UHF FM TRANSCEIVER

TK-890/(B)
TK-890H(B)

SERVICE MANUAL REVISED

KENWOOD

B51-8439-10 (N) 1233

This service manual applies to products with 30300001 or subsequent serial numbers. (KCH-10 and KCH-11 are applicable to the productions June 2001 and after.)
In terms of the products with the serial numbers earier than 30300001, refer to the TK-890/(B)/H(B) service manual as per part No. B51-8439-00 and the TK-890(B) service manual as per part No. B51-8457-00.

TK-890 or TK-890(B) with KCH-10

KCH-11

TK-890H(B)

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GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, and chassis. If the part number is not known, include the chassis or kit number of which it is a part and a sufficient description of the required component, for proper identification.

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by only qualified technicians.

GENERAL

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

Unpack the radio from its shipping container and check for accessory items. If any item is missing, please contact KENWOOD immediately.

2. LICENSING REQUIREMENTS

Federal regulations require a station license for each radio installation (mobile or base) be obtained by the equipment owner. The licensee is responsible for ensuring transmitter power, frequency, and deviation are within the limits permitted by the station license.

Transmitter adjustments may be performed only by a licensed technician holding an FCC first, second or general class commercial radiotelephone operator's license. There is no license required to install or operate the radio.

3. PRE-INSTALLATION CHECKOUT

3-1. Introduction

Each radio is adjusted and tested before shipment. However, it is recommended that receiver and transmitter operation be checked for proper operation before installation.

3-2. Testing

The radio should be tested complete with all cabling and accessories as they will be connected in the final installation. Transmitter frequency, deviation, and power output should be checked, as should receiver sensitivity, squelch operation, and audio output. QT equipment operation should be verified.

4. PLANNING THE INSTALLATION

4-1. General

Inspect the vehicle and determine how and where the radio antenna and accessories will be mounted.

Plan cable runs for protection against pinching or crushing wiring, and radio installation to prevent overheating.

4-2. Antenna

The favored location for an antenna is in the center of a large, flat conductive area, usually at the roof center. The trunk lid is preferred, bond the trunk lid and vehicle chassis using ground straps to ensure the lid is at chassis ground.

4-3. Radio

The universal mount bracket allows the radio to be mounted in a variety of ways. Be sure the mounting surface is adequate to support the radio's weight. Allow sufficient space around the radio for air cooling. Position the radio close enough to the vehicle operator to permit easy access to the controls when driving.

4-4. DC Power and wiring

1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.
2. Connect the positive power lead directly to the vehicle battery positive terminal. Connecting the Positive lead to any other positive voltage source in the vehicle is not recommended.
3. The cable provided with the radio is sufficient to handle the maximum radio current demand. If the cable must be extended, be sure the additional wire is sufficient for the current to be carried and length of the added lead.

5. INSTALLATION PLANNING – CONTROL STATIONS

5-1. Antenna system

Control station. The antenna system selection depends on many factors and is beyond the scope of this manual. Your KENWOOD dealer can help you select an antenna system that will best serve your particular needs.

5-2. Radio location

Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply to allow adequate cooling.

SERVICE

This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

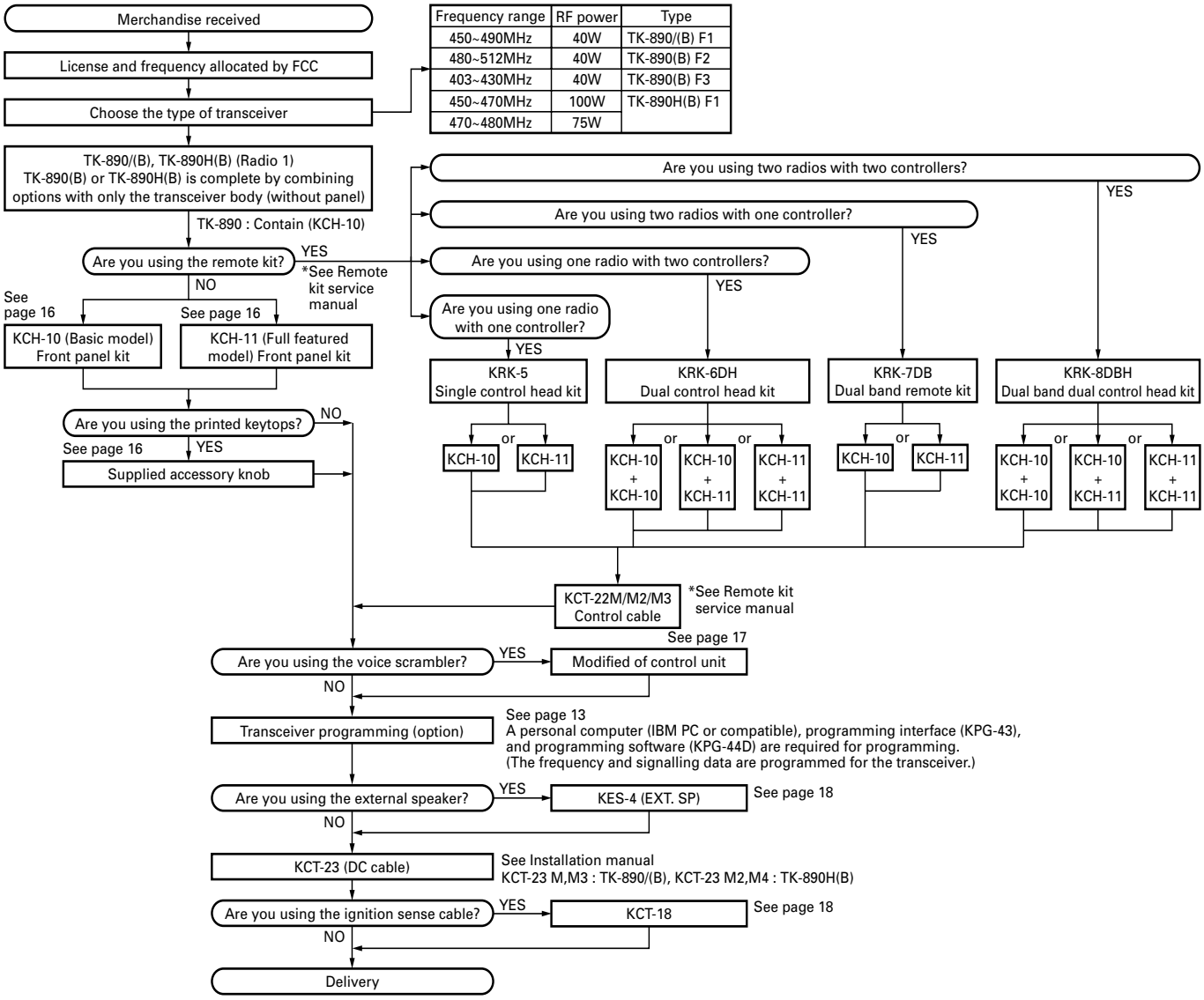
SYSTEM SET-UP

Before Reading About System Set-up

The TK-890(B)/H(B) is a transceiver main unit (without a panel or speaker) that you complete by adding options.

The options are classified into three types according to operation and function.

1. Install the front panel kit (controller) directly on a radio to operate it. (Form : Radio + KCH-10/11)
2. Remotely control one radio with one controller. (Form : Radio + KRK-5 + KCH-10/11 + KCT-22M/M2/M3)
3. Remotely control one radio with two controllers. (Form : Radio + KRK-6DH + KCH-10/11 (two) + KCT-22M/M2/M3 (two))
4. Remotely control two radios with one controller. (Form : Radios (two) + KRK-7DB + KCH-10/11 + KCT-22M/M2/M3)
5. Remotely control two radios with two controllers. (Form : Radio (two) + KRK-8DBH + KCH-10/11 (two) + KCT-22M/M2/M3 (two))



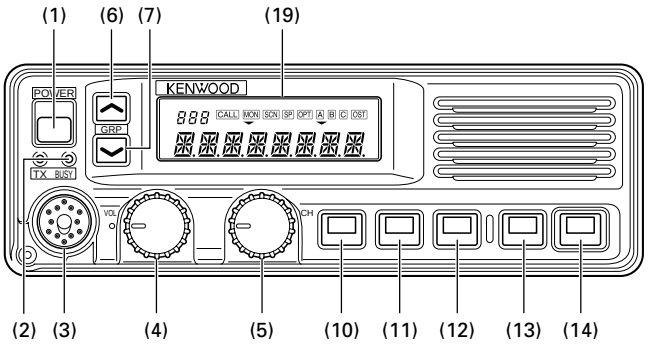
*Service manual parts No. list

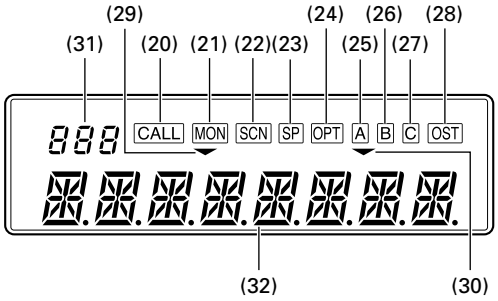
Model	Parts No.
KRK-5/6DH	B51-8445-00
KRK-7DB/8DBH	B51-8452-00

OPERATING FEATURES

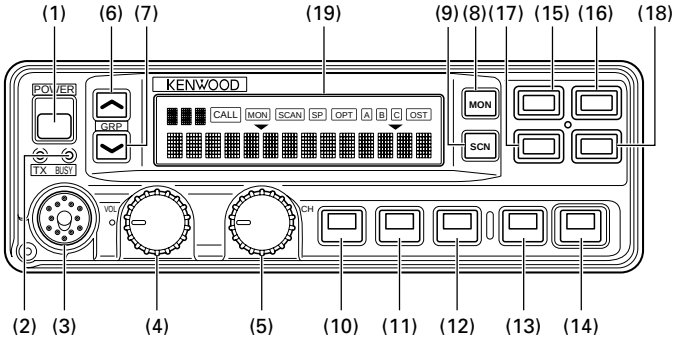
1. Controls and Functions

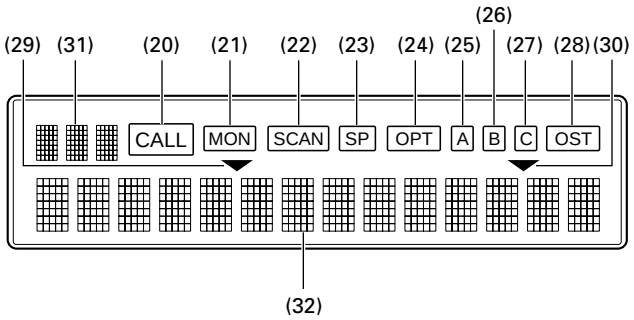
1-1. Basic Function Panel





1-2. Full Function Panel





(1) POWER Switch
Press to turn the power ON and OFF.

(2) TX/BUSY Indicator
The TX Indicator (Red LED) shows that you are transmitting.
The BUSY Indicator (Green LED) shows that the channel is in use.

(3) Microphone Connector

(4) Volume Knob
To increase the volume level, turn clockwise (CW).
To decrease the volume level, turn counterclockwise (CCW).

(5) UP/DOWN Knob
The function of this Knob can be programmed by the FPU.

Function	Description	Note
Channel UP/DOWN	Channel selector. To increase the channel, turn CW. To decrease the channel, turn CCW.	Default setting.
Group UP/DOWN	Group selector. To increase the group, turn CW. To decrease the group, turn CCW.	

(6) GR UP Key, (7) GR DW Key, (8) MON Key, (9) SCN Key, (10)~(18) PF1-9 Key
The function of these Keys can be programmed by the FPU.

Function [ ] : Key top name	Description	Note
No Function	No function.	Default setting of PF1~9.
Monitor [MON]	If [MON] is pressed once while the RADIO is waiting for reception, all signalling* squelch is canceled. If [MON] is held down for 2 seconds, noise squelch is canceled and the audio is unmuted.	Default setting of MON. (Full function panel) all singalling; QT/DQT & 2 TONE/DTMF
Scan [SCN]	Start and stop the scanning sequence.	Default setting of SCN. (Full function panel)
Public Address [PA]	The RADIO works as a PUBLIC ADDRESS amplifier.	
Horn Alert [HA]	When the RADIO receives a the optional signalling calls that are assigned to the channel, the HA relay turns on.	
Talk Around [TA]	Use this function to communicate with other operators directry, without using a repeater.	
Intercom [IC]	Use this function to communicate between the HEAD1 and HEAD2 operator without transmitting.	Dual HEAD configuration only.

OPERATING FEATURES

Function [ ] : Key top name	Description	Note
Channel Name [AN]	Switches the display between Group-Channel No. and Group channel name.	
Speaker Internal/ External [SP]	Switch the audio output between Internal speaker and PA speaker.	
Delete/ Add [D/A]	Changes the Scan DELETE/ADD setting of each channel or group.	Press and hold [D/A] for more than 2 seconds to toggle a Group DEL and ADD.
Squelch Level [SQL]	Press to enter Squelch Level Adjust Mode. The Squelch level can be adjusted by using the UP/DOWN Knob, or the preprogrammed channel Up/Down key or Group Up/Down key.	
Operator Selectable Tone [OST]	Select signalling from the pre-programmed QT/DQT list.	
Scrambler [OPT]	The optional board on and off.	Install the Scrambler board.
AUX A [AUXA]	Turns AUX A port on and off.	
AUX B [AUXB]	Turns AUX B port on and off.	
AUX C [AUXC]	Turns AUX C port on and off.	
Home Channel (Fixed) [HC]	Switches to the pre-programmed Home Channel.	
Home Channel (Toggle) [HC]	When pressed once, switches to the Home Channel. Press again to returns to the previous channel.	
CH1 Direct [CH1]	Switches to the GR1-CH1 directry.	
CH2 Direct [CH2]	Switches to the GR1-CH2 directry.	
CH3 Direct [CH3]	Switches to the GR1-CH3 directry.	
CH4 Direct [CH4]	Switches to the GR1-CH4 directry.	
CH5 Direct [CH5]	Switches to the GR1-CH5 directry.	
Channel Recall [RCL]	When pressed once, switches to the last called channel. Press again to return to the previous channel.	The [RCL] Key works in Scan Mode only.
Dimmer [DIM]	Use this function to adjust the LCD backlight brightness, Key backlight, TX/BUSY LED, and DTMF Mic Key backlight ON/OFF.	

Function [ ] : Key top name	Description	Note
Speaker 1-2 Mute [SPM]	Each speaker audio can be manually disabled from the other control head.	Dual HEAD configuration only.
Channel UP [∧]	If [∧] is pressed once, the channel increases by one step. If [∧] is held down for 1 second, the channel increases continuously.	
Channel DOWN [∨]	If [∨] is pressed once, the channel decreases by one step. If [∨] is held down for 1 second, the channel decreases continuously.	
Group UP [∧]	If [∧] is pressed once, the group increases by one step. If [∧] is held down for 1 second, the group increases continuously.	
Group DOWN [∨]	If [∨] is pressed once, the group decreases by one step. If [∨] is held down for 1 second, the group decreases continuously.	
Mobile Relay Station [RPT]	The RADIO works as a repeater.	Dual BAND configuration only.
Emergency Call [EMG]	To start an Emergency Call, press [EMG].	This function needs the ANI board.

(19) LCD Display

	Description	Note
(20) CALL	Flashes when the RADIO is called by proper Optional Signalling (DTMF or 2Tone).	If Signalling has been set "AND", CALL lights after transmitting.
(21) MON	Lights when [MON] is pressed. Signalling squelch is disabled.	
(22) SCN	Indicates when scan mode is enabled.	
(23) SP	Lights when "PA speaker" is selected for audio output.	
(24) OPT	Lights when the optional board*, that is installed inside the RADIO, is enabled.	Optional Board : · Scrambler
(25) A	Lights when [AUXA] is pressed. The PF Port that is programmed with "AUX A" is ON.	
(26) B	Lights when [AUXB] is pressed. The PF Port that is programmed with "AUX B" is ON.	

OPERATING FEATURES

	Description	Note
(27) C	Lights when [AUXC] is pressed. The PF Port that is programmed with "AUX C" is ON.	
(28) OST	Lights when [OST] is pressed, Operator Selectable Tone is enabled.	
(29) ▼ (Group Add Status)	If the selected group is in the multi group scan sequence, the indicator appears at the group.	
(30) ▼ (Channel Add Status)	If the selected channel is in the scan sequence, the indicator appears at the channel.	
(31) • BASIC FUNCTION PANEL 7 SEGMENT display • FULL FUNCTION PANEL DOT MATRIX (S) display	Displays the channel status. P1 : Lights when a PRIORITY 1 channel is shown on the display. P2 : Lights when a PRIORITY 2 channel is shown on the display. PP : Lights when a PRIORITY 1 & 2 channel is shown on the display. HC : Lights when a Home Channel is selected by [HC] key. TA : Lights when the RADIO is in Talk Around mode. RCL : Lights when recall channel is selected by [RCL] key. R1-R15 : Lights when remote channel is selected by PF port.	
(32) • BASIC FUNCTION PANEL 13 SEGMENT display • FULL FUNCTION PANEL DOT MATRIX (L) display	Displays the operating Group-Channel number (Channel display), or name (Alphanumeric display) programmed by the FPU. Also displays the status of some features.	

1-3. Microphone

Press PTT (Push To Talk) to transmit, then speak into the microphone.

2. Receive

(1) To turn on the RADIO:
Press the Power Switch. The display and graphics illuminate to indicate the RADIO is ON.

(2) To adjust the volume level:
Turn the Volume Knob CW to increase the volume level. Turn the Volume Knob CCW to decrease the volume level.

(3) To select a Group:
Select a Group by rotating the UP/DOWN Knob which has been programmed with "Group UP/DOWN" or by pressing the Keys which have been programmed with "Group UP" and "Group DOWN".
If the "Channel Tracking Function" is enabled, the channel number will not change.

(4) To Select a Channel:
Select a Channel by rotaing the UP/DOWN Knob which has been programmed with "Channel UP/DOWN" or by pressing the keys which have been programmed with "Channel UP" and "Channel DOWN".

(5) To enter carrier squelch mode:
If you want to monitor a channel, press [MON] Key. If the "OFF HOOK Decode" function has been disabled, you can also enter monitor mode by taking the microphone off HOOK.

3. Transmit

(1) Normal ON HOOK Scan Mode
First, lift the microphone from the HOOK. The scanning stops temporarily and the OFF HOOK revert channel is displayed. Listen for a few seconds to make certain the channel is not being used.
OFF HOOK Scan MODE
If scanning, pressing the PTT switch will stop the RADIO on the OFF HOOK revert channel and begin transmission immediately.
Not Scan Mode
Pressing PTT starts transmission at the selected channel.

(2) Press PTT and start speaking. For best results, hold the microphone 1 to 1.5 inches from your mouth. Release PTT when your message is complete. Listen for a response.

(3) When your conversation is finished, replace the microphone on its hook.

4. Scan Operation

4-1. General

There are two "Mic HOOK" scan modes in which the RADIO can be programmed to operate.

- ON HOOK Scan
  Normal method of scanning that requires the microphone to be ON HOOK (hanged on the Mic Hanger) to initiate scan.
- OFF HOOK Scan
  The microphone does not have to be ON HOOK to initiate scan or to scan channels.

OPERATING FEATURES

(1) The scan feature is initiated by pressing the [SCN] Key.
(2) A single confirmation tone sounds, and scanning starts. If there is only one or no added channels, an error tone will sound and scanning will not start.
(3) The display shows "SCN" icon, and "SCAN" or the OFF HOOK Revert Channel Number (FPU setting).
(4) If the RADIO receives a proper signal while scanning, scanning stops temporarily, audio is unmuted, and the channel number or name is displayed.
If either "Priority1" or "Priority2" is programmed and scanning stops at a Normal Channel by receiving a signal, the RADIO watches for a signal on the Priority Channel periodically. When a signal exists on the Priority Channel, the channel will change from the Normal Channel to Priority Channel.
If both "Priority1" and "Priority2" are programmed and scanning stops at the Priority2 Channel by receiving a signal, the RADIO watches a signal on the Priority1 Channel periodically. When a signal exists on the Priority1 Channel, the channel will change from the Priority2 Channel to the Priority1 Channel.
If there is no Priority Channel programmed, the scanning stops at a channel and receives only that channel.
(5) If the [SCN] Key pressed again, Scan Mode ends at the revert channel, and two confirmation tones sound.

4-2. To Delete Undesired Channels

To temporarily delete undesirable channels, press [D/A] Key while the channel is displayed, and scanning resumes. (To temporarily delete Priority Channel 1 or 2, set the "Priority Temporary D/A" function to "YES".)

You can't delete a channel in Scan Mode under the following conditions:

- Priority Scan
  There is only channel beside the Priority Channel in the scan sequence.
- Non-priority Scan
  There are only 2 channels in the scan sequence. To restore the original scan sequence, either turn scan off and on or turn the RADIO off and on.

4-3. To Enter Carrier Squelch Scan While Scan is On

If you have pressed the [MON] Key, the MON indicator is turned on and the RADIO operates in carrier squelch scan.

5. Adding Channels and Groups to the Scan Sequence

(1) Channels
To add the currently displayed channel to the scan sequence, press [D/A] Key. The CH ADD indicator (▼) lights, and the channel is added to the scan sequence.
(2) Groups
To add the currently displayed group of channels to the scan sequence, hold down the [D/A] Key for 2 seconds. The GR ADD indicator (▼) lights, and the group is added to the scan sequence.

6. Deleting Channels and Groups from the Scan Sequence

(1) Channels
To delete a channel from the scan sequence press [D/A] Key. The CH ADD indicator (▼) goes off, and the channel is deleted from the scan sequence.
(2) Groups
To delete the currently displayed group of channels from the scan sequence, hold down [D/A] Key for 2 seconds. The GR ADD indicator (▼) goes off, and all the channels in the group are deleted from the multi group scan sequence.

7. Operator Selectable Priority

(1) Operator Selectable Priority1
If Priority1 has been set to "Operator Selectable", you can set the currently displayed channel as Priority1.
To set the currently displayed channel as Priority1, hold down the [SCN] Key and press the [MON] Key three times.
(2) Operator Selectable Priority2
If Priority2 has been set to "Operator Selectable" you can set the currently displayed channel as Priority2.
To set the currently displayed channel as Priority2, hold down the [SCN] Key and press the [MON] Key twice.

8. Talk Around (TA)

Talk Around is useful when you are close to other mobiles you want to talk to, or are outside the range of your repeater system.

Press the [TA] Key. A confirmation tone sounds, and "TA" (BASIC Panel : 7 segment, FULL Panel : DOT MATRIX (S)) is displayed. You can communicate without using a repeater.

To use a repeater, press [TA] again. A confirmation tone sounds, and "TA" goes off.

9. Horn Alert (HA)

If you are called from the base station using 2Tone/DTMF while you are away from your transceiver, you will be alerted by the vehicle horn or some other type of external alert. To turn the horn alert function on, press the [HA] Key. A confirmation tone sounds, and the display shows HORN ALERT (or HA).

If [HA] is pressed again, the horn alert function is turned off.

OPERATING FEATURES

10. Public Address (PA)

Public Address amplifies the microphone audio, and outputs it through a PA speaker. PA is activated by pressing the [PA] Key. A confirmation tone sounds, and the display shows PUBLIC ADDRESS (or PA). PA can be activated at anytime (scanning or non-scanning).

The RADIO continues to scan & receive calls while in PA mode. Pressing PTT activates PA, and will override an incoming call at anytime ; however, no RADIO transmission takes place. If [PA] is pressed again, a confirmation tone will sound, the display will return to the normal channel or SCAN display, and the PA function will turn off.

11. Speaker Internal/External (SP)

SP amplifies the received audio from the RADIO and outputs it through a PA speaker. SP is activated by pressing the [SP] Key. A confirmation tone sounds and the SP icon is displayed. SP can be activated at anytime (scanning or non-scanning).

The RADIO transmits and operates normally while SP is activated, but all received calls will be output through the PA speaker. If [SP] is pressed again, a confirmation tone sounds, the SP icon goes off and the SP function will turn off.

12. Channel Name (AN)

This function switches the 13-segment display (BASIC Panel) or DOT MATRIX (L) display (FULL Panel) between alphanumeric and Group-Channel number.

If you want to change from alphanumeric display to channel display, press [AN] Key. A confirmation tone sounds, and the alphanumeric display changes to the channel display.

If [AN] is pressed again, a confirmation tone sounds, and the channel display changes back to the alphanumeric display.

13. Intercom (IC) ; Dual Head Configuration only

Intercom (IC) allows one control head operator to talk to the another control head operator. IC mode is activated by pressing the [IC] Key. A confirmation tone sounds and the display shows INTERCOM. IC can be activated at anytime (scanning or non-scanning).

The RADIO continues to scan & receive calls while in IC mode. Pressing PTT activates IC and will override an incoming call at anytime ; however, no RADIO transmission takes place. If [IC] is pressed again, a confirmation tone sounds, the display returns to the normal channel or SCAN display, and the IC function will turn off.

14. Home Channel (HC)

This feature allows the radio operator to immediately select a pre-determined "Home Channel" by pressing the [HC] Key. HC can be activated as follows.

	CASE1 : HC has been set as "HC (Fixed)"		
	Non-Scan Mode	Scanning	Scan temporary stopping
press [HC] once	Change to Home Channel		
press [HC] again	No effect		
	CASE2 : HC has been set as "HC (Toggle)"		
	Non-Scan Mode	Scanning	Scan temporary stopping
press [HC] once	Change to Home Channel		
press [HC] again	Return to current channel	Change to Revert Channel	Return to current channel

15. Squelch Level (SQL)

This function allows the radio operator to manually adjust the squelch threshold in 16 steps (Level 0~15) via the front panel controls. To adjust the squelch level:

(1) Press the [SQL] Key. A confirmation tone sounds, and the RADIO enters Squelch Level Adjust Mode. In this mode, all signallings are canceled and audio is unmuted. The display shows SQUELCH XX (or SQL XX). (XX= squelch level)
(2) Change the squelch level by pressing [∧] and [∨] Keys, or rotating the UP/DOWN Knob.
(3) Press [SQL] again. A confirmation tone sounds, the display returns to the normal channel, the level setting is memorized, and Squelch Level Adjust Mode will turn off.

* This feature can be initiated when the RADIO is not in scanning mode.

16. Operator Selectable Tone (OST)

This function allows the radio operator to change the preset decode QT/DQT, encode QT/DQT. You can select Dec/Enc OFF or from up to 16 decode/encode pairs (Pair No. 1~16) programmed by the FPU. To select the Dec/Enc pairs:

(1) Press the [OST] Key. A confirmation tone sounds, and the display shows the OST Name which is memorized in the channel for 2 seconds. The "OST" icon lights, and OST is enabled.
Press [OST] again, and the OST icon goes off and OST is disabled.
(2) When the [OST] Key is held down, a confirmation tone sounds and the RADIO enters OST Select Mode.
(3) Select the Dec/Enc pair by pressing the [∧] and [∨] Keys, or rotating the UP/DOWN Knob. The display shows TONE XX (XX=Dec/Enc pair number) or the OST Name.
(4) Press [OST] again, a confirmation tone sounds, the display returns to the normal channel, the pair is memorized and OST Mode will turn off.

* You can select a Dec/Enc pair on each channel.

OPERATING FEATURES

17. Option Board (OPT)

If an optional Scrambler board has been installed in the RADIO, Scrambler is activated by pressing the [OPT] Key. A confirmation tone sounds, and the OPT icon is displayed. If [OPT] is pressed again, a confirmation tone sounds, the OPT icon goes off and the Scrambler will turn off.

If [OPT] is held down, the RADIO enters SCR Code Set Mode. A confirmation tone sounds, and the display shows CODE XX (XX=SCR Code). Change the SCR Code by pressing the [∧] and [∨] Keys, or rotating the UP/DOWN Knob.

Press [OPT] again, a confirmation tone sounds, the display returns to channel (SCR is ON), the SCR Code setting is memorized, then SCR Code Set Mode will turn off.

18. AUX A, AUX B, AUX C

This function switches the accessory PF Output ports which have been programmed with AUX A, AUX B and AUX C.

Press [AUXA] Key. A confirmation tone sounds, the A icon is displayed, and the AUX A Port is switched on (Low level). If [AUXA] is pressed again, a confirmation tone sounds, the A icon goes off and the AUX A Port is switched off (open collector).

In the same way, [AUXB] Key controls the AUX B Port, and [AUXC] Key controls the AUX C Port.

19. Direct Channel Access

This feature allows the radio operator to immediately select CHANNELs 1~5 which are contained in GROUP 1. To select GR1-CH1, press [CH1]. To select GR1-CH2~5, press [CH2] ~ [CH5],

20. Channel Recall (RCL)

This feature is enabled in scan mode.

This feature allows the radio operator to immediately access the last called (Unmuted) channel by pressing [RCL]. The 3-digit display shows "RCL". Press [RCL] again, and the radio returns to the previous channel.

21. Dimmer (DIM)

To adjust the brightness of the display backlight, TX/BUSY LED, panel Keys backlight and microphone keys backlight, press the [DIM] Key.

[DIM] controls the brightness at the same time as follows.

	Display backlight	TX/BUSY LED	Panel Keys backlight	Microphone Keys backlight
Default	High	High	High	High
Press [DIM] once	Medium	↓	↓	↓
Press again	Low	↓	↓	↓
Press again	OFF	OFF	OFF	OFF
Press again	return to High	return to High	return to High	return to High

* The brightness setting is memorized.

22. Speaker 1-2 Mute (SPM)

; Dual Head Configuration only

This feature allows the radio operator to manually disable the speaker audio of another control head.

Press the [SPM] Key, a confirmation tone sounds, and the other head speaker is muted. Both head displays shows X MUTE (X=Muted HEAD number).

This muted condition is canceled by both head keys without PTT and Mic HOOK which is connected to Un-muted head.

23. Mobile Relay Station (RPT)

; Dual Band Configuration only

This function allows the radio operator to use the RADIO as a repeater.

(1) Both "Repeater Channel 1" and "Repeater Channel 2" must be pre-programmed by the FPU. Each channels must be on diferent bands.
(2) Press the [RPT] Key, then both the VHF and UHF units move to the repeater channel, and enter Repeater mode. Displays of both heads show "REPEATER".
(3) If one unit receives a proper signal, the other unit will start transmitting (repeating).
(4) If the signal stops, the repeat action will stop. If one of the units detects another signal, the repeat action will restart.
(5) Press [RPT] again, both units return to their previous channels, and exit the Repeater mode. However, during the repeating mode, pressing [RPT] has no effect.

24. Emargency Call (EMG)

If the [EMG] Key is held down, the RADIO enters the Emergency Mode. In the Emergency Mode, the channel changes to the "Emergency Channel (set by the FPU)" internally. The display depends on "Emergency Channel Display" setting, and the Emergency Call (None, DTMF, MSK or ANI board) is transmitted.

If "ANI Board" is selected for the Emergency Type, turn the transceiver off, then turn it on again to recover "Normal Mode".

If "ANI Board" is not selected for the Emergency Type, press and hold [EMG] key to recover "Normal Mode".

OPERATING FEATURES

25. Busy Channel Lockout (BCL), BCL Override

The Busy Channel Lockout function prevents interferance with other stations that may be using the same channel.

While the selected channel is in use, pressing PTT causes the RADIO to sound a warning tone, and transmission is inhibited. To stop the warning tone, release PTT.

If BCL Override has been enabled, pressing PTT within 500msec again will cancel BCL, and transmission is enabled.

26. 2Tone Signalling

2Tone signalling opens the squelch only when the RADIO receives a proper 2Tone code that is the same as the pre-programmed 2Tone for the channel. When the RADIO receives a 2Tone code, the CALL icon flashes.

If Transpond has been programmed, the RADIO will return an acknowledgment signal automatically after receiving the 2Tone code.

If Call Alert has been programmed, an Alert Tone sounds after receiving a 2Tone code. You can configure "Normal" (an alert tone beeps once) or "Continuous" (an alert tone beeps every 5 seconds) for the Call Alert. Unmute condition is canceled and the CALL icon goes off when ; (1) pressing the [MON] Key, (2) hanging the microphone on its hook, (3) muting continues for 10 seconds. (If "Auto Reset" has been programmed)

27. DTMF Signalling

DTMF Signalling opens the squelch only when the RADIO receives a proper DTMF code that is the same as the pre-programmed "Primary Code (Individual ; 1~7digits)" or "Secondary Code (Group ; 1~7digits)". When the RADIO receives a correct code, the CALL icon flashes.

If Transpond has been programmed, the RADIO will return an acknowledgment signal automatically after receiving the DTMF code.

If Call Alert has been programmed, an Alert Tone sounds after receiving a DTMF code. You can configure "Normal" (an alert tone beeps once) or "Continuous" (an alert tone beeps every 5 seconds) for the Call Alert. Unmute condition is canceled and the CALL icon goes off when ; (1) pressing the [MON] Key, (2) hanging the microphone on its hook, (3) muting continues for 10 seconds (If "Auto Reset" has been programmed), and (4) receiving reset code. (Primary code + "#" or secondary code + "#")

28. Time Out Timer

(Possible to configure to each group)

The Time Out Timer function interrupts continuous transmission after a specified time elapses.

Holding down PTT for longer than the programmed time causes the RADIO to stop transmitting and sound a warning tone. To stop the warning tone, release PTT.

29. Signalling AND/OR

(Possible to configure to each group)

The RADIO will be unmuted with a combination of QT/DQT and 2Tone/DTMF. The AND/OR setting works as follows.

29-1. AND

The audio is unmuted when the RADIO receives the correct QT/DQT and 2Tone/DTMF. After transmitting, 2Tone/DTMF will be canceled.

29-2. OR

The audio is unmuted when the RADIO receives the correct QT/DQT. 2Tone/DTMF is used just as an individual call or group call.

30. Off Hook Decode

If the OFF HOOK Decode function has been enabled, removing and replacing the microphone on the HOOK has no effect for decoding QT/DQT and 2Tone/DTMF.

31. TX Audio Monitor

; Dual Head Configuration only

This function allows the radio operator to hear another operator's voice which is transmitted through another control head.

If the TX Audio Monitor function is set to "w/Talk Interrupt" and one operator is transmitting, the other operator's control head displays "INTERCOM" and he/she can speak to the transmitting control head by pressing PTT.

32. Roll Over/Dead End

32-1. Roll Over

When [∧] (CH UP) is pressed, or the CH UP/DOWN Knob is turned CW from the Maximum channel, the channel changes to the Minimum channel.

When [∨] (CH DOWN) is pressed, or the CH UP/DOWN Knob is turned CCW from the Minimum channel, the channel changes to the Maximum channel.

32-2. Dead End

When [∧] (GR UP) is pressed, or the GR UP/DOWN Knob is turned CW from the Maximum group, the group doesn't change.

When [∧] (CH UP) is pressed, or the CH UP/DOWN Knob is turned CW from the Maximum channel, the channel doesn't change.

When [∨] (GR DOWN) is pressed, or the GR UP/DOWN Knob is turned CCW from the Minimum group, the group doesn't change.

When [∨] (CH DOWN) is pressed, or the CH UP/DOWN Knob is turned CCW from the Minimum channel, the channel doesn't change.

OPERATING FEATURES

33. Minimum Volume

When the Volume Knob is adjusted fully counterclockwise, the audio level is set to the Minimum Volume level which is programmed by the FPU.

34. Dead Beat Disable (DBD)

If the RADIO receives a DBD Code (1~7digits), the RADIO returns an acknowledgment signal automatically, and transmission is disabled. This TX INHIBIT condition is memorized.

If the RADIO receives a DBD Reset Code (DBD Code + #), the RADIO returns an acknowledgment signal automatically, and transmission is Enabled.

35. ANI Board

The ANI board contains functions which you can use. To use the function, you select that function on the ANI board.

36. Accessory Programmable Function Port (PF Port)

The RADIO has 13 PF Ports.
HEAD (12 pin) : PF Input Port 2, PF Output Port 2
DECK (Dsub 25 pin) : PF Input Port 5, PF Output Port 4

Each Port can be programmed with a function from next Table.

36-1. PF Input Port

External HOOK	Open → OFF HOOK, Low → ON HOOK
CH Select A	The Channel changes to Remote Channel 1~15. If CH Select A~D are set "H" or "Open", the channel is selected by using the [∧]/[∨] keys or UP/DOWN Knob. (User Channel)
CH Select B	
CH Select C	
CH Select D	
External PTT	Open → PTT OFF, Low → PTT ON
Scan	Open → Scan OFF, Low → Scan ON
Home Channel	Open → Current Channel, Low → Home Channel
Light Sense	Open → LCD Backlight is controlled by [DIM], Low → LCD Backlight is set "Low"
Repeater SW	Open → Repeater inactive, Low → Repeater Active * Dual BAND configuration only
External Monitor	Open → Monitor OFF, Low → Monitor ON

36-2. PF Output Port

AUX A	Pressing [AUXA] once → Low, Pressing [A] [AUXA] again → OPEN-COLLECTOR
AUX B	Pressing [AUXB] once → Low, Pressing [B] [AUXB] again → OPEN-COLLECTOR
AUX C	Pressing [AUXC] once → Low, Pressing [C] [AUXC] again → OPEN-COLLECTOR
TOR	Receiving correct QT/DQT → Low, Not receiving correct QT/DQT → OPEN-COLLECTOR
COR	BUSY → Low, Not BUSY → OPEN-COLLECTOR

37. Timed Power Off

This function works as "Automatic Power Switch Off".

Timed Power Off timer starts from the ignition-off. After the timer expires, the RADIO will automatically turn off. The timer will be reset if the ignition is turned on and off.

This function requires ignition-sense. Connect the ignition-line to the 9-pin connector which is located at the rear of the RADIO.

After the timer expires, you can turn the transceiver on again with 2 methods below.

1) Timed power off function (Default)
   Press the power switch.
2) Ignition function & Timed power off function
   Turn the ignition on.

38. Emergency

- **Active tome**
  Automatic transmission period in the emergency mode.

- **Interval Time**
  Interval time between the automatic tansmissions.

- **Duration of Locator Tone 1**
  Duration of an alert tone before the automatic transmission is performed.

- **Duration of Locator Tone 2**
  Duration of an alert tone after the automatic transmission is performed.

- **Emergency Channel Display**
  Setting for the display in the emergency mode.
  The transceiver can be programmed to display "EMERGENCY" channel name when it is in emergency mode.
  If you set to "off" by KPG-44D the transceiver shows selected group/channel/status before entering to the emergency mode however the transceiver is in an emergency mode.

OPERATING FEATURES

- **Emergency Mode Type**
  Speaker mute on or off in the emergency mode.

- **Emergency Type**
  Select an Emergency code format from DTMF, MSK, ANI board or OFF (Disabled).

- **Emergency DTMF ID**
  The emergency DTMF ID code when you select DTMF in the emergency type.

- **Emergency Call Fleet**
  The emergency fleet number when you select MSK in the emergency type.

- **Emergency Call ID**
  The ID number when you select MSK in the above emergency type.

39. MSK PTT ID

- **Side Tone**
  A tone to notify the voice transmission is allowed after sending the MSK PTT ID (Connect ID).

- **Fleet (Own)**
- **ID (Own)**
  Configure the Fleet/ID of the MSK PTT ID (Fleet Sync Format).

- **Data TX Mod. Delay**
  Delay time of transmitting the MSK ID after the transceiver enters the transmission mode.

40. Power On Text

To display the Power on text for approximately 2 seconds when the transceiver is turned on.

41. Data Programming (PC Mode)

41-1. Preparation and Connection

TK-890 transceiver is programmed by using a personal computer, programming interface cable KPG-43, and programming software KPG-44D.

The programming software can be used with an IBM-PC or compatible machine. Figure 1 shows the setup for programming.

41-2. Programming Interface Cable KPG-43 Description

The KPG-43 is required to interface TK-890 to the computer. It has a circuit in its D-sub 25 pin connector case that converts RS-232C logic level to TTL level.

KPG-43 is used to connect between TK-890 microphone connector and RS-232C serial port of computer.

41-3. Programming Software KPG-44D Description

KPG-44D is the programming software for TK-890 supplied on a 3.5" floppy disk. This software runs under MS-DOS version 3.1 or later on an IBM-PC/XT, AT, or PS2 or compatible machine.

The data can be input to or read from TK-890 and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

We recommend that install KPG-44D for example to harddisk first then use it.

KPG-44D instruction manual part No. : B62-1011-XX.

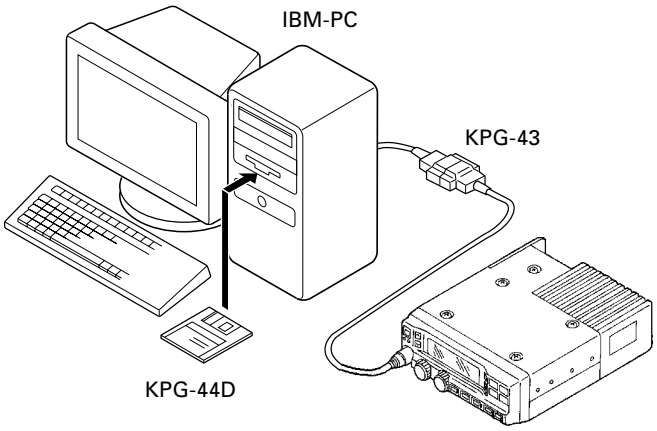
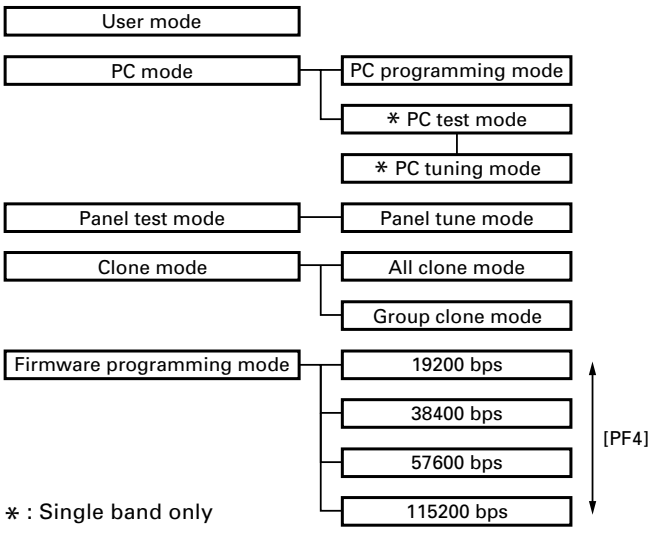


Fig. 1

42. Mode



OPERATING FEATURES

Mode	Function
User mode	Customer use this mode
PC mode	Communication between the radio and PC (IBM compatiible). It requires the KPG-44D.
Panel test mode (Refer to ADJUSTMENT)	Dealer uses to check the fundamental characteristics.
Panel tune mode (Refer to ADJUSTMENT)	Dealer uses to tune the radio.
Clone mode	Programmed data is transferred from one transceiver to another by using a cloning cable.
Firmware programming mode	Re-write the firmware of the flash ROM. **Note :** When programming the firmware, it is best to copy the data from the floppy disk to your hard disk, then from the hard disk to the CPU. Directly copying from the floppy disk to the CPU may not work because the access speed is too slow.

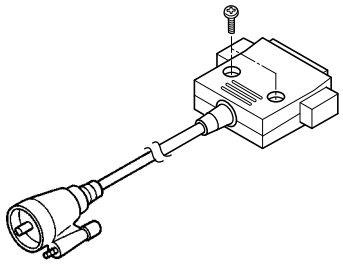
42-1. How to Enter Each Mode

Mode	Operation
User mode	Power on
PC mode	Connect the PC and turn the power on. Then the radio can be controlled by the FPU.
Panel test mode	Hold down the [PF1] key, turn the radio power on.
Panel tune mode	Press the [GR ^] key from the panel test mode.
Clone mode	Hold down the [PF5] key, turn the radio power on.
Firmware programming mode	Hold down the [PF2] key, turn the radio power on.

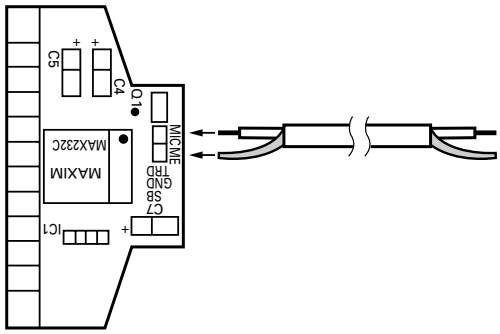
43. PC Tuning Mode

When making adjustment while in PC tuning mode, modify the KPG-43 programming interface cable as described below.

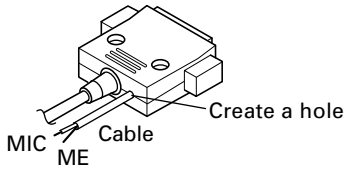
1. Remove the two screws from the plug cover, then lift the cover from the plug.



2. Solder the lead wire onto the MIC tab on the PCB, and the ground wire onto the ME tab.



3. Create a hole in the casing (as shown in the illustration) then fit the cable into the hole. Replace the cover and secure it using the two screws.

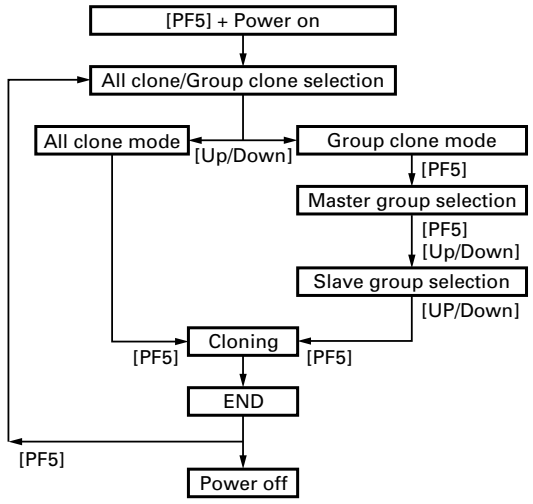


OPERATING FEATURES

44. Clone Modes

There are two clone modes : "All Clone Mode", in which all data programmed in one transceiver with the "FPU" is copied to another transceiver, and "Group Clone Mode", in which group data in one transceiver is copied to a group in another transceiver.

The cloning operation is performed from the master side transceiver.



44-1. To Enter the Clone Mode and Connect Transceivers

(1) Hold down the [PF5] key and turn on the power switch on the master side transceiver.
Turn on the power switch on the slave side transceiver as usual.

(2) Connect the master and slave side transceivers with a cloning cable.

44-2. All Clone

1. Enter the All Clone Mode from the clone mode with the [Up/down] knob.
2. Press the [PF5] key to start cloning.

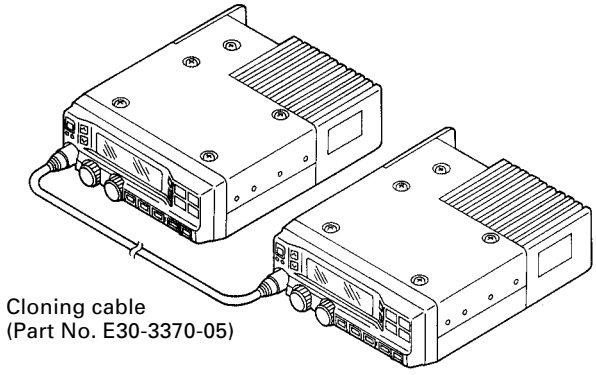
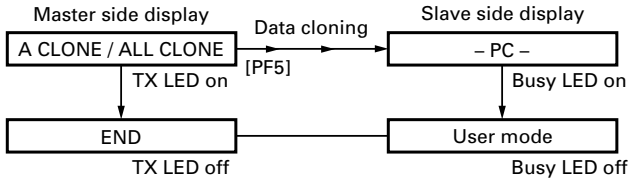


Fig. 2

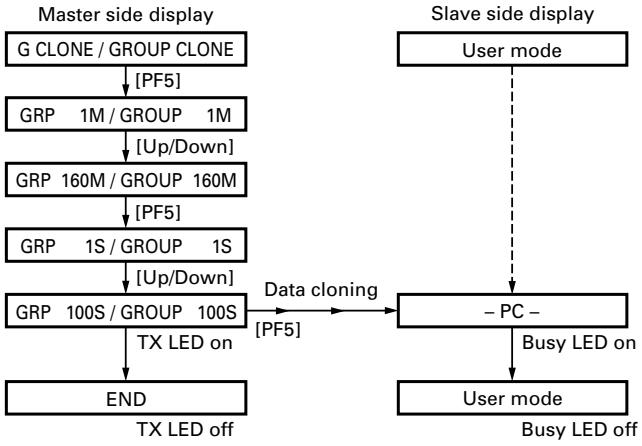
44-3. Group Clone

1. Enter the group clone mode from the clone mode with [Up/Down] knob.
2. Press the [PF5] key to enter the master group select mode. Select the master group with [Up/Down] knob.



3. Press the [PF5] key to enter the slave group select mode. Select the slave group with [Up/Down] knob.
4. Press the [PF5] key to start cloning.

Note : The transceiver does not enter the clone mode if it is disabled with the FPU. To clone the transceiver both transceivers must be same. If the panels, frequency ranges, optional board are different, they cannot be cloned.



INSTALLATION

1. Contents

- Front panel kit (KCH-10, KCH-11)
  Description and use of the knob supplied with the KCH-10/11
- Optional voice scrambler function
  Voice scrambler use and connection
- Optional ANI function
  ANI board connection
- Ignition sense cable (KCT-18)
  Description of the ignition function and timed power off function and connection
- External speaker (KES-4)
  KES-4 connection method and modification for increasing the speaker output of the control head
- Horn alert function
  Modification for changing the function of the ACC terminal for horn alert
- Accessory terminal function
  Description and use of D-SUB 25-pin ACC terminals, "MI/DI" and "SB"
- Connection with remote kit
  Modification of the radio to use KRK-5, KRK-6DH, KRK-7DB, or KRK-8DBH

2. Front Panel Kit (KCH-10, KCH-11)

2-2. Connection with TK-890(B)/H(B)

1. Remove the upper and lower halves of the case of the TK-890(B)/H(B).
2. Connect the lead (W501) with a connector of the control unit (X57-562 B/3) to CN1 of the KCH-10 or KCH-11.
3. Install the KCH-10 or KCH-11 on the radio using the screws (N32-3006-46) (❶) supplied with the front panel kit. Take care not to get the lead between the KCH-10 or KCH-11 and an edge of the case. (You can install the panel upside down if necessary to install the radio.)
4. Reinstall the upper and lower halves of the case.
5. Connection the short plug for the accessory connector (9-pins) on the rear of the radio.

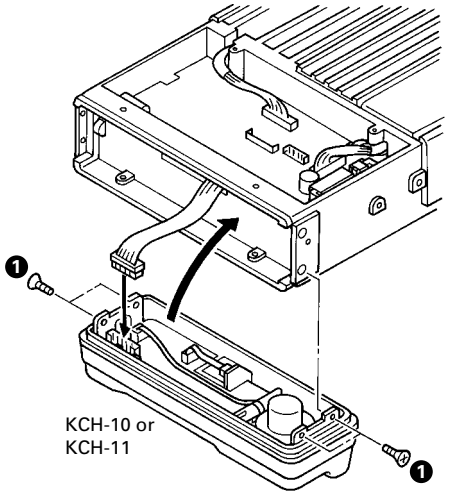


Fig. 1

2-3. Install the accessory knobs

When a function is set by the programming software (KPG-44D), the key legend can be changed by inserting the accessory knobs into PF1 to PF9 of the KCH-11 (PF1 to PF5 : KCH-10). The accessory contains a set of 30 knobs : AN, D/A, DIM, HA, HC, IC, MON, OPT, OST, PA, RCL, RPT, SCN, SP, SPM, SQ, TA, ∧, ∨, CH1, CH2, CH3, CH4, CH5, AUX A, AUX B, AUX C, EMG, and blank.

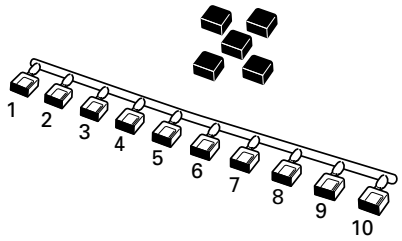
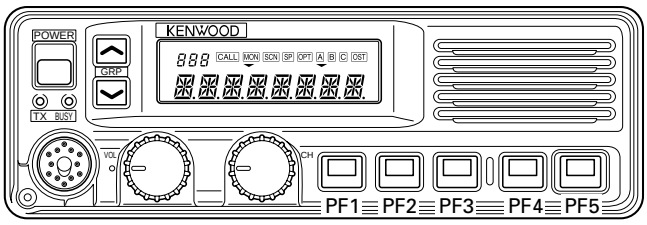


Fig. 2

No.	K29-5276-*3	K29-5277-*3	K29-5305-*3
1	AN	RCL	CH1
2	D/A	RPT	CH2
3	DIM	SCN	CH3
4	HA	SP	CH4
5	HC	SPM	CH5
6	IC	SQ	AUX A
7	MON	TA	AUX B
8	OPT	∧	AUX C
9	OST	∨	EMG
10	PA	No printing	

KCH-10



KCH-11

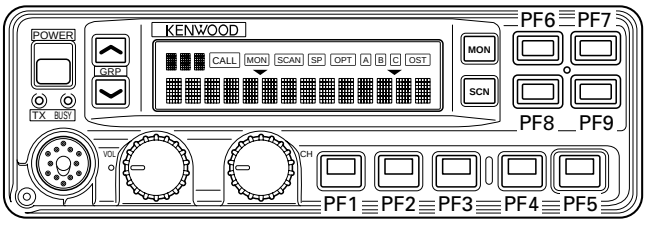


Fig. 3

INSTALLATION

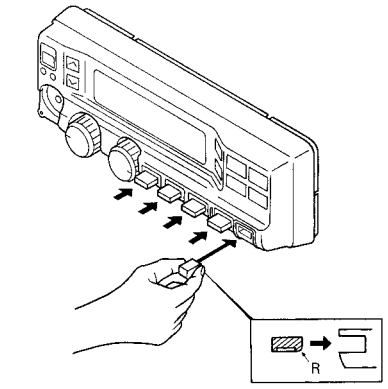


Fig. 4-1 Knob insertion

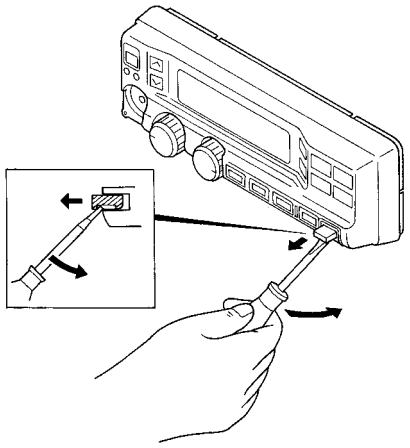


Fig. 4-2 Knob removal

3. Optional Voice Scrambler Function

The optional voice scrambler function can be used by two methods.

1. Assign this function to the OPT key by using the programming software (KPG-44D).
   When the OPT key is pressed, the [OPT] indicator comes on, and the optional (scrambler) function is enabled. When the key is pressed again, the [OPT] indicator goes off and the function is disabled.
2. Assign the optional scrambler function to each channel by using the programming software (KPG-44D). The optional scrambler function can be used without pressing the OPT key.

3-1. Code setting

The code can be set by two methods.

1. Hold down the OPT key to enter the code setting mode. Codes 1 to 16 will be displayed. Set a code by turning the [Up/Down] knob. When the OPT key is pressed again, the code setting mode terminates.
2. Set a code for each channel by using the programming software (KPG-44D).

3-2. Voice scrambler board connection

- **Modification**

1. Remove the upper half of the case of the TK-890.
2. Remove R515 and R604 on the control unit (X57-562 B/3) (Refer to page 21).

- **Connection**

The functions of pins of CN508 on the control unit (X57-562 B/3) are shown in the figure.

Join the CN508 connector to the voice scrambler board via the E37-0808-05 connector cable.

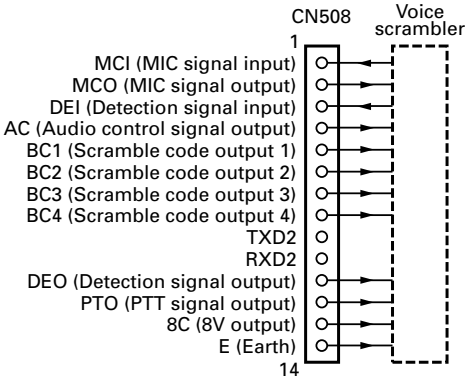


Fig. 5

4. Optional ANI Function

- **Connection**

Join the CN507 connector to the ANI board via the E37-0809-05 connector cable, and the CN508 connector to the ANI board via the E37-0808-05 connector cable.

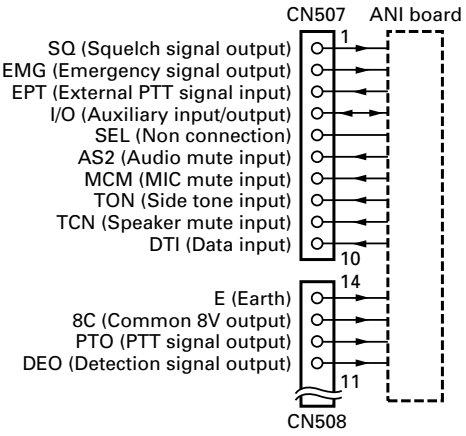


Fig. 6

INSTALLATION

5. Ignition Sense Cable (KCT-18)

The KCT-18 is an optional cable to use the following functions:

5-1. Ignition function

The ignition function allows you to turn the transceiver's power on and off with the ignition key of your car. When you are driving with the ignition key on, the horn alert function is disabled.

5-2. Timed power off function

The timed power off function turns the transceiver's power off the time specified with the programming software (KPG-44D) after the ignition key is turned off. When you are driving with the ignition key on, the horn alert function is disabled.

The ignition sense function and the timed power off function can be used at the same time.

5-3. Modification

- **If the TK-890 and KCH-10 or KCH-11 are used**

1. Remove the short plug from the accessory connector (9 pins) on the back of the transceiver.
2. Insert the KCT-18 into pin 1 (IGN).
3. Remove the upper half of the case of the TK-890.
4. Set jumper resistors (0 ohm), R504, R506, R742 and R743, on the control unit (X57-562 B/3) as shown in Table 1 (Refer to page 21).
5. Reinstall the upper half of the case.

- **When the remote kit is used**

If the accessory connector (9 pins) on the rear of the transceiver is available, use the method described above. (If the KRK-7DB or KRK-8DBH is used, use the accessory connector (9 pins) on the back of radio 1.)

If the accessory connector (12 pins) on the back of the control head is used:

1. Remove the plug from the accessory connector (12 pins) on the back of the control head.
2. Cut off the end of the rubber cap (accessory), insert the KCT-18 into the cap, and insert it into pin 1 (IGN) of the short plug.
3. Install the short plug and rubber cap on the connector on the rear of the control head, then clamp the bottom of the rubber cap with the supplied tie wrap.
4. Remove the upper half of the case of the TK-890.
5. Set jumper resistors (0 ohm), R504, R506, R742 and R743, on the control unit (X57-562 B/3) as shown in Table 1 (Refer to page 21).
6. Reinstall the upper half of the case.

Note : If the KCT-18 is used for the KRK-8DBH, use the 9-pin plug on the back of radio 1 or the 12-pin plug on the back of head 1. The plugs on radio 2 and head 2 cannot be used.
If the KCT-18 is used for the KRK-7DB, use the 9-pin plug on the back of radio 1 or the 12-pin plug on the back of the head. The plug on radio 2 cannot be used.

Available function when KCT-18 is connected	R504	R506	R742	R743
Horn alert function OFF during driving, Timed power off function (Default)	Present	Absent	Present	Absent
Horn alert function OFF during driving, Ignition function	Absent	Present	Present	Absent
None (The transceiver cannot be turned on.)	Absent	Absent	Present	Absent
HA function OFF during driving, Ignition function & Timed power off function	Present	Absent	Absent	Present

Table 1 R504, R506, R742 and R743 setup chart (Refer to page 21)

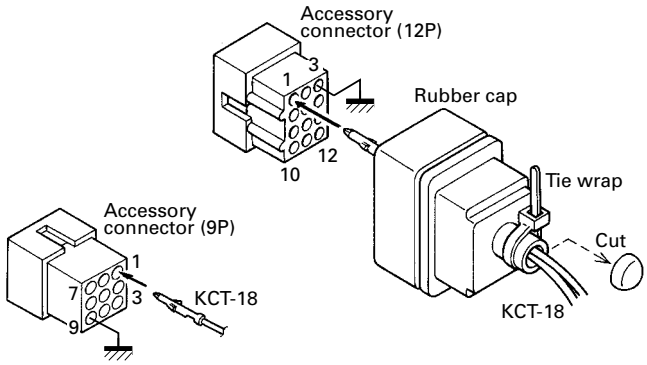


Fig. 7

6. External Speaker (KES-4)

The speaker output from the TK-890 is as follows:

1. The KCH-10 has a built-in speaker (3W/8 ohms).
2. The KCH-11 does not have a built-in speaker.
3. The external speaker output from the accessory connector (9 pins) on the back of the transceiver is 13W/4 ohms. Use the KES-4.
4. The speaker output from the accessory connector (12 pins) on the back of the control head is 2W/4 ohms. If the remote kit (KRK-5, KRK-6DH, KRK-7DB or KRK-8DBH) is used, use the KSP-1A or KES-4. If the KSP-1A is used, do not attempt to modify the transceiver to increase the audio output.

Note : Since the TK-890 uses a BTL audio amplifier, do not ground the speaker output pin.

INSTALLATION

6-1. Connection for the KES-4 with the TK-890

- **When taking the AF output from the accessory connector (9-pin) on the rear of the radio**

The following tools are required for changing the connector.

Extracting tool

the following extracting tool is recommended :
Molex Inc. Order No. : 11-03-0002

1. Remove the connector with jumper from the external speaker connector on the rear panel of the radio (Fig. 8-1).
   Note : Save the jumper, which is required when the radio is used without the external speaker.
2. Remove the terminals with the jumper from the connector housing holes number 3 and 6 using the extracting tool.
   Removing the jumper lead (Fig. 8-2)
   1) Insert the extracting tool (11-03-0002) into the connector while pushing the jumper lead in the direction of (a).
   2) Push the extracting tool into collapse the barbs of the crimp terminal.
   3) Pull out the lead while continuing to push the extracting tool in the direction (b).
3. Reinsert the terminal with the black and white stripe lead into hole number 2, and the terminal with the black lead into hole number 6 (Fig. 8-3).
4. Attach the connector to the external speaker connector on the radio.

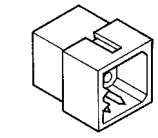


Fig. 8-1

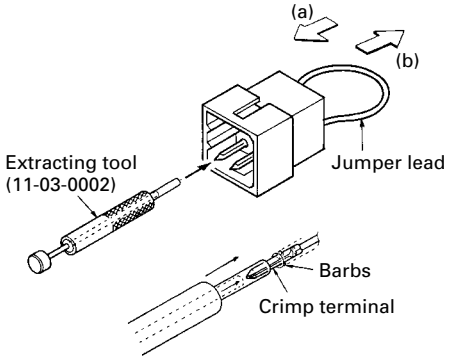


Fig. 8-2

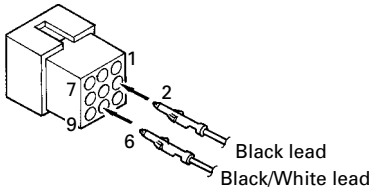


Fig. 8-3

6-2. Connection for the KES-4 with the remote kit (KRK-5, KRK-6DH, KRK-7DB, KRK-8DBH) (When output is from the 12-pin accessory connector on the rear of the control head : remote operation)

- **Modification of plug (12-pin)**

1. Remove the plug from the accessory connector (12-pins) on the rear of the control head.
2. Cut off the end of the rubber cap, insert the KES-4 speaker cable into the cap, and insert it into pins 10 and 11.
3. Install the plug and rubber cap on the accessory connector on the rear of the control head, then clamp the bottom of the rubber cap with the supplied tie wrap.

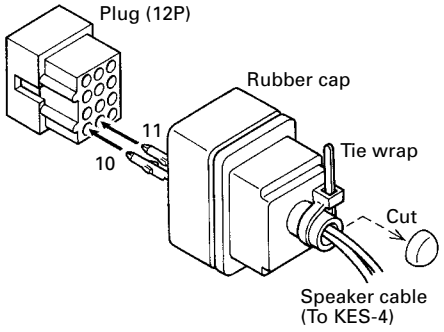


Fig. 9

- **If the KCH-10 is used**

If the KSP-1A or KES-4 is connected to the 12-pin accessory connector, cut the internal speaker wire at the base of the speaker.

If the internal speaker is used, cut the wire connected to pins 10 and 11 of the 12-pins accessory connector at the base of the connector (Fig. 10).

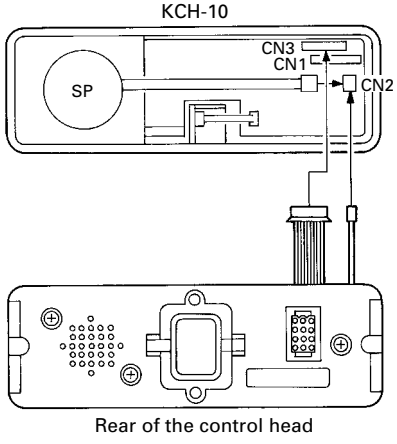


Fig. 10

INSTALLATION

6-3. Modification to increase the audio output of the control head

The speaker output can be increased to 13W by moving jumper resistor (0 ohm) R628 on the control unit (X57-562 B/3) to R627. In this case, the KCH-10 internal speaker cannot be used because the maximum input (3W) of the internal speaker is exceeded. Therefore, use the KES-4.

Note : Even if the KRK-6DH is modified in this way, the audio output of head 2 cannot be increased.
To increase the audio output of head 2 of the KRK-8DBH, modify radio 2 in the same manner.

6-4. Use as public address speaker

1. Remove the short plug from the 9-pin accessory connector on the rear of the radio. (Remove the jumpers as described in Section 5-1.)
2. Insert the KES-4 speaker leads into pins 7 and 8.
3. If you remove jumper shorting pins 3 and 6, the 20W PA (public address) voice signal is output from pins 7 and 8. (Only when the PA or SP switch is on.)
4. If you use the radio with pins 3 and 6 shorted, the internal speaker is available (when the KCH-10 is used). The KCH-11 does not contain a speaker.

Note : Relation ship between accessory connector (9-pins) connection and speaker output.
When pins 3 and 6 are shorted ; The 3W internal speaker is used (KCH-10 only).
When pins 3 and 6 are open and output is from pins 7 and 8 ; The 20W external speaker is used.

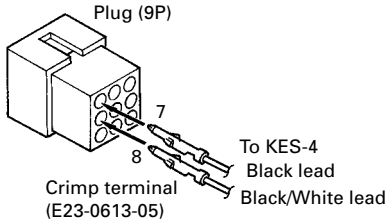


Fig. 11

7. Horn Alert Function

The HR1 pin of the accessory connector (9-pin) on the rear of the transceiver is an open collector and the maximum current is 100mA. The maximum available current can be increased to 1A by installing a relay.

1. Remove the upper half of the case of the TK-890.
2. Move jumper resistor (0 ohm) R691 on the control unit (X57-562 B/3) to R692. To make the HR2 pin, remove R692 (Refer to page 21).
3. Remove screws and erect the PC board. Install and solder relay K501 (Part No. : S76-0407-05).
4. Reinstall the PC board and the upper half of the case.

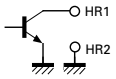
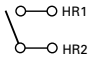
	Default	Modification 1	Modification 2
R690	Present	Present	Absent
R691	Present	Absent	Absent
R692	Absent	Present	Present
State			

Table 2 (Refer to page 21)

8. Accessory Terminal Function

8-1. 25-pin accessory terminal

- **Pin 13**

  MI/DI (MIC Signal Input/Output or Data Audio Input)
  This pin has one of the two functions listed in Table 3 by setting jumper resistors (0 ohm) R640 and R641 on the control unit (X57-562 B/3) (Refer to page 21).

  1) MIC signal input/output
  This pin is directly connected to the MIC input pin of the transceiver, so it has the same function as the MIC input pin. When the input is 5mV/3 kHz, DEV (600 ohms) modulation is obtained. The MIC input is output from the transceiver panel as it is.

  2) Data audio input
  The signal from this pin passes through the LPF (fc: about 10kHz), is summed with the MIC AMP output, and goes to the modulator. Therefore, it is not preemphasized.

- **Pin 14**

  SB (DC Power Output After Power Switch)
  The maximum output (13.6V : TK-890/(B), 13.4V : TK-890H(B) / 0.5A) can be obtained by modifying the control unit as follows:
  Short the land of the print pattern near CN505 of the control unit (X57-562 B/3).

R640	R641	Function
Present	Absent	MIC signal input/output
Absent	Present	DATA audio input : Default

Table3 (Refer to page 21)

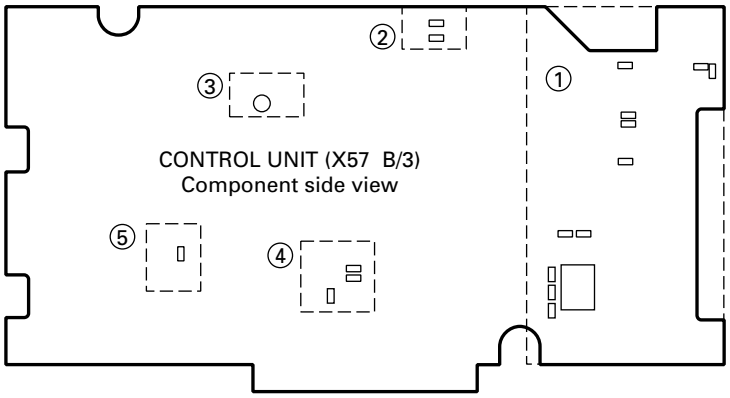
9. Connection with the Remote Kit

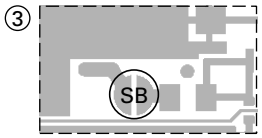
When the KRK-5, KRK-6DH, KRK-7DB or KRK-8DBH is used, set chip resistors and transistors as shown in the table below.

	KRK-5	KRK-6DH	KRK-7DB	KRK-8DBH
Radio 1	Unnecessary			
Radio 2	–		Remove R546 and R661 Move R602 to R705.	

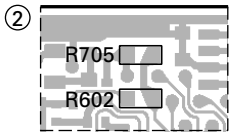
Table 4 (Refer to page 21)

INSTALLATION

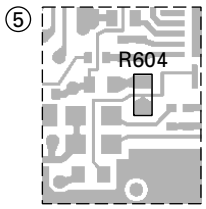




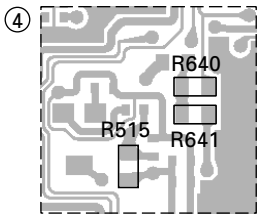
Accessory terminal function (Page 20)



Connection with the remote kit (Page 20)

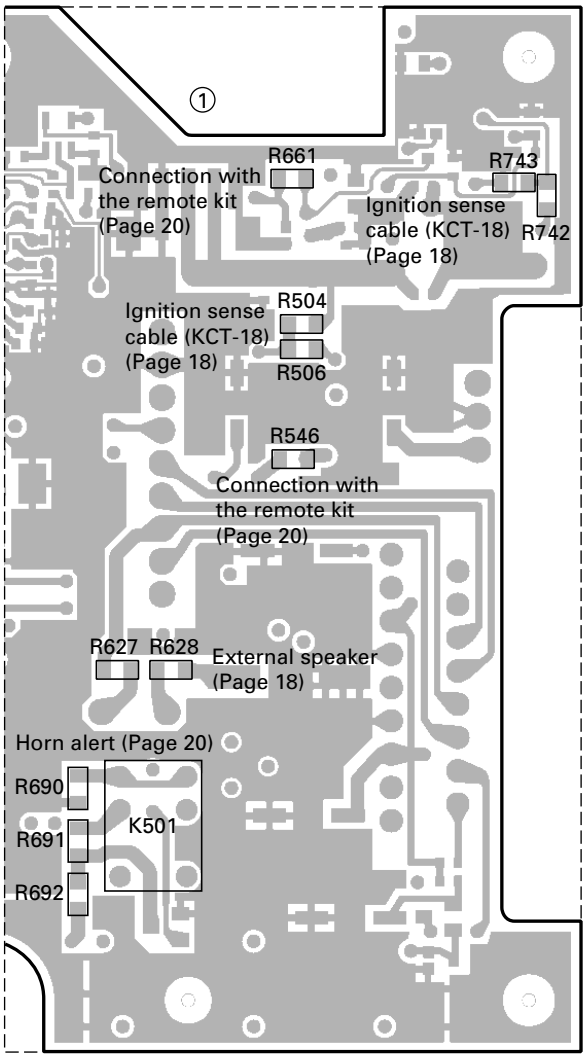


Voice Scrambler (Page 17)



R515 : Voice Scrambler (Page 17)

R640,641 : Accessory terminal function (Page 20)



DISASSEMBLY FOR REPAIR (TK-890/(B))

1. Removing the Case and Shield Cover

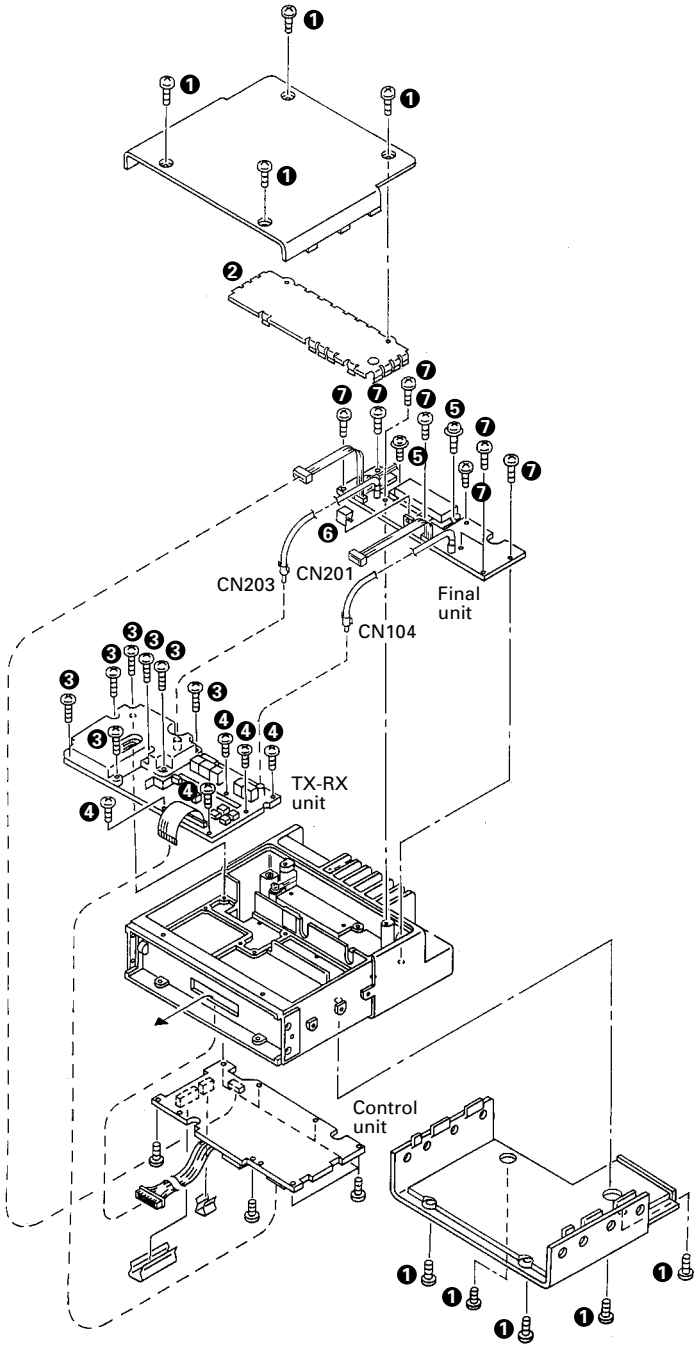
1. Remove the 9 screws (❶), and remove the upper and lower halves of the case. (Remove the 4 screws holding the upper half and the 5 screws holding the lower half.)
2. Remove the shield cover (❷).

2. Removing the TX-RX Unit (X57-562 A/3)

1. Remove the 7 screws (❸), and remove the PLL shield case.
2. Remove the connector (CN201) and coaxial plugs (CN104, CN203) from the final unit, and remove the flat cable (CN202) upwards from the control unit (CN502).
3. Remove the 5 screws (❹).

3. Removing the Final Unit (X57-562 C/3)

1. Remove the 2 screws (❺) holding the power module to the frame.
2. With a screwdriver, remove the leaf spring (❻) holding the Q2 to the frame.
3. Desolder the power module.
4. Remove the 2 screws holding the lead terminal from DC connector (2P) on the rear.
5. Remove the 8 screws (❼) holding the PC board.
6. Desolder CN4 on the antenna connector.



DISASSEMBLY FOR REPAIR (TK-890H(B))

1. Removing the Case and Shield Cover

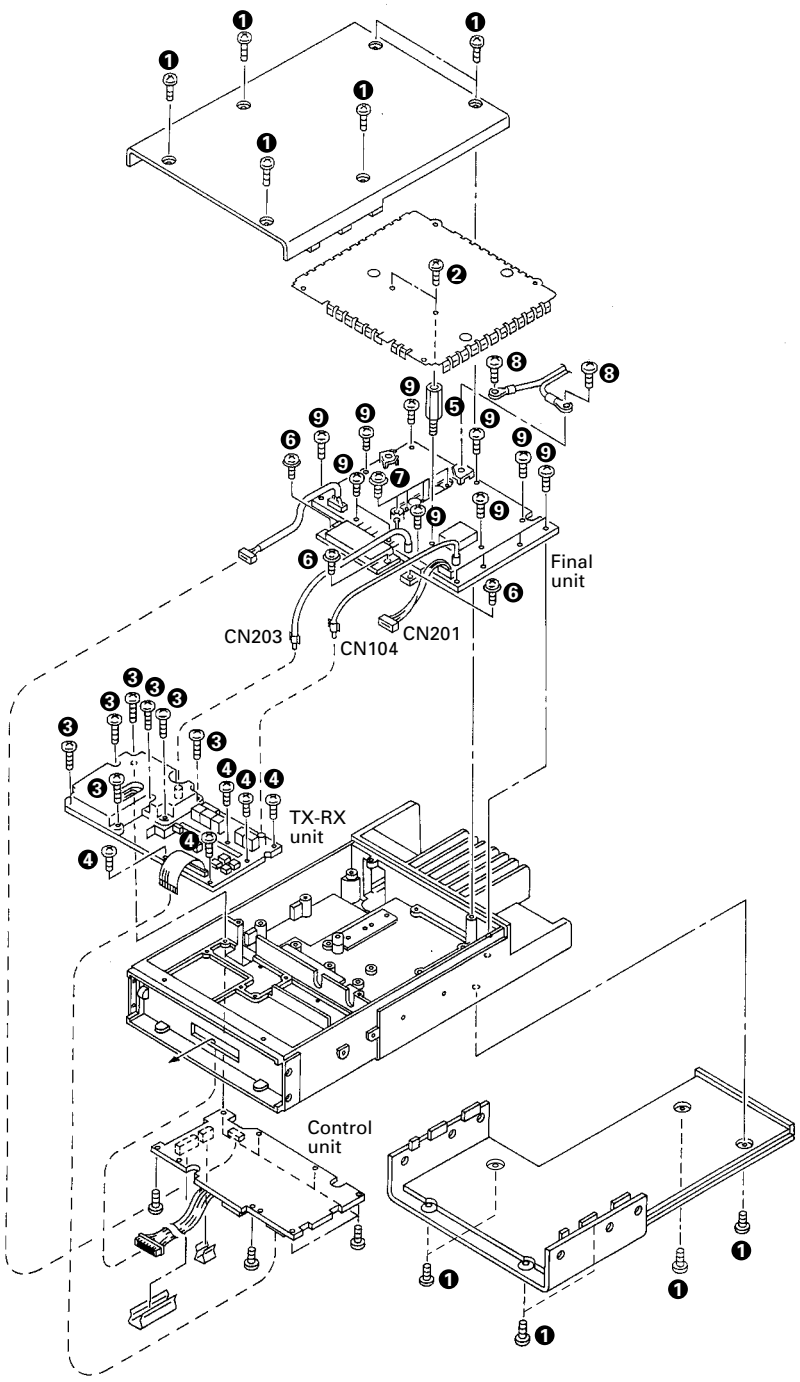
1. Remove the 12 screws (❶), and remove the upper and lower halves of the case. (Remove the 6 screws holding the upper half and the 6 screws holding the lower half.)
2. Remove the 2 screws (❷), and remove the shield cover.

2. Removing the TX-RX Unit (X57-562 A/3)

1. Remove the 7 screws (❸), and remove the PLL shield case.
2. Remove the connector (CN201) and coaxial plugs (CN104, CN203) from the final unit, and remove the flat cable (CN202) upwards from the control unit (CN502).
3. Remove the 5 screws (❹).

3. Removing the Final Unit (X45-357)

1. Remove the 2 hexagonal bosses (❺).
2. Remove the 3 screws (❻) holding the power module and transistor to the frame.
3. Desolder the power module.
4. Remove the 1 screw (❼) holding TH1.
5. Remove the 4 screws (❼) holding the final transistor.
6. Remove the 2 screws (❽) holding the lead terminal from DC connector (4P) on the rear.
7. Remove the 13 screws (❾) holding the PC board.
8. Desolder W3 on the antenna connector.



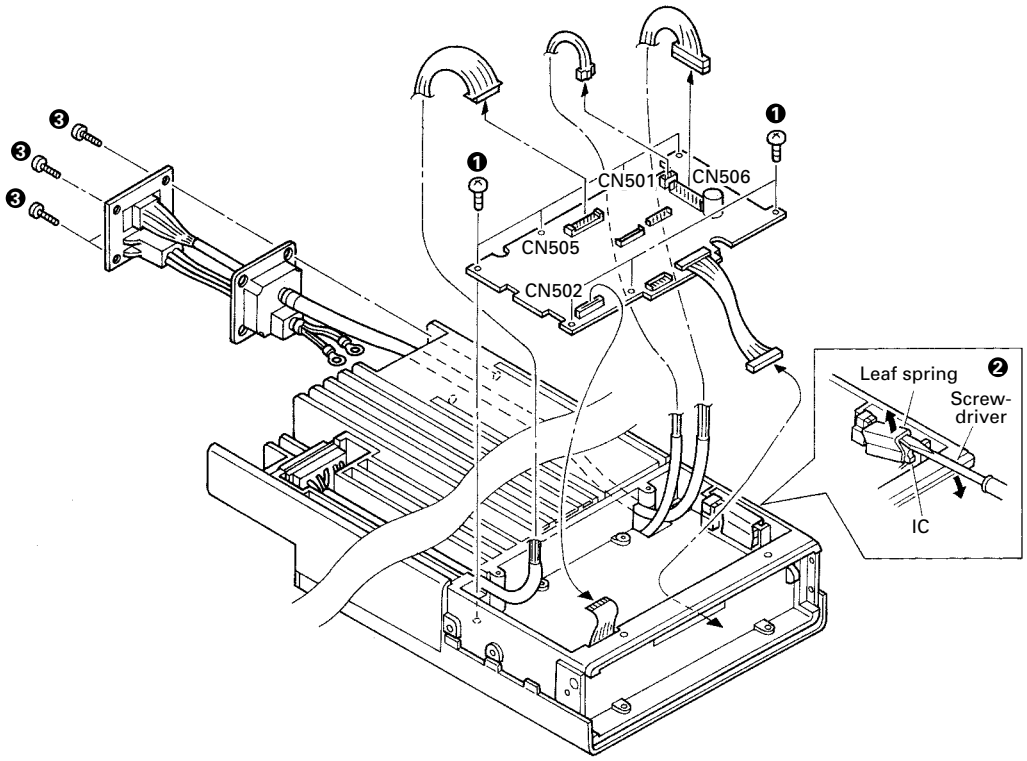
DISASSEMBLY FOR REPAIR

4. Removing the Control Unit (X57-562 B/3)

1. Remove the 8 screws (❶).
2. With a screwdriver, remove the 2 leaf springs holding the ICs to the frame (❷).
3. Remove the flat cable (CN502).
4. Remove the 2 connectors CN501 and CN506.
5. Remove the connector (CN505) from D-sub connector (25P) on the rear.

5. Removing the Accessory Connector on the Rear

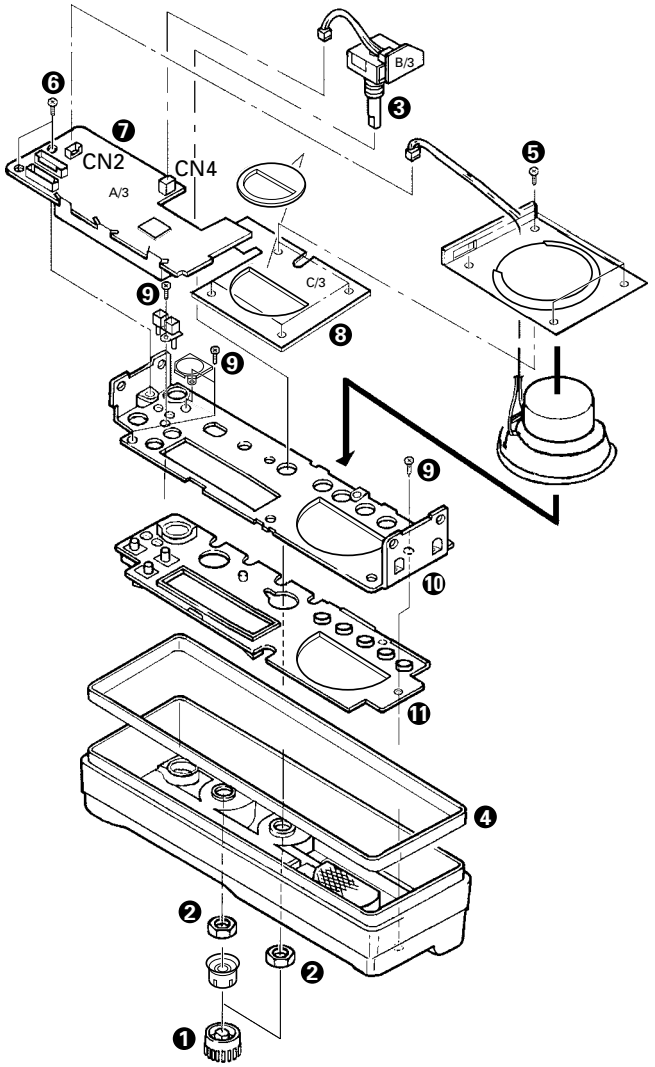
1. Confirm that the screw holding +DC cable (red) and the screw holding –DC cable (black) of the final unit are removed, and that CN506 of the control unit (X57-562 B/3) is disconnected. Remove the 4 screws on the rear (❸).
2. Pull out the connector. (Take the connector terminals out through the opening in the frame.)



DISASSEMBLY FOR REPAIR

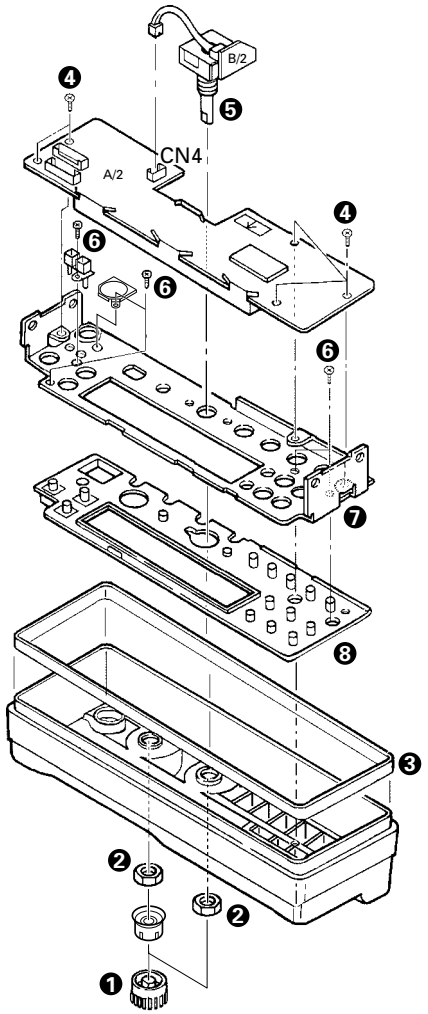
6. Disassembly of the Display Unit (X54-3190) : KCH-10

1. Pull out the VOL and UP/DOWN knobs (❶).
2. Remove the 2 hexagnal nuts (❷).
3. Disconnect the 2 connectors (CN2 and CN4) of the display unit (X54-3190 A/3). You can remove the UP/DOWN encoder (❸).
4. Remove the waterproof seal (❹).
5. Remove the 4 screws (❺) holding the speaker and PC board fitting.
6. Remove the 3 screws (❻). You can remove the display units (X54-3190 A/3 and C/3) (❼ and ❽).
7. Remove the 3 screws (❾), and remove the sub-panel (❿) and keytop (⓫).



7. Disassembly of the Display Unit (X54-3200) : KCH-11

1. Pull out the VOL and UP/DOWN knobs (❶).
2. Remove the 2 hexagnal nuts (❷).
3. Remove the waterproof seal (❸).
4. Disconnect the connector (CN4) of the display unit (X54-3200 A/2), and remove the 5 screws (❹). you can remove the up/down encoder (❺) and display unit.
5. Remove the 4 screws (❻), and remove the sub-panel (❼) and keytop (❽).



CIRCUIT DESCRIPTION

1. Transmitter Circuit

1-1. Microphone amplifier section (X57 B/3)

The audio input from the microphone is attenuated by VR501 and passes through the active high-pass filter (pre-emphasis circuit) in IC505, the compressor circuit in IC504, the IDC (limiter circuit) in IC505, the summing amplifier circuit in IC510, the active low-pass filter in IC510, the summing amplifier circuit in IC513, and the D/A converter in IC512, and is output from the CN502 to the CN202. Q504 is used as a microphone mute switch.

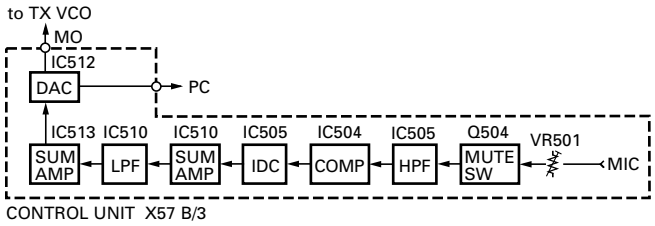


Fig. 1

1-2. Modulation section (X57 A/3)

The signal from the MO terminal of the CN202 goes to D307 in the VCO, and the VCO is directly modulated. The transmit signal output from the VCO passes through switch D308, is amplified by Q201, Q204 and Q205, and is output from the CN203 to the CN1.

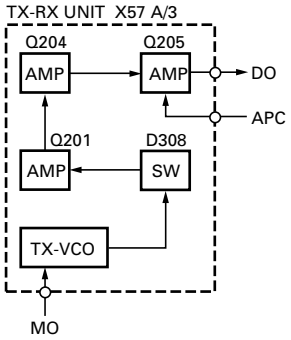


Fig. 2

1-3. Final amplifier section (X57 C/3) : TK-890/(B)

The signal from the DO terminal of the CN1 is applied to drive the power module and the output is fed through transmit/receive switching diode ; D3~D5, low-pass filter, and CM coupler to the antenna connector.

CM coupler is a line for detecting traveling and reflected waves. Traveling waves are detected by D6 and fed through the APC control to differential amplifiers Q5, which compare the signal level with the reference voltage of PC tuned.

The output is amplified by DC amplifier Q1 to control APC DC amplifier Q2. Q1 controls the power supply voltage for the power module, keeping the transmitter output constant. To protect the transmitter power amplifier stages, there is protection circuit, against abnormal antenna loading.

If an abnormal antenna load is connected the reflected wave level increases. Reflected waves are detected by D7 and the output level is fed to the differential amplifier, leading to the transmitter output power being reduced in the way already described.

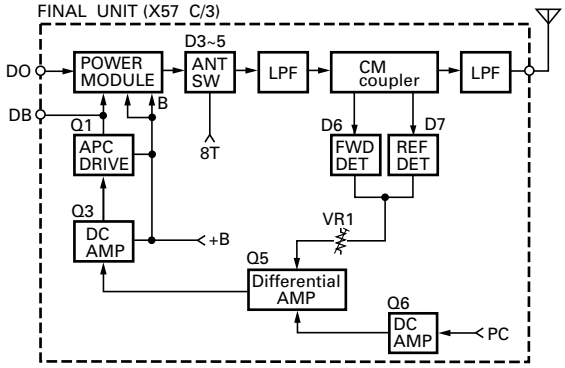


Fig. 3

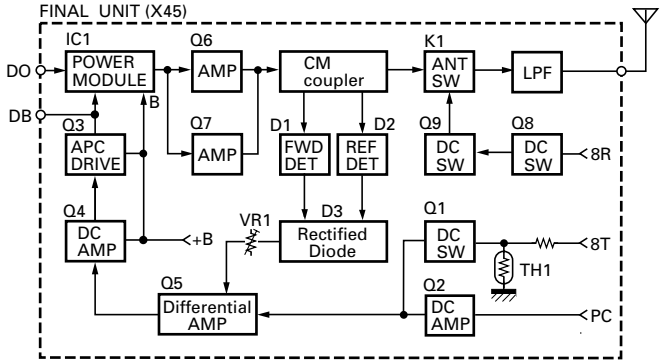
1-4. Final amplifier section (X45) : TK-890H(B)

The signal from the DO terminal of the CN1 is applied to drive the power module, and the output is divided into two signals which are amplified by Q6 and Q7. The signals are mixed and the resulting signal is fed through CM coupler, transmit/receive switching relay ; K1, and the low-pass filter to the antenna connector.

CM coupler is a line for detecting traveling and reflected waves. Traveling waves are detected by D1, D3 and fed through the APC control to differential amplifiers Q5, which compare the signal level with the reference voltage of PC tuned.

The output is amplified by DC amplifier Q4 to control APC DC amplifier Q3. Q4 controls the power supply voltage for the power module, keeping the transmitter output constant. To protect the transmitter power amplifier stages, there are two protection circuits which one is against abnormal antenna loading and the other is against overheating.

If an abnormal antenna load is connected, the reflected wave level increases. Reflected waves are detected by D2, D3 and the output level is fed to the differential amplifier Q5, leading to the transmitter output power being reduced in the way already described. If an abnormal high temperature is detected by the thermistor TH1, DC SW Q1 is made to reduce the reference voltage of the PC tuned. This also leads to the transmitter output power being reduced. Antenna switching is done by a relay K1 with 8R.



Flg. 4

CIRCUIT DESCRIPTION

2. Receiver Circuit

Incoming signals from the antenna pass through a low-pass filter in the final unit of the transmitter system, and are switched to the front-end of the receiver system via a receive/transmit switch (switching diode D3, D4 and D5 : TK-890/(B), switching relay K1 : TK-890H(B)).

The signal is then passed through an antenna matching coil. After passing through the 2-pole BPF (L101), the signal is amplified by the RF amplifier (Q101). The 3-pole BPF (L104) is then passed, and it enters the 1st mixer.

The 1st mixer use a double balanced mixer (A101). The DBM is an excellent IM (intermodulation distortion) and image. The 1st mixer mixes the signal with the 1st local oscillator frequency and converts it to the 1st IF (73.05MHz). The signal is amplified by the 1st IF amplifier 1 (Q102).

The signal then passes through two monolithic crystal filters (XF101 : Wide, XF102 : Narrow) to remove unnecessary nearby frequency components. The signal from the XF101 or XF102 is used as the 1st IF signal.

The 1st IF signal is amplified by 1st IF amplifier 2 (Q107) and fed into IC101 in the FM IF IC. The IF signal is then mixed with the 2nd local oscillator frequency of 73.505MHz to generate the 2nd IF of 455kHz. The 455kHz signal is then passed through a ceramic filter (CF101, CF103 : Wide, CF102, CF104 : Narrow) and fed back into IC101 for additional amplification.

The AF signal output from IC101 then passes through the control unit's HPF and D/A converter IC. After entering the AF power amplifier (IC522), the signal is output from the speaker.

Item	Rating
Nominal center frequency	73.05MHz
Pass bandwidth	±7.5kHz or more at 3dB
Attenuation bandwidth	±30kHz or less at 40dB
Ripple	1.0dB or less
Insertion loss	3.0dB or less
Guaranteed attenuation	85dB or more at fo+400~+1000kHz fo–200~–1000kHz
Terminating impedance	2.0kΩ / –0.5pF

Table 1 Crystal filter (L71-0514-05) : Wide (TX-RX unit XF101)

Item	Rating
Nominal center frequency	73.05MHz
Pass bandwidth	±3.75kHz or more at 3dB
Attenuation bandwidth	±20kHz or less at 40dB
Ripple	1.0dB or less
Insertion loss	4.0dB or less
Guaranteed attenuation	85dB or more at fo+400~+1000kHz fo–200~–1000kHz
Terminating impedance	2.0kΩ / –0.5pF

Table 2 Crystal filter (L71-0515-05) : Narrow (TX-RX unit XF102)

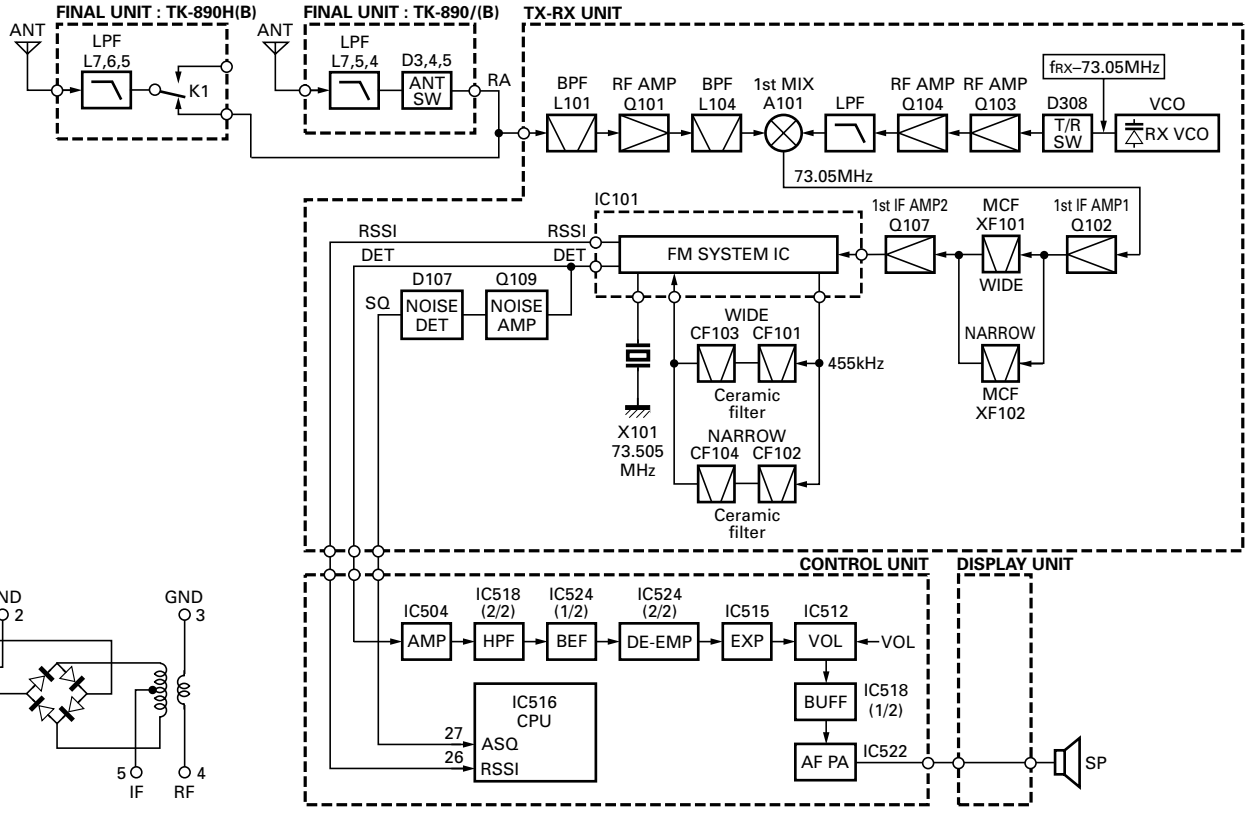


Fig. 5 Receiver circuit

Fig. 6 Double balanced mixer

CIRCUIT DESCRIPTION

3. Squelch Circuit

The output from IC101 enters FM IC again, then passed through a band-pass filter. The noise component output from IC101 is amplified by Q109 and rectified by D103 to produce a DC voltage corresponding to the nose level.

The DC voltage is sent to the analog port of the CPU (IC516/pin 27). And IC101 output a DC voltage (RSSI) corresponding to the input of the IF amplifier. The CPU reads the RSSI signal via pin 26. IC101 determines whether to output sounds from the speaker by comparing the input voltage of pin 27 with the present value.

Only during scan, the RSSI DC voltage is used together with the noise wave detection pin's DC voltage (pin 27).

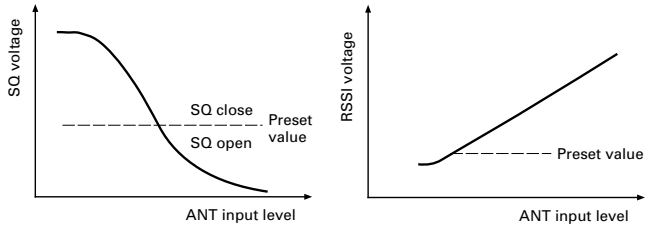


Fig. 7 Squelch and RSSI voltage vs ANT input level

4. RX BPF (L101, L104)

The signal's BPF bandwidth is 20MHz (see the table below)

Destination market	Allowable range of operation	Default setting
K : TK-890/(B)	450~490MHz	450~470MHz
K : TK-890H(B)	450~480MHz	450~470MHz
K2 : TK-890(B)	480~512MHz	480~500MHz
K3 : TK-890(B)	403~430MHz	410~430MHz

ex) When using 470~490MHz (TK-890/(B)), 470~480MHz (TK-890H(B)), tune L101 and L104 as needed while comparing with the chart below. (Refer to Adjustment)

TK-890/(B) **TK-890H(B)**

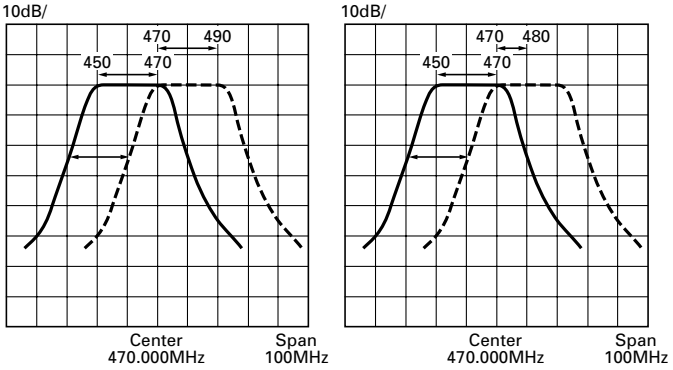


Fig. 8

5. VCO/PLL Circuit

The VCO of TK-890 consists of three VCO circuits which one oscillates the transmit signal with Q305 and the others do the first local receive signal with two RX-VCO. RX band range is divided into two range which lower band oscillates the RXL-VCO with Q306 and higher band does the RXH-VCO with Q307.

Each oscillators are switched by turning the source line for Q308, Q309, Q310, Q311 and Q312 on and off. The signal output of the VCO is amplified by the buffer amplifier Q313 and divided into two signals which one is amplified by Q314 and the other is done by Q315. The signal from Q314 passes through D308 which is transmit/receive switch, is amplified by Q201, Q204 and Q205, and is output from the CN203.

The signal from Q315 passes through the low-pass filter and is applied to IC301 which is PLL frequency synthesizer with VCXO ; X301. The VCXO of which the frequency stability is within 2.0ppm (temperature range of –30 to +60°C) generates 16.8MHz. The PLL-IC consists of three modulus prescaler, fractional divider, reference divider, digital phase comparator with charge pump output.

This PLL-IC is Fractional-N type synthesizer and performs is 40 or 50kHz reference signal which is eighth of the channel step (5 or 6.25kHz). The input signal from the pins 5 and 8 of the PLL-IC is divided down to the 40 or 50kHz and compared at digital phase comparator.

The pulsed output signal of the digital phase comparator is applied to the charge pump and transformed into DC signal. The DC signal from the pin 14 of the PLL-IC passes through the active low-pass filter (loop filter), is applied to the VCO and controls to keep the frequency of the VCO.

The serial data (DT, CP, EP) from the microprocessor IC516 is input to the PLL-IC. And PLL lock condition is always monitored by the pin 28 (UL) of IC516.

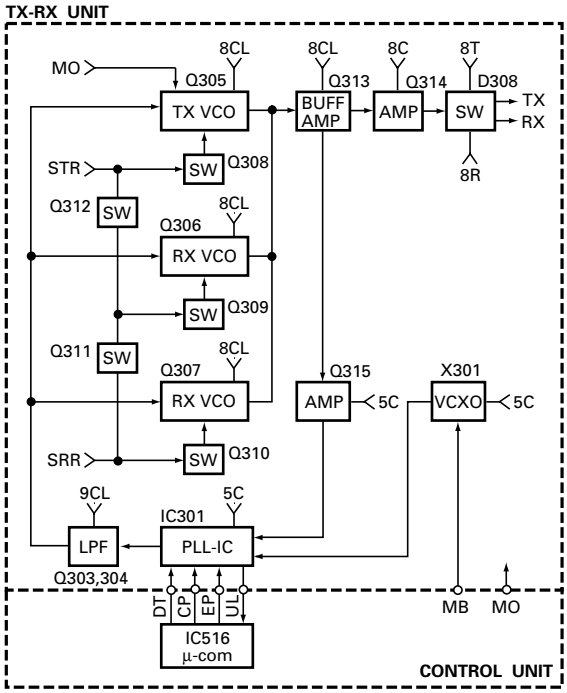


Fig. 9 VCO/PLL circuit

CIRCUIT DESCRIPTION

6. Control Circuit

The control unit consists of microprocessor IC and its peripheral circuits. It controls the TX-RX unit and transfers data to and from the control unit. The CPU (IC516) mainly performs the following :

1) Switching between transmission and reception according to the PTT signal input.
2) Reading channel, frequency, and program data from the memory circuit.
3) Sending frequency data to the PLL.
4) Turning the squelch on and off according to the voltage from the squelch circuit.
5) Controlling the audio mute circuit according to input decode data.
6) Sending encode data (QT, DQT).
7) Sending data to the D/A converter.

6-1. Memory circuit

A flash memory (IC519) with a capacity of 2Mbits contains the transceiver control program for the CPU (IC516) and data such as transceiver channels and operating features.

This program can be easily written from an external devices. Data, such as DTMF memories and operating status, tuning data are programmed into the EEPROM (IC514).

6-2. Shift register

IC517 and IC523 are an interface IC for I/O port expansion. It is used to expand the CPU (IC516) output ports.

6-3. D/A converter

IC512 is used as a conventional semi-fixed-resistor converter. It sets the following :

1) RX sensitivity
2) Transmission power
3) Modulation level
4) Audio power
5) Frequency

6-4. Power supply circuit

D507 is a protection diode for the excess voltage

1) Turning the transceiver on/off with a power switch. Each time you press the power switch, the IC501 output is alternated. The output is feed through Q501, Q503 to turn Q519 on. The power source is always supplied to the IGN terminal. If 24V DC is supplied to the transceiver by mistake, Q502 is turned on then Q503 and Q519 are turned off to protect the transceiver (turned off).
2) Turning the transceiver on with a power switch, then turning the transceiver off with the Timed Power Off (TPO) function. POF is controlled by CPU's TPO function. POF is to turn the transceiver off. The POF logic signal is feed through Q507 and Q506 then 8 pin of IC501 to turn the transceiver off.
3) Turning the transceiver on with IGN SENS, then turning the transceiver off with TPO function. If IGN is turned on, Q543 and Q542 are turned on then the IC501 detects the change. IC501 outputs the signal to turn Q541 off, then Q503 and Q519 are turned on. When POF is detected by 6 pin of IC501, Q541 is turned on then Q503 and Q519 are turned off.

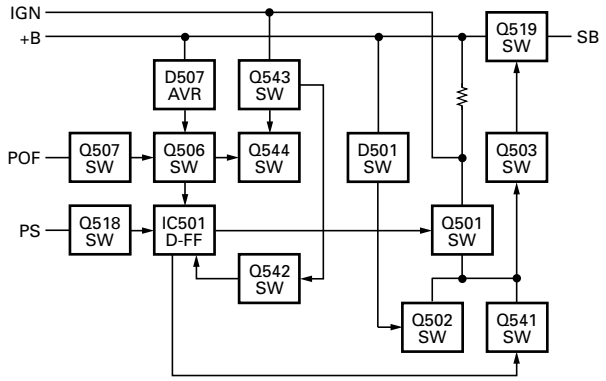


Fig. 10 Power supply circuit

7. Signalling Circuit

7-1. Encode

- **QT, DQT**

The CPU (IC516) transmits the encode data selected by the program. The data items are output from CPU pin 34.

The signal from this pin passes though the CR low-pass filter and goes to the summing amplifier (IC510) in the microphone amplifier.

- **DTMF**

The DTMF-encoder (IC511) transmits the encode data. The encode data is passed to the D/A convertor (IC512) for DTMF deviation adjustment, and goes to IC505 in the IDC circuit of the microphone amplifier.

7-2. Decode

- **QT, DQT**

The demodulated signal from CN502 pin 5 is amplified by IC521 and passes through a low-pass filter (IC502) to remove audio components. The signal is input to pin 25 of the CPU. The CPU digitizes this signal, and decodes the signal.

- **2 TONE**

The demodulated signal from CN502 pin 5 is amplified by IC504 and passes through a high-pass filter (IC518) and a band-elimination filter (IC524) to remove QT and DQT.

This signal is amplified by IC521 and inputs pin 91 of the CPU.

- **DTMF**

The demodulated signal from CN502 pin 5 is amplified by IC504 and passes through a high-pass filter (IC518) and band-elimination filter (IC524) to remove QT and DQT.

This signal inputs pin 1 of the DTMF decoder (IC525).

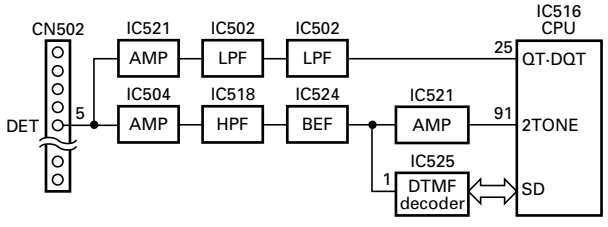


Fig. 11 Decode

CIRCUIT DESCRIPTION

8. Display Unit

The optional display unit (front panel unit) for the TK-890(B)/H(B) comes in two models : KCH-10 and KCH-11

8-1. KCH-10 (Contain : TK-890)

This display unit consists of a CPU (IC4) containing the LCD driver, a reset IC (IC2), 5V AVR (IC1), EEPROM (IC3), and other components.

- **Encoder**

Channels are changed by the rotary encoder (ENC). The up/down pulses from the rotary encoder enter the CPU (IC4), and converted to a serial data signal, and are sent to the control unit.

- **Power supply**

Power is supplied to the CPU by converting SB from the control unit to 5V by IC1. And SB is supplied to the LED for backlight.

- **CPU (containing LCD driver)**

The on/off signals of keys other than the power switch, and the PTT and HOOK signals, are converted to serial data and sent to the control unit. Data is displayed on the 13-segments, 8-digits LCD and 7-segments, 3-digits LCD by the built-in LCD driver.

- **Dimmer function**

From the control of the CPU's DM1/DM2 port, you can switch the LCD/KEY backlight, busy/TX LED, or the optional KMC-28 key backlight as shown in the following table.

Dimmer setting	LCD	KEY	Busy/TX	KMC-28
H	H	ON	ON	ON
M	M	ON	ON	ON
L	L	ON	ON	ON
OFF	OFF	OFF	OFF	OFF

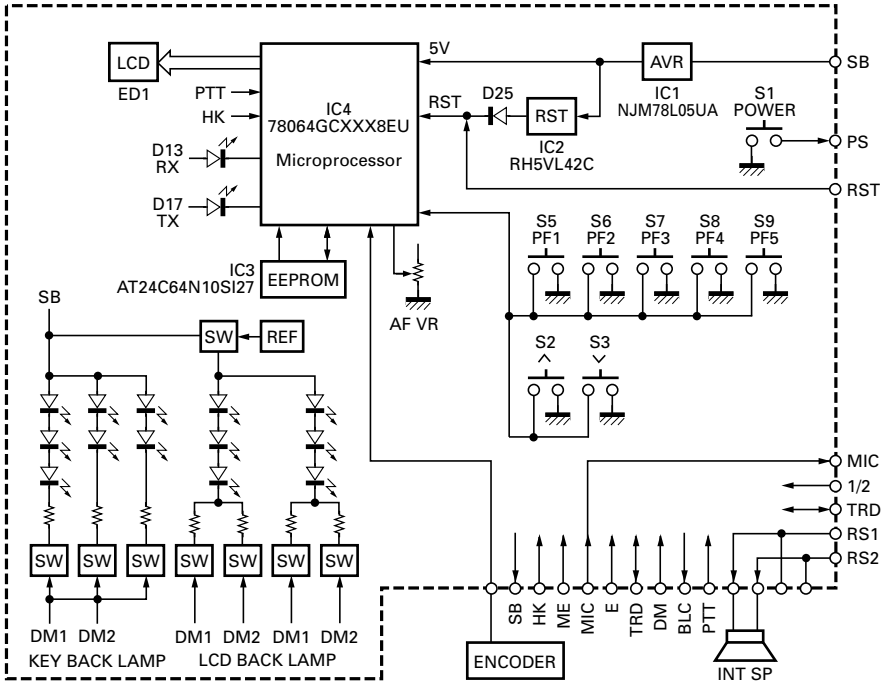


Fig. 12 KCH-10 block diagram

CIRCUIT DESCRIPTION

8-2. KCH-11

This display unit consists of a CPU (IC4) a reset IC (IC2), 5V AVR (IC1), EEPROM (IC3), and other components.

- **Encoder**

Channels are changed by the rotary encoder (ENC). The up/down pulses from the rotary encoder enter the CPU (IC4), and converted to a serial data signal, and are sent to the control unit.

- **Power supply**

Power is supplied to the CPU by converting SB from the control unit to 5V by IC1. And SB is supplied for the LED of backlight.

- **CPU**

The on/off signals of keys other than the power switch, and the PTT and HOOK signals, are converted to serial data and sent to the control unit. Data is displayed on the 14-digits and 3-digits dot matrix alphanumeric display.

- **Dimmer function**

From the control of the CPU's DM1/DM2 port, you can switch the LCD/KEY backlight, busy/TX LED, or the optional KMC-28 key backlight as shown in the following table.

Dimmer setting	LCD	KEY	Busy/TX	KMC-28
H	H	ON	ON	ON
M	M	ON	ON	ON
L	L	ON	ON	ON
OFF	OFF	OFF	OFF	OFF

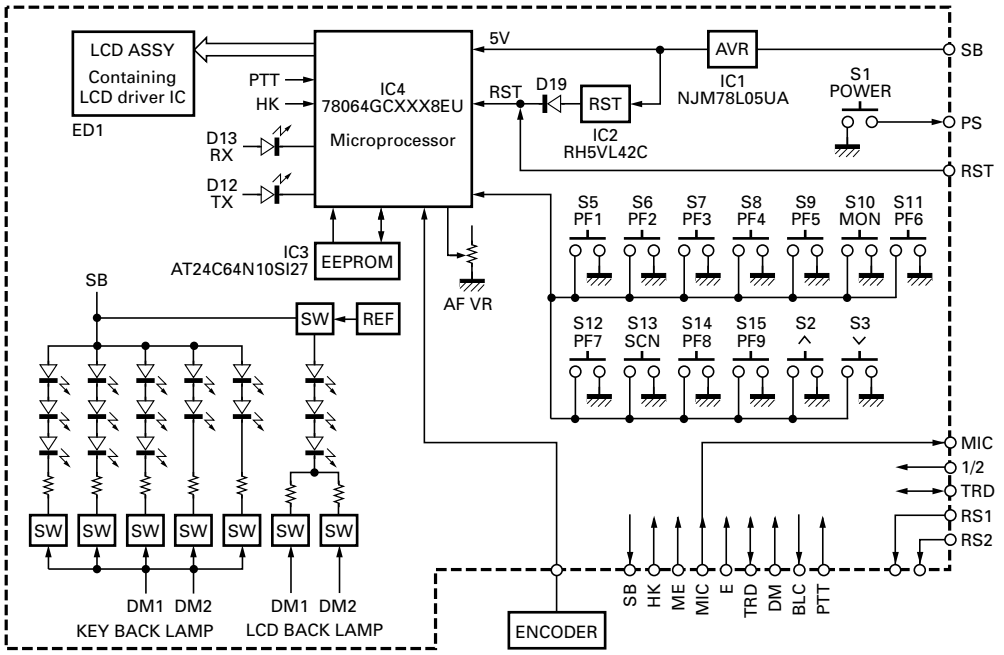


Fig. 13 KCH-11 block diagram

SEMICONDUCTOR DATA

Microprocessor : 784214GCXXX8EU (Control Unit IC516)

- **Terminal function**

Pin No.	Pin name	I/O	Action
1	FCLR	O	Modem FCLR
2	CK	O	Common CLOCK
3	EM	O	D/A converter CS
4	MSKE	O	Modem MSKE
5	DIN	O	Modem DIN
6	EP	O	PLL LE
7	SCL	O	DTMF encoder CLOCK
8	SDT	O	DTMF encoder DATA
9	VDD		+5V
10,11	X2, X1		X'tal
12	VSS		GND
13	XT2		Open
14	XT1		GND
15	RESET		CPU reset
16	TEST	I	Serial interface TEST
17	TRD	I	Modem TRD
18	RTM	I	Modem RTM
19	STD	I	DTMF decoder STD
20	EC2	O	Shift register 2 (Control) CS
21	DT	O	Common DATA
22	ACK	O	DTMF decoder CLOCK
23	AVDD		+5V
24	AVREF0		+5V
25	TI	I	QT/DQT IN
26	RSI	I	RSSI IN
27	ASQ	I	Analog squelch IN
28	UL	I	PLL UNLOCK
29	SD	I	DTMF decoder SD
30	RDT	I	Modem RDT
31	RSV2	I	Reserved
32	IGN	I	Ignition IN
33	AVSS		GND
34	TO	O	QT/DQT OUT
35	CP	O	PLL CLOCK
36	AVREF1		+5V
37	RXD2	I	Acc RXD
38	TXD2	O	Acc TXD
39	ES	O	Shift register (TX/RX) CS

Pin No.	Pin name	I/O	Action
40	RXD1	I	Serial interface RXD
41	TXD1	O	Serial interface TXD
42	STB	O	Modem STB
43	EC1	O	Shift registerl (Control) CS
44	EI	O	Shift register (Interface) CS
45	SEL	I/O	GE-STAR I/O
46	EPT	I	GE-STAR EPT
47	EMG	O	GE-STAR EMG
48~71			Flash ROM access port
72	VSS		GND
73~74			Flash ROM access port
75			Flash ROM (4Mbit) access port
76			Not used.
77~78			Flash ROM access port
79	POF	O	Timed Power OFF.
80			Not used.
81	VDD		+5V
82	EN2	O	D/A converter (Interface) CS
83	CLK	O	EEPROM CLOCK
84	SDA	I/O	EEPROM DATA
85	RSV1	O	Reserved
86	AI1	I	Acc PF Input 1
87	AI2	I	Acc PF Input 2
88	AI4	I	Acc PF Input 4
89	AI3	I	Acc PF Input 3
90	AI5	I	Acc PF Input 5
91	2TN	I	2tone pulse IN
92	KEY	O	TX power SW
93	SQ	O	Acc SQ OUT L : BUSY, H : Not BUSY
94	TEST		GND
95	AO1	O	Acc PF Output 1
96	AO2	O	Acc PF Output 2
97	AO3	O	Acc PF Output 3
98	AO4	O	Acc PF Output 4
99	1/2	I	Deck 1/2 L : Deck 1, H : Deck 2
100	SFT	O	Beat shift

SEMICONDUCTOR DATA

Microprocessor : 78064GCXXX8EU (Display Unit IC4)

- **Terminal function**

Pin No.	Pin name	I/O	Action
1	PTT	I	MIC PTT L : ON, H : OFF
2	K5	I	[MON] key L : ON, H : OFF
3	K6	I	[PF6] key L : ON, H : OFF
4	K7	I	[PF1] key L : ON, H : OFF
5	K8	I	[PF2] key (Full) L : ON, H : OFF
6	K9	I	[PF3] key (Full) L : ON, H : OFF
7	K10	I	[PF7] key (Full) L : ON, H : OFF
8	AVDD	–	+5V
9	AVREF	–	+5V
10	RED	O	TX LED (Red) L : ON, H : OFF
11	GRN	O	BUSY LED (Green) L : ON, H : OFF
12	E	–	GND
13	DM1	O	Backlight (Dimmer)
14	DM2	O	Backlight (Dimmer)
15		I	Not used
16	K11	I	[SCN] key (Full) L : ON, H : OFF
17	K12	I	[PF8] key (Full) L : ON, H : OFF
18	K13	I	[PF9] key (Full) L : ON, H : OFF
19	K1	I	[PF4] key L : ON, H : OFF
20	K2	I	[PF5] key L : ON, H : OFF
21	1/2	I	HEAD 1/2 jumper HEAD 1 : Jumper installed, HEAD 2 : Jumper removed
22	B/F	I	Panel type Jumper Basic panel : Jumper installed. Full panel : Jumper removed
23~26	COM0~3	O	LCD drive common 0~3
27	BIAS		LCD drive bias
28~30	VLC0~2		LCD drive power suply
31	VSS		GND
32~67	S0~35	O	LCD drive segment 0~35
68	S36	O	LCD drive segment 36 (Basic)
	CE		DOT matrix driver CE (Full)
69	S37	O	LCD drive segment 37 (Basic)
	CL		DOT matrix driver CL (Full)
70	S38	O	LCD drive segment 38 (Basic)
	DI		DOT matrix driver DI (Full)
71	S39	O	LCD drive segment 39 (Basic)
	DO	I	DOT matrix driver DO (Full)
72	SCK	O	EEPROM serial clock
73	SDT	I/O	EEPROM serial data
74			Not used
75	RXD	I	Serial interface RXD
76	TXD	O	Serial interface TXD
77			Not used
78		–	GND
79	X2	–	X'tal 4.19MHz
80	X1	–	X'tal 4.19MHz
81	VDD	–	+5V
82,83			Not used
84	RST	–	Reset
85	END	I	Encoder data
86	K3	I	[GR ^] Key L : ON, H : OFF
87	K4	I	[GR v] Key L : ON, H : OFF
88	ENI	I	Encoder interrupt
89	TEST	I	Serial interface test
90	AO2	O	Programable AUX output B
91	AO1	O	Programable AUX output A
92	AI2	I	Programable AUX input B
93	AI1	I	Programable AUX input A
94	BLC	O	MIC backlight ON/OFF L : ON, H : OFF
95,96			Not used
97	DM	I	DTMF MIC key pad data input
98	HK	I	MIC hook L : ON, H : OFF
99	AVSS	–	GND
100	VOL	I	AF volume

Shift Register Output

- **Shift register 1 on control unit (IC523)**

Pin No.	Port	Name	Action
4	Q1	PTO	GE-STAR/Scrambler PTO
5	Q2	BC4	Scrambler BC4
6	Q3	BC3	Scrambler BC3
7	Q4	BC2	Scrambler BC2
14	Q5	AC	Scrambler AC
13	Q6	BC1	Scrambler BC1
12	Q7	HR	Acc HR
11	Q8	CMP	Compander H : ON, L : OFF

SEMICONDUCTOR DATA

- **Shift register 2 on control unit (IC517)**

Pin No.	Port	Name	Action
4	Q1	MM	MIC mute H : Mute, L : Unmute
5	Q2	AS	Audio line SW RX BPF⟷DE-EMP
6	Q3	DS	DET line SW DET⟷RX BPF
7	Q4	AM1	Audio mute 1
14	Q5	RG1	Modem RG1
13	Q6	RG2	Modem RG2
12	Q7	MS	MOD line SW MIC AMP⟷RX BPF
11	Q8	AM2	Audio mute 2

- **Shift register on TX-RX (IC201)**

Pin No.	Port	Name	Action
4	Q1	STR	TX/RX VCO SW
5	Q2	SRR	RX VCO SW
6	Q3		Not used
7	Q4		Not used
14	Q5	8R	8R SW
13	Q6	W/N	Wide/Narrow SW H : Narrow, L : Wide
12	Q7		Not used
11	Q8		Not used

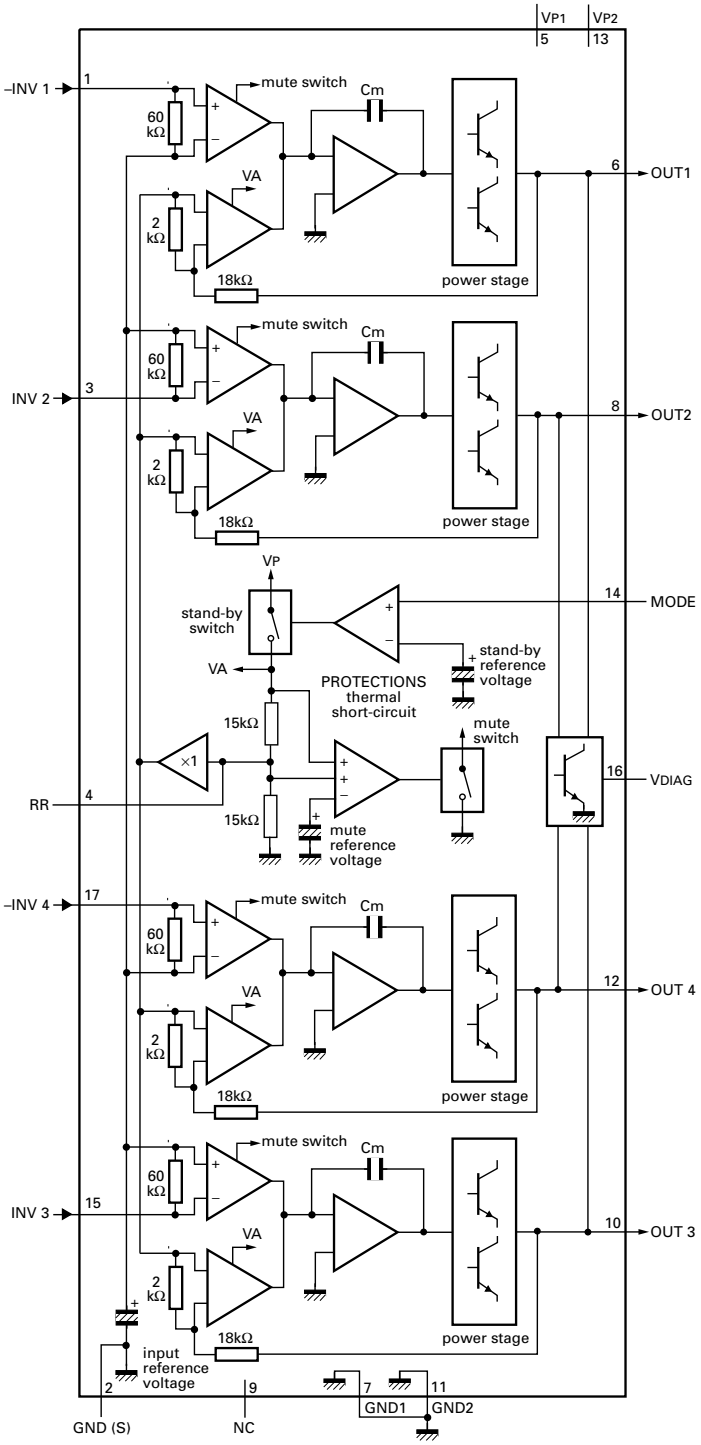
Audio Power Amplifier

: TDA8561Q (Control Unit IC522)

- **Terminal description**

Pin No.	Symbol	Description
1	–INV1	Non-inverting input 1
2	GND (S)	Signal ground
3	INV 2	Inverting input 2
4	RR	Supply voltage ripple rejection
5	VP1	Supply voltage
6	OUT 1	Output 1
7	GND1	Power ground 1
8	OUT 2	Output 2
9	NC	Not connected
10	OUT 3	Output 3
11	GND2	Power ground 2
12	OUT 4	Output 4
13	VP2	Supply voltage
14	MODE	Mode select switch input
15	INV 3	Inverting input 3
16	VDIAG	Diagnostic output
17	–INV 4	Non-inverting input 4

- **Block diagram**



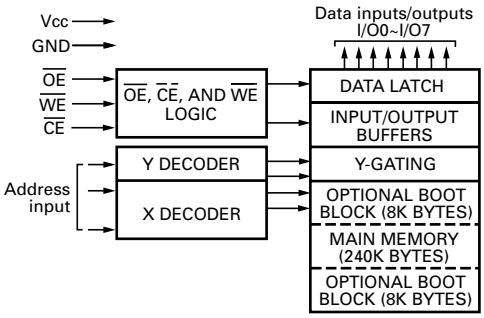
SEMICONDUCTOR DATA

Flash ROM : AT29C020-90TI (Control Unit IC519)

- **Terminal description**

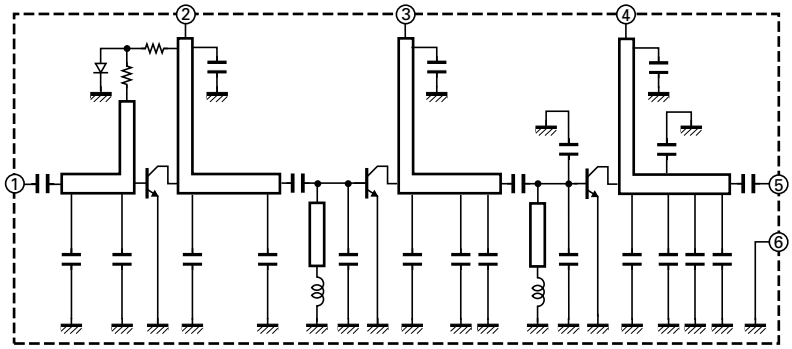
Pin Name	Function
A0~A17	Addresses
$\overline{CE}$	Chip enable
$\overline{OE}$	Output enable
$\overline{WE}$	Write enable
I/O0~I/O7	Data inputs/outputs
NC	No connect

- **Block diagram**



Power Amplifier : M68769H (Final Unit IC1) TK-890/(B) K type
: M68769SH (Final Unit IC1) TK-890(B) K2 type
: M68769L (Final Unit IC1) TK-890(B) K3 type

- **Equivalent circuit**



1 : Input
2 : 1st stage power supply
3 : Drive stage power supply
4 : Final stage power supply
5 : Output
6 : Fin (Earth)

Final Amplifier : 2SC4989 (Final Unit Q6, Q7) TK-890H(B)

- **Absolute maximum ratings**

Tc= 25°C unless otherwise noted

Symbol	Parameter	Conditiona	Rating
V_{CBO}	Collector-base voltage		35V
V_{EBO}	Emitter-base voltage		4V
V_{CEO}	Collector-emitter voltage	$R_{BE} = \infty$	17V
Ic	Collector current		18A
Pc	Collector dissipation		150W
Tj	Junction temperature		175°C
Tstg	Storage temperature		–55 to 175°C

DESCRIPTION OF COMPONENTS

General : TK-890/(B)

Ref. No.	Use/Function	Operation/Condition
IC1	Power amplifier	

General : TK-890H(B)

Ref. No.	Use/Function	Operation/Condition
IC1	TX drive amplifier	
Q6,7	Final amplifier	

Final Unit (X45-3570-10) : TK-890H(B)

Ref. No.	Use/Function	Operation/Condition
Q1	DC amplifier	APC controller
Q2	DC switch	
Q3	APC controller	
Q4	DC amplifier	APC controller
Q5	APC comparator	APC controller
Q8	TX/RX switch	On when RX
Q9	TX/RX switch	ON when RX
Q10,11	DC switch	
D1	Forward wave rectification	
D2	Reflected wave rectification	
D3	Combiner	
D4	Surge absorption	
D5	Voltage reference	
D6	Surge absorption	
D7	Protect of reverse connection	

TX-RX Unit (X57-5620-XX) (A/3)

-10 : TK-890/(B) K -11 : TK-890(B) K2
-12 : TK-890(B) K3 -13 : TK-890H(B) K

Ref. No.	Use/Function	Operation/Condition
IC101	FM IC	1, 2 : Oscillator (73.505MHz) 3 : Mixer output 4 : Vcc 5 : IF input (455kHz) 7 : Noise filter output 8 : Noise filter input 9 : DET output (AF OUT) 10 : Quad input 12 : RSSI output 16 : Input (73.05MHz)
IC201	Shift register	
IC202	AVR	Input : 8V Output : 5V
IC203	AVR	Input : SB Output : 9V
IC301	PLL IC	1 : CP 2 : DT 3 : EP 4 : Vss 5 : Fin 7 : Vcc 8 : REFin (16.8MHz) 14 : Charge pump output 18 : UL ("H" when lock) 20 : VDD (5V)
Q101	1st amplifier	RX frequency
Q102	IF amplifier	73.05MHz
Q103,104	Mix local amplifier	(RX frequency – 73.05)MHz
Q105	DC switch	ON when wide
Q106	DC switch	On when narrow
Q107	IF amplifier	73.05MHz
Q108	DC switch	On when wide
Q109	SQL amplifier	(Noise amplifier)
Q201	TX pre-drive amplifier	
Q202	8T switch	8V when TX
Q203	8T switch	On when TX
Q204,205	TX pre-drive amplifier	
Q206	8R switch	On when RX
Q207	8R switch	8V when RX
Q301	Ripple filter	8CL
Q302	Ripple filter	9CL
Q303,304	Loop filter	
Q305	OSC	TX-VCO
Q306	OSC	RX low-VCO
Q307	OSC	RX high-VCO
Q308	DC switch	On when TX
Q309	DC switch	On when RX low
Q310,311	DC switch	On when RX high
Q312	DC switch	Off when RX low or RX high
Q313	Buffer amplifier	
Q314,315	Amplifier	
D102~105	IF switch	Wide/Narrow
D107	Noise detector	
D108	DC switch	On when TX
D201	TX pre-drive bias	
D301	Frequency controller	TX-VCO
D302	Frequency controller	RX low-VCO
D303	Frequency controller	RX high-VCO
D304	Frequency controller	TX-VCO
D305	Frequency controller	RX low-VCO
D306	Frequency controller	RX high-VCO
D307	Modulator	
D308	RF switch	TX/RX
A101	DBM	

DESCRIPTION OF COMPONENTS

Control Unit (X57-5620-XX) (B/3)

-10 : TK-890/(B) K -11 : TK-890(B) K2
-12 : TK-890(B) K3 -13 : TK-890H(B) K

Ref. No.	Use/Function	Operation/Condition
IC501	D FF	
IC502	LPF	
IC503	AVR	Input : SB, Output : 8V
IC504	Audio processor	
IC505	HPF/IDC	
IC506	AVR	Input : 8V, Output : 5V
IC508	Limiter/Buffer amplifier	
IC509	Buffer amplifier	
IC510	Summing amplifier/LPF	
IC511	DTMF encoder	
IC512	D/A converter	
IC513	LPF/Summing amplifier	
IC514	EEPROM	
IC515	Analog switch	
IC516	CPU	
IC517	Shift register	
IC518	Buffer amplifier	
IC519	Flash ROM	
IC520	NOR gate	
IC521	Buffer amplifier/ Amplifier	
IC522	Audio power amplifier	
IC523	Shift register	
IC524	Buffer amplifier/ De-emphasis	
IC525	DTMF decoder	
IC526	Compander amplifier	
Q501	DC switch	
Q502	DC switch	On when 18V or more
Q503	DC switch	On when the power switch on
Q504	Muting switch	MIC mute
Q505	DC switch	
Q506,507	DC switch	Timed power off switch
Q509	DC switch	Off when P/A
Q510	DC switch	Off when EXT SP
Q511	DC switch	Off when INT SP
Q512	DC switch	Off when RX busy
Q513	DC switch	
Q514	Muting switch	On when AF mute
Q516,517	DC switch	On when on signalling code
Q518	DC switch	On when push the power switch
Q519	Power switch	On when the power switch on
Q520	DC switch	On when horn alert
Q522	Beat shift switch	On when beat shift
Q523	DC switch	Serial data inverter
Q524	DC switch	Serial data transmitter
Q525	DC switch	
Q526,527	DC switch	On when compander on
Q528,529	DC switch	On when compander off
Q530~532	DC switch	On when compander on
Q533~540	DC switch	On when output port on
Q541	DC switch	On when timed power off
Q542,543	DC switch	IGN switch
Q544	DC switch	Timed power off switch
D501	Voltage reference	Protection of high voltage
D502	Reverse current prevention	
D503	Surge absorption	
D504	Voltage reference	
D505,506	DC switch	
D507	Voltage reference	
D508	DCswitch	
D511	DC switch	
D512	Reverse current prevention	
D513~517	Surge absorption	
D519	Surge absorption	
D521	Surge absorption	
D523,524	Surge absorption	
D526,527	Surge absorption	
D528,529	Reverse current prevention	

Final Unit (X57-5620-XX) (C/3)

-10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3

Ref. No.	Use/Function	Operation/Condition
Q1	DC amplifier	APC controller
Q2	APC controller	
Q3,4	DC switch	
Q5	APC comparator	APC controller
Q6	DC switch	
D1	Pretection of reverse connection	
D2	Surge absorption	
D3~5	ANT switch	
D6	Forward wave rectification	
D7	Reflected wave rectification	

DESCRIPTION OF COMPONENTS

Display Unit (X54-3190-20) : KCH-10

Ref. No.	Use/Function	Operation/Condition
IC1	AVR	Input : SB Output : 5V
IC2	Reset	
IC3	EEPROM	
IC4	CPU/LCD driver	
Q1	9V AVR	
Q3	DC switch	Dimmer “Hi”, “Low” : ON
Q4	DC switch	∧ , ∨ key lighting : ON
Q5	DC switch	Dimmer “Hi”, “Mid” : ON
Q6	DC switch	Dimmer “Hi”, “Low” : ON
Q7	DC switch	Dimmer “Hi”, “Mid” : ON
Q9	DC switch	“PF1”, “PF2”, “PF3” key lighting : ON
Q11	DC switch	“PF4”, “PF5” key lighting : ON
Q12,13	TRD switch	
Q14,15	DC switch	On when output port on
D1,2	Surge absorption	
D5	Voltage reference	
D6~11	LCD backlight	
D12	BUSY LED	
D13	TX LED	
D16,17	Surge absorption	
D19~21	Surge absorption	
D24	DC switch	Key lighting : ON
D25	DC switch	

Display Unit (X54-3200-20) : KCH-11

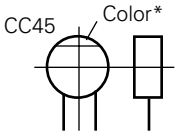
Ref. No.	Use/Function	Operation/Condition
IC1	AVR	Input : SB Output : 5V
IC2	Reset	
IC3	EEPROM	
IC4	CPU	
Q1	9V AVR	
Q2	DC switch	∧ , ∨ key lighting : ON
Q3	DC switch	Dimmer “Hi”, “Low” : ON
Q4	DC switch	“MON”, “PF6”, “PF7” key lighting : ON
Q5	DC switch	“PF1”, “PF2”, “PF3” key lighting : ON
Q6	DC switch	Dimmer “Hi”, “Mid” : ON
Q7	DC switch	“SCN”, “PF8”, “PF9” key lighting : ON
Q8	DC switch	“PF4”, “PF5” key lighting : ON
Q9,10	TRD switch	
Q14,15	DC switch	On when output port on
D1,2	Surge absorption	
D5	Voltage reference	
D6	BUSY LED	
D7	TX LED	
D11,12	Surge absorption	
D14~16	Surge absorption	
D18	DC switch	Key lighting : ON
D19	DC switch	

PARTS LIST

CAPACITORS

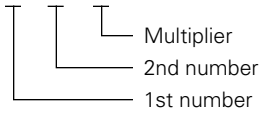
CC	45	TH	1H	220	J
1	2	3	4	5	6

1 = Type … ceramic, electrolytic, etc.
2 = Shape … round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001µF
103 = 0.01µF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	–80	–150	–220	–330	–470	–750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = –470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 –20	+80 –20	+100 –0	More than 10µF – 10 ~ +50 Less than 4.7µF –10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	–

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0
H	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05

RESISTORS

• Chip resistor (Carbon)

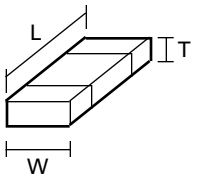
(EX) R D 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type … ceramic, electrolytic, etc.
2 = Shape … round, square, ect.
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension



Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6 ± 0.2	0.8 ± 0.2	0.5 ± 0.1
H	1.0 ± 0.05	0.5 ± 0.05	0.35 ± 0.05

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

TK-890/(B)/H(B)

PARTS LIST

✻ New Parts. ⚠ indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia **K**: USA **P** : Canada
Y: PX (Far East, Hawaii) **T**: England **E** : Europe
Y: AAFES (Europe) **X**: Australia **M**: Other Areas

TK-890
TK-890(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
TK-890					
1	3A		A01-2161-02	CABINET (UPPER)	
2	1A		A01-2162-02	CABINET (LOWER)	
3	2B	✻	A10-1388-11	CHASSIS	
4	2A	✻	A62-0606-13	PANEL ASSY (KCH-10)	
6	3A,3B		B42-2455-04	STICKER (M4X8 MAX)	
7	1J		B46-0470-00	WARRANTY CARD ACSY	
8	1J	✻	B62-0970-10	INSTRUCTION MANUAL	
-		✻	B72-1454-24	MODEL NAME PLATE	
11	2B		E04-0167-05	RF COAXIAL PECEPTACLE (M)	
12	1I	✻	E30-3318-15	DC CORD ASSY ACSY	
13	2A		E31-3269-05	LEAD WIRE WITH MINIPIN PLUG (RA/DO)	
14	2B		E37-0708-05	LEAD WIRE WITH CONNECTOR (ACC:9P)	
15	1B		E37-0728-05	LEAD WIRE WITH CONNECTOR (DC:2P)	
16	1B,2I		E37-0733-05	SHORT PLUG (SP) ACSY	
17	2B	✻	E37-0772-15	LEAD WIRE WITH CONNECTOR (D-SUB:25P)	
18	3A		E37-0776-05	FLAT CABLE (CONT-TX:18P)	
-			E37-0787-05	LEAD WIRE WITH CONNECTOR (KCH-10)	
21	2I		F05-1537-05	FUSE (BLADE) (15A/32V) ACSY	
23	2B		F09-0445-05	CAP (D-SUB)	
24	1B		F10-1479-03	SHIELDING PLATE (FINAL)	
22	2I		F29-0472-04	INSULATING COVER ACSY	
26	2A		G02-0599-04	FLAT SPRING (APC)	
27	3A		G02-0709-04	FLAT SPRING (AUDIO AMP)	
28	3A		G02-0715-04	FLAT SPRING (AVR)	
29	2B		G53-0712-03	PACKING (DC,ACC)	
-			G53-0838-03	PACKING (KCH-10:PANEL ASSY)	
-			G53-0839-14	PACKING (KCH-10:SP)	
32	3B		G53-0869-03	PACKING (CABINET UPPER)	
33	1A	✻	G53-0900-03	PACKING (CABINET LOWER)	
-		✻	G53-1523-04	PACKING (KCH-10:VOL)	
36	2J		H10-6621-02	POLYSTYRENE FOAMED FIXTURE	
35	1J		H11-0896-04	POLYSTYRENE FOAMED BOARD	
38	1I		H12-1403-04	PACKING FIXTURE	
39	2J		H13-1066-04	CARTON BOARD	
40	2I		H25-0029-04	PROTECTION BAG (60/110/0.07)	
42	2I		H25-0103-04	PROTECTION BAG (125/250/0.07)	
43	2I		H25-0117-04	PROTECTION BAG (80/250/0.07)	
44	1J		H25-0194-04	PROTECTION BAG (280/400/0.07)	
41	2I	✻	H25-2063-04	PROTECTION BAG (80/120/0.03)	
45	3J		H52-1230-02	ITEM CARTON CASE	
46	2I		J19-1584-05	HOLDER (MIC) ACSY	
47	1B		J21-8346-04	HARDWARE FIXTURE (DC,ACC)	
-		✻	J21-8417-04	HARDWARE FIXTURE (KCH-10:MIC CONNECTOR)	
48	2I		J29-0422-13	BRACKET ACSY	
-			J39-0625-04	SPACER (KCH-10:TX-BUSY)	
50	2I		J61-0307-05	BAND ACSY	
-			K29-4664-04	KNOB (KCH-10:VOL,UP/DOWN)	
53	2I		K29-4704-04	KNOB ACSY	
-			K29-5251-12	KEY TOP (KCH-10)	
55	2I		K29-5276-03	KNOB ACSY	
56	2I		K29-5277-03	KNOB ACSY	
57	2I		K29-5305-03	KNOB ACSY	
A	2B		N09-2292-05	HEXAGON HEAD SCREW	
B	2A,2B		N32-3006-46	FLAT HEAD MACHINE SCREW	
C	1A,3B		N33-3006-45	OVAL HEAD MACHINE SCREW	
D	1A,2A		N35-3006-46	BINDING HEAD MACHINE SCREW	
E	2B		N67-3008-46	PAN HEAD SEMS SCREW W	
-			N87-2605-46	BRAZIER HEAD TAPTITE SCREW (KCH-10)	
G	2A,3B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW	
-			N87-2608-46	BRAZIER HEAD TAPTITE SCREW (KCH-10)	
J	1A		N87-2612-46	BRAZIER HEAD TAPTITE SCREW	
-			N87-3006-46	BRAZIER HEAD TAPTITE SCREW (KCH-10)	
L	1B,2B		N87-3008-46	BRAZIER HEAD TAPTITE SCREW	
59	2I		N99-0321-05	SCREW SET ACSY	
-			T07-0265-05	SPEAKER (KCH-10)	
62	1I	✻	T91-0587-25	MICROPHONE (KMC-27) ACSY	
TK-890(B)					
1	3A		A01-2161-02	CABINET (UPPER)	
2	1A		A01-2162-02	CABINET (LOWER)	
3	2B	✻	A10-1388-11	CHASSIS	
6	3A,3B		B42-2455-04	STICKER (M4X8 MAX)	
7	1J		B46-0470-00	WARRANTY CARD ACSY	
8	1J	✻	B62-0970-10	INSTRUCTION MANUAL	
-		✻	B72-1454-24	MODEL NAME PLATE	K
-		✻	B72-1456-14	MODEL NAME PLATE	K2
-		✻	B72-1457-24	MODEL NAME PLATE	K3
11	2B		E04-0167-05	RF COAXIAL PECEPTACLE (M)	
13	2A		E31-3269-05	LEAD WIRE WITH MINIPIN PLUG (RA/DO)	
14	2B		E37-0708-05	LEAD WIRE WITH CONNECTOR (ACC:9P)	
15	1B		E37-0728-05	LEAD WIRE WITH CONNECTOR (DC:2P)	
16	1B,2I		E37-0733-05	SHORT PLUG (SP) ACSY	
17	2B	✻	E37-0772-15	LEAD WIRE WITH CONNECTOR (D-SUB:25P)	
18	3A		E37-0776-05	FLAT CABLE (CONT-TX:18P)	
23	2B		F09-0445-05	CAP (D-SUB)	
24	1B		F10-1479-03	SHIELDING PLATE (FINAL)	
22	2I		F29-0472-04	INSULATING COVER ACSY	
26	2A		G02-0599-04	FLAT SPRING (APC)	
27	3A		G02-0709-04	FLAT SPRING (AUDIO AMP)	
28	3A		G02-0715-04	FLAT SPRING (AVR)	
29	2B		G53-0712-03	PACKING (DC,ACC)	
32	3B		G53-0869-03	PACKING (CABINET UPPER)	
33	1A	✻	G53-0900-03	PACKING (CABINET LOWER)	
36	2J		H10-6621-02	POLYSTYRENE FOAMED FIXTURE	
37	2J		H11-0892-04	POLYSTYRENE FOAMED BOARD	
35	1J		H11-0896-04	POLYSTYRENE FOAMED BOARD	
38	1I		H12-1403-04	PACKING FIXTURE	
39	2J		H13-1066-04	CARTON BOARD	
42	2I		H25-0103-04	PROTECTION BAG (125/250/0.07)	
44	1J		H25-0194-04	PROTECTION BAG (280/400/0.07)	
41	2I	✻	H25-2063-04	PROTECTION BAG (80/120/0.03)	
45	3J		H52-1231-12	ITEM CARTON CASE	

PARTS LIST

TK-890(B)
TX-RX UNIT (X57-5620-XX) : TK-890/(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
47	1B		J21-8346-04	HARDWARE FIXTURE (DC,ACC)	
50	2I		J61-0307-05	BAND ACSY	
A	2B		N09-2292-05	HEXAGON HEAD SCREW	
C	1A,3B		N33-3006-45	OVAL HEAD MACHINE SCREW	
D	1A,2A		N35-3006-46	BINDING HEAD MACHINE SCREW	
E	2B		N67-3008-46	PAN HEAD SEMS SCREW W	
G	2A,3B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW	
J	1A		N87-2612-46	BRAZIER HEAD TAPTITE SCREW	
L	1B,2B		N87-3008-46	BRAZIER HEAD TAPTITE SCREW	
59	2I		N99-0365-05	SCREW SET ACSY	
TX-RX UNIT (X57-5620-XX) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3					
C1			CK73GB1H471K	CHIP C 470PF K	
C2			C92-0721-05	ELECTRO 330UF 25WV	
C3			C92-0725-05	ELECTRO 10UF 35WV	K,K2
C4			C92-0721-05	ELECTRO 330UF 25WV	
C5			CK73FB1H472K	CHIP C 4700PF K	
C6			CK73GB1H471K	CHIP C 470PF K	
C7			CK73FB1H472K	CHIP C 4700PF K	
C8			C92-0725-05	ELECTRO 10UF 35WV	K,K2
C9			CK73GB1H471K	CHIP C 470PF K	
C10			C92-0724-05	ELECTRO 10UF 50WV	
C11			C92-0725-05	ELECTRO 10UF 35WV	K,K2
C12			CK73FB1H472K	CHIP C 4700PF K	
C13			C93-0552-05	CHIP C 2.0PF C	
C14			C92-0725-05	ELECTRO 10UF 35WV	
C15			C92-0720-05	ELECTRO 100UF 25WV	K,K2
C16			C93-0553-05	CHIP C 3.0PF C	
C17			CK73GB1H471K	CHIP C 470PF K	
C19			C93-0553-05	CHIP C 3.0PF C	K2
C19			C93-0554-05	CHIP C 4.0PF C	K
C19			C93-0555-05	CHIP C 5.0PF C	K3
C20			CK73GB1H471K	CHIP C 470PF K	
C22			CK73FB1H471K	CHIP C 470PF K	
C23			C93-0603-05	CHIP C 1000PF K	
C24			C93-0554-05	CHIP C 4.0PF C	K,K2
C24			C93-0556-05	CHIP C 6.0PF D	K3
C25,26			CK73GB1H471K	CHIP C 470PF K	
C27			C93-0553-05	CHIP C 3.0PF C	K2
C27,28			C93-0555-05	CHIP C 5.0PF C	K
C27,28			C93-0557-05	CHIP C 7.0PF D	K3
C28			C93-0555-05	CHIP C 5.0PF C	K2
C29			CC73FCH1H030C	CHIP C 3.0PF C	
C30			C93-0554-05	CHIP C 4.0PF C	K2
C30			C93-0555-05	CHIP C 5.0PF C	K
C30			C93-0556-05	CHIP C 6.0PF D	K3
C31			CK73GB1H471K	CHIP C 470PF K	
C32			CK73FB1H471K	CHIP C 470PF K	
C33			CC73FCH1H050C	CHIP C 5.0PF C	K2
C33			CC73FCH1H070D	CHIP C 7.0PF D	K
C33			CC73FCH1H090D	CHIP C 9.0PF D	K3
C34			CK73FB1H471K	CHIP C 470PF K	
C35,36			CK73GB1H471K	CHIP C 470PF K	
C37			C93-0556-05	CHIP C 6.0PF D	K3
C37,38			C93-0555-05	CHIP C 5.0PF C	K,K2
C38			C93-0557-05	CHIP C 7.0PF D	K3
C39			C92-0760-05	ELECTRO 22UF 20WV	K3
C40			C92-0720-05	ELECTRO 100UF 25WV	K3
C41			C92-0760-05	ELECTRO 22UF 20WV	K3
C42,43			CK73FB1H103K	CHIP C 0.010UF K	K3
C101			CC73GCH1H101J	CHIP C 100PF J	
C103			CC73GCH1H070D	CHIP C 7.0PF D	K2
C103			CC73GCH1H080D	CHIP C 8.0PF D	K
C103			CC73GCH1H090D	CHIP C 9.0PF D	K3
C104,105			CK73GB1H471K	CHIP C 470PF K	
C106			CC73GCH1H020C	CHIP C 2.0PF C	K
C106			CC73GCH1H030C	CHIP C 3.0PF C	K2,K3
C107			CC73GCH1H050C	CHIP C 5.0PF C	K,K2
C107			CC73GCH1H060D	CHIP C 6.0PF D	K3
C108			CK73GB1H471K	CHIP C 470PF K	
C109			CC73GCH1H390J	CHIP C 39PF J	
C110			CK73GB1H471K	CHIP C 470PF K	
C112			CK73GB1H103K	CHIP C 0.010UF K	
C113			CC73GCH1H120J	CHIP C 12PF J	
C114,115			CK73GB1H103K	CHIP C 0.010UF K	
C116			CC73GCH1H120J	CHIP C 12PF J	
C117			CK73GB1H471K	CHIP C 470PF K	
C118,119			CC73GCH1H101J	CHIP C 100PF J	
C120			CC73GCH1H220J	CHIP C 22PF J	
C121			CK73GB1H471K	CHIP C 470PF K	
C122,123			CK73GB1H103K	CHIP C 0.010UF K	
C124			CC73GCH1H120J	CHIP C 12PF J	
C125			CK73GB1H471K	CHIP C 470PF K	
C126			CC73GCH1H050C	CHIP C 5.0PF C	K2,K3
C126			CC73GCH1H060D	CHIP C 6.0PF D	K
C127			CK73GB1H471K	CHIP C 470PF K	
C128			CC73GCH1H030C	CHIP C 3.0PF C	
C129-131			CC73GCH1H040C	CHIP C 4.0PF C	
C132			CC73FCH1H060D	CHIP C 6.0PF D	K2,K3
C132			CC73FCH1H090D	CHIP C 9.0PF D	K
C133			CK73GB1H471K	CHIP C 470PF K	
C134			CC73GCH1H030C	CHIP C 3.0PF C	
C135			CC73GCH1H040C	CHIP C 4.0PF C	
C136			CK73GB1H102K	CHIP C 1000PF K	
C138-141			CK73GB1H103K	CHIP C 0.010UF K	
C142			CC73GCH1H100D	CHIP C 10PF D	
C143			CK73FB1E104K	CHIP C 0.10UF K	
C144			CC73GCH1H090D	CHIP C 9.0PF D	
C145			CC73GCH1H101J	CHIP C 100PF J	
C146			CC73GCH1H220J	CHIP C 22PF J	
C147			CK73GB1H102K	CHIP C 1000PF K	
C148-150			CK73GB1H103K	CHIP C 0.010UF K	
C152			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C153			CK73GB1H102K	CHIP C 1000PF K	
C154			CC73GCH1H270J	CHIP C 27PF J	
C155			CK73FB1E104K	CHIP C 0.10UF K	
C156			CK73GB1H103K	CHIP C 0.010UF K	
C157,158			CC73GCH1H221J	CHIP C 220PF J	
C159			CK73GB1H472K	CHIP C 4700PF K	
C160			CK73GB1H103K	CHIP C 0.010UF K	
C161			CK73FB1E104K	CHIP C 0.10UF K	
C162			CK73GB1C333K	CHIP C 0.033UF K	
C163			C92-0003-05	CHIP-TAN 0.47UF 25WV	
C164			CK73GB1H102K	CHIP C 1000PF K	
C166			CC73GCH1H101J	CHIP C 100PF J	
C167			CK73GB1H103K	CHIP C 0.010UF K	
C173			CK73GB1E223K	CHIP C 0.022UF K	

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TX-RX UNIT (X57-5620-XX) : TK-890/(B)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C174			CK73GB1H102K	CHIP C	1000PF	K	
C175			CK73GB1E223K	CHIP C	0.022UF	K	
C176			CK73FB1C334K	CHIP C	0.33UF	K	
C177			CK73GB1H103K	CHIP C	0.010UF	K	
C178			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C179			CC73GCH1H101J	CHIP C	100PF	J	
C201			CC73GCH1H030C	CHIP C	3.0PF	C	
C202			CC73GCH1H101J	CHIP C	100PF	J	
C203			CK73FB1E104K	CHIP C	0.10UF	K	
C204			CK73GB1H471K	CHIP C	470PF	K	
C206			CK73GB1H471K	CHIP C	470PF	K	
C207			CK73GB1H102K	CHIP C	1000PF	K	
C208			CK73GB1H471K	CHIP C	470PF	K	
C209			CK73GB1H103K	CHIP C	0.010UF	K	
C210			CC73GCH1H040C	CHIP C	4.0PF	C	K2
C210			CC73GCH1H050C	CHIP C	5.0PF	C	K,K3
C211,212			C92-0044-05	CHIP-ELE	47UF	10WV	
C213			CK73GB1H102K	CHIP C	1000PF	K	
C214,215			CK73GB1H471K	CHIP C	470PF	K	
C216			CK73GB1H102K	CHIP C	1000PF	K	
C217			CK73FB1E104K	CHIP C	0.10UF	K	
C218			CK73GB1H471K	CHIP C	470PF	K	
C219			CC73GCH1H050C	CHIP C	5.0PF	C	K2
C219			CC73GCH1H070D	CHIP C	7.0PF	D	K,K3
C220			C92-0008-05	CHIP-TAN	3.3UF	16WV	
C221			CK73GB1H471K	CHIP C	470PF	K	
C222			CK73GB1H102K	CHIP C	1000PF	K	
C223			CK73GB1H471K	CHIP C	470PF	K	
C224			C92-0044-05	CHIP-ELE	47UF	10WV	
C225			CK73GB1H471K	CHIP C	470PF	K	
C226			CK73GB1H102K	CHIP C	1000PF	K	
C227			CK73FB1E104K	CHIP C	0.10UF	K	
C228			CK73GB1H103K	CHIP C	0.010UF	K	
C229			CC73FCH1H390J	CHIP C	39PF	J	
C230-232			CK73GB1H471K	CHIP C	470PF	K	
C233-236			CC73GCH1H220J	CHIP C	22PF	J	
C301,302			CK73GB1H102K	CHIP C	1000PF	K	
C303			CK73GB1H103K	CHIP C	0.010UF	K	
C304,305			CK73GB1H471K	CHIP C	470PF	K	
C306			CK73FB1E104K	CHIP C	0.10UF	K	
C307			CK73GB1H102K	CHIP C	1000PF	K	
C308,309			CK73GB1H103K	CHIP C	0.010UF	K	
C310,311			CK73FB1E104K	CHIP C	0.10UF	K	
C312			C92-0633-05	CHIP-TAN	22UF	10WV	
C313			C90-4016-05	ELECTRO	47UF	16WV	
C314			C92-0001-05	CHIP C	0.1UF	35WV	
C315			C92-1341-05	ELECTRO	100UF	16WV	
C316			C90-4016-05	ELECTRO	47UF	16WV	
C318,319			CK73GB1H103K	CHIP C	0.010UF	K	
C320			C92-0514-05	CHIP-TAN	2.2UF	10WV	
C321,322			CK73GB1H471K	CHIP C	470PF	K	
C323			CK73FB1E224K	CHIP C	0.22UF	K	
C324			C92-0514-05	CHIP-TAN	2.2UF	10WV	
C325			C92-0002-05	CHIP-TAN	0.22UF	35WV	
C326			C92-0606-05	CHIP-TAN	4.7UF	10WV	
C327			CC73GCH1H020C	CHIP C	2.0PF	C	K2
C327			CC73GCH1H100D	CHIP C	10PF	D	K3
C327,328			CC73GCH1H030C	CHIP C	3.0PF	C	K
C328			CC73GCH1H050C	CHIP C	5.0PF	C	K3
C328			CC73GCH1H1R5C	CHIP C	1.5PF	C	K2

Ref. No.	Address	New parts	Parts No.	Description			Destination
C329			CC73GCH1H010C	CHIP C	1.0PF	C	K2
C329			CC73GCH1H020C	CHIP C	2.0PF	C	K3
C329			CC73GCH1H1R5C	CHIP C	1.5PF	C	K
C330			CK73GB1H471K	CHIP C	470PF	K	
C331			CC73GCH1H100D	CHIP C	10PF	D	K2
C331			CC73GCH1H120J	CHIP C	12PF	J	K
C331			CC73GCH1H220J	CHIP C	22PF	J	K3
C332			CK73GB1H471K	CHIP C	470PF	K	
C333			CC73GCH1H050C	CHIP C	5.0PF	C	K2
C333			CC73GCH1H060D	CHIP C	6.0PF	D	K
C333			CC73GCH1H100D	CHIP C	10PF	D	K3
C334			CK73GB1H471K	CHIP C	470PF	K	
C335			CC73GCH1H040B	CHIP C	4.0PF	B	K2
C335			CC73GCH1H050C	CHIP C	5.0PF	C	K
C335			CC73GCH1H090D	CHIP C	9.0PF	D	K3
C336			CC73GCH1H0R5C	CHIP C	0.5PF	C	
C337			CC73GCH1H220J	CHIP C	22PF	J	K2
C337			CC73GCH1H270J	CHIP C	27PF	J	K
C337,338			CC73GCH1H470J	CHIP C	47PF	J	K3
C338			CC73GCH1H150J	CHIP C	15PF	J	K2
C338			CC73GCH1H180J	CHIP C	18PF	J	K
C339			CC73GCH1H100D	CHIP C	10PF	D	K2
C339			CC73GCH1H150J	CHIP C	15PF	J	K
C339			CC73GCH1H270J	CHIP C	27PF	J	K3
C340			CC73GCH1H060D	CHIP C	6.0PF	D	K2
C340			CC73GCH1H070D	CHIP C	7.0PF	D	K3
C340-342			CC73GCH1H070D	CHIP C	7.0PF	D	K
C341,342			CC73GCH1H070D	CHIP C	7.0PF	D	K2
C341,342			CC73GCH1H090D	CHIP C	9.0PF	D	K3
C343			CK73GB1H471K	CHIP C	470PF	K	
C344			CC73GCH1H060D	CHIP C	6.0PF	D	K2
C344			CC73GCH1H070D	CHIP C	7.0PF	D	K,K3
C345			CK73GB1H471K	CHIP C	470PF	K	
C346			CC73GCH1H070D	CHIP C	7.0PF	D	K,K2
C346			CC73GCH1H090D	CHIP C	9.0PF	D	K3
C347			CK73GB1H471K	CHIP C	470PF	K	
C348			CC73GCH1H070D	CHIP C	7.0PF	D	K2
C348			CC73GCH1H090D	CHIP C	9.0PF	D	K3
C348,349			CC73GCH1H070D	CHIP C	7.0PF	D	K
C349			CC73GCH1H060D	CHIP C	6.0PF	D	K2
C349			CC73GCH1H070D	CHIP C	7.0PF	D	K3
C350,351			CC73GCH1H100D	CHIP C	10PF	D	K,K2
C350,351			CC73GCH1H120J	CHIP C	12PF	J	K3
C352-354			CK73GB1H471K	CHIP C	470PF	K	
C355-357			CC73GCH1H0R5C	CHIP C	0.5PF	C	
C358,359			CK73GB1H471K	CHIP C	470PF	K	
C360			CC73GCH1H040C	CHIP C	4.0PF	C	
C361			CK73GB1H471K	CHIP C	470PF	K	
C363			CC73GCH1H040C	CHIP C	4.0PF	C	K,K2
C363			CC73GCH1H100D	CHIP C	10PF	D	K3
C364,365			CK73GB1H471K	CHIP C	470PF	K	
C366			CK73GB1H102K	CHIP C	1000PF	K	
C367			CK73GB1H471K	CHIP C	470PF	K	
C369,370			CC73GCH1H040C	CHIP C	4.0PF	C	
C371			CK73GB1H102K	CHIP C	1000PF	K	
C372			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C373			CK73GB1H102K	CHIP C	1000PF	K	
C374-376			CC73GCH1H101J	CHIP C	100PF	J	
C377-379			CK73FB1E104K	CHIP C	0.10UF	K	
C380,381			CC73GCH1H120J	CHIP C	12PF	J	

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Ref. No.	Address	New parts	Parts No.	Description			Destination
C382			CK73FB1H183K	CHIP C	0.018UF	K	K3
C382			CK73FB1H223K	CHIP C	0.022UF	K	K2
C382			CK73FB1H473K	CHIP C	0.047UF	K	K
C501			CC73GCH1H101J	CHIP C	100PF	J	
C524			CK73GB1H102K	CHIP C	1000PF	K	
C525			CK73FB1E683K	CHIP C	0.068UF	K	
C526,527			CK73GB1H471K	CHIP C	470PF	K	
C528			CC73GCH1H101J	CHIP C	100PF	J	
C529			C92-0585-05	CHIP-TAN	4.7UF	16WV	
C530			CK73GB1E123K	CHIP C	0.012UF	K	
C531			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C532			CK73GB1H222K	CHIP C	2200PF	K	
C533			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C534			CK73FB1E104K	CHIP C	0.10UF	K	
C535			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C536,537			CK73FB1E104K	CHIP C	0.10UF	K	
C538			CK73GB1E223K	CHIP C	0.022UF	K	
C539			CC73GCH1H470J	CHIP C	47PF	J	
C540			CK73FB1E104K	CHIP C	0.10UF	K	
C541			CK73GB1H102K	CHIP C	1000PF	K	
C542			CK73FB1E104K	CHIP C	0.10UF	K	
C543			CK73GB1H102K	CHIP C	1000PF	K	
C544			CC73GCH1H121J	CHIP C	120PF	J	
C545			CK73GB1E103K	CHIP C	0.010UF	K	
C546			CK73FB1E104K	CHIP C	0.10UF	K	
C547			CK73GB1E223K	CHIP C	0.022UF	K	
C548			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C549			CK73GB1H222K	CHIP C	2200PF	K	
C550			CK73FB1E104K	CHIP C	0.10UF	K	
C551			CK73FB1E333K	CHIP C	0.033UF	K	
C552			CC73GCH1H470J	CHIP C	47PF	J	
C553,554			CK73FB1E104K	CHIP C	0.10UF	K	
C555			CK73GB1H102K	CHIP C	1000PF	K	
C557			CK73GB1E223K	CHIP C	0.022UF	K	
C558			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C559			C92-0036-05	CHIP-ELE	4.7UF	16WV	
C562			CK73GB1E103K	CHIP C	0.010UF	K	
C563			CK73GB1H102K	CHIP C	1000PF	K	
C565			C92-0003-05	CHIP-TAN	0.47UF	25WV	
C566			CC73GCH1H100D	CHIP C	10PF	D	
C567			CK73GB1E223K	CHIP C	0.022UF	K	
C568			CK73GB1H102K	CHIP C	1000PF	K	
C570			C92-0036-05	CHIP-ELE	4.7UF	16WV	
C571			C92-0585-05	CHIP-TAN	4.7UF	16WV	
C572,573			CC73GCH1H030C	CHIP C	3.0PF	C	
C574			CK73GB1H472K	CHIP C	4700PF	K	
C575			C92-0628-05	CHIP-TAN	10UF	10WV	
C576			CC73GCH1H470J	CHIP C	47PF	J	
C578			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C579			CK73GB1H472K	CHIP C	4700PF	K	
C580-582			CK73GB1H102K	CHIP C	1000PF	K	
C583			C92-0546-05	CHIP-TAN	68UF	6.3WV	
C584			CK73FB1E104K	CHIP C	0.10UF	K	
C585			CC73FCH1H751J	CHIP C	750PF	J	
C586			CC73GCH1H180J	CHIP C	18PF	J	
C587			CK73GB1H122K	CHIP C	1200PF	K	
C588			CC73GCH1H070D	CHIP C	7.0PF	D	
C589			CC73GCH1H181J	CHIP C	180PF	J	
C590			CK73GB1H332K	CHIP C	3300PF	K	
C591			CC73GCH1H180J	CHIP C	18PF	J	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C592			CK73GB1H102K	CHIP C	1000PF	K	
C593			C92-0633-05	CHIP-TAN	22UF	10WV	
C594			CK73GB1E103K	CHIP C	0.010UF	K	
C595-597			CK73GB1H102K	CHIP C	1000PF	K	
C598,599			CK73FB1E104K	CHIP C	0.10UF	K	
C600			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C601			CK73GB1H102K	CHIP C	1000PF	K	
C602			CK73GB1H562K	CHIP C	5600PF	K	
C603			CK73GB1H102K	CHIP C	1000PF	K	
C604,605			CK73GB1H562K	CHIP C	5600PF	K	
C606			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C607			CK73GB1H102K	CHIP C	1000PF	K	
C608			CK73GB1H332J	CHIP C	3300PF	J	
C609			CK73GB1H272J	CHIP C	2700PF	J	
C610			CK73FB1E104K	CHIP C	0.10UF	K	
C611			CK73GB1H272J	CHIP C	2700PF	J	
C612			C92-1341-05	ELECTRO	100UF	16WV	
C613			C92-0040-05	CHIP-ELE	47UF	16WV	
C614			CK73GB1H102K	CHIP C	1000PF	K	
C615			CK73GB1H272J	CHIP C	2700PF	J	
C616			CK73GB1E103K	CHIP C	0.010UF	K	
C617			CK73FB1E104K	CHIP C	0.10UF	K	
C618			CK73GB1H272J	CHIP C	2700PF	J	
C619			C92-0721-05	ELECTRO	330UF	25WV	
C620			CK73GB1E103K	CHIP C	0.010UF	K	
C621			CK73FB1E104K	CHIP C	0.10UF	K	
C622			CK73GB1H102K	CHIP C	1000PF	K	
C623			C92-0040-05	CHIP-ELE	47UF	16WV	
C624			CK73GB1H102K	CHIP C	1000PF	K	
C625			CK73GB1E103K	CHIP C	0.010UF	K	
C626			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C627,628			CK73FB1E104K	CHIP C	0.10UF	K	
C629,630			CK73GB1H102K	CHIP C	1000PF	K	
C631			CC73GCH1H101J	CHIP C	100PF	J	
C632-639			CK73GB1H102K	CHIP C	1000PF	K	
C640			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C641,642			CK73FB1E104K	CHIP C	0.10UF	K	
C666-680			CC73GCH1H101J	CHIP C	100PF	J	
C681			CK73GB1H102K	CHIP C	1000PF	K	
C682,683			CC73GCH1H101J	CHIP C	100PF	J	
C684			CK73GB1H102K	CHIP C	1000PF	K	
C685			CC73GCH1H101J	CHIP C	100PF	J	
C686			CK73GB1H102K	CHIP C	1000PF	K	
C687			CK73GB1E103K	CHIP C	0.010UF	K	
C688,689			CC73GCH1H101J	CHIP C	100PF	J	
C690			CK73FB1E104K	CHIP C	0.10UF	K	
C691,692			CC73GCH1H101J	CHIP C	100PF	J	
C693			CK73GB1E103K	CHIP C	0.010UF	K	
C694			C92-0633-05	CHIP-TAN	22UF	10WV	
C695			CC73GCH1H101J	CHIP C	100PF	J	
C696			C92-0628-05	CHIP-TAN	10UF	10WV	
C697			CK73GB1E103K	CHIP C	0.010UF	K	
C698-700			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C701			C92-0566-05	CHIP-TAN	10UF	6.3WV	
C703-705			CK73FB1E104K	CHIP C	0.10UF	K	
C706			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C707			CC73GCH1H560J	CHIP C	56PF	J	
C708			CK73FB1E104K	CHIP C	0.10UF	K	
C709			CC73GCH1H560J	CHIP C	56PF	J	
C710			CK73GB1E123K	CHIP C	0.012UF	K	

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Ref. No.	Address	New parts	Parts No.	Description	Destination
C711			CC73GCH1H101J	CHIP C 100PF J	
C712			CK73GB1E473J	CHIP C 0.047UF J	
TC301-303			C05-0393-05	CERAMIC TRIMMER CAP (8PF)	
CN1			E04-0154-05	PIN SOCKET	
CN2			E23-0902-05	TERMINAL	
CN3			E04-0154-05	PIN SOCKET	
CN4			E23-1118-05	TERMINAL	
CN101			E04-0154-05	PIN SOCKET	
CN102,103			E40-5538-05	PIN ASSY	
CN104			E04-0154-05	PIN SOCKET	
CN201			E40-5752-05	PIN ASSY	
CN202			E40-5978-05	FLAT CABLE CONNECTOR	
CN203			E04-0154-05	PIN SOCKET	
CN501			E40-5703-05	PIN ASSY	
CN504			E40-5661-05	PIN ASSY SOCKET	
CN505			E40-5960-05	PIN ASSY	
CN506			E40-5066-05	PIN ASSY	
CN507			E40-5751-05	PIN ASSY	
CN508			E40-5701-05	PIN ASSY	
W1			E37-0705-05	LEAD WIRE WITH CONNECTOR	
W2			E37-0704-05	LEAD WIRE WITH CONNECTOR	
W501			E37-0707-05	LEAD WIRE WITH CONNECTOR	
A102			F10-2278-04	SHIELDING PLATE (MCF)	
F501			F53-0128-05	FUSE (0.5A)	
F502			F53-0108-05	FUSE (1.8A)	
CF101			L72-0916-05	CERAMIC FILTER (455KHZ)	
CF102			L72-0939-05	CERAMIC FILTER (455KHZ)	
CF103			L72-0916-05	CERAMIC FILTER (455KHZ)	
CF104			L72-0939-05	CERAMIC FILTER (455KHZ)	
L1			L34-4556-05	AIR-CORE COIL	
L2			L34-4523-05	AIR-CORE COIL	
L3-5			L34-4517-05	AIR-CORE COIL	
L6			L34-4523-05	AIR-CORE COIL	
L7			L34-4517-05	AIR-CORE COIL	
L101			L79-1530-05	HELICAL BLOCK	K
L101			L79-1531-05	HELICAL BLOCK	K2
L101			L79-1532-05	HELICAL BLOCK	K3
L102			L40-1075-34	SMALL FIXED INDUCTOR (10NH)	K,K2
L102			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	K3
L103			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	K,K2
L103			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	K3
L104			L79-1533-05	HELICAL BLOCK	K
L104			L79-1534-05	HELICAL BLOCK	K2
L104			L79-1535-05	HELICAL BLOCK	K3
L105			L40-1281-37	SMALL FIXED INDUCTOR (0.120UH)	
L106			L40-2781-37	SMALL FIXED INDUCTOR (0.270UH)	
L107,108			L40-1271-34	SMALL FIXED INDUCTOR (12NH)	K2
L107,108			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	K
L107,108			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	K3
L109			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	K
L109			L40-2275-34	SMALL FIXED INDUCTOR (22NH)	K3
L109,110			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	K2
L110			L40-2275-34	SMALL FIXED INDUCTOR (22NH)	K
L110			L40-2775-34	SMALL FIXED INDUCTOR (27NH)	K3
L111			L34-4529-05	COIL	
L112,113			L34-4528-05	COIL	
L114			L34-4529-05	COIL	
L115			L34-4528-05	COIL	
L116			L34-4529-05	COIL	

Ref. No.	Address	New parts	Parts No.	Description	Destination
L117,118			L40-1005-34	SMALL FIXED INDUCTOR (10UH)	
L119			L40-4785-34	SMALL FIXED INDUCTOR (470NH)	
L120			L34-4530-05	COIL	
L123			L40-4772-37	SMALL FIXED INDUCTOR (0.047UH)	
L201			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	
L202			L40-1271-34	SMALL FIXED INDUCTOR (12NH)	
L203			L40-8271-34	SMALL FIXED INDUCTOR (82NH)	
L204			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	
L301-306			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	
L307			L34-4556-05	AIR-CORE COIL	
L308,309			L34-4518-05	AIR-CORE COIL	
L310			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	K,K2
L310-315			L40-1595-34	SMALL FIXED INDUCTOR (1.5UH)	K3
L311,312			L40-1595-34	SMALL FIXED INDUCTOR (1.5UH)	K,K2
L313			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	K,K2
L314,315			L40-1595-34	SMALL FIXED INDUCTOR (1.5UH)	K,K2
L316			L40-3375-34	SMALL FIXED INDUCTOR (33NH)	
L317			L40-2275-34	SMALL FIXED INDUCTOR (22NH)	
L318			L92-0148-05	FERRITE CHIP	
L319			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	
L501,502			L40-1005-34	SMALL FIXED INDUCTOR (10UH)	
X101			L77-1737-05	CRYSTAL RESONATOR (73.505MHZ)	
X301		*	L77-1766-15	VCXO(16.8MHZ)	
X501			L77-1708-05	CRYSTAL RESONATOR (3.579545MHZ)	
X502			L77-1863-05	CRYSTAL RESONATOR (12.0MHZ)	
XF101			L71-0514-05	MCF (73.05MHZ WIDE)	
XF102			L71-0515-05	MCF (73.05MHZ NARROW)	
R1			RK73FB2A821J	CHIP R 820 J 1/10W	K2,K3
R2			R92-0670-05	CHIP R 0 OHM K	
R2,3			RK73FB2A100J	CHIP R 10 J 1/10W	K2,K3
R4			RK73FB2A821J	CHIP R 820 J 1/10W	K2,K3
R5			RK73GB1J104J	CHIP R 100K J 1/16W	
R6			R92-1214-05	CHIP R 120 J 1/2W	
R7,8			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R9			RK73GB1J103J	CHIP R 10K J 1/16W	
R10			RK73GB1J102J	CHIP R 1.0K J 1/16W	K2
R10			RK73GB1J331J	CHIP R 330 J 1/16W	K,K3
R11			RK73GB1J103J	CHIP R 10K J 1/16W	
R12			RK73FB2A101J	CHIP R 100 J 1/10W	
R13			RK73GB1J223J	CHIP R 22K J 1/16W	
R14			RK73FB2A101J	CHIP R 100 J 1/10W	K,K2
R14			RK73FB2A820J	CHIP R 82 J 1/10W	K3
R15			RK73GB1J103J	CHIP R 10K J 1/16W	
R101			RK73GB1J470J	CHIP R 47 J 1/16W	
R102			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R103			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R104,105			RK73GB1J470J	CHIP R 47 J 1/16W	
R106			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R107			R92-1252-05	CHIP R 0 OHM	
R108			RK73GB1J151J	CHIP R 150 J 1/16W	K
R108			RK73GB1J821J	CHIP R 820 J 1/16W	K2,K3
R109			RK73GB1J223J	CHIP R 22K J 1/16W	
R110			R92-1252-05	CHIP R 0 OHM	
R111			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R112			RK73FB2A821J	CHIP R 820 J 1/10W	
R113			RK73FB2A5R6J	CHIP R 5.6 J 1/10W	
R114			RK73GB1J270J	CHIP R 27 J 1/16W	
R115			RK73FB2A821J	CHIP R 820 J 1/10W	
R116			RK73GB1J222J	CHIP R 2.2K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-5620-XX) : TK-890/(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R117			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R118			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R119			RK73GB1J330J	CHIP R 33 J 1/16W	
R120			RK73GB1J680J	CHIP R 68 J 1/16W	
R121,122			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R123			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R124			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R125,126			RK73GB1J220J	CHIP R 22 J 1/16W	
R127-129			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R130			RK73GB1J473J	CHIP R 47K J 1/16W	
R132			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R133			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R134-137			RK73GB1J223J	CHIP R 22K J 1/16W	
R139			RK73GB1J223J	CHIP R 22K J 1/16W	
R140			RK73GB1J274J	CHIP R 270K J 1/16W	
R141,142			RK73GB1J223J	CHIP R 22K J 1/16W	
R143			RK73GB1J183J	CHIP R 18K J 1/16W	
R144			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R145			RK73GB1J334J	CHIP R 330K J 1/16W	
R146			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R147,148			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R149			RK73GB1J470J	CHIP R 47 J 1/16W	
R150			RK73GB1J821J	CHIP R 820 J 1/16W	
R151			RK73GB1J5R6J	CHIP R 5.6 J 1/16W	
R152			RK73GB1J821J	CHIP R 820 J 1/16W	
R153			RK73GB1J220J	CHIP R 22 J 1/16W	
R154,155			RK73GB1J271J	CHIP R 270 J 1/16W	
R156			RK73GB1J180J	CHIP R 18 J 1/16W	
R157			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R158			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R159,160			RK73GB1J104J	CHIP R 100K J 1/16W	
R161			RK73GB1J393J	CHIP R 39K J 1/16W	
R162			R92-1252-05	CHIP R 0 OHM	
R163			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R164			RK73GB1J182J	CHIP R 1.8K J 1/16W	K2,K3
R164			RK73GB1J222J	CHIP R 2.2K J 1/16W	K
R165			RK73GB1J101J	CHIP R 100 J 1/16W	
R166			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R201			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R202			RK73GB1J271J	CHIP R 270 J 1/16W	
R203			RK73GB1J180J	CHIP R 18 J 1/16W	
R204			RK73GB1J271J	CHIP R 270 J 1/16W	
R205			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R206			RK73GB1J103J	CHIP R 10K J 1/16W	
R207			RK73GB1J101J	CHIP R 100 J 1/16W	
R208			RK73GB1J470J	CHIP R 47 J 1/16W	
R209			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R210			RK73GB1J471J	CHIP R 470 J 1/16W	
R211			RK73GB1J221J	CHIP R 220 J 1/16W	
R212			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R213			RK73GB1J100J	CHIP R 10 J 1/16W	
R214			RK73GB1J473J	CHIP R 47K J 1/16W	
R215			RK73GB1J100J	CHIP R 10 J 1/16W	
R216			RK73GB1J681J	CHIP R 680 J 1/16W	
R217			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R218			RK73GB1J473J	CHIP R 47K J 1/16W	
R219			RK73GB1J331J	CHIP R 330 J 1/16W	
R220			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R221			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R222			R92-0685-05	CHIP R 22 J 1/2W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R223			RK73FB2A821J	CHIP R 820 J 1/10W	
R224,225			RK73FB2A100J	CHIP R 10 J 1/10W	
R226			RK73FB2A821J	CHIP R 820 J 1/10W	
R301-304			RK73GB1J103J	CHIP R 10K J 1/16W	
R305			R92-1252-05	CHIP R 0 OHM	
R306			RK73GB1J560J	CHIP R 56 J 1/16W	
R307,308			RK73GB1J100J	CHIP R 10 J 1/16W	
R309			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R310,311			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R312			RK73GB1J102J	CHIP R 1.0K J 1/16W	K3
R312			RK73GB1J332J	CHIP R 3.3K J 1/16W	K,K2
R313			RK73GB1J103J	CHIP R 10K J 1/16W	K,K2
R313			RK73GB1J562J	CHIP R 5.6K J 1/16W	K3
R314,315			RK73GB1J331J	CHIP R 330 J 1/16W	
R316			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R317			RK73GB1J474J	CHIP R 470K J 1/16W	
R318			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R319			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R320-325			R92-1252-05	CHIP R 0 OHM	
R326,327			RK73GB1J104J	CHIP R 100K J 1/16W	
R328-330			RK73GB1J330J	CHIP R 33 J 1/16W	
R331			RK73GB1J151J	CHIP R 150 J 1/16W	K
R331			RK73GB1J181J	CHIP R 180 J 1/16W	K3
R331,332			RK73GB1J181J	CHIP R 180 J 1/16W	K2
R332			RK73GB1J221J	CHIP R 220 J 1/16W	K
R332			RK73GB1J271J	CHIP R 270 J 1/16W	K3
R333			RK73GB1J151J	CHIP R 150 J 1/16W	K2
R333			RK73GB1J181J	CHIP R 180 J 1/16W	K
R333			RK73GB1J221J	CHIP R 220 J 1/16W	K3
R334-336			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R337			RK73GB1J470J	CHIP R 47 J 1/16W	
R338			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R339			RK73GB1J470J	CHIP R 47 J 1/16W	
R340			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R341			RK73GB1J470J	CHIP R 47 J 1/16W	
R342,343			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R344			RK73GB1J330J	CHIP R 33 J 1/16W	
R345			RK73GB1J333J	CHIP R 33K J 1/16W	
R346			RK73GB1J103J	CHIP R 10K J 1/16W	
R347			RK73GB1J101J	CHIP R 100 J 1/16W	
R348			RK73GB1J330J	CHIP R 33 J 1/16W	
R349			RK73GB1J223J	CHIP R 22K J 1/16W	
R350			RK73GB1J103J	CHIP R 10K J 1/16W	
R351			RK73GB1J330J	CHIP R 33 J 1/16W	
R352			RK73GB1J273J	CHIP R 27K J 1/16W	
R353			RK73GB1J103J	CHIP R 10K J 1/16W	
R354			RK73GB1J101J	CHIP R 100 J 1/16W	
R355			RK73GB1J471J	CHIP R 470 J 1/16W	
R356			RK73GB1J151J	CHIP R 150 J 1/16W	
R357,358			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R359			RK73GB1J220J	CHIP R 22 J 1/16W	
R361			RK73GB1J220J	CHIP R 22 J 1/16W	
R363-366			R92-1252-05	CHIP R 0 OHM	
R501			RK73GB1J333J	CHIP R 33K J 1/16W	
R502			RK73GB1J471J	CHIP R 470 J 1/16W	
R504			R92-0670-05	CHIP R 0 OHM	
R505			RK73GB1J103J	CHIP R 10K J 1/16W	
R507			RK73GB1J223J	CHIP R 22K J 1/16W	
R508			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R509-511			RK73GB1J473J	CHIP R 47K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-5620-XX) : TK-890/(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R512			RK73GB1J184J	CHIP R 180K J 1/16W	
R513			RK73GB1J223J	CHIP R 22K J 1/16W	
R514			RK73GB1J184J	CHIP R 180K J 1/16W	
R515			R92-0670-05	CHIP R 0 OHM	
R516			RK73GB1J104J	CHIP R 100K J 1/16W	
R517		*	RK73GH1J104D	CHIP R 100K D 1/16W	
R518			R92-1252-05	CHIP R 0 OHM	
R519			RK73GB1J104J	CHIP R 100K J 1/16W	
R520		*	RK73GH1J334D	CHIP R 330K D 1/16W	
R521			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R522			RK73GH1J913D	CHIP R 91K D 1/16W	
R523			RK73GB1J474J	CHIP R 470K J 1/16W	
R524			RK73GH1J224D	CHIP R 220K D 1/16W	
R525			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R526			RK73GB1J104J	CHIP R 100K J 1/16W	
R527			RK73GB1J223J	CHIP R 22K J 1/16W	
R528			RK73GB1J104J	CHIP R 100K J 1/16W	
R529,530			RK73GB1J334J	CHIP R 330K J 1/16W	
R531			RK73GB1J154J	CHIP R 150K J 1/16W	
R532			RK73GB1J474J	CHIP R 470K J 1/16W	
R533			RN73GH1J473D	CHIP R 47K D 1/16W	
R534			RN73GH1J563D	CHIP R 56K D 1/16W	
R535			RK73GB1J103J	CHIP R 10K J 1/16W	
R536			RK73GB1J681J	CHIP R 680 J 1/16W	
R537			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R539			RK73GB1J561J	CHIP R 560 J 1/16W	
R541			R92-0670-05	CHIP R 0 OHM	
R542			RK73GB1J470J	CHIP R 47 J 1/16W	
R543			RK73GB1J220J	CHIP R 22 J 1/16W	
R545			RK73GB1J564J	CHIP R 560K J 1/16W	
R546			R92-0670-05	CHIP R 0 OHM	
R547			R92-1252-05	CHIP R 0 OHM	
R549			RK73GB1J153J	CHIP R 15K J 1/16W	
R550			RK73GB1J683J	CHIP R 68K J 1/16W	
R552			RK73GB1J101J	CHIP R 100 J 1/16W	
R553			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R557,558			RK73GB1J104J	CHIP R 100K J 1/16W	
R559			RK73GB1J224J	CHIP R 220K J 1/16W	
R561			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R562			RK73GB1J274J	CHIP R 270K J 1/16W	
R563			RK73GB1J104J	CHIP R 100K J 1/16W	
R564			RK73GB1J474J	CHIP R 470K J 1/16W	
R565			RK73GB1J123J	CHIP R 12K J 1/16W	
R566			RK73GB1J153J	CHIP R 15K J 1/16W	
R567			RK73GB1J224J	CHIP R 220K J 1/16W	
R568			R92-1252-05	CHIP R 0 OHM	
R570			RK73GB1J223J	CHIP R 22K J 1/16W	
R572			RK73GB1J104J	CHIP R 100K J 1/16W	
R573			RK73GB1J274J	CHIP R 270K J 1/16W	
R574			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R575,576			RK73GB1J104J	CHIP R 100K J 1/16W	
R577			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R578			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R579,580			RK73GB1J823J	CHIP R 82K J 1/16W	
R581,582			RK73GB1J683J	CHIP R 68K J 1/16W	
R583			R92-0670-05	CHIP R 0 OHM	
R584			RK73GB1J333J	CHIP R 33K J 1/16W	
R586			RK73GB1J104J	CHIP R 100K J 1/16W	
R587			R92-0670-05	CHIP R 0 OHM	
R588			RK73GB1J473J	CHIP R 47K J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R589			RK73GB1J223J	CHIP R 22K J 1/16W	
R591,592			RK73GB1J124J	CHIP R 120K J 1/16W	
R594-597			RK73GB1J473J	CHIP R 47K J 1/16W	
R598			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R599,600			RK73GB1J473J	CHIP R 47K J 1/16W	
R601			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R602			RK73FB2A473J	CHIP R 47K J 1/10W	
R603			RK73GB1J103J	CHIP R 10K J 1/16W	
R604			R92-0670-05	CHIP R 0 OHM	
R605			RK73GB1J333J	CHIP R 33K J 1/16W	
R606			RK73GB1J154J	CHIP R 150K J 1/16W	
R607			R92-1252-05	CHIP R 0 OHM	
R608			RK73GB1J123J	CHIP R 12K J 1/16W	
R609			RK73GB1J153J	CHIP R 15K J 1/16W	
R611			RK73GB1J474J	CHIP R 470K J 1/16W	
R612			RK73GB1J823J	CHIP R 82K J 1/16W	
R613			RK73GB1J393J	CHIP R 39K J 1/16W	
R615			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R616			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R617			RN73GH1J274D	CHIP R 270K D 1/16W	
R618			RN73GH1J334D	CHIP R 330K D 1/16W	
R619,620			RN73GH1J274D	CHIP R 270K D 1/16W	
R621			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R622			RK73GB1J473J	CHIP R 47K J 1/16W	
R623			RN73GH1J274D	CHIP R 270K D 1/16W	
R624			RK73GB1J103J	CHIP R 10K J 1/16W	
R625			RK73GB1J684J	CHIP R 680K J 1/16W	
R626			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R627			RN73GH1J274D	CHIP R 270K D 1/16W	
R628			R92-0670-05	CHIP R 0 OHM	
R629			RN73GH1J563D	CHIP R 56K D 1/16W	
R630			RN73GH1J473D	CHIP R 47K D 1/16W	
R631			RK73GB1J104J	CHIP R 100K J 1/16W	
R632			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R633,634			RK73GB1J103J	CHIP R 10K J 1/16W	
R635			R92-0670-05	CHIP R 0 OHM	
R636		*	RK73GH1J104D	CHIP R 100K D 1/16W	
R638			RK73GH1J223D	CHIP R 22K D 1/16W	
R639			RK73GB1J473J	CHIP R 47K J 1/16W	
R641			R92-0670-05	CHIP R 0 OHM	
R642-648			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R652			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R654-656			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R657			R92-0670-05	CHIP R 0 OHM	
R658			RK73GB1J473J	CHIP R 47K J 1/16W	
R659			RK73GB1J563J	CHIP R 56K J 1/16W	
R661			R92-0670-05	CHIP R 0 OHM	
R662			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R663			RK73GB1J473J	CHIP R 47K J 1/16W	
R664			RK73GB1J333J	CHIP R 33K J 1/16W	
R665			RK73GB1J104J	CHIP R 100K J 1/16W	
R666,667			R92-0670-05	CHIP R 0 OHM	
R668			R92-1252-05	CHIP R 0 OHM	
R670			R92-0670-05	CHIP R 0 OHM	
R671			RK73GB1J683J	CHIP R 68K J 1/16W	
R672			RK73GB1J473J	CHIP R 47K J 1/16W	
R674,675			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R676			RK73GB1J473J	CHIP R 47K J 1/16W	
R677			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R678,679			RK73GB1J332J	CHIP R 3.3K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-5620-XX) : TK-890/(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R680			RK73GB1J104J	CHIP R 100K J 1/16W	
R690,691			R92-0670-05	CHIP R 0 OHM	
R693			RK73GB1J103J	CHIP R 10K J 1/16W	
R695			R92-1252-05	CHIP R 0 OHM	
R697			R92-1252-05	CHIP R 0 OHM	
R698			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R699			R92-1252-05	CHIP R 0 OHM	
R700			RK73GB1J220J	CHIP R 22 J 1/16W	
R701			RK73GB1J103J	CHIP R 10K J 1/16W	
R702			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R703			RK73GB1J473J	CHIP R 47K J 1/16W	
R706			R92-0670-05	CHIP R 0 OHM	
R707-713			RK73GB1J474J	CHIP R 470K J 1/16W	
R714			RK73GB1J104J	CHIP R 100K J 1/16W	
R715			RK73GB1J474J	CHIP R 470K J 1/16W	
R716			RK73GB1J104J	CHIP R 100K J 1/16W	
R717			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R718			RK73GB1J333J	CHIP R 33K J 1/16W	
R719			RS14DB3D2R2J	FL-PROOF RS 2.2 J 2W	
R720			R92-0670-05	CHIP R 0 OHM	
R721			RK73GB1J393J	CHIP R 39K J 1/16W	
R722			RK73GB1J184J	CHIP R 180K J 1/16W	
R723			R92-0670-05	CHIP R 0 OHM	
R724			RK73GB1J683J	CHIP R 68K J 1/16W	
R725			RK73GB1J333J	CHIP R 33K J 1/16W	
R726			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R727			RK73GB1J473J	CHIP R 47K J 1/16W	
R728			R92-0670-05	CHIP R 0 OHM	
R729-736			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R740,741			RK73GB1J103J	CHIP R 10K J 1/16W	
R742			R92-0670-05	CHIP R 0 OHM	
R744			RK73GB1J104J	CHIP R 100K J 1/16W	
R746			R92-1252-05	CHIP R 0 OHM	
R747			R92-0670-05	CHIP R 0 OHM	
R748			R92-1252-05	CHIP R 0 OHM	
VR1			R12-6427-05	TRIMMING POT. (47K)	
VR501			R12-6417-05	TRIMMING POT. (1K)	
D1			DSA3A1-FK	DIODE	
D2			22ZR-10D	SURGE ABSORBER	
D3			MA4PH633	DIODE	
D4,5			MI809	DIODE	
D4,5			XB15A709	DIODE	
D6,7			HSM88AS	DIODE	
D102-105			DAN235K	DIODE	
D107			MA742	DIODE	
D108			1SS355	DIODE	
D201			DA204K	DIODE	
D301-306			1SV282	VARIABLE CAPACITANCE DIODE	
D307			1SV214	VARIABLE CAPACITANCE DIODE	
D308			DAN235K	DIODE	
D501			02CZ18(X,Y)	ZENER DIODE	
D502,503			1SS355	DIODE	
D504			02CZ5.6(X,Y)	ZENER DIODE	
D505			1SS355	DIODE	
D506			1SS301	DIODE	
D507			02CZ15(X,Y)	ZENER DIODE	
D508			1SS355	DIODE	
D511			1SS301	DIODE	
D512			1SS355	DIODE	

Ref. No.	Address	New parts	Parts No.	Description	Destination
D513-517			DA204U	DIODE	
D519			DA204U	DIODE	
D521			DA204U	DIODE	
D523,524			DA204U	DIODE	
D526,527			DA204U	DIODE	
D528,529			1SS355	DIODE	
IC1			M68769H	IC (RF POWER MODULE)	K
IC1			M68769L	IC (RF POWER MODULE)	K3
IC1			M68769SH	IC (RF POWER MODULE)	K2
IC101			TA31136FN	IC (FM IC)	
IC201			BU4094BCF	IC (SHIFT REGISTER)	
IC202			NJM78L05UA	IC (AVR)	
IC203			AN8009M	IC (AVR)	
IC301			SA7025DK	IC (PLL IC)	
IC501			TC4013BF(N)	IC (D FF)	
IC502			NJM4558M	IC (LPF)	
IC503			TA7808S	IC (AVR)	
IC504			TC35453F	IC (AUDIO PROCESSOR)	
IC505			NJM4558M	IC (HPF/IDC)	
IC506			L78LR05B-FA	IC (AVR)	
IC508			NJM4558M	IC (LIMITER/BUFFER AMP)	
IC509			MC33172D	IC (BUFFER AMP)	
IC510			NJM4558M	IC (SUMMING AMP/LPF)	
IC511			PCD3312CT	IC (DTMF ENCODER)	
IC512			M62364FP	IC (D/A CONVERTER)	
IC513			NJM4558M	IC (LPF/SUMMING AMP)	
IC514			AT24C64N10SI27	IC (EEPROM)	
IC515			BU4066BCF	IC (ANALOG SWITCH)	
IC516		*	784214GC0518EU	IC (CPU)	
IC517			BU4094BCF	IC (SHIFT REGISTER)	
IC518			NJM4558M	IC (BUFFER AMP)	
IC519			AT29C020-90TI	IC (FLASH ROM)	
IC520			TC7S02F	IC (NOR GATE)	
IC521			NJM4558M	IC (BUFFER AMP)	
IC522			TDA8561Q	IC (AUDIO POWER AMP)	
IC523			BU4094BCF	IC (SHIFT REGISTER)	
IC524			NJM4558M	IC (BUFFER AMP/DE-EMPHASIS)	
IC525			LC73872M	IC (DTMF DECODER)	
IC526			TA75S01F	IC (COMPANDER AMP)	
Q1			2SA1162(Y)	TRANSISTOR	
Q2			2SD2399	TRANSISTOR	
Q3			2SC2712(Y)	TRANSISTOR	
Q4			DTC144EUA	DIGITAL TRANSISTOR	
Q5			FMW1	TRANSISTOR	
Q6			2SC2712(Y)	TRANSISTOR	
Q101,102			2SC3357	TRANSISTOR	
Q103			2SC3356	TRANSISTOR	
Q104			2SC3357	TRANSISTOR	
Q105			DTA144EUA	DIGITAL TRANSISTOR	
Q106			DTC144EUA	DIGITAL TRANSISTOR	
Q107			2SC4215(Y)	TRANSISTOR	
Q108			DTC144EUA	DIGITAL TRANSISTOR	
Q109			2SC4617(S)	TRANSISTOR	
Q201			2SC4226(R24)	TRANSISTOR	
Q202			2SB1132(Q,R)	TRANSISTOR	
Q203			DTC114EUA	DIGITAL TRANSISTOR	
Q204			2SC3357	TRANSISTOR	
Q205			2SC2954	TRANSISTOR	
Q206			DTC114EUA	DIGITAL TRANSISTOR	
Q207			2SB1132(Q,R)	TRANSISTOR	

PARTS LIST

TX-RX UNIT (X57-5620-XX) : TK-890/(B)
TK-890H(B)
FINAL UNIT (X45-3570-10) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q301,302			2SC4116(GR)	TRANSISTOR	
Q303,304			2SC3722K(S)	TRANSISTOR	
Q305-307			2SK508NV(K52)	FET	
Q308-310			2SC4116(Y)	TRANSISTOR	
Q311,312			DTC114EUA	DIGITAL TRANSISTOR	
Q313			2SC4226(R24)	TRANSISTOR	
Q314			2SC3356	TRANSISTOR	
Q315			2SC4226(R24)	TRANSISTOR	
Q501			DTA114EUA	DIGITAL TRANSISTOR	
Q502,503			DTC114EUA	DIGITAL TRANSISTOR	
Q504			DTC363EK	DIGITAL TRANSISTOR	
Q505			DTC144EUA	DIGITAL TRANSISTOR	
Q506			DTA114YUA	DIGITAL TRANSISTOR	
Q507			DTC114YUA	DIGITAL TRANSISTOR	
Q509-513			DTC144EUA	DIGITAL TRANSISTOR	
Q514			DTA144TKA	DIGITAL TRANSISTOR	
Q516			DTA114TUA	DIGITAL TRANSISTOR	
Q517			DTC144EUA	DIGITAL TRANSISTOR	
Q518			DTA114EUA	DIGITAL TRANSISTOR	
Q519			2SJ506(S)	FET	
Q520			DTD114EK	DIGITAL TRANSISTOR	
Q522			2SC4215(Y)	TRANSISTOR	
Q523,524			DTC114TU	DIGITAL TRANSISTOR	
Q525			DTC144EUA	DIGITAL TRANSISTOR	
Q526			DTA114TUA	DIGITAL TRANSISTOR	
Q527			DTC144EUA	DIGITAL TRANSISTOR	
Q528			DTA114TUA	DIGITAL TRANSISTOR	
Q529,530			DTC144EUA	DIGITAL TRANSISTOR	
Q531			DTA114TUA	DIGITAL TRANSISTOR	
Q532-536			DTC144EUA	DIGITAL TRANSISTOR	
Q537-540			DTD114EK	DIGITAL TRANSISTOR	
Q541			DTC114EUA	DIGITAL TRANSISTOR	
Q542			DTA114EUA	DIGITAL TRANSISTOR	
Q543,544			DTC114EUA	DIGITAL TRANSISTOR	
TH101			157-503-53006	THERMISTOR	
TH501			157-302-53008	THERMISTOR	
A101			W02-1939-05	DBM	

TK-890H(B)

101	3D		A01-2163-01	CABINET (UPPER)	
102	1C		A01-2164-01	CABINET (LOWER)	
103	2D		A10-1389-01	CHASSIS	
106	3C,3D		B42-2455-04	STICKER (M4X8 MAX)	
107	1K		B46-0470-00	WARRANTY CARD ACSY	
108	1K	✻	B62-0970-10	INSTRUCTION MANUAL	
-		✻	B72-1458-34	MODEL NAME PLATE	
111	2D		E04-0167-05	RF COAXIAL PECEPTACLE (M)	
113	2C		E31-3301-05	LEAD WIRE WITH MINIPIN PLUG (RA/DO)	
114	2D		E37-0709-05	LEAD WIRE WITH CONNECTOR (ACC:9P)	
115	2D		E37-0731-05	LEAD WIRE WITH CONNECTOR (DC:2P)	
116	2D,1L		E37-0733-05	SHORT PLUG (SP) ACSY	
117	2D	✻	E37-0773-25	LEAD WIRE WITH CONNECTOR (D-SUB:25P)	
118	3C		E37-0776-05	FLAT CABLE (CONT-TX:18P)	
123	2D		F09-0445-05	CAP (D-SUB)	
124	1D		F10-1488-02	SHIELDING PLATE (FINAL)	
122	1L		F29-0472-04	INSULATING COVER ACSY	
127	3C		G02-0709-04	FLAT SPRING (AUDIO AMP)	
128	3C		G02-0715-04	FLAT SPRING (AVR)	
129	2D		G53-0715-03	PACKING (DC,ACC)	
132	3D		G53-0871-03	PACKING (CABINET UPPER)	
133	1C	✻	G53-1501-03	PACKING (CABINET LOWER)	
135	1K		H02-0604-03	INNER PACKING CASE	
136	2L		H10-6617-11	POLYSTYRENE FOAMED FIXTURE	
137	1L		H11-0815-04	POLYSTYRENE FOAMED BOARD	
138	2L		H11-0853-04	POLYSTYRENE FOAMED BOARD	
139	2K		H11-0892-04	POLYSTYRENE FOAMED BOARD	
140	2K		H12-1410-04	PACKING FIXTURE	
141	2L		H12-1442-04	PACKING FIXTURE	
142	2K		H13-1066-04	CARTON BOARD	
144	1L		H25-0103-04	PROTECTION BAG (125/250/0.07)	
145	1K		H25-0724-04	PROTECTION BAG (300/500/0.07)	
143	1L	✻	H25-2063-04	PROTECTION BAG (80/120/0.03)	
146	3L		H52-1232-12	ITEM CARTON CASE	
147	2D		J21-8347-04	HARDWARE FIXTURE (DC,ACC)	
148	1D		J32-0919-04	HEXAGON BOSS (FINAL)	
150	1L		J61-0307-05	BAND ACSY	
M	2D		N09-2292-05	HEXAGON HEAD SCREW	
N	1C,3D		N33-3006-45	OVAL HEAD MACHINE SCREW	
O	1D		N35-3006-46	BINDING HEAD MACHINE SCREW	
P	2C,2D		N67-3008-46	PAN HEAD SEMS SCREW W	
Q	1C,1D		N68-4006-46	PAN HEAD SEMS SCREW A	
R	2C,3D		N87-2606-46	BRAZIER HEAD TAPTITE SCREW	
S	2C		N87-2612-46	BRAZIER HEAD TAPTITE SCREW	
T	2D		N87-3008-46	BRAZIER HEAD TAPTITE SCREW	
159	2L		N99-0365-05	SCREW SET ACSY	

FINAL UNIT (X45-3570-10) : TK-890H(B)

C3			CK73FB1H471K	CHIP C	470PF	K
C5			CK73FB1H471K	CHIP C	470PF	K
C7			C92-0736-05	ELECTRO	10UF	50WV
C8			CK73FB1E104K	CHIP C	0.10UF	K
C9			C90-2020-05	ELECTRO	15UF	25WV
C10			C92-0727-05	ELECTRO	220UF	35WV
C11			CK73FB1H471K	CHIP C	470PF	K
C12			CK73FB1H102K	CHIP C	1000PF	K
C13			C92-0736-05	ELECTRO	10UF	50WV
C14			CK73FB1H471K	CHIP C	470PF	K
C15			CM73F2H101J	CHIP C	100PF	J
C16			CK73FB1H471K	CHIP C	470PF	K
C17			C92-0726-05	ELECTRO	47UF	25WV
C18			CK73FB1H471K	CHIP C	470PF	K
C19			CM73F2H100D	CHIP C	10PF	D
C20,21			CM73F2H101J	CHIP C	100PF	J
C22,23			CK73FB1H471K	CHIP C	470PF	K
C28-31			CM73F2H330J	CHIP C	33PF	J
C32-35			CM73F2H300J	CHIP C	30PF	J
C36			CK73FB1H471K	CHIP C	470PF	K
C37-40			CM73F2H150J	CHIP C	15PF	J
C41,42			CK73FB1H471K	CHIP C	470PF	K
C43,44			CM73F2H101J	CHIP C	100PF	J
C45,46			CK73FB1H103K	CHIP C	0.010UF	K

PARTS LIST

FINAL UNIT (X45-3570-10) : TK-890H(B)
TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
C47			CM73F2H100D	CHIP C 10PF D	
C48,49			CK73FB1E104K	CHIP C 0.10UF K	
C50,51			C92-0736-05	ELECTRO 10UF 50WV	
C52			CK73FB1H471K	CHIP C 470PF K	
C53			CC73FCH1H060D	CHIP C 6.0PF D	
C54-61			CK73FB1H471K	CHIP C 470PF K	
C62			CM73F2H040D	CHIP C 4.0PF D	
C63			C92-0729-05	ELECTRO 330UF 25WV	
C64			CM73F2H150J	CHIP C 15PF J	
C65,66			CK73FB1H471K	CHIP C 470PF K	
C67			CM73F2H180J	CHIP C 18PF J	
C68			C92-0729-05	ELECTRO 330UF 25WV	
C69			CM73F2H090D	CHIP C 9.0PF D	
C70,71			CK73FB1H471K	CHIP C 470PF K	
C72			CM73F2H040D	CHIP C 4.0PF D	
C73			CM73F2H020C	CHIP C 2.0PF C	
CN1,2			E04-0154-05	PIN SOCKET	
CN3,4			E23-1116-05	RELAY TERMINAL	
W1,2			E37-0183-05	PROCESSED LEAD WIRE	
W4			E37-0706-05	LEAD WIRE WITH CONNECTOR	
W5			E37-0701-05	LEAD WIRE WITH CONNECTOR	
A1	1D		F10-2277-04	SHIELDING PLATE (LPF)	
L1,2			L33-0715-05	CHOKE COIL	
L3,4			L34-1233-05	AIR-CORE COIL	
L5			L34-4537-05	AIR-CORE COIL	
L6,7			L34-4538-05	AIR-CORE COIL	
L8			L34-1236-05	AIR-CORE COIL	
L9			L40-1081-34	SMALL FIXED INDUCTOR (100NH)	
R1			RK73FB2A473J	CHIP R 47K J 1/10W	
R2			RK73FB2A104J	CHIP R 100K J 1/10W	
R3			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R4,5			RK73FB2A392J	CHIP R 3.9K J 1/10W	
R6,7			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R8			RK73FB2A103J	CHIP R 10K J 1/10W	
R9			R92-1221-05	CHIP R 82 J 1/4W	
R10			R92-1204-05	CHIP R 100 J 1/4W	
R11			RK73FB2A103J	CHIP R 10K J 1/10W	
R12			RK73FB2A122J	CHIP R 1.2K J 1/10W	
R13			RK73FB2A103J	CHIP R 10K J 1/10W	
R14			RK73FB2A100J	CHIP R 10 J 1/10W	
R15			RK73FB2A821J	CHIP R 820 J 1/10W	
R16			RK73FB2A100J	CHIP R 10 J 1/10W	
R17			RK73FB2A821J	CHIP R 820 J 1/10W	
R18			RK73FB2A104J	CHIP R 100K J 1/10W	
R19			RK73FB2A182J	CHIP R 1.8K J 1/10W	
R20			RK73FB2A122J	CHIP R 1.2K J 1/10W	
R21			R92-1061-05	JUMPER REST 0 OHM	
VR1			R12-6425-05	TRIMMING POT. (22K)	
K1			S51-1437-05	RELAY	
D1,2			HSM88AS	DIODE	
D3			1SS184	DIODE	
D4			1SS193	DIODE	
D5			02CZ10(X,Y)	ZENER DIODE	
D6			ZSA5A27	ZENER DIODE	
D7			SG-5L(R)	DIODE	
IC1			M57788H-32	IC (RF POWER MODULE)	
Q1,2			2SC2712(Y)	TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
Q3			2SD2531	TRANSISTOR	
Q4			2SA1162(Y)	TRANSISTOR	
Q5			FMW1	TRANSISTOR	
Q6,7			2SC4989	TRANSISTOR	
Q8			FMC2	DIGITAL TRANSISTOR	
Q9			2SD1624(S)	TRANSISTOR	
Q10			2SC2712(Y)	TRANSISTOR	
Q11			DTC144EUA	DIGITAL TRANSISTOR	
TH1			PTH9M04BC471TS	THERMISTOR	

TX-RX UNIT (X57-5620-13) : TK-890H(B)

C101			CC73GCH1H101J	CHIP C 100PF J	
C103			CC73GCH1H080D	CHIP C 8.0PF D	
C104,105			CK73GB1H471K	CHIP C 470PF K	
C106			CC73GCH1H020C	CHIP C 2.0PF C	
C107			CC73GCH1H050C	CHIP C 5.0PF C	
C108			CK73GB1H471K	CHIP C 470PF K	
C109			CC73GCH1H390J	CHIP C 39PF J	
C110			CK73GB1H471K	CHIP C 470PF K	
C112			CK73GB1H103K	CHIP C 0.010UF K	
C113			CC73GCH1H120J	CHIP C 12PF J	
C114,115			CK73GB1H103K	CHIP C 0.010UF K	
C116			CC73GCH1H120J	CHIP C 12PF J	
C117			CK73GB1H471K	CHIP C 470PF K	
C118,119			CC73GCH1H101J	CHIP C 100PF J	
C120			CC73GCH1H220J	CHIP C 22PF J	
C121			CK73GB1H471K	CHIP C 470PF K	
C122,123			CK73GB1H103K	CHIP C 0.010UF K	
C124			CC73GCH1H120J	CHIP C 12PF J	
C125			CK73GB1H471K	CHIP C 470PF K	
C126			CC73GCH1H060D	CHIP C 6.0PF D	
C127			CK73GB1H471K	CHIP C 470PF K	
C128			CC73GCH1H030C	CHIP C 3.0PF C	
C129-131			CC73GCH1H040C	CHIP C 4.0PF C	
C132			CC73FCH1H090D	CHIP C 9.0PF D	
C133			CK73GB1H471K	CHIP C 470PF K	
C134			CC73GCH1H030C	CHIP C 3.0PF C	
C135			CC73GCH1H040C	CHIP C 4.0PF C	
C136			CK73GB1H102K	CHIP C 1000PF K	
C138-141			CK73GB1H103K	CHIP C 0.010UF K	
C142			CC73GCH1H100D	CHIP C 10PF D	
C143			CK73FB1E104K	CHIP C 0.10UF K	
C144			CC73GCH1H090D	CHIP C 9.0PF D	
C145			CC73GCH1H101J	CHIP C 100PF J	
C146			CC73GCH1H220J	CHIP C 22PF J	
C147			CK73GB1H102K	CHIP C 1000PF K	
C148-150			CK73GB1H103K	CHIP C 0.010UF K	
C152			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C153			CK73GB1H102K	CHIP C 1000PF K	
C154			CC73GCH1H270J	CHIP C 27PF J	
C155			CK73FB1E104K	CHIP C 0.10UF K	
C156			CK73GB1H103K	CHIP C 0.010UF K	
C157,158			CC73GCH1H221J	CHIP C 220PF J	
C159			CK73GB1H472K	CHIP C 4700PF K	
C160			CK73GB1H103K	CHIP C 0.010UF K	
C161			CK73FB1E104K	CHIP C 0.10UF K	
C162			CK73GB1C333K	CHIP C 0.033UF K	

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description		Destination
C163			C92-0003-05	CHIP-TAN	0.47UF 25WV	
C164			CK73GB1H102K	CHIP C	1000PF K	
C166			CC73GCH1H101J	CHIP C	100PF J	
C167			CK73GB1H103K	CHIP C	0.010UF K	
C173			CK73GB1E223K	CHIP C	0.022UF K	
C174			CK73GB1H102K	CHIP C	1000PF K	
C175			CK73GB1E223K	CHIP C	0.022UF K	
C176			CK73FB1C334K	CHIP C	0.33UF K	
C177			CK73GB1H103K	CHIP C	0.010UF K	
C178			C92-0560-05	CHIP-TAN	10UF 6.3WV	
C179			CC73GCH1H101J	CHIP C	100PF J	
C201			CC73GCH1H030C	CHIP C	3.0PF C	
C202			CC73GCH1H101J	CHIP C	100PF J	
C203			CK73FB1E104K	CHIP C	0.10UF K	
C204			CK73GB1H471K	CHIP C	470PF K	
C206			CK73GB1H471K	CHIP C	470PF K	
C207			CK73GB1H102K	CHIP C	1000PF K	
C208			CK73GB1H471K	CHIP C	470PF K	
C209			CK73GB1H103K	CHIP C	0.010UF K	
C210			CC73GCH1H050C	CHIP C	5.0PF C	
C211,212			C92-0044-05	CHIP-ELE	47UF 10WV	
C213			CK73GB1H102K	CHIP C	1000PF K	
C214,215			CK73GB1H471K	CHIP C	470PF K	
C216			CK73GB1H102K	CHIP C	1000PF K	
C217			CK73FB1E104K	CHIP C	0.10UF K	
C218			CK73GB1H471K	CHIP C	470PF K	
C219			CC73GCH1H070D	CHIP C	7.0PF D	
C220			C92-0008-05	CHIP-TAN	3.3UF 16WV	
C221			CK73GB1H471K	CHIP C	470PF K	
C222			CK73GB1H102K	CHIP C	1000PF K	
C223			CK73GB1H471K	CHIP C	470PF K	
C224			C92-0044-05	CHIP-ELE	47UF 10WV	
C225			CK73GB1H471K	CHIP C	470PF K	
C226			CK73GB1H102K	CHIP C	1000PF K	
C227			CK73FB1E104K	CHIP C	0.10UF K	
C228			CK73GB1H103K	CHIP C	0.010UF K	
C229			CC73FCH1H390J	CHIP C	39PF J	
C230-232			CK73GB1H471K	CHIP C	470PF K	
C233-236			CC73GCH1H220J	CHIP C	22PF J	
C301,302			CK73GB1H102K	CHIP C	1000PF K	
C303			CK73GB1H103K	CHIP C	0.010UF K	
C304,305			CK73GB1H471K	CHIP C	470PF K	
C306			CK73FB1E104K	CHIP C	0.10UF K	
C307			CK73GB1H102K	CHIP C	1000PF K	
C308,309			CK73GB1H103K	CHIP C	0.010UF K	
C310,311			CK73FB1E104K	CHIP C	0.10UF K	
C312			C92-0633-05	CHIP-TAN	22UF 10WV	
C313			C90-4016-05	ELECTRO	47UF 16WV	
C314			C92-0001-05	CHIP C	0.1UF 35WV	
C315			C92-1341-05	ELECTRO	100UF 16WV	
C316			C90-4016-05	ELECTRO	47UF 16WV	
C318,319			CK73GB1H103K	CHIP C	0.010UF K	
C320			C92-0514-05	CHIP-TAN	2.2UF 10WV	
C321,322			CK73GB1H471K	CHIP C	470PF K	
C323			CK73FB1E224K	CHIP C	0.22UF K	
C324			C92-0514-05	CHIP-TAN	2.2UF 10WV	
C325			C92-0002-05	CHIP-TAN	0.22UF 35WV	
C326			C92-0606-05	CHIP-TAN	4.7UF 10WV	
C327,328			CC73GCH1H030C	CHIP C	3.0PF C	
C329			CC73GCH1H1R5C	CHIP C	1.5PF C	

Ref. No.	Address	New parts	Parts No.	Description		Destination
C330			CK73GB1H471K	CHIP C	470PF K	
C331			CC73GCH1H120J	CHIP C	12PF J	
C332			CK73GB1H471K	CHIP C	470PF K	
C333			CC73GCH1H060D	CHIP C	6.0PF D	
C334			CK73GB1H471K	CHIP C	470PF K	
C335			CC73GCH1H050C	CHIP C	5.0PF C	
C336			CC73GCH1H0R5C	CHIP C	0.5PF C	
C337			CC73GCH1H270J	CHIP C	27PF J	
C338			CC73GCH1H180J	CHIP C	18PF J	
C339			CC73GCH1H150J	CHIP C	15PF J	
C340-342			CC73GCH1H070D	CHIP C	7.0PF D	
C343			CK73GB1H471K	CHIP C	470PF K	
C344			CC73GCH1H070D	CHIP C	7.0PF D	
C345			CK73GB1H471K	CHIP C	470PF K	
C346			CC73GCH1H070D	CHIP C	7.0PF D	
C347			CK73GB1H471K	CHIP C	470PF K	
C348,349			CC73GCH1H070D	CHIP C	7.0PF D	
C350,351			CC73GCH1H100D	CHIP C	10PF D	
C352-354			CK73GB1H471K	CHIP C	470PF K	
C355-357			CC73GCH1H0R5C	CHIP C	0.5PF C	
C358,359			CK73GB1H471K	CHIP C	470PF K	
C360			CC73GCH1H040C	CHIP C	4.0PF C	
C361			CK73GB1H471K	CHIP C	470PF K	
C363			CC73GCH1H040C	CHIP C	4.0PF C	
C364,365			CK73GB1H471K	CHIP C	470PF K	
C366			CK73GB1H102K	CHIP C	1000PF K	
C367			CK73GB1H471K	CHIP C	470PF K	
C369,370			CC73GCH1H040C	CHIP C	4.0PF C	
C371			CK73GB1H102K	CHIP C	1000PF K	
C372			C92-0560-05	CHIP-TAN	10UF 6.3WV	
C373			CK73GB1H102K	CHIP C	1000PF K	
C374-376			CC73GCH1H101J	CHIP C	100PF J	
C377-379			CK73FB1E104K	CHIP C	0.10UF K	
C380,381			CC73GCH1H120J	CHIP C	12PF J	
C382			CK73FB1H473K	CHIP C	0.047UF K	
C501			CC73GCH1H101J	CHIP C	100PF J	
C524			CK73GB1H102K	CHIP C	1000PF K	
C525			CK73FB1E683K	CHIP C	0.068UF K	
C526,527			CK73GB1H471K	CHIP C	470PF K	
C528			CC73GCH1H101J	CHIP C	100PF J	
C529			C92-0585-05	CHIP-TAN	4.7UF 16WV	
C530			CK73GB1E123K	CHIP C	0.012UF K	
C531			C92-0560-05	CHIP-TAN	10UF 6.3WV	
C532			CK73GB1H222K	CHIP C	2200PF K	
C533			C92-0560-05	CHIP-TAN	10UF 6.3WV	
C534			CK73FB1E104K	CHIP C	0.10UF K	
C535			C92-0560-05	CHIP-TAN	10UF 6.3WV	
C536,537			CK73FB1E104K	CHIP C	0.10UF K	
C538			CK73GB1E223K	CHIP C	0.022UF K	
C539			CC73GCH1H470J	CHIP C	47PF J	
C540			CK73FB1E104K	CHIP C	0.10UF K	
C541			CK73GB1H102K	CHIP C	1000PF K	
C542			CK73FB1E104K	CHIP C	0.10UF K	
C543			CK73GB1H102K	CHIP C	1000PF K	
C544			CC73GCH1H121J	CHIP C	120PF J	
C545			CK73GB1E103K	CHIP C	0.010UF K	
C546			CK73FB1E104K	CHIP C	0.10UF K	
C547			CK73GB1E223K	CHIP C	0.022UF K	
C548			C92-0507-05	CHIP-TAN	4.7UF 6.3WV	
C549			CK73GB1H222K	CHIP C	2200PF K	

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description			Destination
C550			CK73FB1E104K	CHIP C	0.10UF	K	
C551			CK73FB1E333K	CHIP C	0.033UF	K	
C552			CC73GCH1H470J	CHIP C	47PF	J	
C553,554			CK73FB1E104K	CHIP C	0.10UF	K	
C555			CK73GB1H102K	CHIP C	1000PF	K	
C557			CK73GB1E223K	CHIP C	0.022UF	K	
C558			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C559			C92-0036-05	CHIP-ELE	4.7UF	16WV	
C562			CK73GB1E103K	CHIP C	0.010UF	K	
C563			CK73GB1H102K	CHIP C	1000PF	K	
C565			C92-0003-05	CHIP-TAN	0.47UF	25WV	
C566			CC73GCH1H100D	CHIP C	10PF	D	
C567			CK73GB1E223K	CHIP C	0.022UF	K	
C568			CK73GB1H102K	CHIP C	1000PF	K	
C570			C92-0036-05	CHIP-ELE	4.7UF	16WV	
C571			C92-0585-05	CHIP-TAN	4.7UF	16WV	
C572,573			CC73GCH1H030C	CHIP C	3.0PF	C	
C574			CK73GB1H472K	CHIP C	4700PF	K	
C575			C92-0628-05	CHIP-TAN	10UF	10WV	
C576			CC73GCH1H470J	CHIP C	47PF	J	
C578			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C579			CK73GB1H472K	CHIP C	4700PF	K	
C580-582			CK73GB1H102K	CHIP C	1000PF	K	
C583			C92-0546-05	CHIP-TAN	68UF	6.3WV	
C584			CK73FB1E104K	CHIP C	0.10UF	K	
C585			CC73FCH1H751J	CHIP C	750PF	J	
C586			CC73GCH1H180J	CHIP C	18PF	J	
C587			CK73GB1H122K	CHIP C	1200PF	K	
C588			CC73GCH1H070D	CHIP C	7.0PF	D	
C589			CC73GCH1H181J	CHIP C	180PF	J	
C590			CK73GB1H332K	CHIP C	3300PF	K	
C591			CC73GCH1H180J	CHIP C	18PF	J	
C592			CK73GB1H102K	CHIP C	1000PF	K	
C593			C92-0633-05	CHIP-TAN	22UF	10WV	
C594			CK73GB1E103K	CHIP C	0.010UF	K	
C595-597			CK73GB1H102K	CHIP C	1000PF	K	
C598,599			CK73FB1E104K	CHIP C	0.10UF	K	
C600			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C601			CK73GB1H102K	CHIP C	1000PF	K	
C602			CK73GB1H562K	CHIP C	5600PF	K	
C603			CK73GB1H102K	CHIP C	1000PF	K	
C604,605			CK73GB1H562K	CHIP C	5600PF	K	
C606			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C607			CK73GB1H102K	CHIP C	1000PF	K	
C608			CK73GB1H332J	CHIP C	3300PF	J	
C609			CK73GB1H272J	CHIP C	2700PF	J	
C610			CK73FB1E104K	CHIP C	0.10UF	K	
C611			CK73GB1H272J	CHIP C	2700PF	J	
C612			C92-1341-05	ELECTRO	100UF	16WV	
C613			C92-0040-05	CHIP-ELE	47UF	16WV	
C614			CK73GB1H102K	CHIP C	1000PF	K	
C615			CK73GB1H272J	CHIP C	2700PF	J	
C616			CK73GB1E103K	CHIP C	0.010UF	K	
C617			CK73FB1E104K	CHIP C	0.10UF	K	
C618			CK73GB1H272J	CHIP C	2700PF	J	
C619			C92-0721-05	ELECTRO	330UF	25WV	
C620			CK73GB1E103K	CHIP C	0.010UF	K	
C621			CK73FB1E104K	CHIP C	0.10UF	K	
C622			CK73GB1H102K	CHIP C	1000PF	K	
C623			C92-0040-05	CHIP-ELE	47UF	16WV	

Ref. No.	Address	New parts	Parts No.	Description			Destination
C624			CK73GB1H102K	CHIP C	1000PF	K	
C625			CK73GB1E103K	CHIP C	0.010UF	K	
C626			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C627,628			CK73FB1E104K	CHIP C	0.10UF	K	
C629,630			CK73GB1H102K	CHIP C	1000PF	K	
C631			CC73GCH1H101J	CHIP C	100PF	J	
C632-639			CK73GB1H102K	CHIP C	1000PF	K	
C640			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C641,642			CK73FB1E104K	CHIP C	0.10UF	K	
C666-680			CC73GCH1H101J	CHIP C	100PF	J	
C681			CK73GB1H102K	CHIP C	1000PF	K	
C682,683			CC73GCH1H101J	CHIP C	100PF	J	
C684			CK73GB1H102K	CHIP C	1000PF	K	
C685			CC73GCH1H101J	CHIP C	100PF	J	
C686			CK73GB1H102K	CHIP C	1000PF	K	
C687			CK73GB1E103K	CHIP C	0.010UF	K	
C688,689			CC73GCH1H101J	CHIP C	100PF	J	
C690			CK73FB1E104K	CHIP C	0.10UF	K	
C691,692			CC73GCH1H101J	CHIP C	100PF	J	
C693			CK73GB1E103K	CHIP C	0.010UF	K	
C694			C92-0633-05	CHIP-TAN	22UF	10WV	
C695			CC73GCH1H101J	CHIP C	100PF	J	
C696			C92-0628-05	CHIP-TAN	10UF	10WV	
C697			CK73GB1E103K	CHIP C	0.010UF	K	
C698-700			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C701			C92-0566-05	CHIP-TAN	10UF	6.3WV	
C703-705			CK73FB1E104K	CHIP C	0.10UF	K	
C706			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C707			CC73GCH1H560J	CHIP C	56PF	J	
C708			CK73FB1E104K	CHIP C	0.10UF	K	
C709			CC73GCH1H560J	CHIP C	56PF	J	
C710			CK73GB1E123K	CHIP C	0.012UF	K	
C711			CC73GCH1H101J	CHIP C	100PF	J	
C712			CK73GB1E473J	CHIP C	0.047UF	J	
TC301-303			C05-0393-05	CERAMIC TRIMMER CAP (8PF)			
CN101			E04-0154-05	PIN SOCKET			
CN102,103			E40-5538-05	PIN ASSY			
CN104			E04-0154-05	PIN SOCKET			
CN201			E40-5752-05	PIN ASSY			
CN202			E40-5978-05	FLAT CABLE CONNECTOR			
CN203			E04-0154-05	PIN SOCKET			
CN501			E40-5703-05	PIN ASSY			
CN504			E40-5661-05	PIN ASSY SOCKET			
CN505			E40-5960-05	PIN ASSY			
CN506			E40-5066-05	PIN ASSY			
CN507			E40-5751-05	PIN ASSY			
CN508			E40-5701-05	PIN ASSY			
W501			E37-0707-05	LEAD WIRE WITH CONNECTOR			
A102			F10-2278-04	SHIELDING PLATE (MCF)			
F501			F53-0128-05	FUSE (0.5A)			
F502			F53-0108-05	FUSE (1.8A)			
CF101			L72-0916-05	CERAMIC FILTER (455KHZ)			
CF102			L72-0939-05	CERAMIC FILTER (455KHZ)			
CF103			L72-0916-05	CERAMIC FILTER (455KHZ)			
CF104			L72-0939-05	CERAMIC FILTER (455KHZ)			
L101			L79-1530-05	HELICAL BLOCK			
L102			L40-1075-34	SMALL FIXED INDUCTOR (10NH)			
L103			L40-1575-34	SMALL FIXED INDUCTOR (15NH)			
L104			L79-1533-05	HELICAL BLOCK			

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
L105			L40-1281-37	SMALL FIXED INDUCTOR (0.120UH)	
L106			L40-2781-37	SMALL FIXED INDUCTOR (0.270UH)	
L107,108			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	
L109			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	
L110			L40-2275-34	SMALL FIXED INDUCTOR (22NH)	
L111			L34-4529-05	COIL	
L112,113			L34-4528-05	COIL	
L114			L34-4529-05	COIL	
L115			L34-4528-05	COIL	
L116			L34-4529-05	COIL	
L117,118			L40-1005-34	SMALL FIXED INDUCTOR (10UH)	
L119			L40-4785-34	SMALL FIXED INDUCTOR (470NH)	
L120			L34-4530-05	COIL	
L123			L40-4772-37	SMALL FIXED INDUCTOR (0.047UH)	
L201			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	
L202			L40-1271-34	SMALL FIXED INDUCTOR (12NH)	
L203			L40-8271-34	SMALL FIXED INDUCTOR (82NH)	
L204			L40-1875-34	SMALL FIXED INDUCTOR (18NH)	
L301-306			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	
L307			L34-4556-05	AIR-CORE COIL	
L308,309			L34-4518-05	AIR-CORE COIL	
L310			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	
L311,312			L40-1595-34	SMALL FIXED INDUCTOR (1.5UH)	
L313			L40-1095-34	SMALL FIXED INDUCTOR (1UH)	
L314,315			L40-1595-34	SMALL FIXED INDUCTOR (1.5UH)	
L316			L40-3375-34	SMALL FIXED INDUCTOR (33NH)	
L317			L40-2275-34	SMALL FIXED INDUCTOR (22NH)	
L318			L92-0148-05	FERRITE CHIP	
L319			L40-1575-34	SMALL FIXED INDUCTOR (15NH)	
L501,502			L40-1005-34	SMALL FIXED INDUCTOR (10UH)	
X101			L77-1737-05	CRYSTAL RESONATOR (73.505MHZ)	
X301		✻	L77-1766-15	VCXO (16.8MHZ)	
X501			L77-1708-05	CRYSTAL RESONATOR (3.579545MHZ)	
X502			L77-1863-05	CRYSTAL RESONATOR (12.0MHZ)	
XF101			L71-0514-05	MCF (73.05MHZ WIDE)	
XF102			L71-0515-05	MCF (73.05MHZ NARROW)	
R101			RK73GB1J470J	CHIP R 47 J 1/16W	
R102			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R103			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R104,105			RK73GB1J470J	CHIP R 47 J 1/16W	
R106			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R107			R92-1252-05	CHIP R 0 OHM	
R108			RK73GB1J151J	CHIP R 150 J 1/16W	
R109			RK73GB1J223J	CHIP R 22K J 1/16W	
R110			R92-1252-05	CHIP R 0 OHM	
R111			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R112			RK73FB2A821J	CHIP R 820 J 1/10W	
R113			RK73FB2A5R6J	CHIP R 5.6 J 1/10W	
R114			RK73GB1J270J	CHIP R 27 J 1/16W	
R115			RK73FB2A821J	CHIP R 820 J 1/10W	
R116			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R117			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R118			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R119			RK73GB1J330J	CHIP R 33 J 1/16W	
R120			RK73GB1J680J	CHIP R 68 J 1/16W	
R121,122			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R123			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R124			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R125,126			RK73GB1J220J	CHIP R 22 J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R127-129			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R130			RK73GB1J473J	CHIP R 47K J 1/16W	
R132			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R133			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R134-137			RK73GB1J223J	CHIP R 22K J 1/16W	
R139			RK73GB1J223J	CHIP R 22K J 1/16W	
R140			RK73GB1J274J	CHIP R 270K J 1/16W	
R141,142			RK73GB1J223J	CHIP R 22K J 1/16W	
R143			RK73GB1J183J	CHIP R 18K J 1/16W	
R144			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R145			RK73GB1J334J	CHIP R 330K J 1/16W	
R146			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R147,148			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R149			RK73GB1J470J	CHIP R 47 J 1/16W	
R150			RK73GB1J821J	CHIP R 820 J 1/16W	
R151			RK73GB1J5R6J	CHIP R 5.6 J 1/16W	
R152			RK73GB1J821J	CHIP R 820 J 1/16W	
R153			RK73GB1J220J	CHIP R 22 J 1/16W	
R154,155			RK73GB1J271J	CHIP R 270 J 1/16W	
R156			RK73GB1J180J	CHIP R 18 J 1/16W	
R157			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R158			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R159,160			RK73GB1J104J	CHIP R 100K J 1/16W	
R161			RK73GB1J393J	CHIP R 39K J 1/16W	
R162			R92-1252-05	CHIP R 0 OHM	
R163			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R164			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R165			RK73GB1J101J	CHIP R 100 J 1/16W	
R166			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R201			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R202			RK73GB1J271J	CHIP R 270 J 1/16W	
R203			RK73GB1J180J	CHIP R 18 J 1/16W	
R204			RK73GB1J271J	CHIP R 270 J 1/16W	
R205			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R206			RK73GB1J103J	CHIP R 10K J 1/16W	
R207			RK73GB1J101J	CHIP R 100 J 1/16W	
R208			RK73GB1J470J	CHIP R 47 J 1/16W	
R209			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R210			RK73GB1J471J	CHIP R 470 J 1/16W	
R211			RK73GB1J221J	CHIP R 220 J 1/16W	
R212			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R213			RK73GB1J100J	CHIP R 10 J 1/16W	
R214			RK73GB1J473J	CHIP R 47K J 1/16W	
R215			RK73GB1J100J	CHIP R 10 J 1/16W	
R216			RK73GB1J681J	CHIP R 680 J 1/16W	
R217			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R218			RK73GB1J473J	CHIP R 47K J 1/16W	
R219			RK73GB1J331J	CHIP R 330 J 1/16W	
R220			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R221			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R222			R92-0685-05	CHIP R 22 J 1/2W	
R223			RK73FB2A821J	CHIP R 820 J 1/10W	
R224,225			RK73FB2A100J	CHIP R 10 J 1/10W	
R226			RK73FB2A821J	CHIP R 820 J 1/10W	
R301-304			RK73GB1J103J	CHIP R 10K J 1/16W	
R305			R92-1252-05	CHIP R 0 OHM	
R306			RK73GB1J560J	CHIP R 56 J 1/16W	
R307,308			RK73GB1J100J	CHIP R 10 J 1/16W	
R309			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R310,311			RK73GB1J152J	CHIP R 1.5K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R312			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R313			RK73GB1J103J	CHIP R 10K J 1/16W	
R314,315			RK73GB1J331J	CHIP R 330 J 1/16W	
R316			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R317			RK73GB1J474J	CHIP R 470K J 1/16W	
R318			RK73FB2A152J	CHIP R 1.5K J 1/10W	
R319			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R320-325			R92-1252-05	CHIP R 0 OHM	
R326,327			RK73GB1J104J	CHIP R 100K J 1/16W	
R328-330			RK73GB1J330J	CHIP R 33 J 1/16W	
R331			RK73GB1J151J	CHIP R 150 J 1/16W	
R332			RK73GB1J221J	CHIP R 220 J 1/16W	
R333			RK73GB1J181J	CHIP R 180 J 1/16W	
R334-336			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R337			RK73GB1J470J	CHIP R 47 J 1/16W	
R338			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R339			RK73GB1J470J	CHIP R 47 J 1/16W	
R340			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R341			RK73GB1J470J	CHIP R 47 J 1/16W	
R342,343			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R344			RK73GB1J330J	CHIP R 33 J 1/16W	
R345			RK73GB1J333J	CHIP R 33K J 1/16W	
R346			RK73GB1J103J	CHIP R 10K J 1/16W	
R347			RK73GB1J101J	CHIP R 100 J 1/16W	
R348			RK73GB1J330J	CHIP R 33 J 1/16W	
R349			RK73GB1J223J	CHIP R 22K J 1/16W	
R350			RK73GB1J103J	CHIP R 10K J 1/16W	
R351			RK73GB1J330J	CHIP R 33 J 1/16W	
R352			RK73GB1J273J	CHIP R 27K J 1/16W	
R353			RK73GB1J103J	CHIP R 10K J 1/16W	
R354			RK73GB1J101J	CHIP R 100 J 1/16W	
R355			RK73GB1J471J	CHIP R 470 J 1/16W	
R356			RK73GB1J151J	CHIP R 150 J 1/16W	
R357,358			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R359			RK73GB1J220J	CHIP R 22 J 1/16W	
R361			RK73GB1J220J	CHIP R 22 J 1/16W	
R363-366			R92-1252-05	CHIP R 0 OHM	
R501			RK73GB1J333J	CHIP R 33K J 1/16W	
R502			RK73GB1J471J	CHIP R 470 J 1/16W	
R504			R92-0670-05	CHIP R 0 OHM	
R505			RK73GB1J103J	CHIP R 10K J 1/16W	
R507			RK73GB1J223J	CHIP R 22K J 1/16W	
R508			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R509-511			RK73GB1J473J	CHIP R 47K J 1/16W	
R512			RK73GB1J184J	CHIP R 180K J 1/16W	
R513			RK73GB1J223J	CHIP R 22K J 1/16W	
R514			RK73GB1J184J	CHIP R 180K J 1/16W	
R515			R92-0670-05	CHIP R 0 OHM	
R516			RK73GB1J104J	CHIP R 100K J 1/16W	
R517		✻	RK73GH1J104D	CHIP R 100K D 1/16W	
R518			R92-1252-05	CHIP R 0 OHM	
R519			RK73GB1J104J	CHIP R 100K J 1/16W	
R520		✻	RK73GH1J334D	CHIP R 330K D 1/16W	
R521			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R522			RK73GH1J913D	CHIP R 91K D 1/16W	
R523			RK73GB1J474J	CHIP R 470K J 1/16W	
R524			RK73GH1J224D	CHIP R 220K D 1/16W	
R525			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R526			RK73GB1J104J	CHIP R 100K J 1/16W	
R527			RK73GB1J223J	CHIP R 22K J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R528			RK73GB1J104J	CHIP R 100K J 1/16W	
R529,530			RK73GB1J334J	CHIP R 330K J 1/16W	
R531			RK73GB1J154J	CHIP R 150K J 1/16W	
R532			RK73GB1J474J	CHIP R 470K J 1/16W	
R533			RN73GH1J473D	CHIP R 47K D 1/16W	
R534			RN73GH1J563D	CHIP R 56K D 1/16W	
R535			RK73GB1J103J	CHIP R 10K J 1/16W	
R536			RK73GB1J681J	CHIP R 680 J 1/16W	
R537			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R539			RK73GB1J561J	CHIP R 560 J 1/16W	
R541			R92-0670-05	CHIP R 0 OHM	
R542			RK73GB1J470J	CHIP R 47 J 1/16W	
R543			RK73GB1J220J	CHIP R 22 J 1/16W	
R545			RK73GB1J564J	CHIP R 560K J 1/16W	
R546			R92-0670-05	CHIP R 0 OHM	
R547			R92-1252-05	CHIP R 0 OHM	
R549			RK73GB1J153J	CHIP R 15K J 1/16W	
R550			RK73GB1J683J	CHIP R 68K J 1/16W	
R552			RK73GB1J101J	CHIP R 100 J 1/16W	
R553			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R557,558			RK73GB1J104J	CHIP R 100K J 1/16W	
R559			RK73GB1J224J	CHIP R 220K J 1/16W	
R561			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R562			RK73GB1J274J	CHIP R 270K J 1/16W	
R563			RK73GB1J104J	CHIP R 100K J 1/16W	
R564			RK73GB1J474J	CHIP R 470K J 1/16W	
R565			RK73GB1J123J	CHIP R 12K J 1/16W	
R566			RK73GB1J153J	CHIP R 15K J 1/16W	
R567			RK73GB1J224J	CHIP R 220K J 1/16W	
R568			R92-1252-05	CHIP R 0 OHM	
R570			RK73GB1J223J	CHIP R 22K J 1/16W	
R572			RK73GB1J104J	CHIP R 100K J 1/16W	
R573			RK73GB1J274J	CHIP R 270K J 1/16W	
R574			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R575,576			RK73GB1J104J	CHIP R 100K J 1/16W	
R577			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R578			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R579,580			RK73GB1J823J	CHIP R 82K J 1/16W	
R581,582			RK73GB1J683J	CHIP R 68K J 1/16W	
R583			R92-0670-05	CHIP R 0 OHM	
R584			RK73GB1J333J	CHIP R 33K J 1/16W	
R586			RK73GB1J104J	CHIP R 100K J 1/16W	
R587			R92-0670-05	CHIP R 0 OHM	
R588			RK73GB1J473J	CHIP R 47K J 1/16W	
R589			RK73GB1J223J	CHIP R 22K J 1/16W	
R591,592			RK73GB1J124J	CHIP R 120K J 1/16W	
R594-597			RK73GB1J473J	CHIP R 47K J 1/16W	
R598			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R599,600			RK73GB1J473J	CHIP R 47K J 1/16W	
R601			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R602			RK73FB2A473J	CHIP R 47K J 1/10W	
R603			RK73GB1J103J	CHIP R 10K J 1/16W	
R604			R92-0670-05	CHIP R 0 OHM	
R605			RK73GB1J333J	CHIP R 33K J 1/16W	
R606			RK73GB1J154J	CHIP R 150K J 1/16W	
R607			R92-1252-05	CHIP R 0 OHM	
R608			RK73GB1J123J	CHIP R 12K J 1/16W	
R609			RK73GB1J153J	CHIP R 15K J 1/16W	
R611			RK73GB1J474J	CHIP R 470K J 1/16W	
R612			RK73GB1J823J	CHIP R 82K J 1/16W	

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)

Ref. No.	Address	New parts	Parts No.	Description	Destination
R613			RK73GB1J393J	CHIP R 39K J 1/16W	
R615			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R616			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R617			RN73GH1J274D	CHIP R 270K D 1/16W	
R618			RN73GH1J334D	CHIP R 330K D 1/16W	
R619,620			RN73GH1J274D	CHIP R 270K D 1/16W	
R621			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R622			RK73GB1J473J	CHIP R 47K J 1/16W	
R623			RN73GH1J274D	CHIP R 270K D 1/16W	
R624			RK73GB1J103J	CHIP R 10K J 1/16W	
R625			RK73GB1J684J	CHIP R 680K J 1/16W	
R626			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R627			RN73GH1J274D	CHIP R 270K D 1/16W	
R628			R92-0670-05	CHIP R 0 OHM	
R629			RN73GH1J563D	CHIP R 56K D 1/16W	
R630			RN73GH1J473D	CHIP R 47K D 1/16W	
R631			RK73GB1J104J	CHIP R 100K J 1/16W	
R632			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R633,634			RK73GB1J103J	CHIP R 10K J 1/16W	
R635			R92-0670-05	CHIP R 0 OHM	
R636		*	RK73GH1J104D	CHIP R 100K D 1/16W	
R638			RK73GH1J223D	CHIP R 22K D 1/16W	
R639			RK73GB1J473J	CHIP R 47K J 1/16W	
R641			R92-0670-05	CHIP R 0 OHM	
R642-648			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R652			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R654-656			RK73FB2A102J	CHIP R 1.0K J 1/10W	
R657			R92-0670-05	CHIP R 0 OHM	
R658			RK73GB1J473J	CHIP R 47K J 1/16W	
R659			RK73GB1J563J	CHIP R 56K J 1/16W	
R661			R92-0670-05	CHIP R 0 OHM	
R662			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R663			RK73GB1J473J	CHIP R 47K J 1/16W	
R664			RK73GB1J333J	CHIP R 33K J 1/16W	
R665			RK73GB1J104J	CHIP R 100K J 1/16W	
R666,667			R92-0670-05	CHIP R 0 OHM	
R668			R92-1252-05	CHIP R 0 OHM	
R670			R92-0670-05	CHIP R 0 OHM	
R671			RK73GB1J683J	CHIP R 68K J 1/16W	
R672			RK73GB1J473J	CHIP R 47K J 1/16W	
R674,675			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R676			RK73GB1J473J	CHIP R 47K J 1/16W	
R677			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R678,679			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R680			RK73GB1J104J	CHIP R 100K J 1/16W	
R690,691			R92-0670-05	CHIP R 0 OHM	
R693			RK73GB1J103J	CHIP R 10K J 1/16W	
R695			R92-1252-05	CHIP R 0 OHM	
R697			R92-1252-05	CHIP R 0 OHM	
R698			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R699			R92-1252-05	CHIP R 0 OHM	
R700			RK73GB1J220J	CHIP R 22 J 1/16W	
R701			RK73GB1J103J	CHIP R 10K J 1/16W	
R702			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R703			RK73GB1J473J	CHIP R 47K J 1/16W	
R706			R92-0670-05	CHIP R 0 OHM	
R707-713			RK73GB1J474J	CHIP R 470K J 1/16W	
R714			RK73GB1J104J	CHIP R 100K J 1/16W	
R715			RK73GB1J474J	CHIP R 470K J 1/16W	
R716			RK73GB1J104J	CHIP R 100K J 1/16W	

Ref. No.	Address	New parts	Parts No.	Description	Destination
R717			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R718			RK73GB1J333J	CHIP R 33K J 1/16W	
R719			RS14DB3D2R2J	FL-PROOF RS 2.2 J 2W	
R720			R92-0670-05	CHIP R 0 OHM	
R721			RK73GB1J393J	CHIP R 39K J 1/16W	
R722			RK73GB1J184J	CHIP R 180K J 1/16W	
R723			R92-0670-05	CHIP R 0 OHM	
R724			RK73GB1J683J	CHIP R 68K J 1/16W	
R725			RK73GB1J333J	CHIP R 33K J 1/16W	
R726			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R727			RK73GB1J473J	CHIP R 47K J 1/16W	
R728			R92-0670-05	CHIP R 0 OHM	
R729-736			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R740,741			RK73GB1J103J	CHIP R 10K J 1/16W	
R742			R92-0670-05	CHIP R 0 OHM	
R744			RK73GB1J104J	CHIP R 100K J 1/16W	
R746			R92-1252-05	CHIP R 0 OHM	
R747			R92-0670-05	CHIP R 0 OHM	
R748			R92-1252-05	CHIP R 0 OHM	
VR501			R12-6417-05	TRIMMING POT. (1K)	
D102-105			DAN235K	DIODE	
D107			MA742	DIODE	
D108			1SS355	DIODE	
D201			DA204K	DIODE	
D301-306			1SV282	VARIABLE CAPACITANCE DIODE	
D307			1SV214	VARIABLE CAPACITANCE DIODE	
D308			DAN235K	DIODE	
D501			02CZ18(X,Y)	ZENER DIODE	
D502,503			1SS355	DIODE	
D504			02CZ5.6(X,Y)	ZENER DIODE	
D505			1SS355	DIODE	
D506			1SS301	DIODE	
D507			02CZ15(X,Y)	ZENER DIODE	
D508			1SS355	DIODE	
D511			1SS301	DIODE	
D512			1SS355	DIODE	
D513-517			DA204U	DIODE	
D519			DA204U	DIODE	
D521			DA204U	DIODE	
D523,524			DA204U	DIODE	
D526,527			DA204U	DIODE	
D528,529			1SS355	DIODE	
IC101			TA31136FN	IC (FM IC)	
IC201			BU4094BCF	IC (SHIFT REGISTER)	
IC202			NJM78L05UA	IC (AVR)	
IC203			AN8009M	IC (AVR)	
IC301			SA7025DK	IC (PLL IC)	
IC501			TC4013BF(N)	IC (D FF)	
IC502			NJM4558M	IC (LPF)	
IC503			TA7808S	IC (AVR)	
IC504			TC35453F	IC (AUDIO PROCESSOR)	
IC505			NJM4558M	IC (HPF/IDC)	
IC506			L78LR05B-FA	IC (AVR)	
IC508			NJM4558M	IC (LIMITER/BUFFER AMP)	
IC509			MC33172D	IC (BUFFER AMP)	
IC510			NJM4558M	IC (SUMMING AMP/LPF)	
IC511			PCD3312CT	IC (DTMF ENCODER)	
IC512			M62364FP	IC (D/A CONVERTER)	
IC513			NJM4558M	IC (LPF/SUMMING AMP)	
IC514			AT24C64N10SI27	IC (EEPROM)	

PARTS LIST

TX-RX UNIT (X57-5620-13) : TK-890H(B)
KCH-10
DISPLAY UNIT (X54-3190-20) : KCH-10

Ref. No.	Address	New parts	Parts No.	Description	Destination
IC515			BU4066BCF	IC (ANALOG SWITCH)	
IC516		✻	784214GC0518EU	IC (CPU)	
IC517			BU4094BCF	IC (SHIFT REGISTER)	
IC518			NJM4558M	IC (BUFFER AMP)	
IC519			AT29C020-90TI	IC (FLASH ROM)	
IC520			TC7S02F	IC (NOR GATE)	
IC521			NJM4558M	IC (BUFFER AMP)	
IC522			TDA8561Q	IC (AUDIO POWER AMP)	
IC523			BU4094BCF	IC (SHIFT REGISTER)	
IC524			NJM4558M	IC (BUFFER AMP/DE-EMPHASIS)	
IC525			LC73872M	IC (DTMF DECODER)	
IC526			TA75S01F	IC (COMPANDER AMP)	
Q101,102			2SC3357	TRANSISTOR	
Q103			2SC3356	TRANSISTOR	
Q104			2SC3357	TRANSISTOR	
Q105			DTA144EUA	DIGITAL TRANSISTOR	
Q106			DTC144EUA	DIGITAL TRANSISTOR	
Q107			2SC4215(Y)	TRANSISTOR	
Q108			DTC144EUA	DIGITAL TRANSISTOR	
Q109			2SC4617(S)	TRANSISTOR	
Q201			2SC4226(R24)	TRANSISTOR	
Q202			2SB1132(Q,R)	TRANSISTOR	
Q203			DTC114EUA	DIGITAL TRANSISTOR	
Q204			2SC3357	TRANSISTOR	
Q205			2SC2954	TRANSISTOR	
Q206			DTC114EUA	DIGITAL TRANSISTOR	
Q207			2SB1132(Q,R)	TRANSISTOR	
Q301,302			2SC4116(GR)	TRANSISTOR	
Q303,304			2SC3722K(S)	TRANSISTOR	
Q305-307			2SK508NV(K52)	FET	
Q308-310			2SC4116(Y)	TRANSISTOR	
Q311,312			DTC114EUA	DIGITAL TRANSISTOR	
Q313			2SC4226(R24)	TRANSISTOR	
Q314			2SC3356	TRANSISTOR	
Q315			2SC4226(R24)	TRANSISTOR	
Q501			DTA114EUA	DIGITAL TRANSISTOR	
Q502,503			DTC114EUA	DIGITAL TRANSISTOR	
Q504			DTC363EK	DIGITAL TRANSISTOR	
Q505			DTC144EUA	DIGITAL TRANSISTOR	
Q506			DTA114YUA	DIGITAL TRANSISTOR	
Q507			DTC114YUA	DIGITAL TRANSISTOR	
Q509-513			DTC144EUA	DIGITAL TRANSISTOR	
Q514			DTA144TKA	DIGITAL TRANSISTOR	
Q516			DTA114TUA	DIGITAL TRANSISTOR	
Q517			DTC144EUA	DIGITAL TRANSISTOR	
Q518			DTA114EUA	DIGITAL TRANSISTOR	
Q519			2SJ506(S)	FET	
Q520			DTD114EK	DIGITAL TRANSISTOR	
Q522			2SC4215(Y)	TRANSISTOR	
Q523,524			DTC114TU	DIGITAL TRANSISTOR	
Q525			DTC144EUA	DIGITAL TRANSISTOR	
Q526			DTA114TUA	DIGITAL TRANSISTOR	
Q527			DTC144EUA	DIGITAL TRANSISTOR	
Q528			DTA114TUA	DIGITAL TRANSISTOR	
Q529,530			DTC144EUA	DIGITAL TRANSISTOR	
Q531			DTA114TUA	DIGITAL TRANSISTOR	
Q532-536			DTC144EUA	DIGITAL TRANSISTOR	
Q537-540			DTD114EK	DIGITAL TRANSISTOR	
Q541			DTC114EUA	DIGITAL TRANSISTOR	
Q542			DTA114EUA	DIGITAL TRANSISTOR	
Q543,544			DTC114EUA	DIGITAL TRANSISTOR	
TH101			157-503-53006	THERMISTOR	
TH501			157-302-53008	THERMISTOR	
A101			W02-1939-05	DBM	

KCH-10

Ref. No.	Address	New parts	Parts No.	Description	Destination
201	3E	✻	A62-0606-13	PANEL ASSY	
203	1F		E37-0787-05	LEAD WIRE WITH CONNECTOR (SP)	
205	3F		G53-0838-03	PACKING (PANEL ASSY)	
206	1E		G53-0839-14	PACKING (SP)	
207	3E	✻	G53-1523-04	PACKING (VOL)	
208	2N		H10-6622-02	POLYSTYRENE FOAMED FIXTURE	
209	1M		H11-0894-04	POLYSTYRENE FOAMED BOARD	
210	1N		H13-1059-04	CARTON BOARD	
211	1N		H25-0029-04	PROTECTION BAG (60/110/0.07)	
212	2M		H25-0103-04	PROTECTION BAG (125/250/0.07)	
213	2N		H25-0117-04	PROTECTION BAG (80/250/0.07)	
214	3M		H52-1271-02	ITEM CARTON CASE	
217	2E	✻	J21-8417-04	HARDWARE FIXTURE (MIC CONNECTOR)	
216	2E		J39-0625-04	SPACER (TX-BUSY)	
218	3E		K29-4664-04	KNOB (VOL,UP/DOWN)	
219	2N		K29-4704-04	KNOB ACSY	
220	2E		K29-5251-12	KEY TOP	
221	2N		K29-5276-03	KNOB ACSY	
222	2N		K29-5277-03	KNOB ACSY	
223	2N		K29-5305-03	KNOB ACSY	
U	1E		N87-2605-46	BRAZIER HEAD TAPTITE SCREW	
V	1E,1F		N87-2608-46	BRAZIER HEAD TAPTITE SCREW	
W	2E,2F		N87-3006-46	BRAZIER HEAD TAPTITE SCREW	
225	1N		N99-0364-05	SCREW SET ACSY	
227	2F		T07-0265-05	SPEAKER	

DISPLAY UNIT (X54-3190-20) : KCH-10

Ref. No.	Address	New parts	Parts No.	Description	Destination
-			B11-1148-14	ILLUMINATION GUIDE	
-			B11-1149-04	FILTER	
D6-11			B30-2140-05	LED (YEL)	
D12			B30-2194-05	LED (GREEN)	
D13			B30-2193-05	LED (RED)	
ED1			B38-0800-05	LCD	
C11			CC73GCH1H101J	CHIP C 100PF J	
C17			CC73GCH1H101J	CHIP C 100PF J	
C20			CK73GB1H102K	CHIP C 1000PF K	
C22			CK73GB1E103K	CHIP C 0.010UF K	
C23,24			CC73GCH1H101J	CHIP C 100PF J	
C25			CK73GB1E103K	CHIP C 0.010UF K	
C27			CK73GB1E223K	CHIP C 0.022UF K	
C28,29			CK73GB1E103K	CHIP C 0.010UF K	
C30			CC73GCH1H101J	CHIP C 100PF J	
C32			CC73GCH1H101J	CHIP C 100PF J	

PARTS LIST

DISPLAY UNIT (X54-3190-20) : KCH-10
KCH-11
DISPLAY UNIT (X54-3200-20) : KCH-11

Ref. No.	Address	New parts	Parts No.	Description	Destination
C35-37			CK73GB1E103K	CHIP C 0.010UF K	
C43-47			CC73GCH1H101J	CHIP C 100PF J	
C48-50			CK73GB1H102K	CHIP C 1000PF K	
-		*	E29-1192-04	INTER CONNECTOR	
CN1			E40-5953-05	PIN ASSY	
CN2			E40-5704-05	PIN ASSY	
CN3			E40-5952-05	PIN ASSY	
CN4			E40-5738-05	PIN ASSY	
CN5			E40-5957-05	PIN ASSY SOCKET	
CN6			E40-5958-05	PIN ASSY	
J1		*	E56-0410-15	RF COAXIAL RECEPTACLE (MIC CONNECTOR)	
W1			E37-0703-05	LEAD WIRE WITH CONNECTOR	
X1			L78-0043-05	RESONATOR (4.19MHZ)	
R1,2			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R5			RK73FB2A561J	CHIP R 560 J 1/10W	
R7			RK73FB2A331J	CHIP R 330 J 1/10W	
R8			R92-2023-05	CHIP R 820 J 1/2W	
R9			RK73FB2A181J	CHIP R 180 J 1/10W	
R10			R92-0670-05	CHIP R 0 OHM	
R11			RK73FB2A331J	CHIP R 330 J 1/10W	
R12			RK73FB2A181J	CHIP R 180 J 1/10W	
R13,14			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R15			RK73FB2A151J	CHIP R 150 J 1/10W	
R16			RK73GB1J103J	CHIP R 10K J 1/16W	
R17			RK73GB1J331J	CHIP R 330 J 1/16W	
R18			R92-1281-05	FUSE R 4.7 J 1/4W	
R21			RK73GB1J473J	CHIP R 47K J 1/16W	
R23			RK73GB1J473J	CHIP R 47K J 1/16W	
R24			RK73GB1J101J	CHIP R 100 J 1/16W	
R26			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R29-33			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R34,35			RK73GB1J473J	CHIP R 47K J 1/16W	
R36			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R38			R92-1252-05	CHIP R 0 OHM	
R39,40			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R41-43			RK73GB1J473J	CHIP R 47K J 1/16W	
R45			R92-2063-05	CHIP R 680 J 1/2W	
R47			R92-2023-05	CHIP R 820 J 1/2W	
R48			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R49-51			RK73GB1J473J	CHIP R 47K J 1/16W	
R52			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R54			RK73GB1J103J	CHIP R 10K J 1/16W	
R55			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R67			R92-1252-05	CHIP R 0 OHM	
VR1			R31-0607-05	VARIABLE RESISTOR (10K)	
S1			S40-1420-05	TACT SWITCH	
S2,3			S70-0410-15	TACT SWITCH	
S5-9			S70-0410-15	TACT SWITCH	
D1,2			DA204U	DIODE	
D5			02CZ9.1(X,Y)	ZENER DIODE	
D16,17			DA204U	DIODE	
D19-21			DA204U	DIODE	
D24			1SS301	DIODE	
D25			MA2S111	DIODE	
IC1			NJM78L05UA	IC (AVR)	
IC2			RH5VL42C	IC (RESET)	
IC3			AT24C64N10SI27	IC (EEPROM)	
IC4		*	78064GCA458EU	IC (CPU/LCD DRIVER)	
Q1			2SC2873(Y)	TRANSISTOR	
Q3-7			DTC144EU	DIGITAL TRANSISTOR	
Q9			DTC144EU	DIGITAL TRANSISTOR	
Q11			DTC144EU	DIGITAL TRANSISTOR	
Q12,13			DTC114TU	DIGITAL TRANSISTOR	
Q14,15			DTD114EK	DIGITAL TRANSISTOR	
S4			W02-0393-05	ENCODER	

KCH-11

Ref. No.	Address	New parts	Parts No.	Description	Destination
301	3G	*	A62-0607-13	PANEL ASSY	
303	3H		G53-0838-03	PACKING (PANEL ASSY)	
304	3G	*	G53-1523-04	PACKING (VOL)	
305	2P		H10-6622-02	POLYSTYRENE FOAMED FIXTURE	
306	1O		H11-0894-04	POLYSTYRENE FOAMED BOARD	
307	1P		H13-1059-04	CARTON BOARD	
308	2P		H25-0029-04	PROTECTION BAG (60/110/0.07)	
309	2O		H25-0103-04	PROTECTION BAG (125/250/0.07)	
310	2P		H25-0117-04	PROTECTION BAG (80/250/0.07)	
311	3O		H52-1271-02	ITEM CARTON CASE	
312	1G	*	J21-8417-04	HARDWARE FIXTURE (MIC CONNECTOR)	
313	1G		J39-0625-04	SPACER (TX-BUSY)	
315	3G		K29-4664-04	KNOB (VOL,UP/DOWN)	
316	2P		K29-4704-04	KNOB ACSY	
317	2H		K29-5252-12	KEY TOP	
318	2P		K29-5276-03	KNOB ACSY	
319	2P		K29-5277-03	KNOB ACSY	
320	2P		K29-5305-03	KNOB ACSY	
X	1G		N87-2605-46	BRAZIER HEAD TAPTITE SCREW	
Y	1G,1H		N87-2608-46	BRAZIER HEAD TAPTITE SCREW	
Z	1G,2H		N87-3008-46	BRAZIER HEAD TAPTITE SCREW	
322	1P		N99-0364-05	SCREW SET ACSY	

DISPLAY UNIT (X54-3200-20) : KCH-11

Ref. No.	Address	New parts	Parts No.	Description	Destination
D6			B30-2194-05	LED (GREEN)	
D7			B30-2193-05	LED (RED)	
ED1		*	B38-0801-15	LCD ASSY	
C9			CC73GCH1H101J	CHIP C 100PF J	
C14			CC73GCH1H101J	CHIP C 100PF J	
C20			CK73GB1H102K	CHIP C 1000PF K	
C22			CK73GB1E103K	CHIP C 0.010UF K	
C23,24			CC73GCH1H101J	CHIP C 100PF J	
C25			CK73GB1E103K	CHIP C 0.010UF K	
C27			CK73GB1E223K	CHIP C 0.022UF K	
C28,29			CK73GB1E103K	CHIP C 0.010UF K	
C30			CC73GCH1H101J	CHIP C 100PF J	
C32			CC73GCH1H101J	CHIP C 100PF J	
C35,36			CK73GB1E103K	CHIP C 0.010UF K	
C40			CK73GB1E103K	CHIP C 0.010UF K	
C50-60			CC73GCH1H101J	CHIP C 100PF J	
C61-67			CK73GB1H102K	CHIP C 1000PF K	

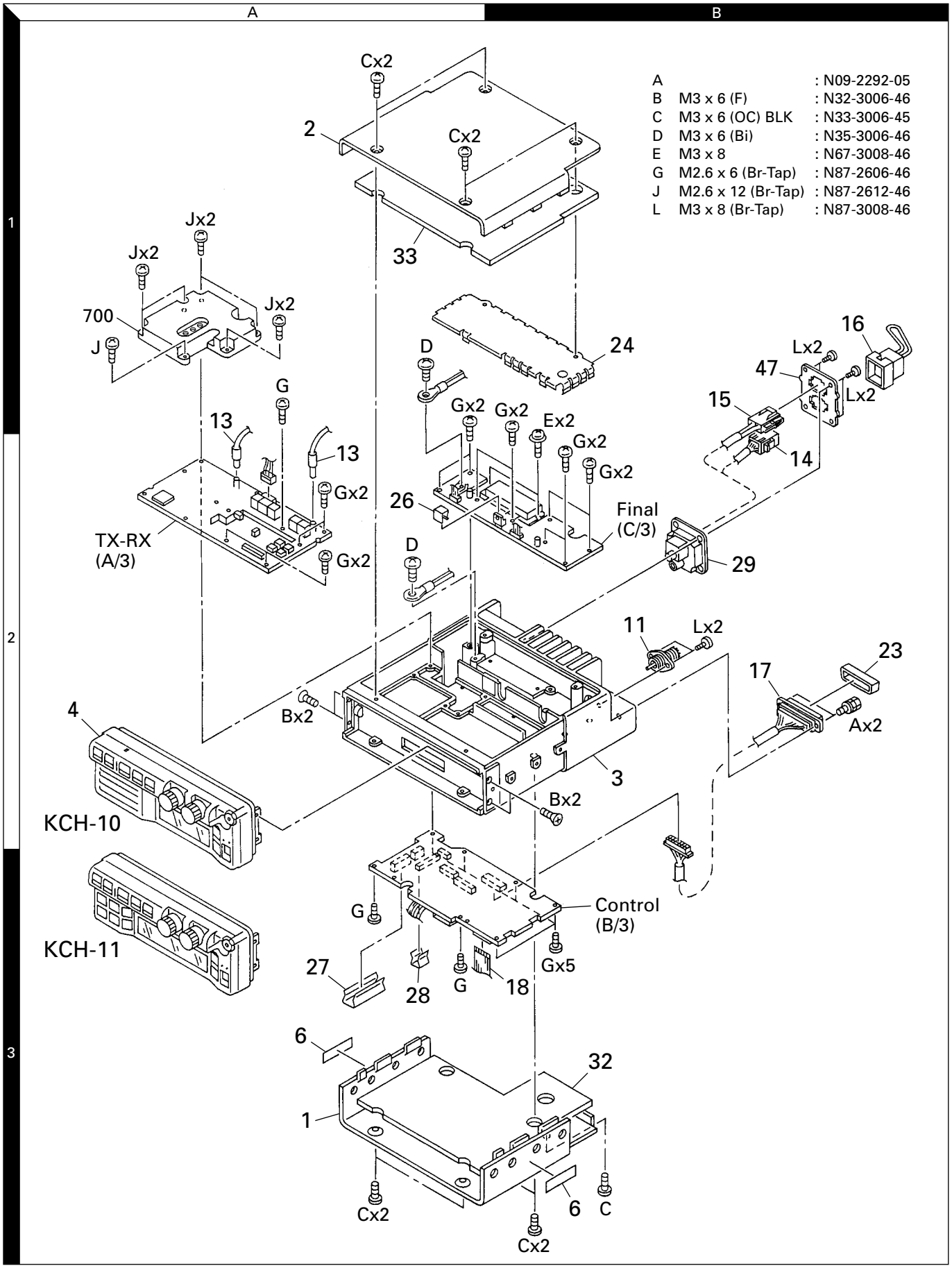
PARTS LIST

DISPLAY UNIT (X54-3200-20) : KCH-11

Ref. No.	Address	New parts	Parts No.	Description	Destination
CN1			E40-5953-05	PIN ASSY	
CN2			E40-5704-05	PIN ASSY	
CN3			E40-5952-05	PIN ASSY	
CN4			E40-5738-05	PIN ASSY	
CN5			E40-5823-05	FLAT CABLE CONNECTOR	
J1		*	E56-0410-15	RF COAXIAL RECEPTACLE (MIC CONNECTOR)	
W1			E37-0703-05	LEAD WIRE WITH CONNECTOR	
X1			L78-0043-05	RESONATOR (4.19MHZ)	
R1,2			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R5			RK73FB2A561J	CHIP R 560 J 1/10W	
R6			R92-2023-05	CHIP R 820 J 1/2W	
R7			R92-0670-05	CHIP R 0 OHM	
R8,9			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R10			RK73FB2A151J	CHIP R 150 J 1/10W	
R11			RK73GB1J103J	CHIP R 10K J 1/16W	
R12			RK73GB1J331J	CHIP R 330 J 1/16W	
R13			R92-1281-05	FUSE R 4.7 J 1/4W	
R14			RK73GB1J473J	CHIP R 47K J 1/16W	
R16			RK73GB1J473J	CHIP R 47K J 1/16W	
R19,20			RK73GB1J473J	CHIP R 47K J 1/16W	
R21			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R22			RK73GB1J101J	CHIP R 100 J 1/16W	
R24			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R26			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R28-32			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R33,34			RK73GB1J473J	CHIP R 47K J 1/16W	
R35			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R37,38			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R39			RK73FB2A331J	CHIP R 330 J 1/10W	
R40,41			R92-2063-05	CHIP R 680 J 1/2W	
R42			RK73FB2A181J	CHIP R 180 J 1/10W	
R43			R92-2063-05	CHIP R 680 J 1/2W	
R44			R92-2023-05	CHIP R 820 J 1/2W	
R45-56			RK73GB1J473J	CHIP R 47K J 1/16W	
R57-62			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R63			RK73GB1J473J	CHIP R 47K J 1/16W	
R65			RK73GB1J103J	CHIP R 10K J 1/16W	
R66			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R67			R92-1252-05	CHIP R 0 OHM	
VR1			R31-0607-05	VARIABLE RESISTOR (10K)	
S1			S40-1420-05	TACT SWITCH	
S2,3			S70-0410-15	TACT SWITCH	
S5-15			S70-0410-15	TACT SWITCH	
D1,2			DA204U	DIODE	
D5			02CZ9.1(X,Y)	ZENER DIODE	
D11,12			DA204U	DIODE	
D14-16			DA204U	DIODE	
D18			1SS301	DIODE	
D19			MA2S111	DIODE	
IC1			NJM78L05UA	IC (AVR)	
IC2			RH5VL42C	IC (RESET)	
IC3			AT24C64N10SI27	IC (EEPROM)	
IC4		*	78064GCA458EU	IC (CPU)	
Q1			2SC2873(Y)	TRANSISTOR	
Q2-8			DTC144EU	DIGITAL TRANSISTOR	
Q9,10			DTC114TU	DIGITAL TRANSISTOR	
Q14,15			DTD114EK	DIGITAL TRANSISTOR	

Ref. No.	Address	New parts	Parts No.	Description	Destination
S4			W02-0393-05	ENCODER	

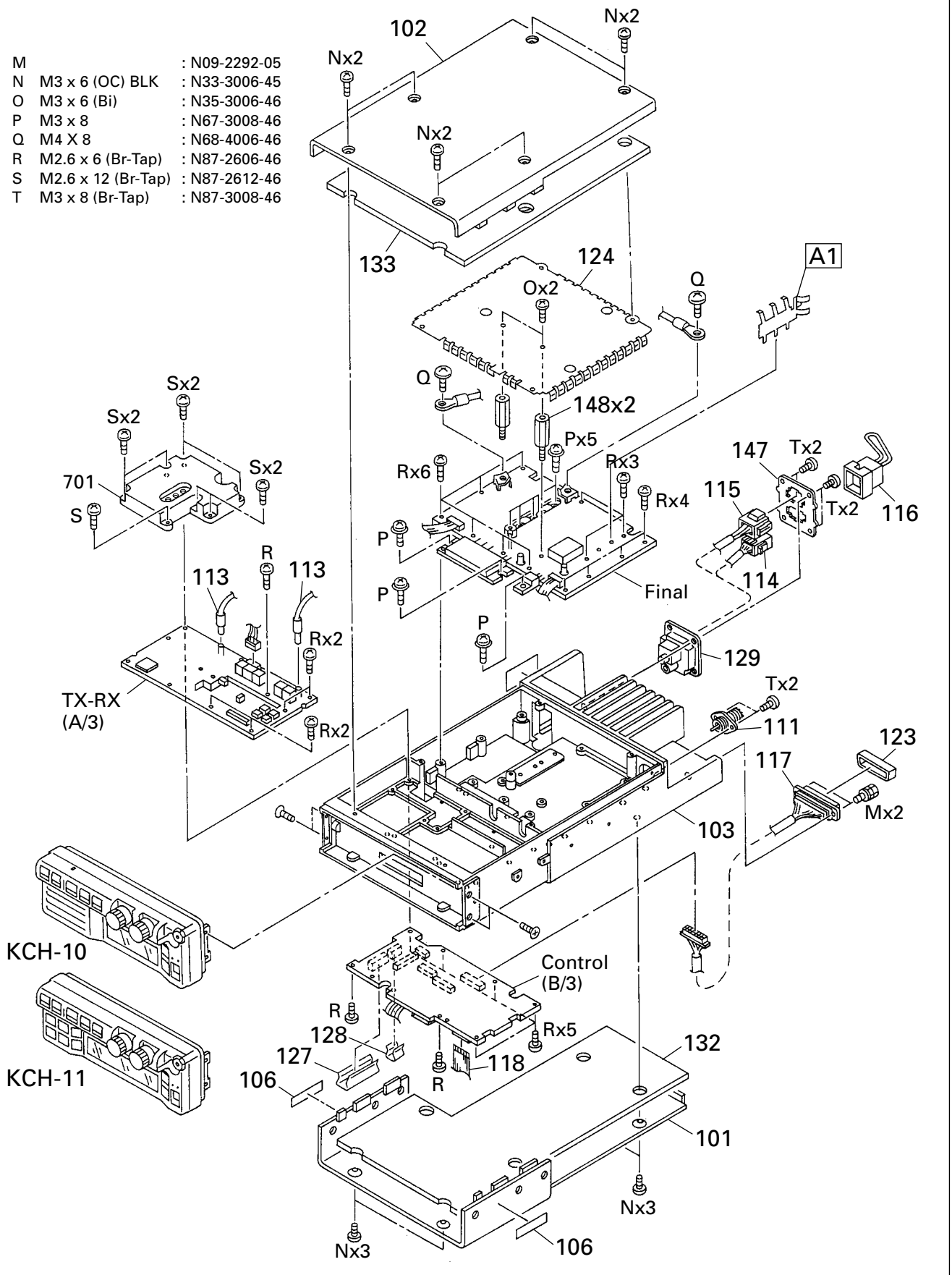
EXPLODED VIEW (TK-890/(B))



Parts with the exploded numbers larger than 700 are not supplied.

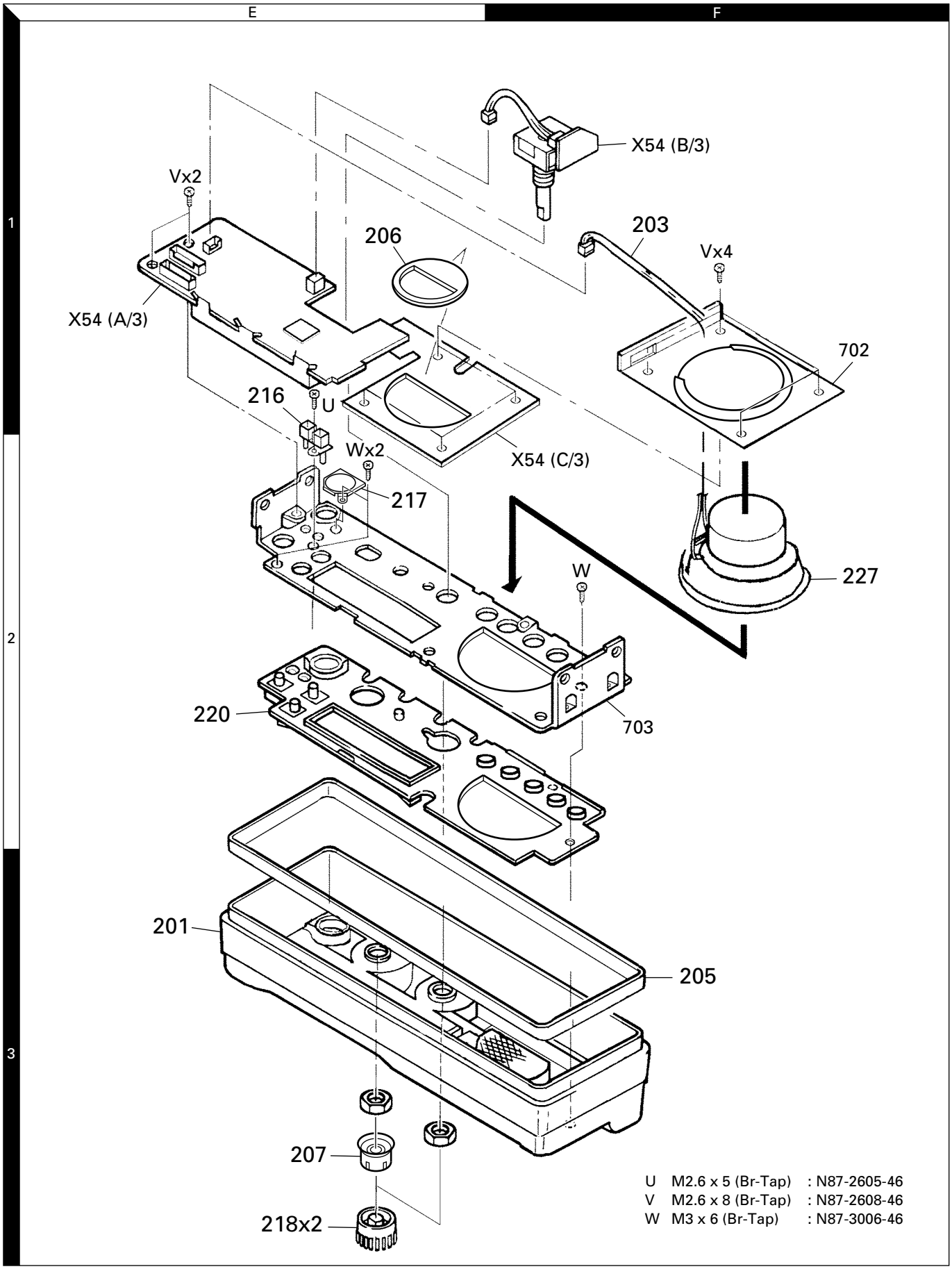
EXPLODED VIEW (TK-890H(B))

M		: N09-2292-05
N	M3 x 6 (OC) BLK	: N33-3006-45
O	M3 x 6 (Bi)	: N35-3006-46
P	M3 x 8	: N67-3008-46
Q	M4 X 8	: N68-4006-46
R	M2.6 x 6 (Br-Tap)	: N87-2606-46
S	M2.6 x 12 (Br-Tap)	: N87-2612-46
T	M3 x 8 (Br-Tap)	: N87-3008-46



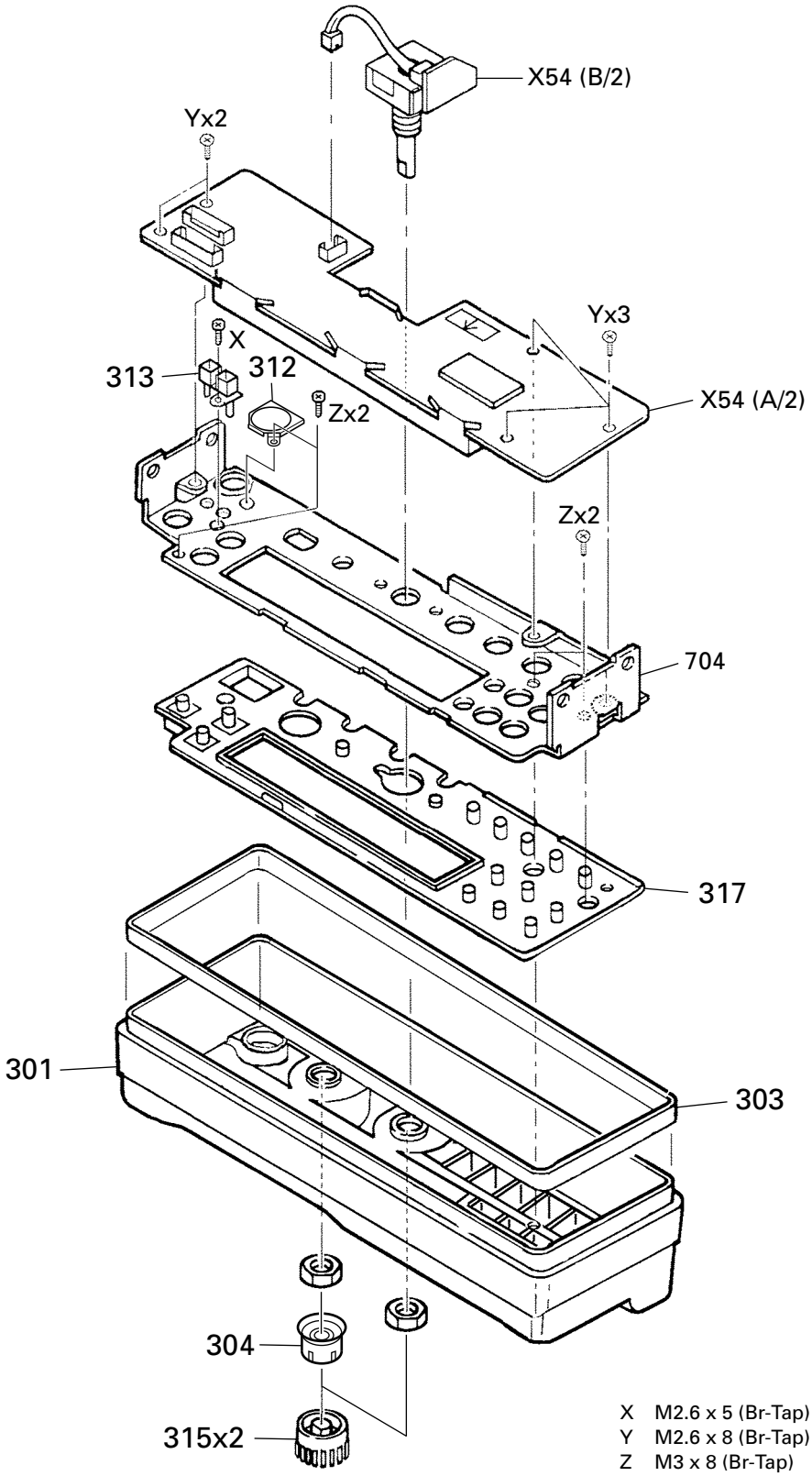
Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (KCH-10)



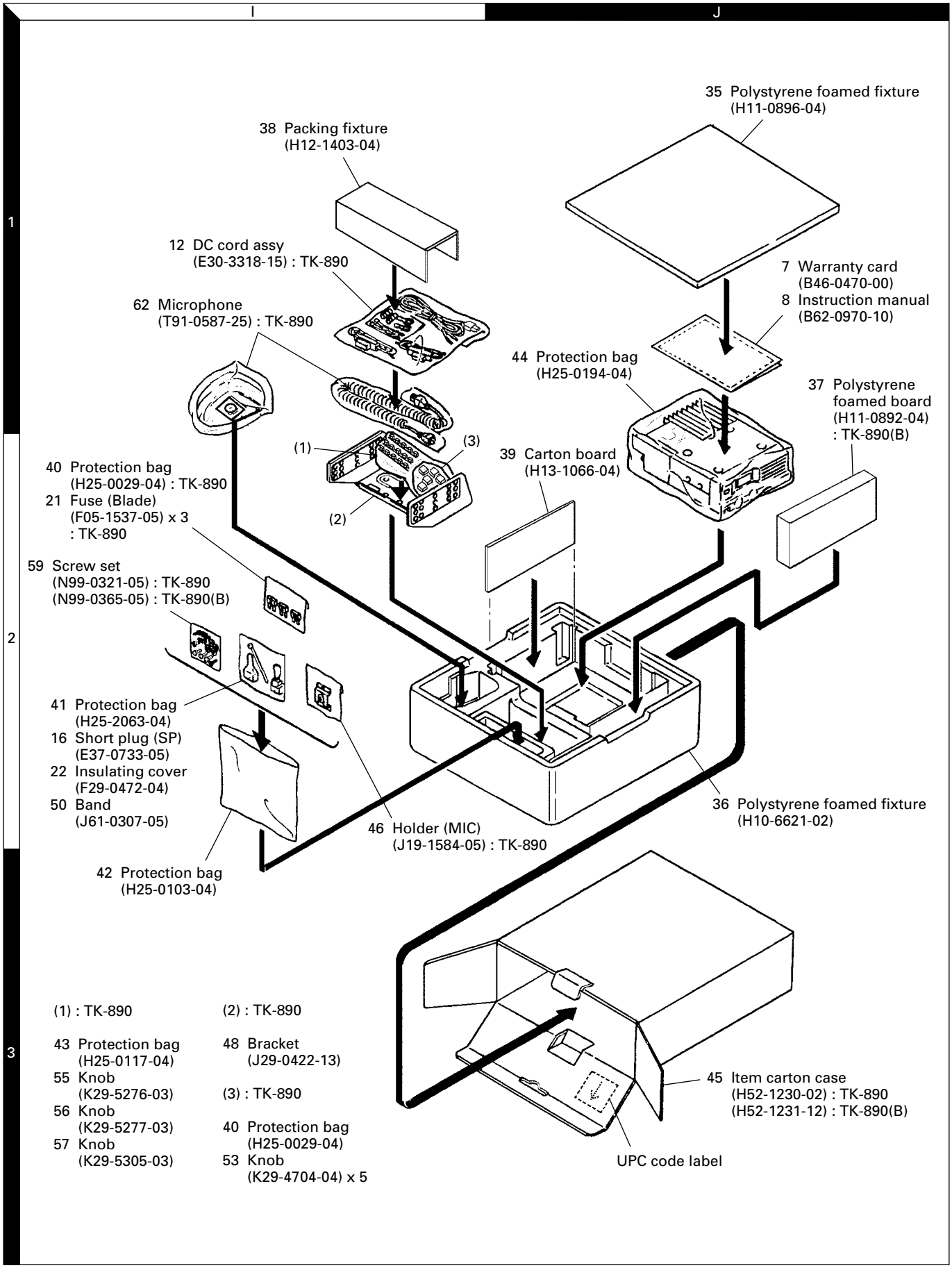
Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (KCH-11)



Parts with the exploded numbers larger than 700 are not supplied.

PACKING (TK-890/(B))



(1) : TK-890

43 Protection bag
(H25-0117-04)
55 Knob
(K29-5276-03)
56 Knob
(K29-5277-03)
57 Knob
(K29-5305-03)

(2) : TK-890

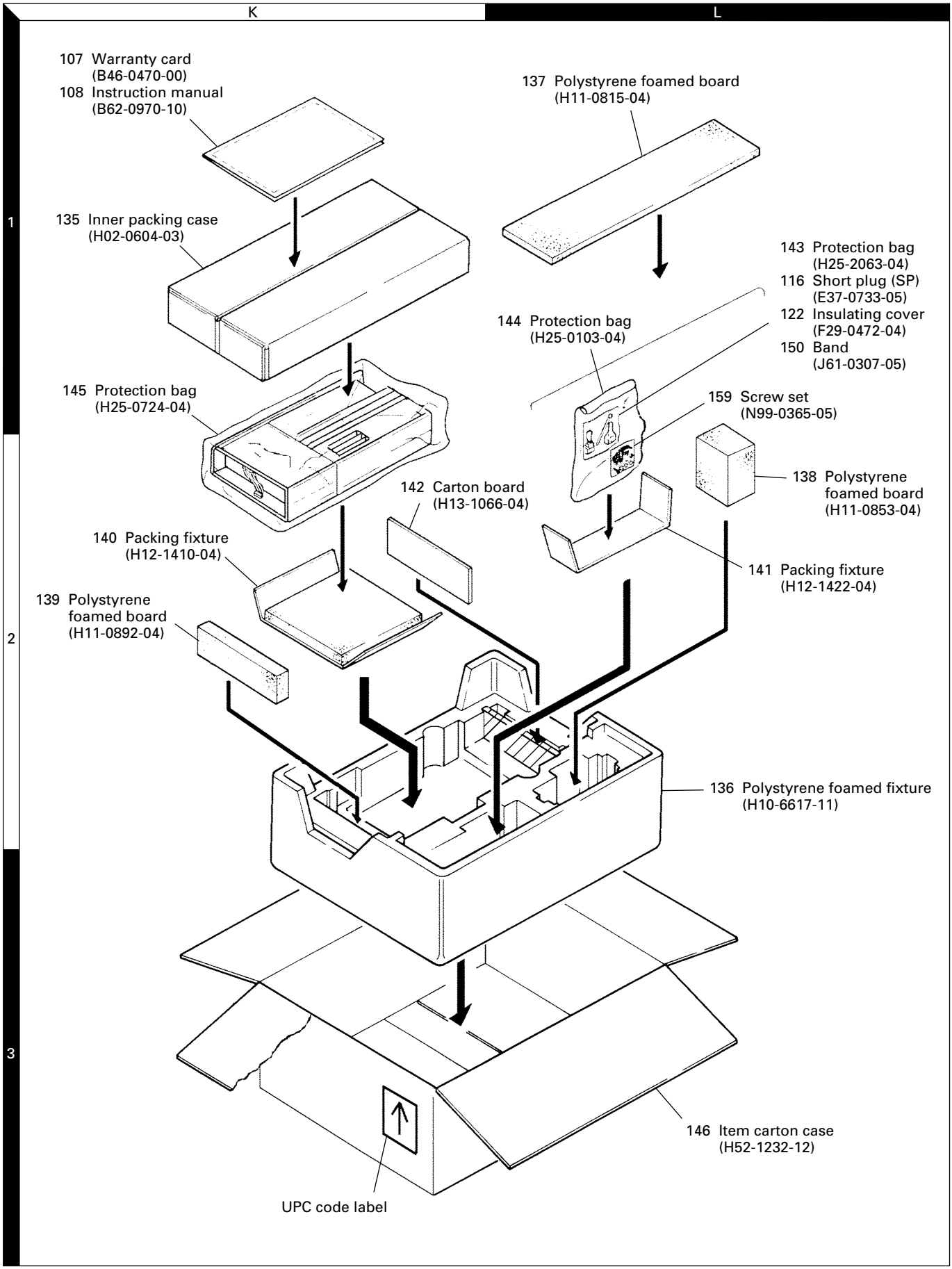
48 Bracket
(J29-0422-13)

(3) : TK-890

40 Protection bag
(H25-0029-04)
53 Knob
(K29-4704-04) x 5

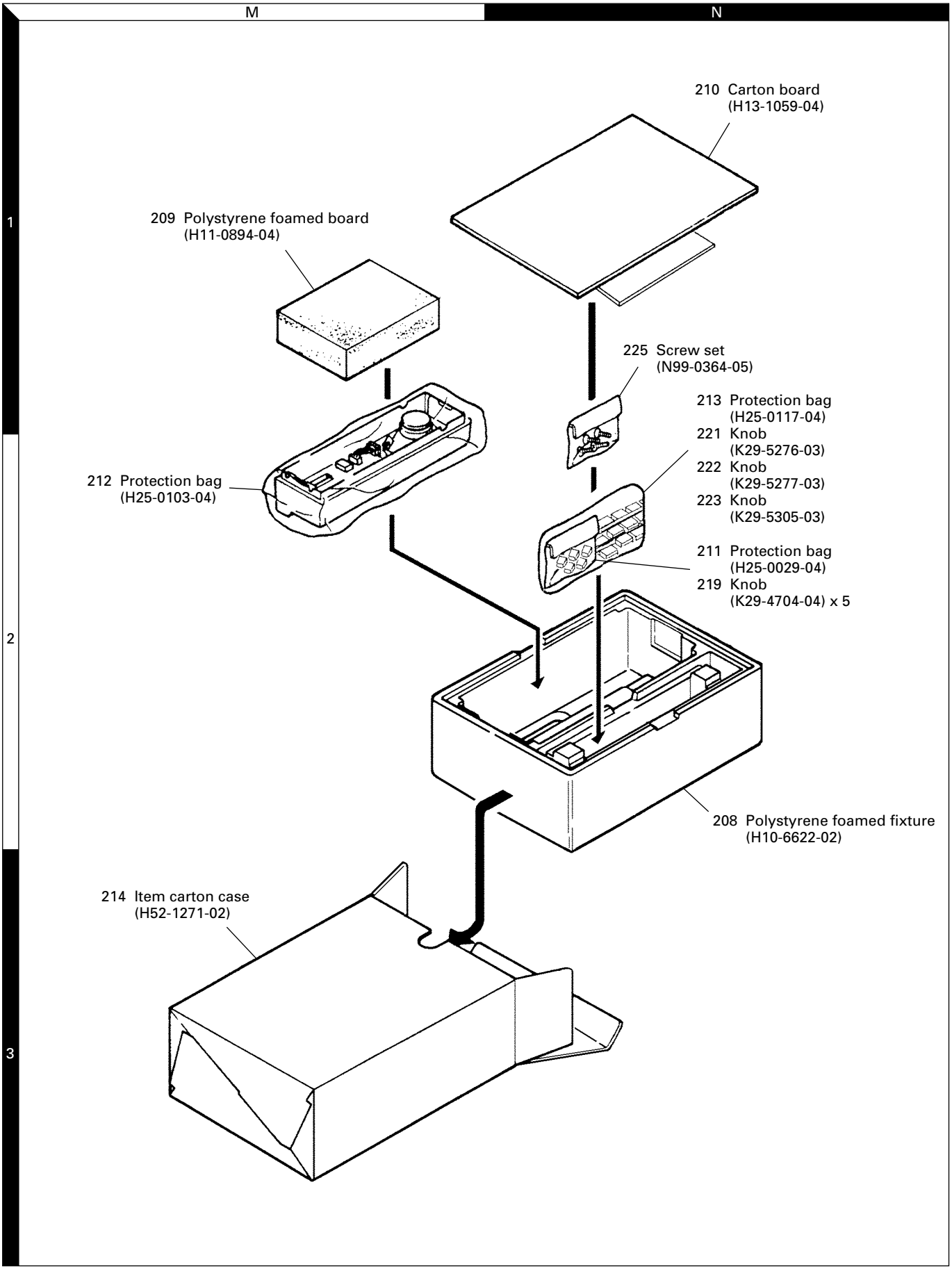
Parts with the exploded numbers larger than 700 are not supplied.

PACKING (TK-890H(B))



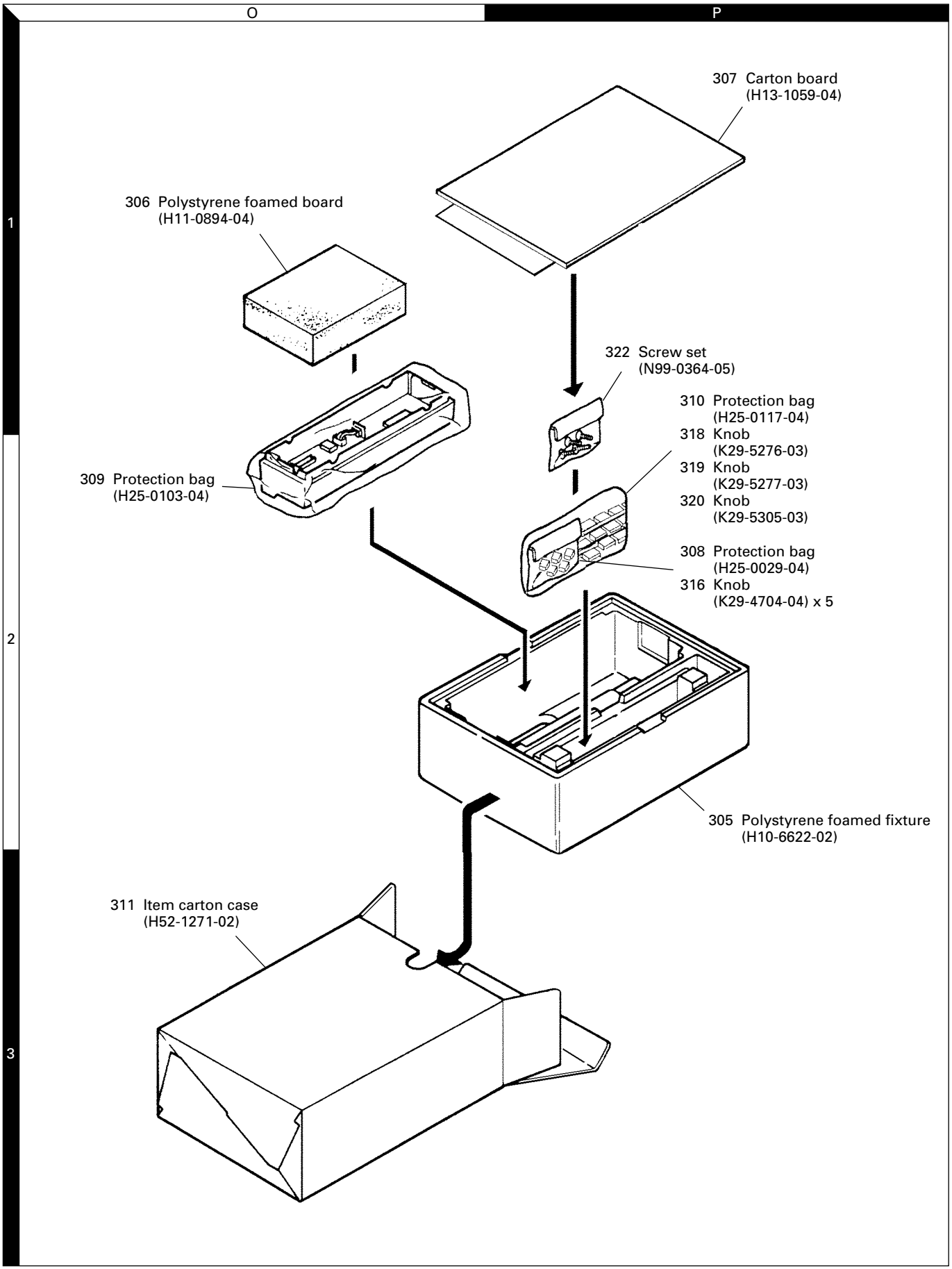
Parts with the exploded numbers larger than 700 are not supplied.

PACKING (KCH-10)



Parts with the exploded numbers larger than 700 are not supplied.

PACKING (KCH-11)



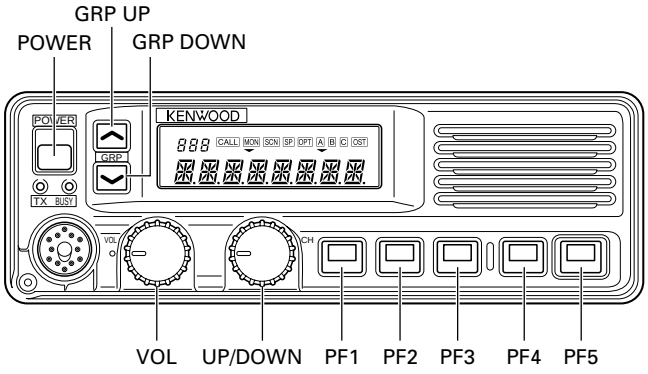
Parts with the exploded numbers larger than 700 are not supplied.

ADJUSTMENT

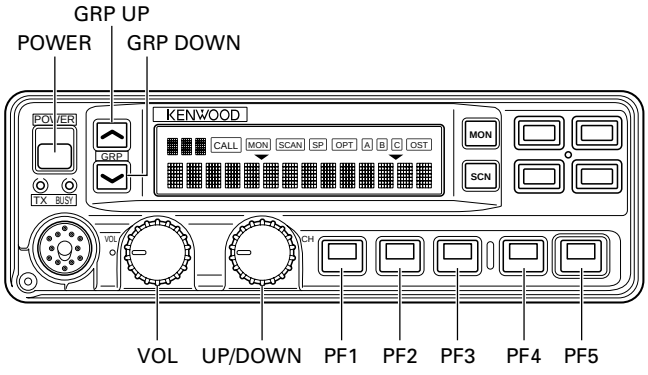
Key Functions in Panel Test Mode and Panel Tune Mode

Knob/Key	Test mode	Tune mode
GRP UP	Test mode/Tune mode changeover	
GRP DOWN	Monitor ON/OFF	
UP/DOWN	Narrow/Wide changeover	
PF1	Frequency CH down	Tuning item down
PF2	Frequency CH up	TUning item up
PF3	Signalling CH down	Tuning value down
PF4	Signalling CH up	Tuning value up
PF5	Not used	Tuning value backup

Basic function panel



Full function panel

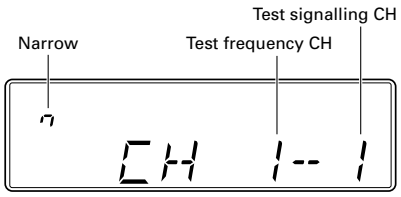


Panel Test Mode

The transceiver's transmission output, receive sensitivity, and other items are measured and QT, DQT, 2tone and DTMF signaling is decoded in this mode.

- **To enter the panel test mode**

Hold down [PF1] and turn the power switch on to enter this mode. The test frequency channel and test signalling channel will be displayed.



Note : When a key other than GRP down is pressed, the optional signalling is reset.

- **Test frequency channel (MHz)**

	K : TK-890/(B), 890H(B)		K2 : TK-890(B)		K3 : TK-890(B)	
CH	TX	RX	TX	RX	TX	RX
1	470.0000	460.1000	496.0000	490.1000	416.5000	420.1000
2	450.0000	450.1000	480.0000	480.1000	403.0000	410.0000
3	490.0000	469.9000	512.0000	499.9000	430.0000	429.9000
4	460.0000	460.0000	490.0000	490.0000	420.0000	420.0000
5	460.2000	460.2000	490.2000	490.2000	420.2000	420.2000
6	460.4000	460.4000	490.4000	490.4000	420.4000	420.4000
7	470.0000	470.1000	492.0000	492.1000	403.0000	403.1000
8	480.0000	480.1000	502.0000	502.1000	413.0000	413.1000
9	490.0000	489.9000	512.0000	511.9000	423.0000	422.9000
10			490.0000	489.9000	420.0000	419.9000
11			470.0000	470.1000	440.0000	439.9000

- **Test signalling channel**

CH No.	Encode tone	Decode tone
1	None	None
2	100Hz square wave	None
3	QT 67.0Hz	QT 67.0Hz
4	QT 151.4Hz	QT 151.4Hz
5	QT 250.3Hz	QT 250.3Hz
6	DQT 023N	DQT 023N
7	Single tone 1633Hz	2 tone 321.7/928.1Hz
8	DTMF [9]	DTMF [159]
9	MSK	None

Panel Tune Mode

The transceiver is adjusted in this mode.

- **To enter the panel tune mode**

Press the [GR ∧] key in the panel test mode.

In this mode, QT and DQT signalling is decoded, but 2tone and DTMF signalling is not decoded.

The adjustment items, the frequency and signalling, other than the maximum deviation and sensitivity, return to the values that were effective for the test frequency channel and test signalling channel before entering the panel tune mode.

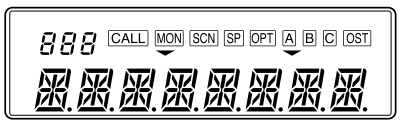
The RF High Power adjustment item of only the TK-890H K type can be adjusted by switching the frequency between 460MHz and 475MHz.

ADJUSTMENT

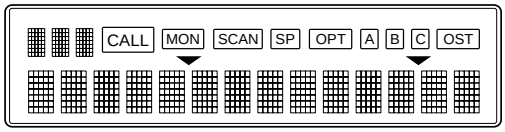
- **Tuning item and display (XXX : 0~255)**

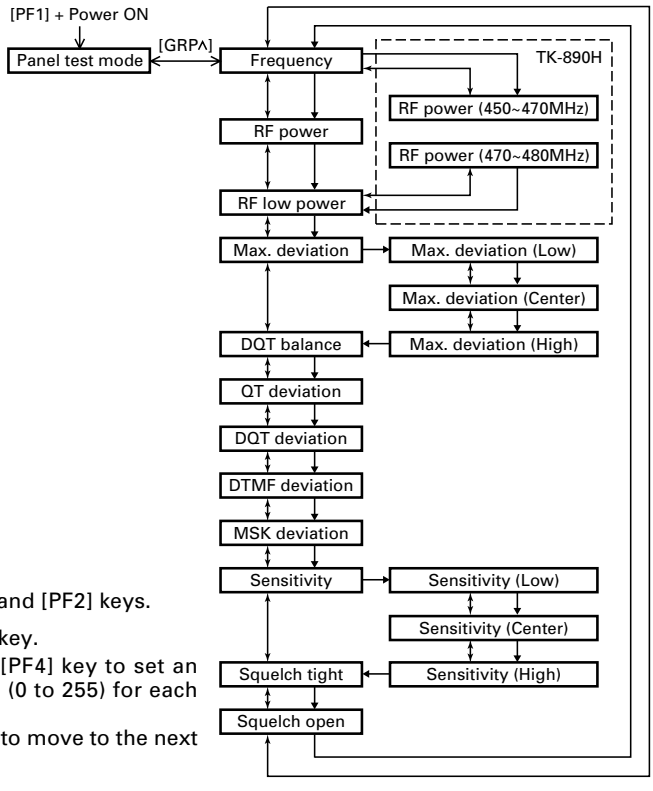
Tuning item	Basic display	Full display	Note
Frequency	FREQ_XXX	FREQUENCY_XXX_	
RF power	_POW_XXX	POWER_ _ _ _ _XXX_	
RF power (450~470MHz)	_POW_XXX	POWER_ _ _ _ _XXX_	Three digits on the upper left side: "_ _ L". Transmission and reception at the low edge. TK-890H(B) only
RF power (470~480MHz)	_POW_XXX	POWER_ _ _ _ _XXX_	Three digits on the upper left side: "_ _ H" Transmission and reception at the high edge. TK-890H(B) only
RF low power	LPOW_XXX	LOW_POWER_XXX_	
Max. deviation	MXDV_XXX	MAX_DEV_ _ _XXX_	Wide/Narrow item
Max. deviation (Low)	MXDV_XXX	MAX_DEV_ _ _XXX_	Three digits on the upper left side: "_ _ L" Transmission and reception at the low edge
Max. deviation (Center)	MXDV_XXX	MAX_DEV_ _ _XXX_	Three digits on the upper left side: "_ _ C" Transmission and reception at the center
Max. deviation (High)	MXDV_XXX	MAX_DEV_ _ _XXX_	Three digits on the upper left side: "_ _ H" Transmission and reception at the high edge
DQT balance	BLNC_XXX	DQT_BLNCE_XXX_	Wide/Narrow item
QT deviation	QTDV_XXX	QT_DEV_ _ _ _XXX_	Wide/Narrow item
DQT deviation	DQDV_XXX	DQT_DEV_ _ _XXX_	Wide/Narrow item
DTMF deviation	DTDV_XXX	DTMF_DEV_ _XXX_	Wide/Narrow item
MSK deviation	MSDV_XXX	MSK_DEV_ _ _XXX_	Wide/Narrow item
Sensitivity	SENS_XXX	RX_SENSE_ _XXX_	Wide/Narrow item
Sensitivity (Low)	SENS_XXX	RX_SENSE_ _XXX_	Three digits on the upper left side: "_ _ L" Transmission and reception at the low edge
Sencitivity (Center)	SENS_XXX	RX_SENSE_ _XXX_	Three digits on the upper left side: "_ _ C" Transmission and reception at the center
Sensitivity (High)	SENS_XXX	RX_SENSE_ _XXX_	Three digits on the upper left side: "_ _ H" Transmission and reception at the high edge
Squelch tight point	SQ_T_XXX	SQL_TIGHT_XXX_	Wide/Narrow item
Squelch open point	SQ_O_XXX	SQL_OPEN_ _XXX_	Wide/Narrow item

Basic display



Full display





↕ : Use the [PF1] and [PF2] keys.

↓ : Use the [PF5] key.

Use the [PF3] or [PF4] key to set an adjustment value (0 to 255) for each adjustment item.
Use the [PF5] key to move to the next item.

ADJUSTMENT

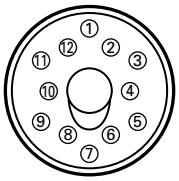
Test Equipment Required for Alignment

No.	Test Equipment	Major Specifications	
1	Standard Signal Generator (SSG)	Frequency Range Modulation Output	400 to 512MHz. Frequency modulation and external modulation. 0.1μV to greater than 1mV.
2	Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω. 400 to 512MHz or more. Vicinity of 200W.
3	Deviation Meter	Frequency Range	400 to 512MHz.
4	Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 20V DC. High input impedance for minimum circuit loading.
5	Oscilloscope		DC through 30MHz.
6	High sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 600MHz. 0.2ppm or less.
7	Ammeter		30A.
8	AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz. 3mV to 3V.
9	Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz or more. 0 to 1V.
10	Distortion Meter	Capability Input Level	3% or less at 1kHz. 50mV to 10Vrms.
11	Voltmeter	Measuring Range Input Impedance	10 to 1.5V DC or less. 50kΩ/V or greater.
12	4Ω Dummy Load		Approx. 4Ω 30W.
13	Regulated Power Supply		(Adjustable from 9 to 17V, 30A). Useful if ammeter equipped.

Caution

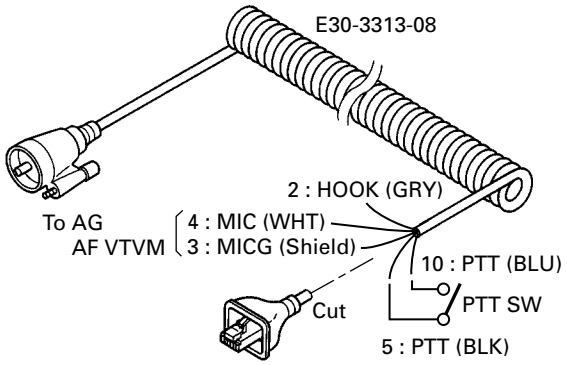
Since the RX AF output is a BTL output, there is a DC Component. Isolate this with a capacitor or transformer as shown in the figure.

MIC connector (Front view)

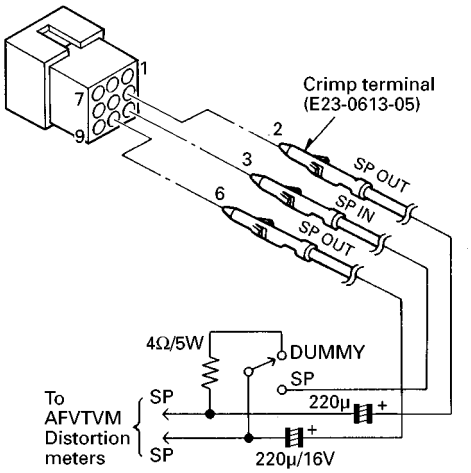


1 : SB
2 : HOOK
3 : MICG
4 : MIC
5 : Earth
6 : TRD
7 : NC
8 : DM
9 : BLC
10 : PTT
11 : NC
12 : NC

Test cable for microphone input



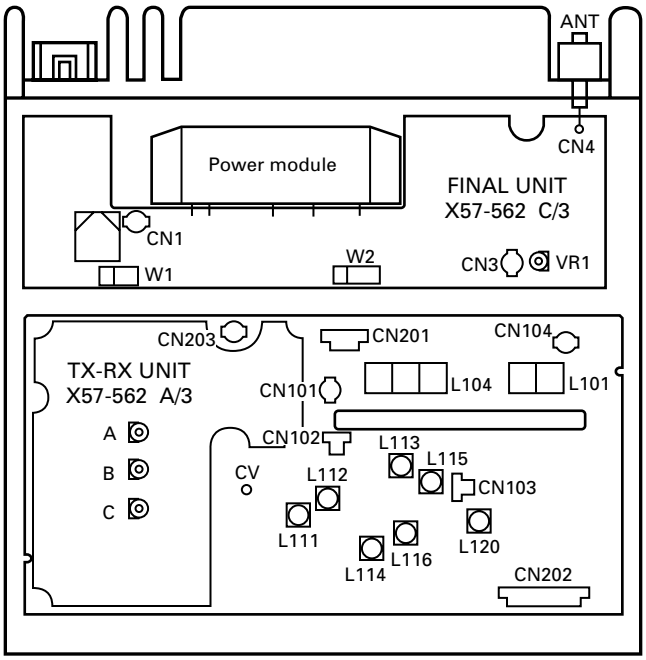
Test cable for speaker output

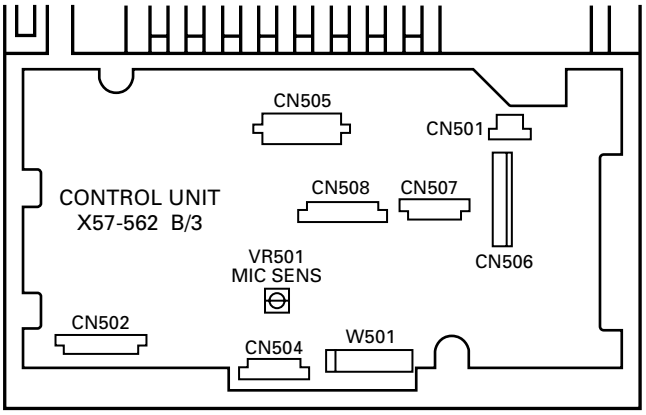


ADJUSTMENT

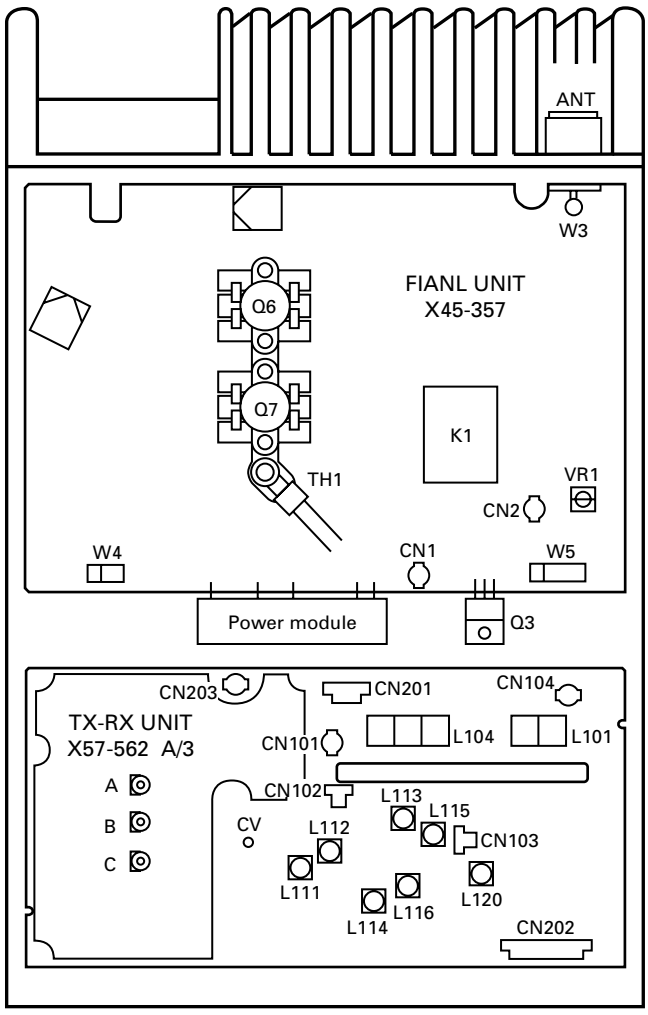
Adjustment Points

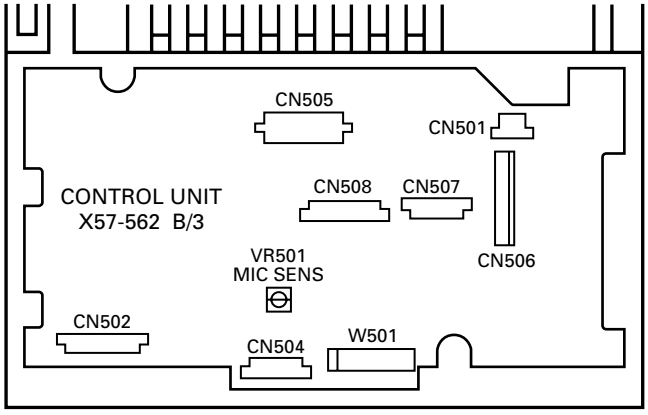
- **TK-890/(B)**





- **TK-890H(B)**

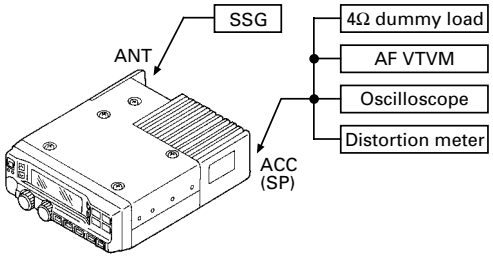


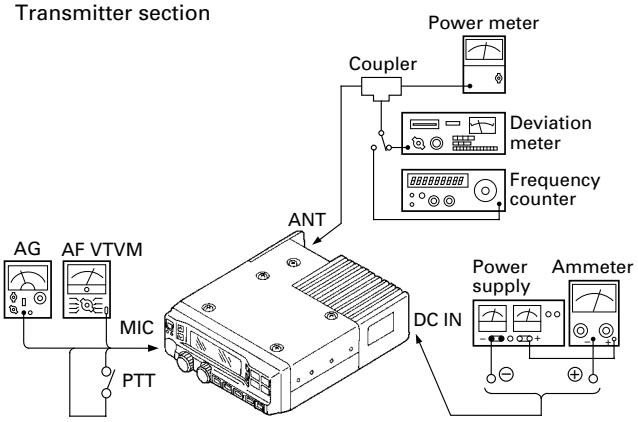


ADJUSTMENT

Common Section

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Condition</th><th colspan="3">Measurement</th><th colspan="3">Adjustment</th><th rowspan="2">Specifications/Remarks</th></tr>
<tr><th>Test-equipment</th><th>Unit</th><th>Terminal</th><th>Unit</th><th>Parts</th><th>Method</th></tr>
<tr><td>1. Frequency list</td><td colspan="8">
• Frequency range (MHz)
K : 450~490 (TK-890/(B), 890H(B))
K2 : 480~512 (TK-890(B))
K3 : 403~430 (TK-890(B))

• Adjustment frequency (MHz)
<table>
<tr><td></td><td colspan="2">K</td><td colspan="2">K2</td><td colspan="2">K3</td></tr>
<tr><td>CH</td><td>TX</td><td>RX</td><td>TX</td><td>RX</td><td>TX</td><td>RX</td></tr>
<tr><td>1</td><td>470.000</td><td>460.100</td><td>496.000</td><td>490.100</td><td>416.500</td><td>420.100</td></tr>
<tr><td>2</td><td>450.000</td><td>450.100</td><td>480.000</td><td>480.100</td><td>403.000</td><td>410.100</td></tr>
<tr><td>3</td><td>490.000</td><td>469.900</td><td>512.000</td><td>499.900</td><td>430.000</td><td>429.900</td></tr>
<tr><td>4</td><td>460.000</td><td>460.000</td><td>490.000</td><td>490.000</td><td>420.000</td><td>420.000</td></tr>
<tr><td>5</td><td>460.200</td><td>460.200</td><td>490.200</td><td>490.200</td><td>420.200</td><td>420.200</td></tr>
<tr><td>6</td><td>460.400</td><td>460.400</td><td>490.400</td><td>490.400</td><td>420.400</td><td>420.400</td></tr>
<tr><td>7</td><td>470.000</td><td>470.100</td><td>492.000</td><td>492.100</td><td>403.000</td><td>403.100</td></tr>
<tr><td>8</td><td>480.000</td><td>480.100</td><td>502.000</td><td>502.100</td><td>413.000</td><td>413.100</td></tr>
<tr><td>9</td><td>490.000</td><td>489.900</td><td>512.000</td><td>511.900</td><td>423.000</td><td>422.900</td></tr>
<tr><td>10</td><td></td><td></td><td>490.000</td><td>489.900</td><td>420.000</td><td>419.900</td></tr>
<tr><td>11</td><td></td><td></td><td>470.000</td><td>470.100</td><td>440.000</td><td>439.900</td></tr>
</table>
• Signalling
<table>
<tr><td>CH No.</td><td>Encode tone</td><td>Decode tone</td></tr>
<tr><td>1</td><td>None</td><td>None</td></tr>
<tr><td>2</td><td>100Hz square wave</td><td>None</td></tr>
<tr><td>3</td><td>QT 67.0Hz</td><td>QT 67.0Hz</td></tr>
<tr><td>4</td><td>QT 151.4Hz</td><td>QT 151.4Hz</td></tr>
<tr><td>5</td><td>QT 250.3Hz</td><td>QT 250.3Hz</td></tr>
<tr><td>6</td><td>DQT 023N</td><td>DQT 023N</td></tr>
<tr><td>7</td><td>Single tone 1633Hz</td><td>2 tone 321.7/928.1Hz</td></tr>
<tr><td>8</td><td>DTMF [9]</td><td>DTMF [159]</td></tr>
<tr><td>9</td><td>MSK</td><td>None</td></tr>
</table>
</td></tr>
<tr><td>2. Setting</td><td colspan="8">
• Receiver section
The indicated SSG output level are for maximum output.
Whenever there is no modulation desingnation,
standard modulation (MOD : 1kHz, DEV : 3kHz (Wide),
DEV : 1.5kHz (Narrow)) is indicated.


• Transmitter section


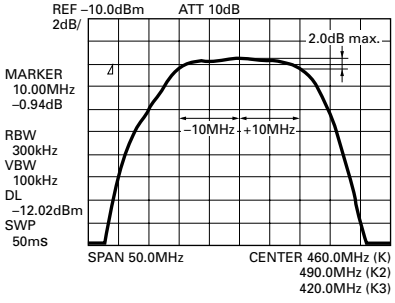
Connect the front panel (KCH-10) to the transceiver's body.
</td></tr>
<tr><td>3. PLL lock voltage</td><td>1) CH-SIG : 3-1 K
CH-SIG : 10-1 K2,K3</td><td rowspan="6">DC VM
Power meter</td><td rowspan="6">TX-RX
(A/3)</td><td rowspan="6">CV</td><td rowspan="6">TX-RX
(A/3)</td><td>A (TC302)</td><td>1.5V</td><td>±0.1V</td></tr>
<tr><td>2) CH-SIG : 9-1 K,K2
CH-SIG : 11-1 K3</td><td>B (TC303)</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>3) CH-SIG : 3-1 K,K2
CH-SIG : 11-1 K3
PTT : ON</td><td>C (TC301)</td></tr>
<tr><td>4) CH-SIG : 2-1 K
CH-SIG : 11-1 K2
CH-SIG : 7-1 K3</td><td rowspan="3"></td><td>Check</td><td>8.0V or less</td></tr>
<tr><td>5) CH-SIG : 7-1 K
CH-SIG : 1-1 K2,K3</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>6) CH-SIG : 2-1 K,K3
CH-SIG : 11-1 K2
PTT : ON</td></tr>
</table>

ADJUSTMENT

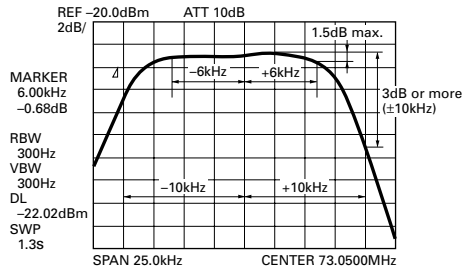
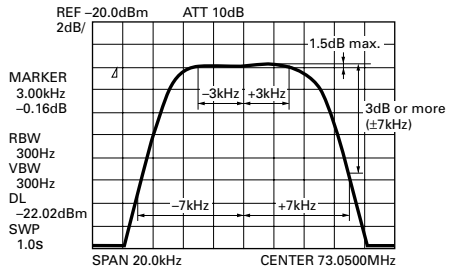
<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Condition</th><th colspan="3">Measurement</th><th colspan="3">Adjustment</th><th rowspan="2">Specifications/Remarks</th></tr>
<tr><th>Test-equipment</th><th>Unit</th><th>Terminal</th><th>Unit</th><th>Parts</th><th>Method</th></tr>
<tr><td>4. Transmit frequency</td><td>1) CH-SIG : 1-1
Select FREQ_XXX
in tune mode
PTT : ON</td><td>Power meter
f. counter</td><td>Rear</td><td>ANT</td><td>Panel</td><td>PF3 key
PF4 key</td><td>CH-1 frequency</td><td>±70Hz</td></tr>
<tr><td>5. BPF</td><td colspan="8">BPF (L101, L104) bandwidth is 20MHz. The BPF bandwidth can be revised to the following depending on your operating frequency.
• TK-890/(B) K type
BPF bandwidth 450~470MHz (Default) ⟷ 470~490MHz (Revised)
Channel allocation and frequency of test mode
<table>
<tr><th></th><th>Default</th><th>Revised</th></tr>
<tr><td>Low</td><td>CH-SIG 2-1 : 450.1MHz</td><td>CH-SIG 7-1 : 470.1MHz</td></tr>
<tr><td>Center</td><td>CH-SIG 1-1 : 460.1MHz</td><td>CH-SIG 8-1 : 480.1MHz</td></tr>
<tr><td>High</td><td>CH-SIG 3-1 : 469.9MHz</td><td>CH-SIG 9-1 : 489.1MHz</td></tr>
</table>
• TK-890(B) K2 type
BPF bandwidth 480~500MHz (Default) ⟷ 492~512MHz (Revised)
Channel allocation and frequency of test mode
<table>
<tr><th></th><th>Default</th><th>Revised</th></tr>
<tr><td>Low</td><td>CH-SIG 2-1 : 480.1MHz</td><td>CH-SIG 7-1 : 492.1MHz</td></tr>
<tr><td>Center</td><td>CH-SIG 1-1 : 490.1MHz</td><td>CH-SIG 8-1 : 502.1MHz</td></tr>
<tr><td>High</td><td>CH-SIG 3-1 : 499.9MHz</td><td>CH-SIG 9-1 : 511.9MHz</td></tr>
</table>
• TK-890(B) K3 type
BPF bandwidth 410~430MHz (Default) ⟷ 403~423MHz (Revised)
Channel allocation and frequency of test mode
<table>
<tr><th></th><th>Default</th><th>Revised</th></tr>
<tr><td>Low</td><td>CH-SIG 2-1 : 410.1MHz</td><td>CH-SIG 7-1 : 403.1MHz</td></tr>
<tr><td>Center</td><td>CH-SIG 1-1 : 420.1MHz</td><td>CH-SIG 8-1 : 413.1MHz</td></tr>
<tr><td>High</td><td>CH-SIG 3-1 : 429.9MHz</td><td>CH-SIG 9-1 : 422.9MHz</td></tr>
</table>
• TK-890H(B) K type
BPF bandwidth 450~470MHz (Default) ⟷ 460~480MHz (Revised)
Channel allocation and frequency of test mode
<table>
<tr><th></th><th>Default</th><th>Revised</th></tr>
<tr><td>Low</td><td>CH-SIG 2-1 : 450.1MHz</td><td>CH-SIG 7-1 : 460.1MHz</td></tr>
<tr><td>Center</td><td>CH-SIG 1-1 : 460.1MHz</td><td>CH-SIG 8-1 : 469.1MHz</td></tr>
<tr><td>High</td><td>CH-SIG 3-1 : 469.9MHz</td><td>CH-SIG 9-1 : 479.1MHz</td></tr>
</table>
<table>
<tr><td>1) CH-SIG : Center - 1
Spectrum analyzer
Span : 50MHz
Scale : 5dB div
Tracking generator
Output : –20dBm</td><td>Spectrum analyzer

Tracking generator</td><td>TX-RX (A/3)

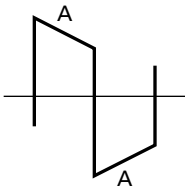
Rear</td><td>CN101

ANT</td><td>TX-RX (A/3)</td><td>L101
L104</td><td>Adjust waveform to figure at below.
 
</td></tr>
</table>
Note : When revising the BPF bandwidth from the default settings, ensure the sensitivity and the point of closing and opening the squelch in accordance with adjusting procedures 16, 17 and 18.</td></tr>
</table>

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
6. MCF • Wide	1) CH-SIG : 1-1 Spectrum analyzer Span : 25kHz Scale : 2dB div Center frequency : 73.050MHz Tracking generator Output : –20dBm	Spectrum analyzer Tracking generator	TX-RX (A/3)	CN103 CN102	TX-RX (A/3)	L112 L113 L115	Adjust it to make gain maximum, and make the band flat as shown in the below. 	
• Narrow	1) Up/down knob : Set the narrow "n_ _" appear on the LCD					L111 L114 L116		
7. Distortion	1) CH-SIG : 1-1 (Wide) SSG output : –53dBm/501μV AF output : 2V/4Ω	SSG Distortion meter AF VTVM Oscilloscope 4Ω dummy load	Rear	ANT EXT.SP			Check	3% or less If the distortion value exceeds 3%, you must adjust L120 to obtain a minimum distortion value.
8. RF power • High power model (High power)	1) Select _ _L _POW_XXX in tune mode PTT : ON	Power meter Ammeter	Rear	ANT	Final	VR1	Maximum clockwise	105W or more
							100W adj.	100W±5W, 28A or less
					Panel	PF3 key PF4 key	100W Check	100W ±5W
	2) Select _ _H _POW_XXX in tune mode PTT : ON						75W adj.	75W±1W 28A or less
(Low power)	1) CH-SIG : 1-1 Select LPOW_XXX in tune mode PTT : ON						40W adj.	40W±1W
• Med power model (High power)	1) CH-SIG : 1-1 Select _POW_XXX in tune mode PTT : ON				TX-RX (C/3)	VR1	Maximum clockwise	42W or less
							40W adj.	40W±1W, 12A or less
					Panel	PF3 key PF4 key	40W check	40W±1W
(Low power)	1) CH-SIG : 1-1 Select LPOW_XXX in tune mode PTT : ON						5W adj.	5W±1W

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. Maximum deviation • Wide	1) Select _ _L MXDV_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF AG : 1kHz/50mV	Power meter Deviation meter AF VTVM AG Oscilloscope	Rear Panel	ANT MIC	Panel	PF3 key PF4 key	Wide ±4.1kHz	±0.1kHz
	2) Select _ _C MXDV_XXX in tune mode PTT : ON							
	3) Select _ _H MXDV_XXX in tune mode PTT : ON							
• Narrow	1) Up/down knob : Set the narrow n_L MXDV_XXX in tune mode PTT : ON						Narrow ±2.05kHz	±0.05kHz
	2) Select n_C MXDV_XXX in tune mode PTT : ON							
	3) Select n_H MXDV_XXX in tune mode PTT : ON							
10. MIC sensitivity Wide only	1) CH-SIG : 1-1 PTT : ON Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF AG : 1kHz/5mV				TX-RX (B/3)	VR501	Check	2.75~3.25kHz
11. DQT balance	1) CH-SIG : 1-2 Select BLNC_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF				Panel	PF3 key PF4 key	Wide/Narrow Make the demodulation waveform neat.	Flat the a parts. 
	2) Up/down knob : Set the narrow n_ _ BLNC_XXX in tune mode PTT : ON							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
12. QT deviation	1) CH-SIG : 1-4 Select QTDV_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF	Power meter Deviation meter AF VTVM AG Oscilloscope	Rear Panel	ANT MIC	Panel	PF3 key PF4 key	Wide ±0.75kHz	±0.05kHz
	2) Up/down knob : Set the narrow n_ _ QTDV_XXX in tune mode PTT : ON						Narrow ±0.35kHz	±0.025kHz
13. DQT deviation	1) CH-SIG : 1-6 Select DQDV_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF						Wide ±0.75kHz	±0.05kHz
	2) Up/down knob : Set the narrow n_ _ DQDV_XXX in tune mode PTT : ON						Narrow ±0.35kHz	±0.025kHz
14. DTMF deviation	1) CH-SIG : 1-8 Select DTDV_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF						Wide ±3.0kHz	±0.1kHz
	2) Up/down knob : Set the narrow n_ _ DTDV_XXX in tune mode PTT : ON						Narrow ±1.5kHz	±0.05kHz
15. MSK deviation	1) CH-SIG : 1-9 Select MSDV_XXX in tune mode PTT : ON Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF						Wide ±3.0kHz	±0.1kHz
	2) Up/down knob : Set the narrow n_ _ MSDV_XXX in tune mode PTT : ON						Narrow ±1.5kHz	±0.05kHz

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
16. Sensitivity	1) Test mode CH-SIG : Low - 1 SSG output : –116dBm/0.35µV AF output : 2V/4Ω	SSG AF VTVM Distortion meter Oscilloscope 4Ω dummy load	Rear	ANT EXT.SP			Wide low check	SINAD 12dB or more
	2) Test mode CH-SIG : Center - 1						Wide center check	
	3) Test mode CH-SIG : High - 1						Wide high check	
	4) Up/down knob : Set the narrow n_C CH-SIG : Center - 1						Narrow center check	
17. Squelch tight point	1) CH-SIG : Center - 1 Select SQ_T_XXX in tune mode SSG output : Value when 6dB is added from the sensitivity value of 12dB SINAD.						Adjust to point of opening squelch	Set the value to 255. Adjust the SSG output to "Condition". Then, decrease the value to the point of opening the squelch.
	2) Up/down knob : Set the narrow n_ _ SQ_T_XXX in tune mode							
18. Squelch open point	1) CH-SIG : Center - 1 Select SQ_O_XXX in tune mode SSG output : Value when 3dB is subtracted from the sensitivity value of 12dB SINAD.							
	2) Up/down knob : Set the narrow n_ _ SQ_O_XXX in tune mode							
	3) SSG output : OFF						Wide/Narrow check	Squelch must be closed.

Remarks : When revising the BPF bandwidth, ensure that squelch is adjusted to the *Center CH of the bandwidth.
(*see adjusting procedure 5.)

TERMINAL FUNCTION

Connector No.	Terminal No.	Terminal Name	I/O	Terminal Function
FINAL UNIT (X45-3570-10) : TK-890H(B)				
CN1 To TX-RX unit	1	DO	I	Transmission drive input. Coaxial connector.
CN2 To TX-RX unit	1	RA	O	Receiver signal output. Coaxial connector.
CN3	1	+B	I	Power supply input (13.4V±15%).
CN4	1	E	–	Earth.
W4 To Control unit	1	E	–	Earth.
	2	+B	O	Power supply output (13.4V±15%).
	3	+B	O	Power supply output (13.4V±15%).
W5 To TX-RX unit	1	DB	O	Transmission drive control voltage output (APC).
	2	E	–	Earth.
	3	8R	I	8V input during reception.
	4	8T	I	8V input during transmission.
	5	PC	I	TX power control signal input.
TX-RX UNIT (X57-5620-XX) (A/3)				
CN104 To Final unit	1	RA	I	Receiver signal input. Coaxial connector.
CN201 To Final unit	1	PC	O	TX power control signal output.
	2	8T	O	8V output during transmissioin.
	3	8R	O	8V output during reception.
	4	E	–	Earth.
	5	DB	I	Tranmission drive control voltage input (APC).
CN202 To Control unit	1	NC	–	Not used.
	2	UL	O	Lock detect output for PLL. "H" : Lock, "L" : Unlock
	3	EP	I	ENABLE input for PLL.
	4	CP	I	CLOCK input for PLL.
	5	MO	I	Modulation signal input for VCO.
	6	MB	I	Modulation and frequency control signal input for VCXO.
	7	SB	I	Power output after power switch (13.6V or 13.4V±15%).
	8	DT	I	DATA input.
	9	ES	I	ENABLE input for shift register.
	10	CK	I	CLOCK input for shift register.
	11	KEY	I	KEY signal input. "H" : TX
	12	8C	I	Common 8V (8V±5%).
	13	E	–	Earth.
	14	DET	O	Detection signal output.
	15	SQL	O	Squelch signal output.
	16	RSI	O	RSSI signal output.
	17	TV	–	Not used.
	18	PC	I	TX power control signal input.
CN203 To Final unit	1	DO	O	Transmission drive output. Coaxial connector.

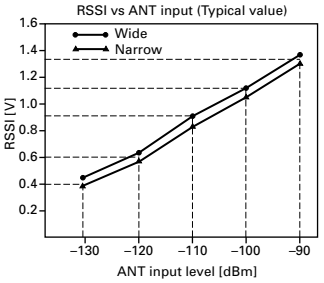
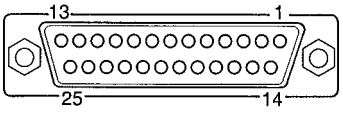
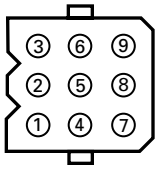
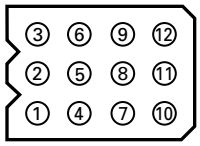
Connector No.	Terminal No.	Terminal Name	I/O	Terminal Function
CONTROL UNIT (X57-5620-XX) (B/3)				
W501 To Display unit	1	RS2	O	Output for remote speaker.
	2	RS1	O	Output for remote speaker.
	3	SB	O	Power output after power switch (13.6V or 13.4V±15%).
	4	IGN	I	Ignition input.
	5	PS	I	Power swith control signal input.
	6	TRD	I/O	TX data output/RX data input.
	7	1/2	O	Remote head 1 signal output.
	8	RST	O	RESET signal output.
	9	E	–	Earth.
	10	MIC	I	MIC signal input.
	11	ME	–	MIC earth.
CN501 To Final unit	1	+B	I	Power supply input (13.6V or 13.4V±15%).
	2	+B	I	Power supply input (13.6V or 13.4V±15%).
	3	E	–	Earth.
CN502 To TX-RX unit	1	PC	O	TX power control signal output.
	2	TV	–	Not used.
	3	RSI	I	RSSI signal input.
	4	SQL	I	Squelch signal input.
	5	DET	I	Detection signal input.
	6	E	–	Earth
	7	8C	O	Common 8V (8V±5%).
	8	KEY	O	KEY signal output. "H" : TX
	9	CK	O	CLOCK output for shift register.
	10	ES	O	ENABLE output for shift register.
	11	DT	O	DATA output.
	12	SB	O	Power output after power switch (13.6V or 13.4V±15%).
	13	MB	O	Modulation and frequency control signal output for VCXO.
	14	MO	O	Modulation signal output for VCO.
	15	CP	O	CLOCK output for PLL.
	16	EP	O	ENABLE output for PLL.
	17	UL	I	Lock detect input for PLL. "H" : Lock, "L" : Unlock.
	18	NC	–	Not used.
CN504 To Control cable (Remote kit)	1	AFO	O	RX audio signal output for head 2.
	2	DE3	I/O	Detection signal input from Radio 2.
	3	E	–	Earth
	4	EI	O	ENABLE output for shift register.
	5	CK	O	CLOCK output for shift register.
	6	DT	O	DATA output for shift register.
	7	RST	I/O	RESET signal output for Radio 2.
	8	5C	O	Common 5V (5V±5%).
	9	PSC	I/O	Power switch control signal input/output.
	10	CS	O	Chip select output for D/A converter.
CN505 To Acc 25 pin D-sub connector	1	RSI	O	RSSI signal output.
	2	NC (SB)	O	Non connection.
	3	AI1	I	Auxiliary input 1 (FPU selectable).
	4	RSV1	O	Reserved
	5	AI2	I	Auxiliary input 2 (FPU selectable).
	6	RSV2	I	Reserved.
	7	AI3	I	Auxiliary input 3 (FPU selectable).
	8	AFO	O	RX audio signal output.
	9	AI4	I	Auxiliary input 4 (FPU selectable).
	10	E	–	Earth.
	11	AI5	I	Auxiliary input 5 (FPU selectable).
	12	DEO	O	Detector signal output.
	13	E	–	Earth.

TERMINAL FUNCTION

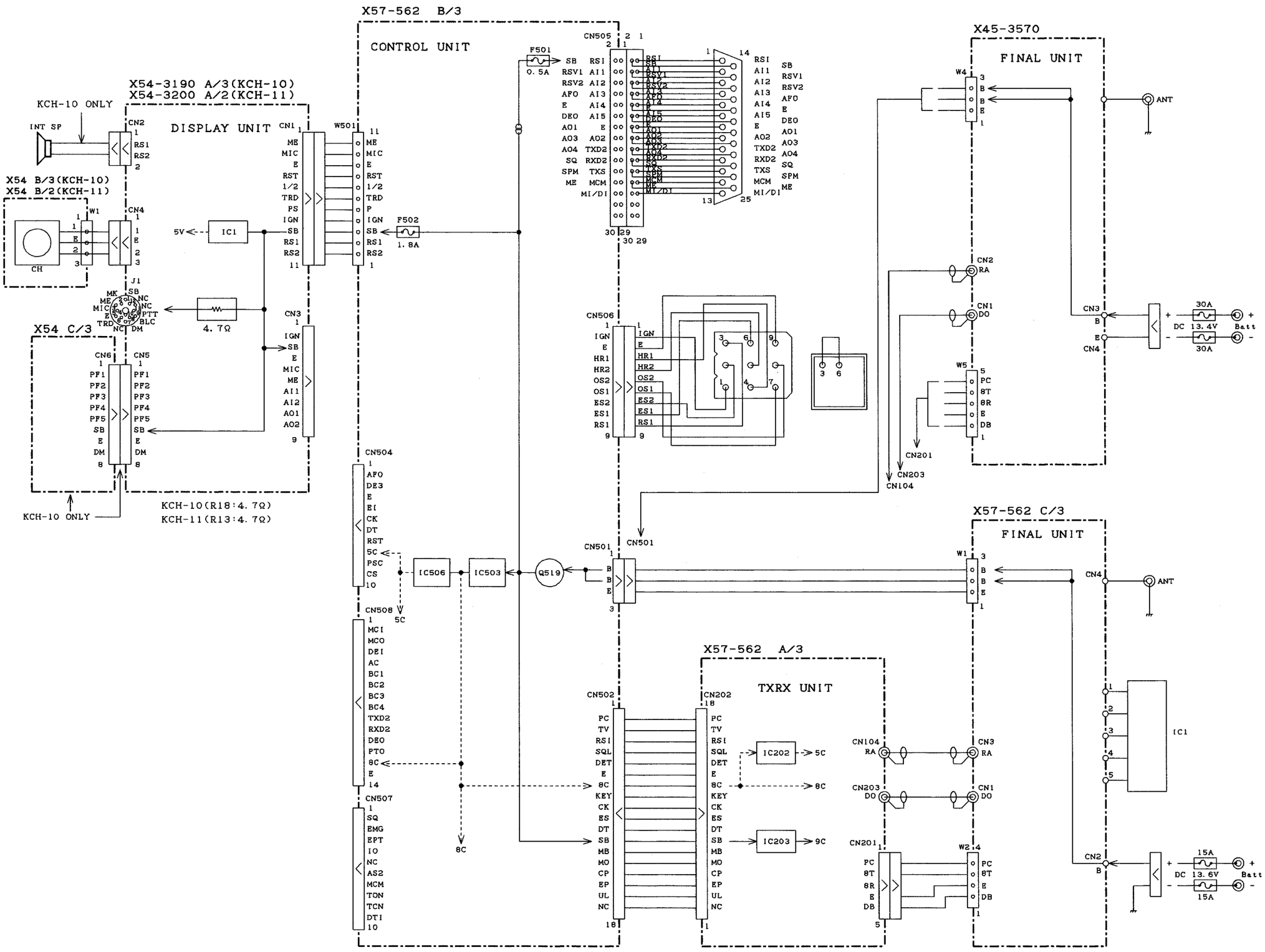
Connector No.	Terminal No.	Terminal Name	I/O	Terminal Function
	14	AO1	O	Auxiliary output 1 (FPU selectale).
	15	AO2	O	Auxiliary output 2 (FPU selectale).
	16	AO3	O	Auxiliary output 3 (FPU selectale).
	17	TXD2	O	Serial data output.
	18	AO4	O	Auxiliary output 4 (FPU selectale).
	19	RXD2	I	Serial data input.
	20	SQ	O	Squelch signal output. "H" : Busy, "L" : Not busy
	21	TXS	O	TX sense signal output. "H" : TX, "L" : Another
	22	SPM	I	Speaker mute signal input. "H" : Mute on
	23	MCM	I	MIC mute signal input. "H" : Mute on
	24	ME	–	MIC earth.
	25	MI/DI	I	Mic/Data signal input 1. (Default : DI)
	26~30	–	–	Non connection.
CN506	1	IGN	I	Ignition sense input.
To Acc	2	E	–	Earth.
9 pin	3	HR1	O	Horn alert signal output 1.
connector	4	HR2	O	Horn alert signal output 2.
	5	OS1	O	BTL output for external speaker B (PA).
	6	OS2	O	BTL output for external speaker B (PA).
	7	ES2	O	BTL output for external speaker A.
	8	ES1	O	BTL output for external speaker A.
	9	RS1	I	Remote speaker switch.
CN507	1	SQ	O	Squelch signal output. "H" : Busy, "L" : No signal
To				
ANI	2	EMG	O	Emergency signal output.
board	3	EPT	I	External PTT signal input.
	4	IO	I/O	Auxiliary input/output.
	5	SEL	–	Non connection.
	6	AS2	I	Audio mute input. "HiZ" : No change, "L" : Mute
	7	MCM	I	MIC mute input. "HiZ" : No change, "L" : Mute
	8	TON	I	Sidetone input.
	9	TCN	I	Speaker mute input. "HiZ" : No change, "L" : Unmute
	10	DTI	I	Data input.
CN508	1	MCI	I	MIC signal input.
To	2	MCO	O	MIC signal output.
voice	3	DEI	I	Detection signal input.
scrambler	4	AC	O	Audio control signal output. "H" : OPT SW off, "L" : On
	5	BC1	O	Scramble code output.
	6	BC2	O	Scramble code output.
	7	BC3	O	Scramble code output.
	8	BC4	O	Scramble code output.
	9	TXD2	O	TX data output 2.
	10	RXD2	I	RX data input 2.
	11	DEO	O	Detection signal output.
	12	PTO	O	PTT signal output.
	13	8C	O	Common 8V output.
	14	E	–	Earth.
FINAL UNIT (X57-5620-XX) (C/3) : TK-890/(B)				
CN1	1	DO	I	Transmission drive input.
To				Coaxial connector.
TX-RX unit				
CN2	1	+B	I	Power supply input (13.6V±15%).

Connector No.	Terminal No.	Terminal Name	I/O	Terminal Function
CN3	1	RA	O	Receiver signal output.
To				Coaxial connector.
TX-RX unit				
W1	1	E	–	Earth.
To	2	+B	O	Power supply output (13.6V±15%).
Control	3	+B	O	Power supply output (13.6V±15%).
unit				
W2	1	DB	O	Transmission drive control voltage output (APC).
To				
TX-RX	2	E	–	Earth
unit	3	8T	I	8V input during transmission.
	4	PC	I	TX power control signal input.
DISPLAY UNIT (X54-3190-20) : KCH-10 (X54-3200-20) : KCH-11				
CN1	1	ME	–	MIC earth.
To	2	MIC	O	MIC signal output.
Control	3	E	–	Earth.
unit	4	RST	I	RESET signal input.
	5	1/2	I	Remote head 1/2 signal input. "L" : Head 1, "H" : Head 2
	6	TRD	I/O	TX data output/RX data input.
	7	PS	O	Power switch control signal output.
	8	IGN	O	Ignition sense output.
	9	SB	I	Power input after power switch (13.6V or 13.4V±15%).
	10	RS1	I	Remote speaker input.
	11	RS2	I	Remote speaker input.
CN2	1	RS1	O	Remote speaker output.
To	2	RS2	O	Remote speaker output.
Remote speaker				
CN3	1	IGN	I	Ignition sense input.
To Acc	2	SB	O	Power output after power switch (13.6V or 13.4V±15%).
12 pin				
connector	3	E	–	Earth.
	4	MIC	I	MIC signal input.
	5	ME	–	MIC earth.
	6	AI1	I	Auxiliary input 1 (FPU selectable).
	7	AI2	I	Auxiliary input 2 (FPU selectable).
	8	AO1	O	Auxiliary output 1 (FPU selectable).
	9	AO2	O	Auxiliary output 2 (FPU selectable).
J1	1	SB	O	Power output after power switch (13.6V or 13.4V±15%)
(MIC				
jack)	2	HK	I	Hook signal input. "L" : On hook, "H" : Off hook
	3	ME	–	MIC eearth.
	4	MIC	I	MIC signal input.
	5	E	–	Earth.
	6	TRD	I/O	TX data output/RX data input.
	7	NC	–	Not used.
	8	DM	I/O	Serial data input/output for keypad MIC.
	9	BLC	O	MIC backlight control signal output. "H" : On, "L" : Off
	10	PTT	I	PTT signal input. "L" : TX, "OPEN" : RX
	11	NC	–	Not used.
	12	NC	–	Not used.

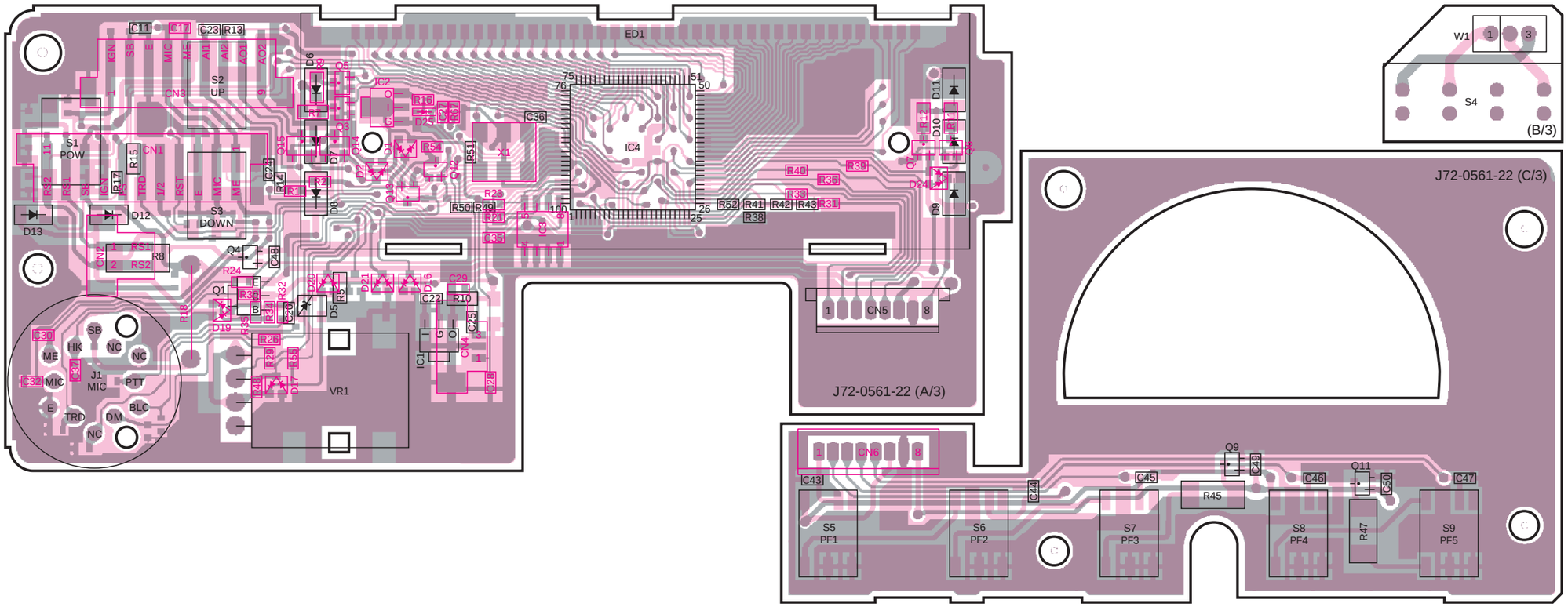
TERMINAL FUNCTION

Connector No.	Terminal No.	Terminal Name	I/O	Terminal Function
Acc 25 pin D-sub connector				
	1	RSI	O	RSSI signal output. 
	2	AI1	I	Auxiliary input 1 (FPU selectable).
	3	AI2	I	Auxiliary input 2 (FPU selectable).
	4	AI3	I	Auxiliary input 3 (FPU selectable).
	5	AI4	I	Auxiliary input 4 (FPU selectable).
	6	AI5	I	Auxiliary input 5 (FPU selectable).
	7	E	–	Earth
	8	AO2	O	Auxiliary output 1 (FPU selectable).
	9	TXD2	O	Serial data output.
	10	RXD2	I	Serial data input.
	11	TXS	O	TX sense signal output. "H" : TX, "L" : Another
	12	MCM	I	MIC mute signal imput. "L" : Mute on, "H" : No change
	13	MI/DI	I	MIC/Data signal input 1. (Default : DI) Input impedance DI : 10kΩ or more MI : 600Ω Coupling DI : DC coupling MI : DC coupling Frequency response DI : ~9.6kHz +1/–3dB (1kHz=0dB) MI : Compliance with TIA/EIA-603 Deviation DI : 60% deviation or more. (1kHz 2.5Vp-p input) MI : 60% deviation (1kHz 5mV±1.5mV input)
	14	NC (SB)	O	Non connection. (SB : 13.6V or 13.4V 0.5A max. Refer to page 20)
	15	RSV1	–	Reserved.
	16	RSV2	–	Reserved.
	17	AFO	O	RX audio signal output (Same as CN504 pin No.1) RX condition : RX audio output. Output level 125mVrms. (Standard modulation) PA copndion : MIC output. Output level 300mVrms. (1kHz 5mV input)
	18	E	–	Earth
	19	DEO	O	Detector signal output. Output impedance 1kΩ or less Coupling DC coupling Output level : 100mVrms (Standard modulation)
				Output frequency response : Wide : 300~4.8kHz +1/–2dB 4.8~9.6kHz +1/–24dB Narrow : 300~4.8kHz +1/–10dB (1kHz=0dB)
	20	AO1	O	Auxiliary output 1 (FPU selectable).
	21	AO3	O	Auxiliary output 3 (FPU selectable).
	22	AO4	O	Auxiliary output 4 (FPU selectable).
	23	SQ	O	Squelch signal output. "L" : Busy, "H" : Not busy
	24	SPM	I	Speaker mute signal input. "L" : Mute on
	25	ME	–	MIC earth.
				
Acc 9 pin connector				
	1	IGN	I	Ignition sense input.
	2	ES2	O	BTL output for external speaker A.
	3	RS1	I	Remote speaker switch
	4	HR1	O	Horn alert signal output 1.
	5	HR2	O	Horn alert signal output 2.
	6	ES1	O	BTL output for external speaker A.
	7	OS1	O	BTL output for external speaker B (PA).
	8	OS2	O	BTL output for external speaker B (PA).
	9	E	–	Earth.
				
Acc 12 pin connector (Remote kit)				
	1	IGN	I	Ignition sense input.
	2	SB	O	Power output after power switch (13.6V or 13.4V±15%).
	3	E	–	Earth.
	4	MIC	I	MIC signal input.
	5	ME	–	MIC earth.
	6	AI1	I	Auxiliary input 1 (FPU selectable).
	7	AI2	I	Auxiliary input 2 (FPU selectable).
	8	AO1	O	Auxiliary output 1 (FPU selectable).
	9	AO2	O	Auxiliary output 2 (FPU selectable).
	10	RS1	O	Remote speaker output.
	11	RS2	O	Remote speaker output.
	12	–	–	Non connection.
				

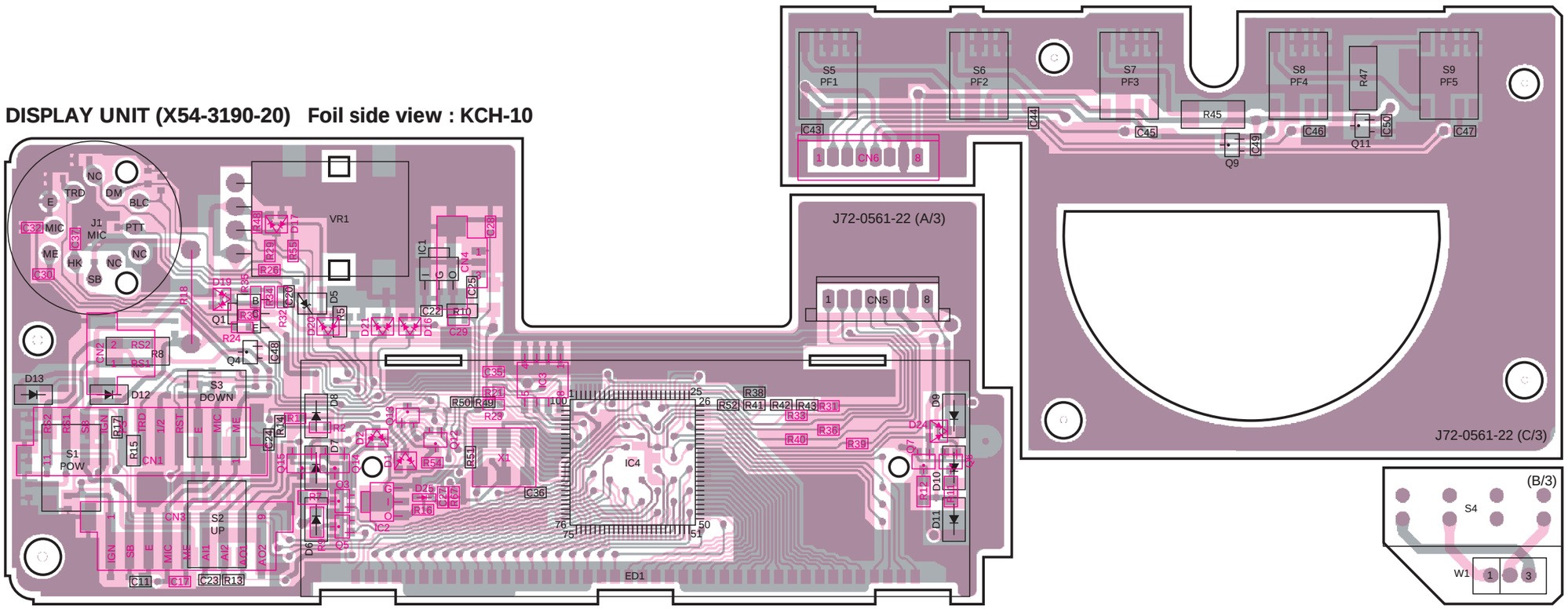
WIRING


X57-562 B/3
CONTROL UNIT
X54-3190 A/3(KCH-10)
X54-3200 A/2(KCH-11)
KCH-10 ONLY
INT SP
DISPLAY UNIT
X54 B/3(KCH-10)
X54 B/2(KCH-11)
CH
X54 C/3
KCH-10 ONLY
KCH-10(R18:4.7Ω)
KCH-11(R13:4.7Ω)
4.7Ω
IC1
F501
0.5A
F502
1.8A
CN505
CN506
CN504
CN508
CN507
CN501
CN502
CN202
IC506
IC503
Q519
IC202
IC203
5C
8C
9C
X45-3570
FINAL UNIT
ANT
30A
DC 13.4V
Batt
CN201
CN203
CN104
X57-562 C/3
FINAL UNIT
X57-562 A/3
TXRX UNIT
DC 13.6V
15A

DISPLAY UNIT (X54-3190-20) Component side view : KCH-10



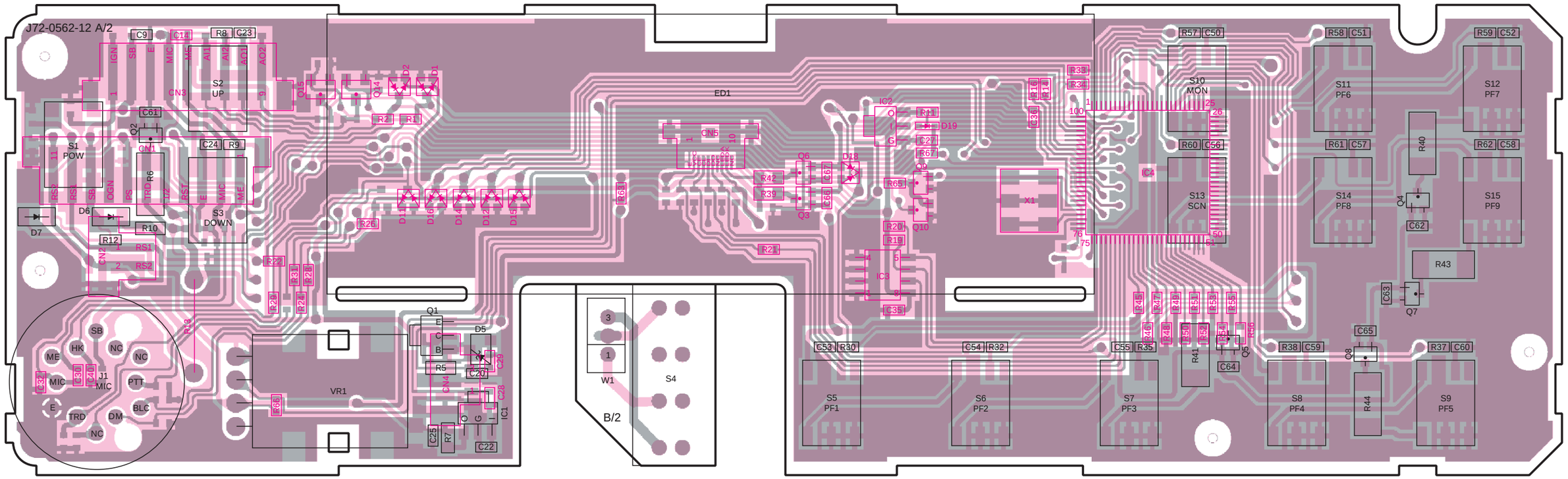
DISPLAY UNIT (X54-3190-20) Foil side view : KCH-10



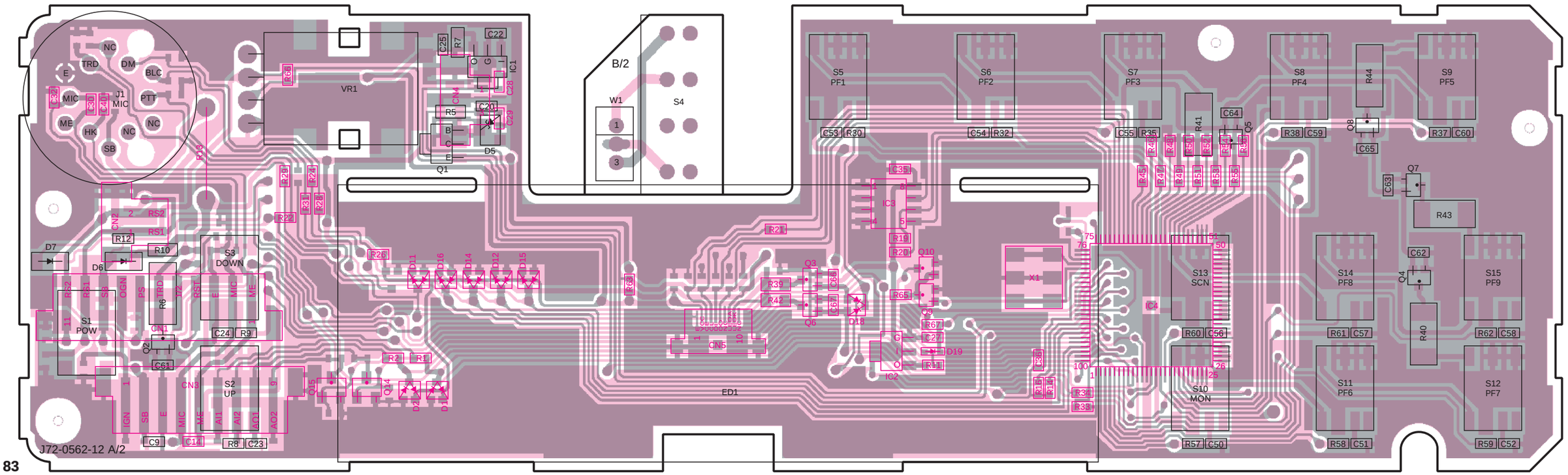
TK-890/(B)/H(B) PC BOARD VIEWS

Component side
Foil side

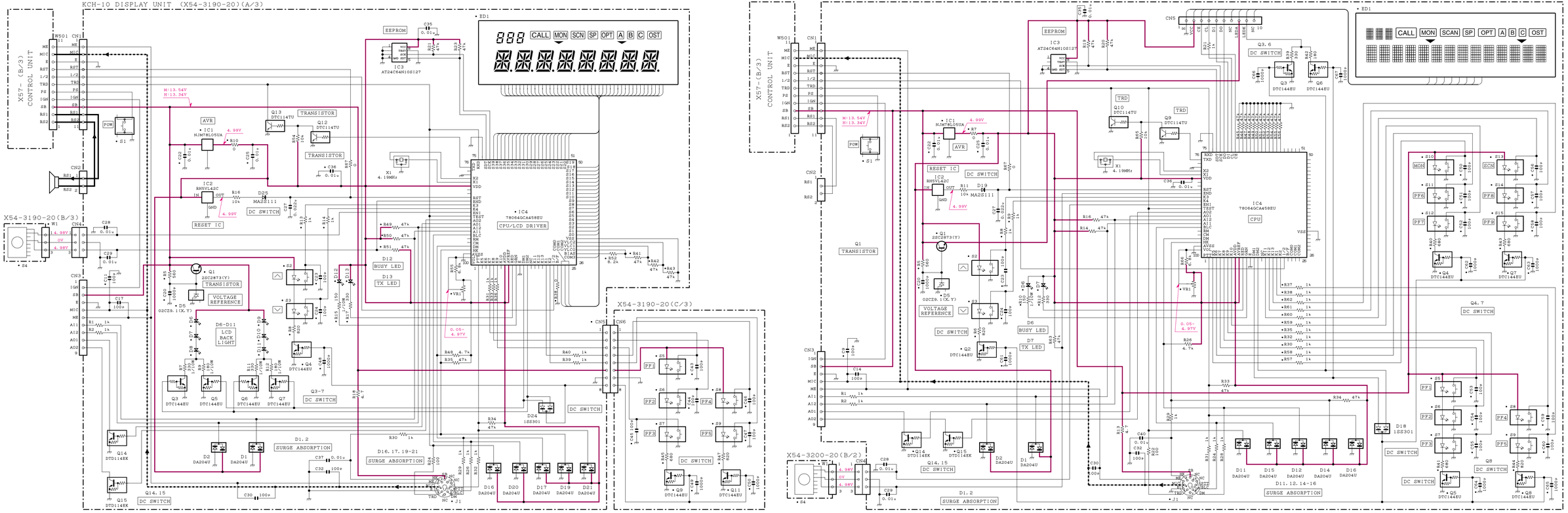
DISPLAY UNIT (X54-3200-20) Component side view : KCH-11



DISPLAY UNIT (X54-3200-20) Foil side view : KCH-11



Note : Components marked with a dot (·) are parts of pattern 1.



D1.2	:DA204U	D12	:B30-2194-05	D24	:1SS301	Q1	:2SC2873(Y)	Q14.15	:DTD114EK
D5	:02CZ9.1(X.Y)	D13	:B30-2193-05	D25	:MA2S111	Q3-7.9.11	:DTC144EU		
D6-11	:B30-2140-05	D16.17.19-21	:DA204U			Q12.13	:DTC114TU		

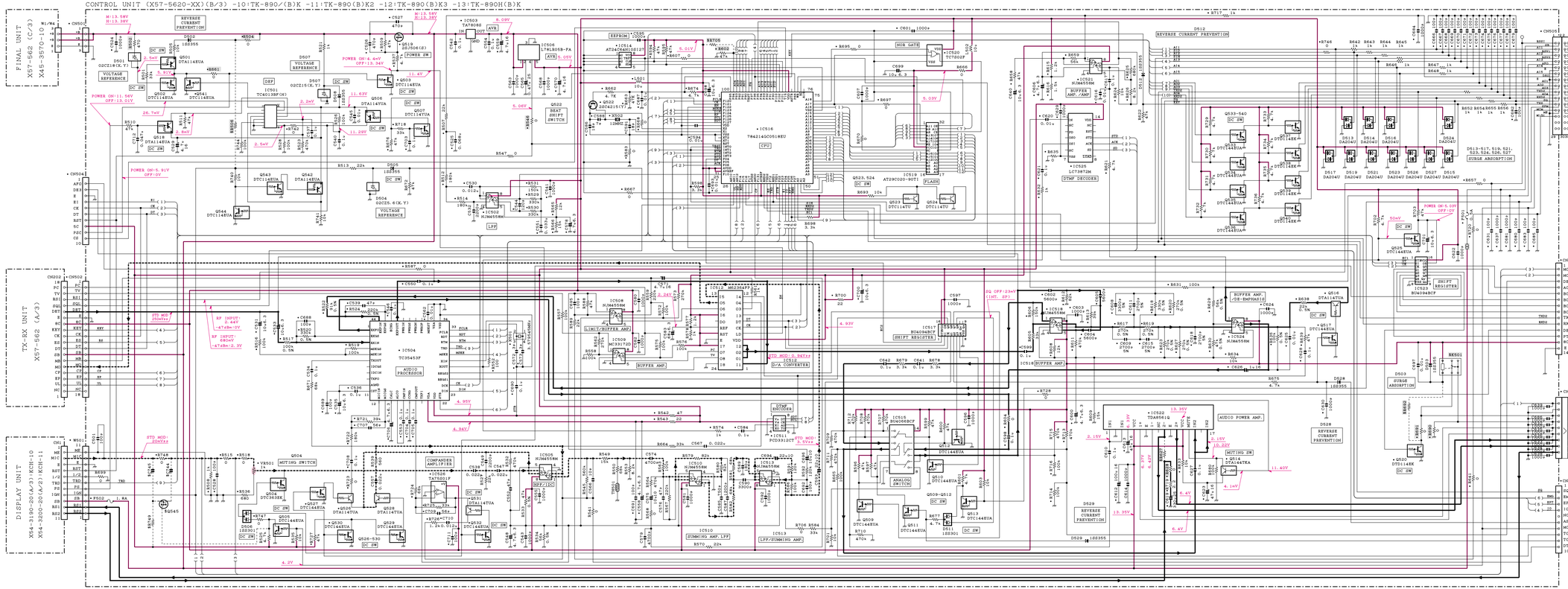
D1.2	:DA204U	D7	:B30-2193-05	D19	:MA2S111	Q1	:2SC2873(Y)	Q14.15	:DTD114EK
D5	:02CZ9.1(X.Y)	D11.12.14-16	:DA204U			Q2-8	:DTC144EU		
D6	:B30-2194-05	D18	:1SS301			Q9.10	:DTC114TU		

IC1	:NJM78L05UA	IC4	:78064GCA458EU		
IC2	:RH5VL42C				
IC3	:AT24C64N10SI27				

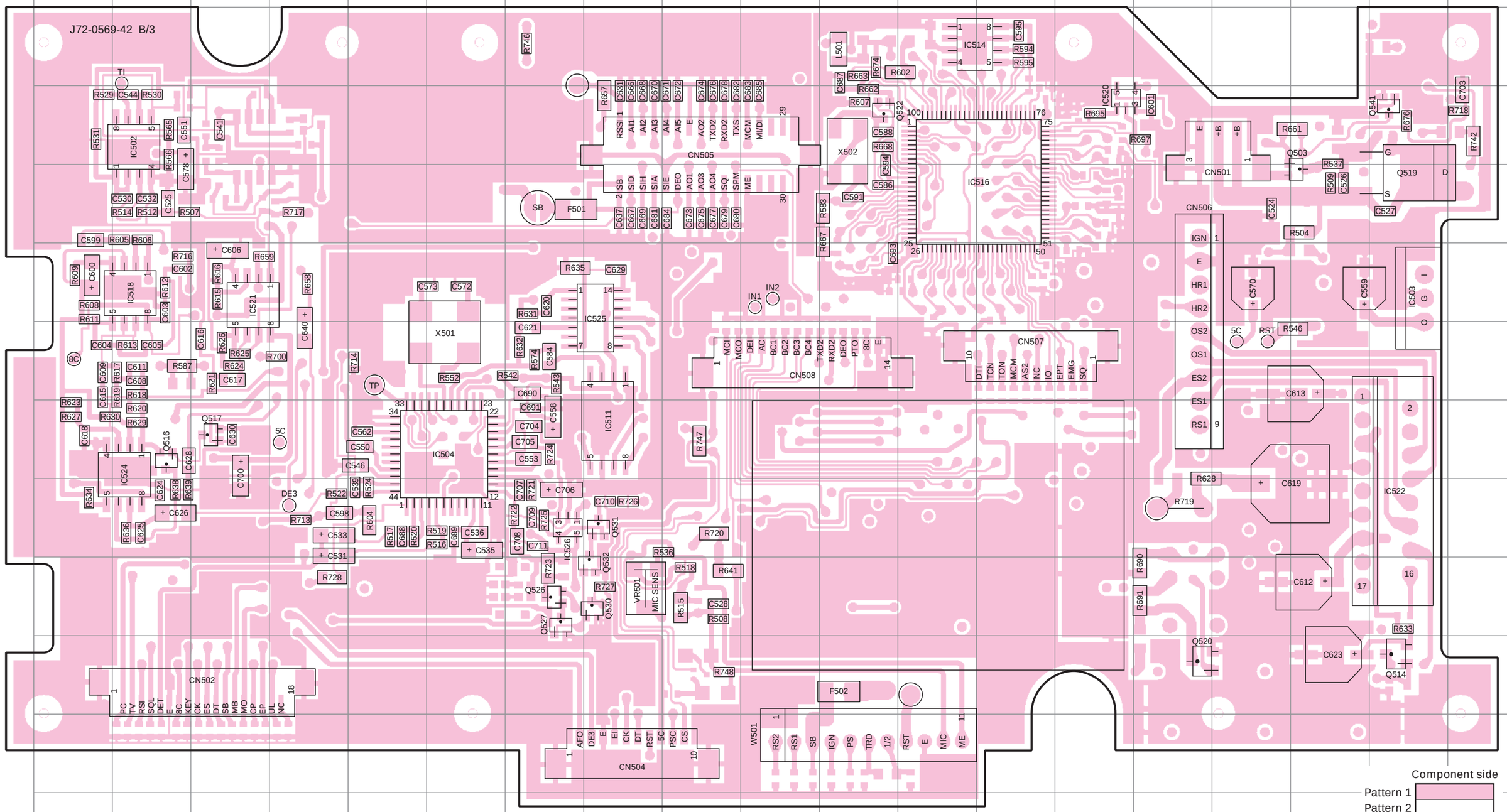
TK-890/(B)/H(B) CIRCUIT DIAGRAM

CONTROL UNIT (X57-5620-XX)(B/3) -10:TK-890/(B)K -11:TK-890(B)K2 -12:TK-890(B)K3 -13:TK-890H(B)K

Note : Components marked with a dot (·) are parts of pattern 1.



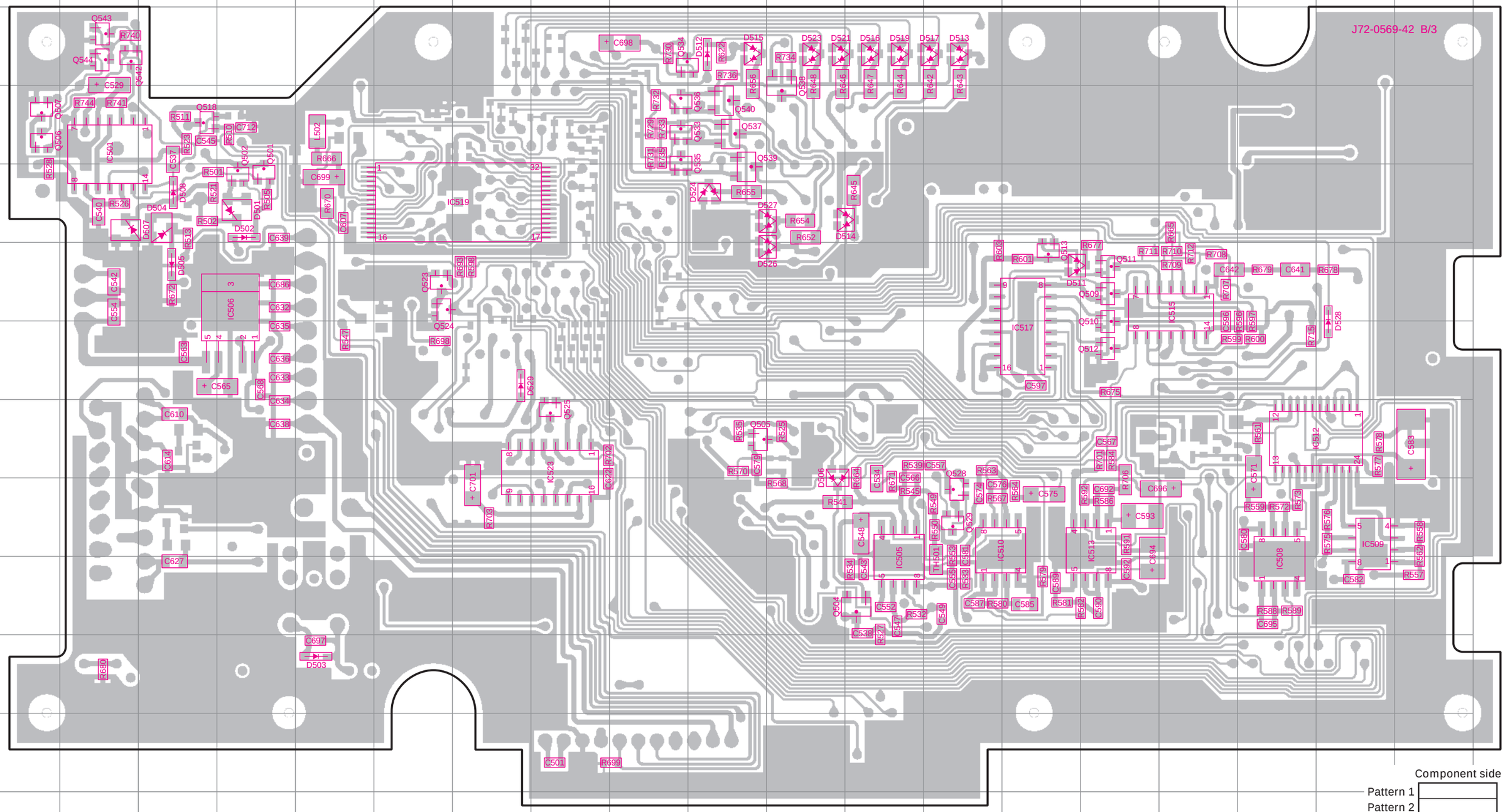
CONTROL UNIT (X57-5620-XX) (B/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) K Component side view



Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC502	3B	IC518	5B	IC526	8G	Q520	10O	Q532	9H
IC503	5R	IC520	3N	Q503	4Q	Q522	3K	Q541	3R
IC504	7F	IC521	5C	Q514	10R	Q526	9G		
IC511	7H	IC522	8R	Q516	7B	Q527	9G		
IC514	2L	IC524	7B	Q517	7C	Q530	9H		
IC516	4M	IC525	5H	Q519	4R	Q531	8H		

TK-890/(B)/H(B) PC BOARD VIEW

CONTROL UNIT (X57-5620-XX) (B/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) K Foil side view



Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC501	3B	IC512	7Q	Q501	4D	Q509	5O	Q523	5F	Q534	2I	Q540	3J	D503	10E	D511	5N	D517	2M	D527	4K
IC505	8L	IC513	8O	Q502	4D	Q510	6O	Q524	5F	Q535	3I	Q542	2B	D504	4C	D512	2J	D519	2L	D528	6R
IC506	5D	IC515	5P	Q504	9L	Q511	5O	Q525	7H	Q536	3I	Q543	2B	D505	5C	D513	2M	D521	2K	D529	6G
IC508	9Q	IC517	6N	Q505	7J	Q512	6O	Q528	8M	Q537	3J	Q544	2B	D506	7K	D514	4L	D523	2K		
IC509	8R	IC519	4G	Q506	3A	Q513	5N	Q529	8M	Q538	2K	D501	4D	D507	4B	D515	2J	D524	4J		
IC510	8M	IC523	7H	Q507	3A	Q518	3C	Q533	3I	Q539	4J	D502	4D	D508	4C	D516	2L	D526	5K		

Component side

Pattern 1

Pattern 2

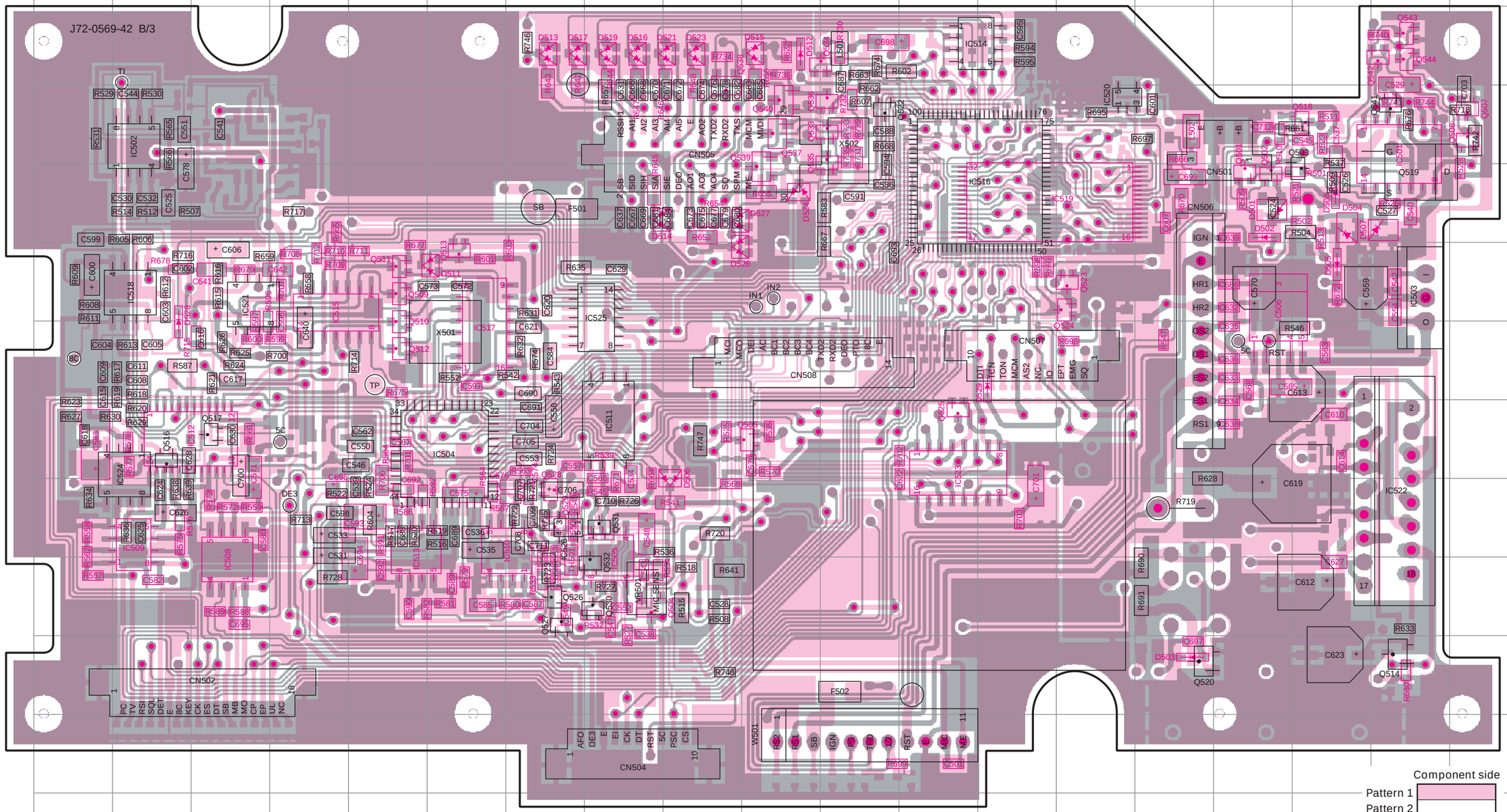
Pattern 3

Pattern 4

Foil side

PC BOARD VIEW TK-890/(B)/H(B)

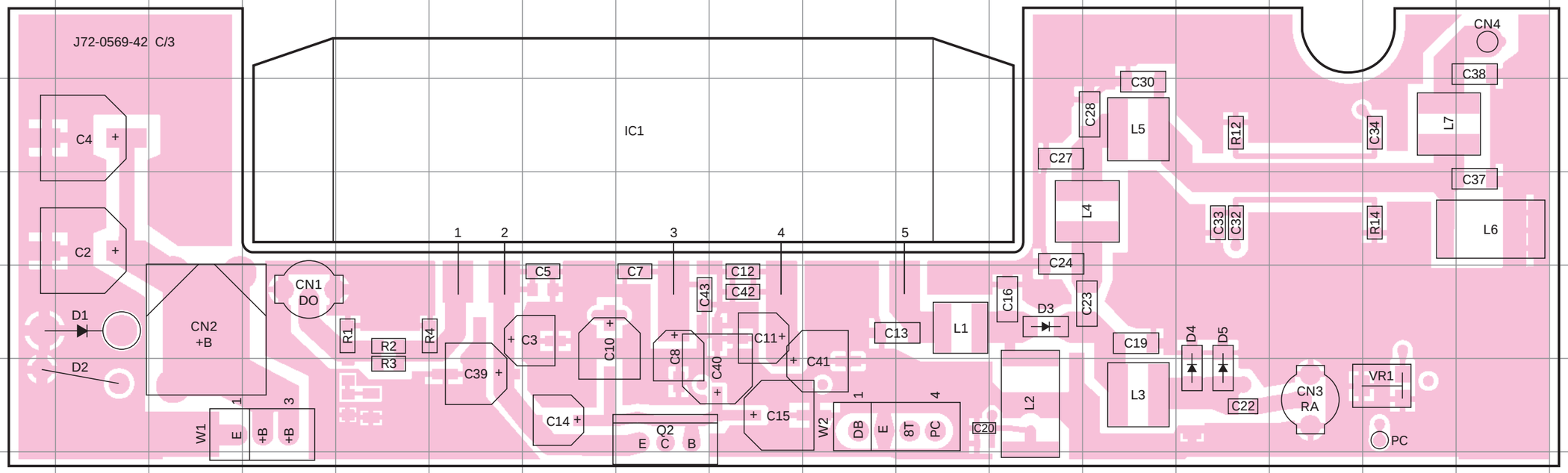
CONTROL UNIT (X57-5620-XX) (B/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) K Component side view + Foil side



Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC501	3R	IC509	8B	IC516	4M	IC523	7L	Q504	9H	Q512	6E	Q520	10O	Q528	8G	Q535	3K	Q542	2R	D505	5Q	D514	4H	D524	4J
IC502	3B	IC510	8G	IC517	6F	IC524	7B	Q505	7J	Q513	5F	Q522	3K	Q529	8G	Q536	3K	Q543	2R	D506	7I	D515	2J	D526	5I
IC503	5R	IC511	7H	IC518	5B	IC525	5H	Q506	3S	Q514	10R	Q523	5N	Q530	9H	Q537	3J	Q544	2R	D507	4R	D516	2H	D527	4I
IC504	7F	IC512	7B	IC519	4N	IC526	8G	Q507	3S	Q516	7B	Q524	5N	Q531	8H	Q538	2I	D501	4P	D508	4Q	D517	2G	D528	6B
IC505	8H	IC513	8E	IC520	3N	Q501	4P	Q509	5E	Q517	7C	Q525	7L	Q532	9H	Q539	4J	D502	4P	D511	5F	D519	2H	D529	6M
IC506	5P	IC514	2L	IC521	5C	Q502	4P	Q510	6E	Q518	3Q	Q526	9G	Q533	3K	Q540	3J	D503	10O	D512	2J	D521	2I		
IC508	9C	IC515	5D	IC522	8R	Q503	4Q	Q511	5E	Q519	4R	Q527	9G	Q534	2K	Q541	3R	D504	4Q	D513	2G	D523	2I		

TK-890/(B) PC BOARD VIEWS

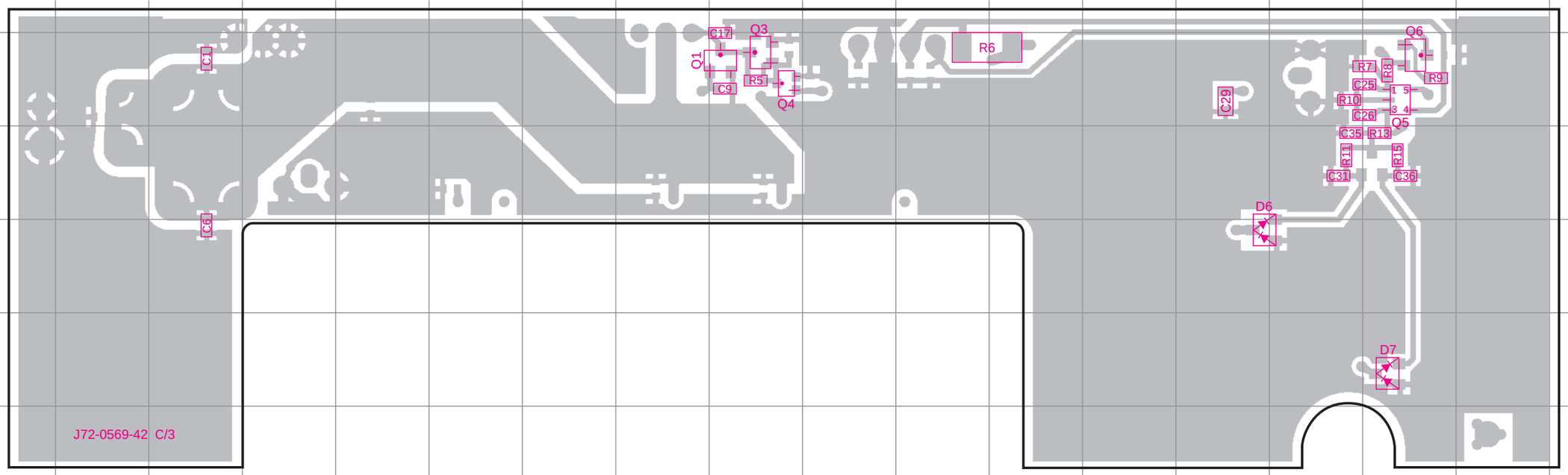
FINAL UNIT (X57-5620-XX) (C/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 Component side view



Ref No.	Address
IC1	3H
Q2	6H
D1	5B
D2	6B
D3	5L
D4	6N
D5	6N

Component side
Pattern 1
Pattern 2
Pattern 3
Pattern 4
Foil side

FINAL UNIT (X57-5620-XX) (C/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 Foil side view

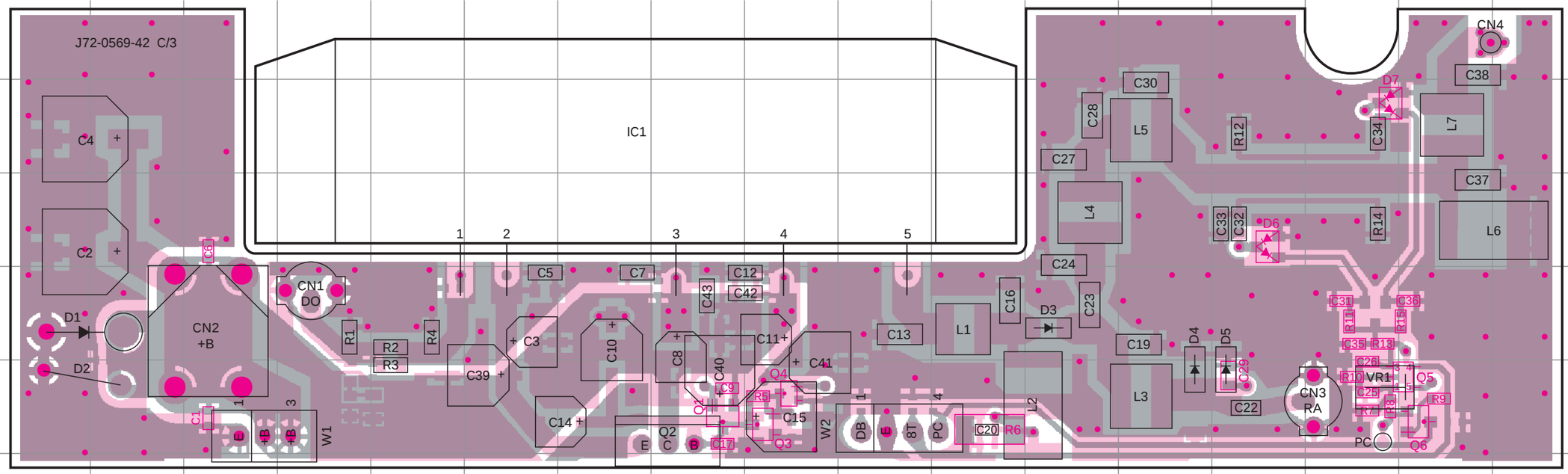


Ref No.	Address
Q1	9I
Q3	9I
Q4	9I
Q5	9P
Q6	9P
D6	11N
D7	12P

Component side
Pattern 1
Pattern 2
Pattern 3
Pattern 4
Foil side

PC BOARD VIEW TK-890/(B)

FINAL UNIT (X57-5620-XX) (C/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 Component side view + Foil side



Ref No.	Address	Ref No.	Address	Ref No.	Address
IC1	3H	Q5	6Q	D4	6N
Q1	6I	Q6	6Q	D5	6O
Q2	6I	D1	5B	D6	4O
Q3	6J	D2	6B	D7	3P
Q4	6J	D3	5M		

Component side

Pattern 1

Pattern 2

Pattern 3

Pattern 4

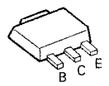
Foil side

● Connect 1 and 4

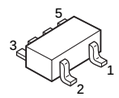
DTA144EUA
DTC114TU
DTC114YUA
DTC144EU
DTC363EK
DTD114EK
2SA1162
2SC2712
2SC3356

2SC3722K
2SC4116
2SC4215
2SC4226
2SC4617

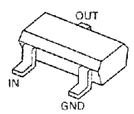
2SB1132
2SC2873
2SC2954
2SC3357
2SD1624



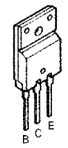
FMC2
FMW1



DTA114EUA
DTA114TUA
DTA144TKA
DTC114EUA
DTC144EUA

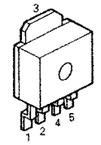


2SD2399



2SK508NV

L78LR05B-FA



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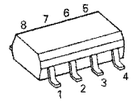
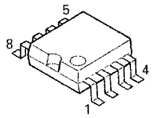
NJM4558M



PCD3312CT



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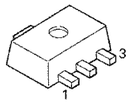
RH5VL42C



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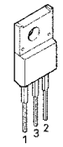
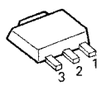
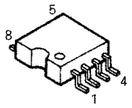


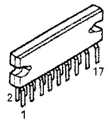
AN8009M



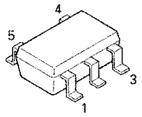
MC33172D



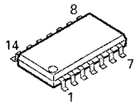
TDA8561Q



TC7S02F



LC73872M



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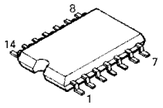

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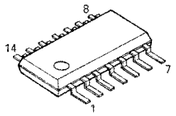
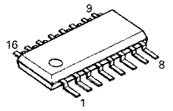


BU4094BCF



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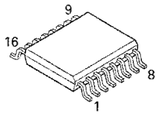

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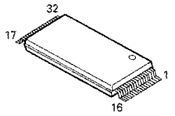
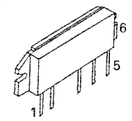
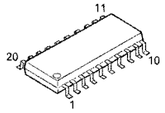


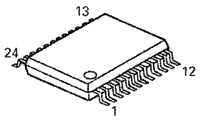
M68769H
M68769L
M6



SA7025DK



M62364FP



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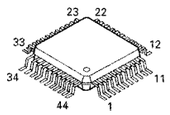

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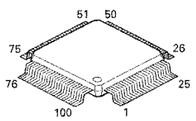
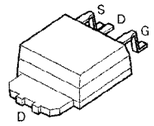
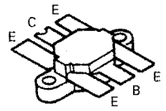


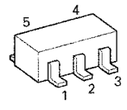
2SJ506



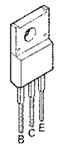
2SC4989



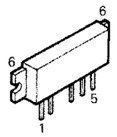
TA75S01F



2SD2531

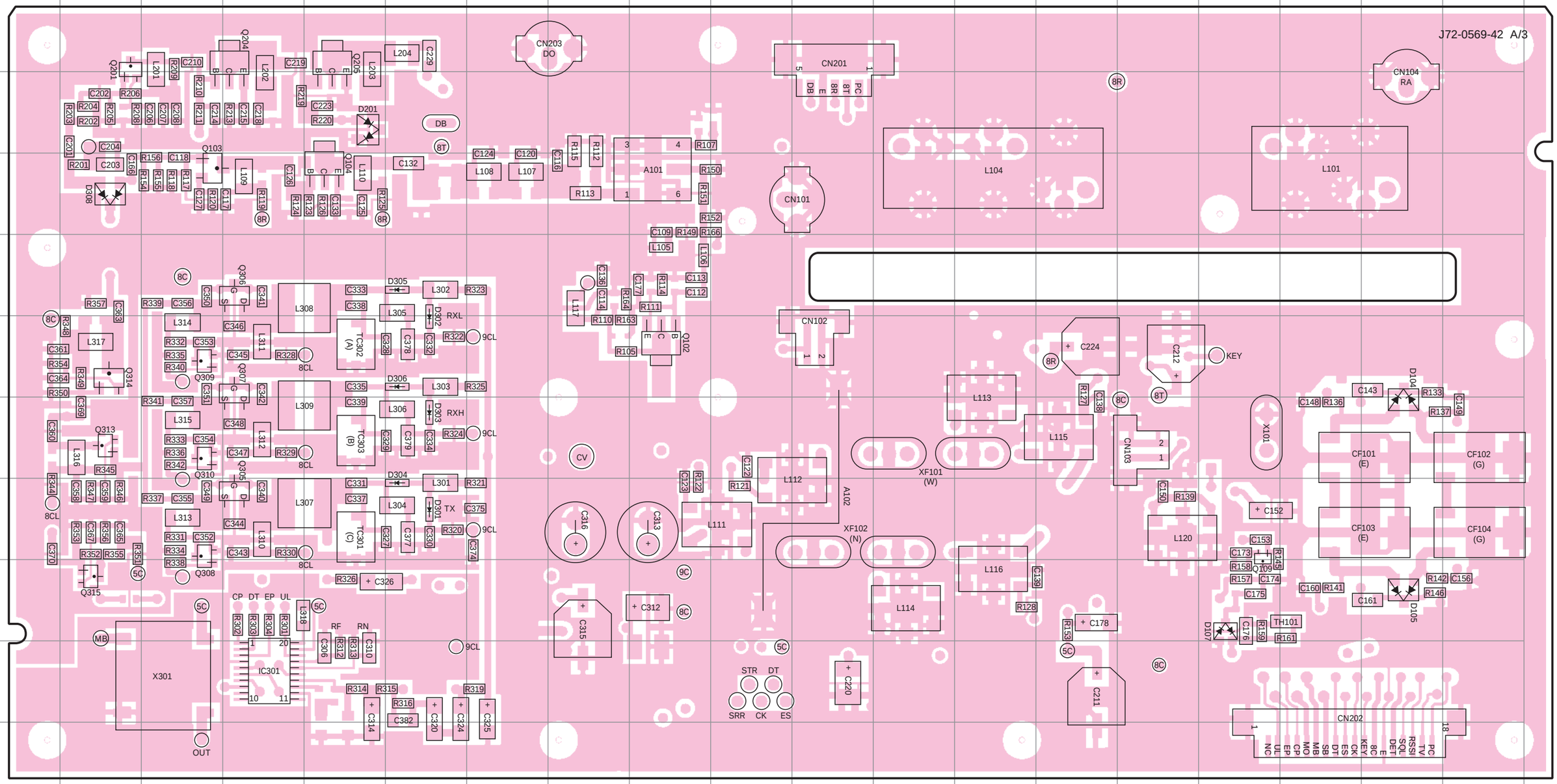


M57788H-32



TK-890/(B)/H(B) PC BOARD VIEW

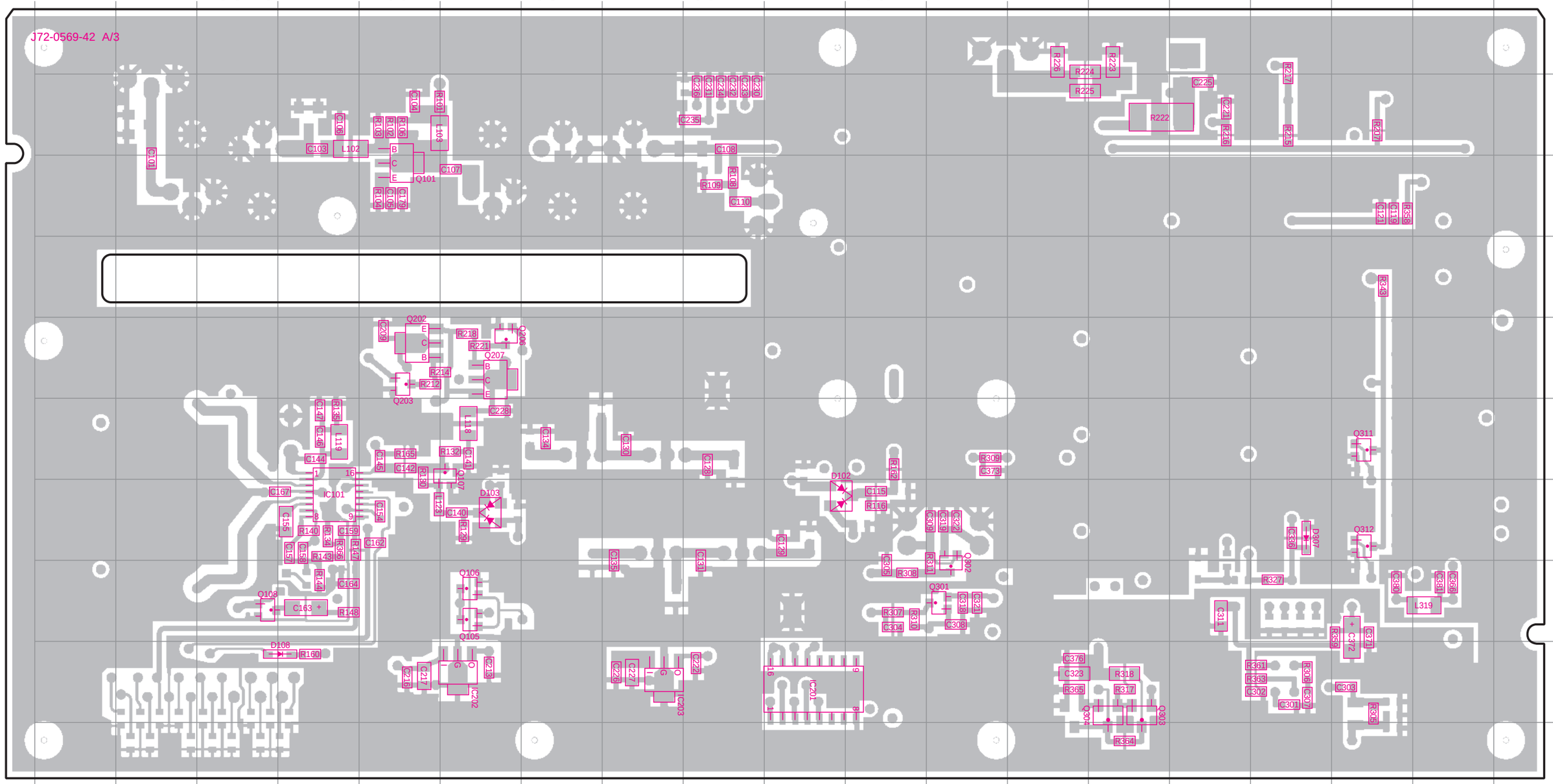
TX-RX UNIT (X57-5620-XX) (A/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) Component side view



Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC301	10D	Q205	2E	Q313	7B	D301	8F
Q102	6I	Q305	8D	Q314	6B	D302	6F
Q103	4C	Q306	5D	Q315	9B	D303	7F
Q104	4E	Q307	6D	D104	7R	D304	8F
Q109	9P	Q308	8C	D105	9R	D305	5F
Q201	2B	Q309	6C	D107	9P	D306	6F
Q204	2D	Q310	7C	D201	3E	D308	4B

Component side
Pattern 1
Pattern 2
Pattern 3
Pattern 4
Foil side

TX-RX UNIT (X57-5620-XX) (A/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) Foil side view

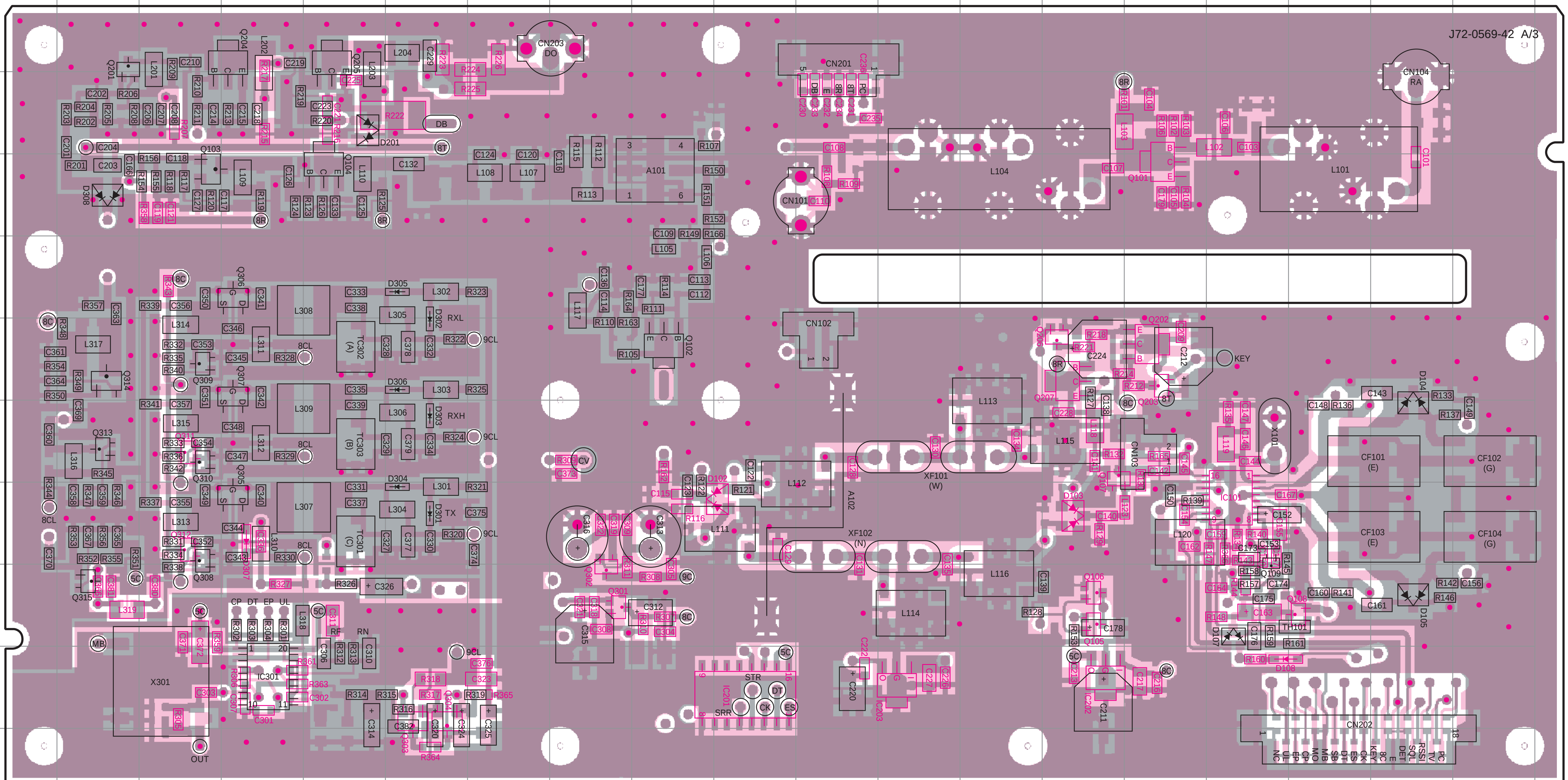


Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC101	8D	Q107	7F	Q302	9L	D108	10D
IC201	10J	Q108	9C	Q303	10N	D307	8P
IC202	10F	Q202	6E	Q304	10N		
IC203	10H	Q203	6E	Q311	7Q		
Q101	4E	Q206	6F	Q312	8Q		
Q105	9F	Q207	6F	D102	8J		
Q106	9F	Q301	9L	D103	8F		

Component side
Pattern 1
Pattern 2
Pattern 3
Pattern 4
Foil side

TK-890/(B)/H(B) PC BOARD VIEW

TX-RX UNIT (X57-5620-XX) (A/3) -10 : TK-890/(B) K -11 : TK-890(B) K2 -12 : TK-890(B) K3 -13 : TK-890H(B) Component side view + Foil side



Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address	Ref No.	Address
IC101	8P	Q103	4C	Q201	2B	Q301	9H	Q308	8C	Q315	9B	D201	3E	D307	8D
IC201	10J	Q104	4E	Q202	6O	Q302	9H	Q309	6C	D102	8J	D301	8F	D308	4B
IC202	10N	Q105	9N	Q203	6O	Q303	10F	Q310	7C	D103	8N	D302	6F		
IC203	10L	Q106	9N	Q204	2D	Q304	10F	Q311	7C	D104	7R	D303	7F		
IC301	10D	Q107	7N	Q205	2E	Q305	8D	Q312	8C	D105	9R	D304	8F		
Q101	4O	Q108	9Q	Q206	6N	Q306	5D	Q313	7B	D107	9P	D305	5F		
Q102	6I	Q109	9P	Q207	6N	Q307	6D	Q314	6B	D108	10P	D306	6F		

Component side

Pattern 1

Pattern 2

Pattern 3

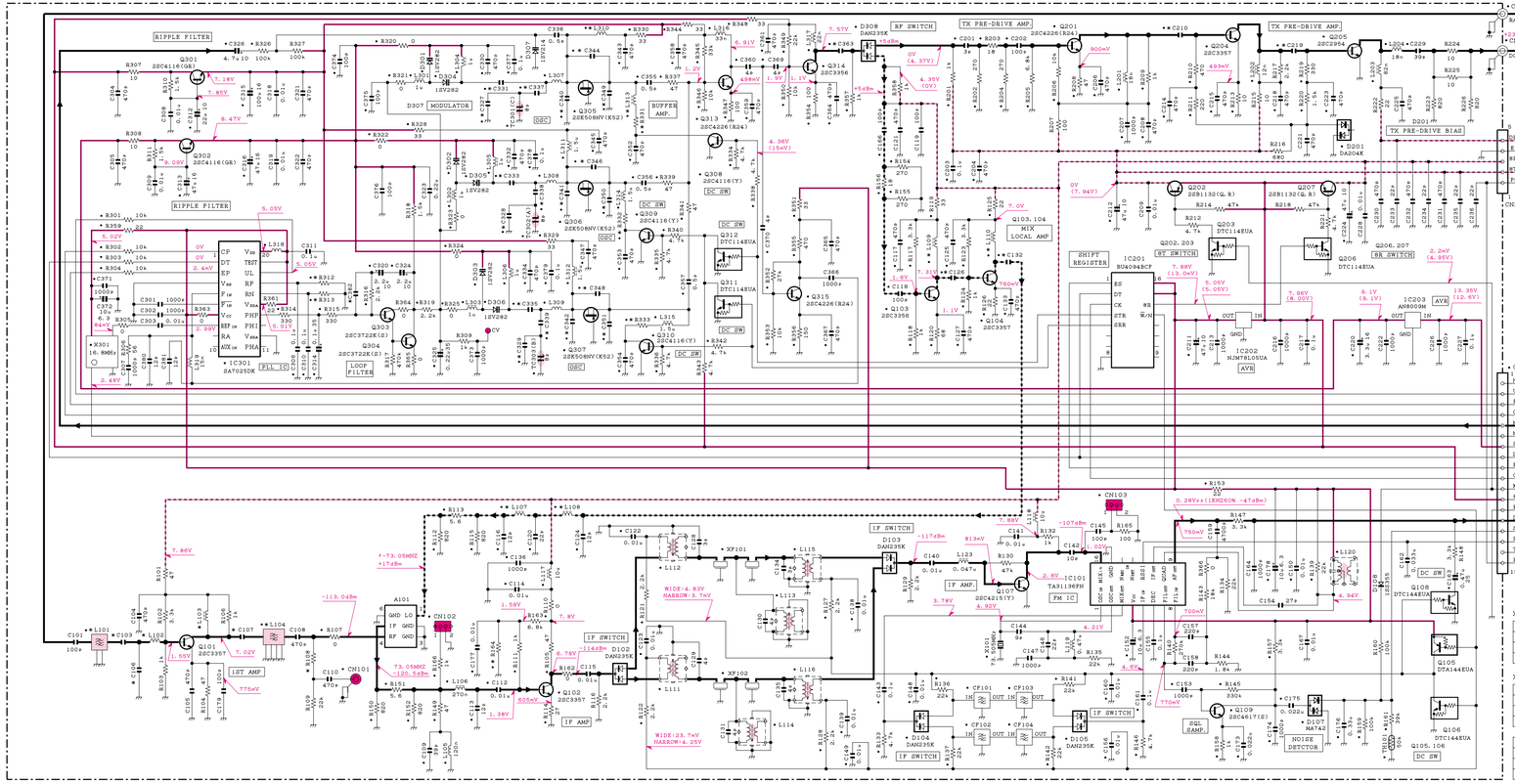
Pattern 4

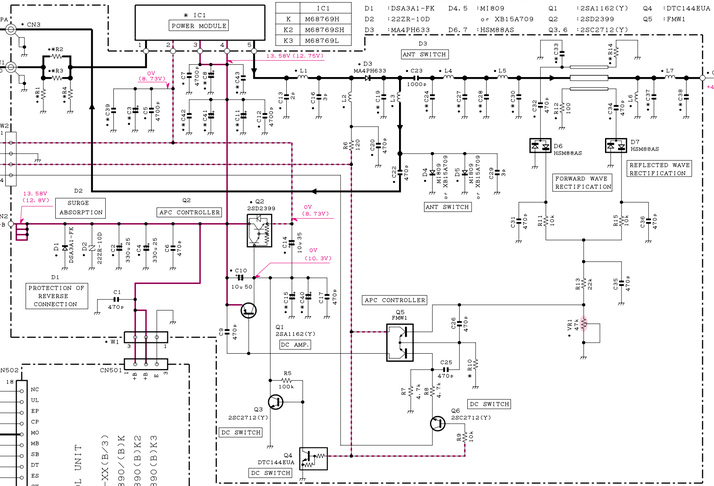
Foil side

● Connect 1 and 4

Note : Components marked with a dot (·) are parts of pattern 1.

TX-RX UNIT (X57-5620-XX)(A/3) -10:TK-890/(B)K -11:TK-890(B)K2 -12:TK-890(B)K3





IC1	
K	M68769H
K2	M68769SH
K3	M68769L

D1 :DSA9A1-FK D4.5 :M1809 Q1 :2SA1162(Y) Q4 :DTC144EUA
D2 :222R-10D o:r XB15A709 Q2 :2SD2399 Q5 :FMW1
D3 :MA4PH633 D6,7 :HSM88AS Q3,6 :2SC2712(Y)

X57-5620-XX(A/3)

D102-105	:DAN235K	Q101,102,104,204	:2SC3357	Q305-307	:2SK508NV(K52)
D107	:MA742	Q103,314	:2SC3356	Q308-310	:2SC4116(Y)
D108	:IS2355	Q105	:DTA144EUA		
D201	:DA204K	Q106,108	:DTC144EUA	IC101	:TA31136FN
D301-306	:1SV282	Q107	:2SC4215(Y)	IC201	:BU4094BCF
D307	:1SV214	Q109	:2SC4617(S)	IC202	:NJM78L05UA
D308	:DAN235K	Q201,313,315	:2SC4226(R24)	IC203	:AN8009M
		Q202,207	:2SB1132(Q,R)	IC301	:SA7025DK
		Q203,206,311,312	:DTC114EUA		
		Q205	:2SC2954		
		Q301,302	:2SC4116(GR)		
		Q303,304	:2SC3722K(G)		

X57-5620-XX(C/3)

USE FOR		C3	C8	C11	C15	C19	C24	C27	C28	C30	C33	C37	C38	C39	C40	C41	C42	C43	R1	R2	R3	R4	R10	R14
X57-5620-10	TK-890/(B)	K	10±3S	10±3S	10±3S	100±2S	4p	4p	5p	5p	5p	7p	5p	5p	NO	NO	NO	NO	NO	NO	0	NO	NO	33Ω	10Ω
X57-5620-11	TK-890/(B)	K2	10±3S	10±3S	10±3S	100±2S	3p	4p	3p	5p	4p	5p	5p	5p	NO	NO	NO	NO	NO	820	10	10	820	1k	100
X57-5620-12	TK-890/(B)	K3	NO	NO	NO	NO	5p	6p	7p	7p	6p	9p	6p	7p	22±20	100±2S	22±20	0.01u	0.01u	820	10	10	820	330	82

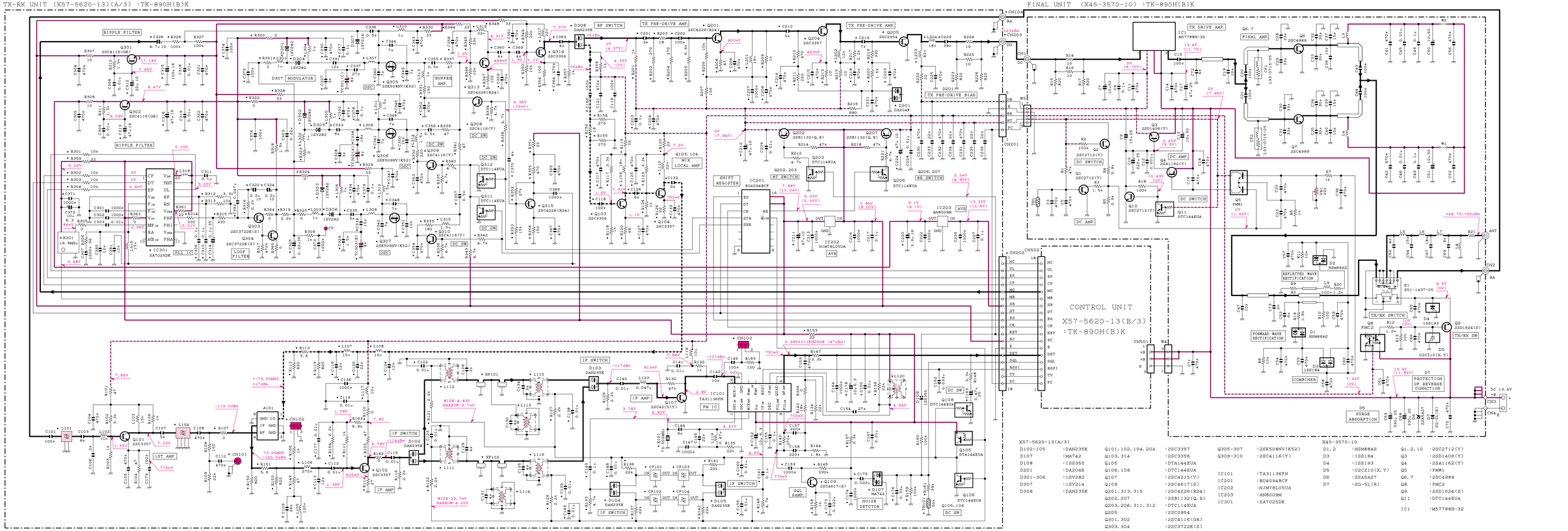
X57-5620-XX(A/3)

USE FOR		L101	L102	L103	L104	L107	L108	L109	L110	L310	L313	C103	C106	C107	C126	C132	C210	C219	C327	C328	C329	C331
X57-5620-10	TK-890/(B)	K	L79-1530-05	10n	15n	L79-1533-05	15n	15n	18n	22n	1.0u	1.0u	8s	2s	5s	6s	9s	5s	7s	3s	3s	1.5s	12s
X57-5620-11	TK-890/(B)	K2	L79-1531-05	10n	15n	L79-1534-05	12n	12n	18n	18n	1.0u	1.0u	7s	3s	5s	5s	6s	4s	5s	2s	1.5s	1s	10s
X57-5620-12	TK-890/(B)	K3	L79-1532-05	15n	18n	L79-1535-05	18n	18n	22n	27n	1.5u	1.5u	9s	3s	6s	6s	6s	6s	5s	7s	10s	5s	2s	22s

USE FOR		C333	C335	C337	C338	C339	C340	C341	C342	C344	C346	C348	C349	C350	C351	C363	C382	R108	R164	R312	R313	R331	R332	R333
X57-5620-10	TK-890/(B)	K	6s	5s	27s	18s	15s	7s	7s	7s	7s	7s	7s	7s	10s	10s	4s	0.047u	150	2.2k	3.3k	10k	150	220	180
X57-5620-11	TK-890/(B)	K2	5s	4s	22s	15s	10s	6s	7s	7s	6s	7s	7s	6s	10s	10s	4s	0.022u	820	1.8k	3.3k	10k	180	180	150
X57-5620-12	TK-890/(B)	K3	10s	9s	47s	47s	27s	7s	9s	9s	7s	9s	9s	7s	12s	12s	10s	0.018u	820	1.8k	1k	5.6k	180	270	220

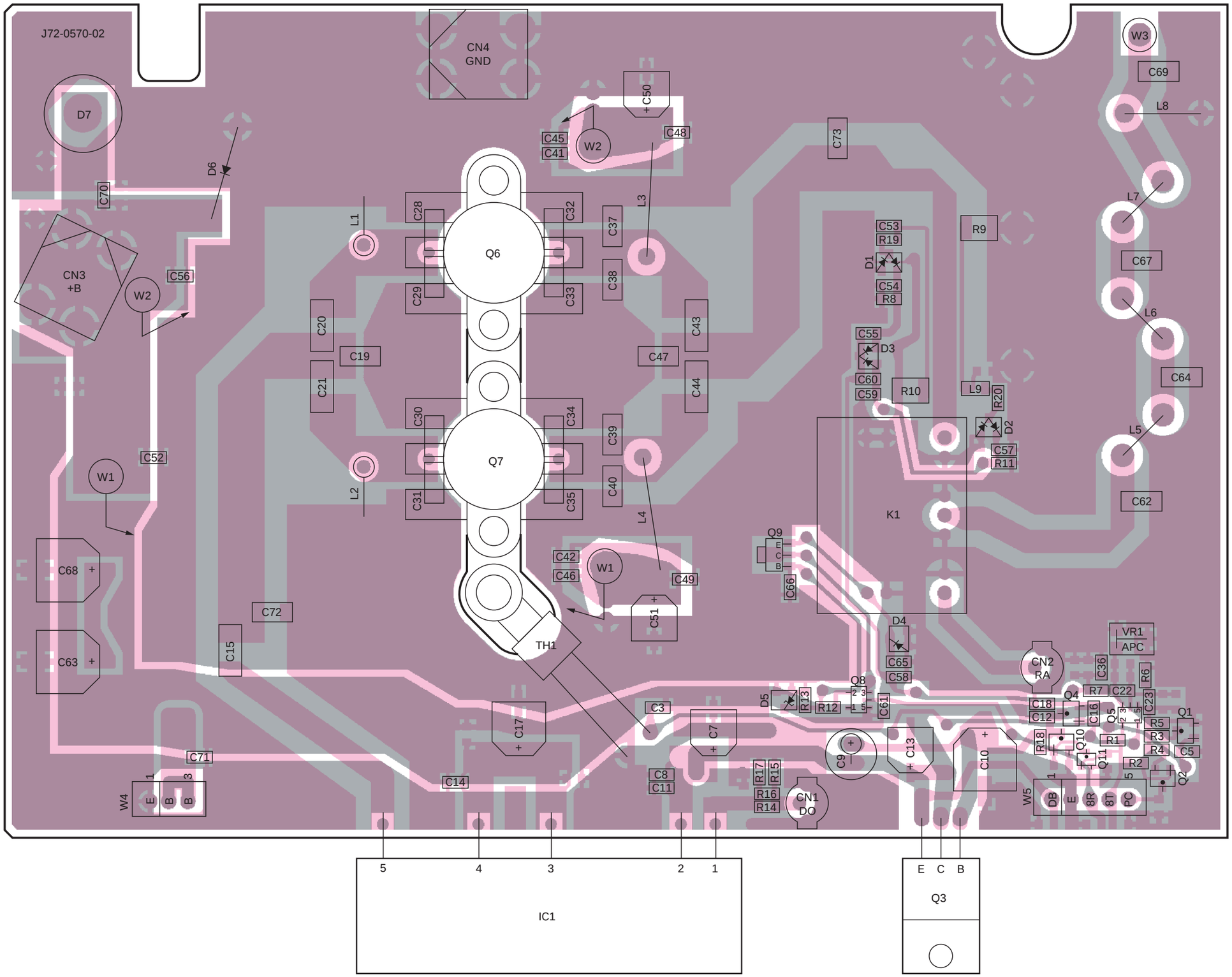
TK-890H(B) CIRCUIT DIAGRAM

Note : Components marked with a dot (·) are parts of pattern 1.



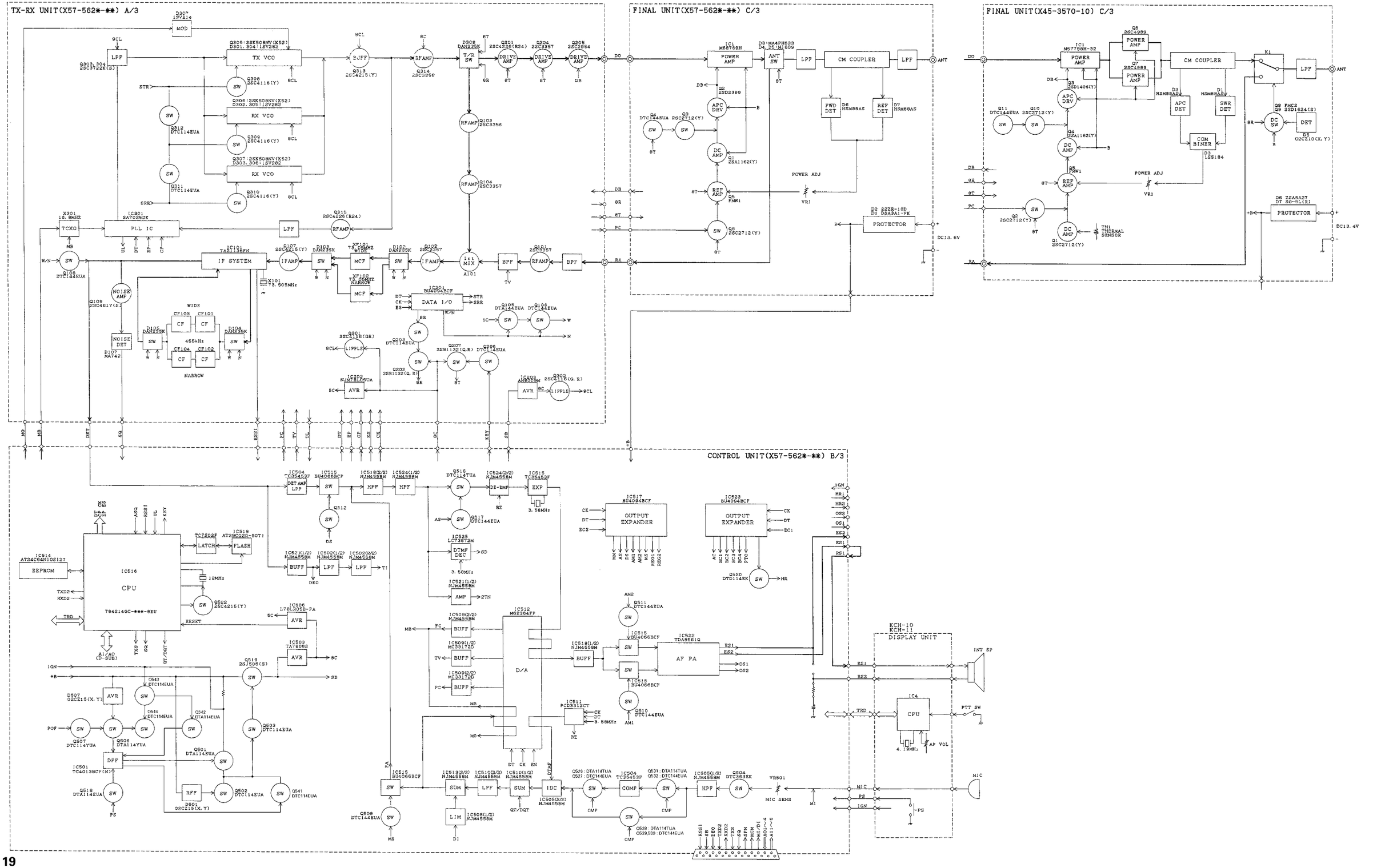
X57-5620-13(A/3)				X45-3570-10			
D102-105	:DAN235K	Q101,102,104,204	:2SC3357	D1,2	:HSM88AS	Q1,2,10	:2SC2712(Y)
D107	:MA742	Q103,314	:2SC3356	D3	:1SS184	Q3	:2SD1406(Y)
D108	:1SS355	Q105	:DTA144EUA	D4	:1SS193	Q4	:2SA1162(Y)
D201	:DA204K	Q106,108	:DTC144EUA	D5	:02CZ10(X,Y)	Q5	:FM#1
D301-306	:1SV282	Q107	:2SC4215(Y)	D6	:ZSA5A27	Q6,7	:2SC4989
D307	:1SV214	Q109	:2SC4617(S)	D7	:EG-5L(R)	Q8	:FMC2
D308	:DAN235K	Q201,313,315	:2SC4226(R24)			Q9	:2SD1624(S)
		Q202,207	:2SB1132(Q,R)			Q11	:DTC144EUA
		Q203,206,311,312	:DTC114EUA			IC1	:M57788H-32
		Q205	:2SC2954				
		Q301,302	:2SC4116(GR)				
		Q303,304	:2SC3722K(S)				
		Q305-307	:2SK508NV(K52)				
		Q308-310	:2SC4116(Y)				
		IC101	:TA31136FN				
		IC201	:BU4094BCF				
		IC202	:NJM78L05UA				
		IC203	:AN8009M				
		IC301	:SA7025DK				

FINAL UNIT (X45-3570-10) Component side view : TK-890H(B)



Component side
Foil side

BLOCK DIAGRAM



SPECIFICATIONS

GENERAL

Frequency Range ..... TK-890 : 450 to 490MHz (K), 480 to 512MHz (K2), 403 to 430MHz (K3)
TK-890H : 450 to 480MHz (K)
Number of Channels ..... 160 channels
Channel Spacing ..... 25kHz (Wide) / 12.5kHz (Narrow)
Operating Voltage ..... TK-890 : 13.6V DC±15%, TK-890H : 13.4V DC±15% negative ground
Current Drain ..... 0.6A on standby
2.2A on receive
TK-890 : 12A, TK-890H : 28A on transmit
Duty Cycle ..... Transmit 20%
Frequency Stability ..... ±0.0002% (–30°C to +60°C)
Operating Temperature Range ..... –30°C to +60°C (–22°F to +140°F)
Dimensions & Weight ..... TK-890 : 7.01" (178mm) W x 2.36" (60mm) H x 7.68" (195mm) D, 5.06lbs (2.3kg)
7.01" (178mm) W x 2.36" (60mm) H x 8.98" (228mm) D, 5.72lbs (2.6kg) with KCH-10
TK-890H : 7.01" (178mm) W x 2.36" (60mm) H x 12.88" (327mm) D, 7.92lbs (3.6kg)

RECEIVER (Measurements made per EIA standard EIA/TIA-240-D)

Antenna Impedance 50Ω
Sensitivity ..... 12dB SINAD : 0.25μV, 20dB Quieting : 0.35μV
Selectivity ..... 85dB (Wide) / 77dB (Narrow)
Intermodulation ..... 80dB (Wide) / 75dB (Narrow)
Spurious and Image Rejection 90dB
Audio Output ..... 13W at 4Ω less than 5% distortion (12W at 4Ω less than 3% distortion)
Frequency Stability ..... ±0.0002% from –30°C to +60°C
Band Spread 20MHz

TRANSMITTER (Measurements made per EIA standard EIA-152-C)

RF Power Output ..... TK-890 : 40W adjustable to 5W
TK-890H : 100W (450 to 470MHz), 75W (470 to 480MHz) adjustable to 40W
Antenna Impedance 50Ω
Spurious Response 80dB
Type of Emission ..... 16K0F3E (Wide) / 11K0F3E (Narrow)
FM Hum and Noise ..... 50dB (Wide) / 44dB (Narrow)
Microphone Impedance 600Ω
Audio Distortion ..... Less than 2% at 1000Hz
Band Spread ..... TK-890 : 40MHz (K), 32MHz (K2), 27MHz (K3) TK-890H : 30MHz

KENWOOD follows a policy of continous advancement in development. For this reason, specifications may be changed without notice.

APPLICABLE (MIL-STD)

Military Standard	Method/Procedures		
	810C	810D	810E
Low Pressure	500.1/Procedure I	500.2/Procedure I, II	500.3/Procedure I, II
High temperature	501.1/Procedure I, II	501.2/Procedure I, II Cat, A1	501.3/Procedure I, II Cat, A1
Low Temperature	502.1/Procedure I	502.2/Procedure I, II Cat, C1	502.3/Procedure I, II Cat, C1
Temperature Shock	503.1/Procedure I	503.2/Procedure I Cat, A1,C1	503.3/Procedure I Cat, A1,C1
Solar Radiation	505.1/Procedure I	505.2/Procedure I	505.3/Procedure I
Rain (Procedure I : Control head only)	506.1/Procedure I, II	506.2/Procedure I, II	506.3/Procedure I, II
Humidity	507.1/Procedure II	507.2/Procedure II	507.3/Procedure II
Salt Fog	509.1/Procedure I	509.2/Procedure I	509.3/Procedure I
Dust	510.1/Procedure I	510.2/Procedure I	510.3/Procedure I
Vibration	514.2/Procedure VIII, X	514.3/Procedure I Cat, 8	514.4/Procedure I Cat, 8
Shock	516.2/Procedure I, II, V	516.3/Procedure I, IV	516.4/Procedure I, IV

TK-890/(B)/H(B)

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