Pilot's Guide **KTR 909/909A**

BENDIX/KING®
UHF Communications
Transceiver

WARNING

The enclosed technical data is eligible for export under Licanse Designation NLR and is to be used solely by the individual/organization to whom it is addressed. Diversion contrary to U.S. law is prohibited.

GENERAL INFORMATION

This pilot's guide contains information about and instructions for operating the KTR 909/909A UHF Comm Transceiver with the KFS 599A UHF Comm Control Head. The KTR 909 must be installed and operated with a KFS 599A UHF Comm Control Head. The KTR 909A can be operated with either a KFS 599A UHF Comm Control Head or a Radio Management System (RMS) using the ARINC 429 interface. This pilot's guide only covers operation using the KFS 599A UHF Comm Control Head. Refer to the RMS operating procedures on using the KTR 909A in an RMS installation.

CONTROLS AND DISPLAYS

Controls

This section describes the operational controls of the KFS 599A UHF Comm Control Head. The following controls are described:

- On/Off/Vol/Test Knob
- Channel Select Button
- Frequency/Channel Select Knob
- Push Tone Button
- Mode Select Button

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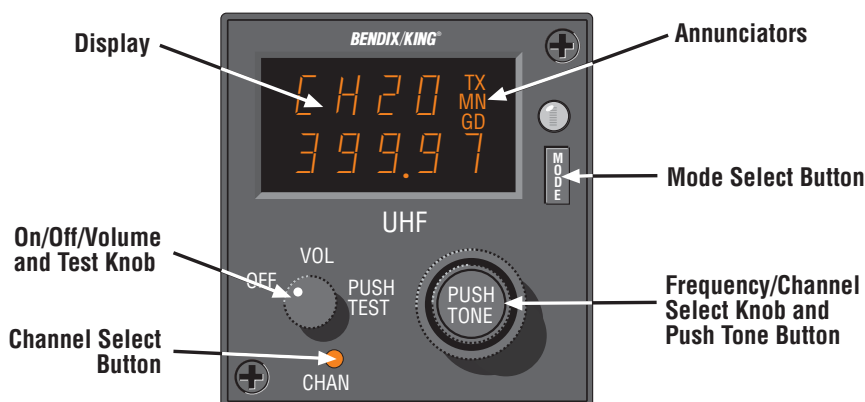
On/Off/Vol/Test Knob

The On/Off/Vol/Test Knob turns the KFS 599A UHF Comm Control Head on, off, and adjusts volume when rotated. Pressing this knob alternately removes and applies squelch.

On units without volume control, the audio level is controlled by the aircraft audio/radio control system.
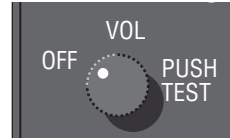
Channel Select Button

The Channel Select button switches the unit between the manual and preset frequency selection modes and also enables the programming mode. Manual frequency selection (when top display line is blank) allows direct tuning of the frequency. Preset frequency selection (Channel number displayed in the top line) allows radio tuning using one of the twenty preset channels or the guard frequency. Pressing and holding the CHAN button for more than three seconds activates the Program Mode.

Frequency/Channel Select Knob

- Manual Frequency Mode — Outer knob tunes the transceiver in 1 MHz steps. Inner knob tunes the transceiver in 25 kHz steps.
- Preset/Guard Channel Mode — Both the outer and the inner knobs change the channel number.

Push Tone Button

Pressing this button activates the 1 kHz tone transmitter test (not available while in the BOTH receiver mode).

Mode Button

Pressing the MODE button selects the Main, Both, or ADF mode of operation. The Main mode enables receiving and transmitting on the displayed frequency and is indicated by the MN annunciator. In the Both mode, the receiver scans the main and guard frequencies. Both the GD and the MN annunciators illuminate during scan. When a signal is detected, the receiver stops on the active frequency and illuminates the active frequency annunciator. Scanning will resume when the receiver becomes inactive. The ADF mode activates an independent ADF receiver.
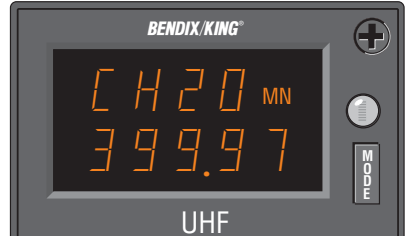
Displays

This section describes the different display formats of the KFS 599A UHF Comm Control Head. These are:

- Preset Channel/Guard Display
- Manual Tuning Display
- Programming Mode Display
- ADF Mode Display

The frequency range of the radio is 225.000 MHz through 399.975 MHz in 25 kHz increments. When the farthest right digit is 2 or 7, the selected frequency is XXX.X25 MHz and XXX.X75 MHz respectively. When the farthest right digit is 0 or 5, the selected frequency is XXX.X00 MHz and XXX.X50 MHz respectively (e.g., when 399.97 is displayed, the selected frequency is 399.975 MHz).

Preset Channel/Guard Display

The Preset Channel/Guard Display shows the current active channel on the top line and the tuned frequency on the bottom line. The example indicates the radio is on Channel 20 and tuned to 399.975 MHz. The letters "Gd" are displayed on the top line when the Guard channel is active.


Manual Tuning Display

The Manual Tuning Display shows the current tuned frequency on the bottom line with the top line blank. The example indicates the radio is tuned to 399.975 MHz.
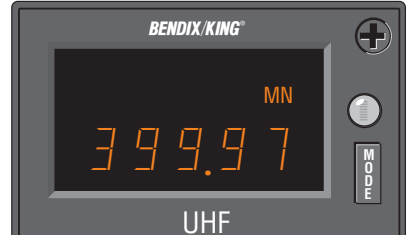
Programming Mode Display

This is available if the programming option was enabled during installation. The Programming Mode Display shows the channel to be programmed on the top line and the programmed frequency on the bottom line.
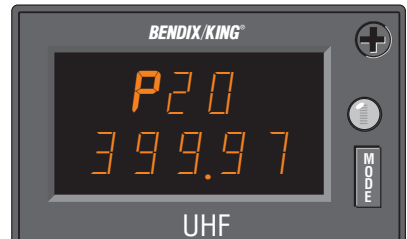
ADF Mode Display

This is available if the ADF option was enabled during installation. When the ADF Mode is activated, the letters AdF appear in either the top or the bottom display line. They will be in the top line if the manual frequency mode is active (shown). The letters will be in the bottom line if the preset channel select mode is active.
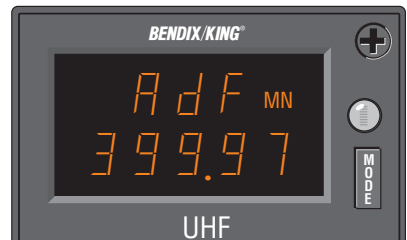
Annunciators

Three annunciators are displayed on the right side of the top display line. These annunciators are:

- Transmit (TX)
- Main (MN)
- Guard (GD)

Transmit Annunciator

The Transmit Annunciator (TX) is illuminated when the microphone is keyed or the 1kHz Tone knob is pressed.

Main Annunciator

The Main Annunciator (MN) is illuminated when the radio is transmitting on the main frequency, the radio is monitoring the main frequency (Main Mode), or the receiver is monitoring both the main and the guard frequencies (Both Mode). While in the Both Mode, the MN and GD annunciators are on.

Guard Annunciator

The Guard Annunciator (GD) is illuminated when the receiver is monitoring both the main and guard frequencies (Both Mode). While in the Both Mode, the MN and GD annunciators are on. If the receiver detects a signal on the Guard frequency while in the both mode, the GD annunciator will be illuminated.

DETAILED OPERATING PROCEDURES

This section describes the detailed operating procedures for the KFS 599A UHF Comm Control Head. The following topics are described:

- Power and Volume Control
- Selecting Receiver Mode
- Transmitting
- Entering a Manual Frequency
- Entering a Preset or Guard Frequency
- Programming a Channel
- X-Mode Operation
- Display Dimming

Power and Volume Control

Power is applied to the KFS 599A and the KTR 909/909A by rotating the ON/OFF/VOL/TEST knob clockwise from the OFF detent position. The unit may be turned off at any time by rotating this knob back into the OFF detent position.

Volume is controlled by rotating the ON/OFF/VOL/TEST knob. The audio level for units without volume control is adjusted using the main aircraft audio/radio control system.

Selecting the Receiver Mode

One of three receiver modes may be selected using the Receive Mode Select (MODE) key. The modes are Main, Both, and ADF.

Main   Transmitting and Receiving on the displayed channel is enabled when the MN annunciator is illuminated.

Both   Scanning of both the Guard and Main receiver frequencies. When the receiver detects a signal on either frequency, scanning stops on the active channel. The annunciator associated with that frequency is displayed. Transmitting while in the Both mode is accomplished on the Main frequency. Scanning resumes when the active frequency becomes idle.

ADF   This is available if the ADF option was enabled during installation. When the ADF mode is enabled and active, the MN annunciator is illuminated and the letters AdF appear in the frequency display when preset channel mode is active or in the channel display when manual frequency mode is in use. The transmitter is disabled and an independent ADF receiver will be enabled.

Transmitting

Note: *Transmitting is disabled when the ADF receiver mode is selected or when in the programming mode. Voice communications are disabled while in the X-Mode.*

For normal voice communications, the transmitter is keyed by pressing the microphone PTT button or through the aircraft radio/audio control system, the TX annunciator will be illuminated. For transmitting digital data, refer to the X-Mode section.

A transmitter test is available that modulates the carrier with a 1kHz tone. This is activated by pressing and holding the PUSH TONE button. When this button is pressed, the TX annunciator will be illuminated.

Entering a Manual Frequency

The CHAN button is used to switch the radio between manual and preset channel selection. When a frequency is selected manually, the receive and transmit frequencies are the same. To enter a frequency manually, perform the following steps:

- Momentarily press the CHAN button to select the Manual Frequency Mode (top display line is blank).
- Rotate the small Frequency/Channel Select Knob to change the frequency in 25 kHz steps. Clockwise rotations increase while counter-clockwise rotations decrease the displayed frequency.
- Rotate the large Frequency/Channel Select Knob to change the frequency in 1 MHz steps. Clockwise rotations increase while counter-clockwise rotations decrease the displayed frequency.

Selecting a Preset or Guard Frequency

The CHAN button is used to switch the radio between manual and preset channel selection. To select a preset frequency:

- Momentarily press the CHAN button to select the Preset/Guard Frequency Mode (top display line shows either "CH" followed by a number or "Gd").
- Rotate either Frequency/Channel Select Knob to cycle through the available channels. Only programmed channels will be displayed. The Guard channel is located between the highest and lowest numbered programmed frequencies.

Programming a Channel

This is available if the programming option was enabled during installation. This mode allows programming any one of the 20 preset operating channels or the Guard channel.

- Programming a channel with identical transmit and receive frequencies (Simplex)
- Programming a channel with different transmit and receive frequencies (Semi-Duplex)
- Changing a Semi-Duplex channel to a Simplex channel
- Deleting a programmed channel

Simplex Programming

This procedure will program a channel to have identical transmit and receive frequencies (simplex operation).

- Press and hold the CHAN button for at least three seconds. The top display line will flash P01 indicating the programming mode is active on channel 1.
- Rotate either the small or the large Frequency/Channel Select Knob to change the channel number.
- Momentarily press the MODE button, the frequency display begins to flash.
- Rotate the knobs to select the desired frequency, refer to the Entering a Manual Frequency section (if the channel is not programmed, the large knob will need to be turned first).
- If more channels need to be programmed, press the MODE button and repeat this procedure.
- Press the CHAN button or wait ten seconds to exit the programming mode.

The programmed channel will now be available in the Preset/Guard Frequency Mode.

Semi-Duplex Programming

This is available if the semi-duplex option was enabled during installation. Different transmit and receive frequencies (semi-duplex) may be programmed into every channel except the Guard. If semi-duplex operation is desired, then perform the following steps:

- Press and hold the CHAN button for at least three seconds. The top display line will flash P01 indicating the programming mode is active on channel 1.
- Rotate either the small or the large Frequency/Channel Select Knob to change the channel number.
- Momentarily press the MODE button, the frequency display begins to flash.
- Rotate the knobs to select the desired transmit frequency, refer to the Entering a Manual Frequency section (if the channel is not programmed, the large knob will need to be turned first).
- Momentarily press the PUSH TONE button to select this frequency as the transmit frequency.
- Rotate the knobs to select the desired receive frequency, refer to the Entering a Manual Frequency section (if the channel is not programmed, the large knob will need to be turned first).
- If more channels need to be programmed, press the MODE button and repeat this procedure.
- Press the CHAN button or wait ten seconds to exit the programming mode.

This channel has now been programmed with different transmit and receive frequencies.

Semi-Duplex to Simplex Conversion

To convert a semi-duplex channel to simplex (transmit and receive frequencies are the same), perform the following steps:

- Press and hold the CHAN button for at least three seconds. The top display line will flash P01 indicating the programming mode is active on channel 1.
- Rotate either the small or the large Frequency/Channel Select Knob to change the channel number.
- Momentarily press the MODE button, the frequency display begins to flash.
- Rotate the large Frequency/Channel Select Knob until the display shows dashes (between 399 and 225).
- Momentarily press the PUSH TONE button.
- Press the CHAN button or wait ten seconds to exit the programming mode.

The former receive frequency is now the transmit and receive frequency.

Programmed Channel Deprogramming

To deprogram a channel, perform the following steps:

- Press and hold the CHAN button for at least three seconds. The top display line will flash P01 indicating the programming mode is active on channel 1.
- Rotate either the small or the large Frequency/Channel Select Knob to change the channel number.
- Momentarily press the MODE button, the frequency display begins to flash.
- Rotate the large Frequency/Channel Select Knob until the display shows dashes (between 399 and 225).
- Press the CHAN button or wait ten seconds to exit the programming mode.

The channel is now deleted from the programmed channel list.

X-Mode Operation

This is available if the X-Mode option was enabled during installation. The radio has the ability to be used for transmitting and receiving digital data using the X-Mode. The X-Mode is activated by the external digital data communication system. When activated, normal voice communications are disabled and the audio output is not squelched.

Display Dimming

This is available if the automatic dimming option was enabled during installation. The display brightness is automatically controlled by the photocell on the front of the unit.

DISCRETE INPUTS

Certain discrete inputs may have been installed that affect the operation of the KTR 909/909A. Refer to the flight manual supplement for more information. The functions available are:

- Control Disable
- Remote Channel Request
- Program Disable
- ADF Enable
- Semi-Duplex Inhibit
- Remote Guard

Control Disable

This switch will enable and disable the front panel controls of the KFS 599A.

Remote Channel Request

This switch, when momentarily pressed, will perform one of two functions. If the KFS 599A is in the manual frequency mode, it will change to the preset channel mode. If the KFS 599A is already in the preset channel mode, it will change the channel to the next higher programmed channel.

Program Disable

This line will disable and enable the programming function of the KFS 599A. The Program Disable line is read only during the power-on sequence; any changes made after power-on are not read.

ADF Enable

This line will enable and disable the ADF mode of the KFS 599A. The ADF Enable line is read only during the power-on sequence; any changes made after power-on are not read.

Semi-Duplex Inhibit

This line will disable and enable the use of the semi-duplex feature of the KFS 599A. Any channels programmed as semi-duplex will transmit on the receive frequencies while semi-duplex is disabled. The Semi-Duplex Inhibit line is read only during the power-on sequence; any changes made after power-on are not read.

Remote Guard Select

While in the Main mode, pressing this switch will select the guard channel. Pressing this switch while in the Guard mode will select the last active Main frequency.

Faults and Tests

Transmission Time-out Fault

If the transmitter is active for more than 90 seconds, a transmit time-out fault occurs. This is indicated by the flashing of every illuminated segment of the display. The transmitter will go inactive until the fault is found or an interruption occurs in the DC power supply. In most cases, the transmission time-out is caused by the microphone PTT button being stuck or if a transmission exceeds 90 seconds (including 1kHz Tone Test).

1kHz Tone Test

Pressing the PUSH TONE button modulates the signal with a 1kHz tone. This verifies the operation of the transmitter and the audio system. This feature is disabled while the unit is in the BOTH receive mode.

NOTES:

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