SECTION 1

DESCRIPTION AND OPERATION

1.1 INTRODUCTION

The Commercial RT-7200 and Military RT-5065/ARC-513 (V) Transceiver Systems provide two-way voice communication in the 138.000 to 173.995 MHz band, while the Commercial RT-9600 and Military RT-5052/ARC-513 (V) Transceiver Systems provide two-way voice communications in the 150.0000 to 173.9975 MHz band. Both frequency bands are commonly known as the VHF HI-Band.

Depending on the control unit used, either 11, 15 or 20 preset channels are provided along with a manually selectable frequency control or CTCSS tone selection. Also, an optional two frequency crystal controlled Guard Receiver allows continuous monitoring of a previously selected frequency.

1.2 PURPOSE OF EQUIPMENT

The Commercial RT-7200 and Military RT-5065/ARC-513 (V) Transceivers are designed to provide two-way voice communications within the frequency range of 138.000 to 173.995 MHz in 5.0 kHz increments, for a total of 7200 channels.

The Commercial RT-9600 and Military RT-5052/ARC-513 (V) Transceivers are designed to provide two-way voice communications within the frequency range of 150.0000 to 173.9975 MHz in 2.5 kHz increments, for a total of 9600 channels.

1.3 MODEL VARIATIONS WITH TRANSCEIVER AND CONTROL UNIT PART NUMBERS

1.3.1 COMMERCIAL PRODUCTS

There are four styles of RT-7200 and eight styles of RT-9600 Commercial Transceivers currently available as defined in Section 1.6.1. See section 1.6.4 for the currently available Commercial Control Units. See Sections 1.6.3 and 1.6.6 for discontinued commercial transceivers and control units.

1.3.2 MILITARY PRODUCTS

Derivatives of the RT-7200 and RT-9600 Transceiver Systems have been supplied for the JETDS Radio Set System AN/ARC-513 (V). These transceivers and control units are described in Sections 1.6.2 and 1.6.5.

1.4 DESIGN FEATURES

Several important features in the design offer maximum reliability, flexibility, ease of installation, operation, and maintenance.

-- Plug-in modular construction with bifurcated gold card-edge connectors.

-- MIL grade epoxy impregnated fiberglass printed circuit boards with MIL spec post coating for humidity and dust protection.

-- All solid state.

-- Burn-out proof transmitter due to open or short-circuited transmission line.

-- RF gated audio sidetone exists when transmitter is producing RF power.

-- Automatic signal-to-noise squelch with manual override.

-- Separate input (without preemphasis) for external CTCSS tones, tone bursts, DTMF encoders, voice scramblers, data, etc.

-- AM detector for use with direction finding equipment.

-- Operates on either 14 or 28V DC power.

-- Low profile 1/2 ATR short package.

-- No band spread limitation.

1.5 TECHNICAL CHARACTERISTICS

1.5.1 RT-7200 AND RT-5065/ARC-513 (V)

GENERAL SPECIFICATIONS

Frequency Range:	FCC Type Accepted 150 to 174 MHz. DOC Type Accepted 138 to 174MHz.
Channelling:	25kHz (standard) or 30 kHz (standard or split) under FCC Parts 83 and 90. 30 kHz under DOC RSS-119. 25 kHz under DOC RSS-182.
Tunability:	Capable of 5 kHz increments.
Mode:	Simplex or semi-duplex 16F3.
Physical Dimensions:	See Figure 2.4-1.
Weight:	9.3 lbs (4.22 kg).
Mounting:	Rigidmount-upright only.
Power Requirements:	
Voltage:	13.75V DC ± 20% or 27.5V DC ± 20%.
Current:	
Standby:	1.3 Amps maximum.
Receive:	1.5 Amps maximum.
Transmit:	5.5 Amps maximum.
Control:	Remote with C-722/C-722A Control Unit.
Warm-up Time:	None Required.
Temperature:	
Storage:	-55 to +85° C.
Operate:	-40 to +60° C.
Altitude:	51,000 feet MSL.
Certification:	FCC Parts 15, 74, 83 and 90. DOC RSS-119 (501 192 1551) DOC RSS-182 (501 272 VLC).

1.5 TECHNICAL CHARACTERISTICS

1.5.1 RT-7200 AND RT-5065/ARC-513 (V) (cont.)

GENERAL SPECIFICATIONS

Other:	Meets RTCA DO-138 Environmental Catagory AAGAAAEXXXXS (when shockmounted) and AANAAAEXXXXS (when rigid mounted) to Wulfsberg defined operational standards.

TRANSMITTER SPECIFICATIONS (STANDARD TEST CONDITIONS)

Nominal Output Power:	Operator selectable, 1 or 10 Watts.
Output Power Tracking:	+ 20%, -40% from nominal over frequency range.
Output Impedance:	50 ohms.
Duty Cycle:	Continuous (EIA)
Frequency Stability:	± 0.0005% over -40 to + 60°C.
Modulation:	± 5 kHz deviation, adjustable.
Audio Input:	0.25 VRMS into 200 ohms input circuit for ± 3.0 kHz deviation, adjustable.
Audio Distortion:	5%
Modulation Tracking:	± 0.9dB across frequency range.
Sidetone Output:	100 mW into 600 ohms, adjustable.
Microphone Circuit:	Carbon or equivalent.
FM Hum and Noise:	-26 dB.
Harmonics:	-70 dB below carrier level.
Spurious:	-80 dB below carrier level.

1.5 TECHNICAL CHARACTERISTICS

1.5.1 RT-7200 AND RT-5065/ARC-513 (V) (cont.)

MAIN RECEIVER SPECIFICATIONS (STANDARD TEST CONDITIONS)

Usable Sensitivity:	0.5 uV, 12 dB SINAD (EIA).
Quieting Sensitivity:	1.0 uV, 20 dB quieting (EIA).
Adjacent Channel:	-68 dB (EIA).
Intermodulation:	-60 dB (EIA).
Response:	
Spurious:	-85 dB.
Image:	-80 dB.
Modulation Acceptance:	7 kHz minimum (EIA).
Squelch:	
Threshold Setting:	4 dB SINAD or less.
Tight Setting:	18 to 20 dB SINAD.
Audio Output:	100mW into 600 ohms.
Audio Distortion:	7% (EIA).
Frequency Tolerance:	0.001% over temperature range.
Hum and Noise:	
Unsquelched:	-26 dB.
Squelched:	-45 dB.
DF Output:	400 mVRMS open circuit (50% modulation), 500 ohms output impedance.

1.5 TECHNICAL CHARACTERISTICS

1.5.1 RT-7200 AND RT-5065/ARC-513 (V) (cont.)

GUARD RECEIVER OPTION SPECIFICATIONS (STANDARD TEST CONDITIONS)

Channel 1 Frequency:	Customer specified. Any frequency between 138.000 and 173.995 MHz allowed. 156.800 MHz (RT-5065/ARC-513 Version)
Channel 2 Frequency:	Customer specified. Any frequency between 138.000 and 173.995 MHz allowed. 156.300 MHz (RT-5065/ARC-513 Version)
Response:	
Image:	-85 dB.
Spurious:	-75 dB.

All other specifications same as the main receiver except the guard receiver has no DF Output.

SUBAUDIBLE TONE SQUELCH OPTION (CTCSS) SPECIFICATIONS

Number of Tones:	Eight.
Selection Method:	Selected by coding four wires on the main connector. The wire coding is generated in the control units or by external switching and may be changed between transmit and receive.
Frequency Range:	60 to 250 Hz - field adjustable.

1.5.2 RT-9600 AND RT-5052/ARC-513 (V)

GENERAL SPECIFICATIONS

Frequency Range:	FCC Type Accepted 150 to 174 MHz. DOC Type Accepted 150 to 174 MHz.
Channelling: 12.5	25 or 30 kHz (standard or split) under FCC parts 74, 83 and 90. 30 kHz under DOC RSS-119. 25 KHz under DOC RSS-182.
Tunability:	Capable of 2.5 kHz increments.

1.5 TECHNICAL CHARACTERISTICS

1.5.2 RT-9600 AND RT-5052/ARC-513 (V) (cont.)

GENERAL SPECIFICATIONS

Mode:	Simplex or Semi-duplex, 16F3.
Physical Dimensions:	See Figures 2.4-1 and 2.4-2.
Weight:	9.3 lbs (4.22 kg).
Mounting:	Rigidmount-upright only.
Power Requirements:	
Voltage:	13.75V DC ± 20% or 27.5V DC ± 20%.
Current:	
Standby:	1.3 Amps maximum
Receive:	1.5 Amps maximum
Transmit:	5.5 Amps maximum
Control:	Remote with C-962/C-962A Control Unit.
Warm-up Time:	None required, 3 Minutes (early production units)
Temperature:	
Storage:	-55 to +85° C.
Operate:	-40 to +60° C.
Altitude:	51,000 feet MSL.
Certification:	FCC Parts 15, 74, 83, and 90. DOC RSS-119 (501 191 126X) DOC RSS-182 (501 821 271V).
Other:	Meets RTCA DO-138 Environmental Catagory AAGAAAEXXXXS (when shock mounted) and AANAAAEXXXXS (when rigid mounted) to Wulfsberg operational standards.

1.5 TECHNICAL CHARACTERISTICS

1.5.2 RT-9600 AND RT-5052/ARC-513 (V) (cont.)

TRANSMITTER SPECIFICATIONS (STANDARD TEST CONDITIONS)

Nominal Output Power:	Operator selectable, 1 or 10 Watts.
Output Power Tracking:	± 20% from nominal over frequency range.
Output Impedance:	50 ohms.
Duty Cycle:	Continuous (EIA).
Frequency Stability:	± 0.0005% over -30° to + 60° C.
Modulation:	± 5 kHz deviation, limited.
Audio Input:	0.25 VRMS into 200 ohms input circuit for ± 3.0 kHz deviation, adjustable.
Audio Distortion:	5%.
Modulation Tracking:	± 0.9 dB across frequency range.
Sidetone Output:	100 mW into 600 ohms, adjustable.
Microphone Circuit:	Carbon or equivalent.
FM Hum and Noise:	-30 dB.
Harmonics:	-70 dB below carrier level.
Spurious:	-80 dB below carrier level.

MAIN RECEIVER SPECIFICATIONS (STANDARD TEST CONDITIONS)

Usable Sensitivity:	0.5 uV, 12 dB SINAD (EIA).
Quieting Sensitivity:	1.0 uV, 20 dB quieting (EIA).
Adjacent Channel:	-70 dB (EIA).
Intermodulation:	-70 dB (EIA).

1.5 TECHNICAL CHARACTERISTICS

1.5.2 RT-9600 AND RT-5052/ARC-513 (V) (cont.)

MAIN RECEIVER SPECIFICATIONS (STANDARD TEST CONDITIONS) (cont.)

Response:	
Spurious:	-90 dB.
Image:	-90 dB.
Modulation Acceptance:	7 kHz minimum (EIA).
Squelch:	
Threshold Setting:	4 dB SINAD or less.
Tight Setting:	18 to 20 dB SINAD.
Audio Output:	100 mW into 600 ohms. 10 Watts into 4 ohms (RT-5052/ARC-513 Version)
Audio Distortion:	7% EIA.
Frequency Tolerance:	± 0.001% over temperature range.
Hum and Noise:	
Unsquelched:	-30 dB.
Squelched:	-45 dB.
DF Output:	400 mVRMS open circuit (50% modulation) 500 ohms output impedance.

GUARD RECEIVER SPECIFICATIONS (STANDARD TEST CONDITIONS)

Channel 1 Frequency:	Customer specified. Any frequency between 150.0000 and 173.9975 MHz allowed. 156.8000 MHz (RT-5052/ARC-513 Version)
Channel 2 Frequency:	Customer specified. Any frequency between 150.0000 and 173.9975 MHz allowed. 156.3000 MHz (RT-5052/ARC-513 Version)

1.5 TECHNICAL CHARACTERISTICS

1.5.2 RT-9600 AND RT-5052/ARC-513 (V) (cont.)

GUARD RECEIVER SPECIFICATIONS (STANDARD TEST CONDITIONS) (cont.)

Response:

Image:	-85 dB.
Spurious:	-75 dB.

All other specifications same as the main receiver except the guard receiver has no DF Output.

SUBAUDIBLE TONE SQUELCH OPTION (CTCSS)

Number of Tones:	Eight.
Selection Method:	Selected by coding four wires on the main connector. The wire coding is generated in the control units or by external switching and may be changed between transmit and receive.
Frequency Range:	60 to 250 Hz - Field Adjustable.

1.5.3 CONTROL UNITS **

Physical Dimensions:

C-960, C-5333/ARC-513(V), C-5368/ARC-513(v), and C-5413/ARC-513(v).	See Figure 2.5-1
C-961	See Figure 2.5-2
C-920	See Figure 2.5-3
C-722, C-962, C-5421/ARC-513 (V), and C-5422/ARC-513(V)	See Figure 2.5-4
C-722A, C-962A	See Figure 2.5-5
C-963	See Figure 2.5-6
HA-4	See Figure 2.5-7
HS-4	See Figure 2.5-8

1.5 TECHNICAL CHARACTERISTICS (cont.)

1.5.3 CONTROL UNITS ** (cont.)

Weight:	lbs	kg
C-960, C-5333/ARC-513 (V), C-5368/ARC-513 (V), and C-5413/ARC-513 (V)	2.0	0.91
C-961	1.8	0.83
C-920	2.3	1.04
C-722, C-962, and C-5421/ARC-513 (V)	2.5	1.13
C-722A, C-962A	2.5	1.13
C-963	0.8	0.36

** FOR DETAILED CONTROL UNIT INFORMATION SEE THE APPROPRIATE CONTROL UNIT MAINTENANCE MANUAL AVAILABLE FROM WULFSBERG ELECTRONICS, INC.

1.5.4 ANTENNAS

Physical Dimensions:	
AT-31	See Figure 2.6-1
AT-690	See Figure 2.6-2
AT-695	See Figure 2.6-3
AT-960, AS-5013/ARC-513 (V)	See Figure 2.6-4

Weight:	lbs	kg
AT-31	2.5	1.13
AT-690	0.6	0.27
AT-695	0.5	0.23
AT-960, AS-5103/ARC-513 (V)	2.8	1.27

1.5 TECHNICAL CHARACTERISTICS (cont.)

1.5.5 TRANSCEIVER MOUNT

Physical Dimensions and Weight:

1N96/1N97/MT-5178/ ARC-513 (V)	See Figure 2.3-1
IN-96A/IN-97A	See Figure 2.3-2

1.6 SYSTEM COMPONENTS

The following are the currently defined components of the RT-7200, RT9600, AN/ARC-513 (V) Transceiver Systems.

1.6.1 COMMERCIAL TRANSCEIVERS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
RT-7200-0	7200 Channel VHF Hi-Band Transceiver, 14/28 VDC, 100mW Audio, Recessed Connector.	400-0087-000
RT-7200-1	7200 Channel VHF Hi-Band Transceiver, 14/28 VDC, 100mW Audio, Recessed Connector, with Guard Receiver.	400-0087-001
RT-7200-2	7200 Channel VHF Hi-Band Transceiver, 14/28 VDC,100 mW Audio, Recessed Connector, with CTCSS Tones.	400-0087-002
RT-7200-3	7200 Channel VHF Hi-Band Transceiver, 14/28VDC, 100mW Audio, Recessed Connector, with Guard Receiver and CTCSS Tones.	400-0087-003
RT-9600-2	9600 Channel VHF Hi-Band Transceiver, 14/28VDC, 100mW Audio, Protruding Connector.	400-0052-002
RT-9600-5	9600 Channel VHF Hi-Band Transceiver, 14/28 VDC, 100mW Audio, Protruding Connector, with Guard Receiver.	400-0052-005

1.6 SYSTEM COMPONENTS (cont.)

1.6.1 COMMERCIAL TRANSCEIVERS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
RT-9600-8	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100 mW Audio, Protruding Connector with CTCSS Tones.	400-0052-008
RT-9600-11	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100 mW Audio, protruding Connector, with Guard Receiver and CTCSS Tones.	400-0052-011
RT-9600-24	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100mW Audio, Recessed Connector.	400-0052-024
RT9600-25	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100 mW Audio, Recessed Connector, with Guard Receiver.	400-0052-025
RT-9600-26	9600 Channel VHF HI-Band Transceiver 14/28 VDC, 100 mW Audio, Recessed Connector, with CTCSS Tones.	400-0052-026
RT-9600-27	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100 mW Audio, Recessed Connector, with Guard Receiver and CTCSS Tones.	400-0052-027

1.6.2 MILITARY TRANSCEIVERS

JETDS NUMBER	DESCRIPTION	WEI PART NUMBER
RT-5052/ ARC-513 (V)	Similar to the discontinued RT-9600-12 and having defined GD 1 and GD 2 frequencies installed.	400-0052-999
RT-5065/ ARC-513 (V)	Similar to RT-7200-1 and having defined GD 1 and GD 2 frequencies installed.	400-0087-005

1.6 SYSTEM COMPONENTS (cont.)

1.6.3 DISCONTINUED COMMERCIAL TRANSCEIVERS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
RT-9600-0	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Recessed Connector.	400-0052-000
RT-9600-1	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Protruding Connector.	400-0052-001
RT-9600-3	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio Recessed Connector, with Guard Receiver.	400-0052-003
RT-9600-4	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio Protruding Connector, with Guard Receiver	400-0052-004
RT-9600-6	9600 Channel VHF HI-Band Transceiver, 14/28VDC, 10W Audio, Recessed Connector, with CTCSS Tones.	400-0052-006
RT-9600-7	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Protruding Connector, with CTCSS Tones.	400-0052-007
RT-9600-9	9600 Channel VHF HI-Band Transceiver, 14/28VDC, 10W Audio, Recessed Connector, with Guard Receiver and CTCSS Tones.	400-0052-009
RT-9600-10	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio Protruding Connector, with Guard Receiver and CTCSS Tones.	400-0052-010

1.6 SYSTEM COMPONENTS (cont.)

1.6.3 DISCONTINUED COMMERCIAL TRANSCEIVERS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
	*NOTE: These Transceivers (RT-9600-12 through RT-9600-23) contain a special IF Bandwidth R/T module that gave the main receiver a Modulation Acceptance BW specification of ± 9.0 kHz minimum. It was designed to allow improved ADF compatibility. The degree of improvement, however, is not sufficient to warrant consideration of this model variation for future applications.	
*RT-9600-12	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Recessed Connector	400-0052-012
*RT-9600-13	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Protruding Connector.	400-0052-013
*RT-9600-14	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100mW Audio, Protruding Connector.	400-0052-014
*RT-9600-15	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Recessed Connector, with Guard Receiver.	400-0052-015
*RT-9600-16	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Protruding Connector, with Guard Receiver.	400-0052-016
*RT-9600-17	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 100mW Audio, Protruding Connector, with Guard Receiver.	400-0052-017
*RT-9600-18	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Recessed Connector, with CTCSS Tones.	400-0052-018
*RT-9600-19	9600 Channel VHF HI-Band Transceiver, 14/28 VDC, 10W Audio, Protruding Connector, with CTCSS Tones.	400-0052-019

1.6 SYSTEM COMPONENTS (cont.)

1.6.3 DISCONTINUED COMMERCIAL TRANSCEIVERS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
*RT-9600-20	9600 Channel VHF Hi-Band Transceiver, 14/28 VDC, 100mW Audio, Protruding Connector, with CTCSS Tones.	400-0052-020
*RT-9600-21	9600 Channel VHF Hi-Band Transceiver, 14/28 VDC, 10W Audio, Recessed Connector, with Guard Receiver and CTCSS Tones.	400-0052-021
*RT-9600-22	9600 Channel VHF Hi-Band Transceiver, 14/28 VDC 10W Audio, Protruding Connector, with Guard Receiver and CTCSS Tones.	400-0052-022
*RT-9600-23	9600 Channel VHF Hi-Band Transceiver, 14/28 VDC, 100mW Audio, Protruding Connector, with Guard Receiver and CTCSS Tones.	400-0052-023

1.6.4 COMMERCIAL CONTROL UNITS

C-722A-10	RT-7200 Control Unit, 138-174 MHz, 7200 Channel, 28V Integral Lights.	400-0084-010
C-722A-20	RT-7200 Control Unit, 138-174 MHz, 7200 Channel, 5V Integral Lights.	400-0084-020
C-722A-30	RT-7200 Control Unit, 138-174 MHz, 7200 Channel, 14V Integral Lights.	400-0084-030
C-962A-10	RT-9600 Control Unit, 150-174 MHz, 9600 Channel, 28V Integral Lights.	400-0073-010

1.6 SYSTEM COMPONENTS (cont.)

1.6.4 COMMERCIAL CONTROL UNITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
C-962A-20	RT-9600 Control Unit, 150-174 MHz, 9600 Channel, 5V Integral Lights.	400-0073-020
C-962A-30	RT-9600 Control Unit, 150-174 MHz, 9600 Channel, 14V Integral Lights.	400-0073-030
C-963	Tone Burst Encoder, 5 Tones, Lighted, 1 1/8 Inch High, Dzus Rail Mount.	400-0068-000
HA-4-110	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Coil Cord, Light Ash	400-0101-110
HA-4-111	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Coil Cord, Beige	400-0101-111
HA-4-112	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Coil Cord, White	400-0101-112
HA-4-113	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Coil Cord, Black	400-0101-113
HA-4-114	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Coil Cord, Ivory	400-0101-114

1.6 SYSTEM COMPONENTS (cont.)

1.6.4 COMMERCIAL CONTROL UNITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
HA-4-210	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Clear Fire Retardant Cord, Light Ash	400-0101-210
HA-4-211	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Clear Fire Retardant Cord, Beige	400-0101-211
HA-4-212	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Clear Fire Retardant Cord, White	400-0101-212
HA-4-213	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Clear Fire Retardant Cord, Black	400-0101-213
HA-4-214	Handset Assembly, Modular, Push-To-Talk for FM, with Handset, Hanger and Clear Fire Retardant Cord, Ivory	400-0101-214

1.6.5 MILITARY CONTROL UNITS

JETDS NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
C-5333/ARC-513 (V)	Same as Discontinued C-960-0	400-0053-000
C-5368/ARC-513 (V)	Same as Discontinued C-964-1	400-0064-001
C-5413/ARC-513 (V)	Similar to Discontinued C-960-3 and having pre-programmed Diode Cards	400-0053-999

1.6 SYSTEM COMPONENTS (cont.)

1.6.5 MILITARY CONTROL UNITS (cont.)

JETDS NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
C-5421/ARC-513 (V)	Similar to the Discontinued C-962	400-0073-001
C-5422/ARC-513 (V)	Similar to the Discontinued C-722	400-0084-001

1.6.6 DISCONTINUED COMMERCIAL CONTROL UNITS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
C-722	RT-7200 Control Unit, 138-174 MHz, 7200 Channel	400-0084-000
C-920	RT-9600 Control Unit, 9600 Channel, up to 20 Simplex or Semi-Duplex Channels RT-9600 Control Unit, 9600 Channel, 11 diode-wired Preset Channels.	400-0057-000
C-960-0	With 28V DC Red Lights	400-0053-000
C-960-1	With 28V DC White Lights	400-0053-001
C-960-2	With 5V DC Red Lights	400-0053-002
C-960-3	With 5V DC White Lights	400-0053-003
C-961	Control Unit, 9600 Channel, 11 Preset Channel Rotary Switch, 14 or 28V DC lights, 3 inch Dzus	400-0060-000
C-962	Control Unit, 9600 Channel, 15 Operator Settable Preset Channel Rotary Switch Control, LED Frequency Readout	400-0073-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.6 DISCONTINUED COMMERCIAL CONTROL UNITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
	Brown color RT-9600 Control Unit, 9600 Channels, 11 diode-wired Preset Channels, "DF" Position on Function Switch.	
C-964-0	With 28V DC White Lights	400-0064-000
C-964-1	With 5V DC White Lights	400-0064-001

1.6.7 INSTALLATION KITS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN-96	RT-7200/RT-9600-24 Installation Kit with Shockmount, Crimp type Connector and Crimp Sockets.	149-0029-000
	Included in the IN-96:	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (61 ea)	129-1019-000
	Shockmount Assembly	300-2122-000
IN-96A	RT-7200/RT9600-24 Installation Kit with Rigidmount, crimp type Connector and Crimp Sockets	149-0029-001
	Included in the IN-96A	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (61 ea)	129-1019-000
	Spacer, 0.75 O.D. X 0.25 I.D. X 0.316L (08 ea)	129-0021-010
	Rigidmount Assembly	300-2122-002
IN-97	RT-9600-2 Installation Kit with Shockmount, Crimp type Connector, and Crimp Sockets.	149-0033-000
	Included in the IN-97:	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (61 ea)	129-1019-000
	Shockmount Assembly	300-2122-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.7 INSTALLATION KITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN-97A	RT-9600-2 Installation Kit with Rigidmount, Crimp Type Connector and Crimp Sockets.	149-0033-001
	Included in the IN-97A:	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (61 ea)	129-1019-000
	Spacer, 0.76 O.D. x 0.25 I.D. x 0.3161 (08 ea)	191-0021-010
	Rigidmount Assembly	300-2122-003
IN-722/962	Installation Kit, C-722A/C-962A Control with Solder Type Connectors.	149-0034-000
	Included in the IN-722/962:	
	Large End Disc Latch with Screws and Nuts (02 ea)	129-1012-000
	Small End Disc Latch with Screws and Nuts (02 ea)	129-1013-000
	Large Junction Shell	129-1020-000
	Small Junction Shell	129-1021-000
	Plug, 50S, Rectangular, Solder	129-2033-000
	Plug, 25S, Rectangular, Solder	129-2034-000
	Rubber Cable, Boot, 0.312 I.D.	129-0004-000
	Rubber Cable Boot, 0.437 I.D.	179-0006-000
IN-722/962-1	Installation Kit, C-722A/C962A Control with Crimp Type Connector and Crimp Sockets.	149-0034-001
	Included in the IN-722/962-1:	
	Large End Disc Latch with screws and nuts (02 ea)	129-1012-000
	Small End Disc Latch with screws and nuts (02 ea)	129-1013-000
	Large Junction Shell	129-1020-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.7 INSTALLATION KITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN-722/962-1 (cont.)	Small Junction Shell	129-1021-000
	Crimp Socket, No.20, D Style (75 ea)	129-1046-000
	Plug, 50S D Submin, Crimp less contacts	129-2139-000
	Plug, 25S, D Submin, Crimp less contacts	129-2140-000
	Cable Boot, 0.312 I.D.	179-0004-000
	Cable Boot, 0.437 I.D.	179-0006-000

1.6.8 INSTALLATION CONNECTOR KITS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN-96A-2	Plug, 67S, DPXB, Crimp Type with sockets for Recessed Transceiver connector.	149-0029-002
	Included in the IN-96A-2:	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (64 ea)	129-1019-000
	Plug 67S, Arinc, Crimp less sockets	129-2040-000
IN-97A-2	Plug, 67S, DPXB, Crimp Type with sockets for Protruding Transceiver Connector.	149-0033-002
	Included in the IN-97A-2:	
	Size 16 Socket (03 ea)	129-1017-000
	Size 20 Socket (64 ea)	129-1019-000
	Jack, 67S, Arinc, crimp less sockets	129-2045-000
IN-960	Plug, 22-55S, Round Cable Mounting, solder with cable boot	149-0030-000
	Included in the IN-960:	
	Plug, 22-55S, Cable Mtg, Solder	129-2042-000
	Rubber Cable Boot, 0.437 I.D.	179-0006-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.8 INSTALLATION CONNECTOR KITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN722/962-2	Plug 25S, D, Solder Type with latches and cable boot.	149-0034-002
	Included in the IN-722/962-2:	
	Small End Disc Latch with screws and nuts (02 ea)	129-1020-000
	Small Junction Shell	129-1021-000
	Plug, 25S, D, Submin, Solder	129-2034-000
	Cable Boot, 0.312 I.D.	179-0004-000
IN-722/ 962-3	Plug, 50S, D, Solder Type with latches and cable boot.	149-0034-003
	Included in the IN722/962-3:	
	Large End Disc Latch with screws and nuts (02 ea)	129-1013-000
	Large Junction Shell	129-1020-000
	Plug, 50S, D, Submin, Solder	129-2033-000
	Rubber Cable Boot, 0.437 I.D.	179-0006-000
IN-722/ 962-4	Plug, 25S, D, Crimp type with Sockets, latches and cable boot.	149-0034-004
	Included in the IN-722/962-4:	
	Small End Disc Latch with screws and nuts (02 ea)	129-1013-000
	Small junction shell with screws and nuts (02 ea)	129-1021-000
	Crimp Sockets, No.20, D style (25 ea)	129-1046-000
	Plug, 25S, D, Submin, crimp less sockets	129-2140-000
	Rubber Cable Boot, 0.312 I.D.	179-0004-000
IN-722/ 962-5	Plug, 50S, D, Crimp type with sockets, latches and cable boot	149-0034-005
	Included in the IN-722/962-5:	
	Large End Disc Latch with screws and nuts	129-1012-000
	Large Junction Shell	129-1020-000
	Crimp Sockets, No.20, D style (50 ea)	129-1046-000
	Plug, 50S, D, Submin, crimp less sockets	129-2139-000
	Rubber Cable Boot, 0.437 I.D.	179-0006-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.8 INSTALLATION CONNECTOR KITS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
IN-963	Plug, 9S, Rectangular, with hood, lever locks, and Cable Boot.	149-0041-000
	Included in the IN-963:	
	Plug, 9S, Rectangular with hood and lever locks	129-2018-000
	Rubber Cable Boot, 0.220 I.D.	179-0005-000
IN-200-0	Plug, 22-55S, Round Cable Mounting, Crimp Type with Sockets and Cable Boot	149-0058-000
	Included in the IN-200-0:	
	Crimp Sockets, No. 20 (55 ea)	129-1041-000
	Plug, 22-55S, cable mount, crimp less sockets	129-2109-000
	Rubber cable boot, 0.437 I.D.	179-0006-000

1.6.9 ANTENNAS, MICROPHONE AND ACCESSORY

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
AT-31	Antenna, D and M, 30-50 118-152, 138-174 MHz Broadband Blade	121-0016-000
AT-690	Antenna, High-Band VHF, 17 inch Fiberglass Whip	121-0004-000
AT-695	Antenna, High-Band VHF, Whip, 4-Hole Mtg	121-0019-000
AT-960	Antenna, High-Band VHF Jet Blade	121-0010-000
M-66T	Microphone, Telex 66T Aircraft, Noice Canceling	137-0022-000
TC-1	Transportable Case, Samsonite, for RT-7200/RT-9600 Systems	400-0104-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.10 MODULES AND CRYSTALS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
XTL-MC96EU	RT-7200/RT-9600 Guard Receiver Module crystal ground for specified frequency per each, installed by user	139-0046-000
MC-72A-0	R/T Module, RT-7200	300-2165-000
MC-72B-0	Synthesizer Module, RT-7200	300-2166-000
MC-72E-0	Two Channel Guard Receiver Module, RT-7200	300-2169-000
MC-96A	R/T Module, RT-9600	300-2097-000
MC-96B	Synthesizer Module, RT-9600	300-2098-000
MC-96C	Power Supply Module, RT-7200 and RT-9600	300-2099-000
MC-96D-1	Audio Module, 100 mWatt, RT-7200 and RT-9600-2/27	300-2100-001
MC-96E-1	Two Channel Guard Receiver Module, RT-9600	300-2101-001
MC-96F-0	Tone Squelch Module, eight subaudible CTCSS Tones, RT-7200 and RT-9600	300-2102-000
HC-4-000	HA-4/WH-5 Handset Coil Cord, Modular Plugs, Light Ash	123-1025-000
HC-4-001	HA-4/WH-5 Handset Coil Cord, Modular Plugs, Beige	123-1025-001
HC-4-002	HA-4/WH-5 Handset Coil Cord, Modular Plugs, White	123-1025-002
HC-4-003	HA-4/WH-5 Handset Coil Cord, Modular Plugs, Black	123-1025-003

1.6 SYSTEM COMPONENTS (cont.)

1.6.10 MODULES AND CRYSTALS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
HC-4-004	HA-4/WH-5 Handset Coil Cord, Modular Plugs, Ivory	123-1025-004
HC-4F-0	HA-4/WH-5 Clear Fire Retardant Handset Coil Cord, Modular Plugs	123-1026-000
HC-4R-0	HA-4/WH-5 Retractable Cord Unit, Black Case, Modular Plug, Grey Cord	300-2265-000
HH-4-010	HA-4 Handset Hanger, for use with Semi-Duplex Flitecomm FM, Light Ash	400-0101-010
HH-4-011	HA-4 Handset Hanger, for use with Semi-Duplex Flitecomm FM. Beige	400-0101-011
HH-4-012	HA-4 Handset Hanger, for use with Semi-Duplex Flitecomm FM, White	400-0101-012
HH-4-013	HA-4 Handset Hanger, for use with Semi-Duplex Flitecomm FM, Black	400-0101-013
HH-4-014	HA-4 Handset Hanger, for use with Semi-Duplex Flitecomm FM, Ivory	400-0101-014
HS-4-020	HA-4 PTT Handset, for use with Flitecomm and Flexcomm FM, Light Ash	300-2174-020
HS-4-021	HA-4 PTT Handset, for use with Flitecomm and Flexcomm FM, Beige	300-2174-021

1.6 SYSTEM COMPONENTS (cont.)

1.6.10 MODULES AND CRYSTALS (cont.)

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
HS-4-022	HA-4 PTT Handset, for use with Flitecomm and Flexcomm FM, White	300-2174-022
HS-4-023	HA-4 PTT Handset, for use with Flitecomm and Flexcomm FM, Black	300-2174-023
HS-4-024	HA-4 PTT Handset, for use with Flitecomm and Flexcomm FM, Ivory	300-2174-024

1.6.11 MAINTENANCE MANUALS

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
SM-9600	Maintenance Manual - RT-9600	150-0058-000
SM-7200	Maintenance Manual - RT-7200	150-0082-000
SM-722/722A/ 962/962A	Maintenance Manual, C-722/ C-722A/C-962/C-962A Control Units	150-0073-000
SM-963	Maintenance Manual, C-963 Control Unit	150-0068-000
SM-TC1	Maintenance Manual, TC-1 Transportable Case	150-0103-000

1.6 SYSTEM COMPONENTS (cont.)

1.6.12 TEST EQUIPMENT

MODEL NUMBER	DESCRIPTION	WULFSBERG PART NUMBER
EC-41	Module Extender Card, RT-9600	300-2084-000
EC-962	Logic Board Extender Cable C-722A/C-962A	149-0051-000
TS-961	VHF FM High-Band Synthesized Control Unit to Test RT-7200/ RT-9600 Transceivers	400-0089-000
TSH-96	Bench Test Harness Kit, RT-7200/RT-9600	149-0050-000

1.6.13 MILITARY ACCESSORIES

JETDS NUMBER	DESCRIPTION	WEI PART NUMBER
MT-5178/ ARC-513(V)	Transceiver Shockmount, same as IN-96	149-0029-000
AS-5103/ ARC-513(V)	Antenna, same as the AT-960	121-0010-000
TS-5125/ ARC-513(V)	Test Set, 138 to 174 MHz, for testing the RT-5052/ ARC-513(V) and RT-5065/ ARC-513(V) Transceivers	400-0091-000
TS-5141/ ARC-513(V)	Test Set, 138 to 174MHz, for testing the C-5333, C5368, C-5413, C-5421, and C-5422 Control Units	400-0067-001

1.7 CONTROL FUNCTION

The function of each control on the C-960 and C-961 (identical in features and functions to that of the C-960) are shown in Figure 1.7-1. The C-961 has an additional feature from that of the C-960. Above the thumbwheels there is an additional space for a stick-on label (WEI P/N 156-0096-000) to indicate the preset frequencies installed. The functions and controls of the C-722/C-962 are shown in Figure 1.7-2, those of the C-722A/C-962A in Figure 1.7-3 and those of the C-920 in Figure 1.7-4.

NOTE

The C-722/C-722A and C-962/C-962A Control Units have an internally accessible THUMBWHEEL ENABLE switch (A4S1C). When this switch is in the OFF position (leverarm away from PC board toward bottom of unit), the manual (M) channel selector position becomes inoperative.

When the THUMBWHEEL ENABLE switch (A4S1C) is in the ON position, any operator of the system must be responsible for assuring proper operation as required by FCC Rules and Regulations, paragraph 90.433.

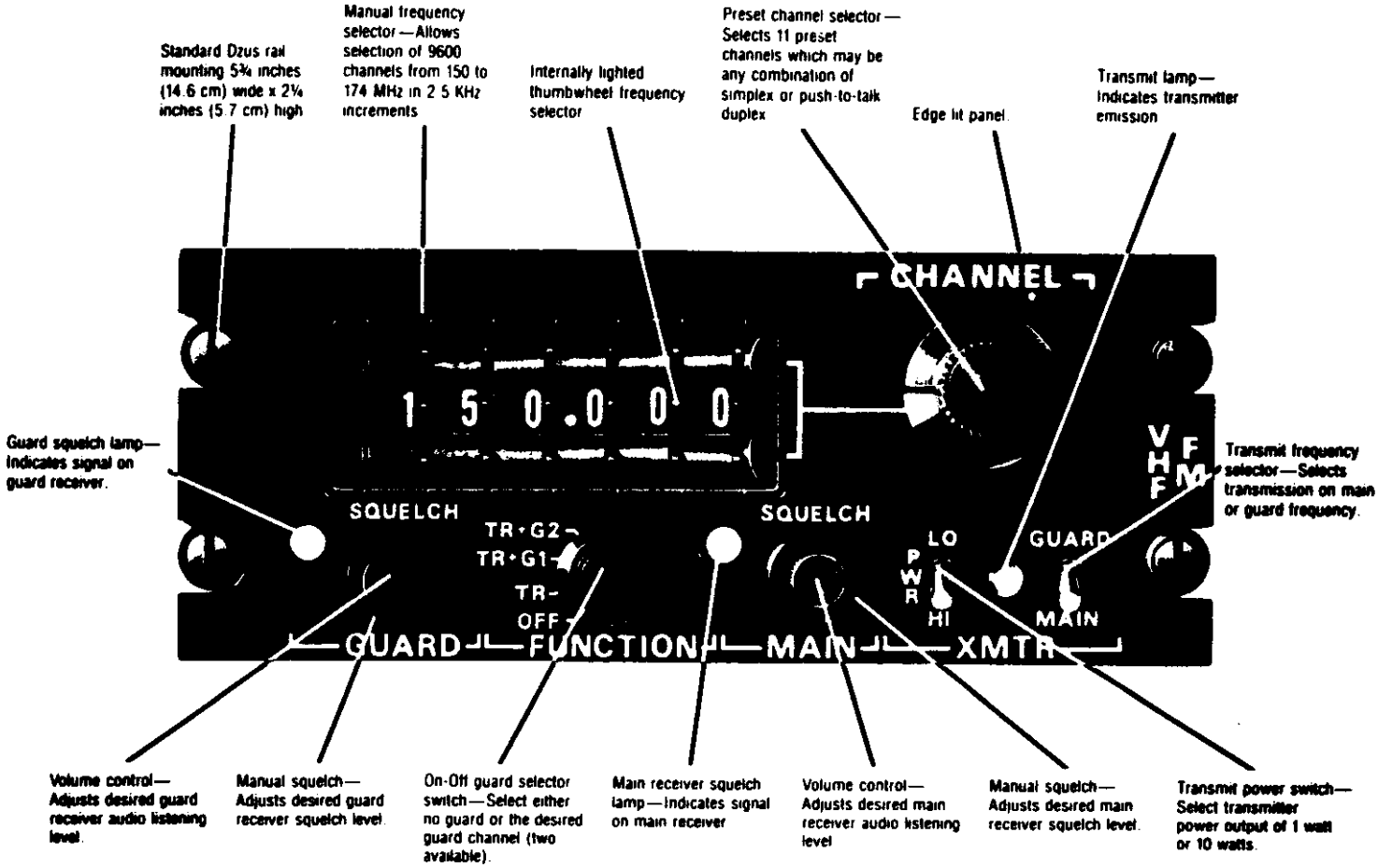
1.8 PRESET CHANNELS

Each of the control units feature the capability to preset the transmit and receive frequencies as well as the tone squelch frequencies. By inserting diodes in the channel cards as outlined in Section 1.10, it is possible to program the control unit to cause the transceiver to transmit on a different frequency than it receives and to use a different tone squelch, or none at all, on transmit than receive. Using the preset feature, there are no restrictions on transmit to receive frequency spacing or combinations of tone squelch functions. The C-722/C-722A/C-962/C-962A Control Units do not use diode channel cards, instead their channels are front panel programmable.

1.9 TONE SQUELCH (CTCSS)

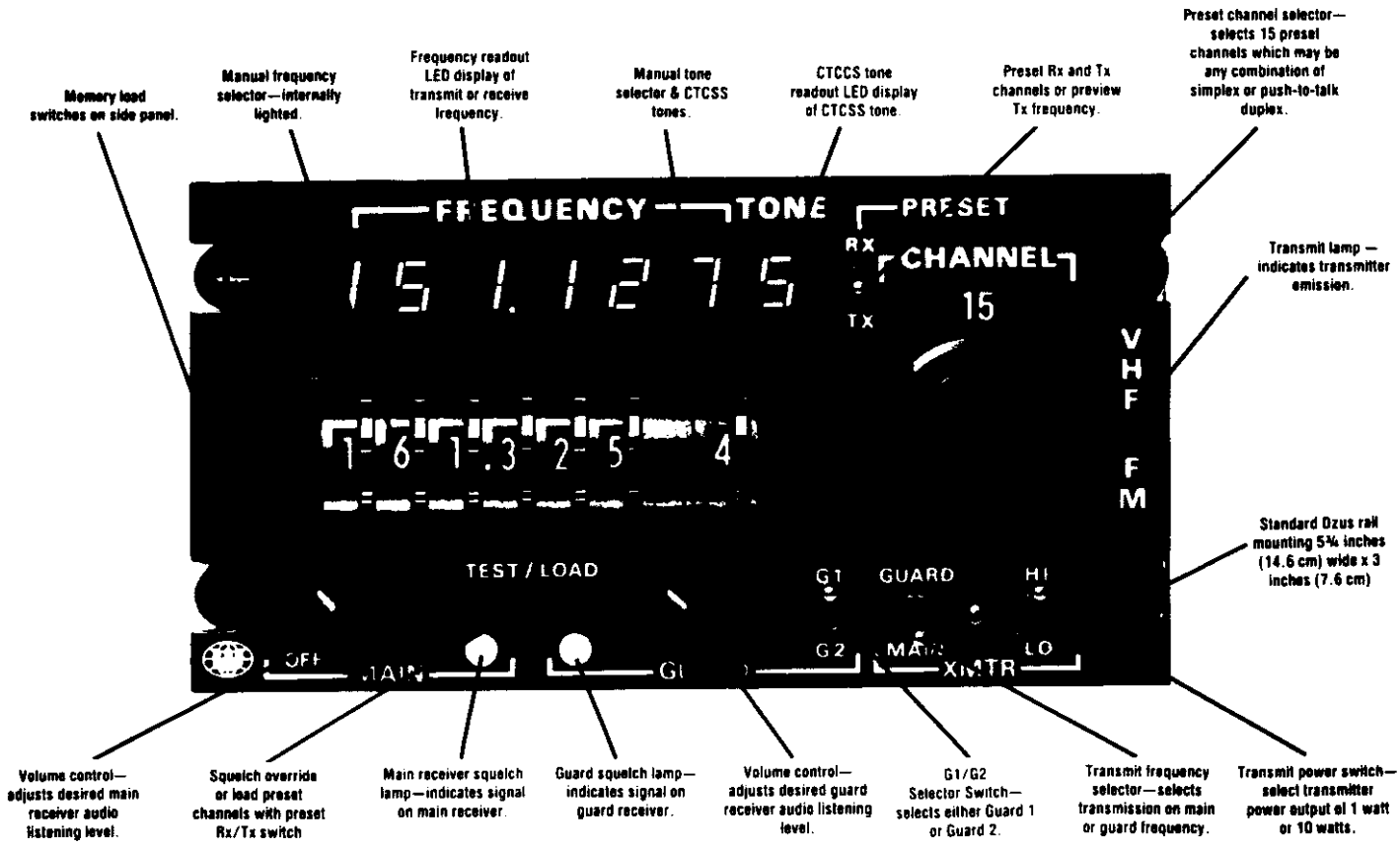
This is an option in the RT-7200/RT-9600 that will allow the receiver audio to be heard only when the transmitter being received is modulated with a continuous tone in the frequency range of 50 to 250 Hz. The exact frequency necessary to open the tone squelch is determined by the coding of the TONE SELECT lines in the transceiver See the RT-7200 or RT-9600 Maintenance Manual for adjustment details.

RT-7200, RT-9600, AN/ARC-513 (V)



CONTROLS AND FUNCTIONS OF THE
C-960 AND ARC-513 (V): C-5333, C-5368, C-5413
FIGURE 1.7-1

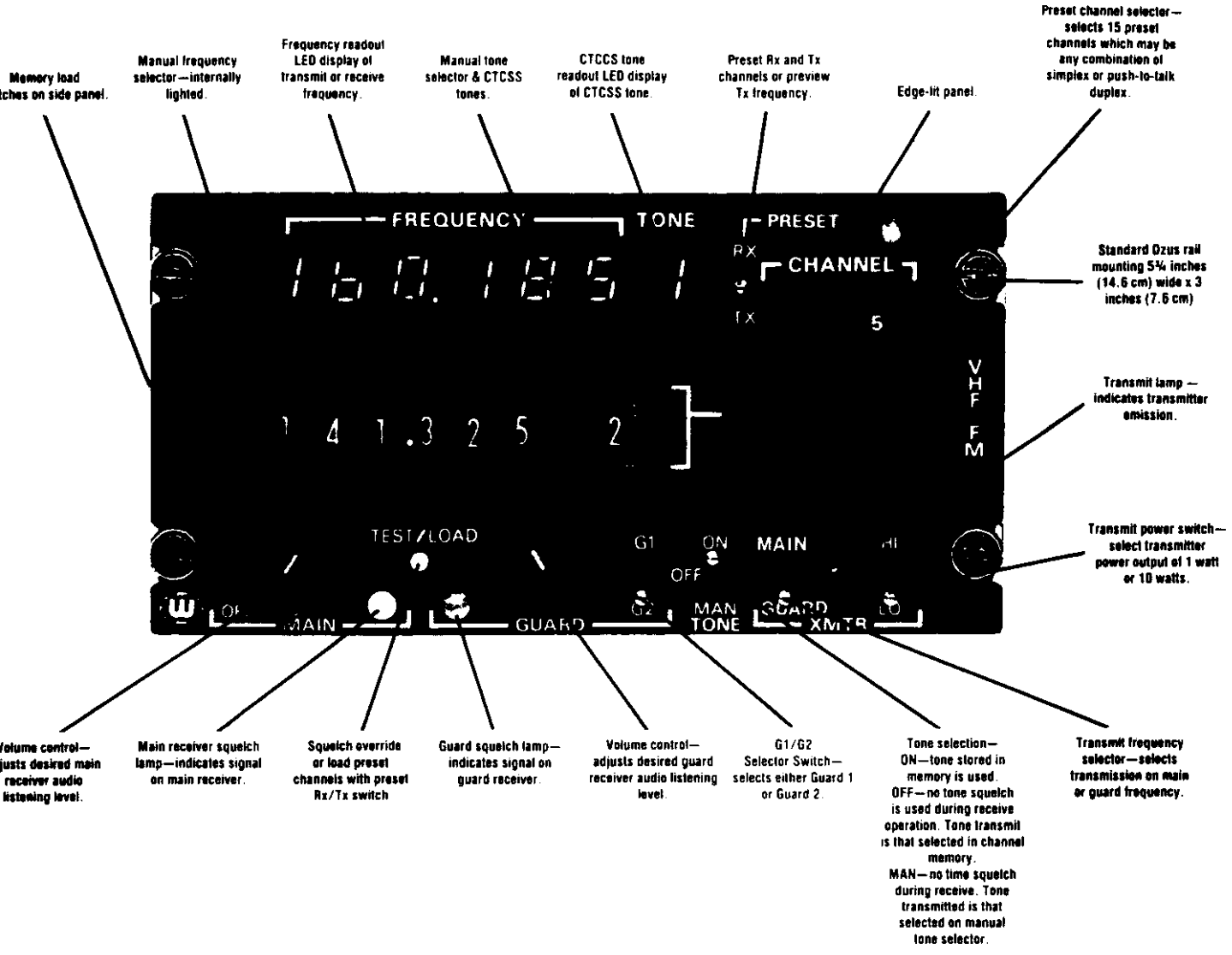
RT-7200, RT-9600, AN/ARC-513 (V)



NOTE: All C-722 and recent C-962 Control Units have an internally accessible THUMBWHEEL ENABLE switch (A4S1C). When this switch is placed in the OFF (leverarm away from PC Board towards bottom of unit) position, the manual M channel selector position becomes inoperative.

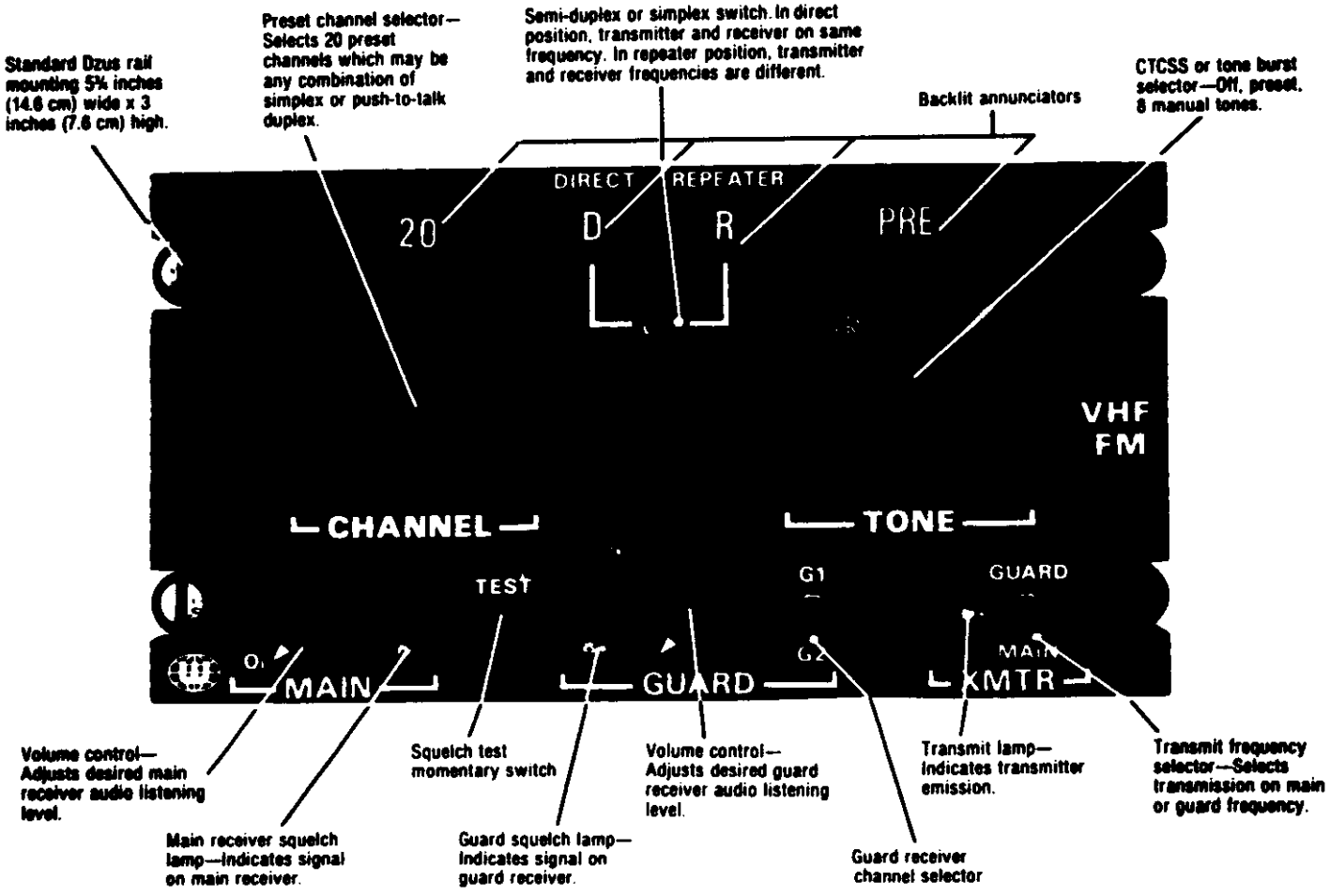
CONTROLS AND FUNCTIONS OF THE
C-722/C-962 AND ARC-513 (V): C-5421, C-5422
FIGURE 1.7-2

RT-7200, RT-9600, AN/ARC-513 (V)



NOTE: All C-722A and recent C-962A Control Units have an internally accessible THUMBWHEEL ENABLE switch (A4S1C). When this switch is placed in the OFF (leverarm away from PC Board towards bottom of unit) position, the manual M channel selector position becomes inoperative.

CONTROLS AND FUNCTIONS OF THE C-722A/C-962A
FIGURE 1.7-3



CONTROLS AND FUNCTIONS OF THE C-920
FIGURE 1.7-4

1.9 TONE SQUELCH (CTCSS) (cont.)

When used on transmit, the tone squelch signal will modulate the transceiver at a typical deviation of 700 Hz and will open the squelch on another receiver equipped to recognize the tone frequency being transmitted. The tone frequency transmitted is selected by the TONE SELECT lines in the same manner as the receive tone.

Tone squelch is not programmed on the MANUAL channel of the C-960 or C-961, but may be selected on any preset channel in the C-960, C-961 or C-920. To allow a squelch test to be heard on the C-960 or C-961, it is necessary to select a preset channel not having tone squelch programmed or to switch to the MANUAL channel.

For the C-722/C-722A/C-962/C-962A, the CTCSS tone squelch may be preset to one of eight possible tone frequencies, on each of the 15 programmable channels. The transmit and receive tones may be different. With the channel selector in the MANUAL position, the tone selection is directly controlled by the TONE THUMBWHEEL switch. Transmit and receive tones are the same for this condition.

1.10 PRESET CHANNEL PROGRAMMING INSTRUCTIONS FOR THE C-920, C-960 AND C-961

Four things (Receive Frequency, Transmit Frequency, Receive Tone Number, and Transmit Tone Number) must be known before a channel is programmed.

This information is then changed to Binary Coded Decimals by converting every number in each piece of data. Each tone number requires consideration of just one number (0 through 7) and each frequency requires conversion of seven numbers. For example, 173.9675 MHz has 7 numbers while tone 4 has one.

First, convert each number to 8-4-2-1 BCD with the following routine. Thinking of 1,2,4, and 8 select the appropriate combination that will add together to equal the number under consideration. For instance, 4 plus 2 equals six.

1.10 PRESET CHANNEL PROGRAMMING INSTRUCTIONS FOR THE C-920, C-960 AND C-961 (cont.)

Second, install diodes in the card locations corresponding to the combination of 1, 2, 4, and 8 selected. Since a 2 and a 4 are required to make the 6 needed in the example, place a diode in the 0.02 and the 0.04 position on the preset card to program the second digit to the right of the decimal point (the 6 in the example). To program the first digit to the right of the decimal use the 0.1, 0.2, 0.4, and 0.8 positions. For other positions use the locations labeled accordingly. The 100 and 40 locations are internally wired and consequently no diode positions will be found.

The right two numbers in the frequency are programmed slightly differently. To program them, simply disregard the rightmost number (5 in the example) and select the appropriate combination of 2 and 5 that adds to equal the next to rightmost number (7 in the example) and place diodes in those locations.

The Tone Number is programmed exactly like the frequency except on the Diode Card; A is used in place of 1, B in place of 2, C in place of 4, and D in place of 8 in programming tones. Always place a diode in the D location to enable the tone function even though it is not required to add up to the tone number desired. **LEAVE ALL TONE LOCATIONS (A, B, C, AND D) EMPTY IF NO TONE OPERATION IS DESIRED.**

Place all diodes on the side of the card with pin M and connect the cathodes to pin M for receive programming and to pin 11 for transmit programming.

The guard transmit frequencies are coded in the same way as the main frequencies with Guard 1 transmit diodes connected to pin M and Guard 2 transmit diodes connected to pin 11.

When the card is programmed, label it at the top with the frequencies programmed. Label the receive frequency on the side with pin M and the transmit frequency on the side with pin 11, and place it in the proper channel connector in the control unit. (See Figures 1.10-1 and 1.10-2).

Stick-on labels are provided for recording how a control unit is preset and should be affixed to the cover of the control unit. Replacement labels may be obtained from Wulfsberg by ordering part number 156-0094-000 for the C-960 and C-961 and 156-0106-000 for the C-920.

1.10 PRESET CHANNEL PROGRAMMING INSTRUCTIONS FOR THE C-920, C-960, AND C-961 (cont.)

The following are examples of where diodes would be placed to program various frequencies and tones.

156.690 Tone 2 Transmit

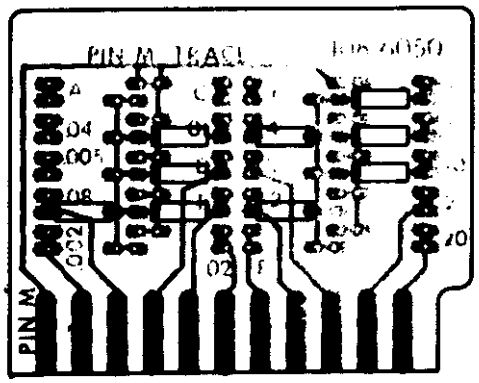
Diodes in lines labeled 10, 1, 4, 0.2, 0.4, 0.01, 0.08, B, D, with cathodes on trace to pin 11.

168.807 Tone 5 Receive

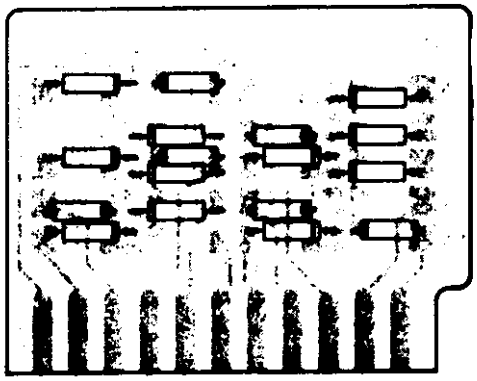
Diodes in lines labeled 20, 8, 0.8, 0.002, 0.005, A, C, D with cathodes on trace to pin M.

172.565 No Tone Guard 1 Transmit

Diodes in lines labeled 10, 20, 2, 0.1, 0.4, 0.02, 1.04, 0.005 with cathodes on trace to pin M.

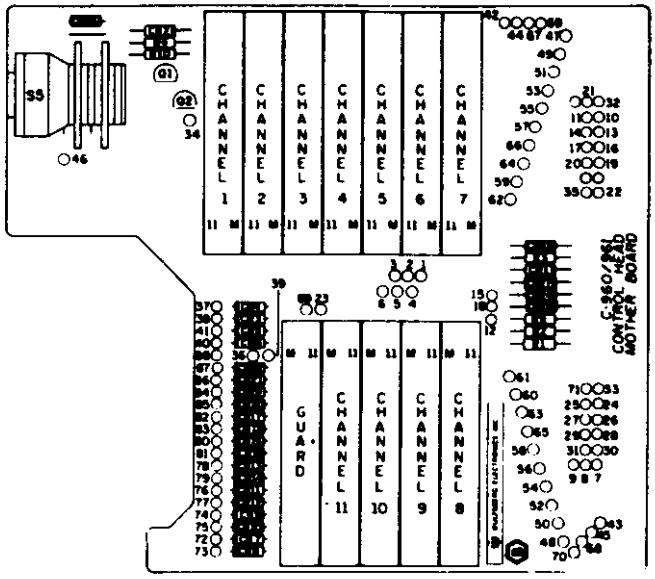


DIODES IN PLACE FOR
155.690 TONE 2 TRANSMIT



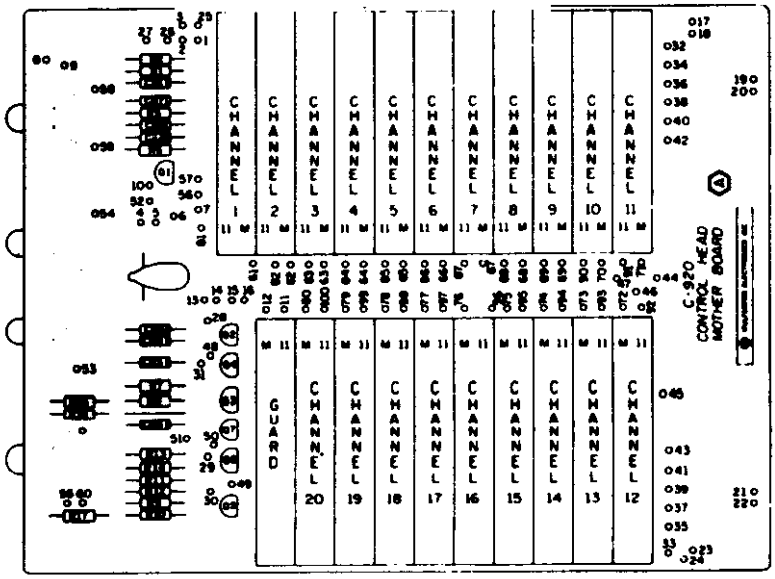
155.690 TONE 2 TRANSMIT
PLUS 168.8075 TONE 2 RECEIVE

FRONT
OF
CONTROL



C-960/C-961 PRESET CHANNEL CARD LOCATIONS
FIGURE 1.10-1

FRONT
OF
CONTROL



C-920 PRESET CHANNEL CARD LOCATIONS
FIGURE 1.10-2

1.11 PRESET CHANNEL PROGRAMMING INSTRUCTIONS FOR THE C-722/C-722A/ C-962/C-962A

NOTE

The C-722/C-722A and C-962/C-962A Control Units have an internally accessible THUMBWHEEL ENABLE switch (A4S1C). When this switch is in the OFF position (leverarm away from PC Board toward bottom of unit), the manual (M) channel selector position becomes inoperative.

When the THUMBWHEEL ENABLE switch (A4S1C) is in the ON position, any operator of the system must be responsible for assuring proper operation as required by FCC Rules and Regulations, paragraph 90.433.

1.11.1 THUMBWHEEL ENABLE FUNCTION

The THUMBWHEEL ENABLE FUNCTION is provided to prevent control unit programming by individuals not responsible for assuring proper operation per FCC Rules and Regulations, paragraph 90.433.

In order to program the preset channels on a C-722/C-722A or a C-962/C-962A (one having a Mod 1, or above, Logic Board) proceed as follows:

1. Set switch A4S1C to the ON (leverarm up) position. See Figure 1.11-1 for location and operation of switch.

2. Program the Main TX/RX and Guard TX (if desired) frequencies as described in Sections 1.11.2 and 1.11.3.

3. Set switch A4S1C to the OFF (leverarm down) position.

1.11.2 MAIN TX/RX FREQUENCY

1. Set switch A4S1 on Logic Board labled MEMORY LOAD to the ON position. Set A4S1C to the MAIN LOAD position. See Figures 1.7-2 and 1.7-3 for switch locations.

2. Select the desired channel to be programmed on the CHANNEL SELECTOR knob.

3. Set up TX frequency and CTCSS tone on the thumbwheels. (If no tone is desired, set the CTCSS selector to the OFF position.)

1.11 PRESET CHANNEL PROGRAMMING INSTRUCTIONS FOR THE C-722/C-722A/C-962/C-962A (cont.)

1.11.2 MAIN TX/RX FREQUENCY (cont.)

4. Set TX selector to MAIN.

5. Operate LOAD SELECT switch to TX LOAD position.

6. Push and release TEST/LOAD button. The TX frequency is now loaded for the selected channel.

7. Set up RX frequency and CTCSS tone on the thumbwheel.

8. Operate LOAD SELECT switch to RX LOAD position.

9. Push and release TEST/LOAD button. The RX frequency is now loaded for the selected channel.

10. Changes in stored channel information may be inhibited by operating MEMORY LOAD switch A4S1B to the OFF position.

CAUTION

All unallocated channel locations must be programmed to 1000.000 MHz TX and RX.

1.11.3 GUARD TX FREQUENCY

1. Set internal switch A4S1B on Logic Board labeled MEMORY LOAD to the ON position. Set internal switch A4S1A to the GUARD LOAD position.

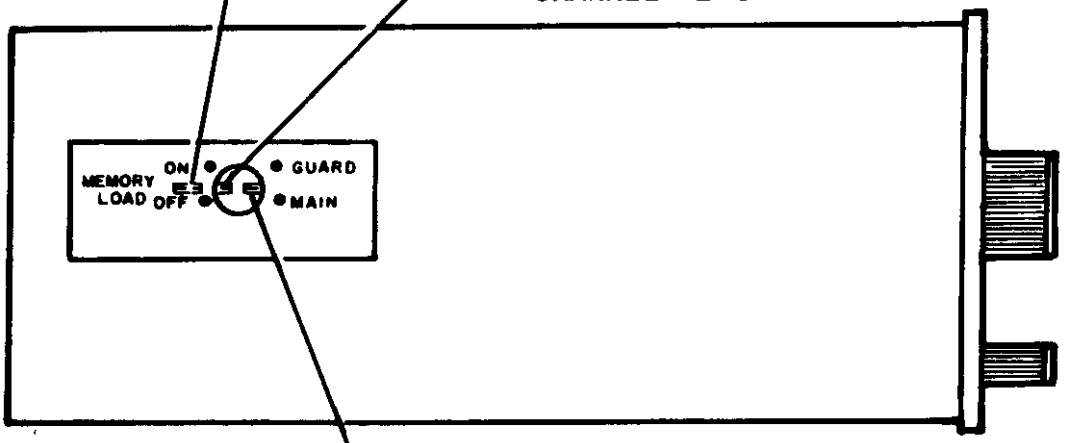
2. Any channel other than manual may be selected for the guard frequency programming operation.

3. Set GUARD TX SELECTOR switch to the particular Guard channel to be programmed (G1 or G2).

4. Set up TX frequency and CTCSS tone on the thumbwheels. (If no tone is required, set the TONE SELECTOR thumbwheel in the OFF position.)

5. Set TX-GUARD/MAIN selector to GUARD position.

6. Operate LOAD SELECT switch to TX LOAD position.



C-722A/C-962A OPERATIONAL MODE SWITCHES
FIGURE 1.11-1

1.11 PRESET CHANNEL PROGRAMMING INSTRUCTION FOR THE C-722/C-722A/C-962/C-962A (cont.)

1.11.3 GUARD TX FREQUENCY (cont.)

7. Push and release TEST/LOAD button. The Guard TX frequency is now loaded.

8. To load the other TX Guard frequencies, repeat steps 3 through 7.

9. Changes to guard frequencies may be inhibited by operating the internal MEMORY LOAD switch to the OFF position or by returning the GUARD/MAIN LOAD switch to the MAIN position.

NOTE

For proper control operation, the GUARD/MAIN switch MUST be returned to MAIN position.

CAUTION

Any unallocated Guard TX channel location(s) must be programmed to 100.0000 MHz.

1.12 FREQUENCY/TONE REVIEW (C-722/C-722A/C-962/C-962A)

NOTE: Do not operate the TEST/LOAD button during this procedure.

1.12.1 UNKEYED TRANSMITTER (C-722/C-962)

The frequency display will show the receive frequency and tone associated with the particular channel selected on the CHANNEL SELECTOR switch.

1.12.2 UNKEYED TRANSMITTER (C-722A/C-962A)

If the seven segment frequency display has been enabled by grounding rear connector P2, pin 23, the display will show the receive frequency and tone being used. To review channel memory of both frequency and tone information, make certain that the TONE switch is in the ON position, otherwise the tone stored in memory will not be displayed. If P2, pin 23 has not been grounded, the received frequency/tone information can still be reviewed by placing the PRESET switch into the RX position.

1.12 FREQUENCY/TONE REVIEW (C-722/C-722A/C-962/C-962A) (cont.)

1.12.3 KEYED TRANSMITTER (C-722/C-962)

The frequency display will immediately show the transmit frequency and tone. It may be different than the receive frequency, on any selected channel other than manual.

1.12.4 KEYED TRANSMITTER (C-722A/C-962A)

If the seven segment frequency/tone display has been enabled, then the display will show the transmitter frequency and tone being used as determined by the G1/G2, XMTR MAIN/GUARD, and TONE switches.

If it is desired to review the transmit channel memory of both frequency and tone without actually transmitting, make certain that the TONE switch is in either the ON or the OFF position. Then place the PRESET switch into the TX position. This will display the transmit channel memory as determined by the G1/G2 and XMTR MAIN/GUARD switches.

1.13 MANUAL OPERATION (C-722/C-722A/C-962/C-962A)

1. Rotate the CHANNEL SELECTOR switch to the manual channel.

2. Set the thumbwheels to the frequency and tone desired. The selected frequency and tone is common to both transmit and receive operations (Simplex channel).

NOTE

The C-722/C-722A and C-962/C-962A Control Units have an internally accessible THUMBWHEEL ENABLE switch (A4S1C). When this switch is in the OFF position (leverarm away from PC Board towards bottom of unit), the manual (M) channel selector position becomes inoperative.

When the THUMBWHEEL ENABLE switch (A4S1C) is in the ON position, any operator of the system must be responsible for assuring proper operation as required by FCC Rules and Regulations, paragraph 90.733.

1.14 SPECIAL OPERATIONAL CONSIDERATIONS FOR DIRECTION FINDING APPLICATIONS

The RT-7200 and RT-9600 are designed to interface with available DF and ADF equipment that use the commutated antenna technique for generating an amplitude modulated RF envelope, the phase of which contains relative bearing information.

Systems that use high commutation rates (above several kHz), such as the Collins DF301E, require that certain FM communication compromises be made. As the signal is being monitored (while in the DF mode), its modulation can become distorted and noisy, sometimes to the point of being unintelligible, and the squelch performance can become erratic to the point of full squelch blocking. These factors do not compromise the full and accurate performance of the direction finder. It works as well as it is designed to work with any AM transceiver. The compromise is limited to the occasional inability to intelligibly communicate with the homing signal.

A further caution to consider is that inherent to its design, the Collins DF301E produces sidelobes of receiver responses which theoretically make possible false pointing on strong, nearby off-frequency signals. (This consideration is not limited to interfaces with the RT-7200 or RT-9600 only.) Depending on the frequency difference to the off-frequency interfering signal the distance relationship from the aircraft to the homing signal and from the aircraft to the off-frequency interfering signal needs to be kept less than 50 to 1, typically, to eliminate this potential. (This caution typically does not apply to systems using subaudible commutation rates.)