

# NARCO AVIONICS

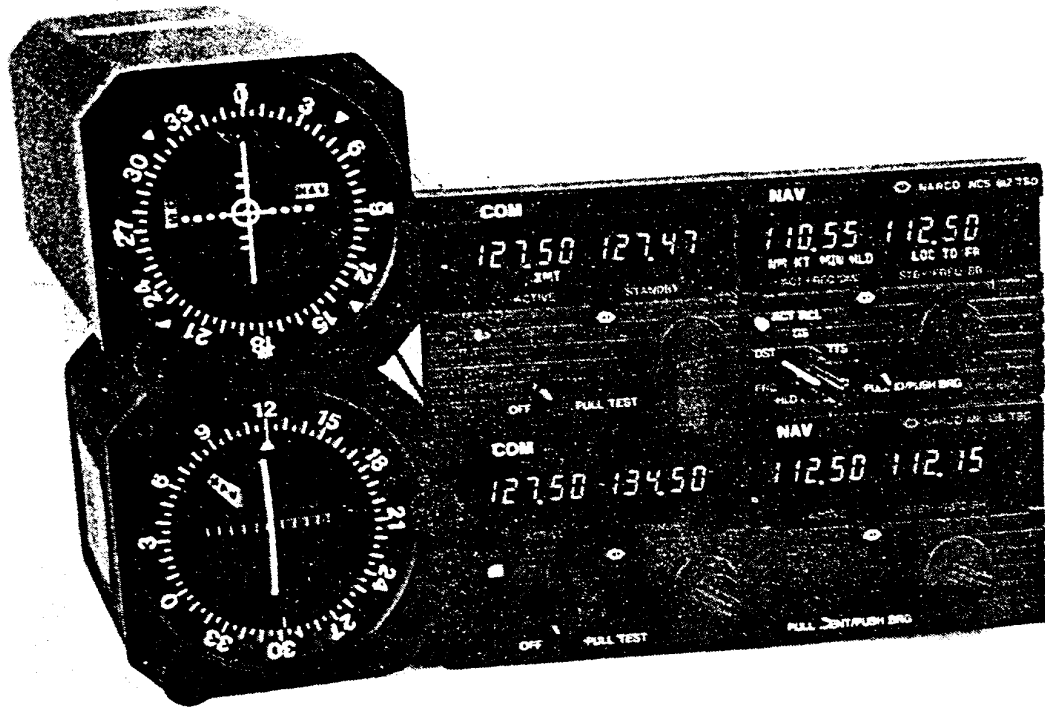
## MK 12E/NCS 812 TSO NAV/COM

WITH

ID824 TSO/ID825 TSO INDICATORS

AND

IDME891/IDME895



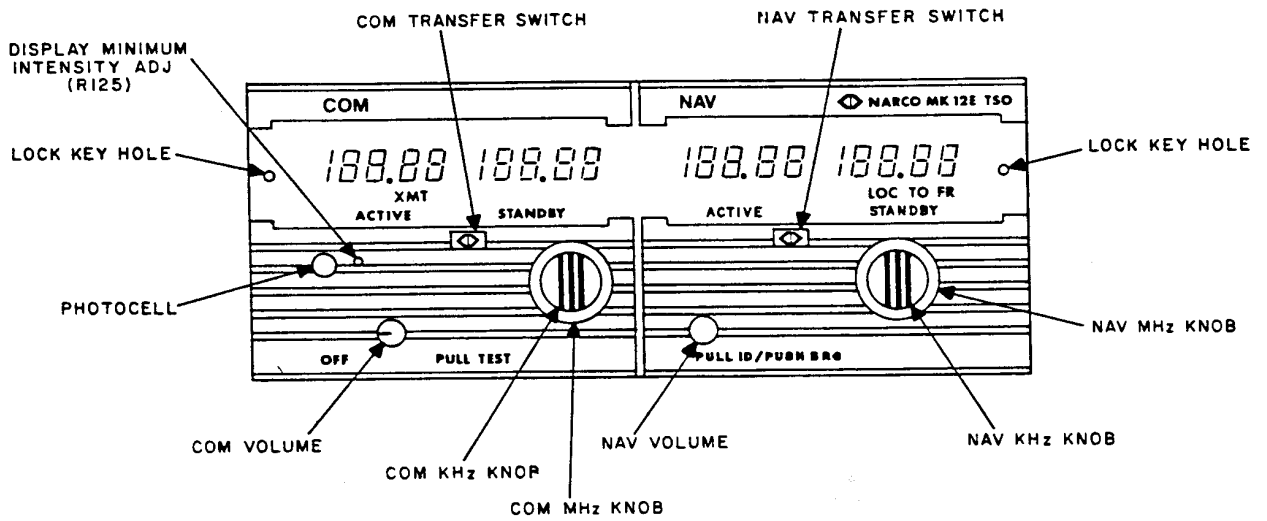
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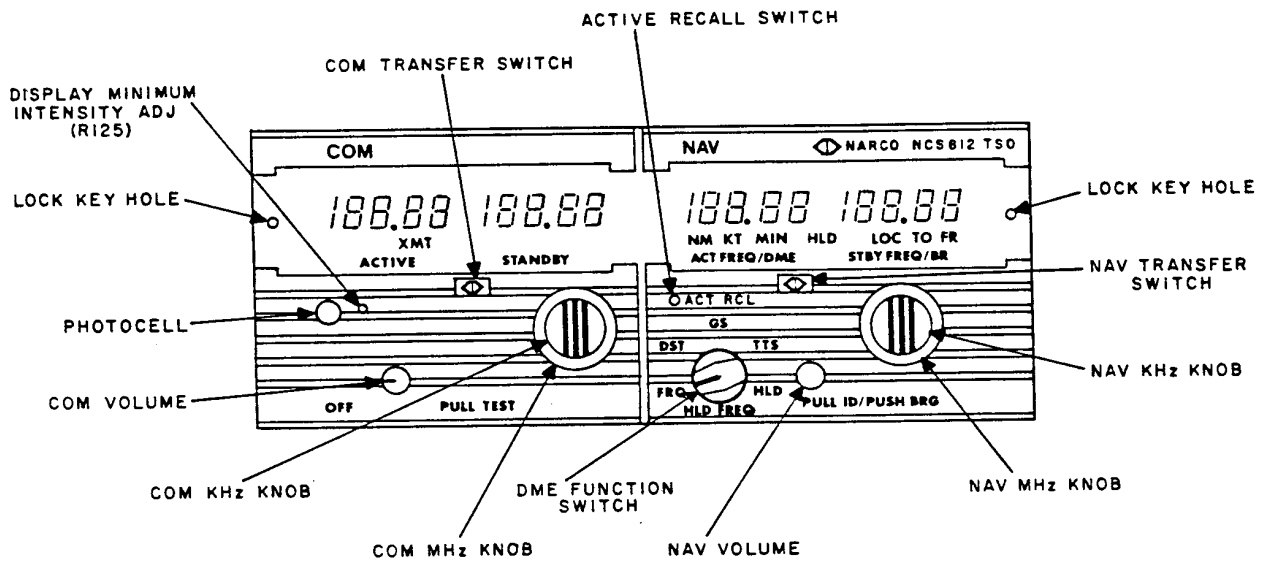
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NARCO AVIONICS MK12E/NCS812 TSO



TP001644A

FIGURE 2-4 CONTROL FUNCTIONS MK12E



TP001644B

FIGURE 2-5 CONTROL FUNCTIONS NCS812

# NARCO AVIONICS MK12E/NCS812 TSO

## OPERATION

A non-volatile memory feature monitors the last COM and NAV active and standby frequencies used. When the radio is turned off or power is interrupted, these frequencies are stored in memory. When power is restored to the radio the frequencies appear in the appropriate displays as present prior to shut down.

The non-volatile memory feature utilizes a battery/memory combination integrated circuit to maintain information. A battery voltage level monitoring circuit checks the condition of the battery each time the radio is turned on. In the event that the battery section becomes weak, the COM and NAV displays will show all "E's" as an error code for two seconds after the initial turn on.

If an error code appears contact your nearest Narco service center for appropriate action.

### COM Section Operation

#### COM: DISPLAY

The left side of the display identifies the COM Active communications frequency, and the letters "XMT" (when lit) to indicate that the Mike Key is depressed and the Unit is transmitting.

The right side of the display identifies the COM Standby frequency.

#### COM: OFF-VOL-PULL TEST

OFF is the maximum counterclockwise rotation of this control. Clockwise rotation past the "click" turns both the COM and NAV Sections ON.

VOL, once the Unit is turned ON, continued clockwise rotation increases the COM audio volume.

PULL TEST when pulled deactivates the squelch circuit.

#### COM: MHz/KHz CHANNEL SELECT KNOBS

Both these controls allow for continuous CW or CCW rotation. MHz frequency readout, in Standby display, changes at a rate of 1 MHz per detent. Rotation of the KHz knob steps the Standby frequency readout at a change rate of 25 KHz per detent.

Clockwise rotation increments the frequency, counterclockwise decrements the frequency. (See Figures 2-36 and 2-37).

## NARCO AVIONICS MK12E/NCS812 TSO

Continued

### COM: HOW TO ENTER A FREQUENCY

All frequencies entered into the COM Section enter via the Standby route, that is, the frequency is entered (seen in the standby displays) and then transferred to the Active by depressing the transfer button. The next frequency entered is the Standby frequency.

The Active frequency and its resultant data are not affected by the rotation of either the MHz or KHz knobs.

### COM: TRANSFER

Pressing this momentary switch "flips" the display. The Standby frequency becomes the Active and the Active becomes the Standby.

### NAV Section Operation

NOTE: NCS812 operation is described with the DME function switch set to "FRQ" position.

### NAV: DISPLAY

The left side of the display identifies the NAV Active communications frequency.

The right side of the display identifies the NAV Standby frequency. When the Active frequency is an ILS frequency the annunciator "LOC" (located under the Standby frequency) will be lit.

### NAV: VOL-PULL IDENT-PUSH BEARING

VOL, minimum NAV audio is obtained through full counterclockwise rotation of this control.

VOL, continued rotation increases the NAV audio volume.

PULL IDENT, when pulled activates the IDENT CIRCUIT.

Push BRG, when pressed cycles standby display through frequency, bearing to the station, and radial from the station.

### NAV: MHz/KHz CHANNEL SELECT KNOBS

Both these controls allow for continuous CW or CCW rotation. MHz frequency readout, in Standby display, changes at 1 MHz per detent. Rotation of the KHz Knob steps the Standby frequency readout at 50 KHz per detent.

Clockwise rotation increments the frequency, counterclockwise decrements the frequency. (See Figures 2-36 and 2-38).

## NARCO AVIONICS MK12E/NCS812 TSO

Continued

### NAV: HOW TO ENTER A FREQUENCY

All frequencies entered into the NAV Section enter via the Standby route, that is, the frequency is entered (seen in the standby displays) and then transferred to the Active by depressing the transfer button. The next frequency entered is the Standby frequency.

The active frequency and its resultant data is not affected by the rotation of either of the MHz or KHz knobs.

### NAV: TRANSFER

Pressing this momentary switch "flips" the display. The Standby frequency becomes the Active and the Active becomes the Standby.

### NCS812 DME Function Switch (FIG 2-5)

With the NCS812 DME function switch in the "FRQ" position the NCS812 operates identically to the MK12E as described up to this point.

### DST

With the DME function switch in the "DST" position the NCS812 will display distance from the DME selected by the active frequency. The annunciator "NM" will be lit. If the DME is not receiving a valid signal or is not on, the display will bar. The active frequency can be recalled for two seconds by momentarily pressing the "ACT RCL" switch. When a transfer is done the new active frequency will be displayed for two seconds and then the NCS812 will revert to distance or bars.

### GS

With the DME function switch in the "GS" position the NCS812 will display ground speed to the DME selected by the active frequency. The annunciator "KT" will be lit. If the DME is not receiving a valid signal or is not on, the display will bar. The active frequency can be recalled for two seconds by momentarily pressing the "ACT RCL" switch. When a transfer is done the new active frequency will be displayed for two seconds and the NCS812 will revert to ground speed or bars.

Continued

TTS

With the DME function switch in the "TTS" position the NCS812 will display time to the station selected by the active frequency. The annunciator "MIN" will be lit. If the DME is not receiving a valid signal or is not on, the display will bar. The active frequency can be recalled for two seconds by momentarily pressing the "ACT RCL" switch. When a transfer is done the new active frequency will be displayed for two seconds and then the NCS812 will revert to time to station or bars.

HLD

With the DME function switch in the "HLD" position the NCS812 will hold the two out of five channeling to the DME if entered from "TTS" position, thereby allowing the NAV receiver to be re-channelled while not affecting the DME. In this position the DME distance will be displayed as will the annunciators "NM" and "HLD". The active frequency can be recalled for two seconds by momentarily pressing the "ACT RCL" switch. When a transfer is done the new active frequency will be displayed for two seconds and then the NCS812 will revert to distance or bars. the two out of five channeling will stay held until the DME function switch is placed in either the "TTS" or "FRQ" position at which time the channeling will be changed to that of the active frequency.

HLD FRQ

With the DME function switch in the "HLD FRQ" position the NCS812 will hold the two out of five channeling to the DME, if entered from the 'FRQ' position, thereby allowing the NAV receiver to be re-channelled while not affecting the DME. In this position the frequency being held and the annunciator "HLD" will be displayed. The active frequency can be recalled for two seconds by momentarily pressing the 'ACT RCL' switch. When a transfer is done the new active frequency will be displayed for two seconds and then the NCS812 will revert to the HOLD frequency display. The two out of five channeling will stay held until the DME function switch is placed in either the "TTS" or "FRQ" position at which time the channeling will be changed to that of the active frequency.

## 2.8 MECHANICAL INSTALLATION

This Section provides the mechanical installation steps for mounting the tray and rear connector.

### 2.8.1 Tray Lock

The tray has a built-in spring locking device. When the Unit is positioned into the tray's track and slid into the tray the tension (lock) spring contacts the Unit. When the Unit's connectors touch the tray connectors an additional set of tension springs can be felt holding back the inward direction of the Unit. At this point using firm pressure the Unit will continue inward approximately a half-inch stopping as the forward tension/locking spring "clicks" into position. The Unit is now locked in place.

Removal of the Unit requires the use of an extraction key. There are two holes located on either side of the display (Figure 2-29). Place the key alternately in each hole to release the Unit from the tray.

### 2.8.2 Mechanical - Tray

Upon removing the MK12E/NCS812 Tray Assembly from its shipping container, the Unit must be removed from the mounting Tray Assembly.

Position the assemblies on a flat surface, place a block behind it as shown in Figure 2-29. Insert the key straight into the keyhole in the trim panel, exert sufficient pressure to release the spring lock. Upon release the tension (eject) springs will "pop" the Unit outward, freeing it. SAVE THE KEY.

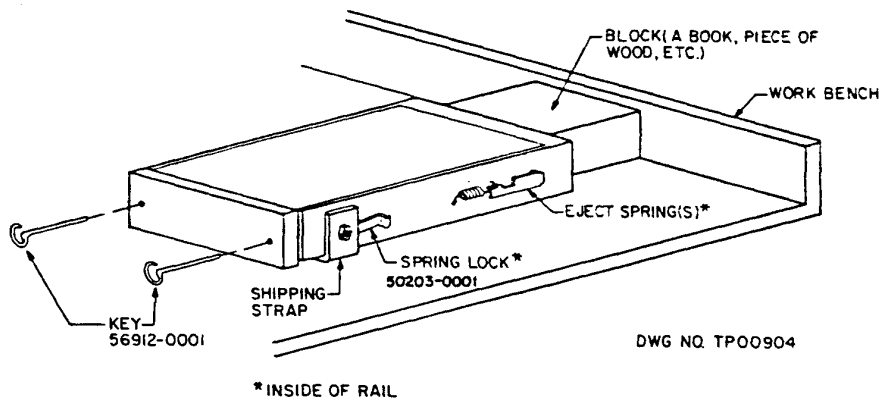


FIGURE 2-29 TYPICAL TRAY LOCK OPERATION

Loss of Display

The following is not expected but is given as a means of using the unit in case of loss of display. If the Units receivers appear to be functioning, the Unit can be channeled knowing the standby frequencies.

With the Unit off press and hold the COM transfer switch while turning the Unit on (hold the transfer switch for at least 2 seconds). The Active and Standby COM frequencies will now be preset to 118.000 MHz and the NAV Active and Standby frequencies will be 108.00 MHz. By counting the number of detents the Standby frequencies can now be changed to the desired frequency (See Figure 2-37, 2-38). Clockwise rotation will increase the frequency and counterclockwise rotation will decrease the frequency (See Figure 2-36). Remember that the KHz spacing for COM is 25 KHz and for NAV 50 KHz.

Once the new change is selected, press the corresponding transfer button to transfer it from the Standby to Active frequency position. The COM frequency can be verified by transmitting and waiting for a reply. The NAV channel can be verified by listening for the station IDENT.

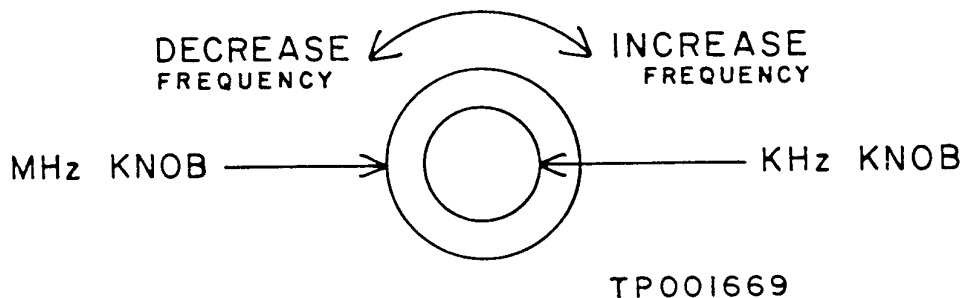


FIGURE 2-36 COM AND NAV FREQUENCY CONTROL KNOBS