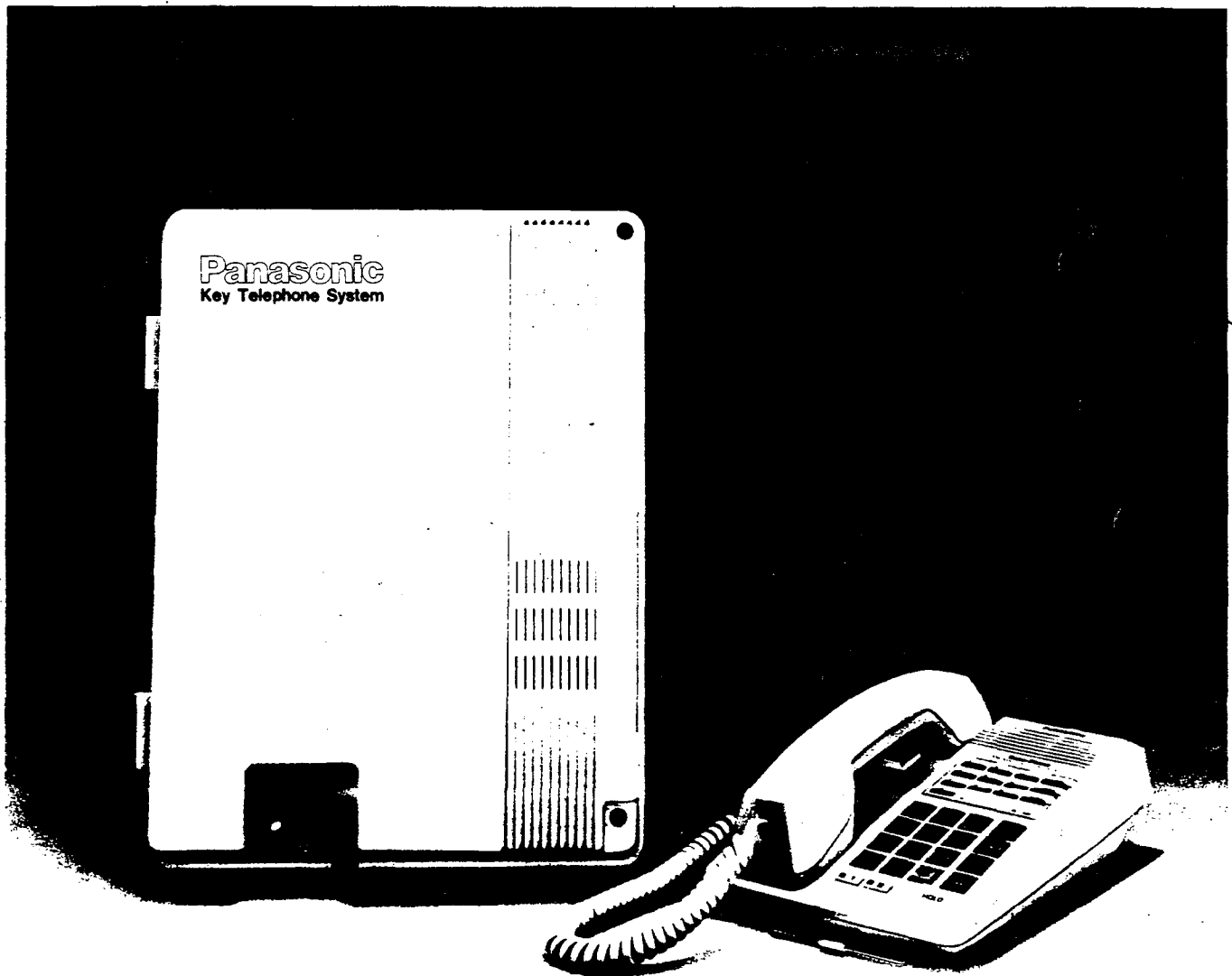


Installation Manual

Easa-Phone™
Key Telephone System

VA-208



Panasonic

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CONTENTS

1.	HOW TO FOLLOW THE INSTALLATION PROCEDURE	1
2.	PACKING MATERIALS AND EXPLODED VIEW	2
2.1	PACKING MATERIALS (KEY SERVICE UNIT)	2
2.2	PACKING MATERIALS (KEY TELEPHONE)	3
2.3	EXPLODED VIEW (KEY SERVICE UNIT)	4
2.4	EXPLODED VIEW (KEY TELEPHONE)	5
3.	SYSTEM CONNECTION LAYOUT	6
4.	SYSTEM CAPACITY AND SPECIFICATIONS	7
5.	MODELS AND SYSTEM CONFIGURATION	8
6.	INSTALLATION OF KEY SERVICE UNIT	9
6.1	PAD ADJUSTMENT AND EXPLANATIONS ON FUSES	9
6.2	CLAMPING OF INSTALLATION WIRING CABLES, AND INSTALLATION AND CONNECTION OF BACKUP BATTERY UNIT (VA-20864)	10
6.3	HOW TO MOUNT THE MAIN UNIT ON THE WALL	11
7.	INSTALLATION OF KEY TELEPHONE	12
7.1	VOLUME ADJUSTMENT	12
7.2	HOW TO MOUNT THE KEY TELEPHONE ON THE WALL	12
8.	WIRING CONNECTION OF EQUIPMENTS	14
8.1	CONNECTION OF KEY SERVICE UNIT AND KEY TELEPHONE	14
8.2	INSTALLATION AND CONNECTION OF EXTENSION EC UNIT	18
8.3	INSTALLATION AND CONNECTION OF DOORPHONE ADAPTOR (VA-20860)	20
8.4	CONNECTION OF EXTERNAL HOLD-ON MUSIC	22
8.5	INSTALLATION OF EXTERNAL PAGING EQUIPMENT	23

PROGRAMMING	24
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1.	EXPLANATION OF PROGRAMMING	25
2.	GENERAL OPERATIONAL PROCEDURES	26
3.	PROGRAMMING SETTINGS	29

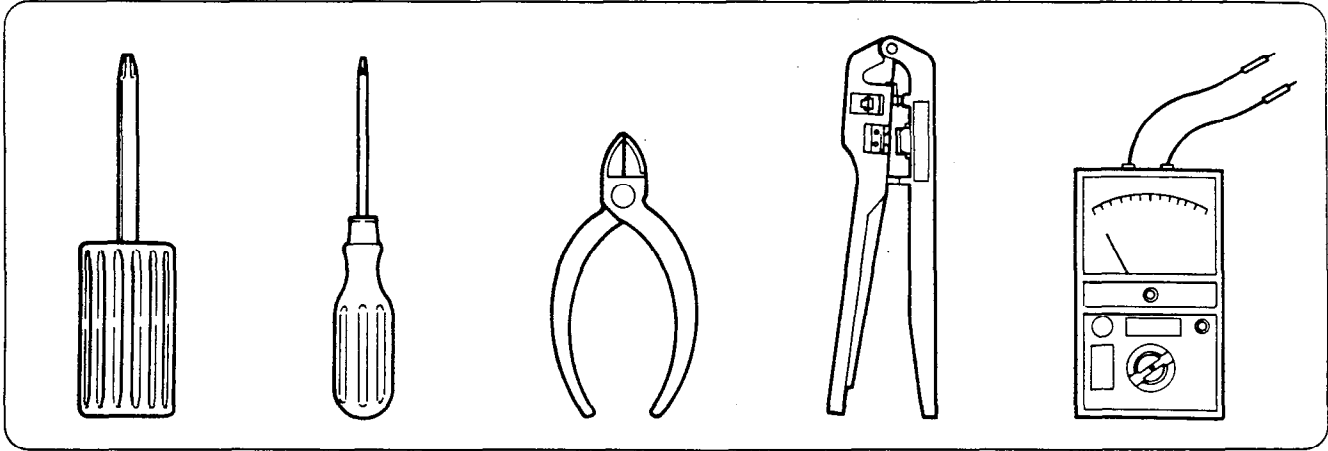
APPENDIX A

PROGRAMMING TABLE FOR INITIAL SET

1. HOW TO FOLLOW THE INSTALLATION PROCEDURE

Please carry out the installation according to page order.

- Perform each installation task in the order of 1, 2, 3, and so on, please use the following tools.



HOW TO FOLLOW THE INSTALLATION PROCEDURE

Unpack the equipment. Check the parts according to the Packing Materials.
See Page 2, 3.

Perform installation work and adjustment of the Key Service Unit interior.
See Page 9.

Perform installation work and adjustment of the key telephone.
See Page 12.

Perform installation and connection of the optional parts required.
See Page 18.

Now, the installation is completed.

Perform programming in accordance with the features required.
See Page 24.

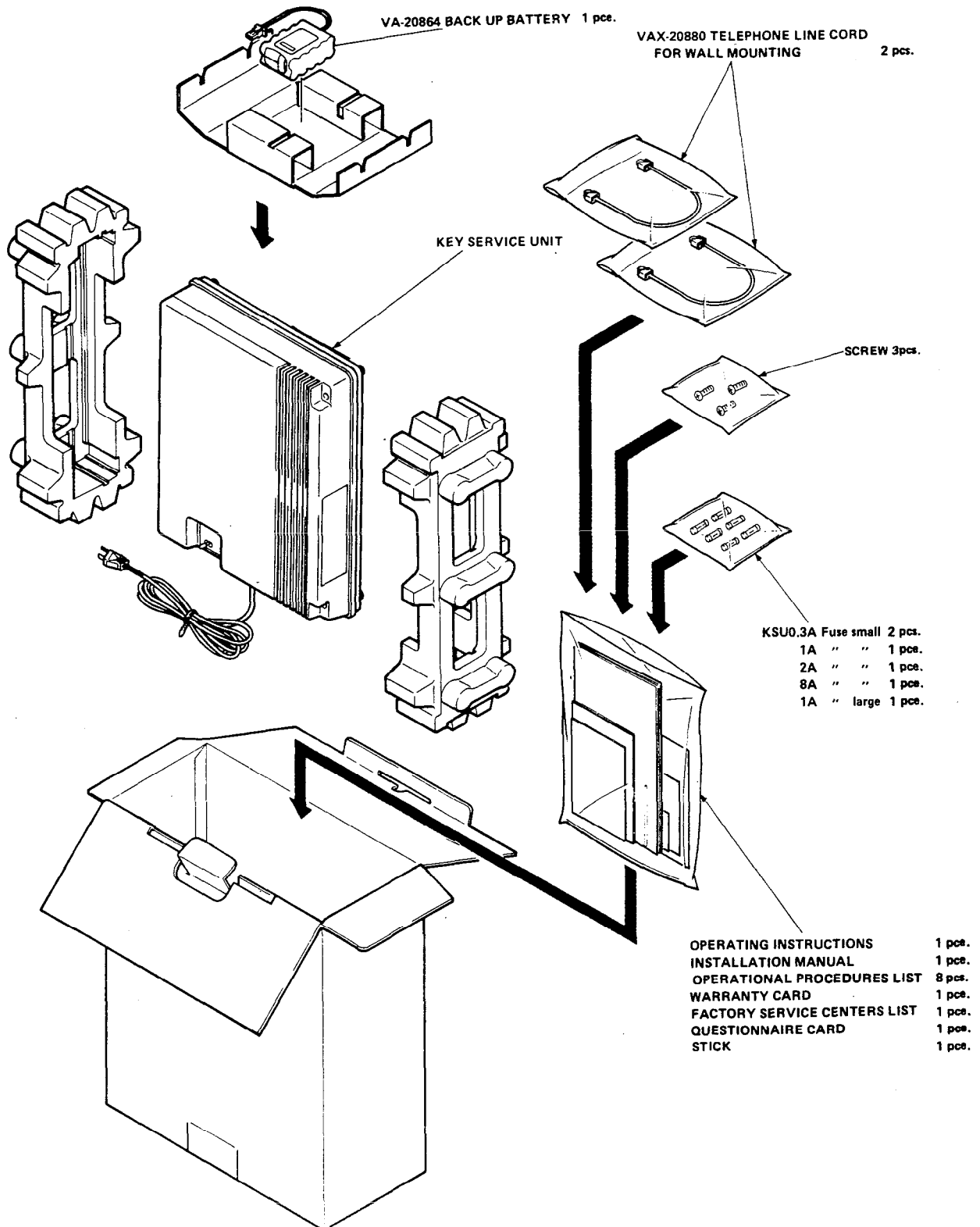
Now, everything is finished.



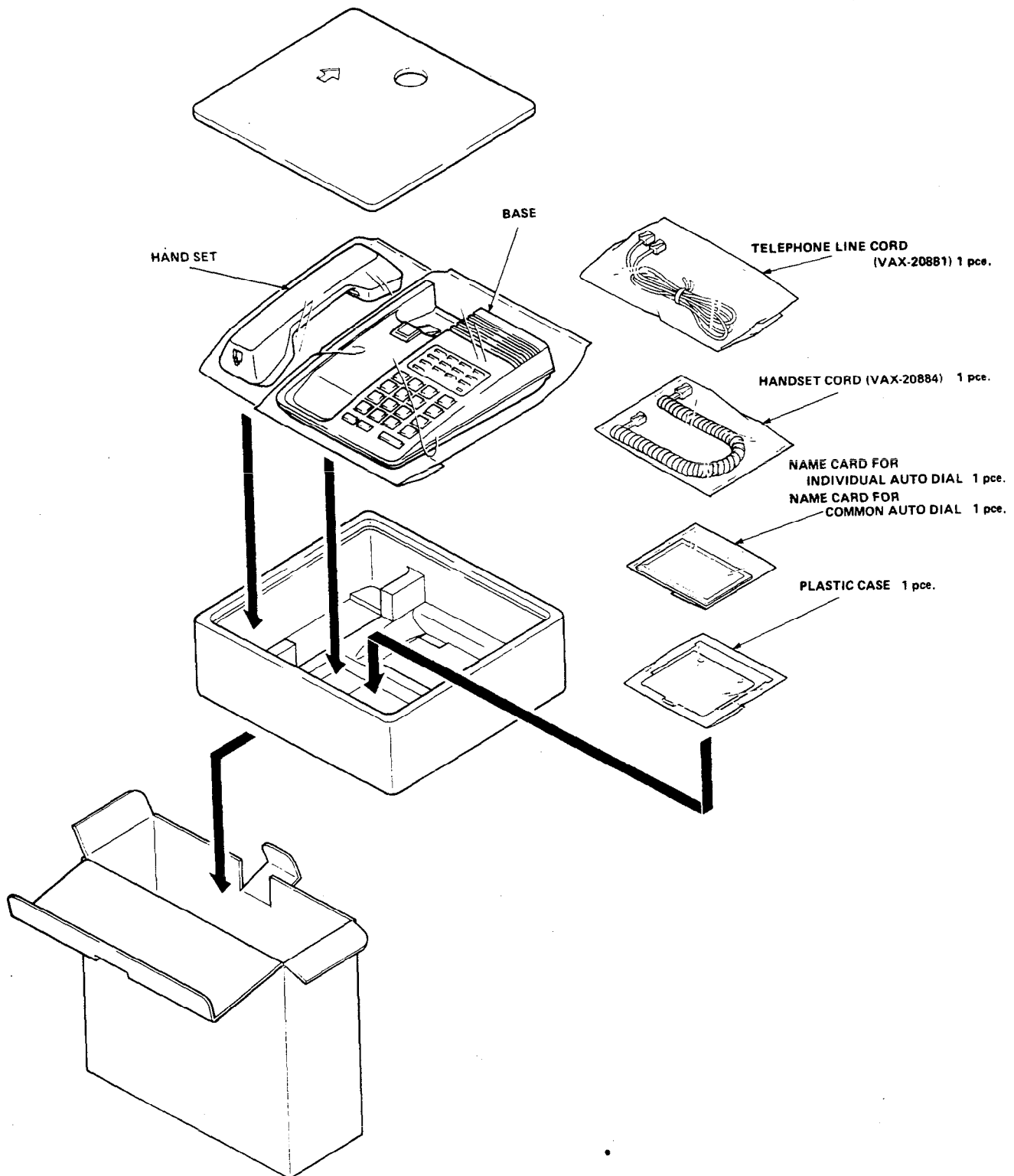
2. PACKING MATERIALS AND EXPLODED VIEW

2.1 PACKING MATERIALS (KEY SERVICE UNIT)

These are the packing materials for each section. Check them for any missing parts.



2.2 PACKING MATERIALS (KEY TELEPHONE)



2.3 EXPLODED VIEW (KEY SERVICE UNIT)

Names of each part of Key Service Unit

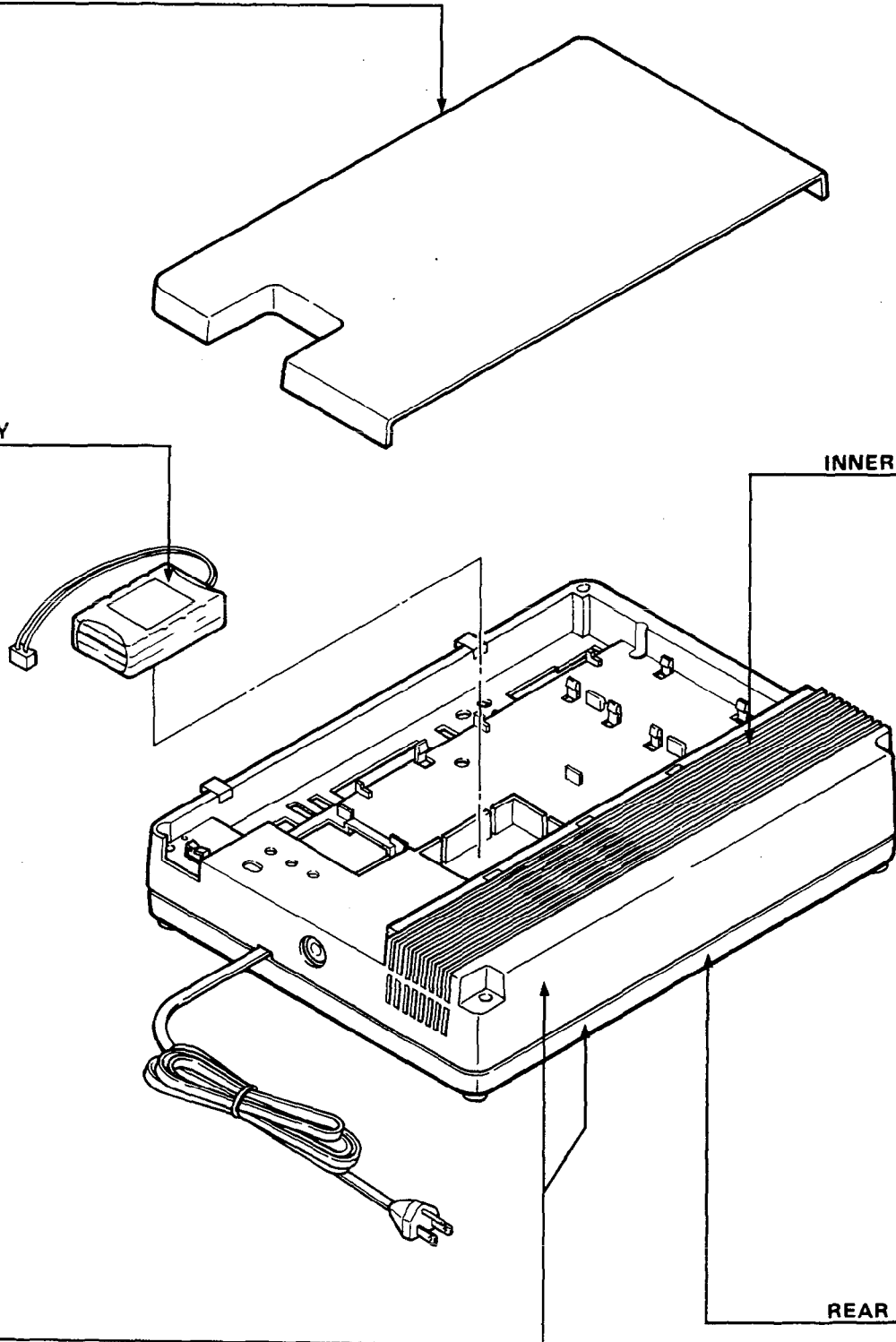
FRONT COVER

BACK UP BATTERY

INNER COVER

MAIN BODY

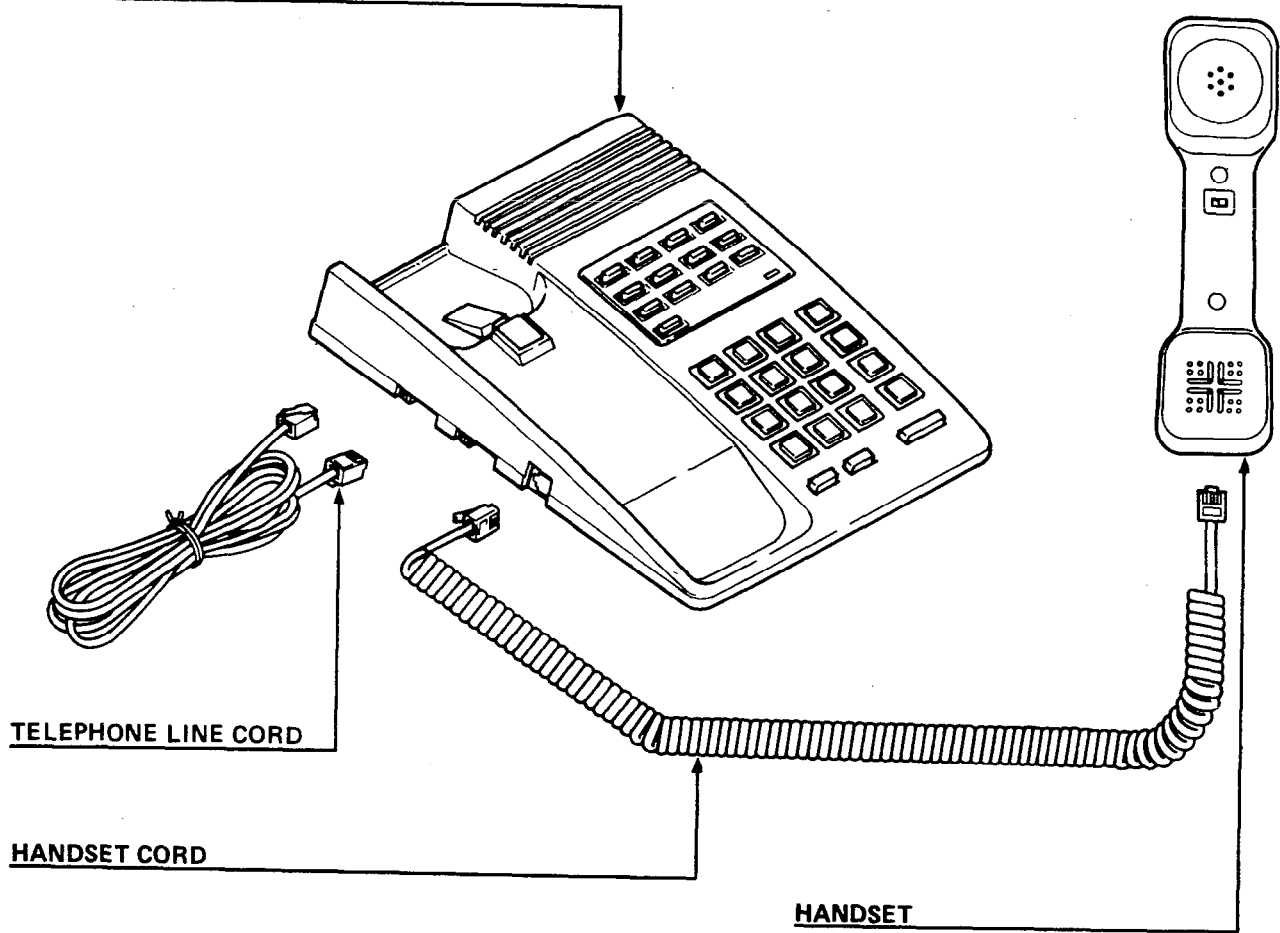
REAR COVER



2.4 EXPLODED VIEW (KEY TELEPHONE)

Names of each part of key telephone.

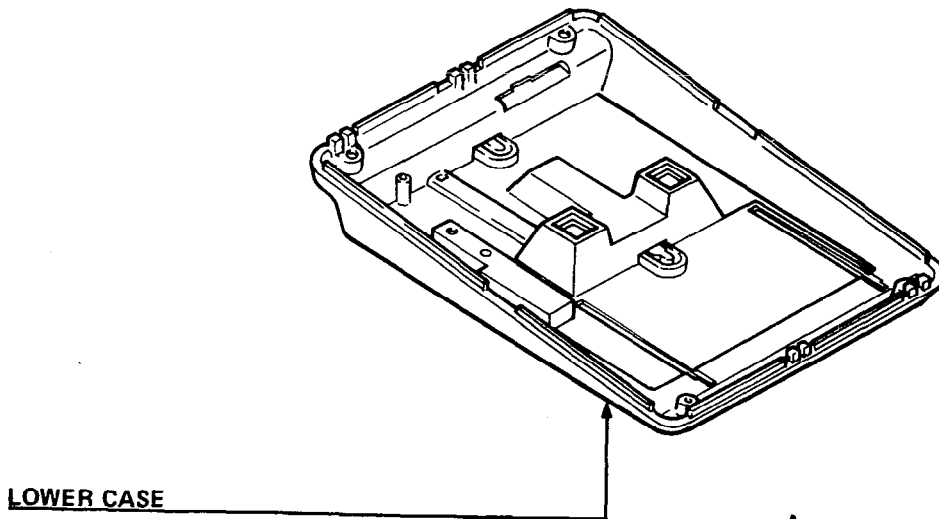
UPPER CASE



TELEPHONE LINE CORD

HANDSET CORD

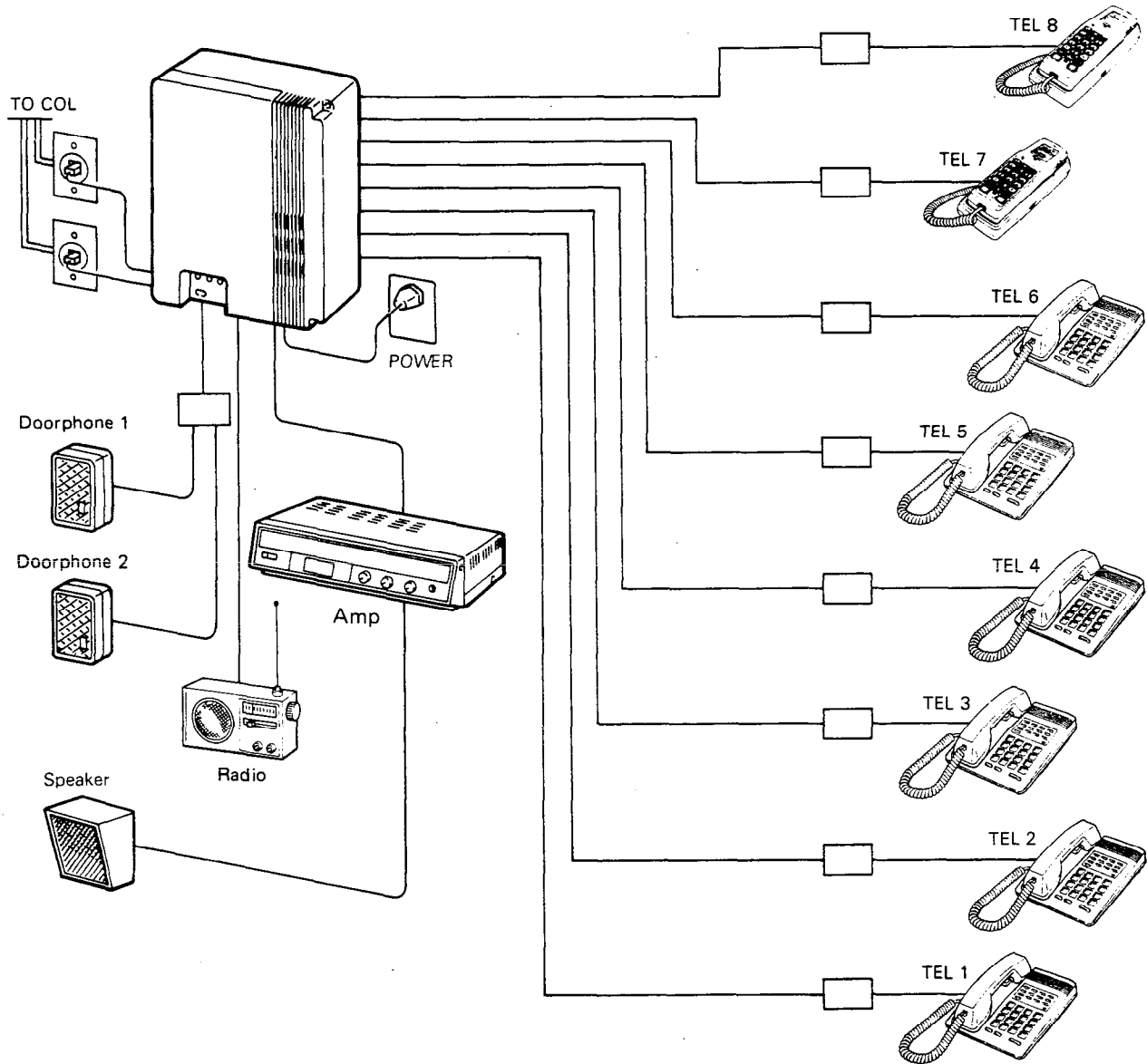
HANDSET



LOWER CASE

3. SYSTEM CONNECTION LAYOUT

This is the layout for a system with all optional parts fully connected.



NOTE:

- When installing a doorphone unit, connect the doorphone adaptor to the main printed circuit board in the key service unit. (See Page 20.)
- When installing TELs 5 through 8, connect an extension EC unit to the main printed circuit board in the key service unit. (See Page 18.)

4. SYSTEM CAPACITY AND SPECIFICATIONS

(1) System Capacity

COL capacity	2
Intercom speech path	2
Key telephone	8
Backup time by battery in power failure	About 30 minutes
System speed dial	
Individual memory	10
Common memory	90
Number of digits	16 digits included PBX access code
Redial	32 digits last dialed number

(2) Specifications

Dimension (inch) (Height x Width x Depth) and Weight (pound)	
Key Service Unit	14.1 x 10.5 x 3, 8
Key Telephone	3.9 x 6.1 x 8.3, 2.6
Power consumption (W)	
At standby	10
Maximum	30

Note: Specifications subject to change without notice.

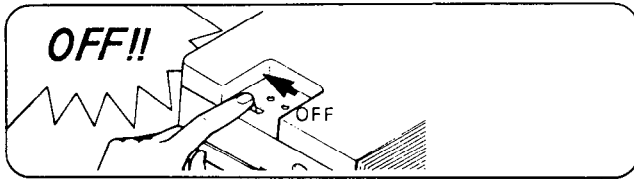
5. MODULES AND SYSTEM CONFIGURATION

	Model No.	Description	Q'ty System	Note
	VA-20800	Standard kit		KSU x 1. TEL x 4
KSU	VA-20810	Key Service Unit	1	For 4 key telephones with VA-20864
Back up battery	VA-20864	Sealed Ni-Cd Battery	1	Replace the battery after using 3 years
Key telephone	VA-20820	Key telephone	8	
	VA-20821	Key telephone with built in speakerphone		Max. 4 key telephones
Optional equipment	VA-20840	Extension Card	1	1 pce. for 4 key telephones
	VA-20841	Extension Card		1 pce. for 2 key telephones and 2 single line telephones
	VA-20860	Doorphone adaptor	1	1 pce. for 2 door units
	VA-20861	Door unit	2	
	VA-20862	Door unit		
	VA-20863	1-line extension bell	2	To be connected to the specified telephones in power failure
Installation material	VAX-20880	Wall-mount telephone line cord	—	
	VAX-20881	Telephone line cord (7 feet)	—	
	VAX-20882	Telephone line cord (16 feet)	—	
	VAX-20883	Telephone line cord (25 feet)	—	
	VAX-20884	Handset cord (7 feet)	—	
	VAX-20885	Handset cord (15 feet)	—	
	VAX-20886	4-pin connector	—	Modular screw terminal
	VAX-20887	Magnet for connector	—	Used when connector and extension bell is installed on metal surface
	VAX-20890	Name card for system speed dial	—	Fire, police indication and non-indication (each 5 cards)
	VAX-20891	Name card for system speed dial/Intercom	—	5 cards
	VAX-20892	Name card plastic cover	—	5 covers
	VAX-20893	Wall-mount adaptor	—	For VA-20821 only

- Notes:** 1. The above list shows composition of a system with full capacity.
 2. Mark "—" shows quantity of "as needed".

6. INSTALLATION OF KEY SERVICE UNIT

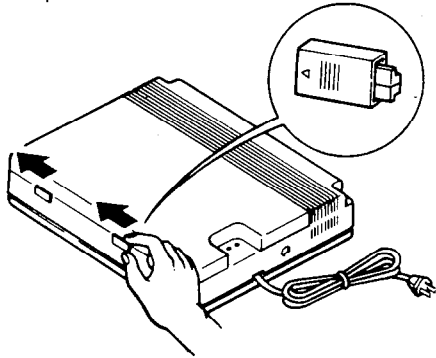
6.1 PAD ADJUSTMENT AND EXPLANATION ON FUSES



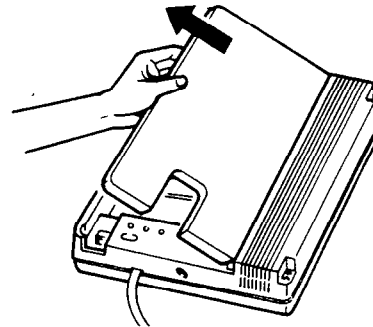
NOTE: PLEASE TURN OFF POWER SWITCH WITHOUT FAIL, BEFORE OPEN THE FRONT COVER

1. HOW TO DETACH FRONT COVER

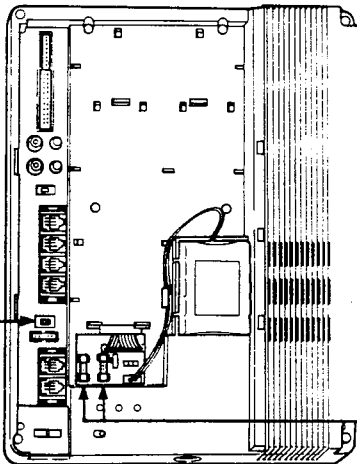
1 Push up the slide.



2 Open the cover and detach it from the main body.



CAUTION: TO AVOID ELECTRIC SHOCKS, NEVER OPEN THE INNER COVER.



2. PAD SELECTOR SWITCH

Set to "OFF" position

NOTE

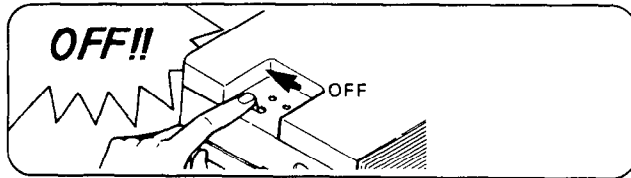
- Please use rated fuses only.
- When replacing fuse F5 and F6, detach by squeezing in the upper and lower surfaces of the plastic cover.

3. EXPLANATION ON FUSES

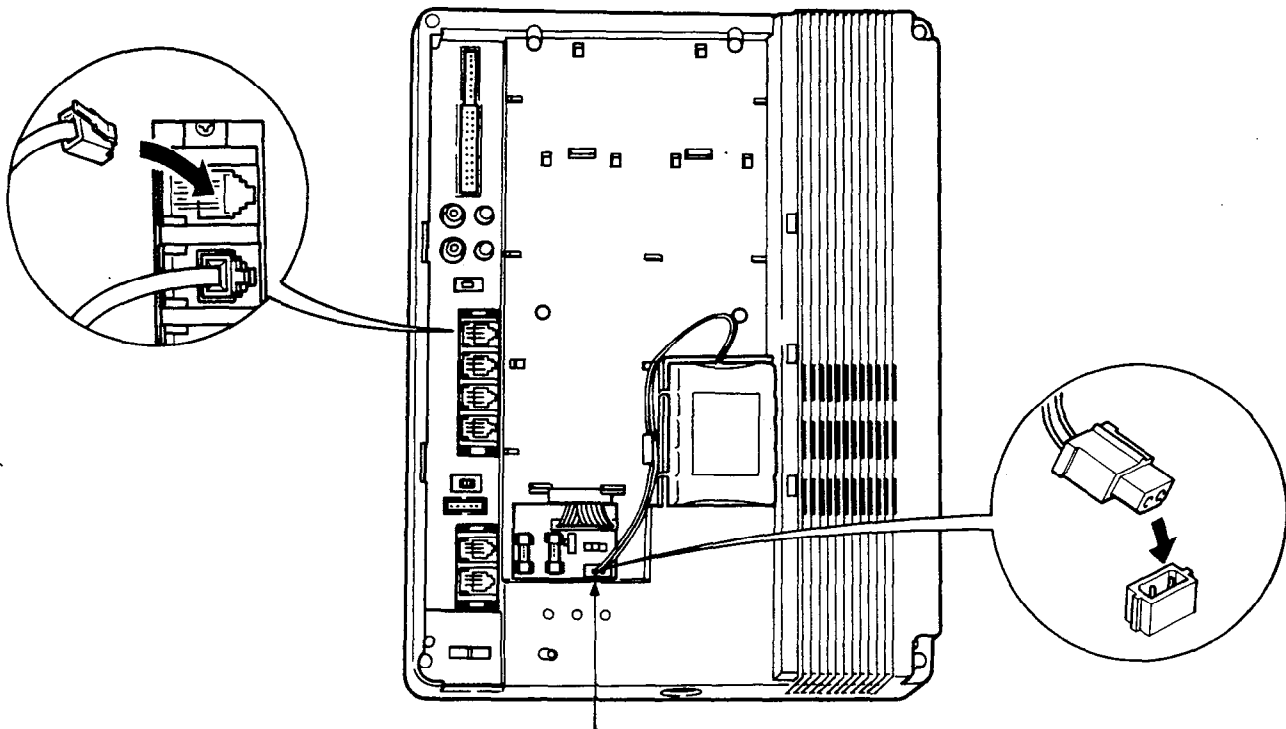
- F1 (1A) AC Power Fuse
F5 (0.3A) . . . Power Line Fuse for TELs 1 and 2
F6 (0.3A) . . . Power Line Fuse for TELs 3 and 4.
Please note that the following fuses are installed in the places beyond your access.
F2 (8A) AC Power Fuse
F3 (2A) DC12V Power Fuse
F4 (1A) for Ni-Cd back up battery

NOTE: Please use rated fuses only.

6.2 CLAMPING OF INSTALLATION WIRING CABLES, AND INSTALLATION AND CONNECTION OF BACKUP BATTERY UNIT (VA-20864).



NOTE: PLEASE TURN OFF POWER SWITCH WITHOUT FAIL, BEFORE INSTALLING THE BATTERY UNIT.



1. CLAMPING OF INSTALLATION WIRING CABLES

- 1 When performing the cable connections, provide enough extra cable for the key service unit. This is necessary for future checks.
- 2 Push in the cables from the top of the cable guide.

2. CONNECTION OF BACKUP BATTERY UNIT

- 1 Please turn off power switch before installing the battery unit.
- 2 Install the battery unit to the key service unit.

3. NOTE

- 1 Effective operating time by backup battery

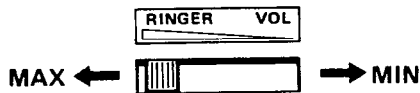
Part Number of Power Failure Backup Battery	Effective Operating Hours
VA-20864	Approx. 30 minutes
- 2 If there is a power failure of approximately 60 minutes or more, the battery will require 15 hours or so to recharge.
- 3 Replace the battery every 3 years or so.
- 4 Use a designated battery only.

7. INSTALLATION OF KEY TELEPHONE

7.1 VOLUME ADJUSTMENT

VOLUME ADJUSTMENT OF INCOMING RINGING TONE

Incoming Ringing Tone Adjusting Volume



ADJUSTMENT OF SPKR VOLUME

SPKR Volume Adjusting Volume



PHONE VOLUME SELECT SWITCH

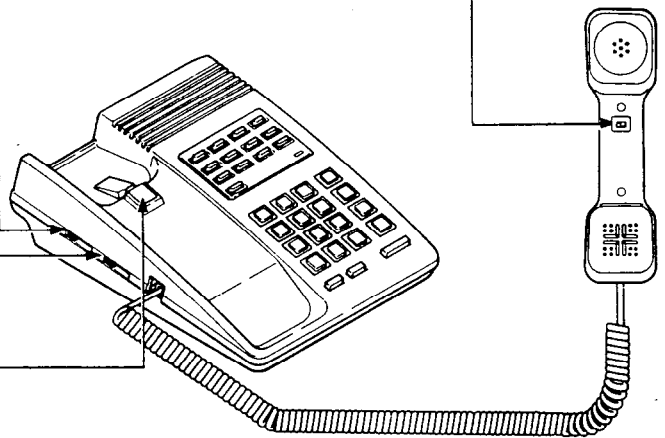
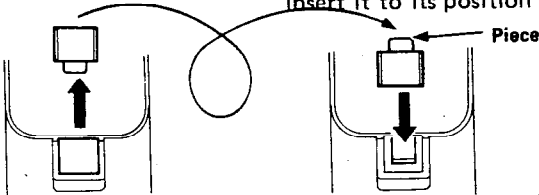
When the select switch is set to "H" side, the phone volume level is increased by approximately 6 dB.

7.2 HOW TO MOUNT THE KEY TELEPHONE ON THE WALL

When modular jack for a wall phone is installed on the wall, the key telephone can be mounted and used on the wall.

1 RE-INSERTION OF HANDSET GUIDE

- 1 Pull out the handset
- 2 Reverse the direction of the handset guide in the arrow and insert it to its position

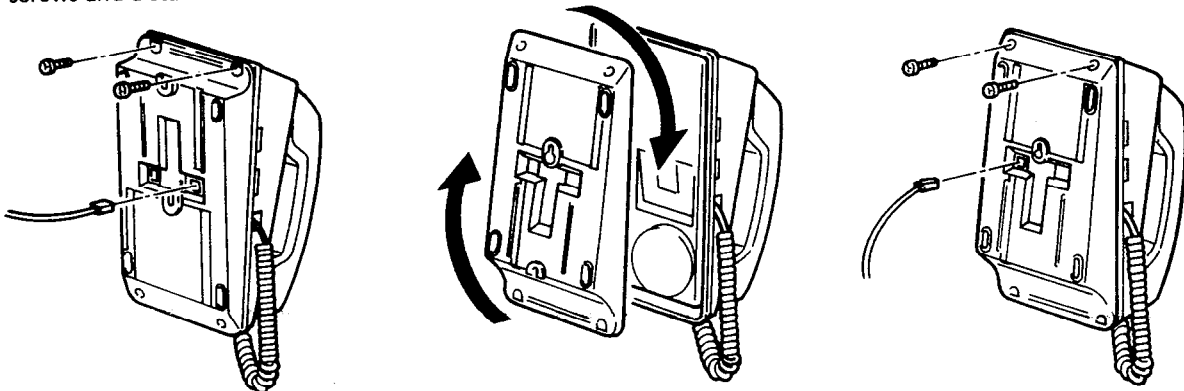


NOTE

The key telephone with a built-in speakerphone is installed with an exclusive adaptor, for on the wall installations.


2 REINSTALLATION OF THE LOWER CASE

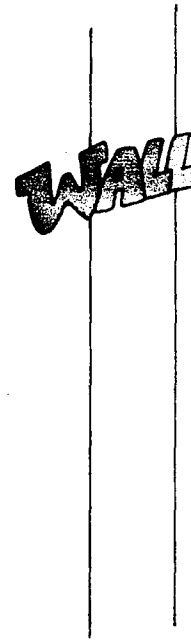
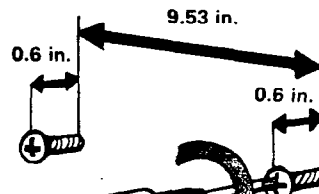
- 1 Remove and disconnect screws and a station cable.
- 2 Turn the lower case upside down.
- 3 Secure the lower case with the screws.



**6.3 HOW TO MOUNT THE KEY SERVICE UNIT ON THE WALL
(USE THE KEY SERVICE UNIT ONLY ON THE WALL.)**

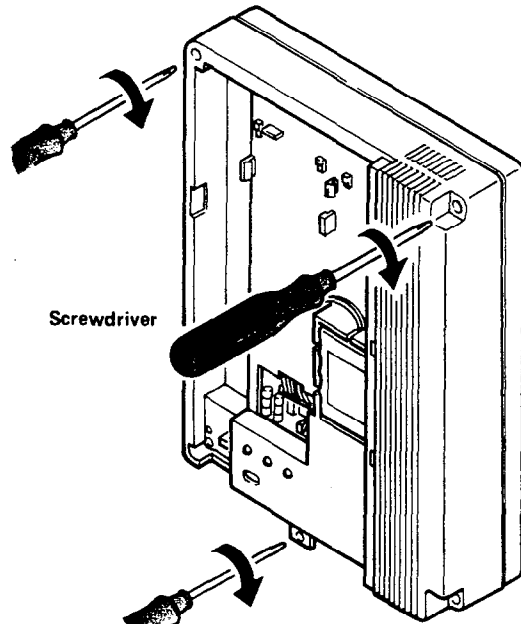
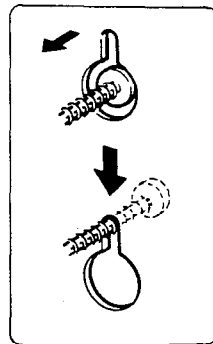
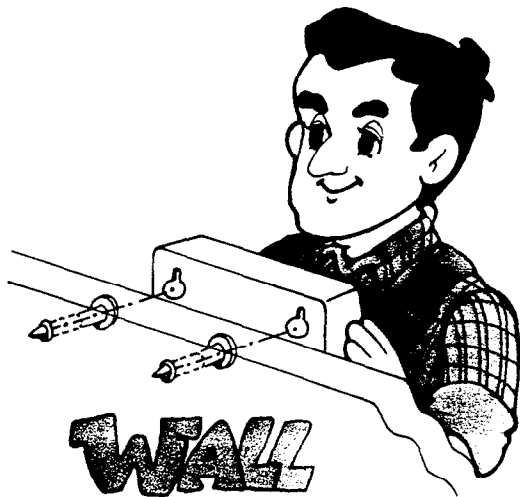
- (1) Detach the case cover of the key service unit.
Refer to 6.1.1.
- (2) Drill the wall according to the specified dimensions and install wood screws (0.16 in. in diameter) to the two places at the top. Leave each of the screw heads sticking out 0.6 in. or so.

NOTE
Use the mark  on this page for measurement.

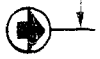
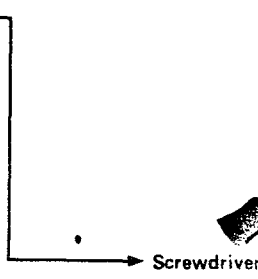


- (3)
 - 1 Insert the mounting screw heads into the two upper mounting holes on the case.
 - 2 Pull down the rear case.
 - 3 The screw heads will be visible at the front when the rear case is pulled down, then tighten the screws completely.

9.53 in

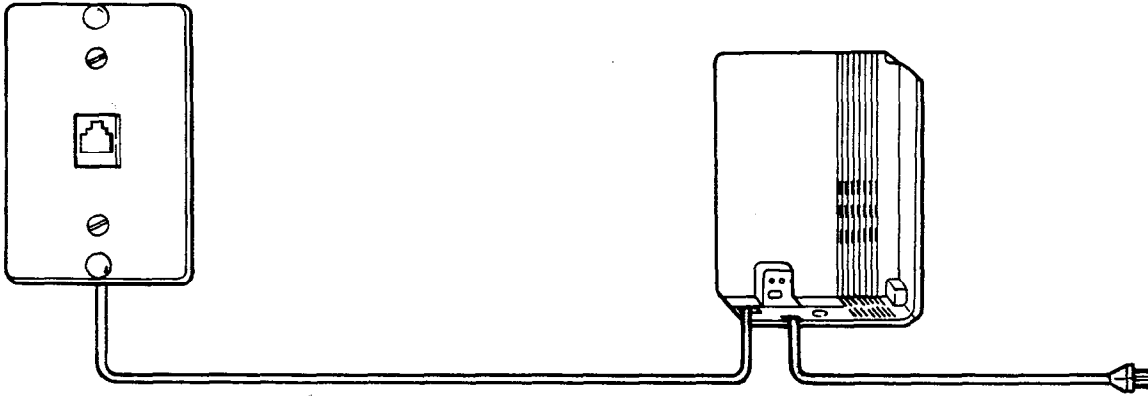


- (4) Install screws to the lower side.

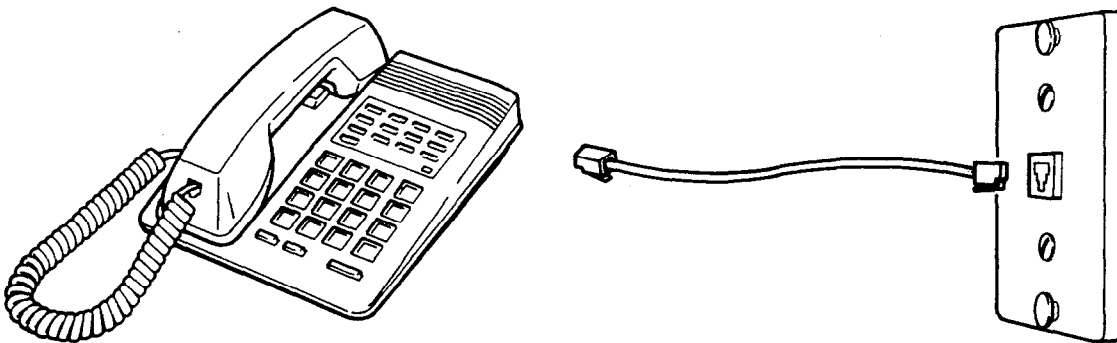


3 INSTALLATION ON THE WALL

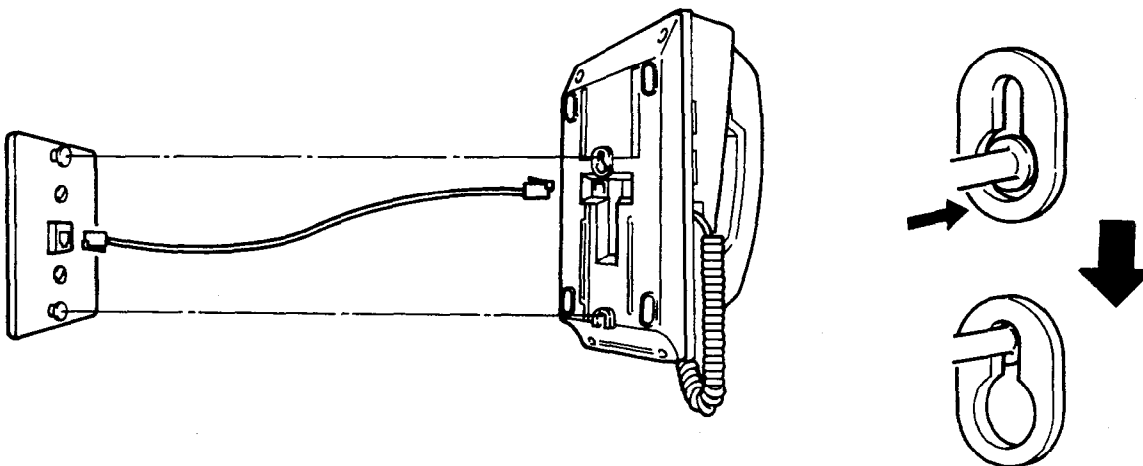
- 1 Connect the output cord from within the modular jack for a wall phone to the key service unit.



- 2 Using a short cord, connect the modular jack for a wall phone to the key telephone connector.

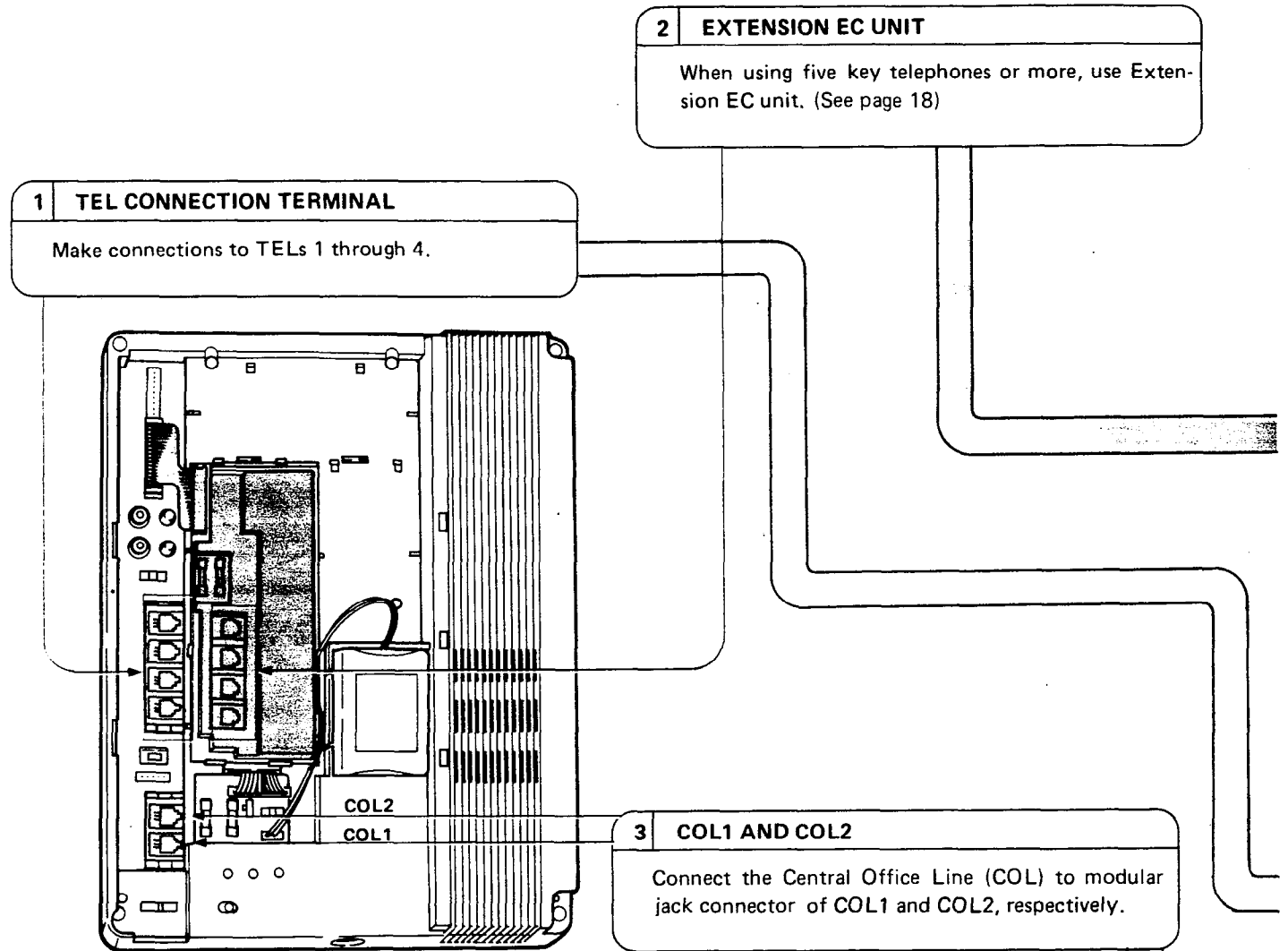


- 3 Mate the lower case hole to projection of modular jack for a wall phone.



8. WIRING CONNECTION OF EQUIPMENTS

8.1 CONNECTION OF KEY SERVICE UNIT AND KEY TELEPHONE

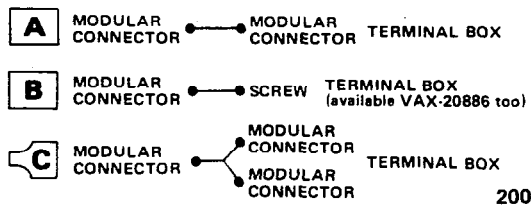


• For coupling of cable, either of following A, B and C can be used.

Terminal Box	TYPE	A	B	C
	Terminal	Modular • — • Modular	Modular • — • Screw	Modular • — • Modular
NOTE		Use this type when the quad cable and doorphone unit is connected.	Use this type when the extension bell is attached.	
COUPLING OF CABLE	Flat cable	Flat cable	Flat cable	Quad cable

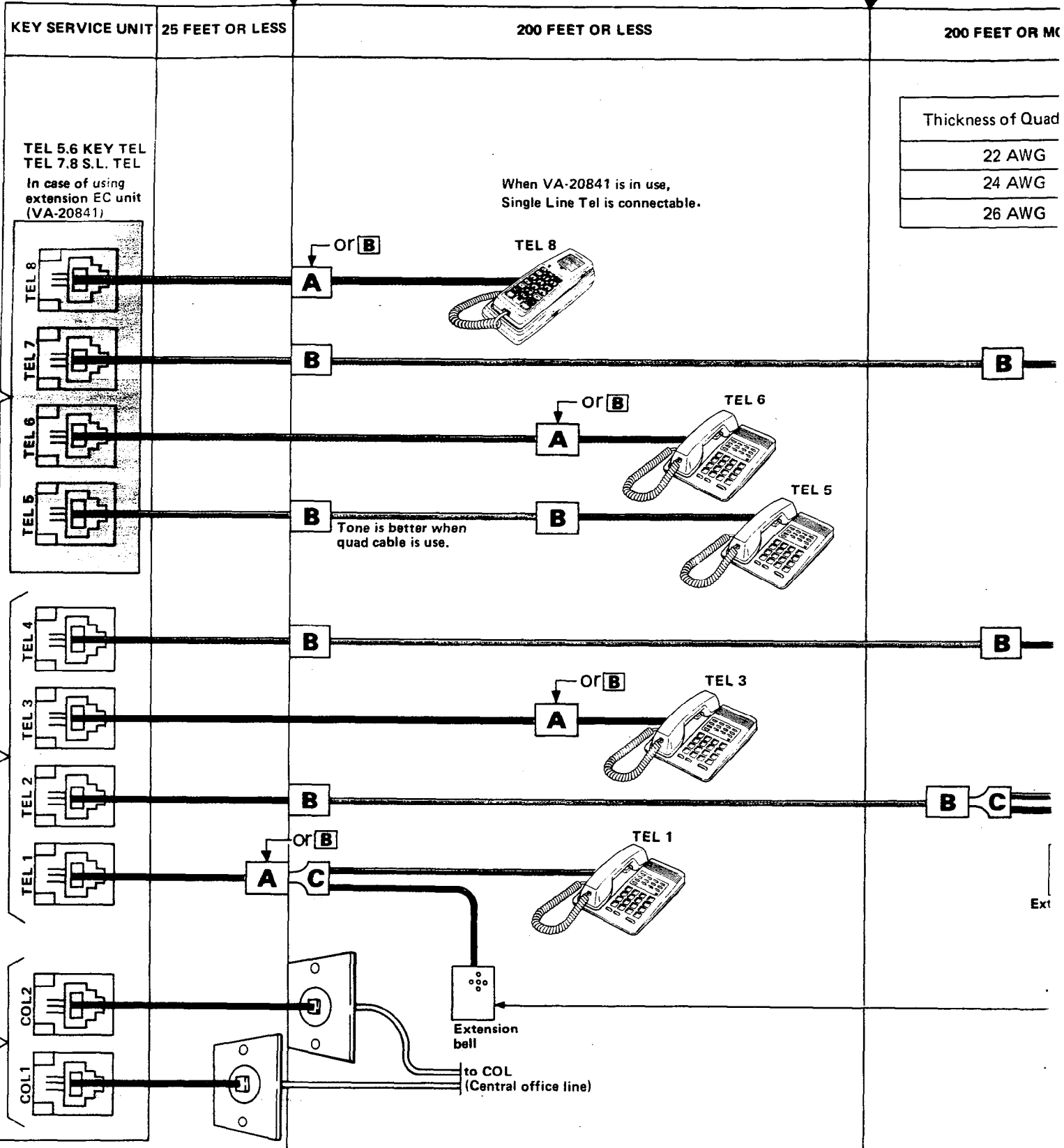
• CONNECTION EXAMPLE

• EXPLANATORY NOTES



25 FEET

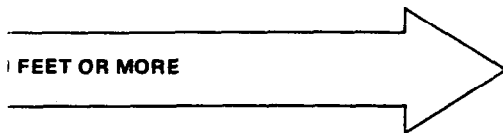
200 FEET



Thickness of Quad
22 AWG
24 AWG
26 AWG

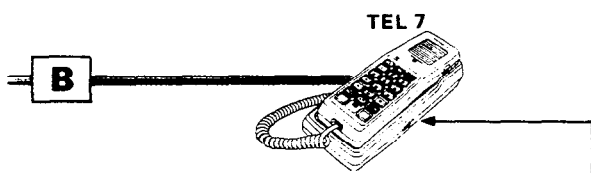
Flat cable

Quad cable

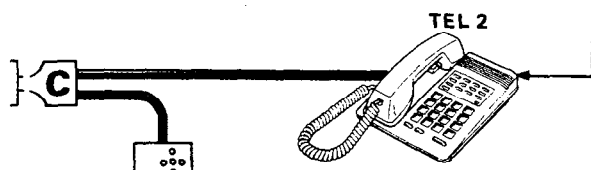


Thickness of Quad Cable	Length of Quad Cable
22 AWG	Within 1100 Feet
24 AWG	Within 700 Feet
26 AWG	Within 450 Feet

When VA-20841 is in use,
Single Line Tel is connectable.



For a distance of more than 200 feet.
Use a quad cable.



Extension bell

1 CONNECTION OF WIRING CABLE (FOR USE OF MODULAR CONNECTOR)

- When the key service unit and TEL are within 25 feet, use a privately used cable, 7 feet, 15 feet and 25 feet cable are ready for use.
- Telephone line cord and Handset cord
Depending on connection method and length, 4 types of Telephone line cord and 2 types of Handset cord are available.

• TELEPHONE LINE CORD

MODEL NO.	LENGTH
VAX-20880	Short (wall-mount only)
VAX-20881	7 feet
VAX-20882	15 feet
VAX-20883	25 feet

• HANDSET CORD

MODEL NO.	LENGTH
VAX-20884	7 feet
VAX-20885	15 feet

- When the key service unit and TEL are within 25~200 feet range, the cable available from the market can be used by connecting with a modular terminal
* For connecting, see the left hand column.

• COUPLING OF QUAD CABLE

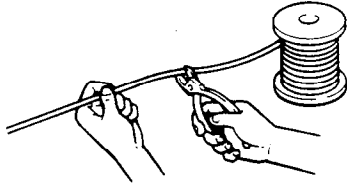
- When key service unit and TEL are apart more than 200 feet use a quad cable without fail. Quad cables assure better characteristic than flat cables and so they are also recommended for shorter distance use.
* For use of quad cable, use the connector for the Screw-Modular. (Type B)

2 CONNECTING OF EXTENSION BELL (VB-20863)

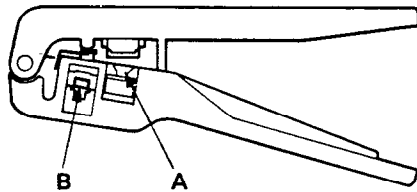
- Use a triforked modular terminal and connection as shown in the figure. This connection is applicable to TEL1 and TEL2.
- Operation of extension bell.
When the backup battery runs out, Extension bell responds to COL receiving.
 - COL1 → TEL1
 - COL2 → TEL2

HOW TO USE CONNECTION TOOL

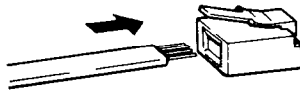
- 1 Cut a flat cable for a required length.



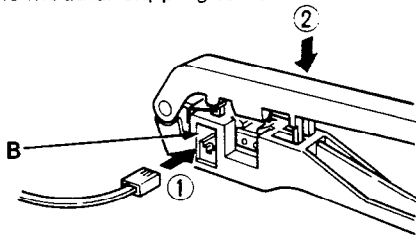
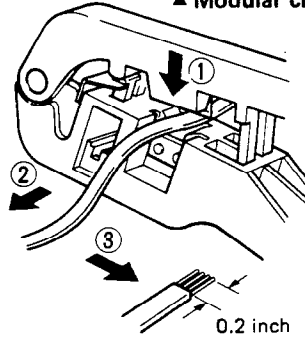
- 2 Peel cable sheath by 0.2 inch with A portion of the modular clipping tool, and pull and remove the peeled cable sheath. At this time, leave the colored sheath of the conductor as it is.
- 3 Put the modular terminal to the flat cable.



▲ Modular clipping tool



- 4 Press and connect the terminal with B portion of the modular clipping tool.

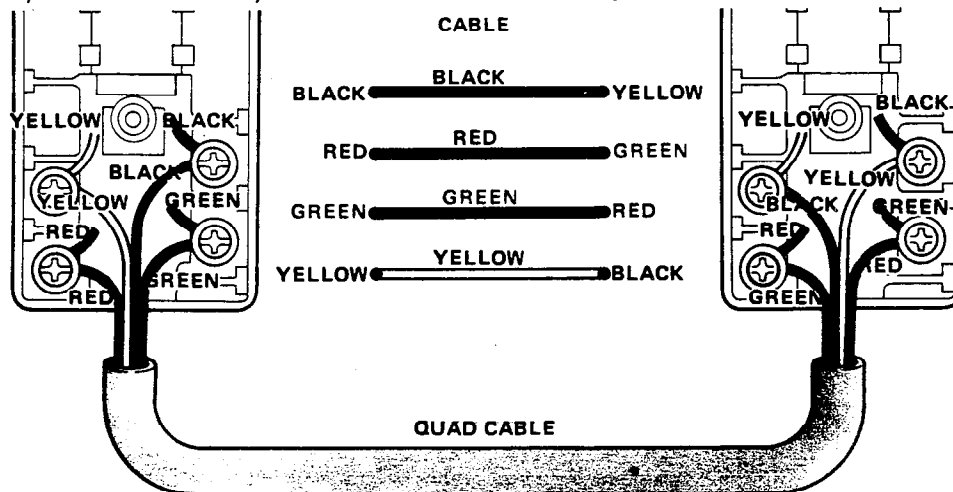


* For the modular terminal at the opposite side, install the terminal in a reverse direction as shown in the illustration.



HOW TO CONNECT THE QUAD CABLE

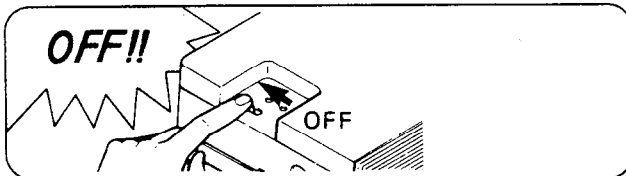
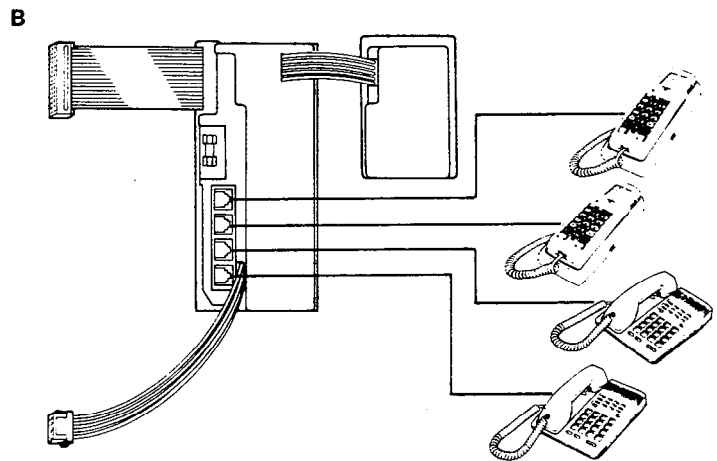
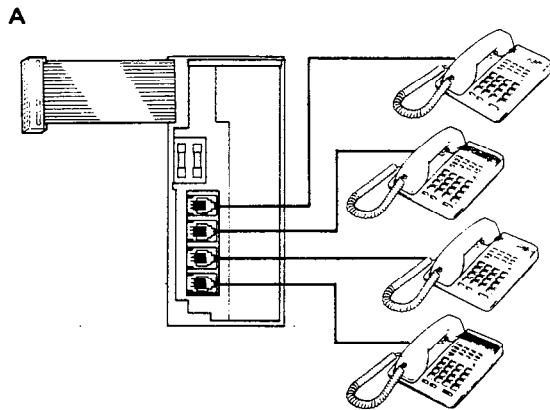
- The quad cable marketed can not be connected to the modular connector.
- When using the quad cable terminal, use screw terminal.
- On one side, connect the quad cable wires to the terminals with the same colour.
- On the other side, connect as follows: yellow with black and vice-versa, green with red and vice-versa.



8.2 INSTALLATION AND CONNECTION OF EXTENSION EC UNIT

When using five key telephones or more, connect them using Extension EC Unit. The following types of Extension EC Units are available.

A	For extending 4 key telephones	VA-20840
B	For extending 2 key telephones and 2 SLTs	VA-20841 (to be released shortly)



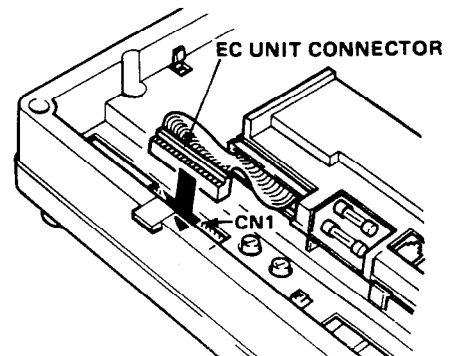
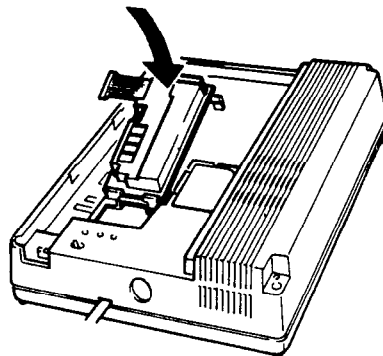
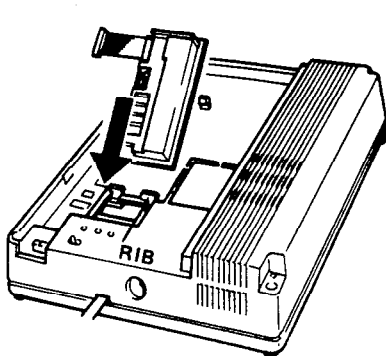
NOTE: PLEASE TURN OFF POWER SWITCH WITHOUT FAIL, BEFORE INSTALLING THE EC UNIT.

1 A. HOW TO INSTALL EC UNIT VA-20840

1. Put lower side of the EC unit to the rib.

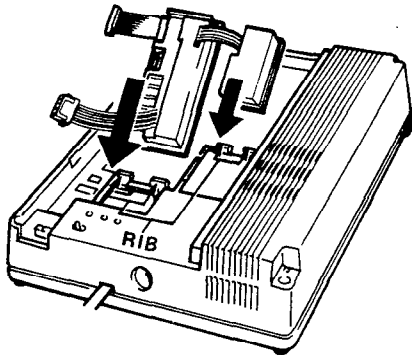
2. Push down the other side of the EC unit and fix it to the guide.

3. Insert the EC unit connector to connector CN1 of the main printed circuit board.

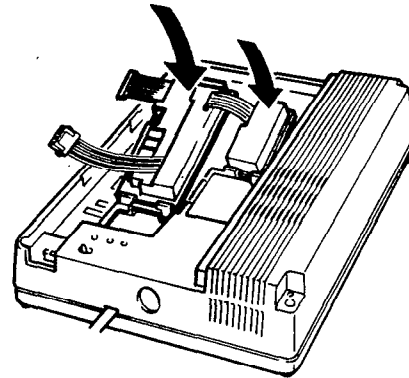


1 B. HOW TO INSTALL EC UNIT VA-20841

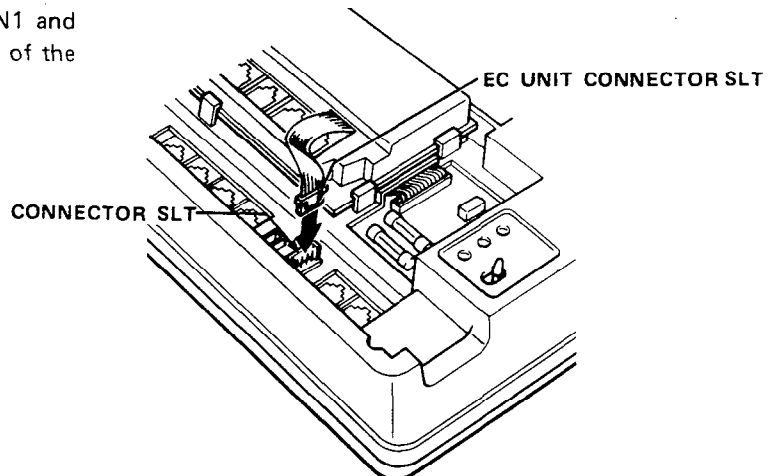
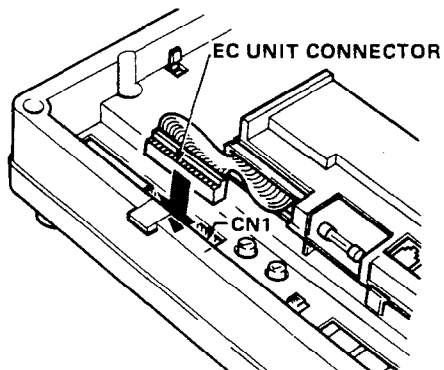
1. Put lower side of the EC units (VA-20841-1, VA-20841-2) to the rib.



2. Push down the other side of the EC units and fix into the guide.



3. Insert EC unit connector to connector CN1 and EC unit connector SLT to connector SLT of the main printed circuit board.



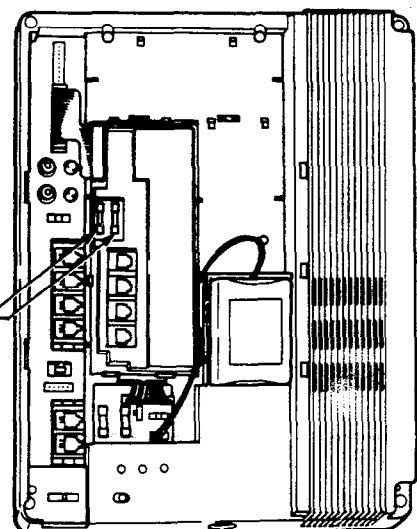
2 EXPLANATIONS ON FUSES

F7 (0.3A) . . . Power Line Fuse for TELs 5 and 6

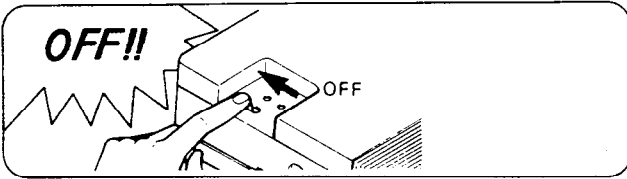
F8 (0.3A) . . . Power Line Fuse for TELs 7 and 8

* Always use rated fuses only.

* In the case of EC unit VA-20841, there is one fuse only.



8.3 INSTALLATION AND CONNECTION OF DOORPHONE ADAPTOR (VA-20860)

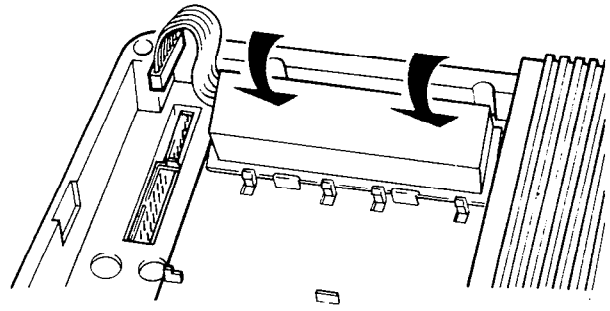
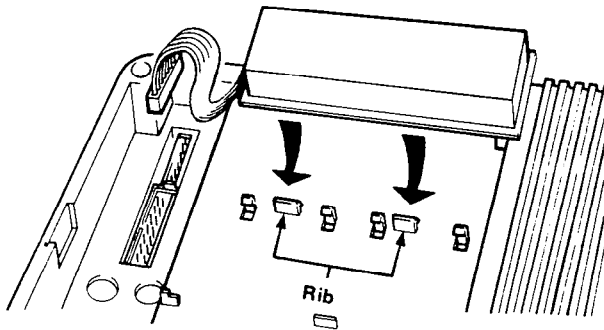


NOTE: PLEASE TURN OFF POWER SWITCH WITHOUT FAIL, BEFORE INSTALLING THE DOORPHONE ADAPTOR.

1 HOW TO INSTALL THE DOORPHONE UNIT

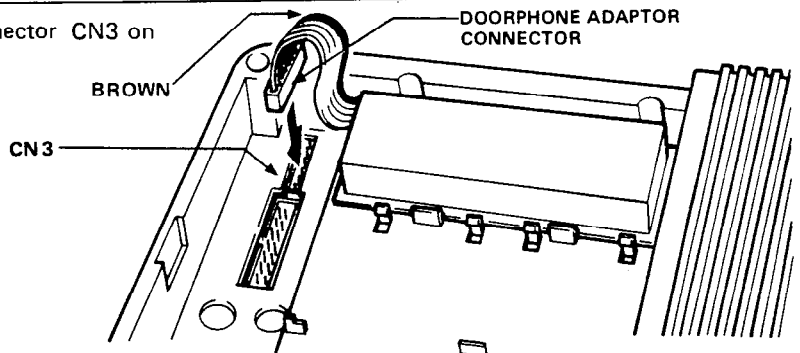
1 Insert the adaptor projection to the one side ribs .

2 Push it down so that it is fixed to the other side ribs .



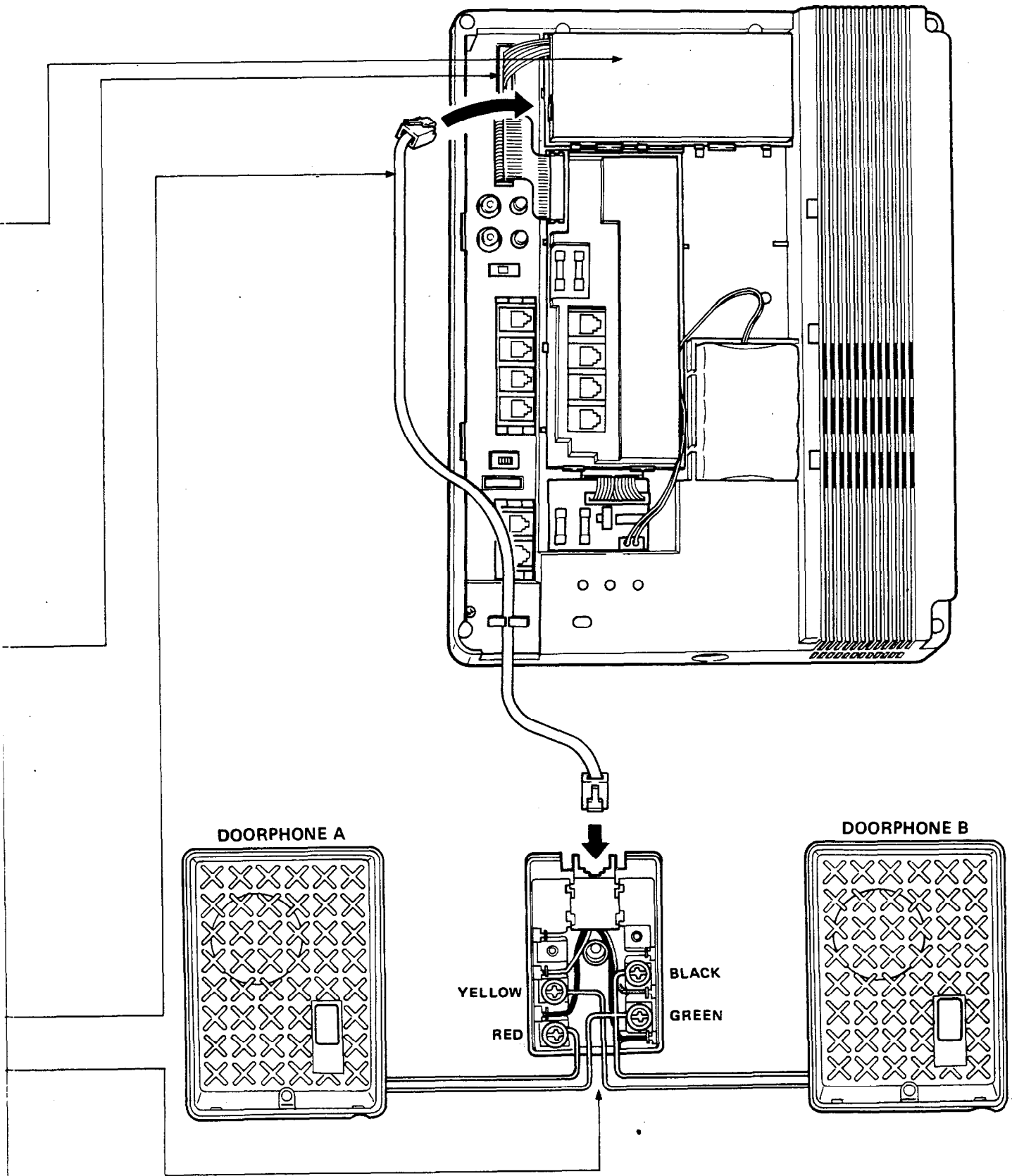
2 CONNECTION OF CONNECTOR

Insert the adaptor connector to connector CN3 on the main printed circuit board.
(Brown cable to be upper side)



3 CONNECTION OF DOORPHONE UNIT

- 1 Using a attachment cable having modular terminals at its ends, connect the doorphone adaptor to the terminal box.
- 2 Connect the doorphone units to the terminal box. At this time, connect doorphone A to red and green screws and doorphone B to yellow and black screws, as shown in the illustration.



8.4 CONNECTION OF EXTERNAL HOLD-ON MUSIC

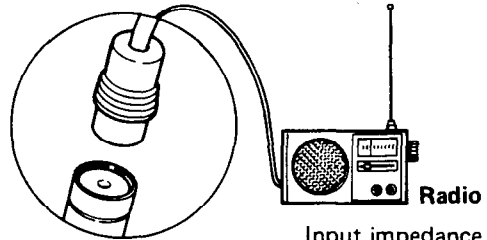
1. MOH SWITCH ENABLES THE HOLD-ON MUSIC TO BE SELECTED AS FOLLOWS

- A – American Patrol
- B – Bridal Doll
- EXT – External music

When using external music, connect the equipment to an external music source (such as radio music, for example).

2. MOH TERMINAL

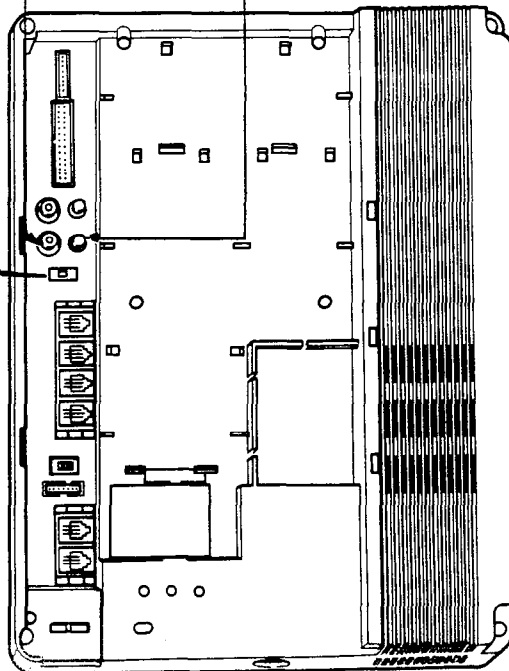
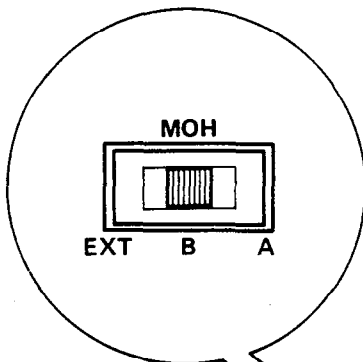
Connect an external music source by the use of an RCA type plug.



Input impedance $20k\Omega$
Input level 0 dBm

3. VR2

VR2 enables you to control the volume of the connected external music.

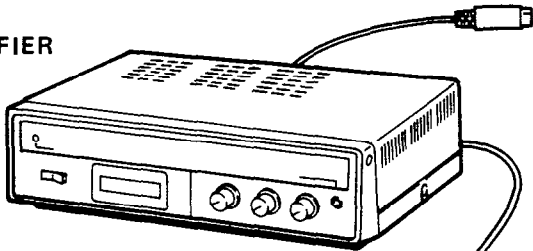


8.5 INSTALLATION OF EXTERNAL PAGING EQUIPMENT

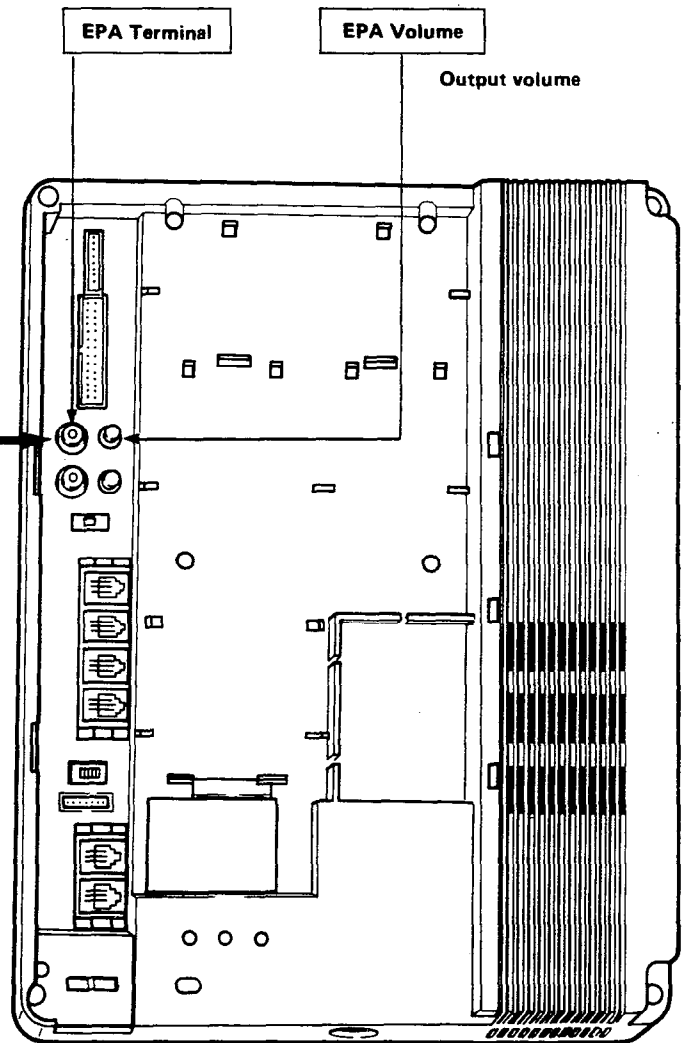
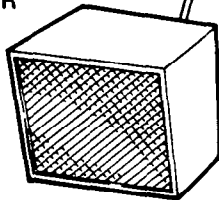
- 1 The external paging becomes available by connecting an amplifier to EPA terminals. The amplifier volume can also be adjusted by EPA Volume.

- 2 Connect the amplifier to EPA terminals by the use of an RCA type plug. Output impedance 8Ω .

AMPLIFIER



SPEAKER



- 3 Connect speakers to the amplifier.

PROGRAMMING

CONTENTS

1. EXPLANATION OF PROGRAMMING	25
2. GENERAL OPERATIONAL PROCEDURES	26
3. PROGRAMMING SETTINGS	29
SYSTEM SETTINGS	29
HOLD-ON ALARM	29
LONG SPEECH ALARM	29
CONNECTION OF DOORPHONE	30
INCOMING ALARM TIME	31
AUTO PAUSE	31
SPEED DIALING STORED COMMON NUMBERS	32
COL SETTINGS	32
DIALING METHOD	32
TYPE OF LINE	33
INCOMING COL CALL ARRIVING ALARM	34
KEY TELEPHONE SETTINGS	35
COL INCOMING RING	35
NIGHT INCOMING RING	36
DOORPHONE CALL	37
INTERCOM CALL DURING CONVERSATION	38
COL AUTO ANSWERING	39
COL INTERRUPTION	40
SINGLE LINE TELEPHONES	41
SET THE SPEAKERPHONE	42
SERVICE CLASS	43
OUTWARD DIALING RESTRICTION SETTINGS	44
RESTRICTED FROM DIALING STORED COMMON NUMBER	44
TYPE SET OF SERVICE CLASS 2 OR 3	45
PBX OUTWARD DIALING DIGITS	46
DIALING SIGNAL SENT TIME	48
MINIMUM PAUSE BETWEEN DIALING SIGNALS	48
APPENDIX A	
PROGRAMMING TABLE FOR INITIAL SET	

1. EXPLANATION OF PROGRAMMING

The Easa-Phone VA-208 is a small, sophisticated Key Telephone system. It offers many features which can be easily programmed to uniquely fit your communication needs.

The Easa-Phone utilizes Random Access Memory (RAM) for storage of the "User's" variable programs and features. Each telephone station can be assigned a set of features based on the individual "User's" requirements.

Note that a program has been pre-set into the Easa-Phone VA-208 system memory for general use which is called the Initial Set. Thus, no programming is necessary to immediately use your telephone system. However, to properly change the System Settings, COL Settings, Key Telephone Settings or Outward Dialing Restriction Settings from the Initial Set to any other option, the programming steps detailed under the Programming Settings for the desired feature must be followed.

A programming record chart is provided for ease of recording your programmed changes. A sample of this Programming Table indicating the Initial Set can be found in the back of this manual. Whenever programming changes are made, they should be immediately recorded on the Programming Table to provide a quick reference of the current programmed feature options.

2. GENERAL OPERATIONAL PROCEDURES

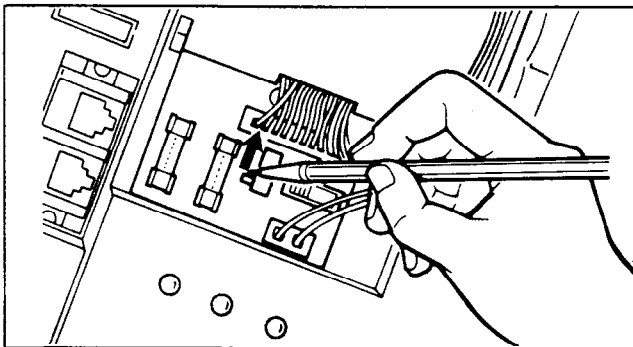
Read the following paragraphs before proceeding to the actual programming instructions and procedures. These notes and procedures are intended to acclimate the programmer to the proper programming sequence required prior to the actual programming.

The Feature selections and specific Setting instructions are detailed under the Programming Settings section of this manual, ie., SYSTEM SETTING(S), COL SETTING(S), KEY TELEPHONE SETTING(S) and OUTWARD DIALING RESTRICTION SETTING(S).

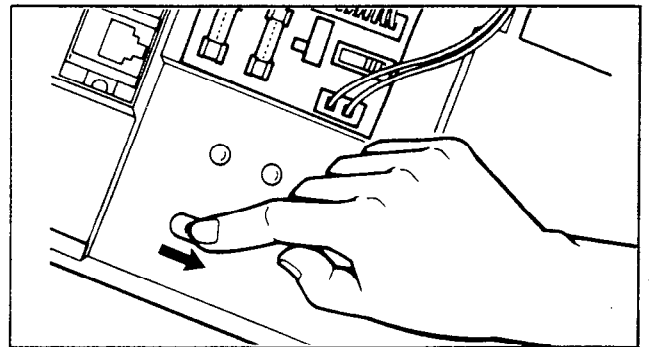
Changing the Initial Set program or changing any feature programming which has already been made is easily performed by following the basic steps outlined below:

Step 1 Place the system in the programming mode. This is done through the Key Service Unit as follows:

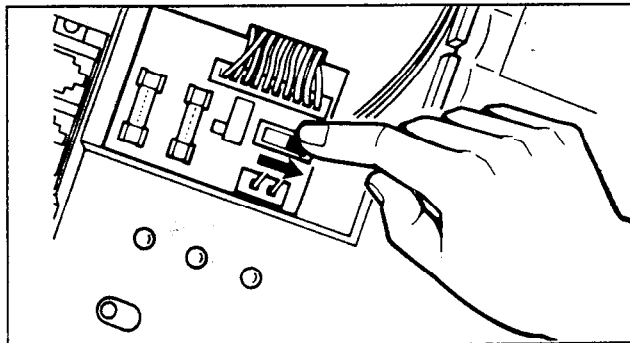
- 1a. Set the RAM switch to the "HOLD" side.
- 1b. Set the AC Power Switch to the "ON" position. (Green Power Lamp will light and Green Operation Lamp will flicker).
- 1c. Set the Programming (PGM) Switch to the "ON" position. (Red Program Lamp will light).



1a.



1b.

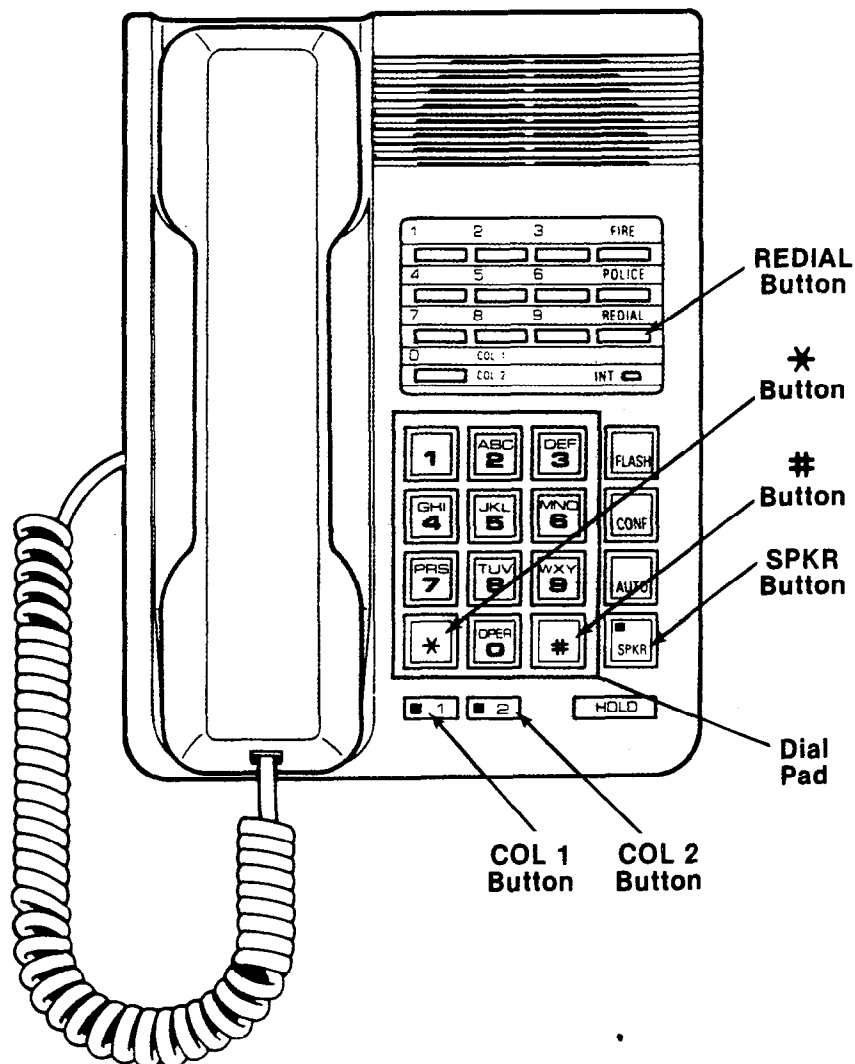


1c.

GENERAL OPERATIONAL PROCEDURES

NOTE: All programming changes must be made with TEL Station 1.

- Step 2** With the handset in place, place TEL Station 1 in the programming mode by depressing the SPKR button. The lamp on the SPKR button will light and a continuing tone will be emitted. If you are not ready to program, depress the SPKR button again. This will stop the tone, disable the programming mode and extinguish the SPKR lamp.
- Step 3** Dial the appropriate feature program activation code for the desired feature option. These feature activation codes are outlined under the corresponding feature in the Program Setting section of this manual.
- Step 4** As specified for the desired feature options, depress the designated COL 1, COL 2, SPKR and REDIAL button to illuminate or extinguish the associated LED lamp as specified for the desired feature option. These lamp settings are outlined under the corresponding feature in the Program Setting section of this manual.
- Step 5** Depress the # button on the Dial Pad to store the feature program change.
- Step 6** Proceed to next feature program change or depress FLASH button and SPKR button in sequence to end the programming mode.



GENERAL OPERATIONAL PROCEDURES

Step 7 Place the Key Service Unit out of the programming mode by setting the Programming Switch to the "OFF" position.

Step 8 Manually record all program changes on the Program Tables.

To demonstrate how easy the Easa-Phone VA-208 is to program, an example of how to set the HOLD-ON ALARM for 30 seconds is given below:

Step 1 Set the Key System in the programming mode as specified above under Step 1.

Step 2 Set TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code

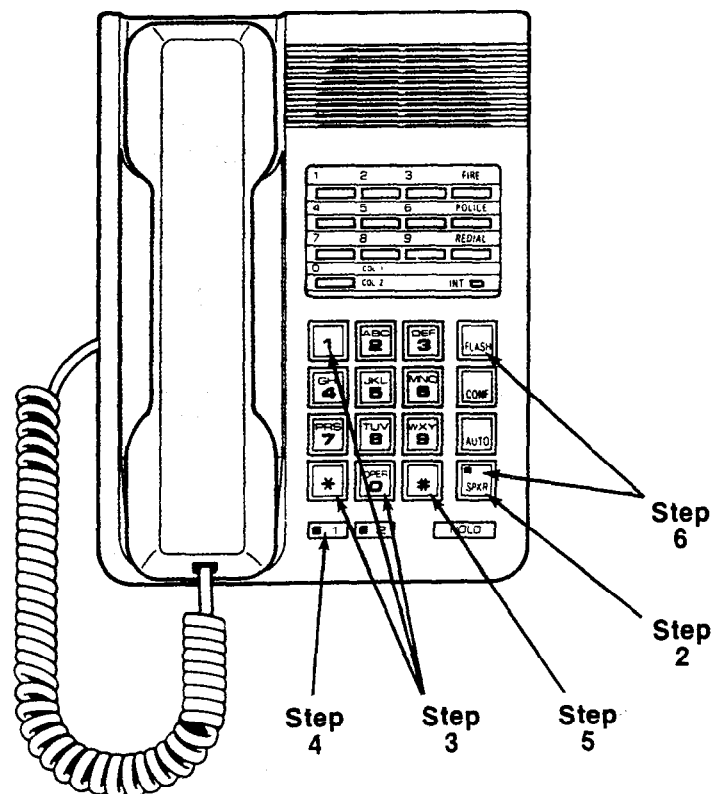
Step 4 Depress the COL 1 button, if on, to extinguish the LED lamp. If the COL 2 LED lamp is off, depress the COL button to light the LED lamp.

Step 5 Depress the # button on the Dial Pad to store the feature program change.

Step 6 Depress the FLASH button and SPKR button in sequence to end to programming mode.

Step 7 Place the Key Service Unit out of the programming mode by setting the Programming Switch to the "OFF" position.

Step 8 Record the program change on the Programming Table by placing an X under the 30 second option for the HOLD-ON ALARM.



3. PROGRAMMING SETTINGS

SYSTEM SETTING HOLD-ON ALARM

This feature will generate a ring alarm indicating that a call has been left on HOLD longer than the pre-set time. The alarm can be programmed to ring after a call has been left on HOLD for 30 seconds, 1 minute, 2 minutes or No Alarm.

- The initial program setting is for No Alarm.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set the HOLD-ON ALARM for 30 seconds, depress the COL 1 button, **if on**, to extinguish the LED lamp. If the COL 2 lamp **is extinguished**, depress the COL 2 button to light the LED lamp.

Option	COL 1	COL 2
30 sec.	OFF	ON

OR

- 4b. To set the HOLD-ON ALARM for 1 minute, depress COL 1 button, **if extinguished**, to light the LED lamp. If the COL 2 LED lamp **is on**, depress the COL 2 button to extinguish the LED lamp.

Option	COL 1	COL 2
1 min.	ON	OFF

OR

- 4c. To set the HOLD-ON ALARM for 2 minutes, depress COL 1 and COL 2 buttons, **if extinguished**, to light the LED lamps.

Option	COL 1	COL 2
2 min.	ON	ON

OR

- 4d. To deactivate the HOLD-ON ALARM, depress both COL 1 and COL 2 **if on**, to extinguish the LED lamps.

Option	COL 1	COL 2
None	OFF	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

LONG SPEECH ALARM

This feature will generate a faint alarm tone every 3 minutes during a conversation.

- The initial program setting is for no tone.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

SYSTEM SETTINGS LONG SPEECH ALARM

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To activate the LONG SPEECH ALARM, depress the SPKR button, **if extinguished**, to light the LED lamp.

Option	SPKR
Tone	ON

OR

- 4b.** To deactivate the LONG SPEECH ALARM, depress the SPKR button, **if on**, to extinguish the LED lamp.

Option	SPKR
No Tone	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program OR to end programming, depress FLASH button and SPKR button in sequence.

CONNECTION OF DOORPHONE

This instruction is used to indicate whether a doorphone is connected. The Easa-Phone VA-208 System can be equipped for a maximum of two doorphones.

- The initial program setting is for a doorphone to be connected.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To program a doorphone to be connected, depress the COL 1 button, **if extinguished**, to light the LED lamp.

Option	COL 1
Connected	ON

OR

- 4b.** To program a doorphone to be disconnected, depress the COL 1 button, **if on**, to extinguish the LED lamp.

Option	COL 1
Not Connected	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

SYSTEM SETTING INCOMING ALARM TIME

This feature establishes a time period, of either 20 or 30 seconds, to activate tone ringing at all stations if an incoming call is not answered within a 20 or 30 second time frame. Reference must be made to the COL Settings—Incoming COL Call Arriving Alarm to program the COL 1 and COL 2 lines for the alarm tone.

- The initial program setting is for the alarm to ring after 30 seconds.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set the INCOMING ALARM TIME for 20 seconds, depress the SPKR button, if **extinguished**, to light the LED lamp.

Option	SPKR
20 sec	ON

OR

- 4b. To set the INCOMING ALARM TIME for 30 seconds, depress the SPKR button, if **on**, to extinguish the LED lamp.

Option	SPKR
30 sec	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

AUTO PAUSE

This feature will allow a 2 second pause to be automatically inserted after dialing the number 9. When the Easa-Phone is connected behind a PBX or Centrex system, this 2 second pause allows the user to directly dial the desired number after dialing "9," without waiting for the PBX or Centrex dial tone.

- The initial program setting is for no pause.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To activate the AUTO PAUSE, depress the COL 2 button, if **extinguished**, to light the LED lamp.

Option	COL 2
Pause	ON

OR

SYSTEM SETTINGS AUTO PAUSE

- 4b. To deactivate the AUTO PAUSE, depress the COL 2 button, if on, to extinguish the LED lamp.

Option	COL 2
No Pause	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL Station 1.

SPEED DIALING STORED COMMON NUMBERS

This feature allows commonly dialed telephone numbers to be stored in the system memory for access by all unrestricted station users. Up to 88 individual telephone numbers can be stored.

The Fire and Police numbers are programmed in the same method by using the two-digit code 88 for Fire and 89 for Police.

If the Easa-Phone VA-208 is being used behind a Centrex or PBX system, the system setting AUTO PAUSE must be activated with SPEED DIALING STORED COMMON NUMBERS.

NOTE: The Key System Unit is not required to be in the programming mode for programming the storage of common telephone numbers. Only one telephone number can be programmed at a time. To program multiple telephone numbers, complete Steps 1 through 5 for the first number, then repeat Steps 2 through 5 for each additional number to be stored.

- To program commonly dialed numbers into the system memory, perform the following steps:

Step 1 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 2 Activate the Feature Program Activation Code by depressing the AUTO button.

Step 3 Assign a two-digit speed dial number by depressing two numbers between 00 and 87 on the Dial Pad.

Step 4 Dial in the telephone number to be stored. Up to 16 digits can be stored for each telephone number.

Step 5 Depress the CONF button to store the programmed number.

Step 6 Depress the SPKR button to end programming.

A Speed Dial Chart is provided in the back of this manual for ease of record keeping.

COL SETTING DIALING METHOD

This is required to set the type of dialing—either Outputpulse Dialing or Touch-Tone® (multi-frequency) Dialing for COL 1 and/or COL 2.

NOTE: Only one COL can be programmed at a time. To change the DIALING METHOD settings for both COL 1 and COL 2, complete Steps 1 thru 5 for COL 1 and then repeat Steps 3 thru 5 for COL 2.

- The initial program setting is for Outputpulse Dialing at a 10PPS (pulses per second) dialing speed. Note that the Outputpulse Dialing speed may be set for either 10PPS or 20PPS.

COL SETTINGS DIALING METHOD

- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in programming mode by depressing the SPKR button.

Step 3 Dial the appropriate Feature Program Activation Code for the COL to be programmed.

3a. For COL 1—Dial Feature Program Activation Code

For COL 2—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

4a. To set Outpulse Dialing at 10PPS, depress COL 1 button and/or COL 2 button, **if on**, to extinguish the LED lamps.

Option	COL 1	COL 2
10 PPS	OFF	OFF

OR

4b. To set Outpulse Dial at 20PPS, depress the COL 1 button, **if on**, to extinguish the LED lamp. If the COL 2 button **if off**, depress the COL 2 button to light the LED lamp.

Option	COL 1	COL 2
20 PPS	OFF	ON

OR

4c. To set Touch-Tone® (multi-frequency) Dialing, depress the COL 1 button, **if extinguished**, to light the LED lamp. If the COL 2 button is **on**, depress the the COL 2 button to extinguish the LED lamp.

Option	COL 1	COL 2
DTMF	ON	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

TYPE OF LINE

This is required to indicate to the system the type of line, either Central Office or PBX, that is connected to COL 1 and COL 2.

NOTE: Only one COL can be programmed at a time. To change the TYPE OF LINE setting for both COL 1 and COL 2, complete Steps 1 thru 5 for COL 1 and then repeat Steps 3 thru 5 for COL 2.

- The initial program setting is for a Central Office line circuit.

- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the appropriate Feature Program Activation Code for the COL to be programmed.

For COL 1—Dial Feature Program Activation Code

For COL 2—Dial Feature Program Activation Code

COL SETTINGS TYPE OF LINE

Step 4 Activate only one (1) of the following options:

- 4a. To set the TYPE OF LINE for a Central Office line, depress the SPKR button, if on, to extinguish the LED lamp.

Option	SPKR
CO	OFF

OR

- 4b. To set the TYPE OF LINE for a PBX line, depress the SPKR button, if extinguished, to light the LED associated with the button.

Option	SPKR
PBX	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

INCOMING COL CALL ARRIVING ALARM

This feature will generate an alarm sound at every Key Telephone when an incoming call on COL 1 and COL 2 is not answered within the time frame set by the INCOMING ALARM.

NOTE: Only one COL can be programmed at a time. To change both COL 1 and COL 2, complete Steps 1 thru 5 for COL 1 and then repeat Steps 3 thru 5 for COL 2.

- The initial program setting is for no alarm.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the appropriate Feature Program Activation Code for the COL to be programmed.

- 3a. For COL 1—Dial Feature Program Activation Code

For CoL 2—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set the INCOMING COL CALL ARRIVING ALARM, depress the REDIAL button, if extinguished, to light the INT LED lamp.

Option	REDIAL
Alarm	ON

OR

- 4b. To deactivate the INCOMING COL CALL ARRIVING ALARM, depress the REDIAL button, if on, to extinguish the INT LED lamp.

Option	REDIAL
No Alarm	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

KEY TELEPHONE SETTINGS COL INCOMING RING

This setting will program TEL Station tone ringing for incoming calls. The TEL Stations can be programmed for Incoming Call Ringing for either COL 1 or COL 2 or for both.

NOTE: Only one TEL Station can be programmed at a time. To change the COL INCOMING RING on multiple TEL Stations, complete Steps 1 thru 6 for the first TEL Station and then repeat Steps 3 thru 6 for each remaining TEL Station you wish to change.

- The initial program setting is for both COL 1 and COL 2 to ring on all TEL Stations.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set COL 1 to ring, depress the COL 1 button, **if extinguished**, to light the LED lamp.

Option	COL 1
Ring	ON

OR

- 4b. To set COL 1 not to ring, depress the COL 1 button, **if on**, to extinguish the LED lamp.

Option	COL 1
No Ring	OFF

Step 5 Activate only one of the following options:

- 5a. To set COL 2 to ring, depress the COL 2 button, **if extinguished**, to light the LED lamp.

Option	COL 2
Ring	ON

OR

- 5b. To set COL 2 not to ring, depress the COL 2 button, **if on**, to extinguish the LED lamp.

Option	COL 2
No Ring	OFF

KEY TELEPHONE SETTINGS COL INCOMING RING

Step 6 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 7 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

NIGHT INCOMING RING

This setting is to specify whether an incoming call received after office hours can be answered on a particular TEL Station. Each TEL Station must be individually programmed for NIGHT INCOMING RING.

NOTE: Only one TEL Station can be programmed at a time. To change the NIGHT INCOMING RING on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to receive calls after hours.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set the station for NIGHT INCOMING RING, depress the SPKR button, if extinguished, to light the LED lamp.

Option	SPKR
Ring	ON

OR

- 4b.** To set the station for no NIGHT INCOMING RING, depress the SPKR button, if on, to extinguish the LED lamp.

Option	SPKR
No Ring	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

KEY TELEPHONE SETTINGS DOORPHONE CALL

This feature is to designate what group of TEL Stations are capable of communicating with Doorphones. Up to two doorphones can be connected, DOORPHONE A and DOORPHONE B. Up to five TEL Stations can be connected to each Doorphone to receive the incoming ringing tone of the respective Doorphone. Each TEL Station must be individually programmed for Doorphone Call.

NOTE: Only one TEL Station can be programmed at a time. To change the DOORPHONE CALL on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for TEL Stations 1 thru 5 to receive the incoming ring tone for both DOORPHONE A and DOORPHONE B.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set the TEL Station to receive DOORPHONE A CALL, depress COL 1 button, **if extinguished**, to light the LED lamp. If the COL 2 LED lamp **is on**, depress the COL 2 button to extinguish the LED lamp.

Option	COL 1	COL 2
DP A Conn.	ON	OFF

OR

- 4b.** To set the TEL Station to receive DOORPHONE B CALL, depress COL 1 button, **if on**, to extinguish the LED lamp. If the COL 2 LED lamp **is extinguished**, depress the COL 2 button to light the LED lamp.

Option	COL 1	COL 2
DP B Conn.	OFF	ON

OR

KEY TELEPHONE SETTINGS DOORPHONE CALL

- 4c.** To set the TEL Station to receive DOORPHONE A and DOORPHONE B CALL, depress COL 1 and COL 2 buttons, **if extinguished**, to light the LED lamps.

Option	COL 1	COL 2
DP A/B Conn.	ON	ON

OR

- 4d.** To set the TEL Station to not receive a DOORPHONE CALL, depress COL 1 and COL 2 buttons, **if on**, to extinguish the LED lamps.

Option	COL 1	COL 2
DP A/B Not Conn.	OFF	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR buttons in sequence.

INTERCOM CALL DURING CONVERSATION

This feature allows an intercom caller to signal a TEL Station which is already busy on an Intercom Call by superimposing a continuous tone. Each TEL Station must be individually programmed for INTERCOM CALL DURING CONVERSATION.

NOTE: Only one TEL Station can be programmed at a time. To change the INTERCOM INCOMING CALL DURING CONVERSATION on multiple TEL stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to have no INTERCOM INCOMING CALL DURING CONVERSATION.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

KEY TELEPHONE SETTINGS INTERCOM CALL DURING CONVERSATION

Step 4 Activate only one (1) of the following options:

- 4a.** To set the TEL Station to receive INTERCOM INCOMING CALL DURING CONVERSATION, depress the SPKR button, **if extinguished**, to light the LED lamp.

Option	SPKR
Ring	ON

OR

- 4b.** To set the TEL Station to not receive INTERCOM INCOMING CALL DURING CONVERSATION, depress the SPKR button, **if on**, to extinguish the LED lamp.

Option	SPKR
No Ring	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode.

COL AUTO ANSWERING

This feature enables an incoming call on either COL 1 or COL 2 to be automatically connected to the TEL Station by picking up the handset without depressing the COL button. Each TEL Station must be individually programmed for COL AUTO ANSWERING.

NOTE: Only one TEL Station can be programmed at a time. To change the COL AUTO ANSWERING on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to have AUTO ANSWERING.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

KEY TELEPHONE SETTINGS COL AUTO ANSWERING

Step 4 Activate only one (1) of the following options:

- 4a. To set the TEL Station for COL AUTO ANSWERING, depress the COL 1 button, **if extinguished**, to light the LED lamp.

Option	COL 1
Auto Ans	ON

OR

- 4b. To set the TEL Station for no COL AUTO ANSWERING, depress the COL 1 button, **if on**, to extinguish the LED lamp.

Option	COL 1
No Auto Ans	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

COL INTERRUPTION

This feature allows a telephone user to maintain privacy or be interrupted during a conversation by a third party on another TEL Station. Each TEL Station must be individually programmed for COL INTERRUPTION.

NOTE: Only one TEL Station can be programmed at a time. To change the COL INTERRUPTION on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to have COL INTERRUPTION.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

KEY TELEPHONE SETTINGS COL INTERRUPTION

Step 4 Activate only one (1) of the following options:

- 4a.** To set the TEL Station for COL INTERRUPTION, depress the COL 2 button, if **extinguished**, to light the LED lamp.

Option	COL 2
No Privacy	ON

OR

- 4b.** To set the TEL Station for no COL INTERRUPTION, depress the COL 2 button, if **on**, to extinguish the LED lamp.

Option	COL 2
Privacy	OFF

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or to end programming, depress FLASH button and SPKR button in sequence.

SINGLE LINE TELEPHONES

This feature is to indicate whether a Key telephone station or a standard single line telephone station is connected to the Easa-Phone System. Only two single line telephones can be installed and must be assigned either Extension TEL 7 and/or TEL 8.

- The initial program setting is for no single line telephones.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in General Operating Procedures.

Step 2 Place TEL 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set for a Key Telephone Station, depress, if **on**, the SPKR button to extinguish the LED lamp.

Option	SPKR
Key	OFF

OR

- 4b.** To set for a standard single line station, depress, if **extinguished**, the SPKR button to light the LED lamp.

Option	SPKR
SLT	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL 1.

KEY TELEPHONE SETTINGS SET THE SPEAKERPHONE

This feature is to indicate whether a TEL Station is connected as a Key Telephone or as a Key Telephone with a Speakerphone. Each TEL Station must be individually programmed for SET THE SPEAKERPHONE.

NOTE: Only one TEL Station can be programmed at a time. To change the SET THE SPEAKERPHONE on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to be connected as a Key Telephone.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set the TEL Station for connection as a Key Telephone, depress the REDIAL button, **if on**, to extinguish the INT LED lamp.

Option	REDIAL
Key	OFF

OR

- 4b.** To set the TEL Station for connection with a Speakerphone, depress the REDIAL button, **if extinguished**, to light the associated INT LED lamp.

Option	REDIAL
SPKR	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode.

KEY TELEPHONE SETTINGS SERVICE CLASS

This feature specifies the outward dialing area (local, long distance, etc.) a TEL Station is allowed to call. The four (4) SERVICE CLASSES available are:

Class 1—No Outward Dialing

*Class 2—Local Calling Only

*Class 3—Local Calling and "411" only

Class 4—No Restrictions To Outward Dialing

*Reference must be made to the Outward Dialing Restriction Settings—Type Set of service Class 2 or Service Class 3.

If COL 1 and/or COL 2 are functioning as PBX lines as specified by the COL Setting—Type Of Line, the SERVICE CLASS feature is **not applicable**. The restrictions on those lines would be determined by the PBX system. Each TEL Station must be individually programmed for their SERVICE CLASS.

NOTE: Only one TEL Station can be programmed at a time. To change the SERVICE CLASS on multiple TEL Stations, complete Steps 1 thru 5 for the first TEL Station and then repeat Steps 3 thru 5 for each remaining TEL Station you wish to change.

- The initial program setting is for all TEL Stations to have CLASS 4—No Restrictions To Outward Dialing.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code for the particular TEL Station to be programmed.

For TEL Station 1—Dial Feature Program Activation Code

For TEL Station 2—Dial Feature Program Activation Code

For TEL Station 3—Dial Feature Program Activation Code

For TEL Station 4—Dial Feature Program Activation Code

For TEL Station 5—Dial Feature Program Activation Code

For TEL Station 6—Dial Feature Program Activation Code

For TEL Station 7—Dial Feature Program Activation Code

For TEL Station 8—Dial Feature Program Activation Code

KEY TELEPHONE SETTINGS · SERVICE CLASS

Step 4 Activate only one (1) of the following options:

- 4a.** To set the TEL Station for CLASS 1—No Outward Dialing, depress the SPKR and REDIAL buttons, **if on**, to extinguish the LED lamps.

Option	SPKR	REDIAL
Class 1	OFF	OFF

OR

- 4b.** To set the TEL Station for CLASS 2—Local Calling Only, depress the SPKR button, **if on**, to extinguish the LED lamp and depress the REDIAL button, **if extinguished**, to light the LED lamp.

Option	SPKR	REDIAL
Class 2	OFF	ON

OR

- 4c.** To set the TEL Station for CLASS 3—Local Calling and "411" Only, depress the SPKR button, **if extinguished**, to light the LED lamp and depress the REDIAL button, **if on**, to extinguish the LED lamp.

Option	SPKR	REDIAL
Class 3	ON	OFF

OR

- 4d.** To set the TEL Station for CLASS 4—No Restrictions To Outward Dialing, depress both the SPKR and REDIAL buttons, **if extinguished**, to light the LED lamps.

Option	SPKR	REDIAL
Class 4	ON	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL Station 1.

OUTWARD DIALING RESTRICTION SETTINGS RESTRICTED FROM DIALING STORED COMMON NUMBER

This feature designates whether a TEL Station is allowed access to common telephone numbers stored in the system Speed Dial memory. Even TEL Stations assigned a CLASS 2 or CLASS 3 Service can access stored common numbers if they are not restricted from dialing STORED COMMON NUMBER.

- The initial program setting is for no Restriction For Dialing Stored Common Number.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code

OUTWARD DIALING RESTRICTION SETTINGS RESTRICTED FROM DIALING STORED COMMON NUMBERS

Step 4 Activate only one (1) of the following options:

- 4a.** To set the RESTRICTION FOR DIALING STORED COMMON NUMBERS, depress the COL 1 button, **if on**, to extinguish the LED lamp.

Option	COL 1
Restriction	OFF

OR

- 4b.** To set for NO RESTRICTION FOR DIALING STORED COMMON NUMBERS, depress the COL 1 button, **if extinguished**, to light the LED lamp.

Option	COL 1
No Restriction	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode.

TYPE SET OF SERVICE CLASS 2 OR 3

TEL stations which are programmed for Service Class 2 or 3 must also be programmed for Type A or Type B Service. The type service is dependent upon the long distance dialing plan of your local area. Geographic areas where you dial the area code and number should be assigned the Type A Service. Geographic areas where you must dial "1" before dialing the area code and number should be assigned the Type B Service.

- To program the Type Set of Service Class 2 or 3, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set for Type A Service, depress the COL 2 button, **if on**, to extinguish the LED lamp.

Option	COL 2
Type A	OFF

OR

- 4b.** To set for Type B Service, depress the COL 2 button, **if extinguished**, to light the LED lamp.

Option	COL 2
Type B	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode.

OUTWARD DIALING RESTRICTION SETTINGS PBX OUTWARD DIALING DIGITS

This feature setting is required to indicate the dialing number for outward dialing when COL 1 and/or COL 2 are designated as PBX under the COL Setting—Type Of COL.

- The initial program setting is for the PBX OUTWARD DIALING on 9.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in General Operational Procedures.

Step 2 Place TEL Station 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the Feature Program Activation Code

Step 4 Activate only one (1) of the following options:

- 4a.** To set the PBX OUTWARD DIALING DIGIT FOR "0", depress COL 1, COL 2, SPKR and REDIAL buttons, **if on**, to extinguish the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
0	OFF	OFF	OFF	OFF

OR

- 4b.** To set the PBX OUTWARD DIALING DIGIT for "1", depress the COL 1, COL2, and SPKR buttons, **if on**, to extinguish the LED lamps. If the REDIAL button is **extinguished**, depress the REDIAL button to light the LED lamp.

Option	COL 1	COL 2	SPKR	REDIAL
1	OFF	OFF	OFF	ON

OR

- 4c.** To set the PBX OUTWARD DIALING DIGIT for "2", depress the COL 1, COL 2 and REDIAL buttons, **if on**, to extinguish the LED lamps. If the SPKR button is **extinguished**, depress the SPKR button to light the LED lamp.

Option	COL 1	COL 2	SPKR	REDIAL
2	OFF	OFF	ON	OFF

OR

- 4d.** To set the PBX OUTWARD DIALING DIGIT for "3", depress the COL 1 and COL 2 buttons, **if on**, to extinguish the LED lamps. If the SPKR and REDIAL buttons are **extinguished**, depress the SPKR and REDIAL buttons to light the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
3	OFF	OFF	ON	ON

OR

OUTWARD DIALING RESTRICTION SETTINGS PBX OUTWARD DIALING DIGITS

- 4e. To set the PBX OUTWARD DIALING DIGIT for "4", depress the COL 1, SPKR and REDIAL buttons, **if on**, to extinguish the LED lamps. If the COL 2 button **is extinguished**, depress the COL 2 button to light the LED lamp.

Option	COL 1	COL 2	SPKR	REDIAL
4	OFF	ON	OFF	OFF

OR

- 4f. To set the PBX OUTWARD DIALING DIGIT for "5", depress the COL 1 and SPKR buttons, **if on**, to extinguish the LED lamps. If the COL 2 and REDIAL buttons **are extinguished**, depress the COL 2 and REDIAL buttons to light the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
5	OFF	ON	OFF	ON

OR

- 4g. To set the PBX OUTWARD DIALING DIGIT FOR "6", depress the COL 1 and REDIAL buttons, **if on**, to extinguish the LED lamps. If the COL 2 and SPKR buttons **are extinguished**, depress the COL 2 and SPKR buttons to light the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
6	OFF	ON	ON	OFF

OR

- 4h. To set the PBX OUTWARD DIALING DIGIT FOR "7", depress the COL 1 button, **if on**, to extinguish the LED lamp. If the COL 2, SPKR and REDIAL buttons **are extinguished**, depress the COL 2, SPKR and REDIAL buttons to light the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
7	OFF	ON	ON	ON

OR

- 4i. To set the PBX OUTWARD DIALING DIGIT FOR "8", depress the COL 1 button, **if extinguished**, to light the LED lamp. If the COL 2, SPKR and REDIAL buttons **are on**, depress the COL 2, SPKR and REDIAL buttons to extinguish the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
8	ON	OFF	OFF	OFF

OR

- 4j. To set the PBX OUTWARD DIALING DIGIT FOR "9", depress the COL 1 and REDIAL buttons, **if extinguished**, to light the LED lamps. If the COL 2 and SPKR buttons **are on**, depress the COL 2 and SPKR buttons to extinguish the LED lamps.

Option	COL 1	COL 2	SPKR	REDIAL
9	ON	OFF	OFF	ON

OUTWARD DIALING RESTRICTION SETTINGS PBX OUTWARD DIALING DIGITS

- Step 5** Depress the # button on the Dial Pad to store the program established in Step 4.
- Step 6** Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL Station 1.

DIALING SIGNAL SENT TIME

This feature allows for the setting of the DTMF signal duration for either 80 msec or 160 msec. The standard DTMF signal duration is 80 msec, however when the Easa-Phone is connected to some PBXs or Central Offices, the longer duration setting may be required.

- The initial program setting is for 80 msec.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL 1 in the programming mode by depressing the SPKR button.

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set the DIALING SIGNAL SENT TIME for 80 msec, depress the COL 1 button, if **on**, to extinguish the LED lamp.

Option	COL 1
80 msec	OFF

OR

- 4b. To set the DIALING SIGNAL SENT TIME for 160 msec, depress the COL 1 button, if **extinguished**, to light the LED lamp.

Option	COL 1
16 msec	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL 1.

MINIMUM PAUSE BETWEEN DIALING SIGNALS

This feature allows for a brief pause of either 80 msec or 160 msec between the DTMF signals. The standard pause between DTMF signals is 80 msec, however when the Easa-Phone is connected to some PBXs of Central Offices, the longer duration setting may be required.

- The initial program setting is for 80 msec.
- To change the program setting, perform the following steps:

Step 1 Place the system in the programming mode. See instructions in the General Operational Procedures.

Step 2 Place TEL 1 in the programming mode by depressing the SPKR button.

OUTWARD DIALING RESTRICTION SETTINGS MINIMUM PAUSE BETWEEN DIALING SIGNALS

Step 3 Dial the feature program activation Code

Step 4 Activate only one (1) of the following options:

- 4a. To set the MINIMUM PAUSE BETWEEN DIALING SIGNAL to 80 msec, depress the COL 2 button, **if on**, to extinguish the LED lamp.

Option	COL 2
80 msec	OFF

OR

- 4b. To set the MINIMUM PAUSE BETWEEN DIALING SIGNAL to 160 msec, depress the COL 2 button, **if extinguished**, to light the LED lamp.

Option	COL 2
160 msec	ON

Step 5 Depress the # button on the Dial Pad to store the program established in Step 4.

Step 6 Proceed to next feature program or depress FLASH button and SPKR button in sequence to end programming mode at TEL 1.

APPENDIX A PROGRAMMING TABLE FOR INITIAL SET

FEATURE		OPTION SELECTED			
		30 SECONDS	1 MINUTE	2 MINUTES	NO ALARM
SYSTEM SETTINGS	HOLD-ON ALARM				X
	LONG SPEECH ALARM	TONE		NO TONE	
	CONNECTION OF DOORPHONE	CONNECTED		NOT CONNECTED	
	AUTO PAUSE	PAUSE		NO PAUSE	
	INCOMING ALARM TIME	20 SECONDS		30 SECONDS	
COL SETTINGS	DIALING METHOD		10 PPS	20 PPS	DTMF
		COL 1	X		
		COL 2	X		
	TYPE OF LINE		CO		PBX
		COL 1	X		
		COL 2	X		
INCOMING COL CALL ARRIVING ALARM		ALARM		NO ALARM	
	COL 1			X	
	COL 2			X	
KEY TELEPHONE SETTINGS TELEPHONE NO. 1	COL INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	NIGHT INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	DOORPHONE CALL		RING	NO RING	
		DP A	X		
		DP B	X		
	INTERCOM CALL DURING CONVERSATION		RING	NO RING	
				X	
	COL AUTO ANSWER		AUTO ANSWER		NO AUTO ANSWER
			X		
	COL INTERRUPTION		PRIVACY		NO PRIVACY
		X			
SET THE SPEAKERPHONE		KEY TELEPHONE		SPEAKERPHONE	
		X			
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4
					X

**KEY TELEPHONE SETTINGS
TELEPHONE NO. 2**

COL INCOMING RING		RING	NO RING	
	COL 1	X		
	COL 2	X		
NIGHT INCOMING RING		RING	NO RING	
	COL 1	X		
	COL 2	X		
DOORPHONE CALL		RING	NO RING	
	DP A	X		
	DP B	X		
INTERCOM CALL DURING CONVERSATION		RING	NO RING	
			X	
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER	
		X		
COL INTERRUPTION		PRIVACY	NO PRIVACY	
		X		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE	
		X		
SERVICE CLASS	CLASS 1	CLASS 2	CLASS 3	CLASS 4
				X

**KEY TELEPHONE SETTINGS
TELEPHONE NO. 3**

COL INCOMING RING		RING	NO RING	
	COL 1	X		
	COL 2	X		
NIGHT INCOMING RING		RING	NO RING	
	COL 1	X		
	COL 2	X		
DOORPHONE CALL		RING	NO RING	
	DP A	X		
	DP B	X		
INTERCOM CALL DURING CONVERSATION		RING	NO RING	
			X	
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER	
		X		
COL INTERRUPTION		PRIVACY	NO PRIVACY	
		X		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE	
		X		
SERVICE CLASS	CLASS 1	CLASS 2	CLASS 3	CLASS 4
				X

KEY TELEPHONE SETTINGS TELEPHONE NO. 4	COL INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	NIGHT INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	DOORPHONE CALL		RING	NO RING	
		DP A	X		
		DP B	X		
	INTERCOM CALL DURING CONVERSATION		RING	NO RING	
			X		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
		X			
COL INTERRUPTION		PRIVACY	NO PRIVACY		
		X			
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
		X			
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4
					X
KEY TELEPHONE SETTINGS TELEPHONE NO. 5	COL INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	NIGHT INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	DOORPHONE CALL		RING	NO RING	
		DP A	X		
		DP B	X		
	INTERCOM CALL DURING CONVERSATION		RING	NO RING	
			X		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
		X			
COL INTERRUPTION		PRIVACY	NO PRIVACY		
		X			
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
		X			
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4
					X

KEY TELEPHONE SETTINGS TELEPHONE NO. 6	COL INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	NIGHT INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	DOORPHONE CALL		RING	NO RING	
		DP A	X		
		DP B	X		
	INTERCOM CALL DURING CONVERSATION		RING	NO RING	
			X		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
		X			
COL INTERRUPTION		PRIVACY	NO PRIVACY		
		X			
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
		X			
SERVICE CLASS	CLASS 1	CLASS 2	CLASS 3	CLASS 4	
				X	
KEY TELEPHONE SETTINGS TELEPHONE NO. 7	COL INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	NIGHT INCOMING RING		RING	NO RING	
		COL 1	X		
		COL 2	X		
	DOORPHONE CALL		RING	NO RING	
		DP A	X		
		DP B	X		
	INTERCOM CALL DURING CONVERSATION		RING	NO RING	
				X	
	COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER	
			X		
	COL INTERRUPTION		PRIVACY	NO PRIVACY	
			X		
	SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE	
			X		
	SERVICE CLASS	CLASS 1	CLASS 2	CLASS 3	CLASS 4
					X
SINGLE LINE TELEPHONES		KEY TELEPHONE	SINGLE LINE TELEPHONE		
	TEL 7	X			
	TEL 8	X			

KEY TELEPHONE SETTINGS TELEPHONE NO. 8	COL INCOMING RING		RING				NO RING				
		COL 1	X								
		COL 2	X								
	NIGHT INCOMING RING		RING				NO RING				
		COL 1	X								
		COL 2	X								
	DOORPHONE CALL		RING				NO RING				
		DP A	X								
		DP B	X								
	INTERCOM CALL DURING CONVERSATION		RING				NO RING				
							X				
	COL AUTO ANSWER		AUTO ANSWER				NO AUTO ANSWER				
			X								
	COL INTERRUPTION		PRIVACY				NO PRIVACY				
		X									
SET THE SPEAKERPHONE		KEY TELEPHONE				SPEAKERPHONE					
		X									
SERVICE CLASS		CLASS 1	CLASS 2			CLASS 3	CLASS 4				
							X				
SINGLE LINE TELEPHONES		KEY TELEPHONE				SINGLE LINE TELEPHONE					
	TEL 7	X									
	TEL 8	X									
OUTWARD DIALING RESTRICTION SETTINGS	RESTRICTED FROM FROM DIALING SHARED COMMON NUMBER	RESTRICTED				NO RESTRICTION					
						X					
	TYPE SET OF SERVICE CLASS 2 OR 3	TYPE A				TYPE B					
		X									
	PBX OUTWARD DIALING DIGITS	0	1	2	3	4	5	6	7	8	9
											X
DIALING SIGNAL SENT TIME	80 MSEC				160 MSEC						
	X										
MINIMUM PAUSE BETWEEN DIALING SIGNAL	80 MSEC				160 MSEC						
	X										

PROGRAMMING TABLE

FEATURE		OPTION SELECTED			
SYSTEM SETTINGS	HOLD-ON ALARM	30 SECONDS	1 MINUTE	2 MINUTES	NO ALARM
	LONG SPEECH ALARM	TONE		NO TONE	
	CONNECTION OF DOORPHONE	CONNECTED		NOT CONNECTED	
	AUTO PAUSE	PAUSE		NO PAUSE	
	INCOMING ALARM TIME	20 SECONDS		30 SECONDS	
COL SETTINGS	DIALING METHOD	10 PPS		20 PPS	DTMF
		COL 1			
		COL 2			
	TYPE OF LINE	CO		PBX	
		COL 1			
		COL 2			
INCOMING COL CALL ARRIVING ALARM	ALARM		NO ALARM		
	COL 1				
	COL 2				
KEY TELEPHONE SETTINGS TELEPHONE NO. 1	COL INCOMING RING	RING		NO RING	
		COL 1			
		COL 2			
	NIGHT INCOMING RING	RING		NO RING	
		COL 1			
		COL 2			
	DOORPHONE CALL	RING		NO RING	
		DP A			
		DP B			
	INTERCOM CALL DURING CONVERSATION	RING		NO RING	
	COL AUTO ANSWER	AUTO ANSWER		NO AUTO ANSWER	
	COL INTERRUPTION	PRIVACY		NO PRIVACY	
SET THE SPEAKERPHONE	KEY TELEPHONE		SPEAKERPHONE		
SERVICE CLASS	CLASS 1	CLASS 2	CLASS 3	CLASS 4	

KEY TELEPHONE SETTINGS TELEPHONE NO. 2	COL INCOMING RING		RING		NO RING	
		COL 1				
		COL 2				
	NIGHT INCOMING RING		RING		NO RING	
		COL 1				
		COL 2				
	DOORPHONE CALL		RING		NO RING	
		DP A				
		DP B				
	INTERCOM CALL DURING CONVERSATION		RING		NO RING	
COL AUTO ANSWER		AUTO ANSWER		NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY		NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE		SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4	
KEY TELEPHONE SETTINGS TELEPHONE NO. 3	COL INCOMING RING		RING		NO RING	
		COL 1				
		COL 2				
	NIGHT INCOMING RING		RING		NO RING	
		COL 1				
		COL 2				
	DOORPHONE CALL		RING		NO RING	
		DP A				
		DP B				
	INTERCOM CALL DURING CONVERSATION		RING		NO RING	
COL AUTO ANSWER		AUTO ANSWER		NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY		NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE		SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4	

KEY TELEPHONE SETTINGS TELEPHONE NO. 4	COL INCOMING RING		RING	NO RING	
		COL 1			
		COL 2			
	NIGHT INCOMING RING		RING	NO RING	
		COL 1			
		COL 2			
	DOORPHONE CALL		RING	NO RING	
		DP A			
DP B					
INTERCOM CALL DURING CONVERSATION		RING	NO RING		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY	NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4
KEY TELEPHONE SETTINGS TELEPHONE NO. 5	COL INCOMING RING		RING	NO RING	
		COL 1			
		COL 2			
	NIGHT INCOMING RING		RING	NO RING	
		COL 1			
		COL 2			
	DOORPHONE CALL		RING	NO RING	
		DP A			
DP B					
INTERCOM CALL DURING CONVERSATION		RING	NO RING		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY	NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4

**KEY TELEPHONE SETTINGS
TELEPHONE NO. 6**

COL INCOMING RING		RING	NO RING		
	COL 1				
	COL 2				
NIGHT INCOMING RING		RING	NO RING		
	COL 1				
	COL 2				
DOORPHONE CALL		RING	NO RING		
	DP A				
	DP B				
INTERCOM CALL DURING CONVERSATION		RING	NO RING		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY	NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4

**KEY TELEPHONE SETTINGS
TELEPHONE NO. 7**

COL INCOMING RING		RING	NO RING		
	COL 1				
	COL 2				
NIGHT INCOMING RING		RING	NO RING		
	COL 1				
	COL 2				
DOORPHONE CALL		RING	NO RING		
	DP A				
	DP B				
INTERCOM CALL DURING CONVERSATION		RING	NO RING		
COL AUTO ANSWER		AUTO ANSWER	NO AUTO ANSWER		
COL INTERRUPTION		PRIVACY	NO PRIVACY		
SET THE SPEAKERPHONE		KEY TELEPHONE	SPEAKERPHONE		
SERVICE CLASS		CLASS 1	CLASS 2	CLASS 3	CLASS 4
SINGLE LINE TELEPHONES		KEY TELEPHONE		SINGLE LINE TELEPHONE	
	TEL 7				
	TEL 8				

KEY TELEPHONE SETTINGS TELEPHONE NO. 8	COL INCOMING RING		RING				NO RING				
		COL 1									
		COL 2									
	NIGHT INCOMING RING		RING				NO RING				
		COL 1									
		COL 2									
	DOORPHONE CALL		RING				NO RING				
		DP A									
		DP B									
	INTERCOM CALL DURING CONVERSATION		RING				NO RING				
COL AUTO ANSWER		AUTO ANSWER				NO AUTO ANSWER					
COL INTERRUPTION		PRIVACY				NO PRIVACY					
SET THE SPEAKERPHONE		KEY TELEPHONE				SPEAKERPHONE					
SERVICE CLASS		CLASS 1	CLASS 2			CLASS 3		CLASS 4			
SINGLE LINE TELEPHONES		KEY TELEPHONE				SINGLE LINE TELEPHONE					
	TEL 7										
	TEL 8										
OUTWARD DIALING RESTRICTION SETTINGS	RESTRICTED FROM FROM DIALING SHARED COMMON NUMBER		RESTRICTED				NO RESTRICTION				
	TYPE SET OF SERVICE CLASS 2 OR 3		TYPE A				TYPE B				
	PBX OUTWARD DIALING DIGITS		0	1	2	3	4	5	6	7	8
DIALING SIGNAL SENT TIME		80 MSEC				160 MSEC					
MINIMUM PAUSE BETWEEN DIALING SIGNAL		80 MSEC				160 MSEC					

SPEED DIALING STORED COMMON NUMBERS	00	01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40
41	42	43	44	45	46	47
48	49	50	51	52	53	54
55	56	57	58	59	60	61
62	63	64	65	66	67	68
69	70	71	72	73	74	75
76	77	78	79	80	81	82
83	84	85	86	87	88 FIRE	89 POLICE



Operating Instructions

Easa-Phone™
Key Telephone System

VA-208

Panasonic

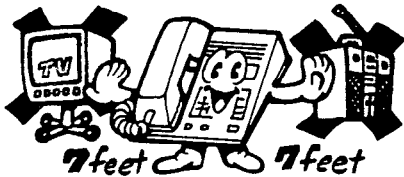
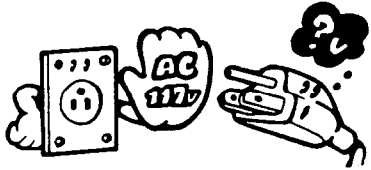
Before operating this unit, please read these instructions completely.

7A249029E

Thank you for purchasing the Panasonic Easa-Phone VA-208, Key Telephone System.

- This unit can be used with any of pulse and/or touch tone lines.
In addition, two dialing speeds of 20 PPS (fast dialing speed) and 10 PPS (slow dialing speed) can be mixed as a dialing speed for a rotary dialing line. (Pulse Line)
- Keys used by this unit are all of a non-lock type.

IMPORTANT INSTRUCTIONS



Always follow the instructions below for your safety.

- This unit generates radio frequencies (RF). Therefore, keep the unit away from a TV set and radio to prevent noises.
- Never use paint thinner and the like for cleaning a telephone.
If the telephone becomes too dirty, wipe it off with a piece of cloth dampened with a kitchen detergent, then wipe it again with a dry cloth.
- Keep the set installation, terminals, connectors, etc. free from water and so forth.
Also, do not use the unit at a place with high humidity or a place exposed to the rain.
- Always plug a power cable to AC117V plug receptacle only.
- Do not change the set installation location without consulting the dealer/installer from which you purchased the unit.

TABLE OF CONTENTS

■ Important Instructions	1	to another extension	20
■ Important Notice	4	(2) When the party to whom the call is to be transferred is away from you. <COL auto-matic transfer>	21
■ Name and Function of each Item	6	6. When providing COL conference	22
■ Accessories	7	Convenient Features for COL Communication	23
When providing COL communication (Central Office Telephone Line)	8	● Volume control of received voice	23
1. When making a telephone call	8	● Long speech alarm	23
(1) Manual dialing	8	● COL call arriving alarm	23
(2) Redialing the last dialed telephone number	9	● Volume control of arriving and monitor tones	23
(3) Automatic dialing	10	● Receiving with speaker	24
● Dialing a number stored in the memory	10	● Flashing	24
● Dialing an emergency number	11	● Interruption to COL conversation	24
● Dialing an individual number stored in the memory	12	● Outward dialing restriction	24
2. When storing numbers into the memory	13	● Night transfer	25
● When storing common numbers	13	● Hold recall	25
● When storing emergency numbers	14	● Automatic pausing	25
● When storing individual numbers	15	● DTMF signal conversion	26
● When inserting a pause between dials	16	When providing Intercom Communication	27
3. When receiving a telephone call	18	1. When making individual access to intercom	27
(1) When answering through the telephone at which an incoming ringing tone is heard	18	2. When making simultaneous access to intercom	28
(2) When answering through the telephone at which an incoming ringing tone is not heard	18	(1) Calling	28
4. When temporarily holding the line.	19	(2) Answering	28
5. When transferring a COL incoming call to another telephone.	20	3. When temporarily holding the line	29
(1) When the party to whom the call is transferred		4. When transferring a conversation to another telephone	30
		5. When providing an intercom conference	31

6. When making an intercom alternate point answering	32
Convenient Features for Intercom Communication	33
● Incoming call arriving during busy	33
● Receiving a call with speaker	33
■ Sound and Lamp Indications	34
1. When COL is in use.	34
2. When intercom is in use.	35
Function and Usage of Optional Units	36
1. When providing external paging.	36
(1) When providing external paging only	36
(2) When providing the simultaneous station call and external paging at the same time	37
2. When providing doorphone communication	38
(1) When answering through the telephone to which a doorphone incoming ringing tone is set	38
(2) When answering through the telephone to which no doorphone incoming ringing tone is set.	39
When Power Failure Occurs.	40
■ Priority when making a call and receiving a call occur at the same time	42
■ Quick reference of the words in this booklet	44
■ Specification	45
■ Memo for your convenience	45

■ IMPORTANT NOTICE

This unit generates radio frequencies (RF). If not used in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception. This unit has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this unit does cause interference (such as static) to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by employing one or more of the following measures:

- change the location or position of the receiving antenna (indoor type) of the radio or TV.
- move the unit away from the radio or TV.
- plug the unit into a different outlet so that the unit and the radio, or TV are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U. S. Government Printing Office Washington, D. C., 20402, Stock No. 004-000-00345-4.

This telephone does not provide magnetic coupling to hearing aid and is prohibited for use by FCC rules in the following locations:

1. Places where a person with impaired hearing might be isolated, such as elevators, highways, tunnels, etc.
2. Hospital rooms, residential health care facilities, convalescent homes, and prisons, specifically where telephone are used for signalling life-threatening or emergency situation if alternative means of signalling are not available.
3. Places where telephones are specifically installed to alert emergency authorities such as police, fire or medical assistance personnel.
4. Workstations for hearing impaired employee.
5. Places in which visits by public are reasonably expected, such as lobbies of hotels, motels, apartment buildings, public transportation terminals, stores, etc.
6. Hotels and motels where fewer than ten percent at the rooms contain hearing-aid compatible telephones or contain no jack for plug-in hearing-aid compatible telephones.

NAME AND FUNCTION OF EACH ITEM

WHEN PROVIDING COL COMMUNICATION

1. When making a telephone call.
2. When storing numbers into the memory.
3. When receiving a telephone call.
4. When temporarily holding the line.
5. When transferring a COL incoming call to another telephone.
6. When providing COL conference.

CONVENIENT FEATURES FOR COL COMMUNICATION

WHEN PROVIDING INTERCOM COMMUNICATION

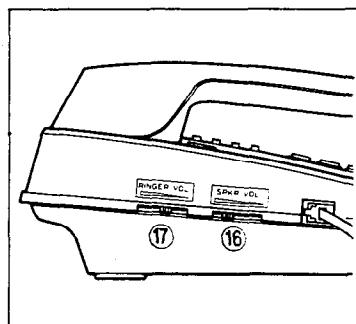
1. When making individual access to intercom.
2. When making simultaneous access to intercom.
3. When temporarily holding the line.
4. When transferring a conversation to another telephone.
5. When providing an intercom conference.
6. When making an intercom alternate point answering.

CONVENIENT FEATURES FOR INTERCOM COMMUNICATION

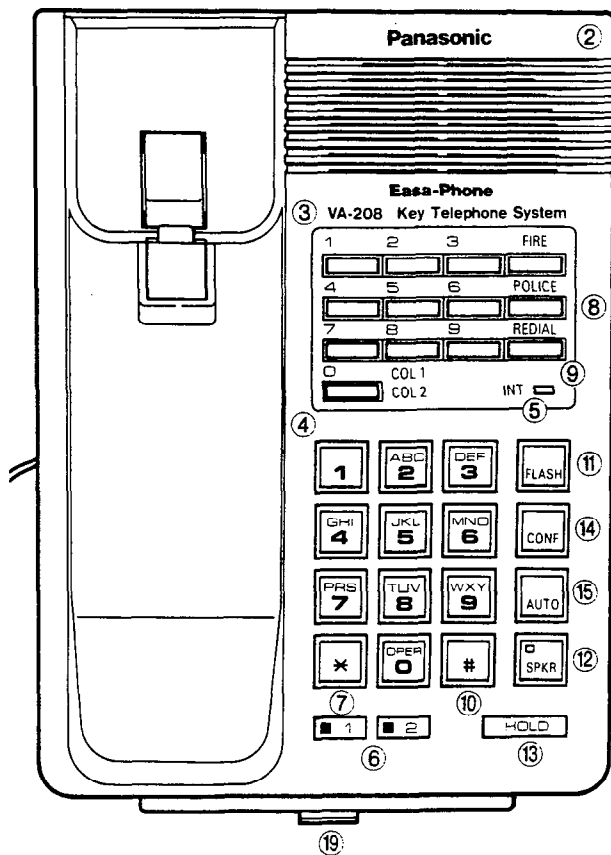
NAME AND FUNCTION OF EACH ITEM

1. **Handset**
2. **Speaker**
For enabling various signal sounds and conversation voices to be heard.
3. **One-Touch Button**
Used for storing numbers in the memory (up to 10 numbers every telephone) or dialing a number in the memory.
4. **Dialing Button**
5. **INT Indicator**
Flashes in intercom arriving and in hold mode, and lights up in intercom communication mode.
6. **Line Selector Button - Indicator**
Capable of connecting up to two CO lines.
A lamp of the CO line being used by you will flash while a lamp of the line being used by another party will light up.
7. **Asterisk Button**
Used in the intercom alternate point answering mode, etc.
8. **Emergency Button**
Enables one-touch dialing to FIRE, POLICE.
9. **Redialing Button**
Used to redial the party you called last.
10. **Sharp Button**
Used for answering to the simultaneous intercom call, doorphone call, etc.

11. **FLASH Button**
Provides the same telephone operation as hanging up a handset. This button is used in FLASH mode.
12. **SPKR Button - Indicator**
Provides the same telephone operation as lifting off a handset. For on-hook dialing only.
13. **HOLD Button**
Used when temporarily holding the line and when pause is necessary on entering memory.



6



14. **CONF Button**
Used for transferring a call or for a conference.
15. **AUTO Button**
Used when entering numbers in the memory and when automatically dialing a number stored in the memory.
16. **Speaker Volume Control**
For adjusting the sound level of a voice from the speaker.
17. **Tone Ringer Volume Control**
For adjusting the volume of incoming ringing tone, calling tone and voice.
18. **Volume Selector (located on the back of the handset)**
For enabling the sound level of your party's voice to be made louder when switched to H side, if the other party's voice is weak.
19. **Telephone numbers List**
For entering numbers in the memory or intercom numbers for your convenience.

ACCESSORIES

Fuses	0.3AX2, 1.0AX2, 2.0AX1, 8AX1
Fixtures for installing the main unit on the wall	One set
Operating instructions	One copy
Operational Procedure List	8 copies
Installation manual	One copy
Short Telephone Line Cord for Wall Mounting of telephone	2 pieces

7

1. WHEN MAKING A TELEPHONE CALL

(1) Manual dialing



NOTE

- It will return to Standby mode unless the dialing is done within approximately 15 seconds after pressing Line Selector Button-Indicator, in the on hook dialing mode.
- Set the knob of Monitor Volume Control ⑮ to "High", if the level of a noise around the telephone is high.



- 1 Press the vacant Line Selector Button-Indicator ⑥ .
 - COL dialing tone
 - SPKR Button-Indicator will light up.



* Dialing can be also done by lifting Handset. Then pressing Line Selector Button or by just pressing Line Selector Button to activate monitor speaker.



2. Press Dialing Buttons ④ of the desired telephone number.



- 3 In monitor Speaker mode ② pick up Handset after party has answered.



- 4 Lift Handset ① .



Now, a telephone conversation with your party is available.

(2) Redialing the last dialed telephone number



- 1 Press Redialing Button ⑨ .



Now, the last dialed telephone number is dialed automatically.

NOTE

Redialing can be also done by lifting off Handset, pressing Line Selector Button-Indicator ⑥ , then pressing Redialing Button ⑨ .

(3) Automatic dialing

In case of the automatic dialing, 88 stations for Common, 2 stations for Emergency and 10 Stations for each individual telephone are available.

- Dialing a number stored in the memory



- 1 Press the vacant Line Selector Button-Indicator ⑥.
- 2 Press AUTO Button ⑮.
- 3 To dial the number stored, press any two number from 00~87.

Now, the number is dialed automatically.

10

- Dialing an emergency number



- 1 Press the vacant Line Selector Button-Indicator ⑥.
- 2 Press Emergency Button ⑧.

Now, the emergency number is dialed automatically.

- Dialing an individual number stored in the memory.



- 1 Press the vacant Line Selector Button-Indicator ⑥.



- 2 Press One-Touch Button ③.



Now, the individual number is dialed automatically.

- * Even in the one-touch button dialing mode, the dialing operation will be stopped half-way if Line Selector Button-Indicator is pressed again.

12

2. WHEN STORING NUMBERS INTO THE MEMORY.

- When storing common numbers.

Common stored-numbers are stored numbers available for every telephone.

To store these numbers, only TEL. 1 can be used. Storing operation by the use of TEL. 1 is still enabled even when TEL. 2 through TEL. 8 are in use.



- 1 Press SPKR Button ⑫.
 - Intercom dialing tone (a continuous tone) will be heard.
 - SPKR Indicator will light up.



- 2 Press AUTO Button ⑮.
 - The intercom dialing tone will cease.



- 3 Press Dialing Buttons 00 ~ 87.



- 4 Press telephone number to be stored.
 - Up to 16 digits can be stored.



- 5 Press CONF Button ⑭.
 - On completion of the storing operation, an intercom tone will be heard.



- 6 When storing additional telephone numbers in succession, repeat the operations 2 through 5 as described above.



- 7 Press SPKR Button ⑫.
 - The intercom dialing tone will cease.
 - SPKR Indicator will go off.

Now, the telephone number(s) is (are) stored.

- To change the stored telephone number(s), repeat the operations 1 through 7 as described above. The storage of the old telephone number(s) is (are) erased and (a) new telephone number(s) is (are) stored.

13

● **When storing emergency numbers.**

Storing emergency numbers is performed by the same operations as those for the common numbers. Dialing Buttons should be pressed as follows;



1 Press SPKR Button ⑫ .



2 Press Auto Button ⑮ .



3 Press Dialing Buttons ⑧⑧ for FIRE or ⑧⑨ for POLICE.



4 Dial telephone number to be stored.



5 Press CONF Button ⑭ .



6 Repeat steps 2 through 5 for storing next telephone number.



7 When finishing, press SPKR Button or hang up Handset.



● **When storing individual numbers.**

Individual stored-numbers are provided for each telephone.

To store individual numbers, please store them by operating the telephone that uses these numbers.

The storing operation is still enabled even when other telephones are in use.

It should be also noted that the one-touch buttons ① through ⑩ that are not stored correspond to Dialing Buttons ⑩⑩ through ⑩⑨ .

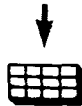
In case of storing no individual numbers into the memory, dialing is also enabled by pressing one-touch button ① through ⑩ instead of pressing AUTO Button and Dialing Buttons ⑩⑩ through ⑩⑨ .



1 Press SPKR Button ⑫ .



2 Press AUTO Button ⑮ .



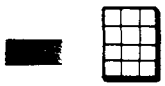
3 Press One-Touch Buttons ① through ⑩ .



- An intercom dialing tone (continuous tone) will be heard.
- SPKR Indicator will light up.

- The intercom dialing tone will cease sounding.





4 Press Dialing Buttons ④ for the telephone number to be stored.

- Up to 16 digits can be stored.



5 Press CONF Button ⑭ .

- When the number is stored, an intercom dialing tone will be heard.



6 When storing additional telephone numbers in succession, repeat the operations 2 through 5 described above.



7 Press SPKR Button ⑫ .

- The intercom dialing tone will cease.
- SPKR Indication will go off.

Now, the telephone number(s) is (are) stored in the memory.

- When changing the stored telephone number(s), repeat the operations 1 through 7 described above. The storage of the old telephone number(s) is erased and (a) new telephone number(s) is (are) stored.

- When inserting a pause between dials. Press HOLD Button, it occupies a space equivalent to one digit.

Example • To store using MCI, SPRINT, etc.



1 Press SPKR Button ⑫ .



2 Press AUTO Button ⑮ .



3 Press Dialing Buttons 00 .
(Common Memory)



4 Press Dialing Buttons ④ for the access number to be stored.

- ex. 1 2 3 - 4 5 6 7



5 Press HOLD Button ⑬ three times.
Three pause can be stored.

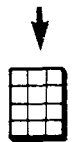
NOTE Each pressing HOLD Button gives 2 sec. of pause time.



6 Press CONF Button ⑭ .



7 Press AUTO Button ⑮ .



8 Press Dialing Buttons 01 ④ .
(Common Memory)



9 Press Dialing Buttons ④ for the Desired telephone number to be stored.

- ex. 2 0 1 - 3 9 2 - 4 3 8 9



10 Press CONF Button ⑭ .



11 Press SPKR Button ⑫ .

Now in this case, access number to MCI or SPRINT is stored in 00 and the desired telephone numbers are stored in 01 .

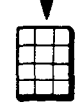
- To dial numbers using MCI



1 Press SPKR Button ⑫ .



2 Press AUTO Button ⑮ .



3 Press Dialing Buttons 00 first.

- Wait for tone and last digit dialed.



4 Press AUTO Button ⑮ .



5 Press Dialing Button 01 .

- Wait for tone and the other party replies.

3. WHEN RECEIVING A TELEPHONE CALL

(1) When answering through the telephone at which an incoming ringing tone is heard.



1 Lift Handset ① .

Reply can be given to the calling station.

NOTE

- When two incoming COL calls are arriving at the same time, reply is given to COL 1.
- When one of these COLs are held, this auto answering feature is disabled. Press the flashing Line Selector Button ⑥ after lifting off a handset.
- Note that it is possible, by means of the programming at the installation, to disable the answering unless Line Selector Button is pressed after lifting off a handset.

(2) When answering through the telephone at which an incoming ringing tone is not heard.

1 Lift Handset ① .



2 Press the Line Selector Button ⑥ with a quick-flashing Line Selector Indicator.



Now, a reply can be done to the calling station.



18

4. WHEN TEMPORARILY HOLDING THE LINE



1 Stop the conversation for a while, and press HOLD Button ⑬ .

- Line Selector Indicator ⑥ of the held CO line will flash.
- The calling station will hear a HOLD-ON music.

NOTE

By being connected to MOH terminals on the main unit, external sounds such as a radio or voices can be used as a HOLD-ON music.

Now, the line is held.



2 Press Line Selector Button ⑥ of the held CO line.

- The flashing Line Selector Indicator ⑥ will light up.

Now, the conversation is enabled.

NOTE

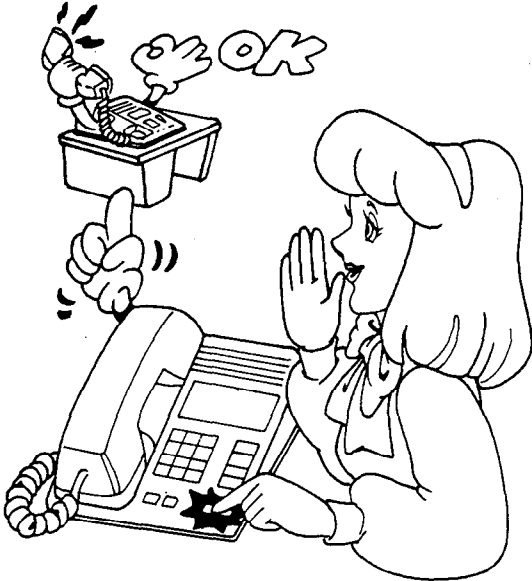
During the HOLD-ON mode, a conversation with another station through another CO line or intercom can be done.



19

5. WHEN TRANSFERRING A COL INCOMING CALL TO ANOTHER TELEPHONE

(1) When the party to whom the call is transferred to another extension



- 1 Press HOLD Button ⑬.
- 2 Press desired intercom number.
- 3 When the party answers, tell party they have a call on Line one or Two.

20

(2) When the party to whom the call is to be transferred is away from you [COL automatic transfer]



- 1 Stop the conversation for a while, and press HOLD Button ⑬.
- 2 Dial the desired intercom number ④.
- 3 Wait for the party to answer the telephone, tell party there is a call on line 1 or 2.
- 4 Press CONF Button ⑬.
 - A conversation among three parties is enabled.
- 5 Hang up Handset ①.
 - The COL party and the party to whom the call was transferred can hear a hanging-up sound.

The called party can continue, without doing anything, the conversation with the COL party.

6. WHEN PROVIDING COL CONFERENCE



1 Stop the conversation for a while, and press HOLD Button ⑬.



2 Call the third party through the vacant CO line or intercom.

3 Give a message when the party is on the line.



4 Press CONF Button ⑭.



Now, a conversation among three parties can be had.

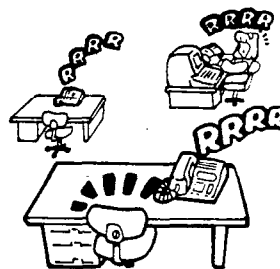
CONVENIENT FEATURES FOR COL COMMUNICATION

●Volume control of received voice



Changing Volume Selector ⑮ located on the back of the hand-set enables the sound level to increase by approximately 6 dB. Set the volume selector to "H" side, if it is hard to hear the party's voice. In same area, only a slight volume increase will be noticed.

●COL call arriving alarm ※ This has to be programmed.



If there is a delay in replying to the arriving COL call, an alarm can be sounded at all telephones. The set time is 20 seconds or 30 seconds after the arrival of the COL call. However, no alarm is sounded at the COL set programmed.

●Long speech alarm ※ This has to be programmed.



Alarm tone (lasting for approximately 0.5 second) can be produced every three minutes from the beginning of an outgoing call.

●Volume control of arriving and monitor tones



The arriving ringing tone can be adjusted by means of Tone Ringer Volume Control ⑰. Also, the speaker volume can be adjusted by Speaker Volume Control ⑱.

NOTE : About programming, see the programming table in the Installation Manual.

23

●Receiving with speaker



The party's voice can be heard through the speaker. Press SPKR Button ⑩ while you are on the line. The party's voice is still heard through the speaker, even if you hang up the handset. For returning again to the handset conversation mode, just lift off the handset.

●Interruption to COL conversation ※ This has to be programmed.



This feature allows the third party to talk on the line by interrupting the COL conversation. For the interrupting operation, press Line Selector Button of the CO line to be interrupted.

●Flashing



FLASH Button ⑩ basically has a function equivalent to hanging up and lift off again.

●Outward dialing restriction ※ This has to be programmed.



Areas, such as intra-city areas, out-of-city area, etc., to which outward dialings are allowed can be limited for each telephone. In addition, even for the telephones assigned as class 2 or class 3, a restriction can be set in order that only the origination by common SSD (System Speed Dialing) is allowed.

NOTE : About programming, see the programming table in the Installation Manual.

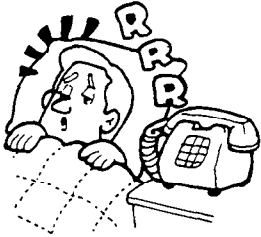
24

●Night transfer ※This has to be programmed.

Telephone calls arriving during holding or at night can be transferred automatically to the specific telephone. The operation can be done by any telephone.

- 1 Press SPKR Button ⑫.
- 2 Press \equiv Sharp Button ⑩.
- 3 Press $\overline{6}$ of Dialing Button ④.

● Both of Line Selector Indicators 1 and 2 of all telephones begin to flash. To clear this feature, perform the same operation as the set operation.



●Hold recall ※This has to be programmed.



When a party is on hold (on hook position only) the phone will ring after 30 sec (1 min or 2 min) to remind you.

●Automatic pausing ※This has to be programmed.



If it is necessary to dial for an outside line, the unit provides an automatic pause after dial number "9".

NOTE : About programming, see the programming table in the Installation Manual.

25

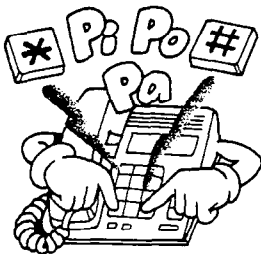
●DTMF signal conversion

DTMF signal can be sent out, although a dial pulse line is connected.

- 1 Make an outward dialing through a dial pulse line.
- 2 Press \ast Asterisk Button ⑦.
- 3 Press \equiv Sharp Button ⑩.

By the operations 1 through 3 above, access to MCI or SPRINT is enabled for long distance communication.

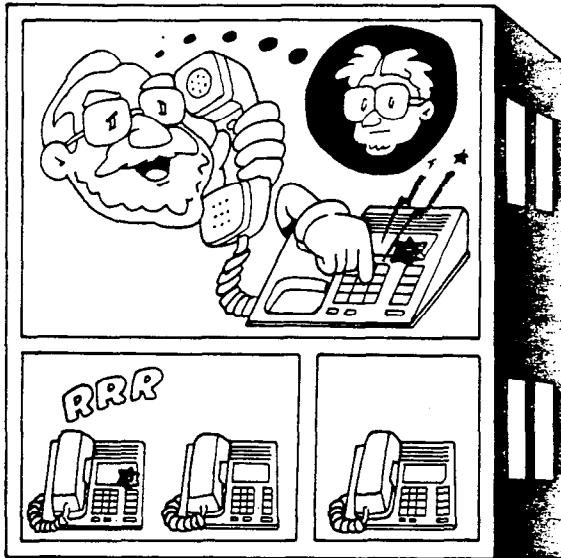
In addition, it is possible to automatically return to the dial pulse signal mode if the handset is on-hooked (hanged up).



26

WHEN PROVIDING INTERCOM COMMUNICATION

1. WHEN MAKING INDIVIDUAL ACCESS TO INTERCOM



1 Lift Handset ① .

- An intercom dialing tone will be heard.



2 Press the Dialing Button ④ of the station to be called.

- A short calling tone will be heard at the station you are calling.
- INT indicator will light up on both phones.



3 If the person does not answer immediately, press number 1 to call again.



Now, the conversation with the called station is enabled.

27

2. WHEN MAKING SIMULTANEOUS ACCESS TO INTERCOM

(1) Calling



1 Lift Handset ① .

2 Press Sharp Button ⑩ .

3 Press 0 of Dialing Button ④ .



NOTE

- Make a call such as "Ladies and gentlemen in ---".
- If an external paging unit is connected, the external paging feature will operate at the same time.

(2) Answering



1 Lift Handset ① .



2 Press Sharp Button ⑩ twice.

Now, answering can be made.

NOTE

- The simultaneous call is not effective to the telephone which is busy.

28

3. WHEN TEMPORARILY HOLDING THE LINE



- 1 Press the HOLD Button ⑬ .
 - INT Indicator ⑤ will slowly flash.

Now, the line is in the HOLD mode.



- 2 Press HOLD Button ⑬ again.
 - INT Indicator ⑤ will light up.

Now, the conversation is restored.

NOTE

- During the HOLD mode, no conversation is made with another party through the COL or intercom.

29

4. WHEN TRANSFERRING A CONVERSATION TO ANOTHER TELEPHONE



- 1 Press the HOLD Button ⑬ .



- 2 Dial station number of the telephone to which the conversation is to be transferred.



- 3 Give a message when the party answers.

- 4 Press CONF Button ⑭ .
 - All three parties may speak.

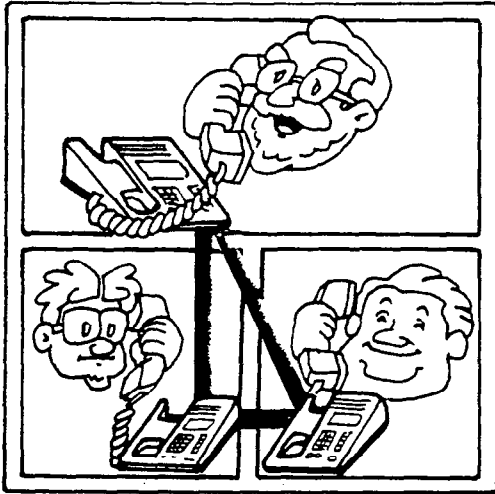
- 5 Hang up Handset ① .
 - Hanging-up tone will be heard at the telephones of the two parties.



The called party remains as he is and can speak with his party.

30

5. WHEN PROVIDING AN INTERCOM CONFERENCE



1 Press HOLD Button ⑬ .

2 Dial the intercom number of the third party.



3 Press CONF Button ⑭ . CONF Button must then be pressed by the person who pressed the HOLD Button.



Now, a conversation among three parties is made available.

31

6. WHEN MAKING AN INTERCOM ALTERNATE POINT ANSWERING



1 Lift Handset ①.



2 Press \star Asterisk Button ⑦ twice.

NOTE

- The intercom alternate point answering is available in the cases of a Doorphone Call Arriving and a Call arriving during Busy time.
- When calls arrive at two telephones or more at the same time, answering is made by the telephone having the lowest intercom number.

32

CONVENIENT FEATURES FOR INTERCOM COMMUNICATION

- Incoming call arriving during busy. ※ This has to be programmed.



If you are already talking to someone and another intercom number calls you, a continuous tone will be heard from the speaker.

- Receiving a call with the speaker .



This enables you to hear the party's voice through the speaker .

Press SPKR Button ⑫ while you are on the line. The party's voice is still heard through the speaker even if you hang up the handset.

If you want to return again to the handset communication mode, just lift the handset.

NOTE : About programming, see the programming table in the Installation Manual.

SOUND AND LAMP INDICATIONS

COL COMMUNICATION

ITEM		INTERVAL	REMARKS
When telephone call arrives	Normal		Approx. 450Hz + Approx. 550Hz, Synchronized with incoming ringing signal
COL busy	When used by yourself		
	When used by others		
COL held	Hold		
	Self-hold		
	Hold recall (Telephone held)		
Long speech alarm			3 minutes for the first time, then every 3 minutes
When night transfer feature is set			Lamp indicators flash at the same time for COL 1 and COL 2

NOTE: [S] and [L] represent sound and lamp indications, respectively.

34

INTERCOM COMMUNICATION

ITEM		INTERVAL	REMARKS
Intercom arriving	Normal		Approx. 450Hz
Intercom busy			
Intercom hold			
Intercom dialing tone			Approx. 550Hz
Intercom busy, call confirmation tone (RBT)			Approx. 550Hz
Intercom busy tone (BT)			Approx. 550Hz
Voice call confirmation tone			Approx. 550Hz
ITEM		INTERVAL	REMARKS
Busy time			Approx. 400Hz
Doorphone busy tone			INT indicator is the same as that of the intercom arriving
SPKR indicator (in on-hook dial mode)			

NOTE: [S] and [L] represent sound and lamp indications, respectively.

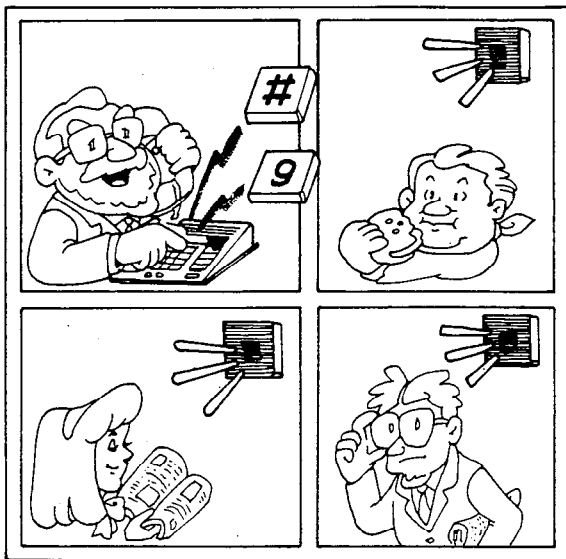
35

FUNCTION AND USAGE OF OPTIONAL UNITS

1. WHEN PROVIDING EXTERNAL PAGING

Connect an external amplifier and (a) speaker(s) to EPA terminals of the main unit.
The internal paging can be done through any of the telephones.

(1) When providing the external paging only



1 Lift Handset ①.



2 Press \equiv Sharp Button ⑩.



3 Press 9 of Dialing Button ④.

Now, the external paging is available.

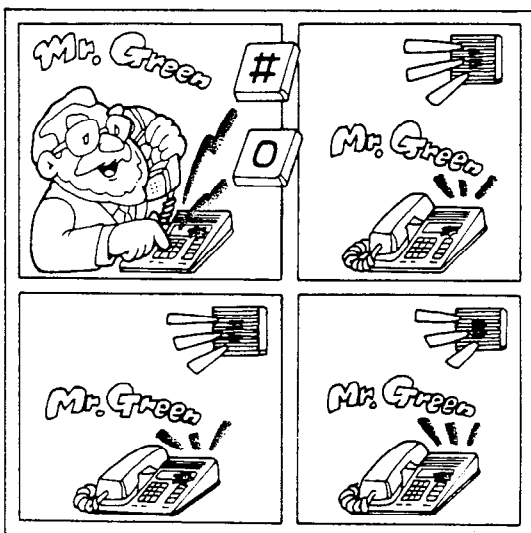
NOTE

EPA must be connected to an EXTERNAL amplifier.

36

(2) When providing the simultaneous station call and the external paging at the same time

Refer to the descriptions as to "When making simultaneous access to intercom" on Page 28.



37

2. WHEN PROVIDING THE DOORPHONE COMMUNICATION

Connect a doorphone adaptor and a doorphone unit, then the communication with the doorphone is enabled through each telephone.

Up to two doorphone units, that is, Doorphone A and Doorphone B, can be connected.

In addition, an incoming ringing tone of each doorphone unit can be sounded at up to 5 telephones, respectively.

\equiv 1 of Dialing Button corresponds to answering or calling for Doorphone Unit A.

Also, \equiv 2 of Dialing Button corresponds to answering or calling for Doorphone Unit B.

Doorphone A and B have a different sound.

(1) When answering through the telephone to which a doorphone incoming ringing tone is set

A calling tone from the doorphone unit will be heard and INT Indicator will light up for approximately 15 seconds.



While the INT Indicator is lighting.

- 1 Lift Handset ①.

Now, the doorphone communication is available after the INT Indicator goes off.

After the INT Indicator lamp goes off.



- 1 Lift Handset ①.



- 2 Press \equiv Sharp Button ⑨.

- 3 Press 1 or 2 of Dialing Button ④.

Now, the doorphone communication is available.



38

(2) When answering through the telephone to which no doorphone incoming ringing tone is set



- 1 Lift Handset ①.



- 2 Press \equiv Sharp Button ⑨.

- 3 Press 1 or 2 of Dialing Button ④.

Now, the doorphone communication is available.



39

WHEN POWER FAILURE OCCURS

	For approxi. 30 minutes after the occurrence of power failure.		After approxi. 30 minutes	When completely stopped.
Telephones assigned for Power Failure (TEL. 1, 2)	<ul style="list-style-type: none"> • TEL. 1 and TEL. 2 can be used for dialing and receiving through COL 1 and COL 2, respectively. For the operation, just lift off the handset. • The intercom will be disabled at the same time as the occurrence of power failure. • SSD feature and re-dialing feature are still available. 	<ul style="list-style-type: none"> • For the telephones in the HOLD mode, HOLD lamp flashes continuously and a hold recall tone is sounded. In addition, the restoration of the communication of the hold mode can be done only by the telephone that was held. 	<ul style="list-style-type: none"> • The communication remains as it is, only when it is in use. In addition, an arriving during busy tone is heard with a short interval. This is an alarm indicating that the battery will discharge soon. 	<ul style="list-style-type: none"> • Outward COL dialing is disabled. • Incoming COL arriving is enable only when an external ringer is installed in parallel.
Telephones not assigned for Power Failure (TEL. 3 ~ 8)	<ul style="list-style-type: none"> • COL communication remains as it is, only when it is in use. • Intercom will be disabled at the same time as the occurrence of power failure. 		<ul style="list-style-type: none"> • Disabled. 	<ul style="list-style-type: none"> • Disabled.

40

NOTE

- The power failure backup battery operates for approximately 30 minutes.
- In case of Power Failure, Indicators other than HOLD are all disabled at the telephones from No.3 to No.8.
- In a case of complete power failure (complete stoppage of power supply), set AC Power Switch on the main unit to "OFF" position.
- The power failure backup battery will be charged up by charging for 15 hours, after 1 hour-power failure.
- Replace the power failure backup battery with a new one every 3 years or so.
- Use a designated battery only.

PRIORITY WHEN MAKING A CALL AND RECEIVING A CALL OCCUR AT THE SAME TIME

When making a call and receiving a call occur at the same time, the line is connected to the one having the higher priority.

HOW TO READ THE TABLE

Example

	COL
HOLD RECALL	Maintained Prior incoming call Disabled Later incoming call

NOTE 7) Incoming call during the busy tone is heard if the incoming call during busy tone is set.

- NOTE 1)** COL 1 tone and COL 2 tone are mixed and a mixed tone rings.
- NOTE 2)** When answering is made to an incoming COL call, HOLD Recall occurs again.
- NOTE 3)** A mixed tone rings.
- NOTE 4)** A mixed tone rings.
Connection is made to Doorphone, when handset is lifted off.
At this time, COL incoming call ringing tone is changed to incoming call during busy tone.
- NOTE 5)** A mixed tone rings. When the handset is lifted off, connection is made to a doorphone call arriving later. Prior incoming call arriving tone disappears.
- NOTE 6)** Incoming call arriving tone is heard through the handset, only while talking with the door-

		Prior	Status of Incoming Call and Calling					
			Incoming COL Call	HOLD Recall	Incoming Doorphone Call	Incoming Intercom Call	Simultaneous Calling	Busy
Status of Incoming Call and Calling	Incoming COL Call	Later	Maintained	Suspended NOTE 2)	Maintained	Maintained	Stopped	Maintained
		Prior	Received NOTE 1)	Received	Received NOTE 4)	IT	Received	IT
	Hold Recall	Later	Maintained	Maintained	Maintained	Maintained	Stopped	Maintained
		Prior	Disabled	Disabled	Recalled NOTE 3)	Disabled	Recalled	Disabled
	Incoming Doorphone Call	Later	Maintained	Stopped	Maintained	Maintained	Stopped	Maintained
		Prior	Door-phone NOTE 4)	Door-phone NOTE 3)	Door-phone NOTE 5)	IT	Door-phone	IT NOTE 6)
Incoming Intercom Call	Later	Maintained	Maintained	Maintained	Maintained	Stopped	Maintained	
	Prior	Disabled (BT)	Disabled	Disabled	Disabled	call	Dis-abled or IT NOTE 7)	
Simultaneous Calling	Later	Maintained	Maintained	Maintained	Maintained	Maintained	Maintained	
	Prior	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	

BT: Busy Tone
IT: Incoming Call During Busy Tone

■ QUICK REFERENCE OF THE WORDS IN THIS BOOKLET

Common Numbers Stored in memory . . . These numbers are stored in the memory and can be used by any telephone. Telephone numbers of up to 90 stations can be stored.

Individual Numbers stored in memory . . . These numbers are stored in the memory and can be used only by the telephone which stored the numbers. Telephone numbers of up to 10 stations can be stored.

Conference . . . Simultaneous conversation through three telephones is enabled.

Emergency Call . . . Dialing to FIRE, POLICE is done by just pressing one button.

Flashing Feature . . . Dialing can be terminated by just pressing Flash Button in stead of hanging up handset. When redialing, there is no need to find a vacant CO line.

Outward Dialing Restriction . . . Classified into Class 1 (COL dialing is restricted), Class 2 (Only intra-city dialing is allowed), Class 3 (Only intra-city dialing and specific COL dialing are allowed), and Class 4 (No restriction).

Any of Class 1 through Class 4 can be assigned to each telephone.

Redialing Feature . . . When making a call again to the last dialed party, this feature enables the redialing to be done without dialing the telephone number of the party.

SPECIFICATIONS

Dimension (Inch) (Height x Width x Depth), Weight (Pound)	Key Service Unit	VA-20810	approx 14.1 x approx 10.5 x approx 3, approx 8
	Standard Key Telephone	VA-20820	approx 3.9 x approx 6.1 x approx 8.3, approx 2.6
Power Consumption		Maximum : approx. 30W Standby : approx. 10W	

MEMO FOR YOUR CONVENIENCE

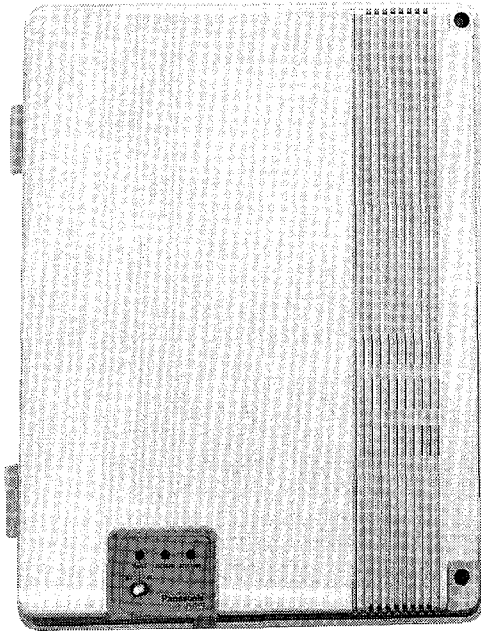
CONVENIENT MEMORANDUM		
Purchased Date	/ /	Model No. Key Telephone System VA-208
Purchased Store	TEL () -	
Panasonic Service Center	TEL () -	

MEMO

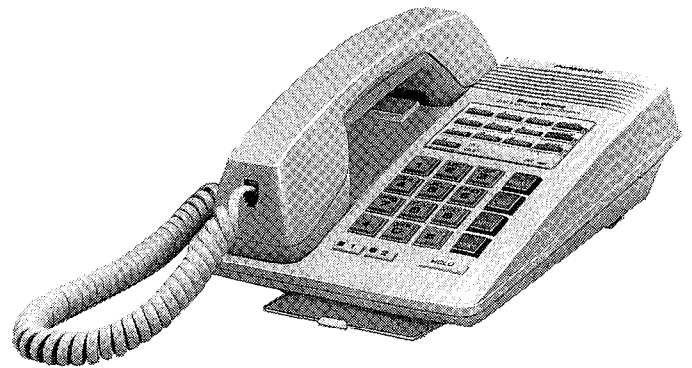
Technical Information

Easa-Phone™ Key Telephone System

VA-208



VA-20810



VA-20820

Panasonic®

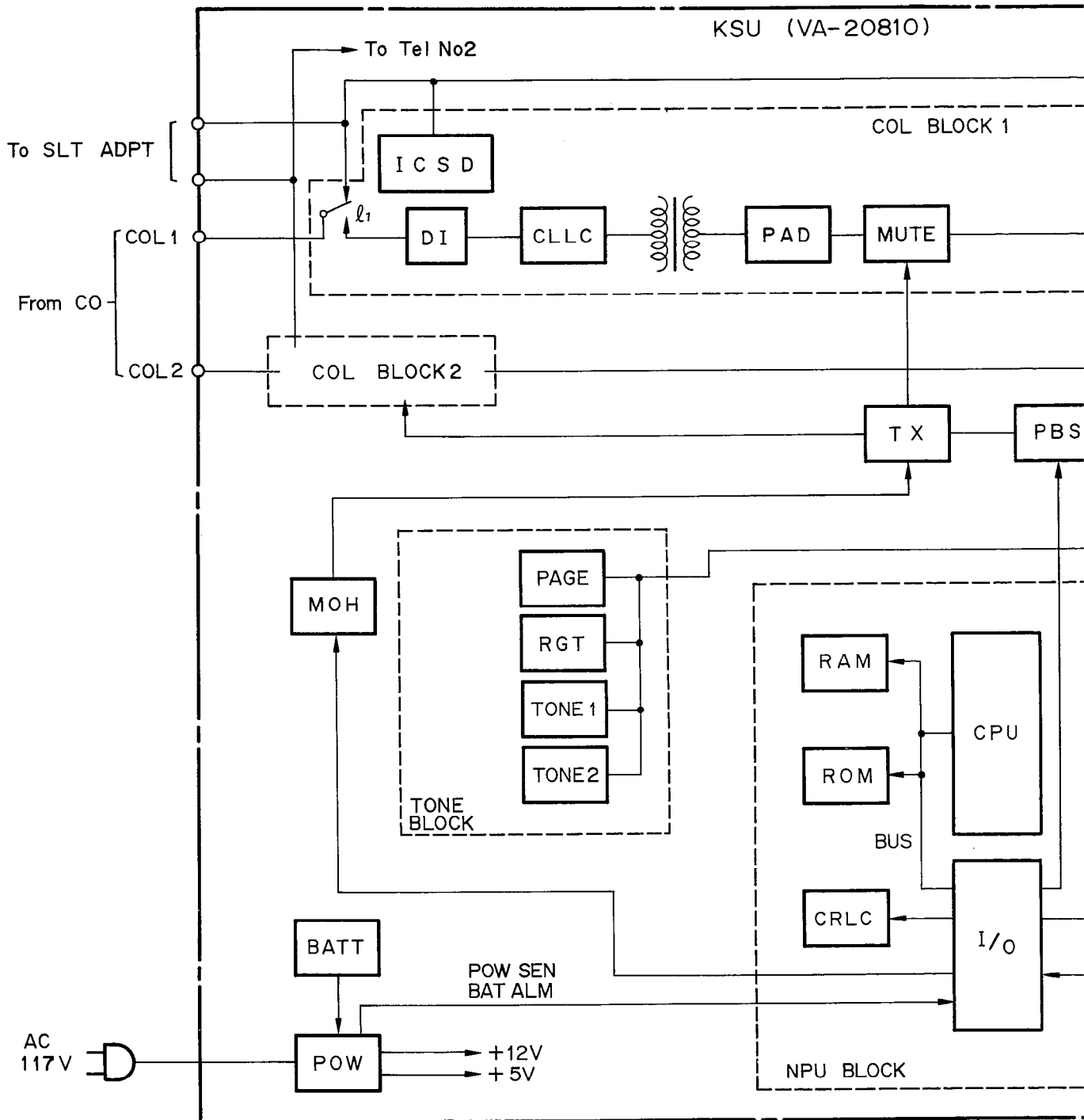
Panasonic Company
Division of Matsushita Electric Corporation of America
One Panasonic Way, Secaucus, New Jersey 07094

Panasonic Hawaii, Inc.
91-238 Kauhū St., Ewa Beach, Honolulu, Hawaii 96808-0774

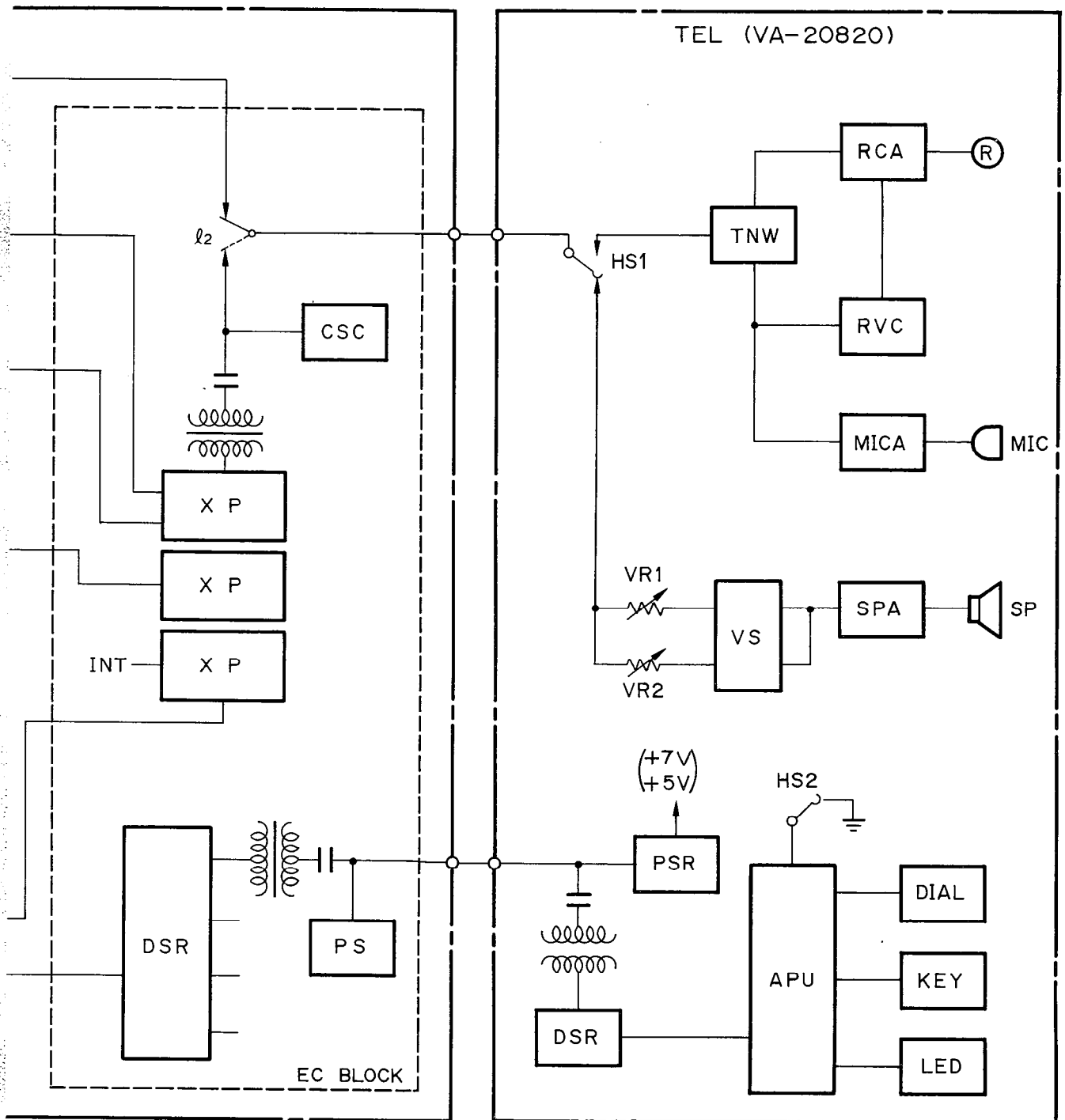
CONTENTS

BLOCK DIAGRAM	1
EXPLANATION OF CIRCUIT OPERATION (KSU)	2
1. COL Circuit	2
2. Relay Operation Circuit	3
3. Hold Tone Transmit Circuit	4
4. RAM Hold Circuit	5
5. WD Circuit	6
6. Power Failure Detect Circuit	7
7. TONE Circuit	8
8. Link IC Circuit	9
9. Data Communication between TEL and KSU (1)	11
10. Data Communication between TEL and KSU (2)	12
11. IC Port Explanation	13
EXPLANATION OF CIRCUIT OPERATION (KEY TELEPHONE)	16
1. Conversation	16
2. Functional Operation Circuit	17
3. Power Supply for TEL	18
4. A-K Communication	19
TROUBLE SHOOTING GUIDE	20

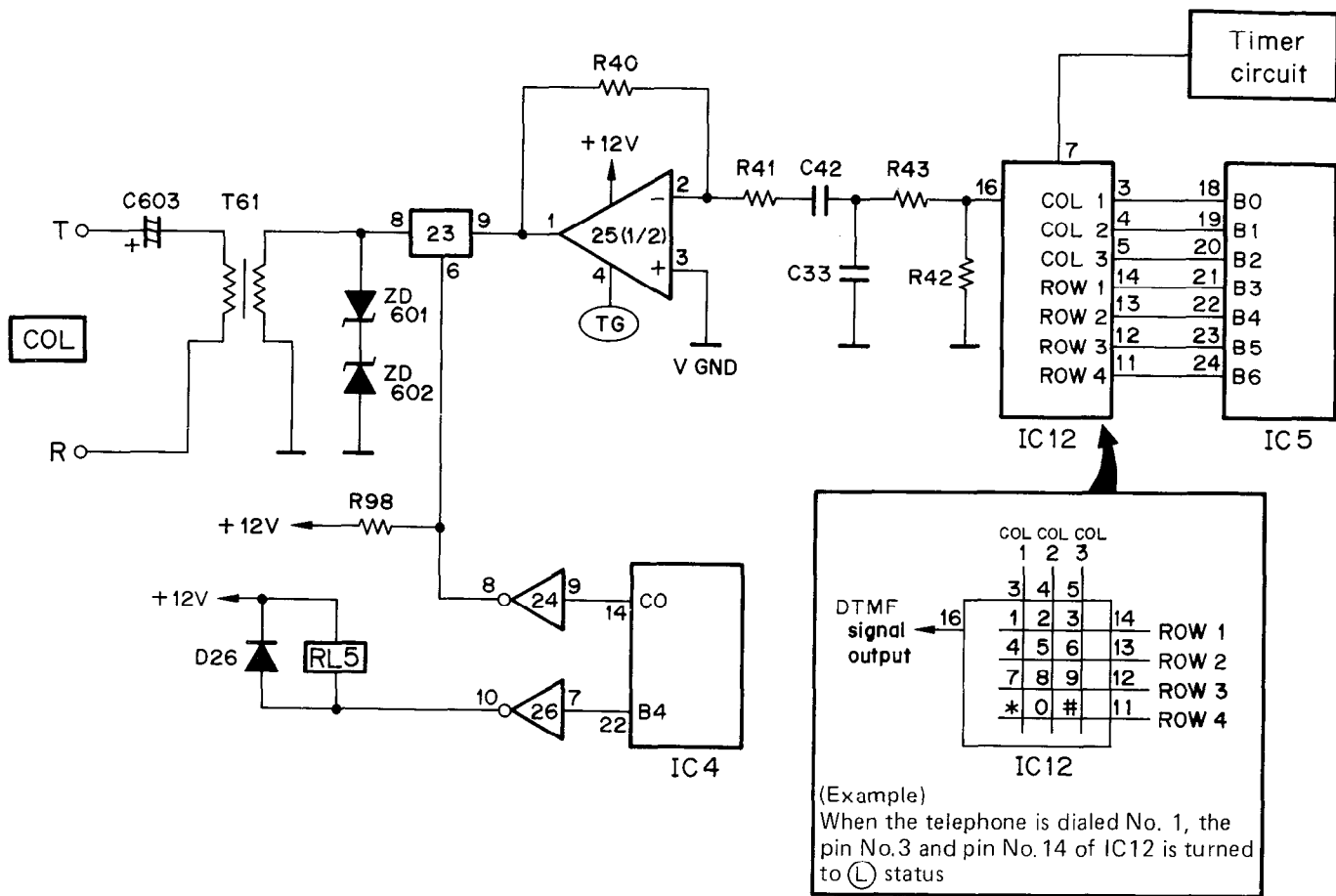
■ BLOCK DIAGRAM



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
KSU	Key Service Unit	ICSD	COL Detection Circuit	DSR	Data Transmission and Receiv
TX	Central Line Transmit Tone Switch	CLLC	COL Loop Circuit	XP	Speech Path Switch
PBS	PB Dial Sender	PAD	COL Pad	PS	Power Supply
MOH	Hold-on Music Source			CSC	Current Supply Circuit
BATT	Battery	PAGE	Paging		
POW	Power Transformer	RGT	Ringer Tone		
		TONE1,2	Intercom Signal Tone		



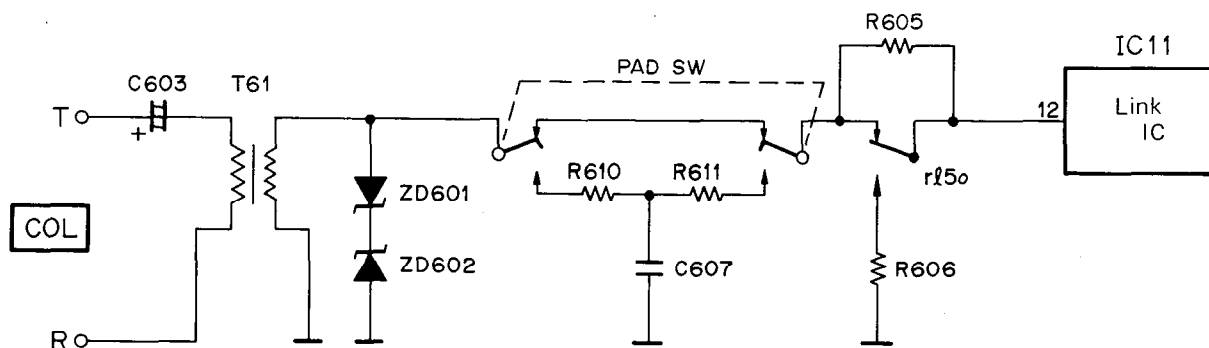
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
RAM	Random Access Memory	TEL	Key Telephone	SPA	Speaker Amp
ROM	Read Only Memory	RCA	Receiver Amp	SP	Speaker
CRLC	COL Relay Control	TNW	Telephone Network	KEY	Key Group
		RVC	Receiver Volume Control	LED	LED Group
		MICA	Microphone Amp	APU	Telephone Control CPU
		MIC	Microphone	PSR	Power Receiver and Rectifier
		VS	Voice Switch	HS	Hook Switch



(3) DTMF signal sending operation

When the DTMF signal is dialed on Key Telephone, IC12 generates desired DTMF signal according to the dialed telephone number, and amplified it by IC25 to send it to CO line via IC23 and T61.

Besides, the signal sending circuit is formed with (H) status on IC23 (Analog switch) pin No.6 when the signal is sending, and r15₁ is close during the dialing to send the DTMF signal to the CO line.



(4) PAD circuit

In case of the line resistance from the CO line is less than 300 ohms, the sound quality will be corrected by the PAD switch which the switch turned to ON (Insert R610, R611) side to function as attenuator, and it is connected in series to the CO line.

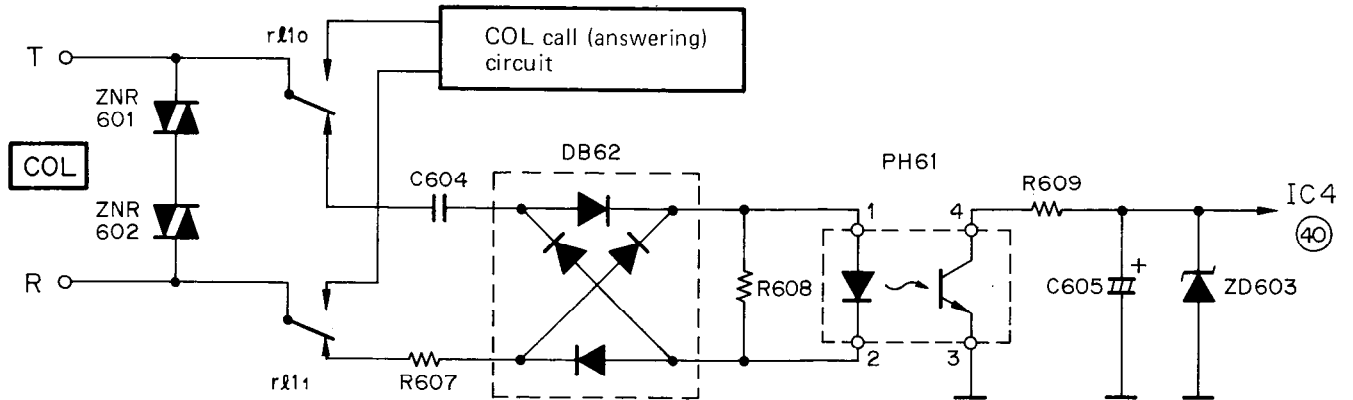
(5) Mute circuit

To reduce dial signal tone level to the hand set during the dial signal send, r15₀ operates to insert R605 and R606 as a attenuator.

■ EXPLANATION OF CIRCUIT OPERATION (KSU)

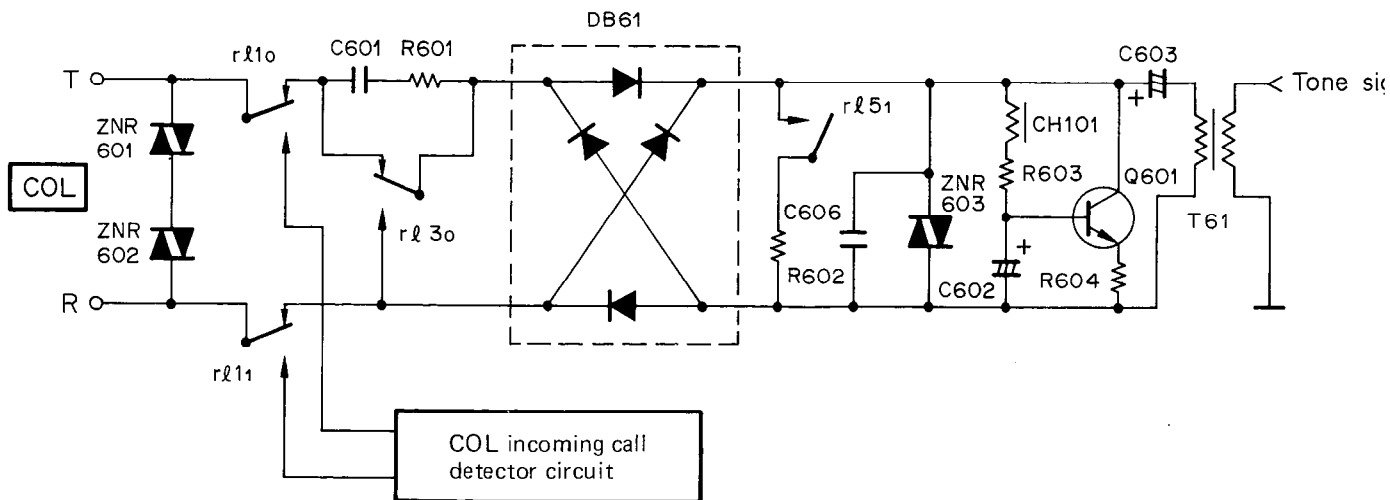
1. COL Circuit

1.1 COL incoming call detector circuit



Incoming call from COL is full wave rectified by DB62, and the rectified signal is sent to PH61 photo coupler. PH61 photo coupler is synchronised to the incoming call signal and generates switched DC pulse. Then send it to IC4 pin No. 40 to identify if the signal is incoming COL call or not. (RL1 operates when the power supply is ON, dot line side on the above figure).

1.2 COL call (answering) circuit



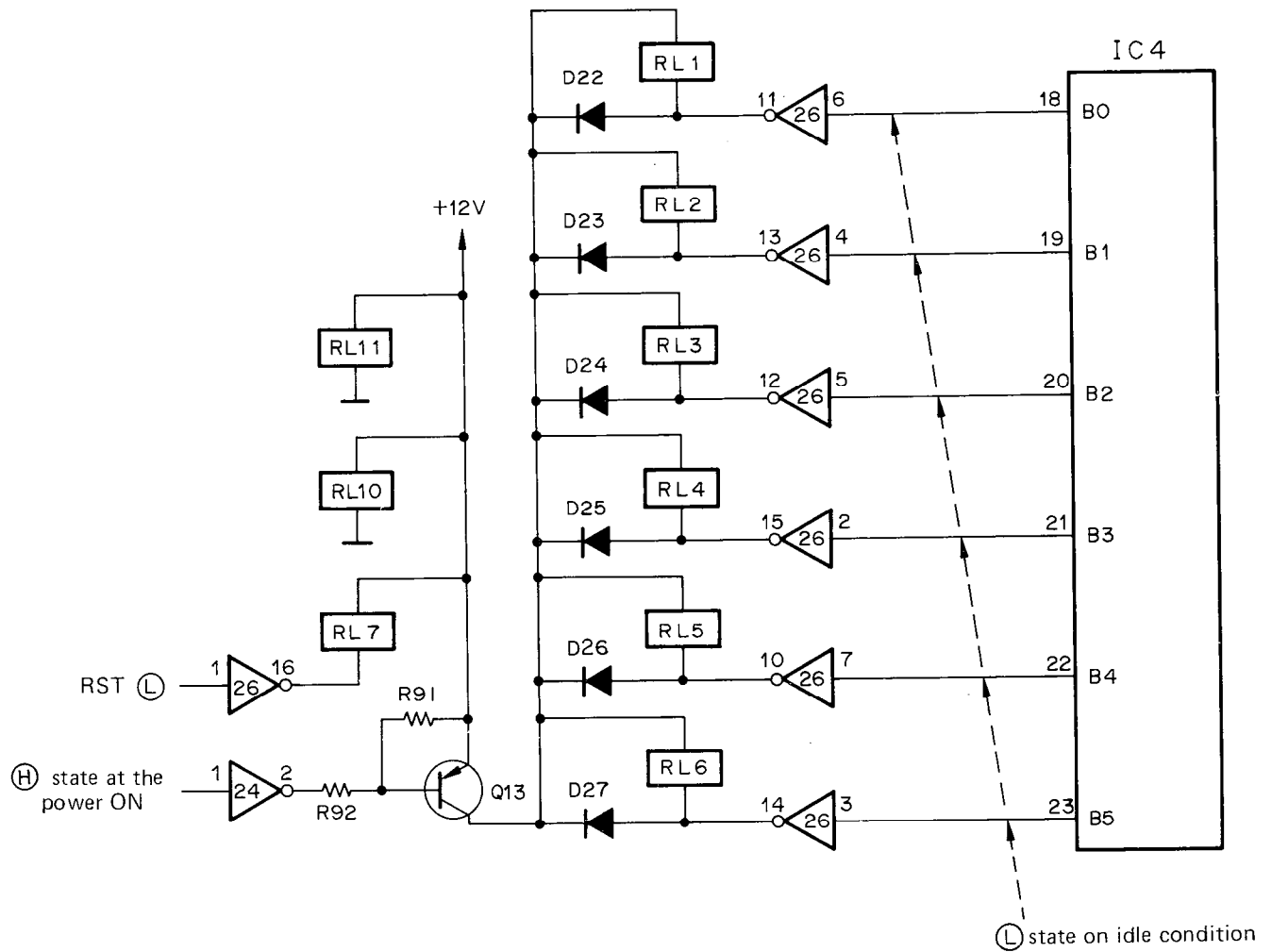
(1) Forming of the DC loop

When operates COL call (answering) on Key Telephone, RL1 relay operates (Refer to relay operation circuit) to form approx. 200 ohms DC loop by Q601 and R604 against to the CO line.

(2) Dial pulse signal sending operation

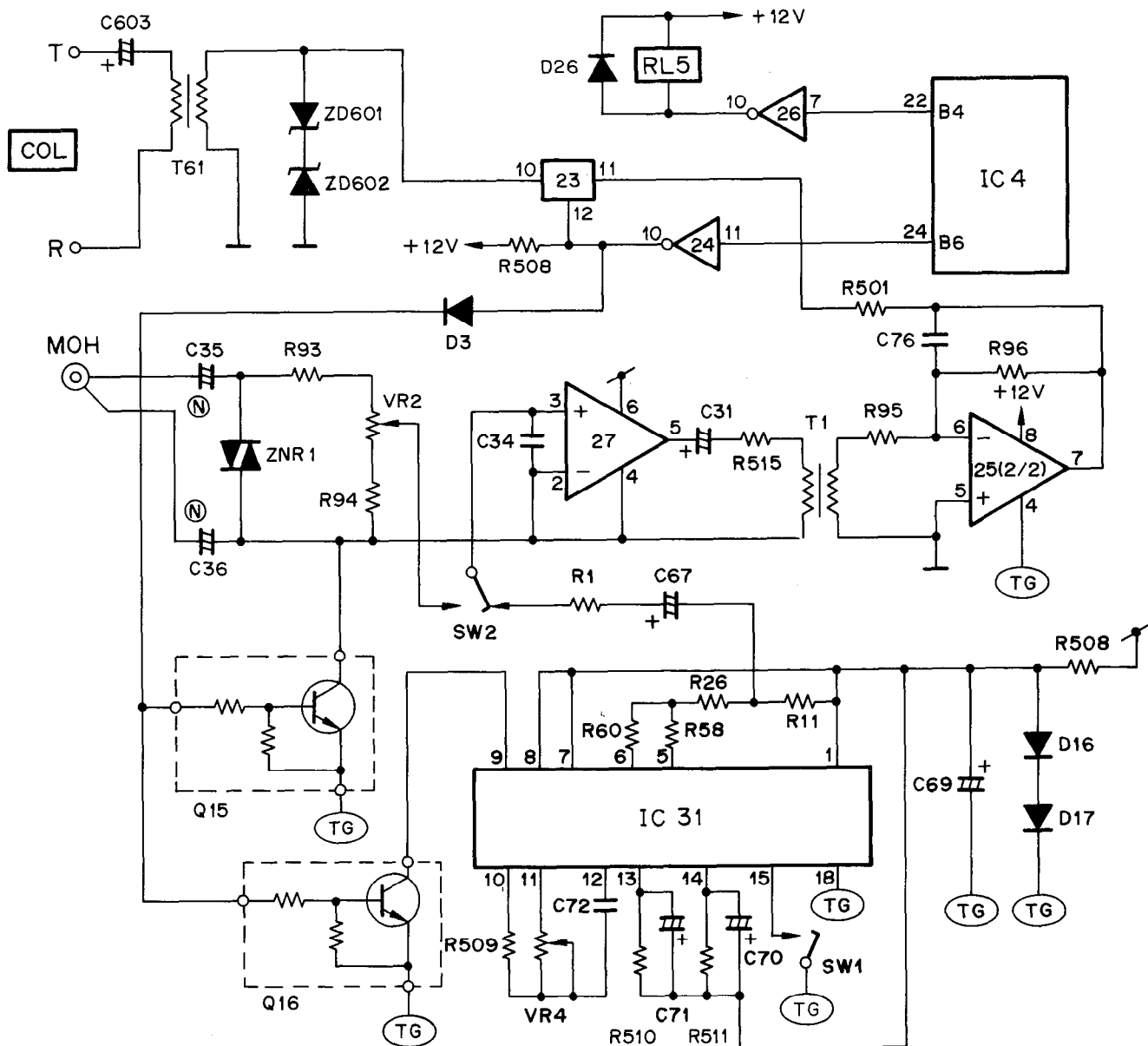
When the DP signal is dialed on Key Telephone, rl3₀ (Refer to relay circuit operation) operates intermittently according to the incoming dial pulse, and rl5₁ (Refer to relay operation circuit) is close during the dialing to send dial pulses to the CO line.

2. Relay Operation Circuit



- RL 1 : Operates when the COL 1 line is seized.
- RL 2 : Operates when the COL 2 line is seized.
- RL 3 : Operates when the dial signal sending to COL 1 line (by Di relay).
- RL 4 : Operates when the dial signal sending to COL 2 line (by Di relay).
- RL 5 : Operates when the dial signal sending and the COL 1 line holding (DS relay).
- RL 6 : Operates when the dial signal sending and the COL 2 line holding (DS relay).
- RL 7 : Power supply to TEL.
- RL 10 : Cut through at the power failure condition for TEL 1.
- RL 11 : Cut through at the power failure condition for TEL 2.

3. Hold Tone Transmit Circuit



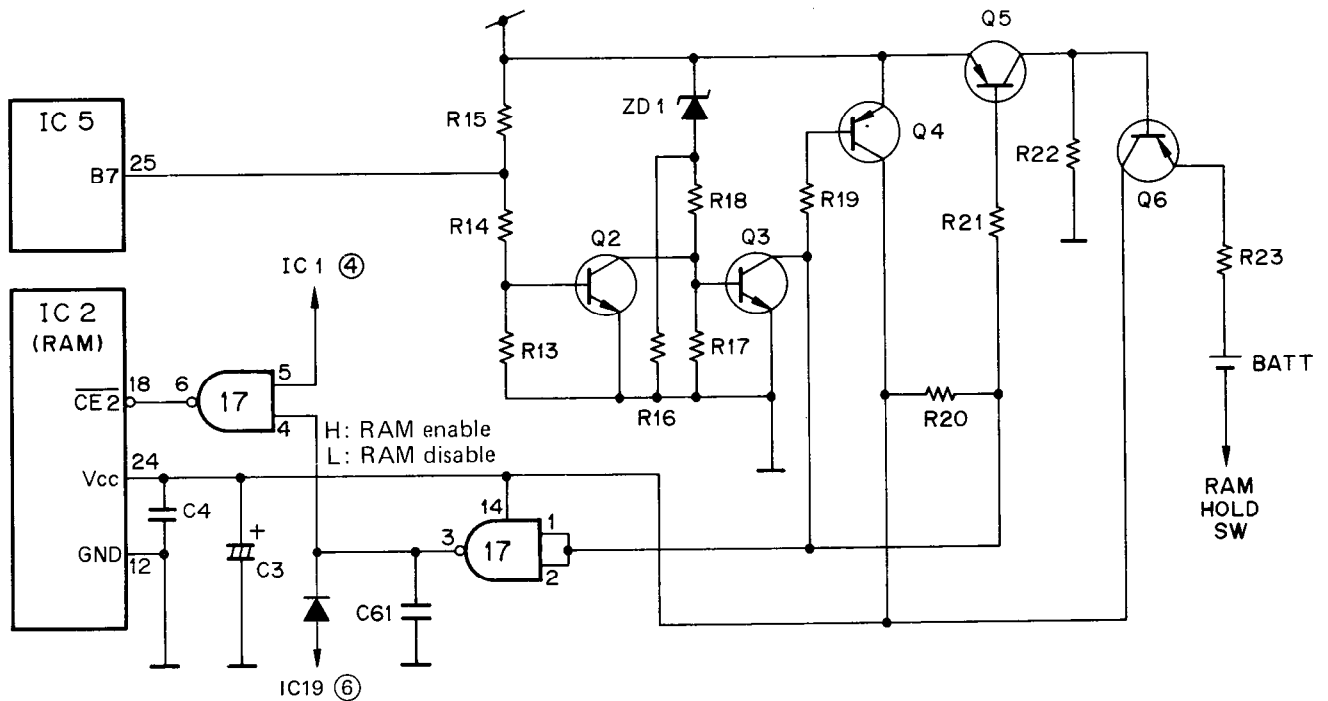
When the incoming call is hold at Key Telephone, (L) status is output on IC4-B6 (pin No. 24) by turn the SW2 switch to R1 side and SW1 switch is break.

Then reverse it with IC24 to supply the base bias ON for Q16, and IC31 (Hold tone memory IC) is actuated. Generated memory output on IC31 pin No. 5 and 6 is sent to IC27 and IC25 (Amplifier), and transmit it to CO line via IC23 and T61.

Besides, when SW1 is in holding condition, (H) status is supplied to IC23 (Analog switch), and formed the melody tone transmit circuit. Simultaneously, formed the CO line loop with $rl5_1$ contact operation by SW2 switch ON.

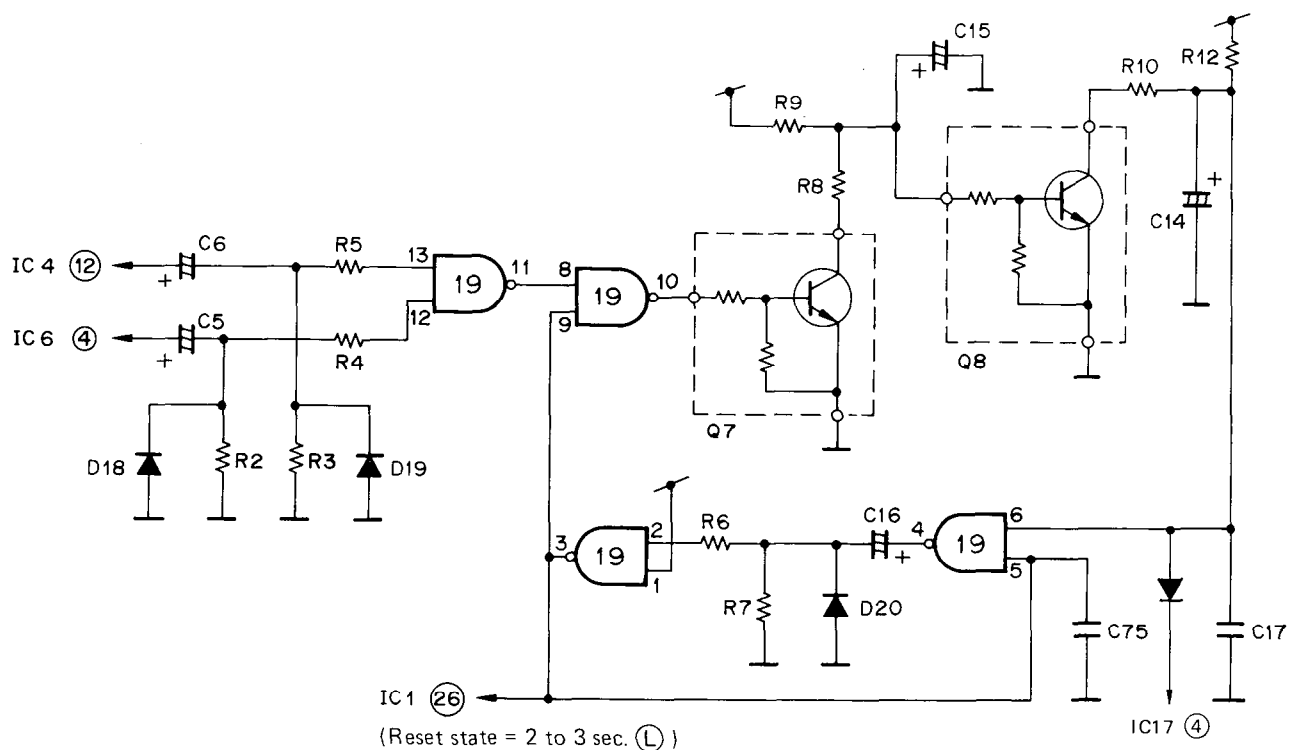
- NOTES:**
- When the SW2 is in EXT position, the external hold tone is sent from MOH terminal to the circuit.
 - SW1 is selection switch of music IC.

4. RAM Hold Circuit



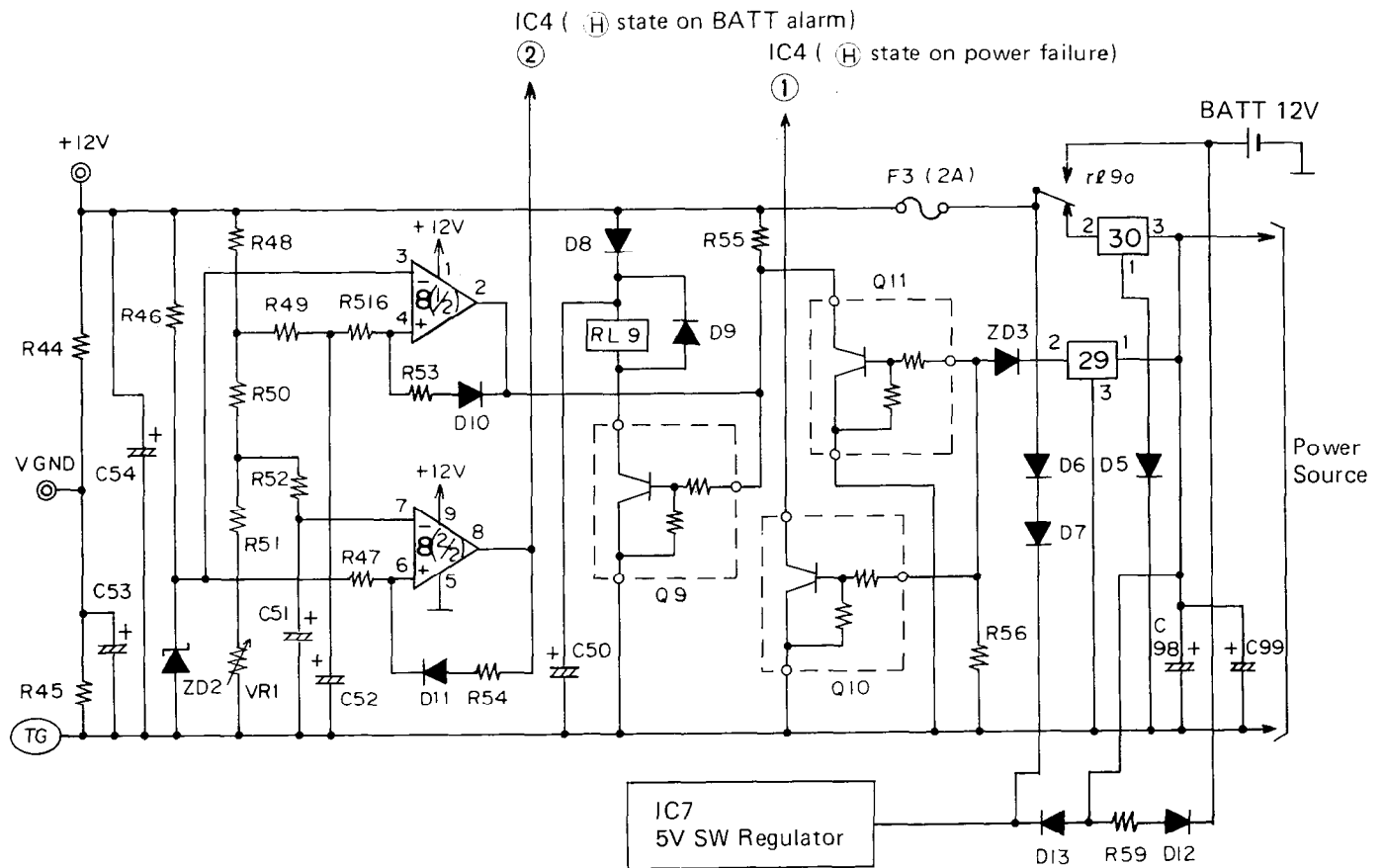
- In case of the power failure, +3V DC voltage is supplied to IC2-Vcc (pin No. 24) from backup battery to prevent erasure of memorised program in RAM.
- At the normal operation (AC power ON), the battery idle condition formed by \odot status on IC5-B7 (pin No. 25), and the operation flow is as following sequence:
Q2 [OFF] → Q3 [ON] → Q4 [ON] → Supplied +5V DC to IC2 -Vcc (pin No. 24) and Q2 [OFF] → Q3 [ON] → Q5[ON] → Q6[OFF].
- In case of the power failure, Q6 is turned to ON condition by R22, and the backup battery is connected to IC2-Vcc (pin No. 24) for supply +5V DC voltage to the circuit.
- At the moment of the power failure, the transient time of switching over from AC mains to backup battery is backed up by C3 capacitor.
- In case of the main battery (Ni-Cd 12V) voltage drops below zener voltage of ZD1 diode (Approx. 4.3V), instantaneously Q3 turned OFF → Q4 and Q5 [OFF], and the circuit condition turned to as same as power failure condition.

5. WD Circuit



- When the WD circuit detects abnormal condition on data communication between TEL and Link switch address output, the WD circuit executes system reset with sending out (L) status on IC1-RST (pin No.26) and IC4 to 6-RST .
- WD circuit is monitor the status of data communication Inh signal of IC4 and address output of IC6 all times, in case of either signals are stop, and the circuit executes system reset with a following operation sequence:
 IC19 (pin No. 12 or 13) is (L) → IC19 (pin No. 11) is (H) → IC19 (pin No. 10) is (L) → Q7 [OFF] → Q8 [ON] → IC19 (pin No. 4) is (H) → IC19 (pin No. 3) is (L) → IC1 (pin No. 26) is RST.

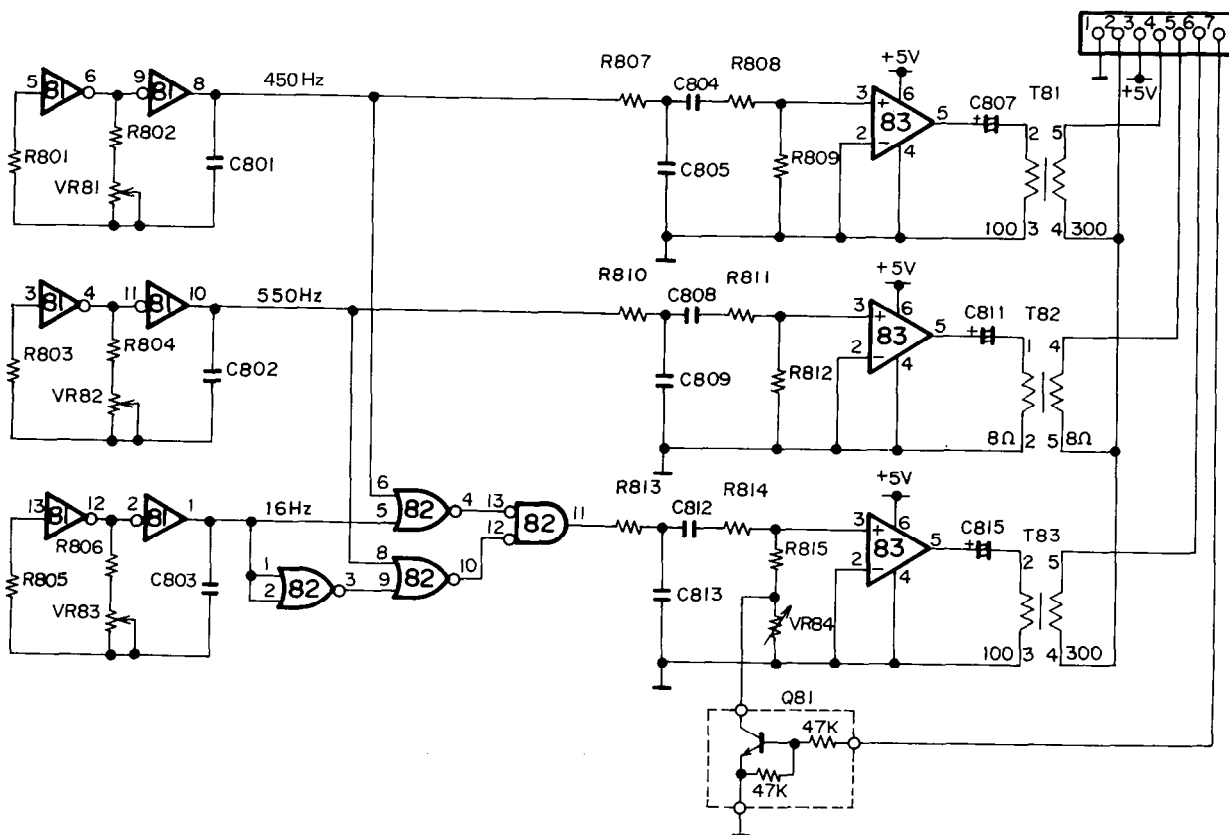
6. Power Failure Detect Circuit



- When AC power is failed, RL 9 relay operates by the voltage detection circuit, and change over the power source circuit to Battery circuit. Under the above condition, COL call originate and answer function can be maintain only TEL 1 and 2.
- When AC power is failed, the detector circuit condition changes from 1) to 2) as follow:
 - 1) Normal condition:
 (L)status on IC8 (pin No.2) by Q11 ON.
 - 2) When AC power is failed:
 Drops down the output of IC29 (pin No.2) → Q11 [OFF] when the voltage drops below the zener voltage of ZD3 (Approx. 10V) → (H)status on IC8 (pin No.2).
 The power source circuit is changed over to the Battery circuit by the following sequence:
 Voltage comparator IC8 (pin No. 8) is (H) → Q9 [ON] → RL9 [ON] and switch over to the battery circuit.
- Battery alarm shall be emitted from TEL1 and 2 when the battery voltage drop down to +11V or less, and the operation executes by the following sequence:
 (H)status on IC8 (pin No. 8) → Battery alarm signal send to NPU.
- When the battery voltage drops to less than +10.5V, IC8 (pin No.2) turned to (L) status, and RL9 resets the battery circuit [OFF] to prevent over discharge of the battery.

NOTE: At the moment of power failure, the switch over transient shall be backed up by the discharge of C54, and maintain the voltage to +12V.

7. TONE Circuit



7.1 450Hz oscillator circuit:

Used for Intercom call tone.

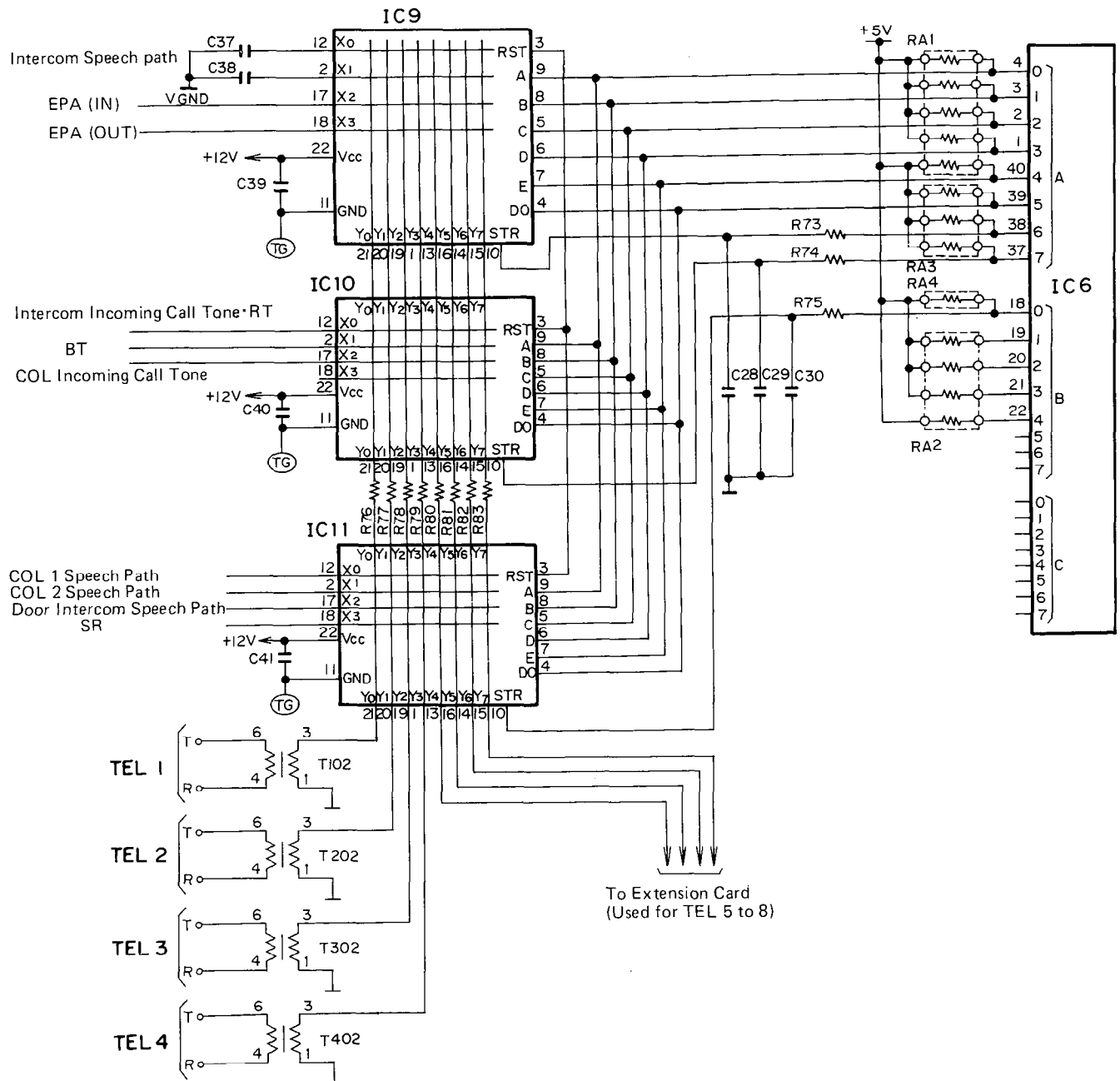
7.2 550Hz oscillator circuit:

Used for Intercom dial tone, Busy tone and Ring back tone.

7.3 16Hz oscillator circuit:

Used for CO incoming call tone which modulated with 450Hz/550Hz by 16Hz.

8. Link IC Circuit



Release and connection of TEL and IC (IC9 to IC11).

Release and connection between TEL and link IC is executed by control data from IC6.

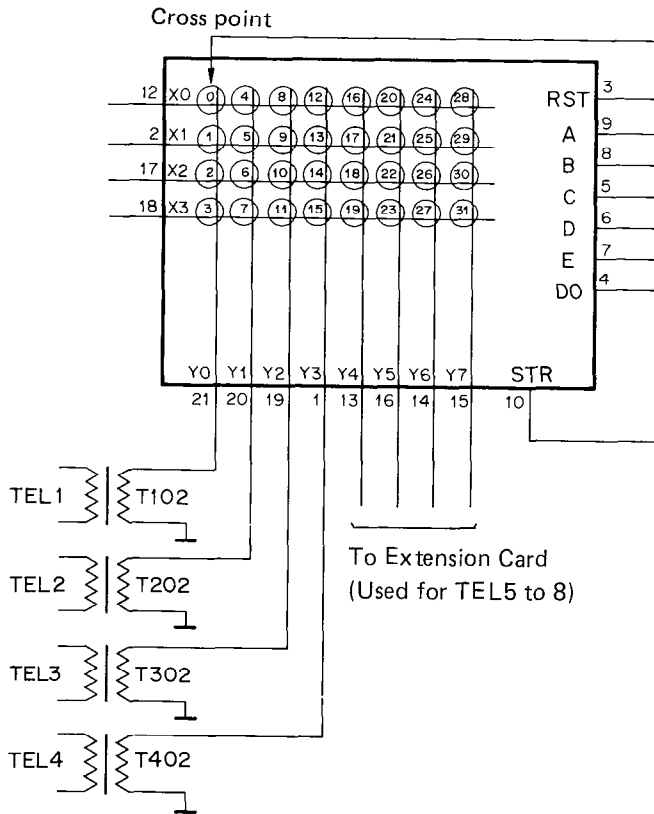
The control data output from IC6 is output to STR, D0, A to E pin terminal of IC6.

The operation of the data input to IC9-IC11 (STR, D0, A-E terminal) is as follow:

- STR is the data for the activation of IC.
- D0 is the data to make a selection either connection or release of TEL.
- A to E is the data for selection of cross points.

Link IC (MN6105) operation

The relation chart for input and connections



Cross Point	Input Condition							DATA	OFF/ON
	STR	E	D	C	B	A			
0	L	X	X	X	X	X	X	Y0-X0	NC
	H	L	L	L	L	L	L		OFF
1	H	L	L	L	L	L	H	Y0-X1	OFF
	H	L	L	L	L	H	H		ON
2	H	L	L	L	H	L	L	Y0-X2	OFF
	H	L	L	L	H	L	H		ON
3	H	L	L	L	H	H	L	Y0-X3	OFF
	H	L	L	L	H	H	H		ON
4	H	L	L	H	L	L	L	Y1-X0	OFF
	H	L	L	H	L	L	H		ON
5	H	L	L	H	L	H	L	Y1-X1	OFF
	H	L	L	H	L	H	H		ON
6	H	L	L	H	H	L	L	Y1-X2	OFF
	H	L	L	H	H	L	H		ON
7	H	L	L	H	H	H	L	Y1-X3	OFF
	H	L	L	H	H	H	H		ON
8	H	L	H	L	L	L	L	Y2-X0	OFF
	H	L	H	L	L	L	H		ON
9	H	L	H	L	L	H	L	Y2-X1	OFF
	H	L	H	L	L	H	H		ON
30	H	H	H	H	H	L	L	Y7-X2	OFF
	H	H	H	H	H	L	H		ON
31	H	H	H	H	H	H	L	Y7-X3	OFF
	H	H	H	H	H	H	H		ON

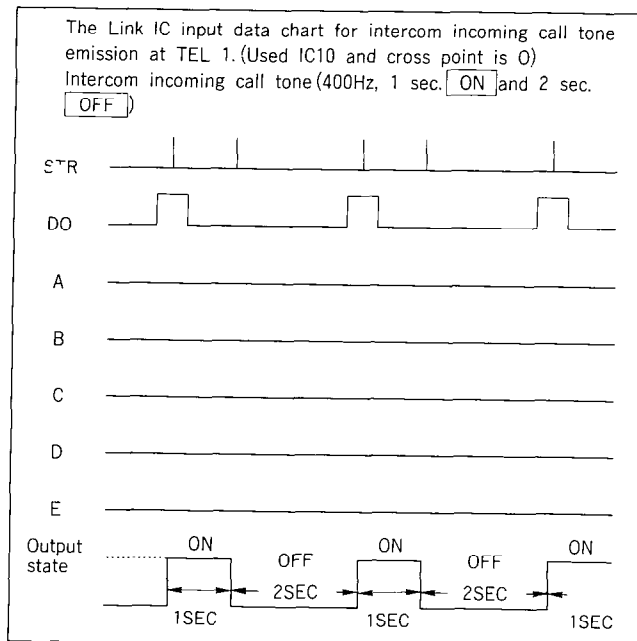
- NOTES:**
- When the status of Link IC input terminal SRT (pin No.10) and DO (pin No.4) is (H), Link IC read out the address data of A to E and ratch the cross point.
 - When the status of Link IC input terminal SRT (pin No.10) is (H) and DO (pin No.4) is (L), Link IC read the address data of A to E and release the ratch of cross point.
 - In case of Link IC input terminal SRT (pin No.10) is (L), the Link IC keep present operation even the data input to DO address (Shall not operates ratch or release).

NC = Keep the present operation.
 ON = Ratch
 OFF = Release the ratch.

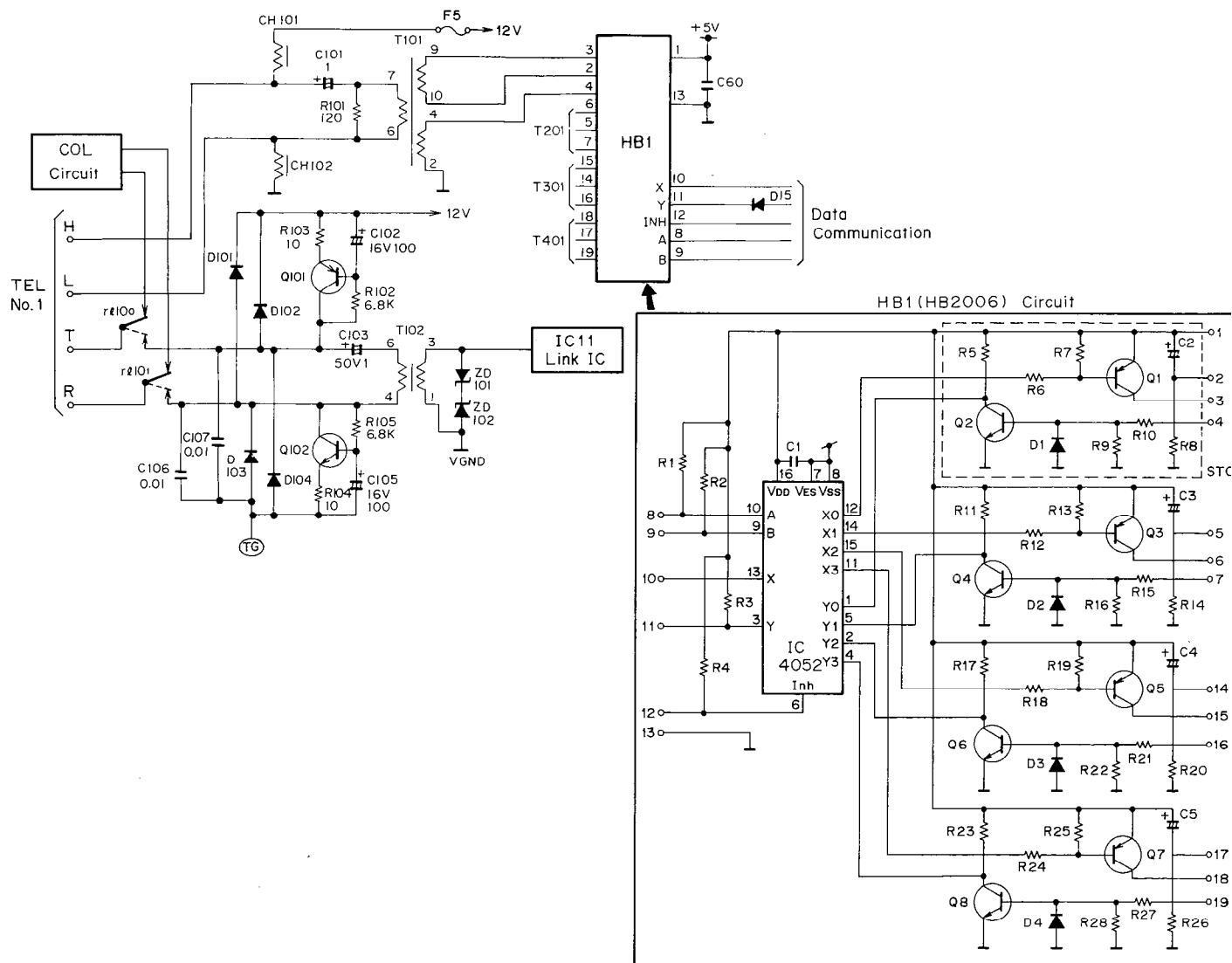
Data input timing chart of Link IC ON and OFF operation. (Example of cross point is 0)

Terminal Name	ON (Ratch)	OFF (Release)
STR (10pin)		
DO (4pin)		
A (9pin)		
B (8pin)		
C (5pin)		
D (6pin)		
E (7pin)		

Can read in.



9. Data Communication between TEL and KSU (1)



9.1 Supply of the control current to H, L terminal. (For data communication and power supply source to the TEL).

+12V is supplied to H,L terminal via CH101 choke coil, and supplied DC voltage is superposed to communication data between TEL and KSU.

(1) Output the data from KSU to TEL.

The data from HB1 (pin No. 10) is output to pin No. 3, and output is to H, L terminal via T101 (pin No. 9, 10 to No. 7, 6).

(2) Data input from TEL to KSU.

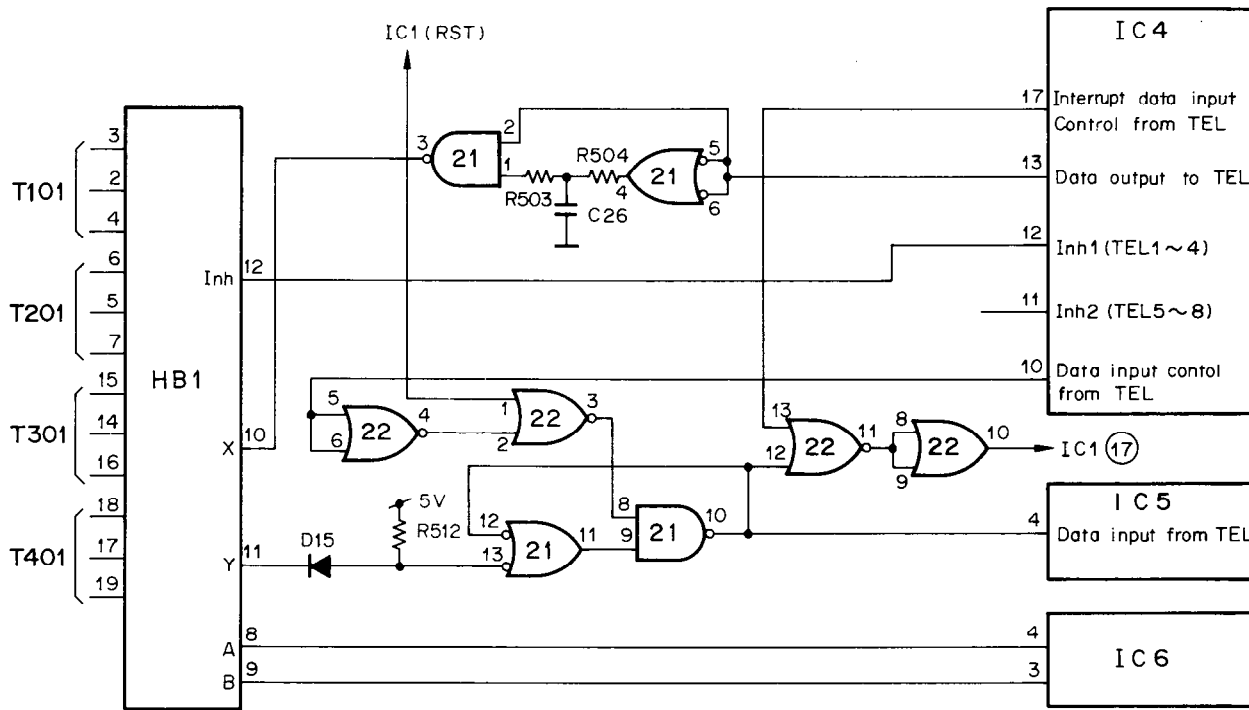
The input data from TEL is induced to T101 (pin No. 7, 6 to No. 4, 2) via C101, and input it to HB1 STAT (pin No. 4), then output it from HB1 (pin No. 11).

9.2 DC power supply to the speech path.(To the T,R terminal)

DC power supply to the speech path is supplied to TEL speech circuit. The supply process for +12V is for positive side via R103, Q101 and for negative side via Q102, R104.

The function of R103, Q101, Q102 and R104 operates as coil, and the voice signal and other tone signals is induced to T102 and supply to the speech path.

10. Data Communication between TEL and KSU (2)



10.1 The circuit for read in the data from TEL to KSU.

The data sent from TEL is input to HB1 (pin No. 4) and output it from HB1 (pin No. 11). The output data is input to IC21 (pin No. 13) via D15 (Low active). The input data of IC21 (pin No. 13) is input to IC21 (pin No. 9) through pin No. 11 when (L) status on pin No. 12.


The input data of IC21 (pin No. 9) is output to IC5 (pin No. 4) from pin No. 10 when (H) status on pin No. 8, then the data is read into KSU from TEL.

10.2 Data output from KSU to TEL (IC4 pin No. 13).

The data from KSU is output (L) (Low active) from IC4 (pin No. 13), and input it to IC21 (pin No. 5, 6). When the input data of IC21 (pin No. 5, 6) is (L) status, the data (H) is output from pin No. 4 to IC21 (pin No. 1).

When (H) status on IC21 (pin No. 2), the input data of IC21 (pin No. 1) is output the data (L) status from IC21 (pin No. 3) to HB1 (pin No. 10), then output the data from HB1 (pin No. 3) to TEL.

10.3 Data communication access input (Inh) of HB1.

The signal for Inh  is output from IC4 (pin No. 12) to HB1 (pin No. 12).

When the Inh signal is (L) status, HB1 communicates with TEL and the communication is executed sequentially from TEL 1 to TEL 4 for every 65.2 msec.

10.4 HB1 (A, B) address input.

The address input is output to HB1 (pin No. 8, 9) from IC6 (pin No. 4, 3), and the output is connected sequentially from TEL 1 to TEL 4 and TEL 5 to TEL 8 for every 65.2 msec.

11. IC Port Explanation

11.1 IC4 (UPD8255AC)

TERMINAL NO.	PORT	SIGNAL	I/O	ACTIVE STATUS	REMARKS
4	A0	RAM clear	I	L	RAM hold on (H)
3	1	Program mode	I	L	(L) on programming
2	2	BT ALM	I	H	Sounds alarm at (H)
1	3	POW SEN	I	H	Power failure code at (H)
40	4	COL 1, Incoming call	I	L	COL 1 incoming call detection
39	5	COL 2, Incoming call	I	L	COL 2, Incoming call detection
38	6	DPH CA	I	L	Door-phone A call input
37	7	DPH CB	I	L	Door-phone B call input
18	B0	RL 1	O	H	COL 1 seize
19	1	RL 2	O	H	COL 2 seize
20	2	RL 3	O	H	COL 1 dialing: operates on seize
21	3	RL 4	O	H	COL 2 dialing: operates on seize
22	4	RL 5	O	H	COL 1, ON status on dialing (DP/DTMF)
23	5	RL 6	O	H	COL 2, ON status on dialing (DP/DTMF)
24	6	Tone 1	O	L	COL 1, Hold tone sending
25	7	Tone 2	O	L	COL 2, Hold tone sending
14	C0	IC 23 6pin	O	L	COL 1, (H) status on DTMF dialing
15	1	// 5pin	O	L	COL 2, (H) status on DTMF dialing
16	2	Timer start	O	H	Start on (H) status/Reset on (L) status
17	3	A-K interrupt control	O	H	(L) status on idle(enable)/(H) status on disable
13	4	X	O	H	Data output from KSU to TEL/(H) -1, (L) -0
12	5	INH 1	O	H	(H) status on Inhibit/TEL 1 to 4 is able to communicate on (L) status
11	6	INH 2	O	H	(H) status on Inhibit/TEL 5 to 8 is able to communicate on (L) status
10	7	Input control	O	H	H:enable L:disable

Note: All letters for I/O is "in" or "out".

11.2 IC5 (UPD8255AC)

TERMINAL NO.	PORT	SIGNAL	I/O	ACTIVE STATUS	REMARKS																				
4	A0	A-K communication input(Y)	I	/	APU→KPU (L) →1																				
3	1	/	/	/	Self diagnosis input (L)																				
2	2	SLT1 HK	I	/	SLT 1, (L) status on OFF-HOOK, (H) status on ON-HOOK																				
1	3	SLT2 HK	I	/	SLT2: (L) status on OFF-HOOK, (H) status on ON-HOOK																				
40	4	Reg "1"	I	L	} SLT dialing output. (eg. No.7 dialing (L) status on port A4, 5, 6)																				
39	5	"2"	I	L																					
38	6	"4"	I	L																					
37	7	"8"	I	L																					
18	B0	MF C1	O	L	} <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>C1</th> <th>C2</th> <th>C3</th> </tr> </thead> <tbody> <tr> <td>R1</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>R2</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>R3</td> <td>7</td> <td>8</td> <td>9</td> </tr> <tr> <td>R4</td> <td>*</td> <td>0</td> <td>#</td> </tr> </tbody> </table>		C1	C2	C3	R1	1	2	3	R2	4	5	6	R3	7	8	9	R4	*	0	#
	C1	C2	C3																						
R1	1	2	3																						
R2	4	5	6																						
R3	7	8	9																						
R4	*	0	#																						
19	1	C2	O	L																					
20	2	C3	O	L																					
21	3	R1	O	L																					
22	4	R2	O	L																					
23	5	R3	O	L																					
24	6	R4	O	L																					
25	7	RAM Pow SW	O	/	RAM power control, Normally (L) status, (H) on Protect/(L) on Power ON																				
14	C0	Relay Pow SW	O	/	Relay power control, (H) on OFF/(L) on power ON																				
15	1	/	/	/	/																				
16	2	NT SW	O	/	(H) status on Night setting output, (L) status on Normal																				
17	3	/	/	/	/																				
13	4	DPH Busy	O	/	(H) status on Normal/(L) status on Busy																				
12	5	DPH Sel	O	/	(H) status on B selection/(L) status on A selection																				
11	6	EPA lontal	O	/	(L) status on Normal/(H) status on EPA																				
10	7	SPC	O	/	(TEL 3 to 8 on power failure)(L) status on power failure/(H) status on Normal																				

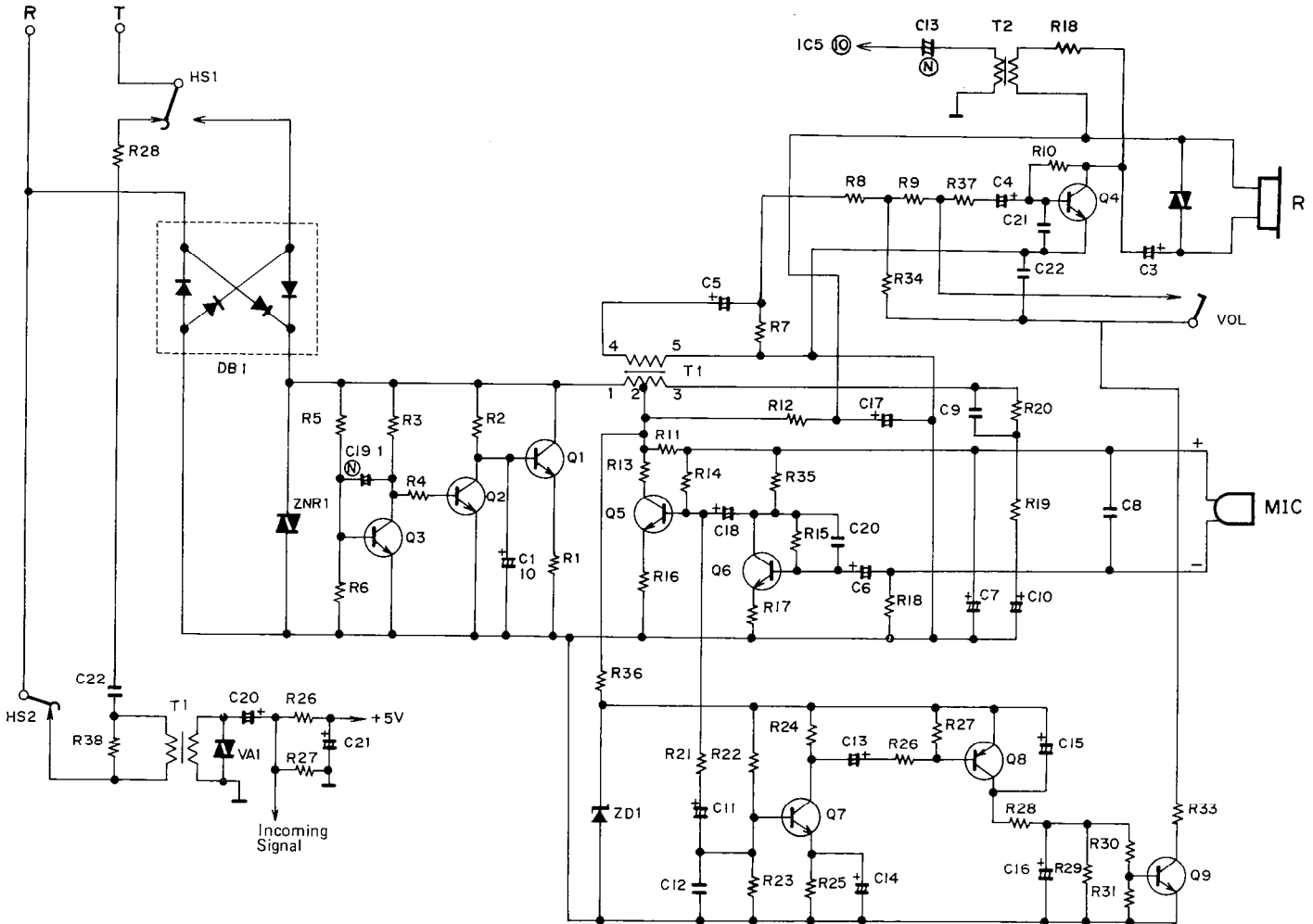
11.3 IC6 (UPD8255AC)

TERMINAL NO.	PORT	SIGNAL	I/O	ACTIVE STATUS	REMARKS
4	A0	A	0	/	
3	1	B	0	/	
2	2	C	0	/	
1	3	D	0	/	
40	4	E	0	/	
39	5	Da	0	/	
38	6	STR1	0	/	
37	7	STR2	0	/	
18	B0	STR3	0	/	
19	1	SLT 1, COL switch over	0	L	
20	2	SLT 2 //	0	L	
21	3	SLT 1 Ringer	0	L	(H) status on Incoming call/(L) status on Normal
22	4	SLT 2 //	0	L	
23	5				/
24	6				
25	7				
14	C0				
15	1				
16	2				
17	3				
13	4				
12	5				
11	6				
10	7				

EXPLANATION OF CIRCUIT OPERATION (KEY TELEPHONE)

1. Conversation

Hand set (Transmitter and Receiver) is connected to T, R line when HS1 is [ON] (OFF-HOOK).



1.1 Receiving

The voice signal input is emitted from receiver via the sequence of:

T, R terminal → HS1 [ON] → DB1 (Rectifier) → Sink circuit (Provided to maintain conversation quality by constant current supply for various distance condition to the Central Office Exchange) → T1 → Q4 (Receiver amp.) → R (Receiver).

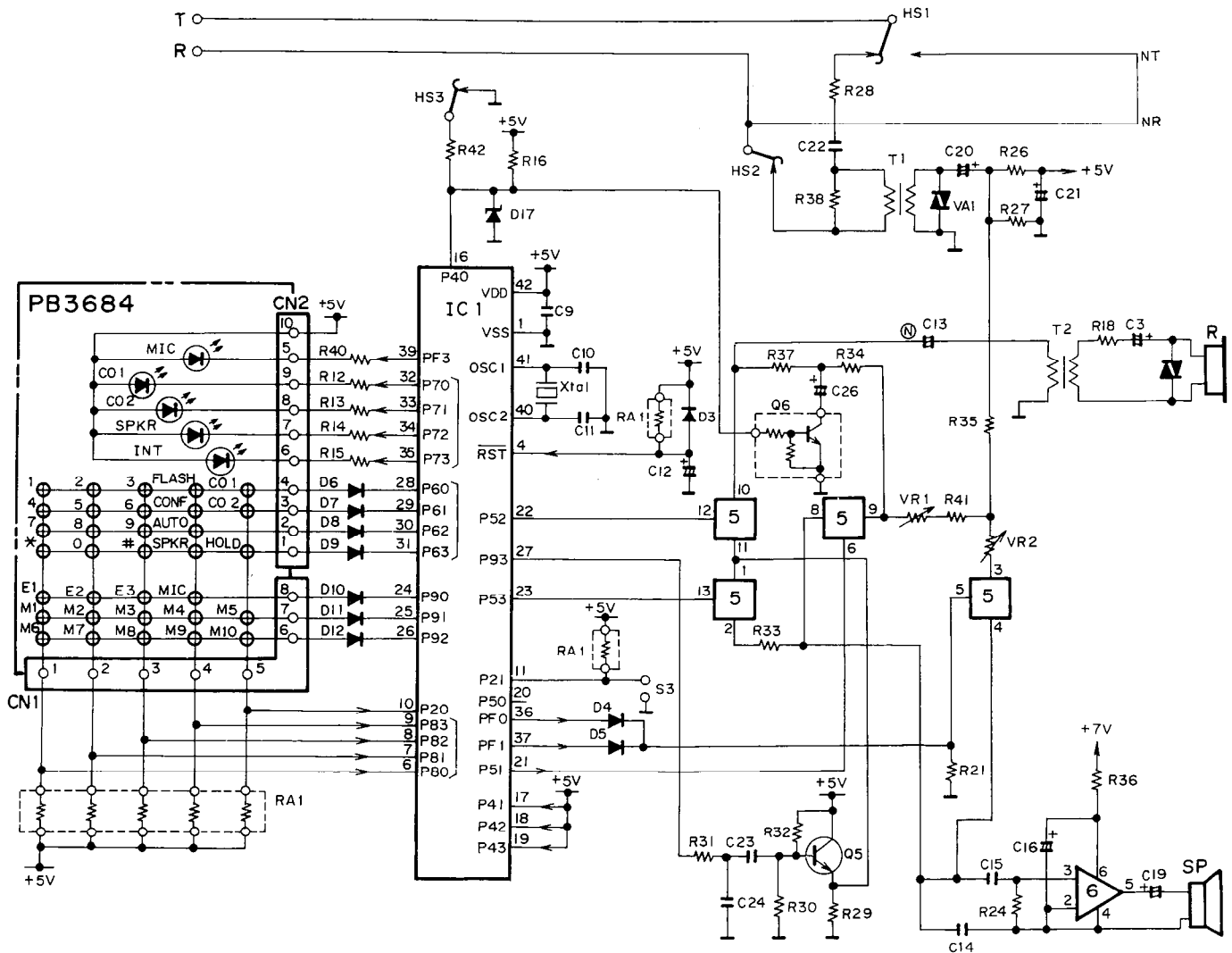
1.2 Transmitting

Transmission of the voice signal is output to T, R terminal via following sequence:

MIC → Q6 (Transmitter amp.) → T1 → DB1 → HS1 [ON] → T, R terminal.

NOTE: When the transmission voice level is over from specified level, Q7 to Q9 (The receiver mute circuit) is suppress the side tone by Q9 [ON].

2. Functional Operation Circuit



2.1 CO lamp flickering during CO line talk (eg. COL 1).

When CO incoming call lamp data is arrived to TEL from KSU, IC1 pin No. 32 is output the control data (0.5 sec. L , 0.125 sec. H L H and 1.5 sec L). The lamp control data turn on the COL lamp when the status is L and turn off the COL lamp when the status is H . This is the reason for COL lamp is flickering.

2.2 Sounding of CO incoming call tone.

When the CO incoming call tone sounding data is input to TEL from KSU, IC1 pin No. 37 is output the H status. Then H status is input to IC5 pin No. 5 via D5, and turn IC5 [ON]. From the above process, the CO incoming call tone which sent from T, R terminal is sent out from IC5 pin No. 3 to pin No. 4. CO incoming call tone which sent out is input to IC6 via C15, and the input data amplified by IC6 then emit the call tone from SP.

2.3 Intercom call tone sounds and Intercom voice call.

When the Intercom call sounding data and voice call data is sent to TEL from KSU, output the H status to IC1 pin No. 36. H status output is sent to IC5 pin No. 5 via D4 and turn on IC5 to ON. Following operation as same as clause 2.2.

2.4 Interrupt tone control and interrupt tone output.

By the interrupt tone control data is sent to TEL from KSU, (H) status is output on IC1 pin No. 23, then the receiving SW at busy IC5 (pin No. 1, 2) is turned to ON at the (H) status on IC5 (Analog switch).

The interrupt tone is sent to speaker by the following sequence:

IC1 pin No.27 → Q5 (Amplify) → IC5 (Analog switch) pin No. 1 → IC1 pin No. 2 → IC6 (Amp.) → Speaker.

2.5 Speaker (SP) receiving control.

When depressed speaker receiving switch, IC1 pin No.31 is output the key scanning data and the data is read into IC1 pin No.9 for output the speaker receiving data to KSU from IC1 pin No. 14.

By the speaker receiving control data from KSU, IC1 pin No. 21 is output the (H) status and SP switch IC5 (pin No. 9, 8) turn to ON when the (H) status on IC5 (Analog switch) pin No.6.

The signal input is induced from T, R terminal via T1 transformer to the speaker by the following sequence:
C20 → VR1 → IC5 pin No.9 → IC5 pin No.8 → IC6 (Amp.) → SP.

2.6 Key-in tone control and Key-in tone output.

(1) Hand set output.

- When the handset is OFF-hook, the off-hook detection data is output to KSU with input the (H) status on IC1 pin No. 16 by HS3.

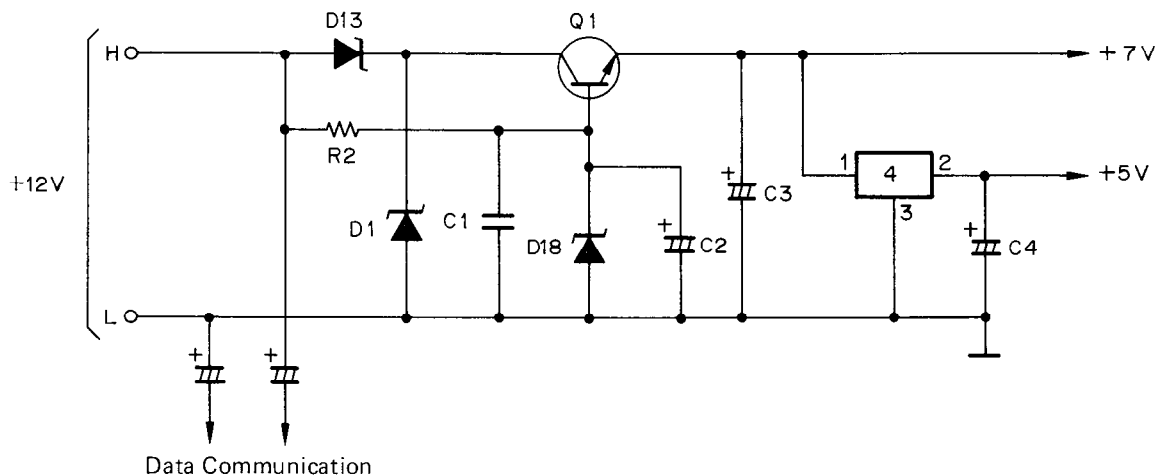
When depressed dial key, IC1 pin No. 22 is output the (H) status → the (H) status on pin No. 12 of IC5 then turn the Key-in tone switch IC5 (pin No. 11, 10) to ON.

- The Key-in tone output is output from receiver when depressed the dial key by the following sequence:
IC1 pin No. 27 → Q5 (Amp.) → IC5 pin No. 11 → IC5 pin No. 10 → C13 → T2 → receiver.

(2) SP output

- When the operation status is SP receiving, IC1 pin No. 21 is (H) status. (Refer to SP receiving control).
- When depressed the dial key, (H) status is output from IC1 pin No. 22, and turn the Key-in tone switch IC5 (pin No. 11, 10) to ON with (H) status on IC5 pin No. 12.
- Key-in tone is output from SP when depressed the dial key by the following sequence:
Q5 (Amp.) → IC5 pin No. 11 → IC5 pin No. 10 → R37 → R34 → IC5 pin No. 9 → IC5 pin No. 8 → IC6 (Amp.) → SP.

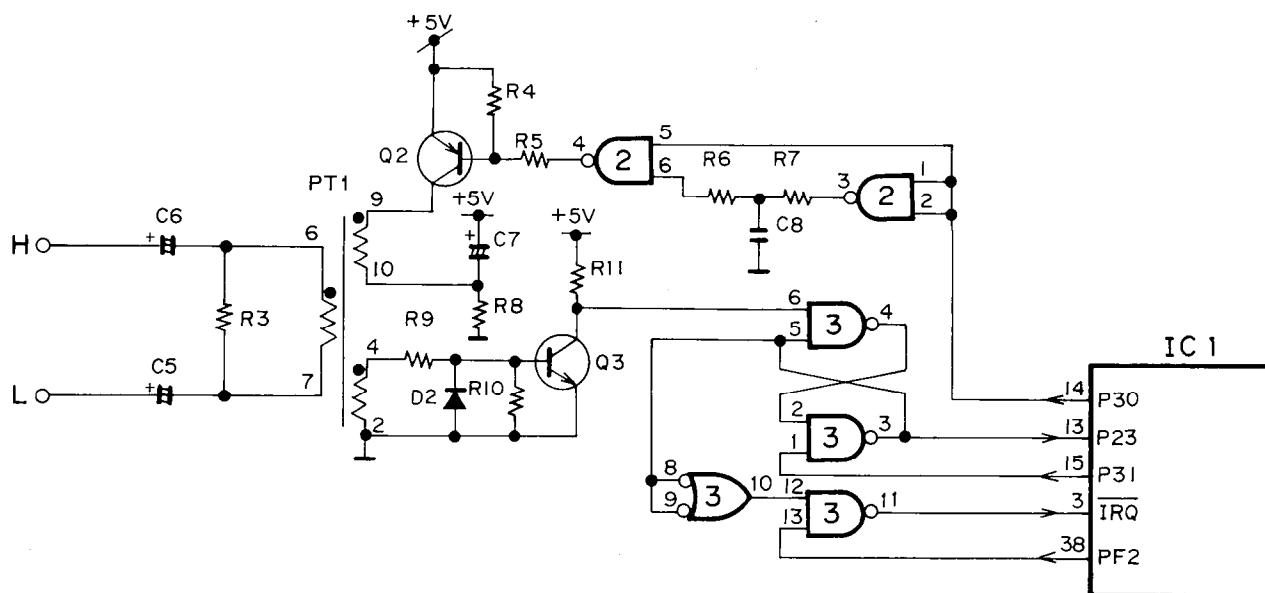
3. Power Supply for TEL



+12V DC is supplied from KSU to TEL. Supplied voltage is converted to +7V and +5V by the voltage regulator circuit and converted voltages are used for power source of TEL.

4. A-K Communication

Data communication between KSU (CPU) and TEL (APU)



4.1 Receiving of A-K communication (IC1 pin No 13).

The input data from H, L line is received by IC1 via the sequence of:

PT1 (Data induced) → R9 → Q3 → IC3 pin No 6 (The data eliminated DC current by C5 and C6).

NOTE: D2 is half wave rectifier.

IC1 pin No. 15 is receive the data from KSU only when the (H) status is appeared on the A-K communication receiver control terminal from IC1 pin No. 13.

4.2 Transmitting of A-K communication data

The data of TEL is output to H, L line from IC1 pin No.14 via the sequence of:

IC2 pin No.4 (Formed pulse) → Q2 base → Q2 collector → PT1 (9, 10) → Data induced to PT1 (6,7) → C5 and C6.

■ TROUBLE SHOOTING GUIDE

VA-20810

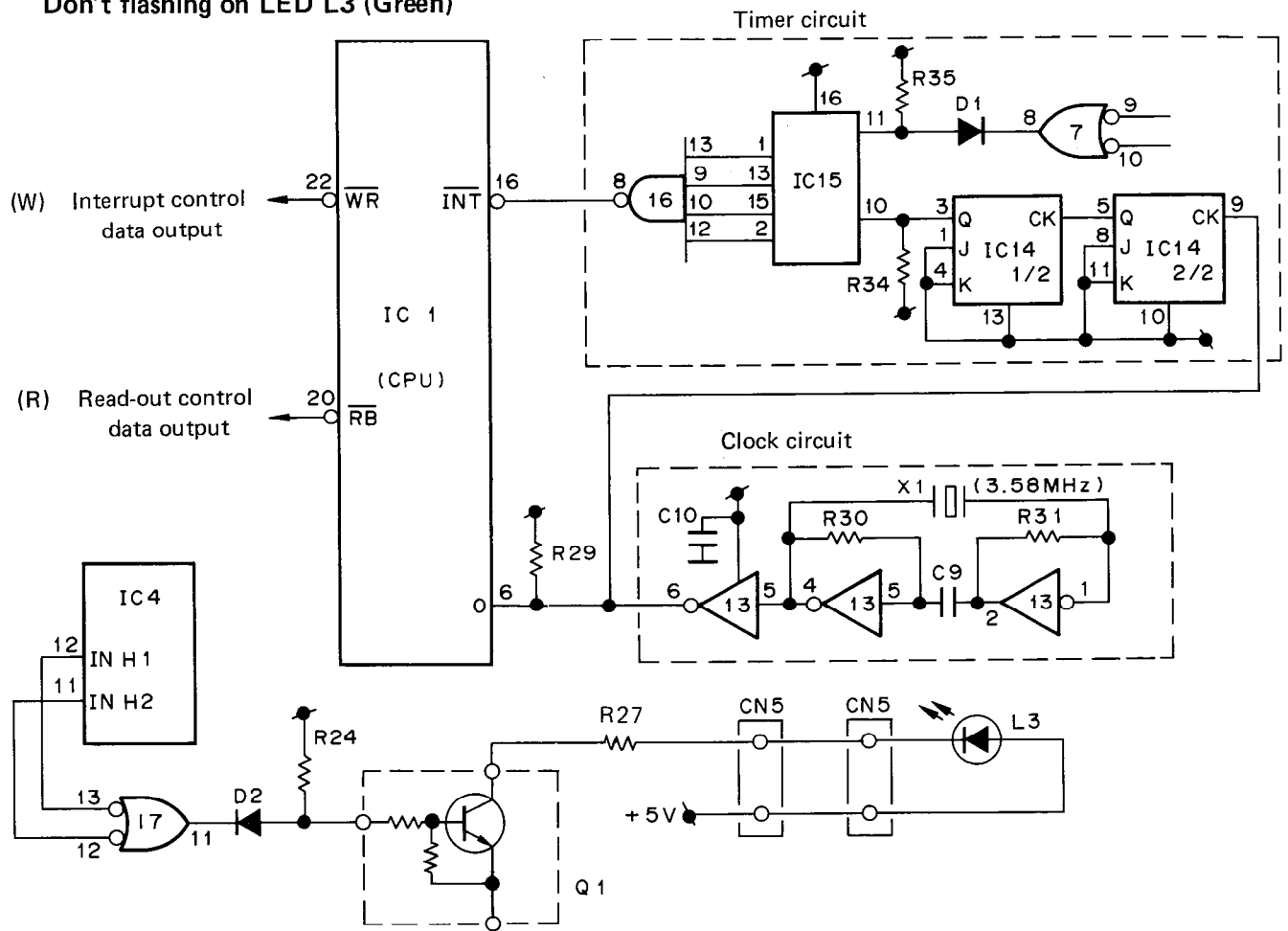
OPERATION	DEFECTIVE PHENOMENON	CHECK ITEM	
Power SW ON	Don't flashing on LED L3 (Green)	(1)Clock circuit (2)Timer circuit (3)IC1 WR	Service check point- 1 (Page-21)
Off-hook the handset	No Intercom dial tone	(1)H,L power (2)A-K communication (3)Link IC control	Service check point- 2 (Page-22)
Call from TEL 1 to TEL 2	No intercom incoming call tone	(1)A-K communication (2)Link IC control	Service check point- 3 (Page-24)
Conversation between TEL 1 and TEL 2	Can not intercom conversation	(1)A-K communication (2)Link control	Service check point- 4 (Page-25)
CO incoming call	No CO incoming call	(1)CO incoming call detect circuit (2)Link control	Service check point- 5 (Page-26)
CO answering	Can not answer to CO call	(1)A-K communication input (2)RL1 relay (3)Link control	Service check point- 6 (Page-27)
CO call hold	No hold tone	(1)RL5 relay operation (2)Analog SW IC operation	Service check point- 7 (Page-28)
CO call originate(DP)	Can not CO call originate (DP)	(1)RL1 operation (2)RL3, RL5 operation	Service check point- 8 (Page-29)
CO call originate (DTMF)	Can not CO call originate (DTMF)	(1)RL1 operation (2)RL5 operation (3)DTMF signal generator	Service check point- 9 (Page-30)
AC plug off	Can not dial with specified TEL at power failure	Power failure detect circuit	Service check point-10 (Page-31)

VA-20820

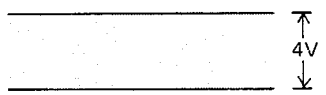
Off-hook the handset	No intercom dial tone	(1)H,L power (2)A-K communication	Service check point-11 (Page-32)
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Service Check Point-1

Don't flashing on LED L3 (Green)

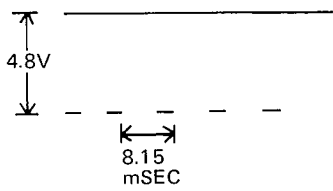


(1) **Check of clock circuit**
Does it input to IC1 (pin No. 6) with following wave form?



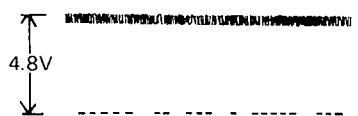
Measured with 10msec. range

(2) **Check of timer circuit**
Does it input to IC1 (pin No. 16) with following wave form?



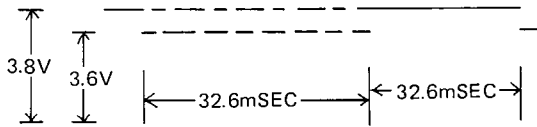
Measured with 10msec. and 2V range

(3) **Check of IC1 W/R**
Does it output to IC1 (pin No. 22) with following wave form?

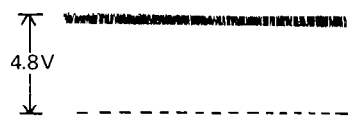


Measured with 10msec. and 2V range

(4) **L3 lamp flashing circuit, Q1 (Collector)**



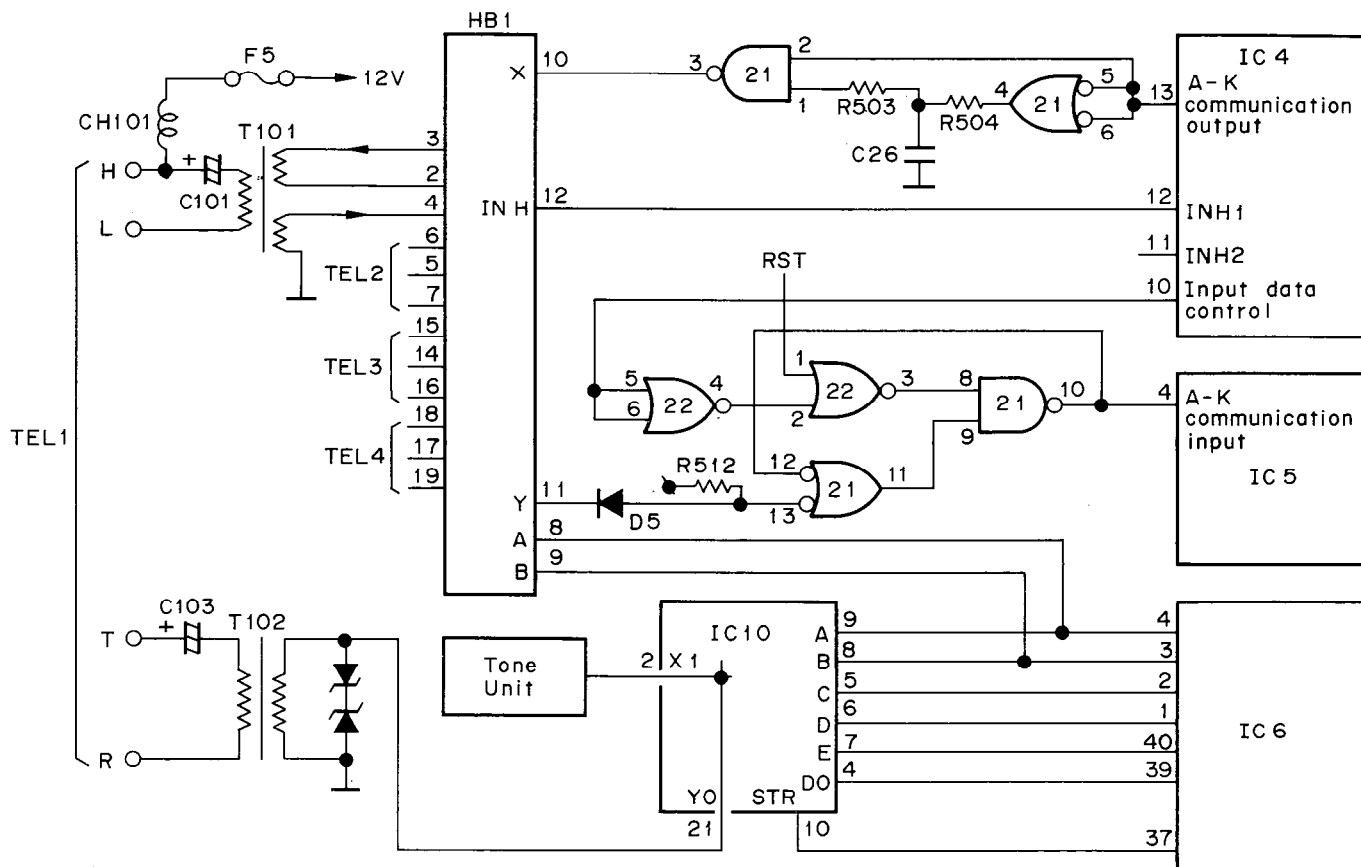
Does it output to IC1 (pin No. 20) with following wave form?



Measured with 10msec. and 2V range

Service Check Point-2

No intercom dial tone



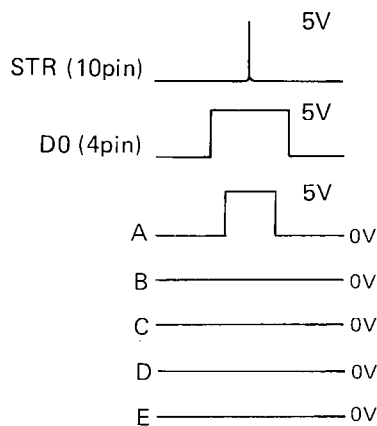
(1) **Check of the voltage between H and L**
Does it output 12V between H(+) and L(-)?

- (2) **Check of the A-K communication data input/output**
- 1) Does the data input to HB1 (pin No. 4) from TEL?
 - 2) Does the data output to TEL from HB1 (pin No.3)?
 - 3) Does the data from TEL output on HB1 (pin No. 11)?
 - 4) Does the data from TEL input to IC5 (pin No. 4) ?
 - 5) Does IC4 (pin No. 13) output the data to TEL?
 - 6) Does the data from TEL input to HB1 (pin No. 10) from IC4?
 - 7) Does the access input data input to HB1 (pin No. 8, 9)?

* The measured wave form for the above A-K communication check is explained in attached sheet.

(3) **Check of Link IC control input**

- In case of the dial tone send out to TEL1
- 1) Does the following wave form and voltage can input to IC10?



- 2) Does the dial tone output from IC10 (pin No. 21)?

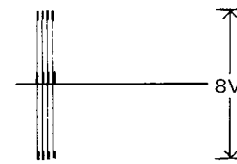
Input/output wave form check for the A-K communication data

(1) HB1 (4 pin)



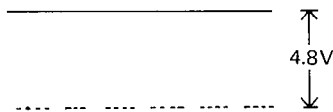
Measured with 5msec.
2V and 50msec. range

(2) HB1 (3 pin)



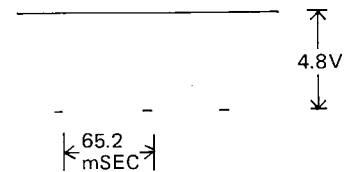
Measured with 2msec.
and 2V range

(3) HB1 (11 pin)



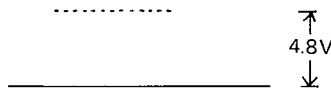
Measured with 5msec.
and 2V range

(4) IC5 (4 pin)



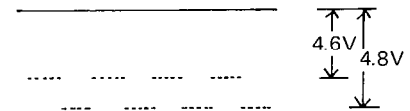
Measured with 20msec.
and 2V range

(5) IC4 (13 pin)



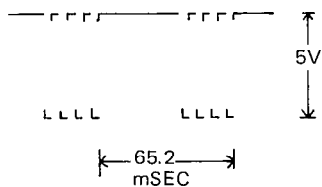
Measured with 5msec.
and 2V range

(6) HB1 (10 pin)



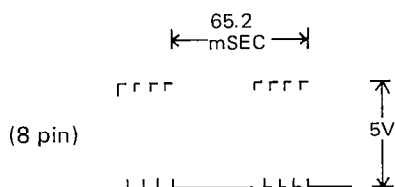
Measured with 5msec.
and 2V range

(7) HB1 (12 pin)

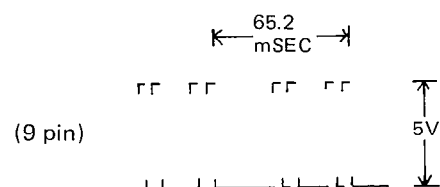


Measured with 10msec.
and 2V range

(8) HB1 (8, 9 pin)



Measured with 10msec.
and 2V range



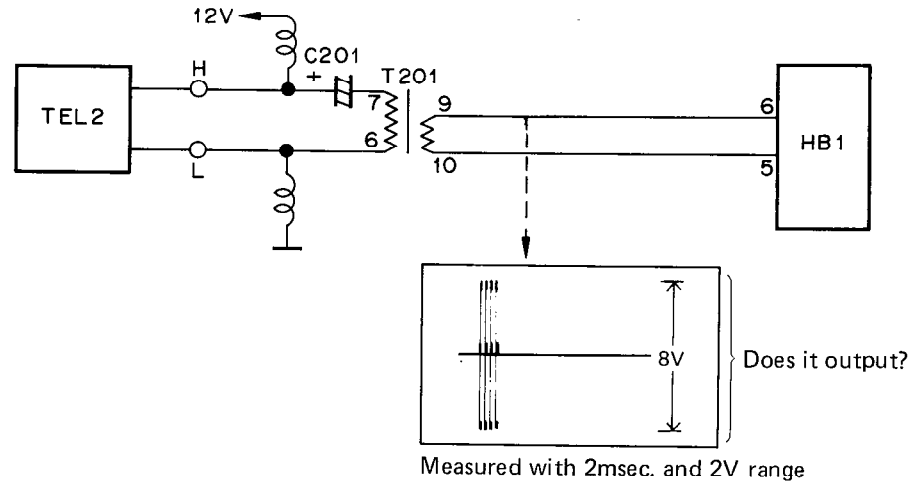
Measured with 10msec.
and 2V range

Service Check Point-3

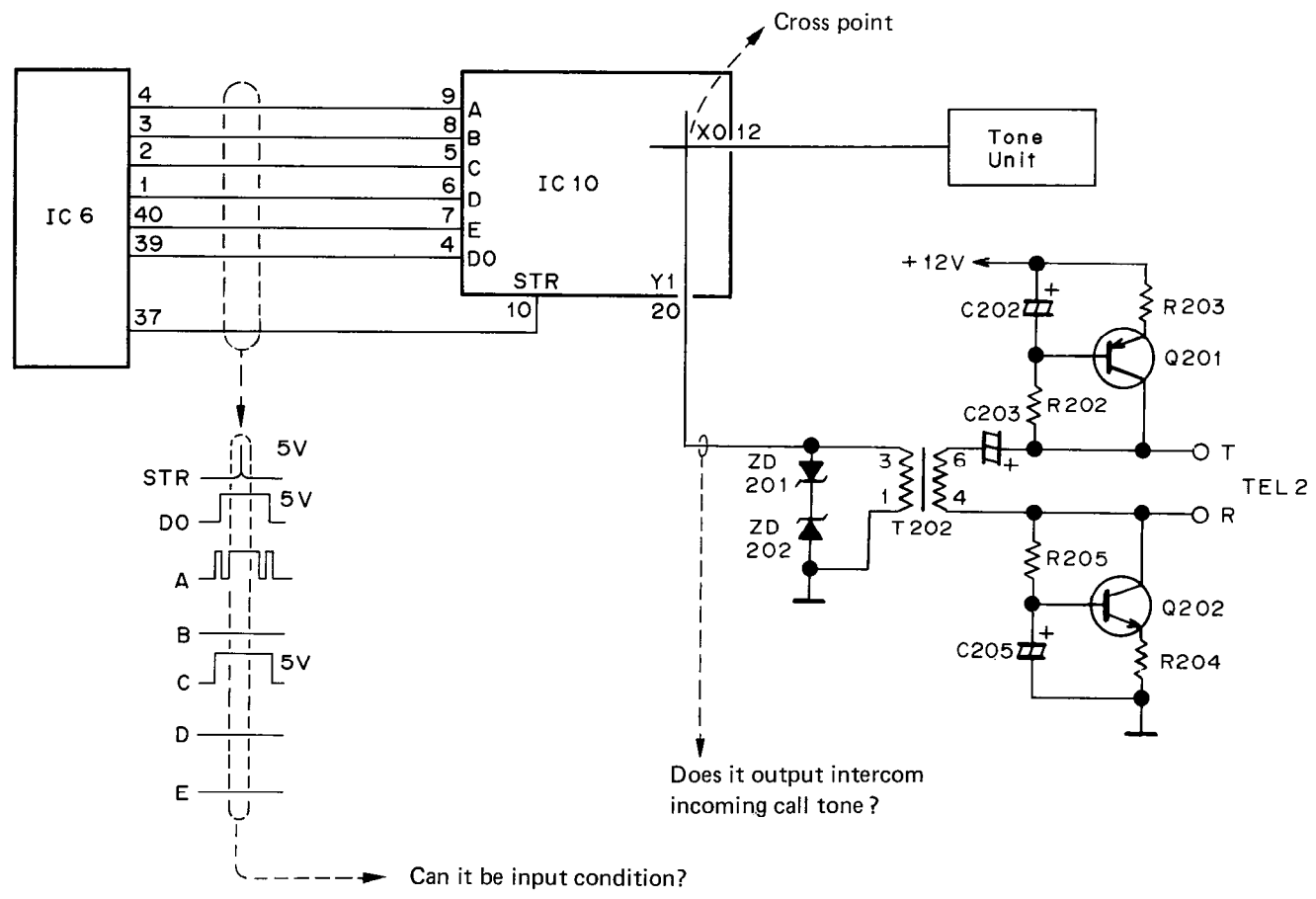
No intercom incoming call tone In case of the A-K communication of TEL1 is normal

* In case of the call from TEL1 to TEL2

(1) Does the data from KSU output to TEL2 when the call from TEL1 to TEL2?



(2) Does the control data from IC6 output to IC10 when call from TEL1 to TEL2?
Does IC10 connects TEL2 and Tone unit?

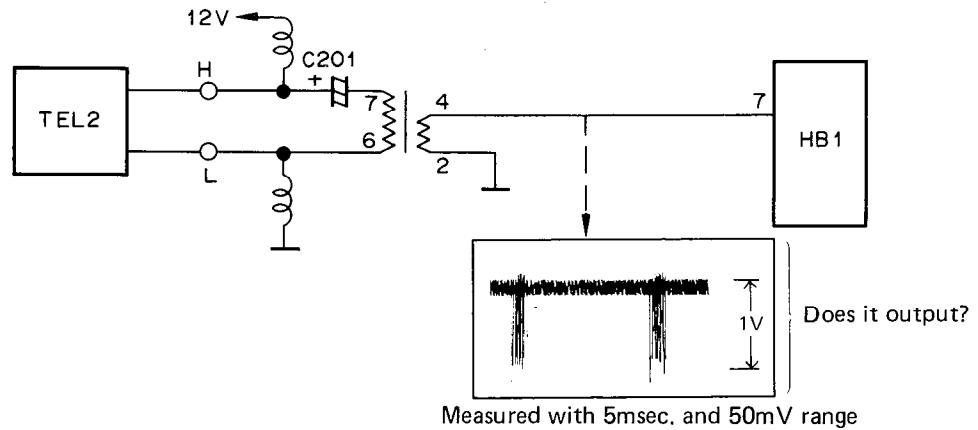


Service Check Point-4

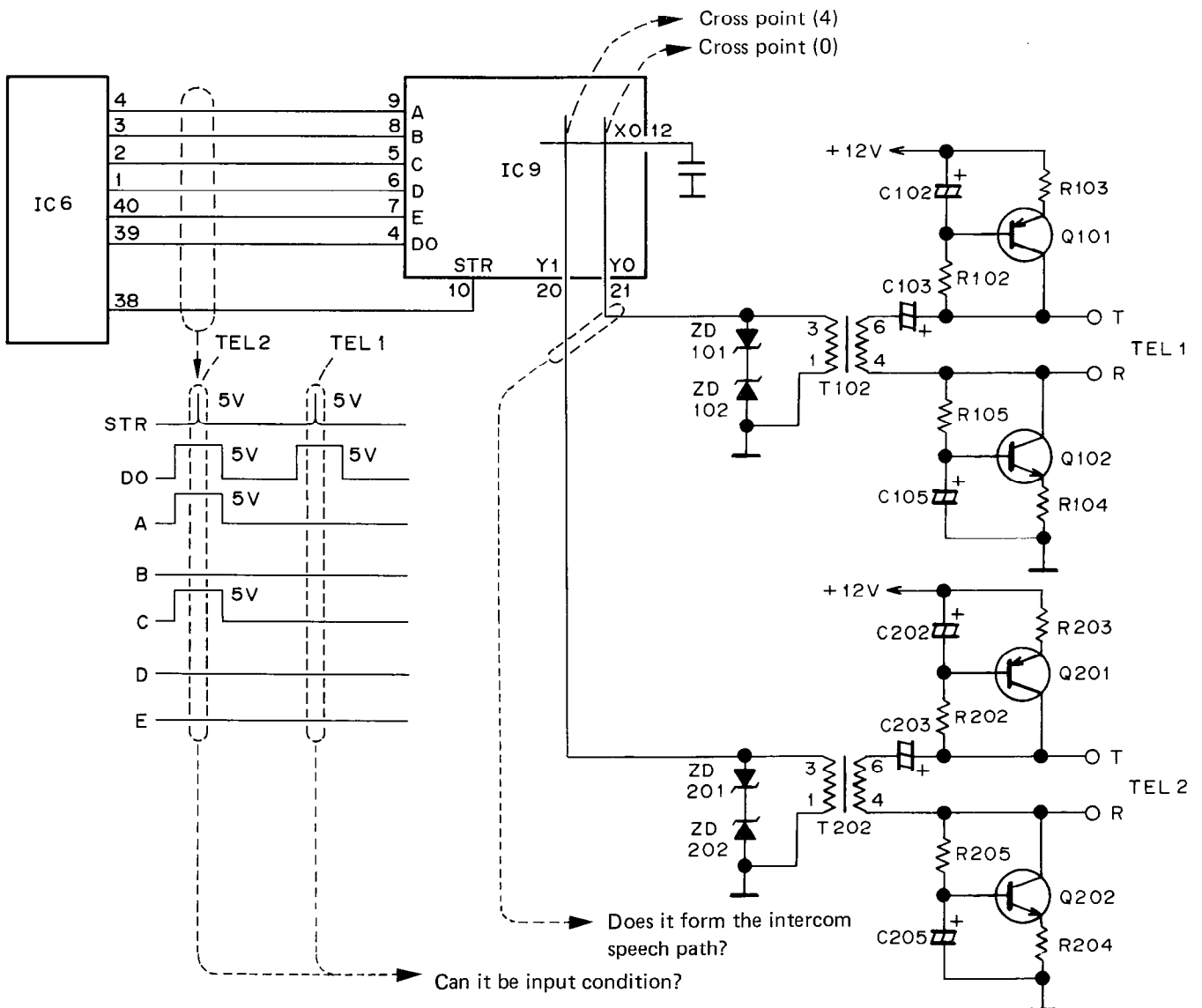
Can not intercom conversation In case of the A-K communication of TEL1 is normal

* In case of the conversation between TEL 1 to TEL2

(1) Does the answering data output to KSU when TEL2 called from TEL1 and TEL2 is answered?



(2) Does IC9 connects TEL1 and TEL2 when TEL2 is answered and the control data is sent from to IC9?

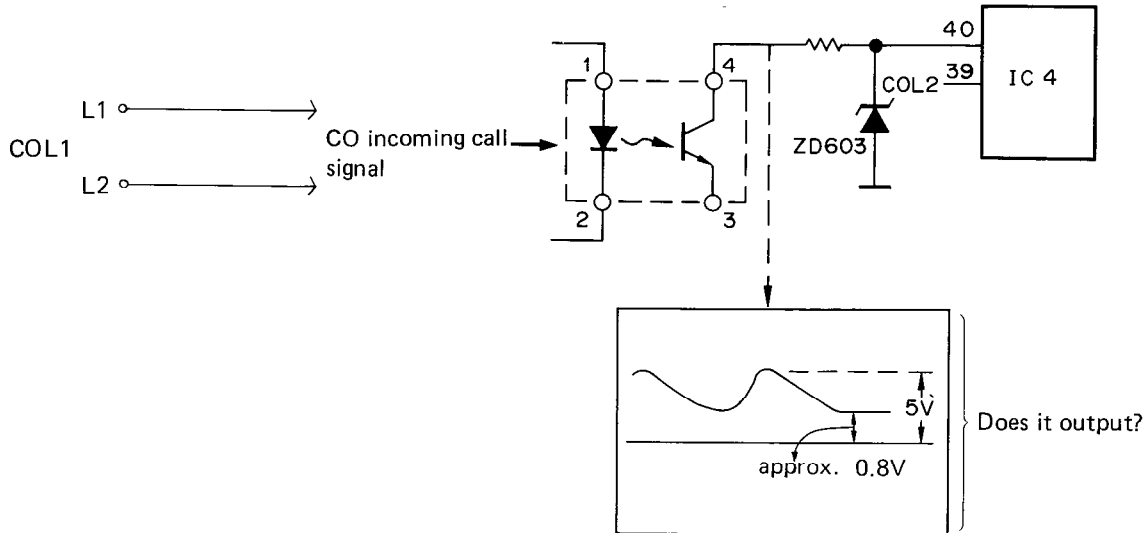


Service Check Point-5

No CO incoming call In case of the A-K communication of TEL is normal

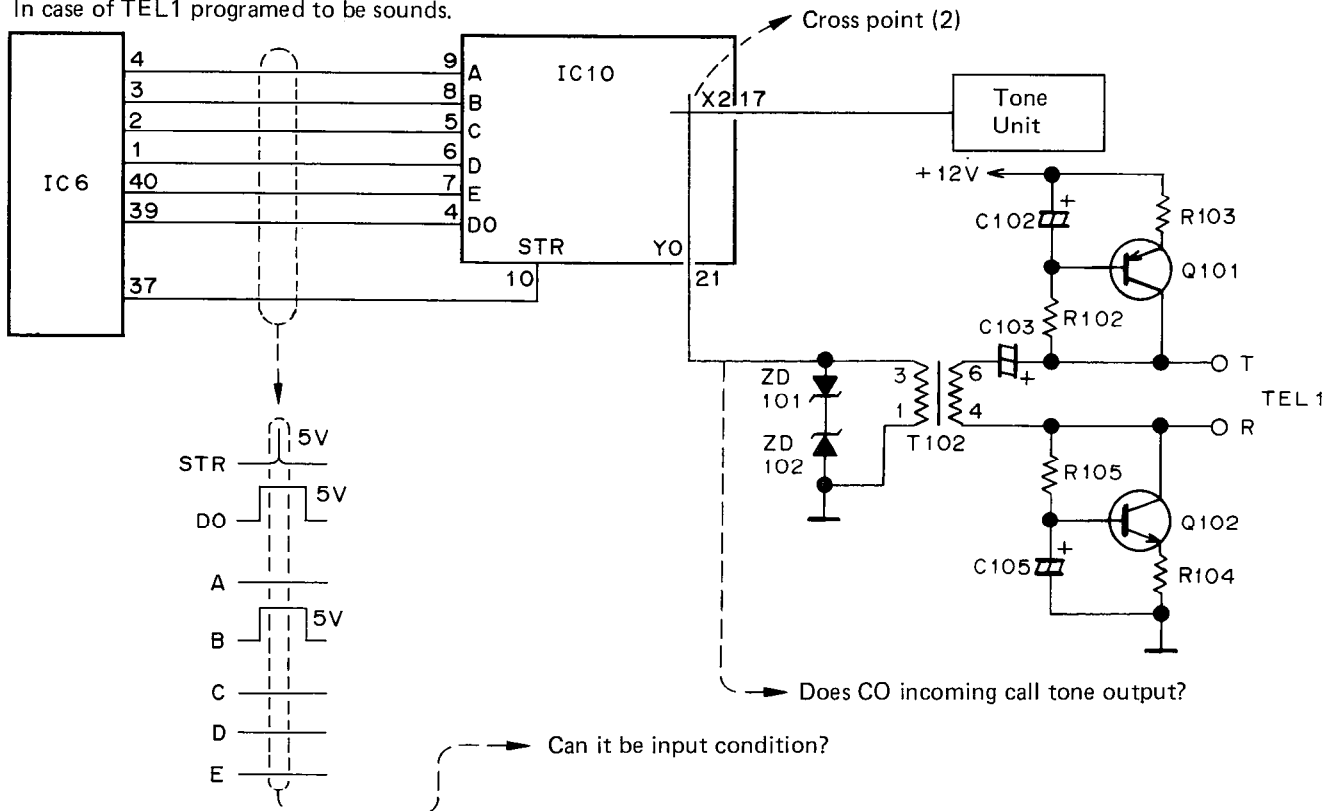
* In case of COL1

(1) Does CO incoming call data input to IC4 (pin No.40)?



(2) Does the control data output from IC6 to IC10 when the CO incoming call data is input to IC4 (pin No. 40)?

In case of TEL1 programed to be sounds.

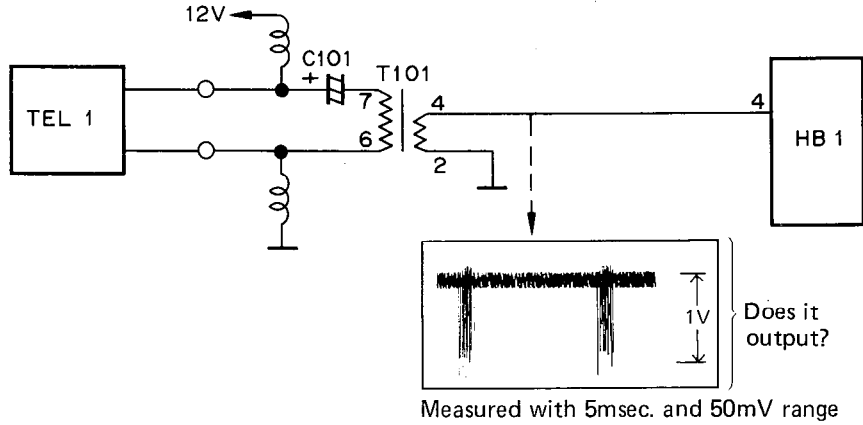


Service Check Point-6

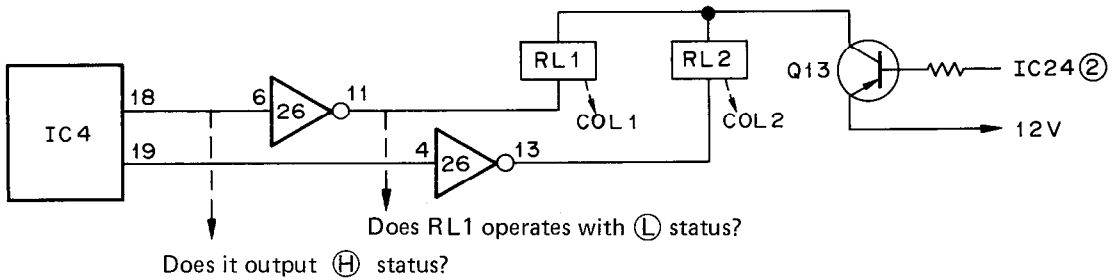
Can not answer to CO call. In case of the A-K communication of TEL is normal

* In case of answering on TEL1

(1) Does the data output to KSU when TEL1 is answered to CO incoming call?

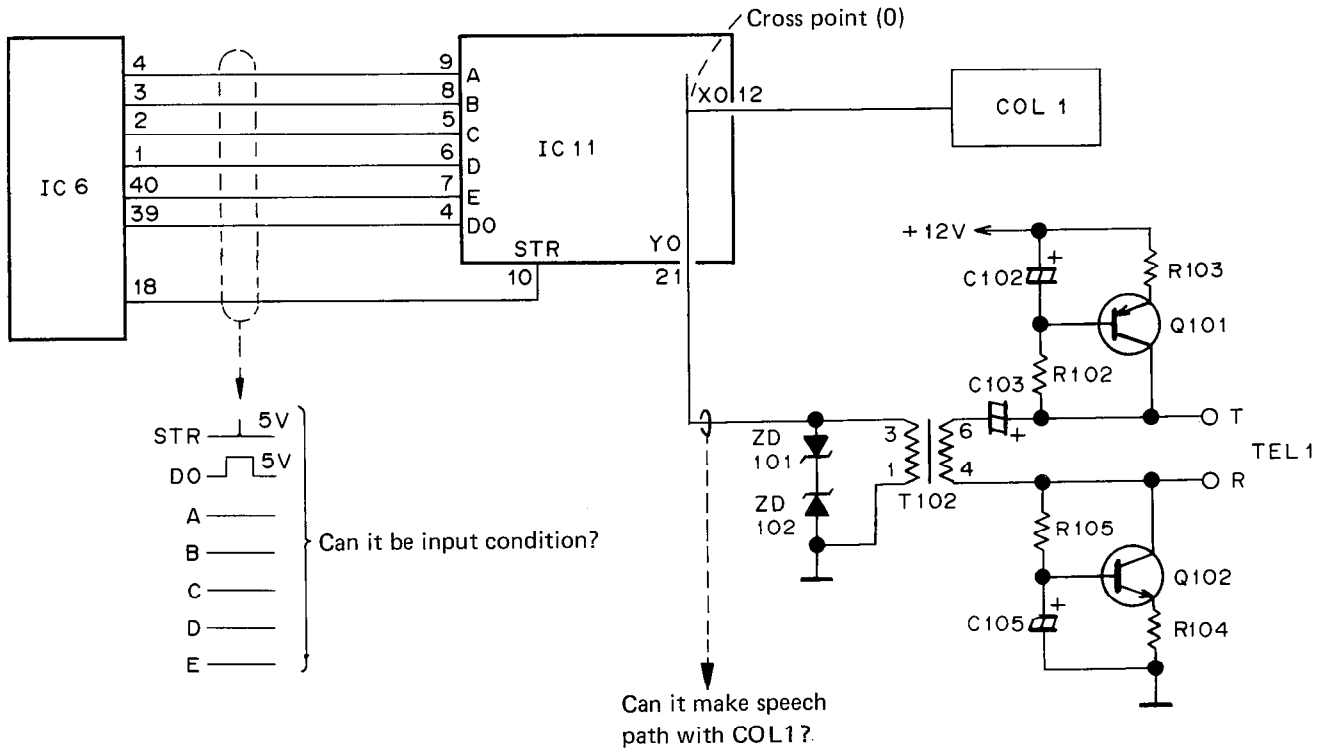


(2) Does RL1 operates by the answering of TEL1?



(3) Does IC6 output the control data to IC11 by answering on TEL1?

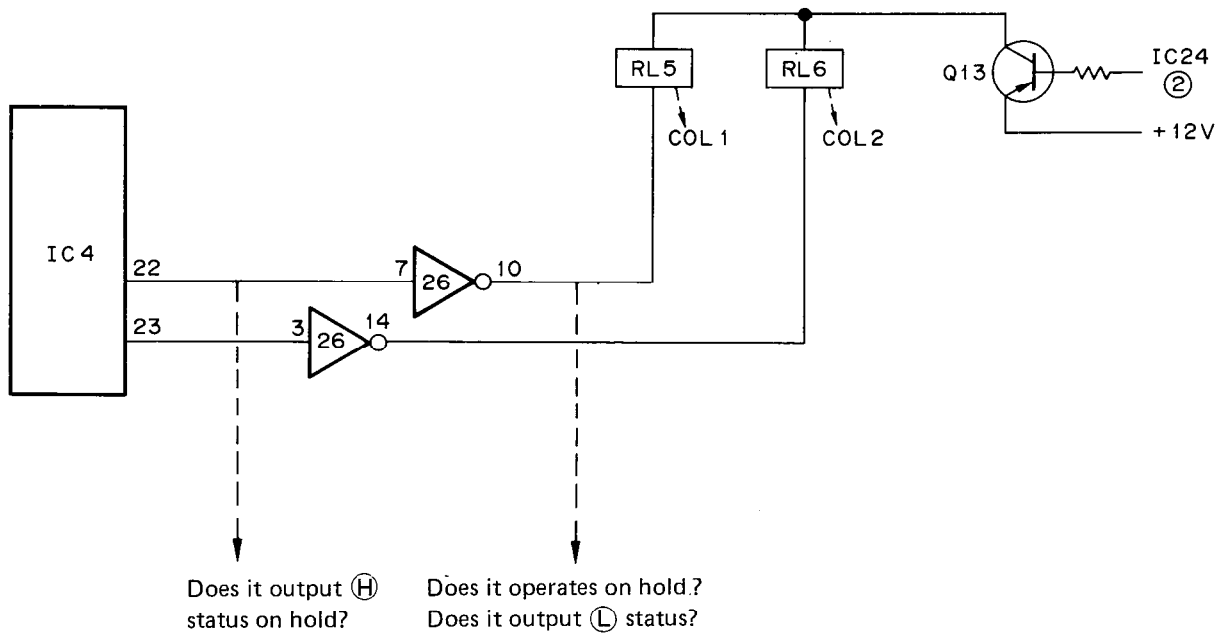
Does IC11 connects the conversation between TEL1 and COL1?



Service Check Point-7

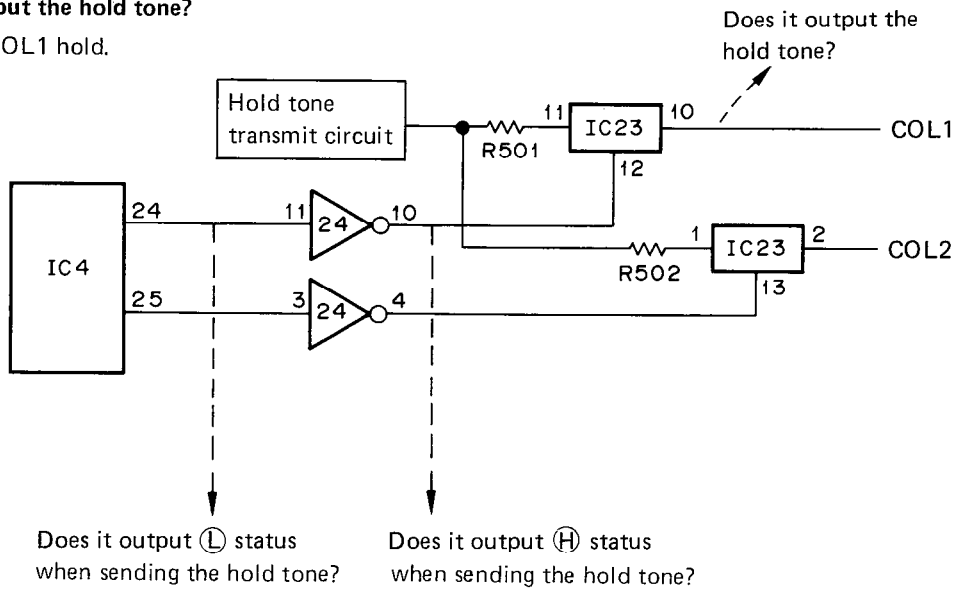
No hold tone In case of TEL A-K communication is normal

(1) Does RL5 operates by the hold data from TEL?



(2) Does it output the hold tone?

In case of COL1 hold.

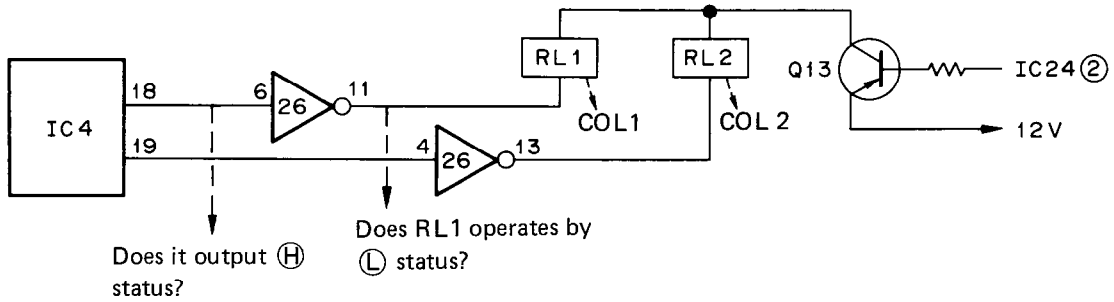


Service Check Point-8

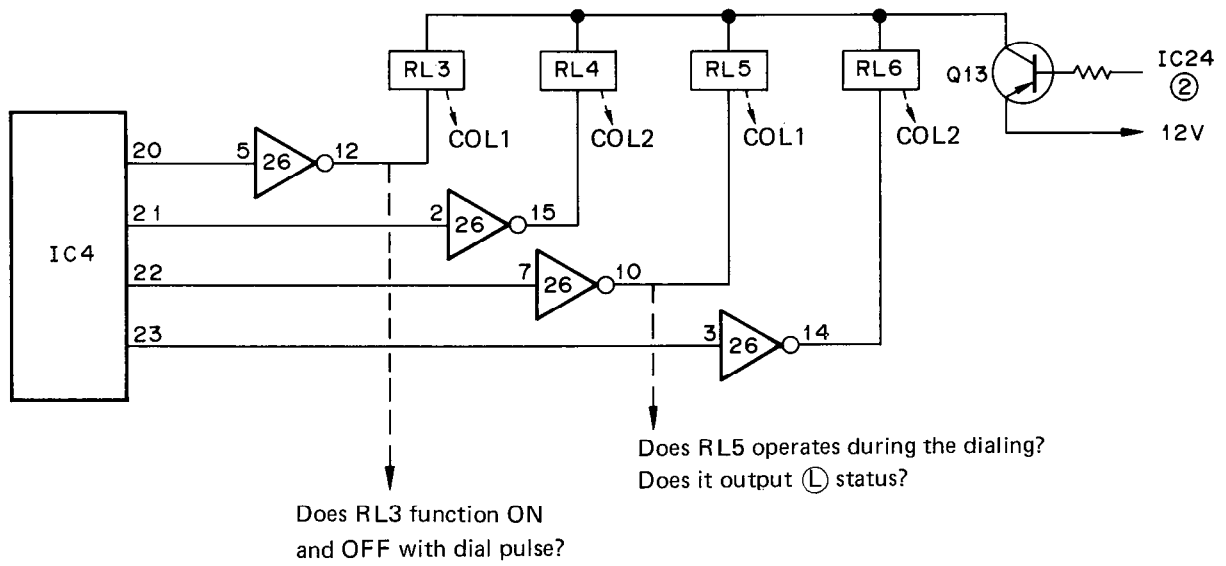
Can not CO call originate (DP). In case of the A-K communication of TEL is normal

* In case of call from COL1

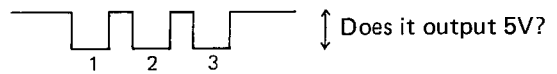
- (1) Does RL1 operate by the call data of TEL?
(no dial tone can be heard)



- (2) Does RL3 and 5 operates by call dialing data of TEL ?



For example: In case of press the dial key 3

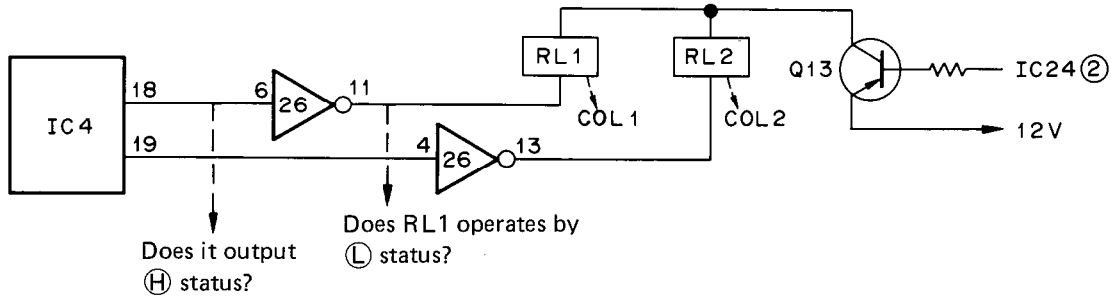


Service Check Point-9

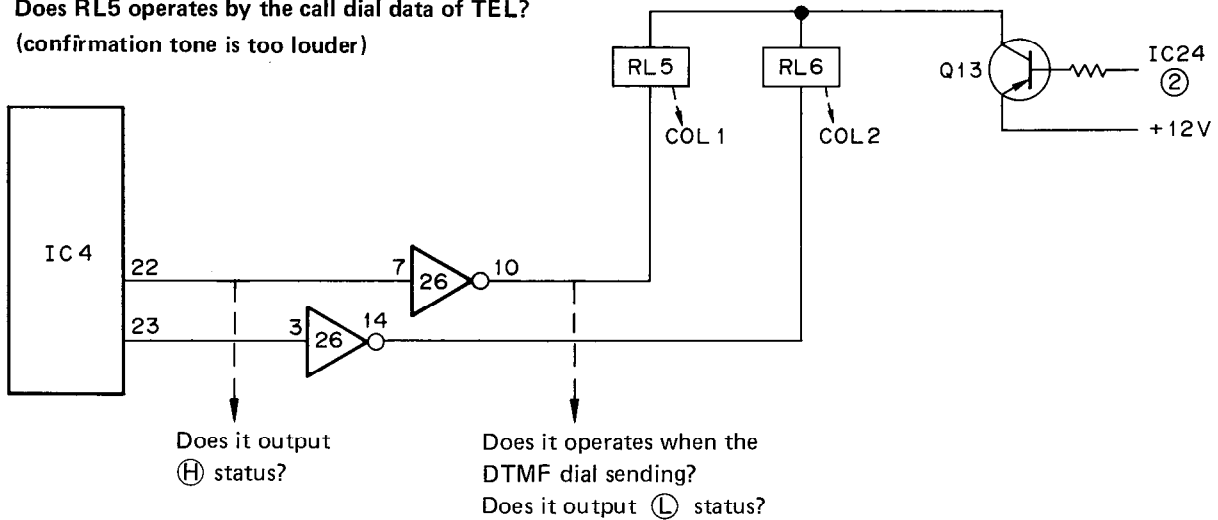
Can not call CO originate (DTMF) . . In case of the A-K communication of TEL is normal

* In case of call from COL1

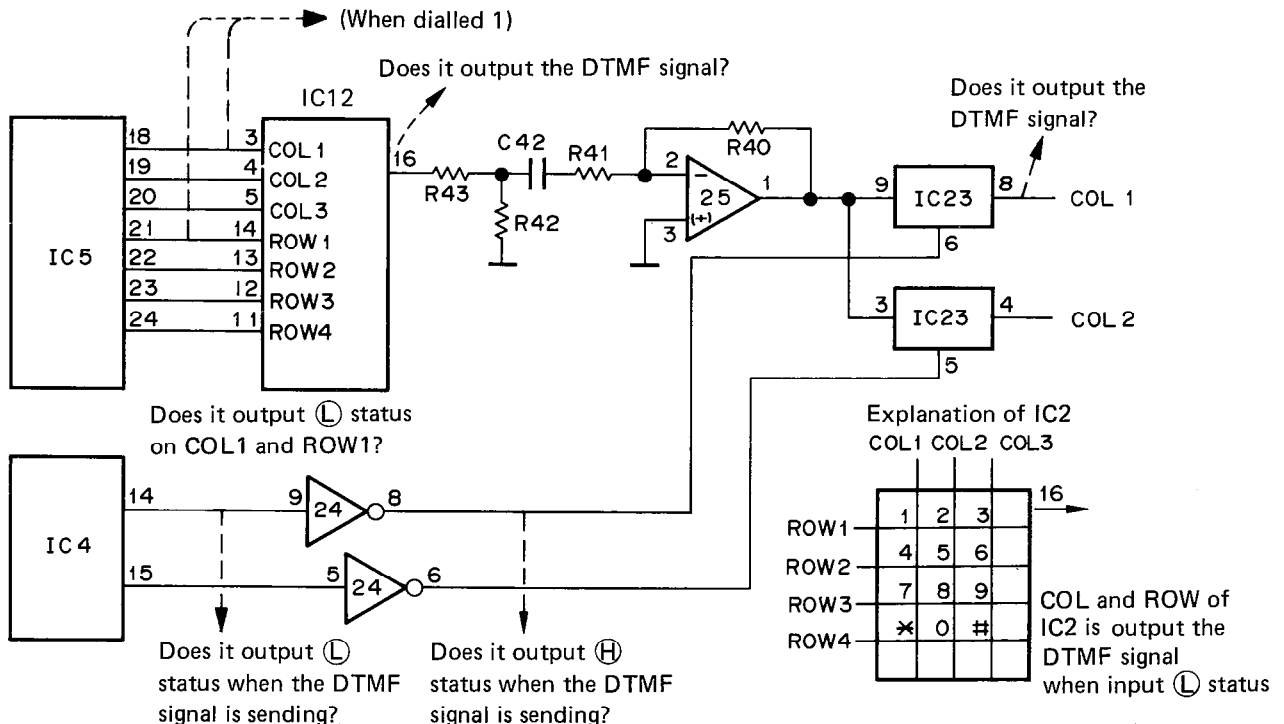
- (1) Does RL1 operates by the call data of TEL?
(no dial tone can be heard)



- (2) Does RL5 operates by the call dial data of TEL?
(confirmation tone is too louder)



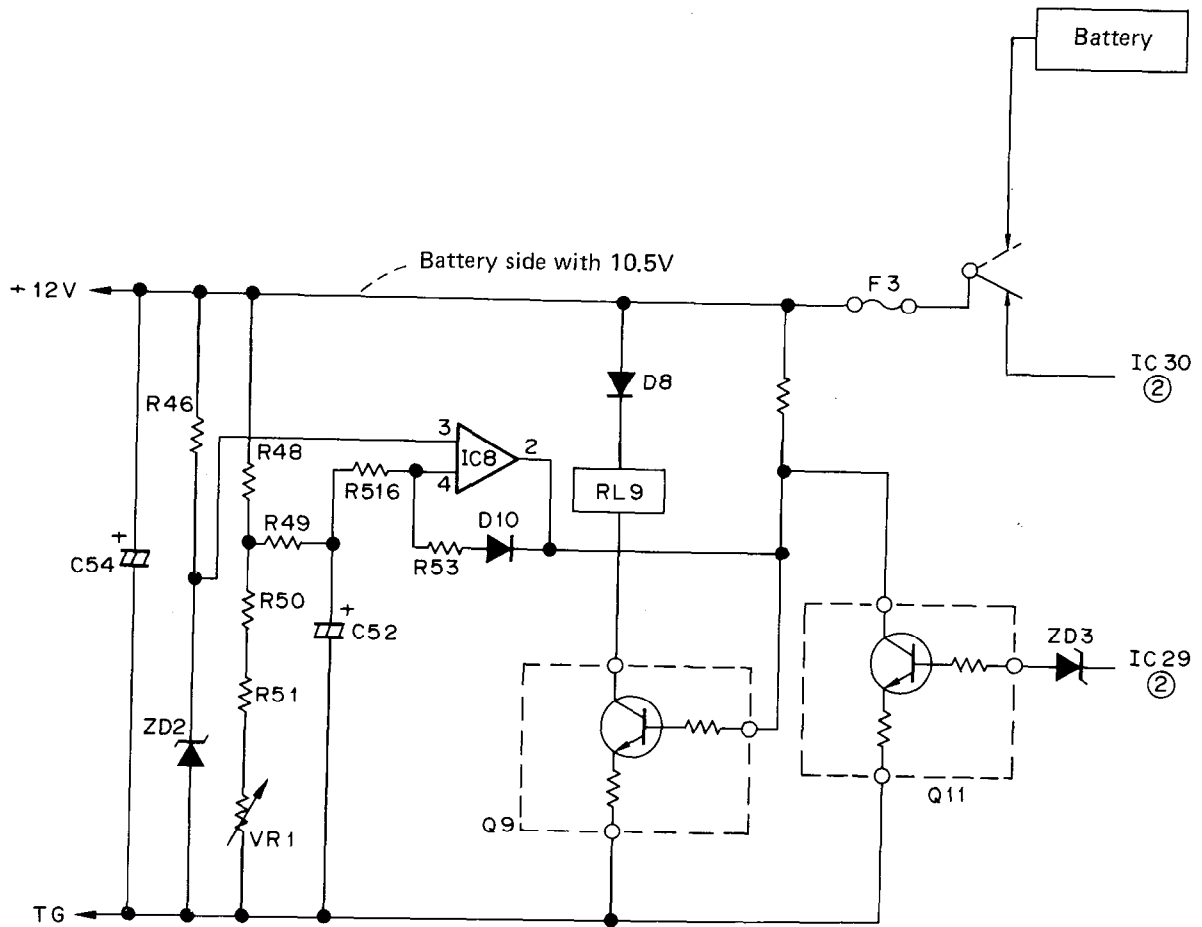
- (3) Does it output the DTMF dial signal?



Service Check Point-10

Can not dial with specified TEL at power failure

(1) Does it supply the battery voltage?



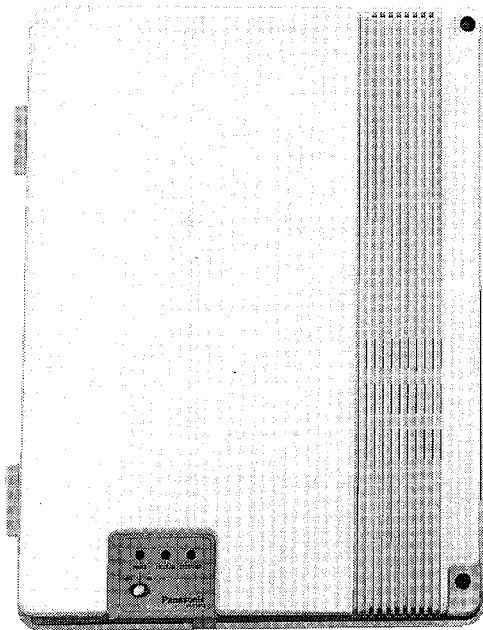
- 1) Does Q11 turn to OFF when the AC power is failed?
- 2) Does IC8 (pin No. 2) return to H status by Q11 is OFF?
- 3) Does Q9 turn to ON?
- 4) Does RL9 operates?

Technical Information

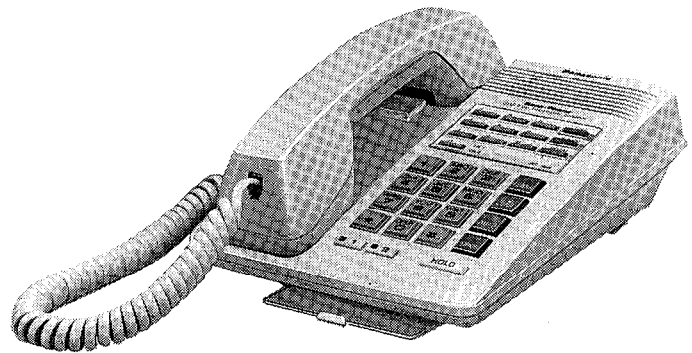
Easa-Phone™ Key Telephone System

VA-208

▲ SUPPLEMENT ▼



VA-20810



VA-20820

■ INTRODUCTION

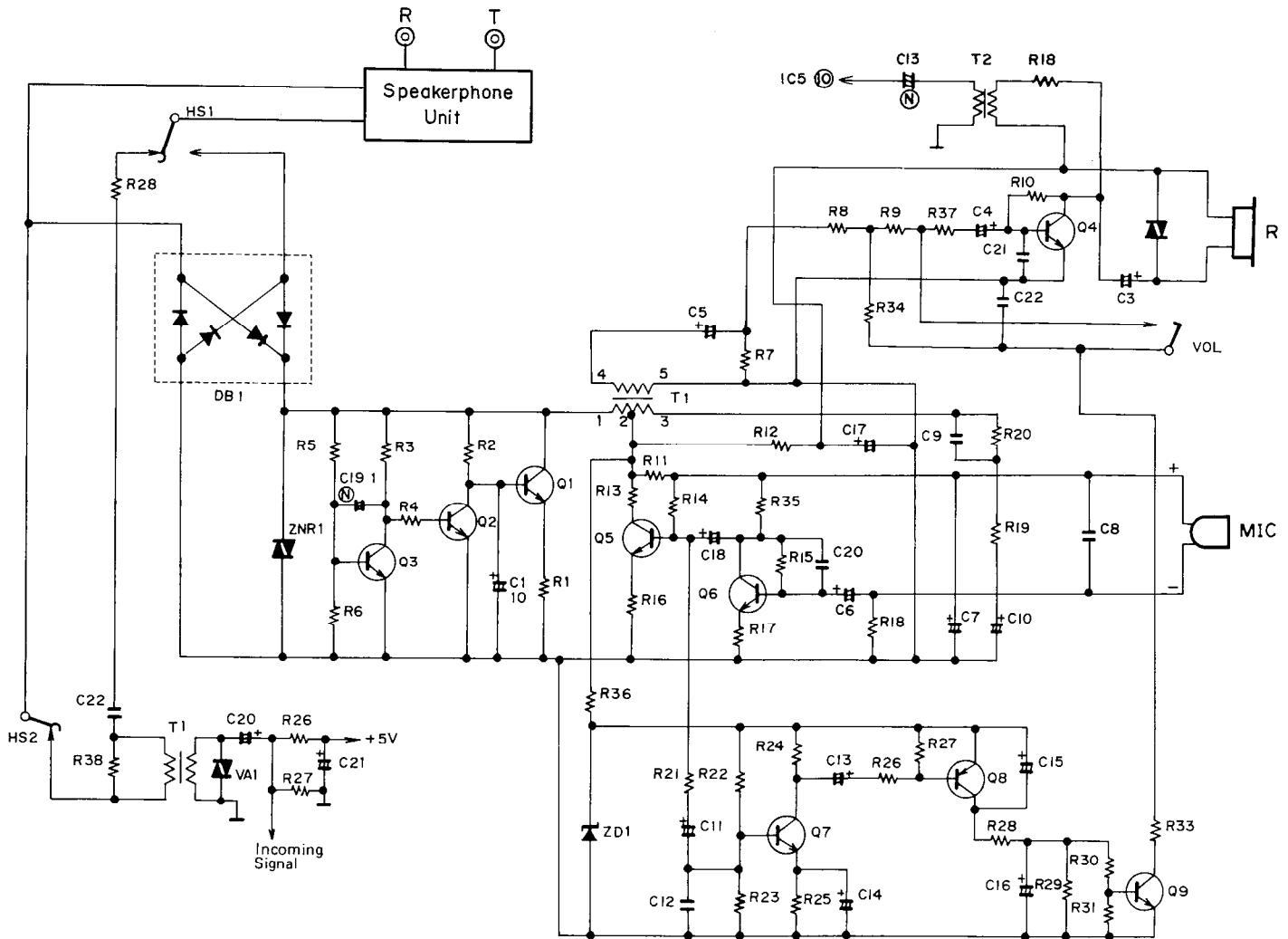
This manual is for the key telephone with built-in speakerphone and optional equipments of the key telephone system VA-208.

EXPLANATION OF CIRCUIT OPERATION

1. Key telephone with built in speakerphone

1.1 Conversation

Handset is connected to T and R line when HS1 is ON.



(1) Receiving circuit

The received voice signal is connected to the receiver via the following path.

T, R terminal → HS1 (ON) → DB1 (Rectifier) → Sink circuit (Provided to maintain conversation quality by a constant current supply for various distance conditions to the Central Office Exchange) → T1 → Q4 (Receiver amp.) → R (Receiver).

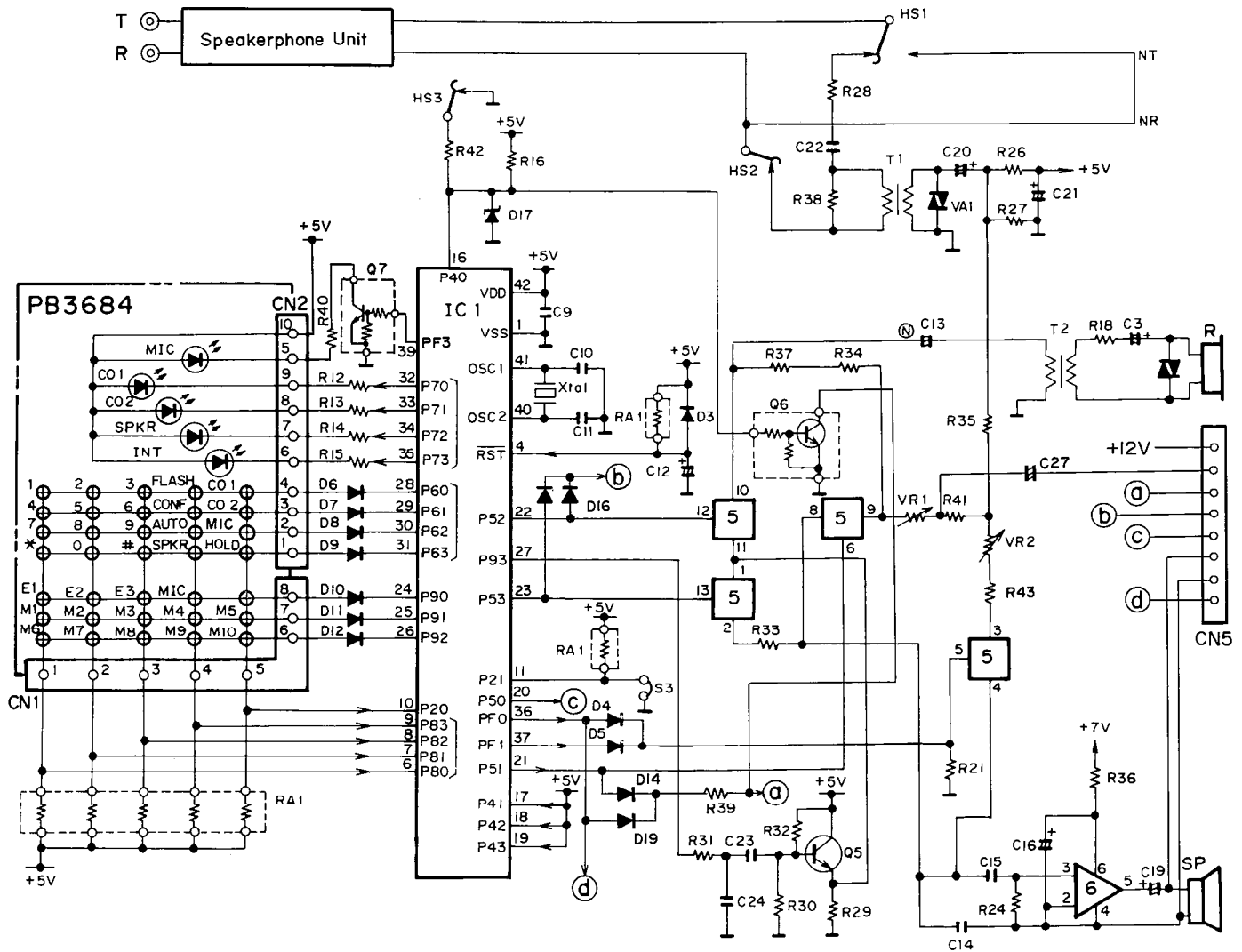
(2) Transmitting circuit

The send signal is connected to T and R terminal via the following path.

MIC → Q6 (Transmitter amp.) → T1 → DB1 → HS1 (ON) → T, R terminal

NOTE: When the send voice level is over the specified level, Q7 to Q9 (The receiver mute circuit) suppresses the side tone by Q9 (ON).

1.2 Functional operation circuit



(1) COL lamp flashing during CO line use (eg. COL 1).

When the COL incoming call lamp signal arrives to the TEL from the KSU, pin (32) of IC1 outputs the control signal (0.5 sec. \odot , 0.125 sec. $\oplus \odot \oplus$ and 1.5 sec. \odot). The lamp control signal turns ON the COL lamp when the signal becomes \odot and turns OFF the COL lamp when the signal becomes \oplus . This is the reason the COL lamp flashes.

(2) Sounding of COL incoming call tone.

When the COL incoming call tone sounding signal is input to the TEL from the KSU, pin (37) of IC1 becomes \oplus level. Then the \oplus level-signal is sent to pin (5) of IC5 via D5, and turns IC5 (ON).

From the above process, the COL incoming call tone which is sent from T and R terminal, is sent out from pin (3) of IC5 to pin (4) the incoming call tone is then sent to IC6 via C15, and the input signal is amplified by IC6 which then emits the call tone from the SP.

(3) Intercom call tone sounds and intercom voice call.

When the intercom call sounding signal and voice call signal is sent to the TEL from the KSU, pin (36) of IC1 becomes \oplus level. The \oplus level-signal is sent to pin (5) of IC5 via D4 and turns IC5 to ON. The following operation is the same as in clause 2.2.

(4) Interrupt tone control and interrupt tone output.

The interrupt tone control signal is sent to the TEL from the KSU, pin (23) of IC1 becomes \oplus level, then the receiving SW at busy IC5 (pin 1, 2) is turned to ON at the \oplus level on IC5 (Analog switch).

The interrupt tone is sent to the speaker by the following path.

IC1 (27) \rightarrow Q5 (Amplify) \rightarrow IC5 (1) \rightarrow IC1 (2) \rightarrow IC6 (Amp.) \rightarrow Speaker.

(5) Key-in tone control and Key-in tone output.

1) Handset output

- When the handset is OFF-hook, the off-hook detection signal is sent to the KSU with input the \oplus on pin (16) of IC1 by HS3.

When the dial key is pressed pin (22) of IC1 outputs \oplus \rightarrow the \oplus level on pin (12) of IC5 then turns the Key-in tone switch IC5 (10, 11) to ON.

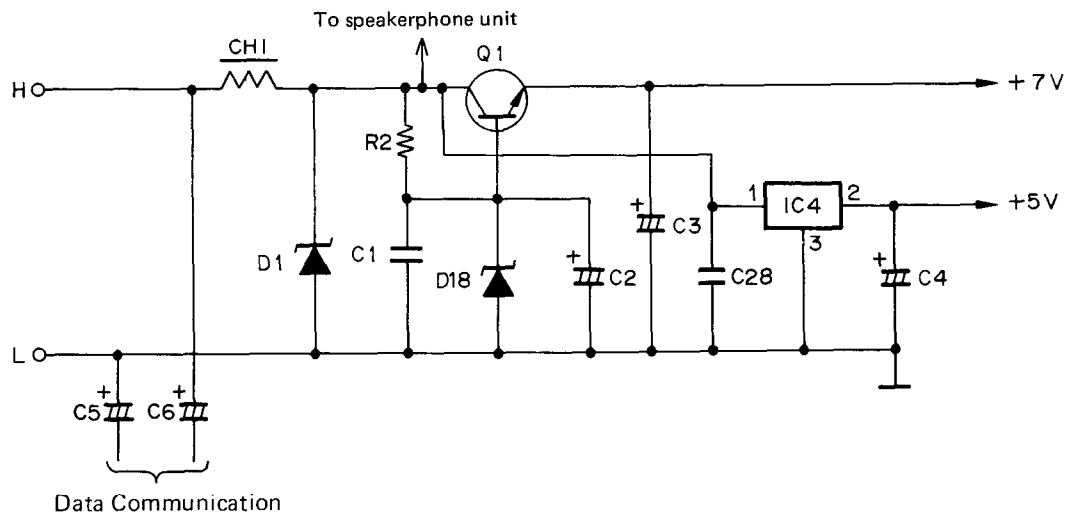
- The Key-in tone output is outputted from the receiver when the dial key is pressed by the following path.
IC1 (27) \rightarrow Q5 (Amp.) \rightarrow IC5 (11) \rightarrow IC5 (10) \rightarrow C13 \rightarrow T2 \rightarrow Receiver

2) Speaker output

- When the dial key is pressed, the \oplus level-signal is outputted from pin (22) of IC1, which turns the Key-in tone switch IC5 (10, 11) to ON with the \oplus level on pin (12) of IC5.

- Key-in tone is output from SP when the dial key is pressed by the following path.
Q5 (Amp.) \rightarrow IC5 (11) \rightarrow IC5 (10) \rightarrow R37 \rightarrow R34 \rightarrow IC5 (9) \rightarrow IC5 (8) \rightarrow IC6 (Amp.) \rightarrow SP

1.3 Power supply for TEL



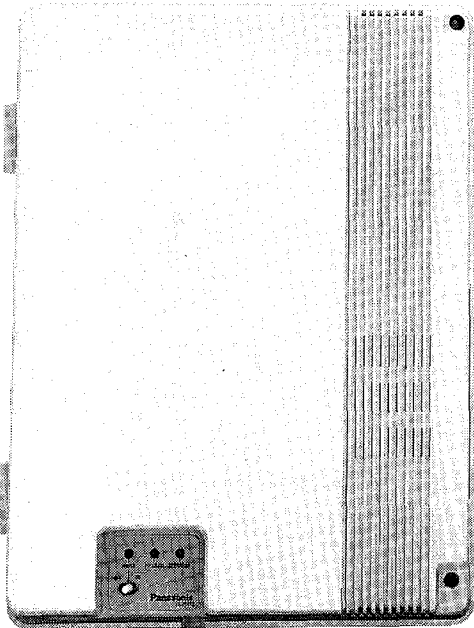
+12V DC is supplied from the KSU to the TEL. Supplied voltage is converted to +7V and +5V by the voltage regulator circuit and converted voltages are used for the power source of the TEL.

Technical Information

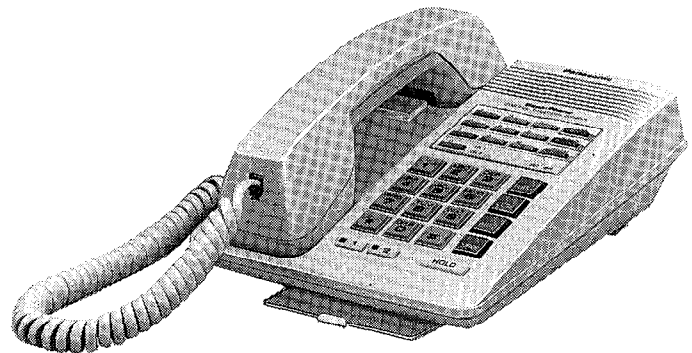
Easa-Phone™ Key Telephone System

VA-208

▲ SUPPLEMENT ▼



VA-20810



VA-20820

■ INTRODUCTION

This manual is for the key telephone with built-in speakerphone and optional equipments of the key telephone system VA-208.

CONTENTS

BLOCK DIAGRAM	1
1. Key telephone with built in speakerphone (VA-20821)	1
2. Doorphone Adaptor (VA-20860)	2
3. Extension Card (VA-20840)	2
4. Extension Card (VA-20841)	2
EXPLANATION OF CIRCUIT OPERATION	3
1. Key telephone with built in speakerphone (VA-20821)	3
1.1 Conversation	3
1.2 Functional Operation Circuit	4
1.3 Power Supply for TEL	5
1.4 A-K Communication	6
1.5 Speech Path Change Circuit	6
1.6 Transmitting Circuit (Speakerphone)	7
1.7 Receiving Circuit (Speakerphone)	8
1.8 Send Voice Signal Detecting Circuit	9
1.9 Receive Voice Signal Detecting Circuit	9
1.10 Voice Switch	10
2. Extension Card (VA-20840/VA-20841)	11
2.1 Data Communication between Key TEL and KSU	11
2.2 Data Communication between SLT (Single Line Telephone) and KSU	12
2.3 Incoming Tone Oscillation Circuit (VA-20841)	13
2.4 DTMF Signal Receiving Circuit (VA-20841)	13
3. Doorphone adaptor (VA-20860)	14
3.1 Call Detecting Circuit	14
3.2 Call Tone Oscillation Circuit	14
3.3 Doorphone Power Control Circuit	15
3.4 Doorphone Conversation Circuit	16
4. Doorphone Unit (VA-20861)	17
4.1 Call Circuit	17
4.2 Conversation	17
5. Extension bell (VA-20863)	18
TROUBLE SHOOTING GUIDE	19

(3) Intercom call tone sounds and intercom voice call.

When the intercom call sounding signal and voice call signal is sent to the TEL from the KSU, pin (36) of IC1 becomes \oplus level. The \oplus level-signal is sent to pin (5) of IC5 via D4 and turns IC5 to ON. The following operation is the same as in clause 2.2.

(4) Interrupt tone control and interrupt tone output.

The interrupt tone control signal is sent to the TEL from the KSU, pin (23) of IC1 becomes \oplus level, then the receiving SW at busy IC5 (pin 1, 2) is turned to ON at the \oplus level on IC5 (Analog switch).

The interrupt tone is sent to the speaker by the following path.

IC1 (27) \rightarrow Q5 (Amplify) \rightarrow IC5 (1) \rightarrow IC1 (2) \rightarrow IC6 (Amp.) \rightarrow Speaker.

(5) Key-in tone control and Key-in tone output.

1) Handset output

- When the handset is OFF-hook, the off-hook detection signal is sent to the KSU with input the \oplus on pin (16) of IC1 by HS3.

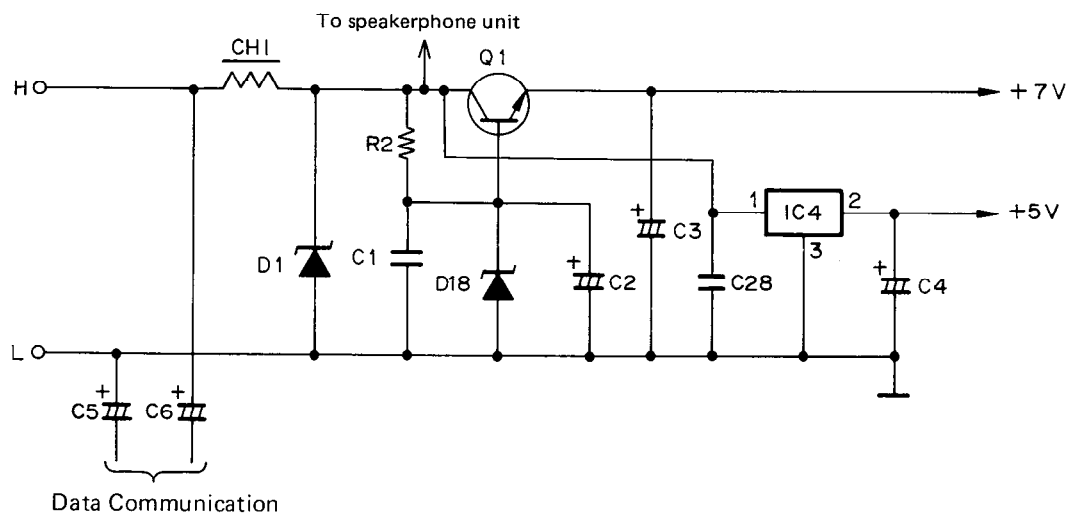
When the dial key is pressed pin (22) of IC1 outputs \oplus \rightarrow the \oplus level on pin (12) of IC5 then turns the Key-in tone switch IC5 (10, 11) to ON.

- The Key-in tone output is outputted from the receiver when the dial key is pressed by the following path.
IC1 (27) \rightarrow Q5 (Amp.) \rightarrow IC5 (11) \rightarrow IC5 (10) \rightarrow C13 \rightarrow T2 \rightarrow Receiver

2) Speaker output

- When the dial key is pressed, the \oplus level-signal is outputted from pin (22) of IC1, which turns the Key-in tone switch IC5 (10, 11) to ON with the \oplus level on pin (12) of IC5.
- Key-in tone is output from SP when the dial key is pressed by the following path.
Q5 (Amp.) \rightarrow IC5 (11) \rightarrow IC5 (10) \rightarrow R37 \rightarrow R34 \rightarrow IC5 (9) \rightarrow IC5 (8) \rightarrow IC6 (Amp.) \rightarrow SP

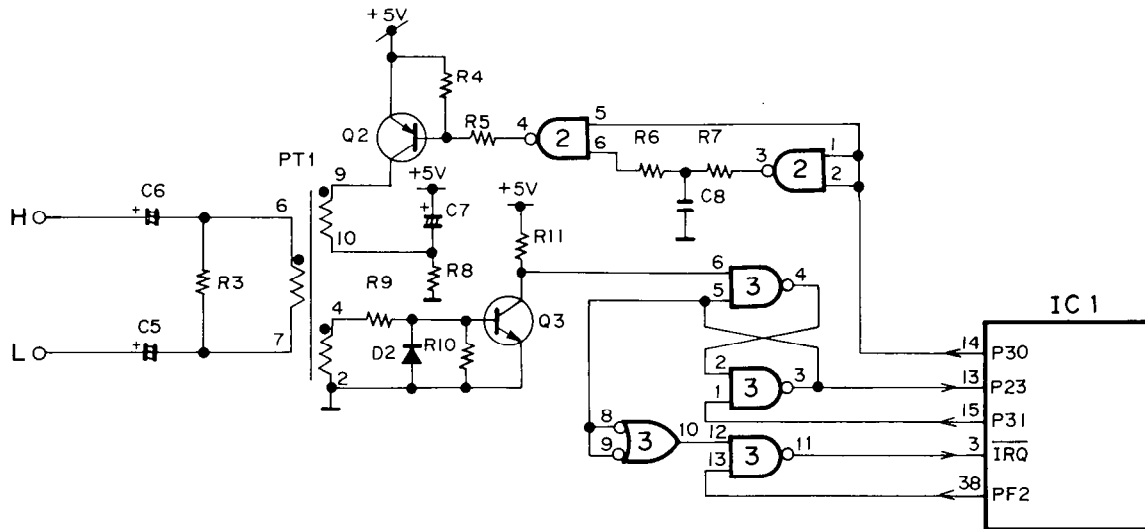
1.3 Power supply for TEL



+12V DC is supplied from the KSU to the TEL. Supplied voltage is converted to +7V and +5V by the voltage regulator circuit and converted voltages are used for the power source of the TEL.

1.4 A-K communication

Data communication between KSU (CPU) and TEL (APU)



(1) Receiving of A-K communication (pin No. 13 of IC1)

The receiving signal from H and L line is received by IC1 via the following path.
PT1 (Signal induced) → R9 → Q3 → IC3 (6)

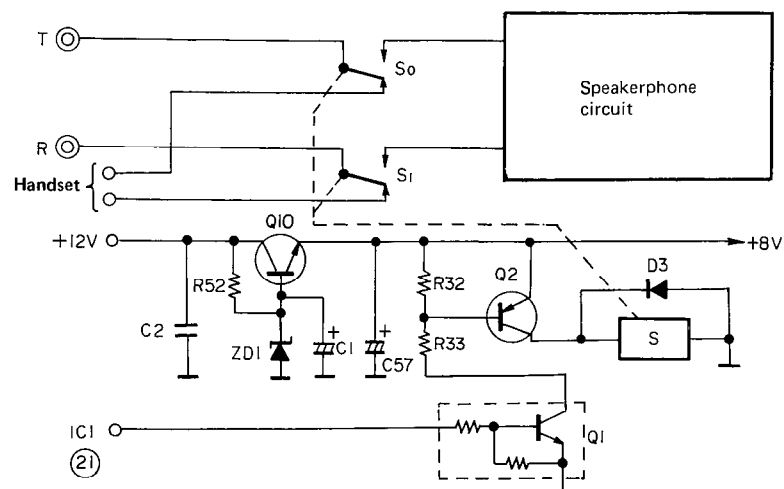
NOTE: DC current is eliminated by C5 and C6. D2 is a half wave rectifier.

Pin (15) of IC1 receives the signal from the KSU only when the \oplus level-signal appears on the A-K communication receiver control terminal from pin (13) of IC1.

(2) Transmitting of A-K communication data

The data of the TEL is sent to H and L line from pin (14) of IC1 via the following path.
IC2 (4) → Q2 (Base) → Q2 (Collector) → PT1 (9, 10) → PT1 (6, 7) → C5 and C6.

1.5 Speech path change circuit

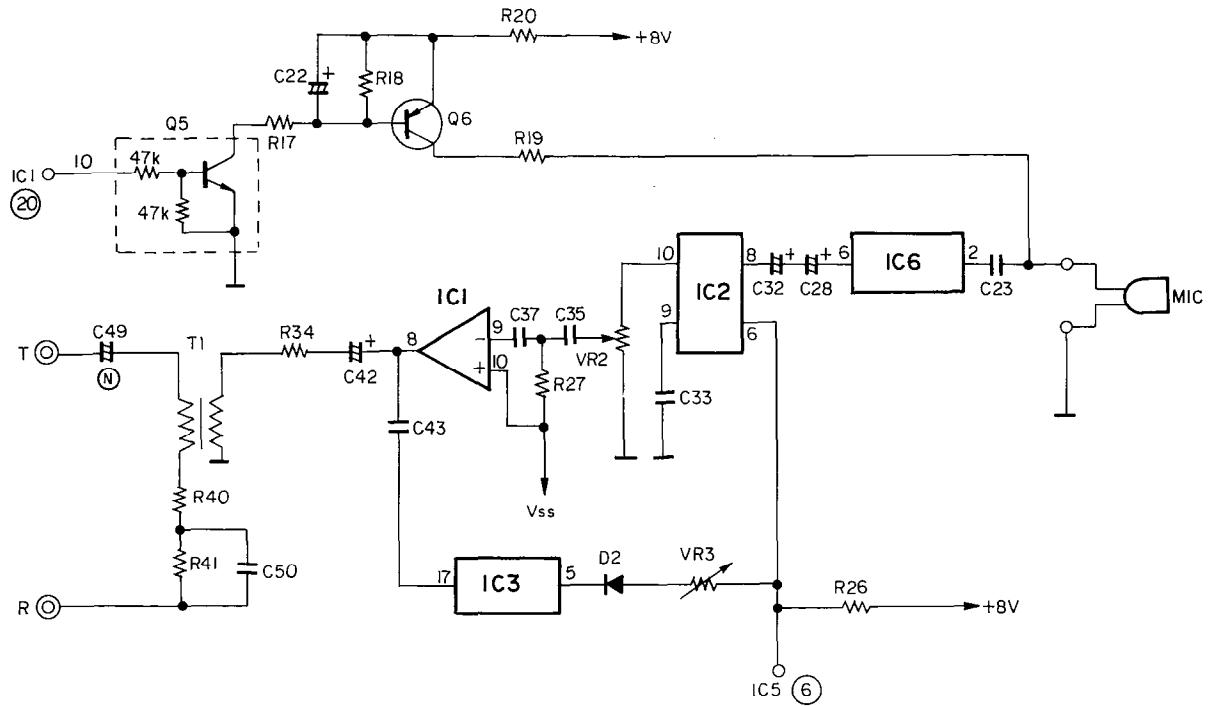


When the SPKR button is pressed, the voltage level at pin (21) of IC1 on the main P.C.B. (PB3942) becomes \oplus and the relay S is caused to operate via the following path.

IC1 (21) \oplus → Q1 (ON) → Q2 (ON) → Relay S

Thus, the speech path is changed from the handset to the speakerphone. Note here that Q10 and ZD1 are used for obtaining a +8V stabilized power source.

1.6. Transmitting circuit (speakerphone)



When the SPKR button is pressed, pin (20) of IC1 on the main P.C.B. (PB3942) becomes \oplus causing Q5 and Q6 to be turned ON and the power to be supplied to the MIC.

The send voice signal is connected to the COL via the following path.

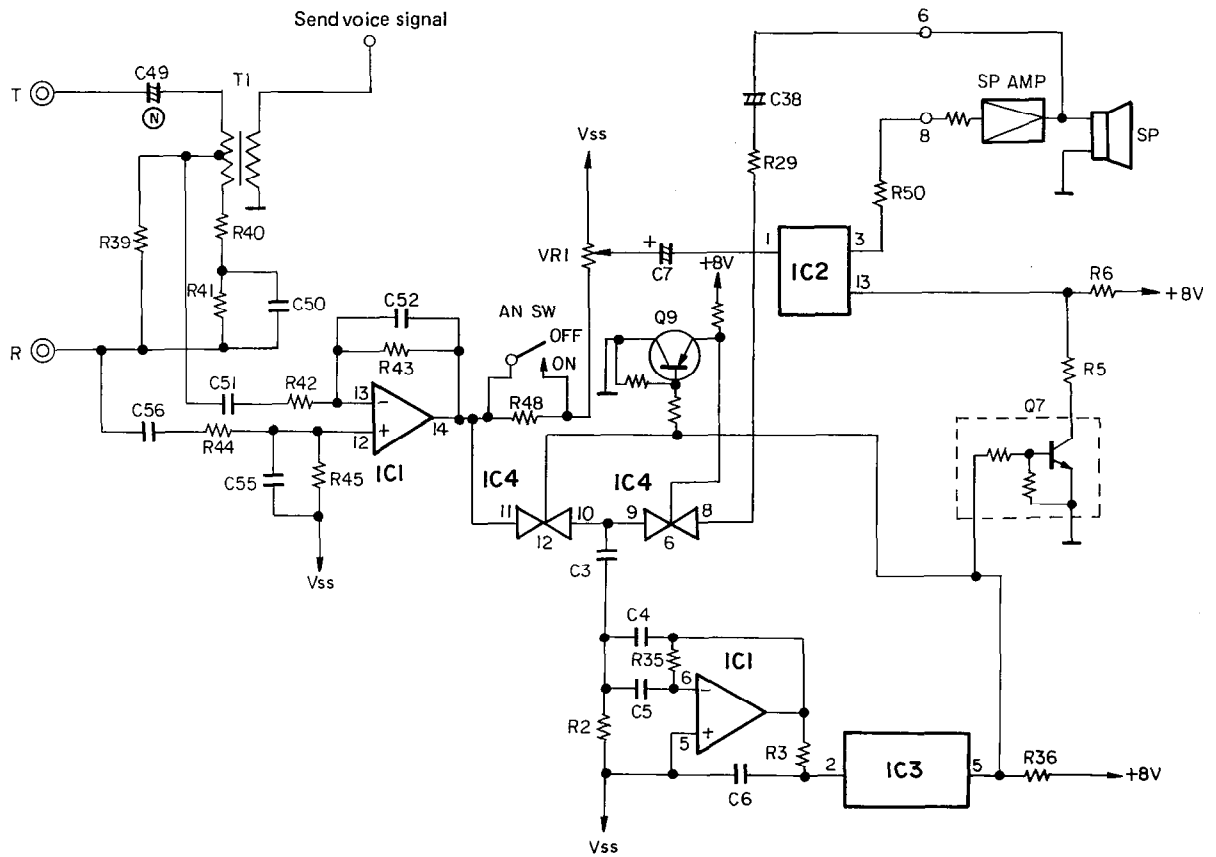
MIC \rightarrow IC6 \rightarrow IC2 \rightarrow VR2 \rightarrow IC1 \rightarrow T1 \rightarrow COL

In addition, the send voice signal is also input to the Voice SW via the following path.

MIC \rightarrow IC6 \rightarrow IC2 \rightarrow VR2 \rightarrow IC1 \rightarrow Voice SW

If there is any receive signal, since the voltage level at pin (6) of IC2 is caused by the Voice SW to drop, the send signal level also becomes low.

1.7 Receiving circuit (speakerphone)



The received voice signal is connected to the speakerphone via the following path.

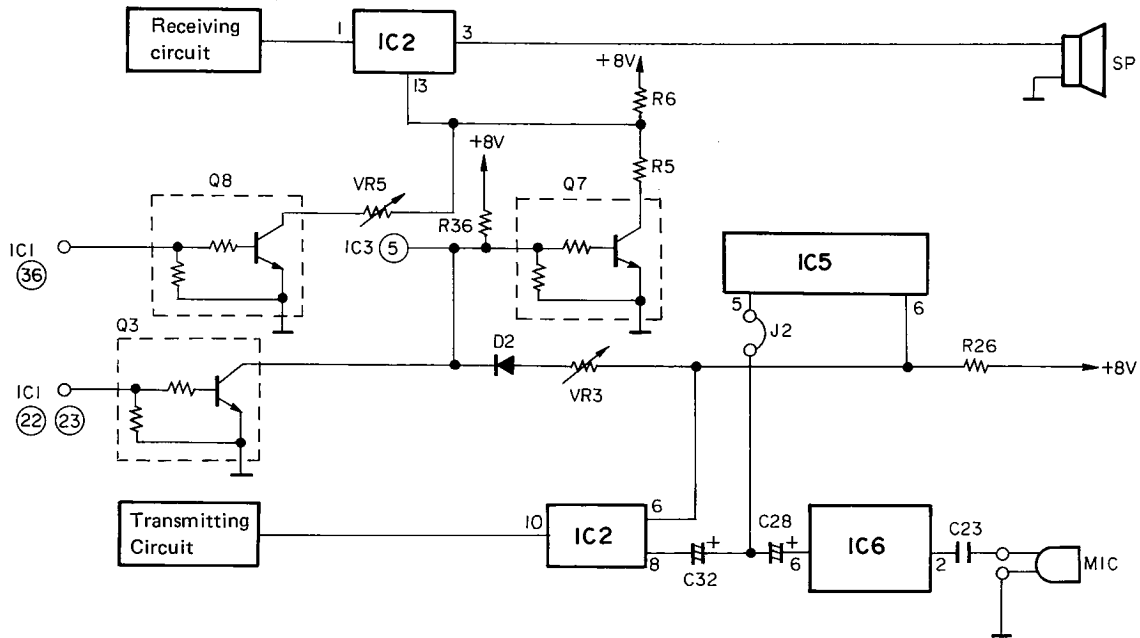
COL → IC1 → VR1 → IC2 → CN5 (8), Main P.C.B. → IC6 → Speakerphone

In addition, the received voice signal is also inputted to the Voice SW via the following path.

COL → IC1 → IC4 → IC1 → Voice SW

If there is any send signal presente, pin (13) of IC2 (Voice SW) goes ①, causing the receive signal to be cut off at IC2.

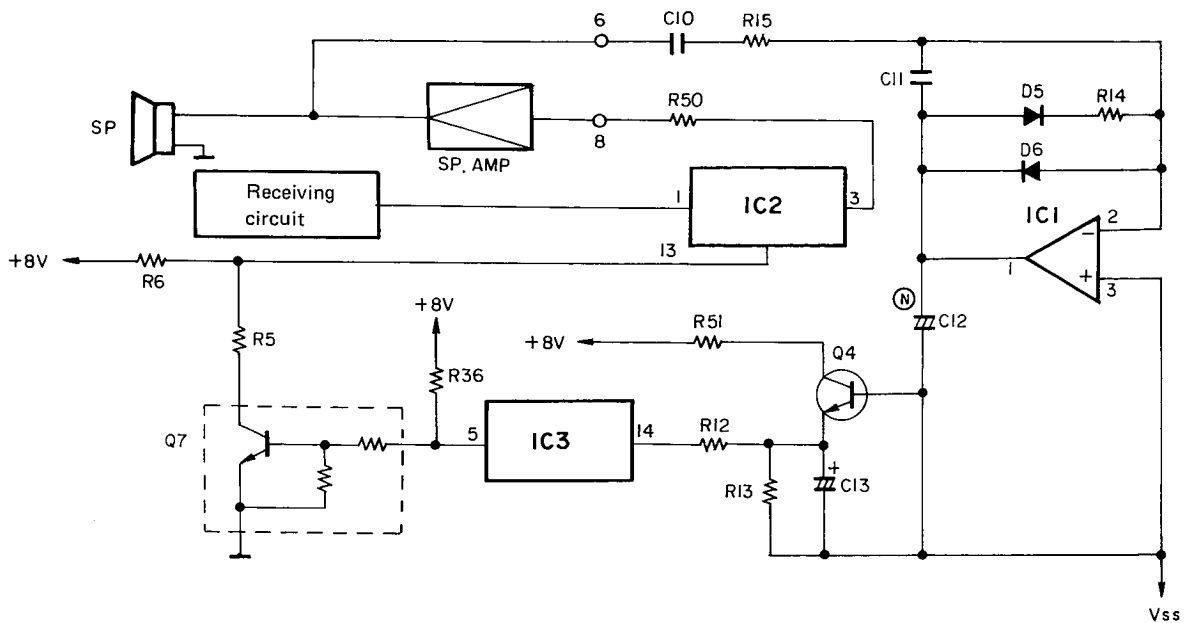
1.8 Send voice signal detecting circuit



The send voice signal through the microphone is inputted via IC6 to pin (5) of IC5. The voltage level in this case at pin (6) of IC5 becomes \oplus if a voice is detected or it becomes \ominus if no voice or continuous sound (noise) is detected, thus, the send signal level is controlled.

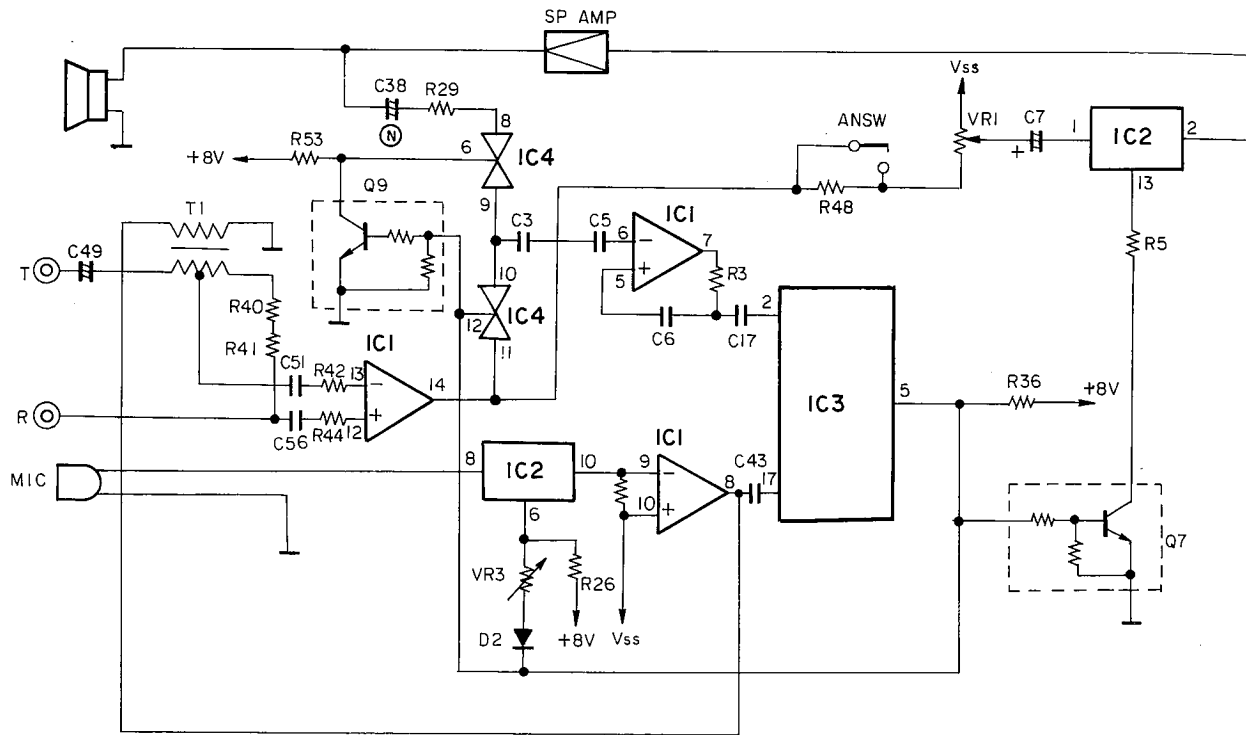
When pin (22) (for Key Entry) or pin (23) (for Off-Hook Receiving) of IC1 on the main P.C.B. (PB3942) is at \oplus level, Q3 is turned ON and pin (6) of IC2 becomes \ominus level. For this reason, the send signal level becomes low. (Pin (36) of IC1 on the main P.C.B. also becomes \oplus level and Q8 is turned ON when Off-Hook Receiving occurs, therefore pin (13) of IC2 becomes \ominus level and the receive signal level also becomes low.)

1.9 Receive voice signal detecting circuit



When the output from the speaker amplifier is too strong, pins (1 ~ 3) of IC1 and Q4 are turned ON causing pin (14) of IC3 to go \oplus thus holding the received voice signal for approximately one second.

1.10 Voice switch



The receive voice signal from the COL, after being connected to the speakerphone, is inputted to pin (2) of IC3 via the following path.

SP → C38, R29 → IC4 → IC1 → IC3 (2)

The send voice signal from the MIC, after outputted through pin (8) of IC1, is inputted through C43 to pin (17) of IC3.

Comparison between the receive signal and the send signal is made in IC3 and pin (14) is set to ⊖ level for the receive mode or to ⊕ level for the send mode.

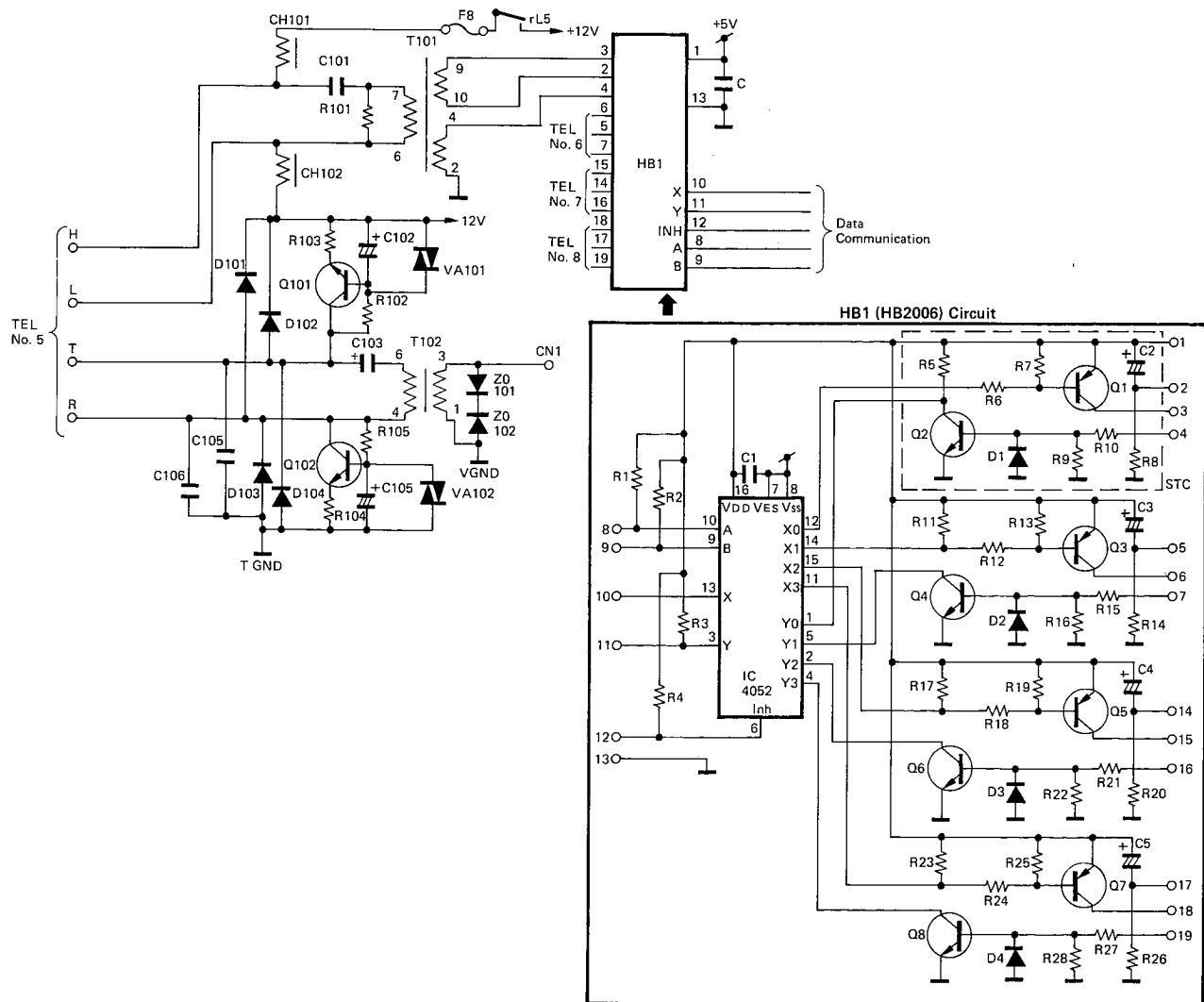
For this reason, the input path to IC3 for the receive signal in the send mode is changed as shown below.

COL → IC1 → IC3 (14) ⊕ IC4 (11-10 : ON) → IC1 → IC3 (2)

Note here that the receive signal and the send signal are controlled by the use of IC2 according to the output from pin (14) of IC3.

2. Extension card (VA-20840/VA-20841)

2.1 Data communication between key TEL and KSU



(1) Supply of the control current to H-L terminals. (For data communication and as power source to the key TEL)

The +12V is supplied to the H-L terminals via the choke coil CH101, and the supplied DC voltage is superposed on the communication data between the key TEL and the KSU.

1) Outputting the data from the KSU to the key TEL

The data from pin (1C) of the HB1 is output to pin (3) of HB1, then it is further output via the transformer T101 (9 and 10 to 7 and 6) to the H-L terminals.

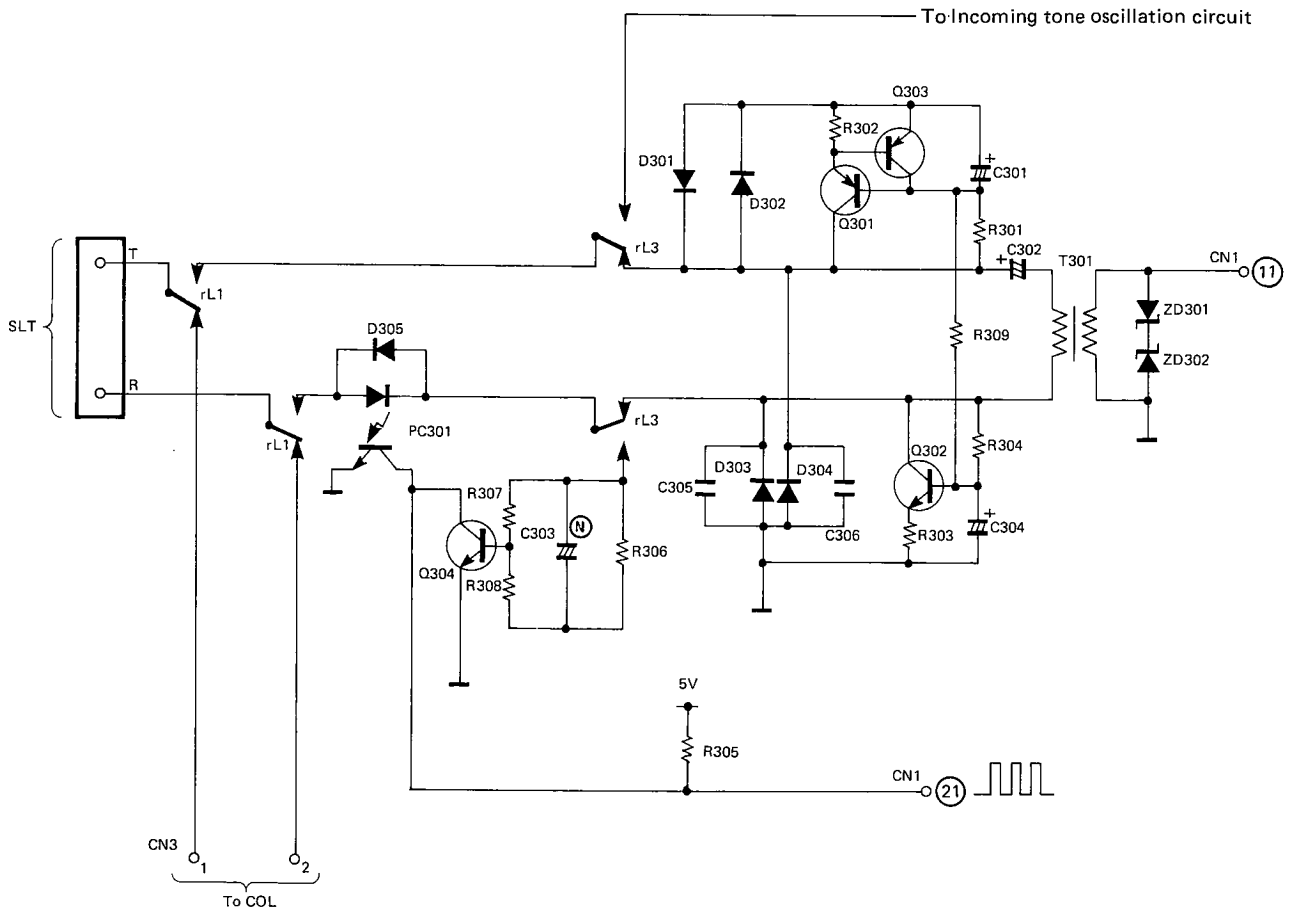
2) Inputting the data from the key TEL to the KSU

The input data from the key TEL is applied across T101 (7 and 6 to 4 and 2) via the capacitor C101 then inputted to HB1 STAT (4) to be outputted from HB1 (11).

(2) DC power supply to the speech path (to T-R terminals)

DC power to the speech path is supplied to the TEL speech circuit. That is, the positive side of the +12V is connected through R103 and Q101, and the negative side through Q102 and R104. The R103, Q101, Q102 and R104 work together to convert DC current into a current to enable a coil function of the transformer T102, and the voice signal and other tone signals are applied to the transformer T102 through which they are outputted to the speech path.

2.2 Data communication between SLT (single line telephone) and KSU



(1) Speech current supply circuit

The positive side of the DC 12V is supplied by R302 and Q301 and the GND side is supplied by R303 and Q302 (Q303 is used as a constant current Tr, $I = 22\text{mA}$), and the speech signal is connected to the speech path through T301.

(2) Dial pulse detecting circuit

The dial pulse being input from the terminals T and R is detected by the photocoupler PC301 to be sent to the main unit.

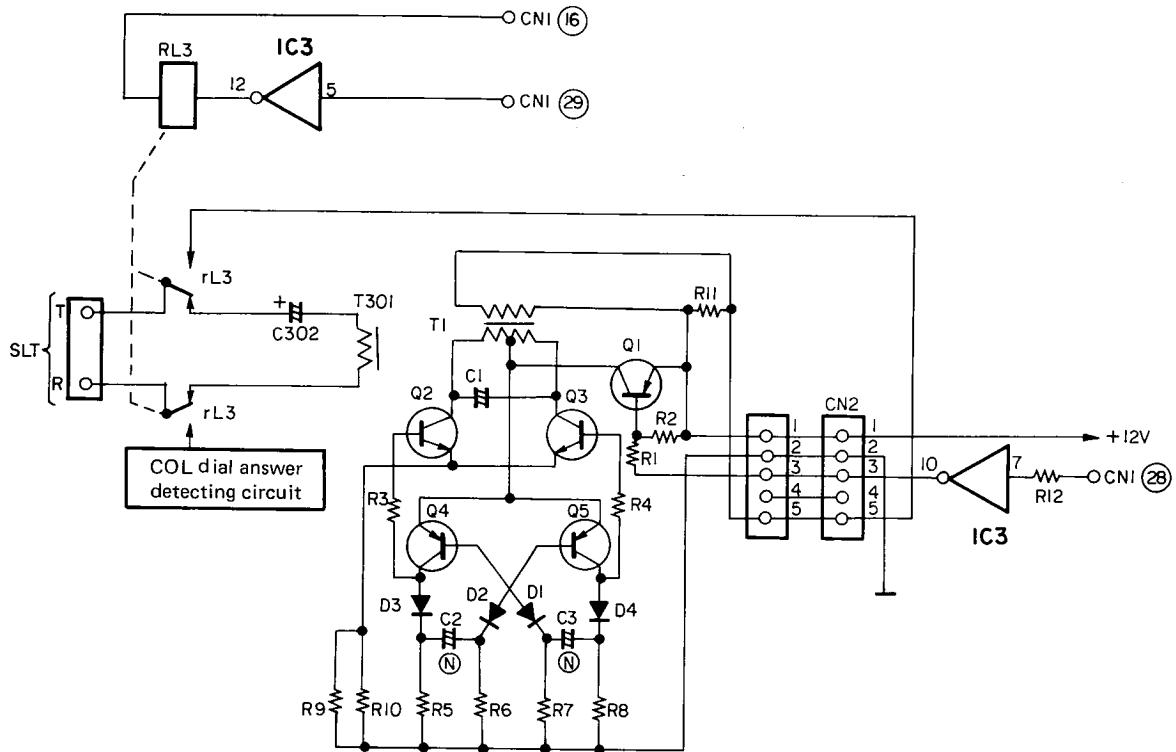
(3) COL call answer detecting circuit

When an incoming call arrives, the relay RL3 repeats ON/OFF operation, an incoming signal produced by the oscillation circuit, is sent to the SLT in intervals. When a response is made to the incoming signal, the signal passes through rL3, Q304 is turned ON, and the \odot level-signal is sent to the KSU, thus COL Call Answer is detected.

(4) Power failure-direct COL connecting relay

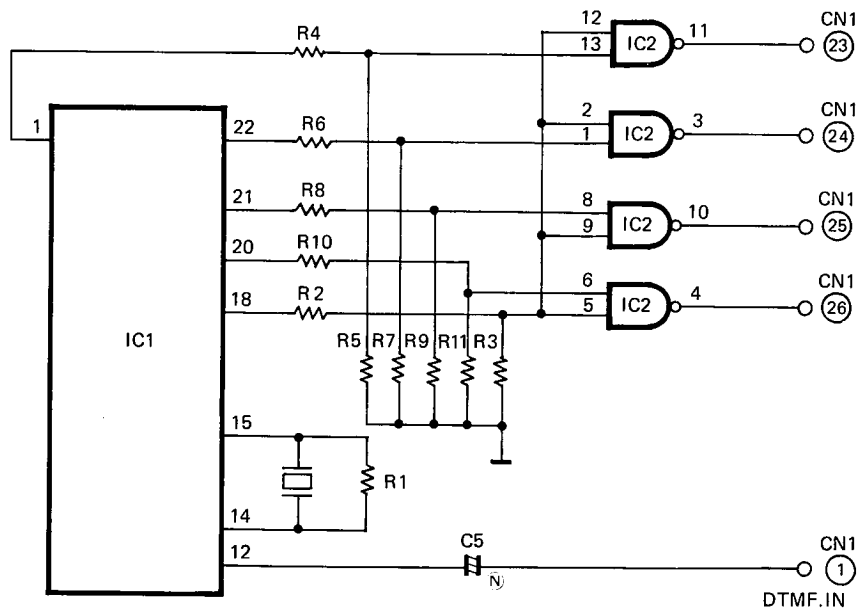
In power failure (and in backup power failure), the RL1 is turned off and a SLT is connected directly to the COL via the connector CN3.

2.3 Incoming tone oscillation circuit (VA-20841)



When an incoming call arrives, the output of IC3 (7, 10) becomes \textcircled{L} level and Q1 is turned ON to start the oscillation (approximately 20 Hz). Simultaneously, the output of IC3 (5, 12) also becomes \textcircled{L} level and RL3 is turned ON. Consequently, the oscillation signal is sent through rL3 to the key telephone.

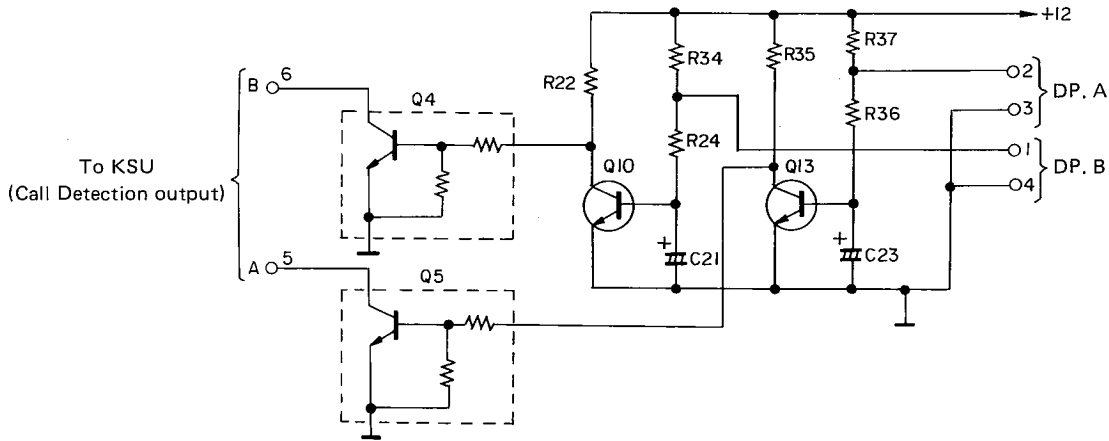
2.4 DTMF signal receiving circuit (VA-20841)



The DTMF which is input through the SLT is input via the LINK IC to pin (12) of IC1. Then it passes from pins (1), (22), (21) and (20) of IC1 through IC2 to be output in the form of a hexadecimal code to the KSU.

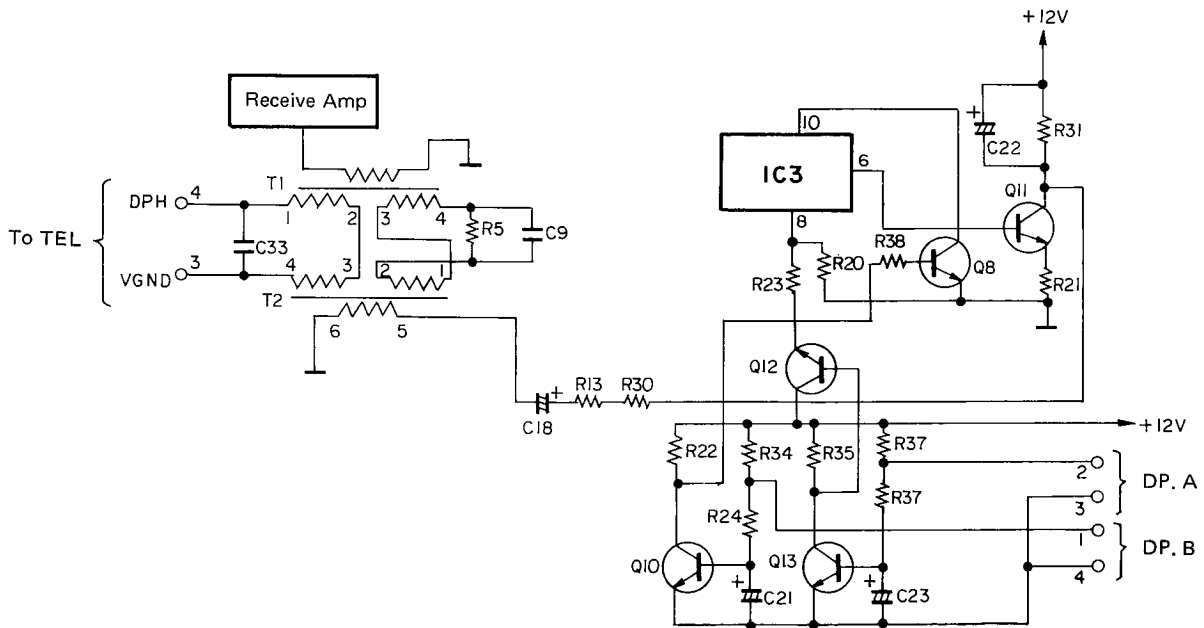
3. Doorphone adapter (VA-20860)

3.1 Call detecting circuit



When the call button of the doorphone unit A is pressed, the terminals 2 and 3 are shorted therefore the base of Q13 becomes \ominus level. Consequently, Q13 is turned OFF while Q5 is turned ON. When Q5 is turned ON, pin (5) of CN is substantially connected to a ground. By this, the KSU side can detect a call from the doorphone A.

3.2 Call tone oscillation circuit



When the call button of the doorphone unit A is pressed, Q13 is turned OFF and the base of Q12 becomes \oplus level. Consequently, Q12 is turned ON, \oplus level is input to pin (8) of IC3, then a call tone is sent out through pin (6) of IC3.

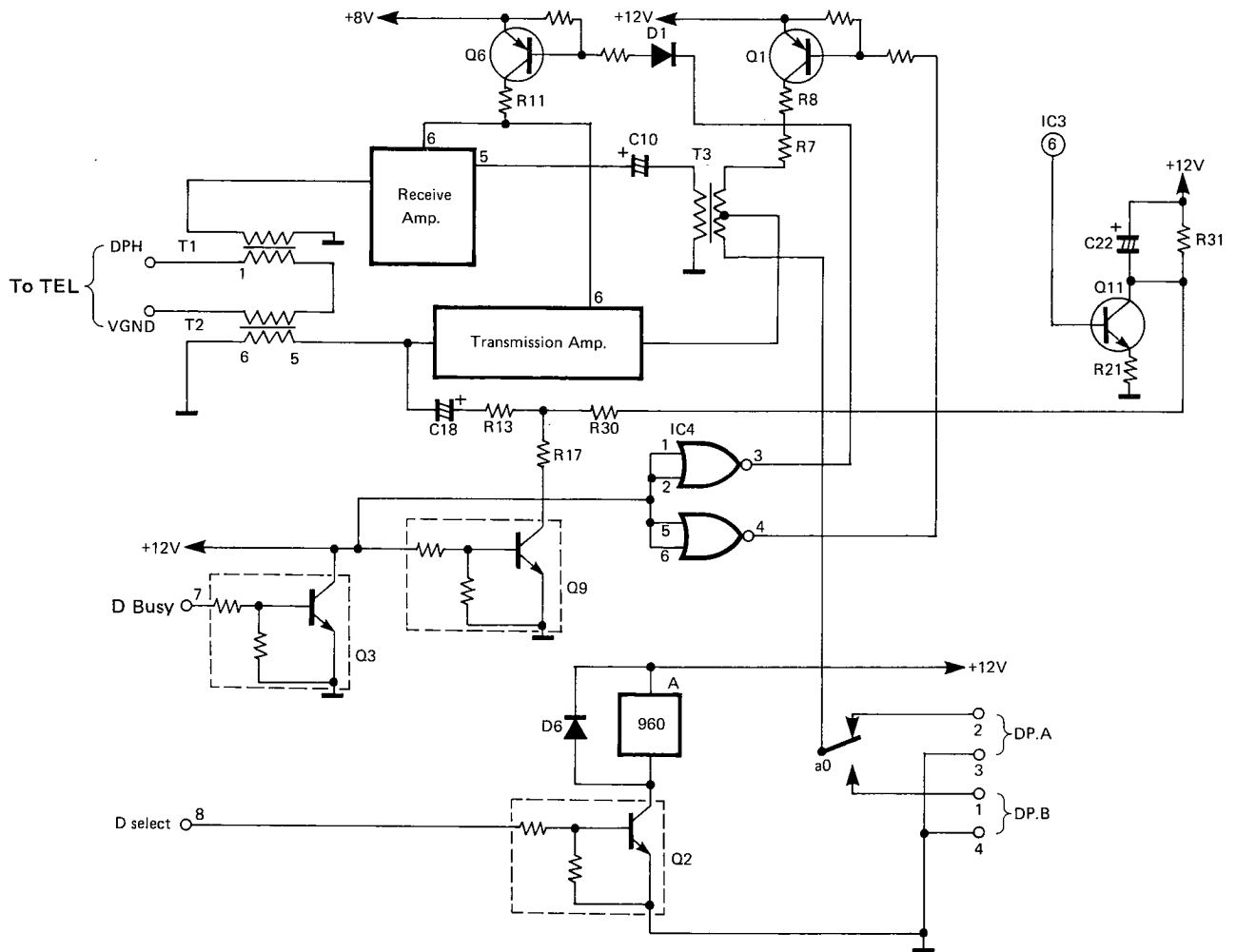
Similarly, a call tone is sent out through pin (6) of IC3 via the following path if the call button of the doorphone unit B is pressed.

Doorphone B → Q10 (OFF) → Q8 (ON) → IC3 (10) → IC3 (6)

The call tone sent out through pin 6 of IC3 is sent out to the KSU via the following path.

IC3 (6) → Q11 → R30, 13 → C18 → T2 → T1 → pin 4 of CN

3.3 Doorphone power control circuit



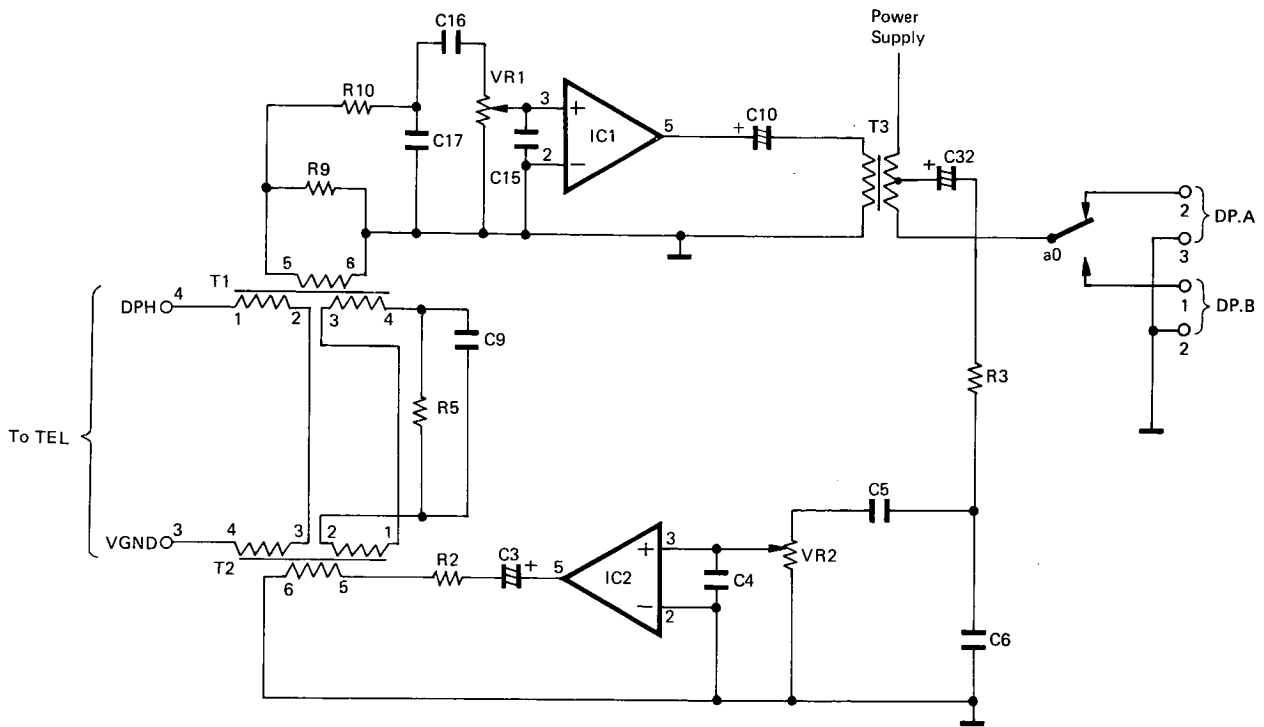
The selection of the doorphone A/B is determined by inputting \ominus / \oplus level through pin 8 of CN. When the doorphone A is selected for example, through pin 8 of CN is input \ominus level, and Q2 is turned OFF. Consequently, the Relay A becomes OFF and the circuit is changed to the doorphone A.

The supply of power is accomplished by \ominus level which is input through pin 7 of CN. When \ominus level is input through pin 7 of CN, Q3 is turned OFF then \oplus level is input to pins 1, 2, 5 and 6 of IC4.

For this reason, Q1 is turned ON and power is supplied via T3 to the doorphone. Q6 is turned ON at the same time causing the power to be also supplied to IC1 and IC2. When Q3 is turned OFF, \oplus level is input to the base of Q9 which causes it to turn ON.

By this, the send path from pin 6 of IC becomes a low impedance path.

3.4 Doorphone conversation circuit



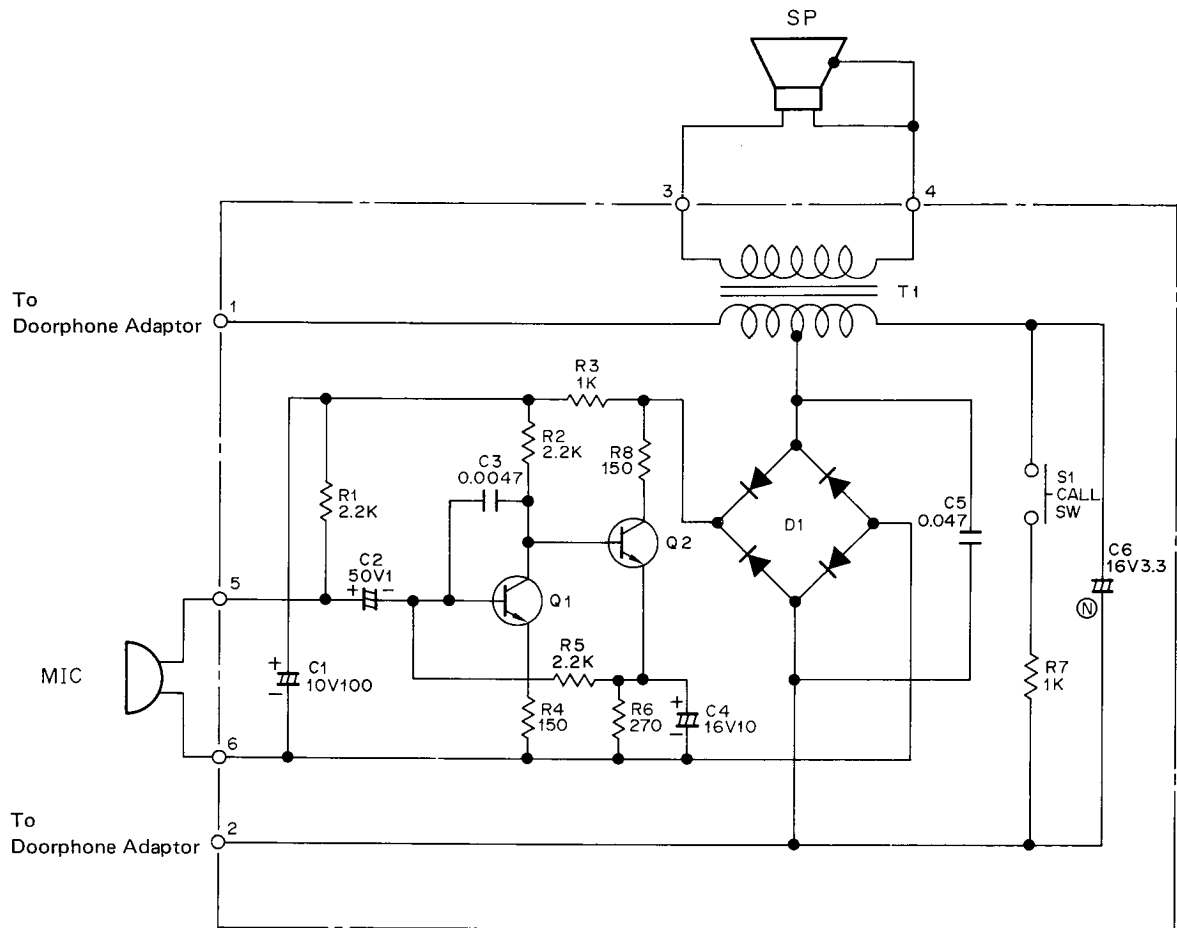
The send voice signal from the doorphone is connected to the KSU via the following path.

a0 → T3 → VR2 → IC2 → T2 → T1 → pin 4 of CN → KSU

The receive voice signal is connected to the doorphone via the following path.

KSU → pin 4 of CN → T1 → VR1 → IC1 → T3 → a0 → Doorphone unit

4. Doorphone unit (VA-20861)



4.1 Call circuit

Turning ON the call SW causes the terminals 1 and 2 to be shorted through R7, therefore a call is detected at the doorphone adaptor side.

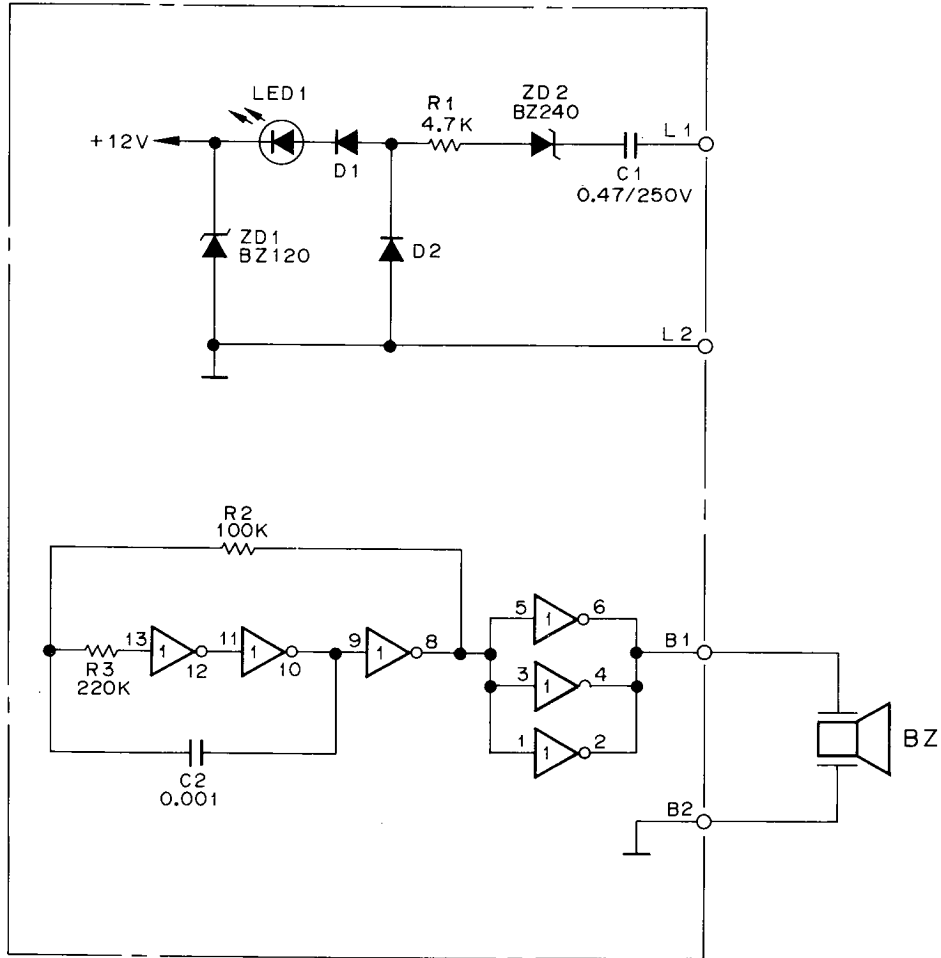
4.2 Conversation

The send voice signal is sent to the doorphone adaptor via the following path.

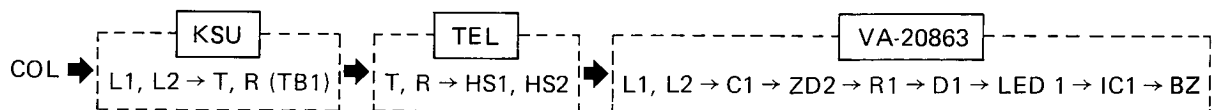
Mic → Q1, 2 → (Mic amp.) → D1 → T1 → Doorphone adaptor

The receive voice signal is received at the SP via the terminal 1 → T1.

5. Extension bell (VA-20863)



The extension bell is used when there is a power failure. The operation of the extension bell is performed via the following path.



■ TROUBLE SHOOTING GUIDE

VA-20821

OPERATION	DEFECTIVE PHENOMENON	CHECK ITEM	
Off-hook the handset	No intercom dial tone	(1) H, L power (2) A-K communication	Service check point-1
Speakerphone conversation	No transmitting possible	(1) Voice detecting circuit (2) Send voice monitor amp. (3) Voice SW	Service check point-2
	No receiving possible	(1) Receive voice monitor amp. (2) Voice SW	Service check point-3

VA-20841 (VA-20840)

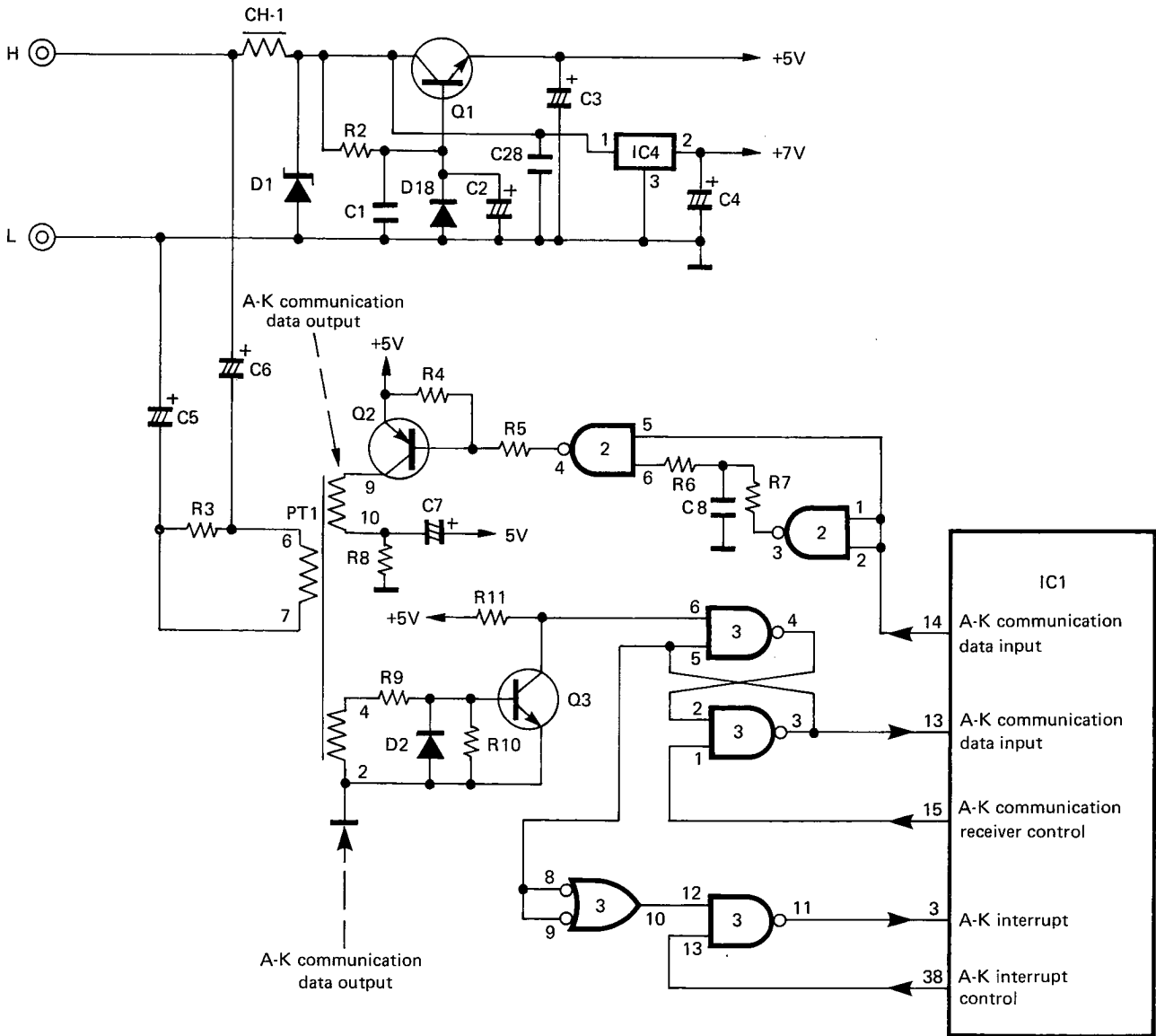
(VA-20841 and VA-20840)

TEL conversation	No conversation possible	(1) H, L terminal power supply (2) A-K communication	Service check point-4
(VA-20841 only) SLT conversation	No conversation possible	(1) T, R terminal power supply (2) Dial pulse detecting circuit	Service check point-5
CO incoming call	No CO incoming call	(1) Relay RL 3 (2) Oscillation circuit	Service check point-6

VA-20860

Doorphone call	No call tone sound	(1) Call tone detecting circuit (2) Call tone oscillation circuit	Service check point-7
Doorphone conversation	No conversation possible	(1) Amp. power supply (2) S/R amp.	Service check point-8

Service Check Point-1



(1) H.L power check

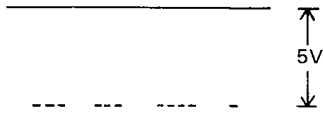
Is there a output 12V between H(+) and L(-)?

(2) A-K communication input check } Refer to attached A-K communication

(3) A-K communication output check } input/output wave form .

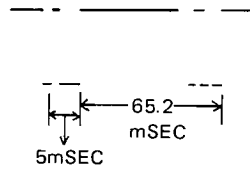
A-K communication input

(1) IC3 (6 pin)



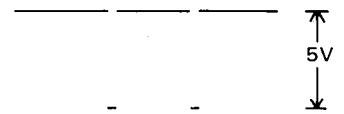
Measured with 2msec.
and 2V range.

(2) IC3 (1 pin)



Measured with 10msec.
and 2V range.

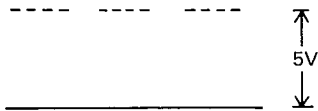
(3) IC3 (3 pin)



Measured with 2msec.
and 2V range.

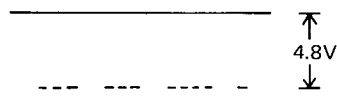
A-K communication output

(1) IC1 (14 pin)



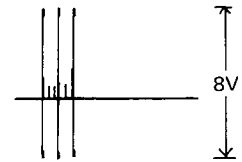
Measured with 2msec.
and 2V range.

(2) IC2 (4 pin)



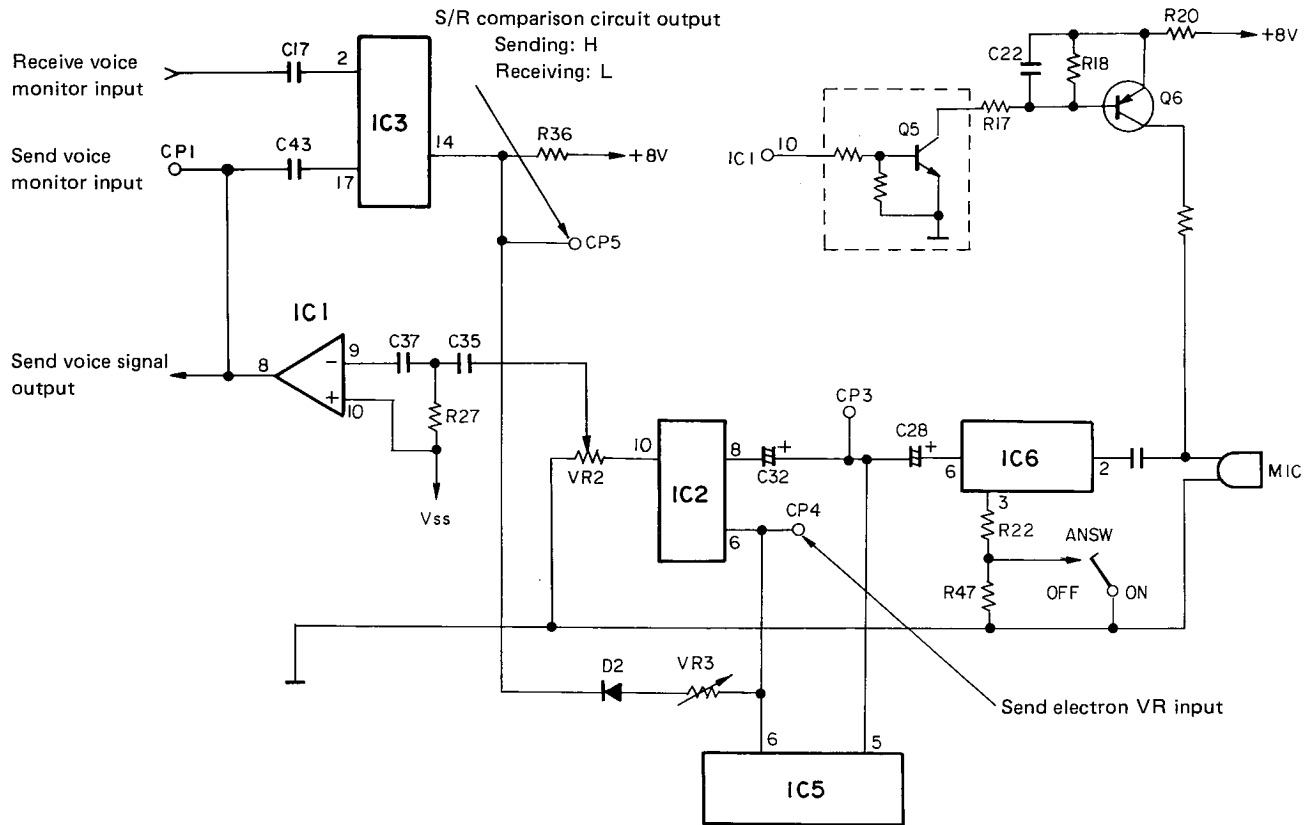
Measured with 2msec.
and 2V range.

(3) Q2 (collector)



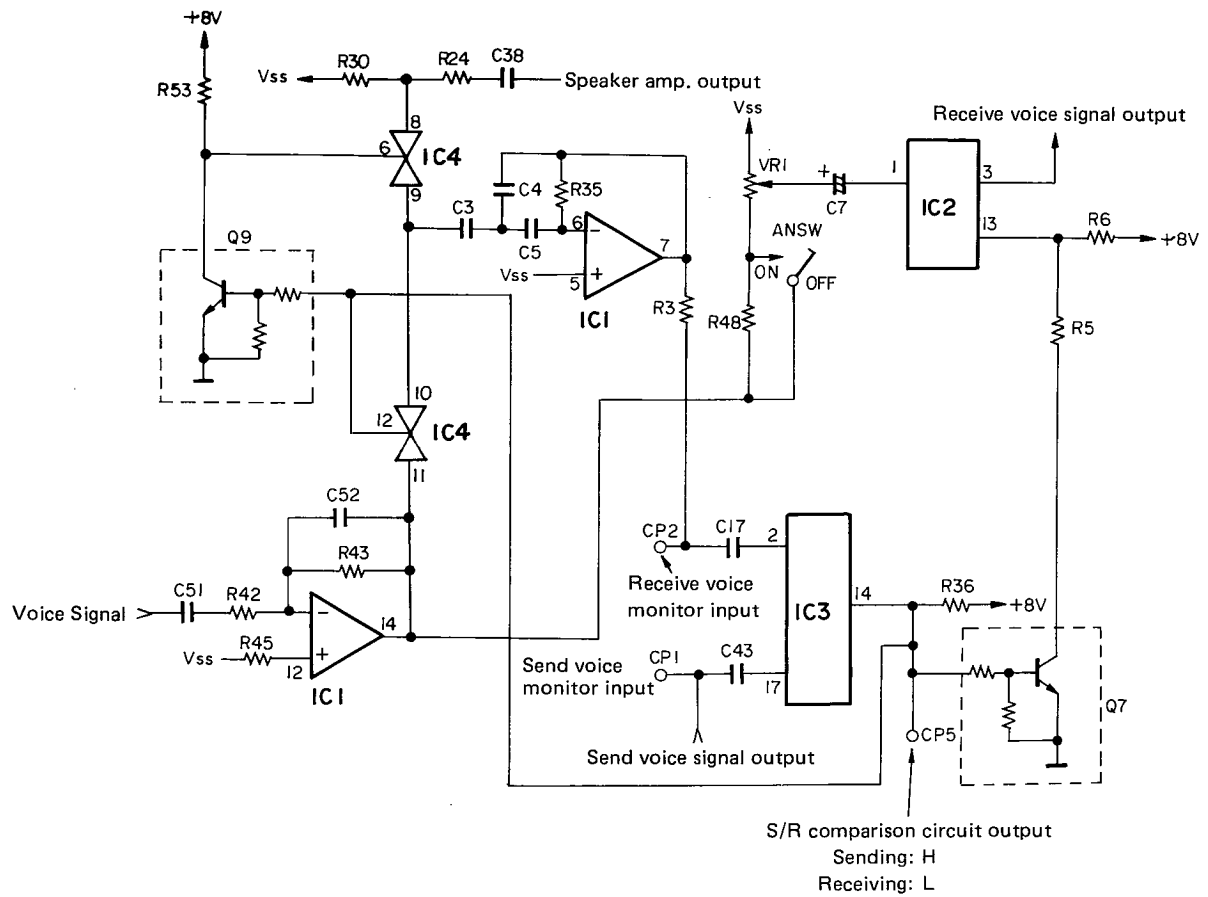
Measured with 2msec.
and 2V range.

Service Check Point-2



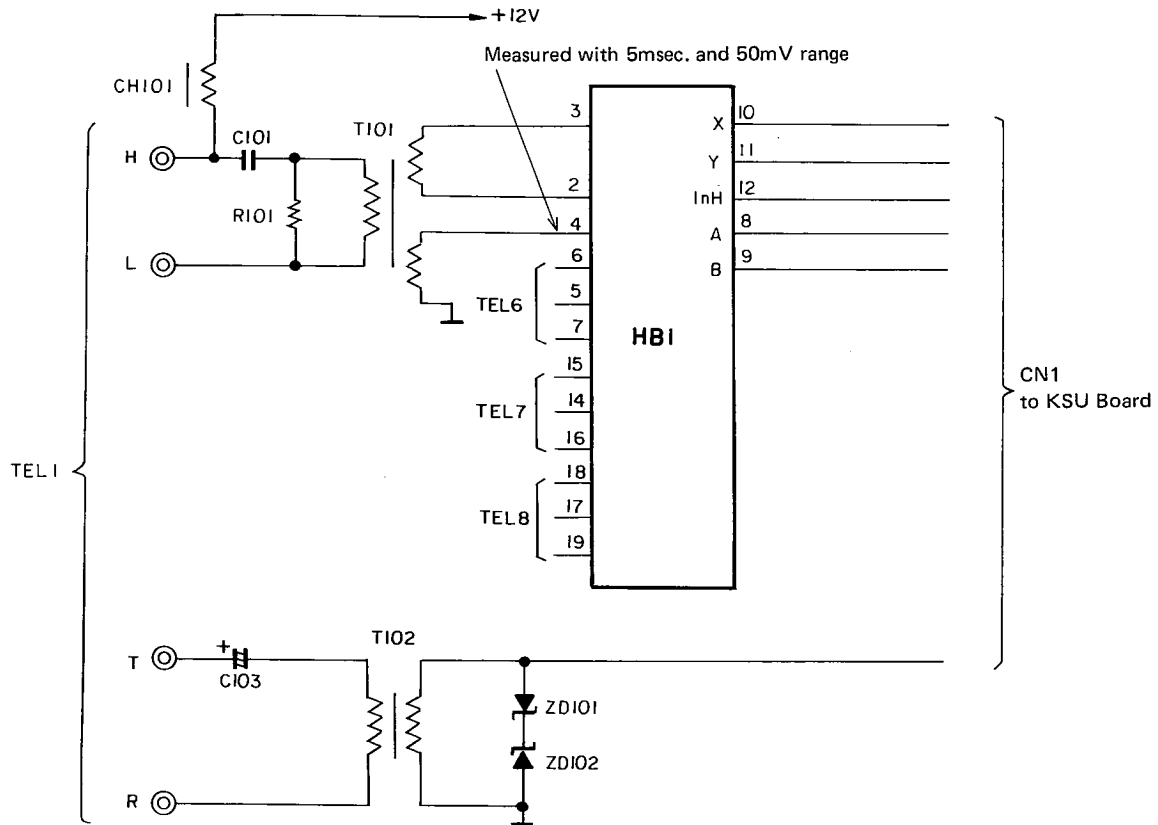
- (1) Mic power check
- (2) When the voice is input to the Mic.
Check CP4 (Is there a \oplus output from it?)
- (3) Is there a voice signal output from CP1?
- (4) Is there a \oplus output from CP5?

Service Check Point-3



- (1) Is there a voice signal output from pin (14) of IC1?
- (2) Is there a voice signal output from CP2?
- (3) Is the CP5 level L ?
- (4) Is there a voice signal output from pin (3) of IC2?

Service Check Point-4



(1) Check of the voltage between H and L

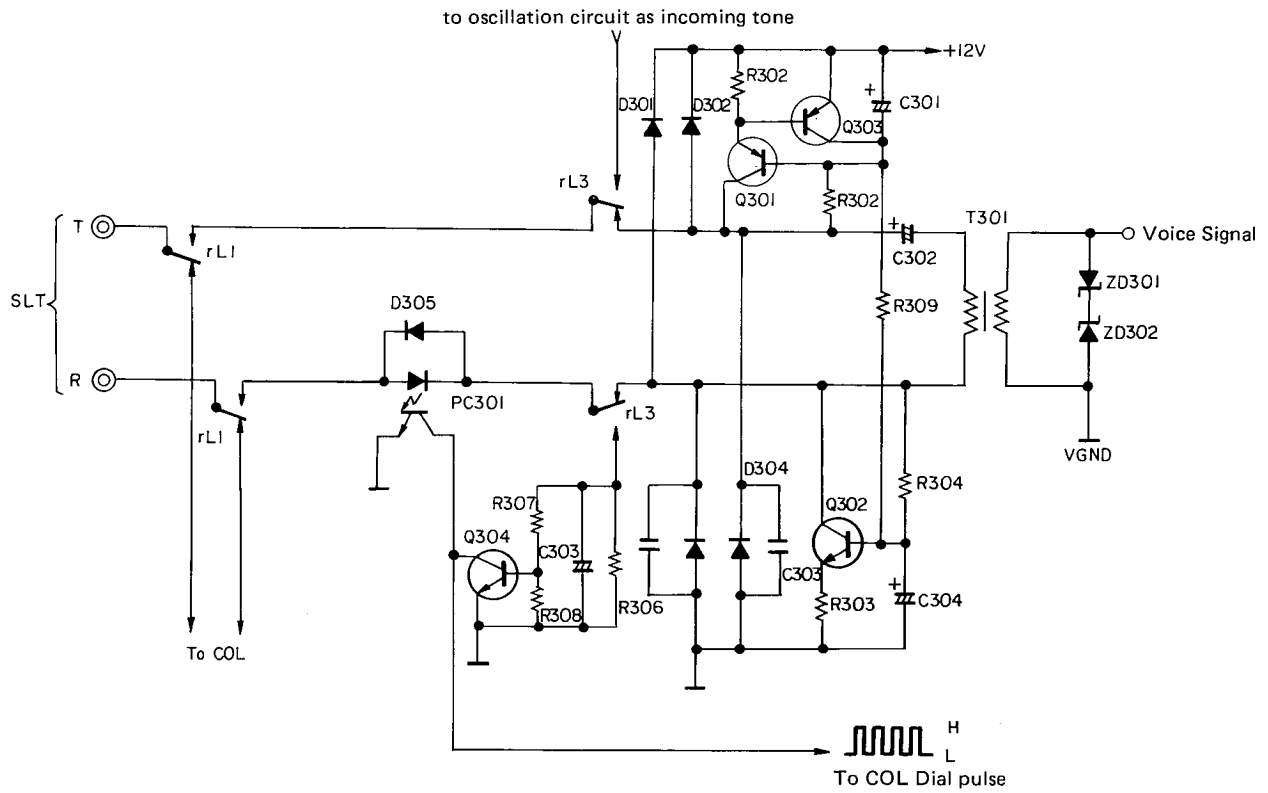
Is there a output 12V between H(+) and L(-)?

(2) Check of the A-K communication data input/output

- 1) Is there a data input to HB1 (pin No. 4) from TEL?
- 2) Is there a data output to TEL from HB1 (pin No. 3)?
- 3) Is there a data from TEL output on HB1 (pin No. 11)?
- 4) Is there a data from TEL input to HB1 (pin No. 10)?
- 5) Is there a access input data input to HB1 (pin No. 8, 9)?

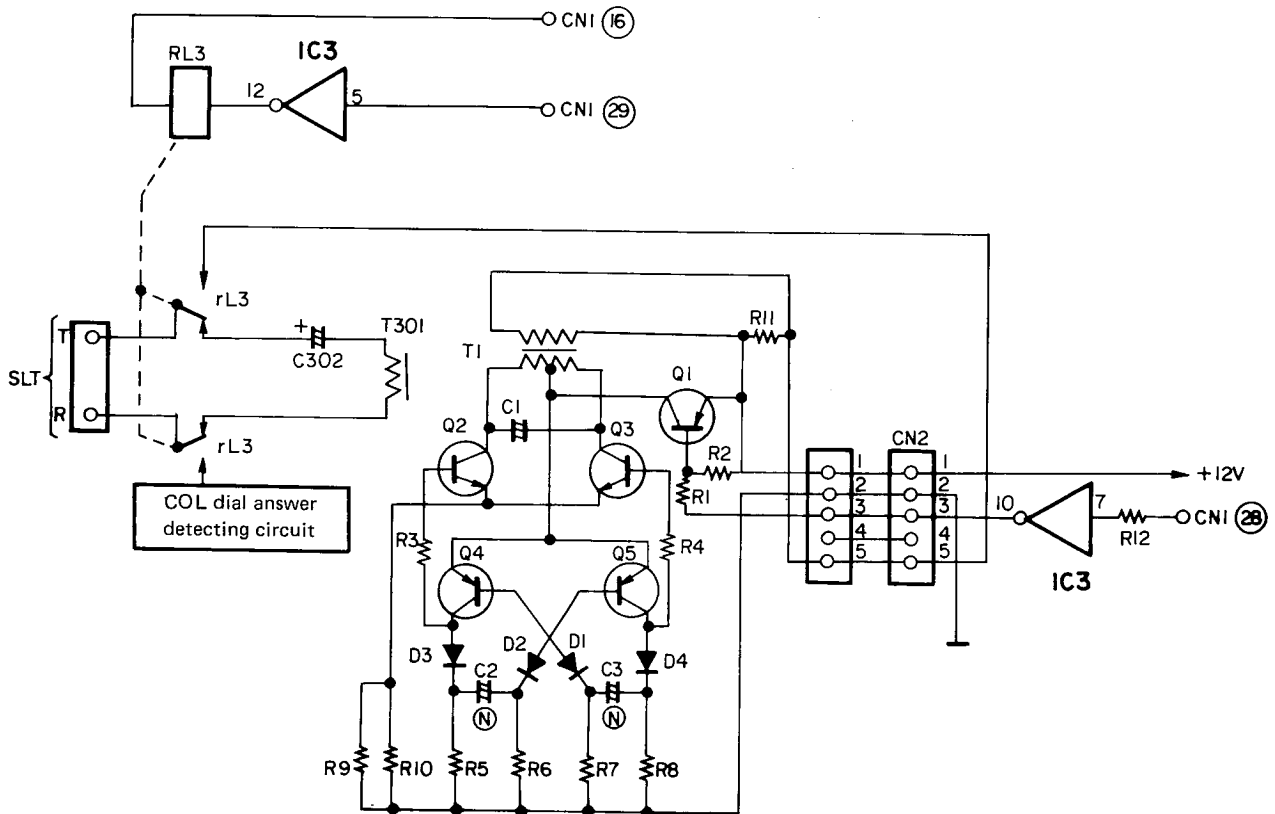
* The measured wave form for the above A-K communication check is explained in attached sheet.

Service Check Point-5



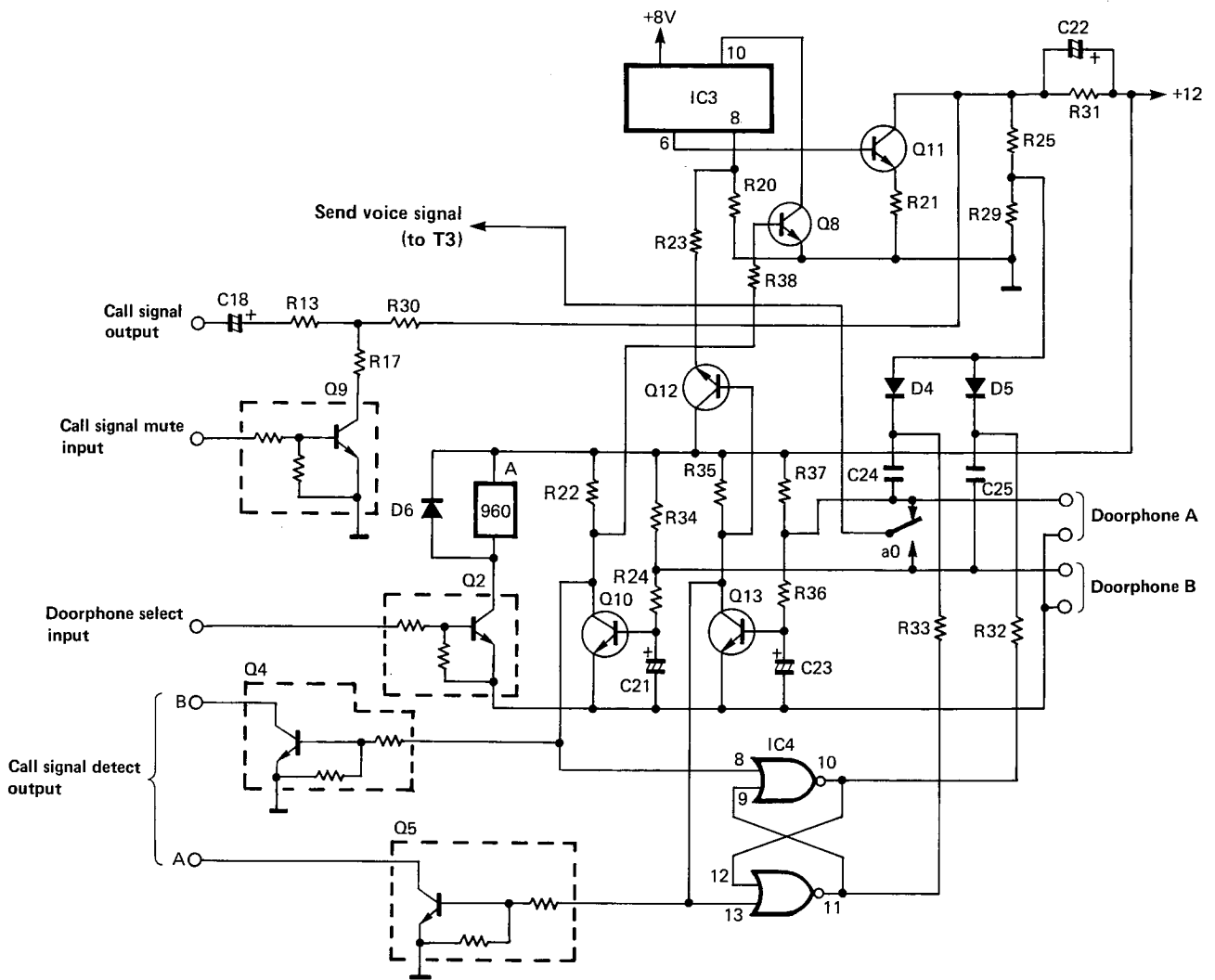
- (1) Is power (DC12V) supplied to the terminal T, R?
- (2) When key-in, the dial pulse is output from the collector of Q304?

Service Check Point-6



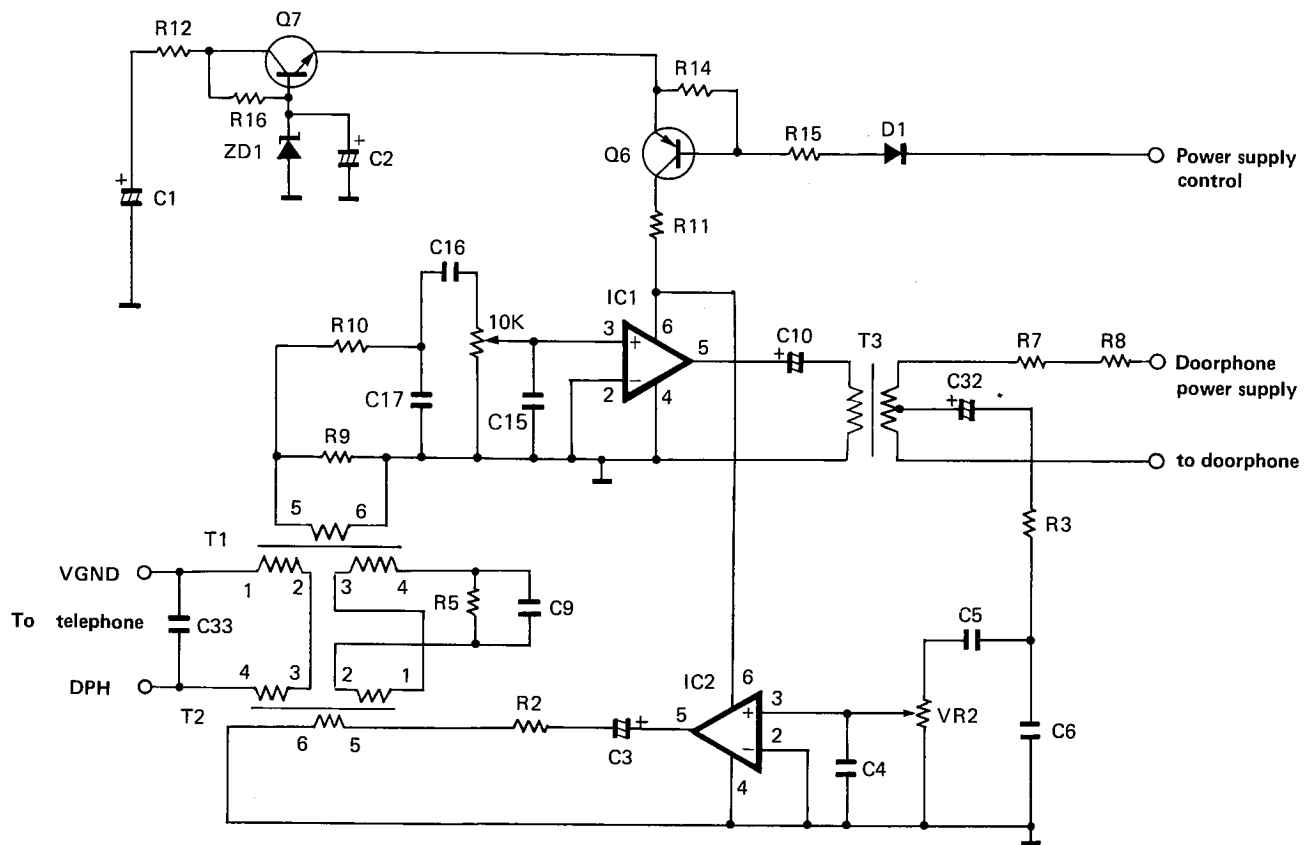
- (1) Is pin (10) of IC3 L level?
- (2) Is there a ringing signal output from pin (5) of CN2?
- (3) Does pin (12) of IC3 repeatedly change from H to L level.

Service Check Point-7



- (1) When the call button of doorphone unit A is pressed, Q13 is OFF, Q12 and Q5 are in the ON mode?
- (2) Is there a call signal output from pin (6) of IC3?

Service Check Point-8



(1) Is Q6 in the ON mode?

Check the output level of Q3 and pin (4) of IC4.

(2) In the case of transmitting is impossible, a voice signal is output from pin (5) of T2?

In the case when receiving is impossible, a voice signal is output from T3?