW



### GENERAL DESCRIPTION

The GARMIN SL40 COM Transceiver constitutes a powerful 760 channel VHF communications transceiver with functions and capabilities comparable to those of the COM Transceiver unit of the GARMIN SL30. Similar to the COM transceiver unit of the SL30, the SL40 also incorporates workload-reducing functions besides traditional COM features such as frequency memory lists which contain both, manually stored channels and the last eight used active frequencies as well as prestored channels. In addition to the communications transceiver unit, the GARMIN SL40 includes also an independent voice-activated INTERCOM system.

Together with the active COM frequency, the tuned-in STANDBY frequency is also displayed on the alphanumeric front display of the SL40. Furthermore, the SL40 offers the opportunity to monitor the tuned-in STANDBY frequency in the background. The tuned-in STANDBY frequency is activated by pressing the **Frequency Flip/Flop** button. To ensure a good visibility of the display and to prevent glare and reflections caused by the display under all operational conditions, a photocell is located in the top left corner of the front panel display which automatically adapts the light intensity of the display LEDs to the current light conditions.

The transmission and reception range of the SL40 VHF COM Transceiver extends to the frequency band between 118 and 136.975 MHz with 760 channels, i.e. the frequency distance between two selectable COM channels is 25 kHz.

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## OPERATION OF THE SL40

In order to activate the SL40 COM Transceiver, both the **ALT/BAT**-Master Switch and the Avionics Master Switch have to be in the "ON"-Position.

## ACTIVATION / DEACTIVATION OF THE SL40

The SL40 COM Transceiver is turned on by rotating the Power/Volume knob clockwise past the detent. The continuing rotation of this knob towards the right increases speaker and headphone amplifier volume level. Rotate the knob to the left (counter-clockwise) to reduce the volume level. After activation, the SL40 will go through a short initialization routine and displays the last selected frequency when it is operative.

The SL40 is turned off by rotating the Power/Volume knob counter-clockwise until the detent engages in the end position.

## FREQUENCY SELECTION

New frequencies are first selected as a STANDBY frequency and then toggled to the active side when desired. The desired STANDBY frequency can be selected by means of the large and small Frequency Selector knobs located near the right edge of the SL40 front panel. The large Frequency Selector knob has to be used to change the frequency in 1 MHz increments. The small Frequency Selector knob has to be used to change the frequency in 25 kHz increments between 000 and 975 kHz. The STANDBY frequency is toggled to the active frequency by pressing the **Frequency Flip/Flop** button. Only the STANDBY frequencies can be changed with the Frequency Selector knobs, not the active frequencies.

## RADIO COMMUNICATION

### VOLUME AND SQUELCH

The speaker and headphone amplifier volume level is adjusted by rotating the Power/Volume knob. In order to disable the automatic squelch, the Power/Volume knob has to be pulled. A general adjustment of the automatic squelch to the used headsets and the overall noise conditions has to be conducted in the SYSTEM CONFIGURATION MODE under the menu items "MIC1 SQUELCH" and "MIC2 SQUELCH".

### TRANSMITTING

The transmitter mode of the SL40 COM Transceiver unit is activated by pressing the push-to-talk button on the control stick. A transmit indicator ("**TX**") located above the **Frequency Flip/Flop** button appears on the display while the COM radio is transmitting.

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## FREQUENCY MONITORING FUNCTION

The FREQUENCY MONITORING function allows the user to monitor and listen to the STANDBY frequency without activating the STANDBY frequency by pressing the **Frequency Flip/Flop** button and hence cancelling the previous active frequency. Consequently, the STANDBY frequency can be listened to, while monitoring the active frequency for activity.

The FREQUENCY MONITORING function is activated by pressing the **MON** button. A small “m” (“monitoring”) appears on the display in front of the STANDBY frequency in place of the small “s” (“stand-by”) after activating the FREQUENCY MONITORING function. The small “m” indicates that the FREQUENCY MONITORING function is active. During normal operation when the FREQUENCY MONITORING function is inactive, the small “s” identifies the STANDBY frequency.

The FREQUENCY MONITORING function is immediately deactivated and the unit will switch automatically to the active channel as soon as a signal is received on the active frequency. When the activity on the active frequency ceases, the unit will automatically switch back to the STANDBY channel so that the transmitted signals on the STANDBY frequency are audible in the headsets again. An arrow (< or >) on the display will point to the frequency to which the pilot is currently listening to. A slight clicking sound occurs in the background when the radio is checking the active frequency for activity.

For a manual deactivation of the FREQUENCY MONITORING function, the **MON** button has to be pressed once again. After the deactivation of the FREQUENCY MONITORING function, the small “s” appears in front of the STANDBY frequency again.

## RECALLING STORED FREQUENCIES

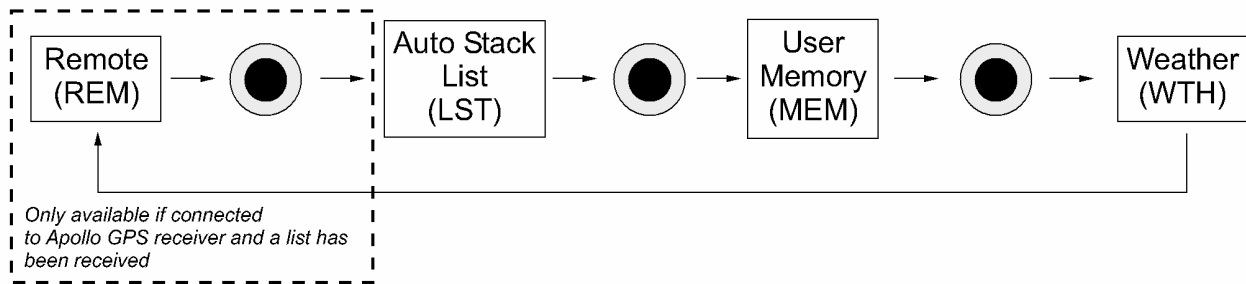
In order to recall and select stored frequencies from the memory, the following steps have to be carried out:

- Press the **RCL** button to go to the frequency databases
- The different items of the basic menu (frequency memory lists, refer to the illustration on the next page) may be selected by turning the large Frequency Selector knob.  
To recall a manually saved frequency, select the frequency memory list (menu item) *USER MEMORY (MEM)* with the large Frequency Selector knob.
- The different available sub-items of the selected frequency memory list may be selected by rotating the small Frequency Selector knob. To recall a manually saved frequency, scroll through the saved frequency channels with the small Frequency Selector knob until the desired channel is selected. The selected frequency appears in the STANDBY frequency position.

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- The STANDBY frequency is activated by pressing the **Frequency Flip/Flop** button.

The following illustration shows the menu structure of the available frequency memory lists of the SL40 COM Transceiver.



### *Menu Structure of the available Frequency Memory Lists*

The AUTO STACK LIST (LST) contains a list of the last eight used active channels in chronological order which may be selected by rotating the small Frequency Selector knob. Duplicate frequencies are not saved again in this list, but they are moved to the front of the list.

All manually saved frequencies are stored in the *USER MEMORY* list (MEM) with the capability to maximally store 8 different COM channels. If the user memory list is full, the message “MEM FULL” appears on the display. In this case, no frequency can be saved in this user memory list unless at least one of the already stored frequencies is deleted from this list first.

The recalling of the emergency frequency (121.5 MHz) from the frequency memory is described in section 3 of this Airplane Flight Manual Supplement.

For a detailed description of each frequency memory list, refer to the effective issue of the SL40 User’s Guide, P/N 560-0954-XX.

### **SAVING A COM CHANNEL IN THE FREQUENCY MEMORY LIST**

Previously tuned STANDBY frequencies may be saved in the frequency memory list by pressing the **MEM** button. All manually saved channels are automatically stored in the *USER MEMORY* list (MEM) and may be recalled from there. Each stored frequency may be assigned with an alphanumeric identifier. For more details in this regard, refer to the effective issue of the SL40 User’s Guide, P/N 560-0954-XX.

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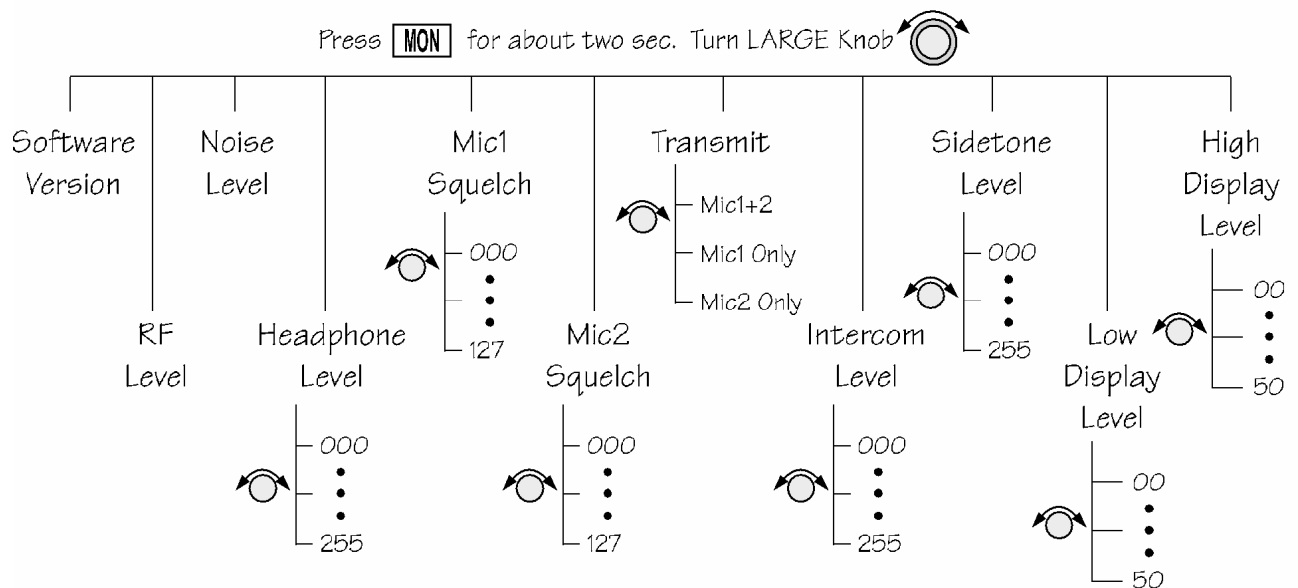
**DELETING CHANNELS FROM THE FREQUENCY MEMORY LIST**

In order to delete channels from the *USER MEMORY* list (MEM), the following steps have to be carried out:

- Press the **RCL** button to go to the frequency databases.
- Select the *USER MEMORY* list (MEM) by rotating the large Frequency Selector knob.
- Press the **MEM** button (Memory)
- Rotate the large Frequency Selector knob until “REMOVE“ is displayed.
- Select the desired channel to be deleted by rotating the small Frequency Selector knob.
- Press the **MEM** button to delete the selected channel.  
If you want to leave the menu at this stage without deleting the selected frequency, turn the large Frequency Selector knob until “ABORT“ is displayed. Press then the **MEM** button to leave the Frequency Memory List menu.

**SYSTEM CONFIGURATION MODE**

In order to make configuration adjustments for the SL40, the user has to switch over to the SYSTEM CONFIGURATION MODE by pressing the **MON** button for at least 2 seconds to get into the system configuration menu. In the system configuration menu, general configuration or system information may be recalled or COM configuration options changed. The following illustration shows the general structure of the available menus. For more detailed information with regard to each menu and possible configuration options, refer to the effective issue of the SL40 User’s Guide, P/N 560-0954-XX.



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## INTEGRATION OF THE SL40 COM TRANSCEIVER INTO THE AQUILA AT01

The GARMIN SL40 COM Transceiver is installed into the avionic rack in the midsection of the instrument panel among the other avionic equipment. The on-board electrical power supply of the SL40 occurs via the Avionic Bus which is connected to the Main Bus of the aircraft's electrical power supply via the Avionics Main Switch (20 A protective rocker switch). To provide a functional separation between the COM transceiver unit and the thereof independent INTERCOM unit, the SL40 includes two different electrical circuits that are independent from each other with their own power supply and separately protected with their own circuit breaker. One electrical circuit supplies the COM Transceiver unit with electrical energy which is protected by a 5 A circuit breaker marked with the placard "**COM/NAV 1**" or "**COM/NAV 2**", if the SL40 is installed as second COM Transceiver into the aircraft. The other electrical circuit supplies the independent INTERCOM unit of the SL40 with electrical energy which is protected by a 3 A circuit breaker marked with the placard "**INTERCOM**". Both circuit breakers are installed in the right section of the instrument panel among the other circuit breakers.

The SL40 COM Transceiver is connected to the VHF-COM antenna of the aircraft.

For further information and a detailed description of the integration of the SL40 COM Transceiver into the aircraft, its connection to the on-board electrical system as well as the installation position of the COM antenna, refer to the effective revision of the Maintenance Manual of the AQUILA AT01, document no. MM-AT01-1020-100.

## 8. HANDLING, SERVICE AND MAINTENANCE

In order to increase the service life of the GARMIN SL40 COM Transceiver, it should always be deactivated during engine start-up and shut-down since electrical surges during the start-up and shut-down process may cause damage to the unit.

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