

EXTROM

ELECTRONIC KEY TELEPHONE SYSTEM

HMS-1032

INSTALLATION MANUAL

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434-1200

10M HEAD TP

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1. INTRODUCTION

I. SUMMARY

This manual covers the information necessary to install the EXTROM HMS-1032 Electronic Key Telephone System. Each installer is required to read this manual carefully and familiarize himself with the system and its installation procedures before going on installation of the system.

II. GENERAL SPECIFICATION OF THE HMS-1032 KEY TELEPHONE SYSTEM

- (1) The HMS-1032 KSU specifications are as follows:

Size: 25.7"high 15.7"wide 3.35"deep
(653mmHx398mmWx85mmD)

Weight: 19.8 pounds(9.0Kg)

Power: 117VAC Input
24VDC Output at 6A, 5VDC Output at 1.2A

Fuse: 5AAC

Card arrangements: in layers

Basic: COMU Common unit
16STU 16-station unit
POWU Power supply unit
Option: 4COU 4-C.O. line unit
8STU 8-station unit
MISCU Music/page unit
DB INFU DSS/BLF interface unit

Terminals:

Amphenol connector: C.O.Lines (One for 10 C.O.Lines)
Telephone Lines

Screws: External music source and paging system

- (2) The HMS-1032 telephone specifications are provided below.

Size: 3.3"high, 7.5"wide, 8.9"deep
(85mmHx190mmWx225mmD)

Weight: 2.2 pounds (1Kg.)

Card: Basic: TELU Option: HFU

Handset: K-1 handset (U.S.Standard)

Color: Cream (case)

Connection:

-4 conductor modular cable for telephone

Cabling: -4 conductor, non-shielded, twisted pair cable
-50 conductor, non-shielded, twisted pair cable

Maximum cable run:

500 feet for 26 gauge(AWG) cable
700 feet for 24 gauge(AWG) cable
900 feet for 22 gauge(AWG) cable

2. UNPACK AND INSPECT EQUIPMENT

STEP	PROCEDURE
------	-----------

A. Delivery Inspection

- 1 Check if all items have been received against the order form and packing slip. Submit the report on all errors and missing parts to the supplier at once.

B. KSU Cabinet

- 2 Unpack and remove the KSU cabinet from the carton. Do not destroy the shipping carton until the KSU has been installed and fully tested.
- 3 Inspect the KSU for:
 - damaged or loose connectors,
 - broken or loose circuit cards,
 - broken wires, flat cables and power cord,
 - broken or bent connector pins,
 - scratches or dents in the cabinet,
 - loose screws on the KSU covers.
- 4 Check if the accessories are included with the KSU package, as shown in List A of this section.

C. Telephone Set

- 5 Unpack and remove telephone set and the handset from the shipping carton. Inspect for:
 - damaged keyboard or dial pad,
 - damaged molded parts,
 - damaged handset curled cord and modular cord,
 - damaged modular connectors and jacks.
- 6 Check if the accessories are included with the telephone set package. See List A.

D. Circuit Cards

- 7 Following the instruction of the circuit card handling listed in Section 3.3, remove each circuit card from the shipping carton and inspect for:
 - damaged printed circuit boards,
 - damaged components,
 - broken flat cables,
 - alien substance in connectors or damaged connectors.

To prevent damage to the circuit card, DO NOT REMOVE EACH CARD FROM ITS ANTI-STATIC BAG until it is ready to be installed into the KSU cabinet.

List A ACCESORIES OF HMS-1032 KEY TELEPHONE SYSTEM

ITEM	EQUIPMENT	PART NO.	DESCRIPTION	QTY
1	HMS-1032 KSU	228007A1 705132G1 991040A1 914218A1	Fuse: 5A Woodscrew: +M5.1x32S SKB-2M cable tie HMS-1032 Installation Manual	1 4 4 1
2	HMS-1032 TEL	917522A1 997302A1 997304A1 914219A1	Directory card Directory tray Function overlay plate HMS-1032 User's Guide	1 1 1 1
3	HMS-1032 DSS TEL	917522A1 997302A1 997304A1 914185A1	Directory card Directory tray Function overlay plate HMS-1032DSS User's Guide	1 1 1 1
4	4COU(10A)	819527A1 819505A1 993215J1	S/C34X110BD flat cable S/C10X110BD flat cable LCBS-16N spacer	1 1 5
5	8STU(10A)	819526A1 763111B1 703006A1 991040A1	S/C30X90BD flat cable Stand-off B +M3X6S screw SKB-2M cable tie	2 5 5 1
6	MISCU(6A)	819505A1 993215J1	S/C10x110BD flat cable LCBS-16N spacer	1 4
7	DB INFU(10A)	819404A1 763111B1 703006A1 991040A1	S/C30X110BD flat cable Stand-off B +M3X6S screw SKB-2M cable tie	1 4 4 1
8	PFU	819495B1 827183B1 703116G1	PFU cable 3-pair modular cable +M3.1x16S wood screw	1 1 2
9	HFU(6B)	819490A1 703010B2	S/C17x110BD flat cable +M3x10S tapping screw	1 2
10	WMK	937495A1 937494A1 827231A1 703008B2 704116G1	Wall bracket Handset hook Adapter cord +M3x8S screw +M4.1x16S wood screw	1 1 1 2 4
11	AB	937496A1 703012B2	Bracket +M3x12S tapping screw	1 1

3. INSTALL KEY SERVICE UNIT (KSU)

The HMS-1032 KSU is mounted only on the wall. Consider the factors listed below and select a suitable site for installation of the KSU.

LOCATION OF KSU CABINET

- a) AC power outlet should be located near the KSU.
- b) Within 25 feet (7.6m) from the Telco terminal block.
- c) Locations of stations installed, considering the maximum cable run is 900 feet for 22 gauge cable.
- d) There is enough space to allow for accessing and servicing the KSU.
- e) A well ventilated area having a temperature range of from 32° F to 104° F (0° C to 40° C).

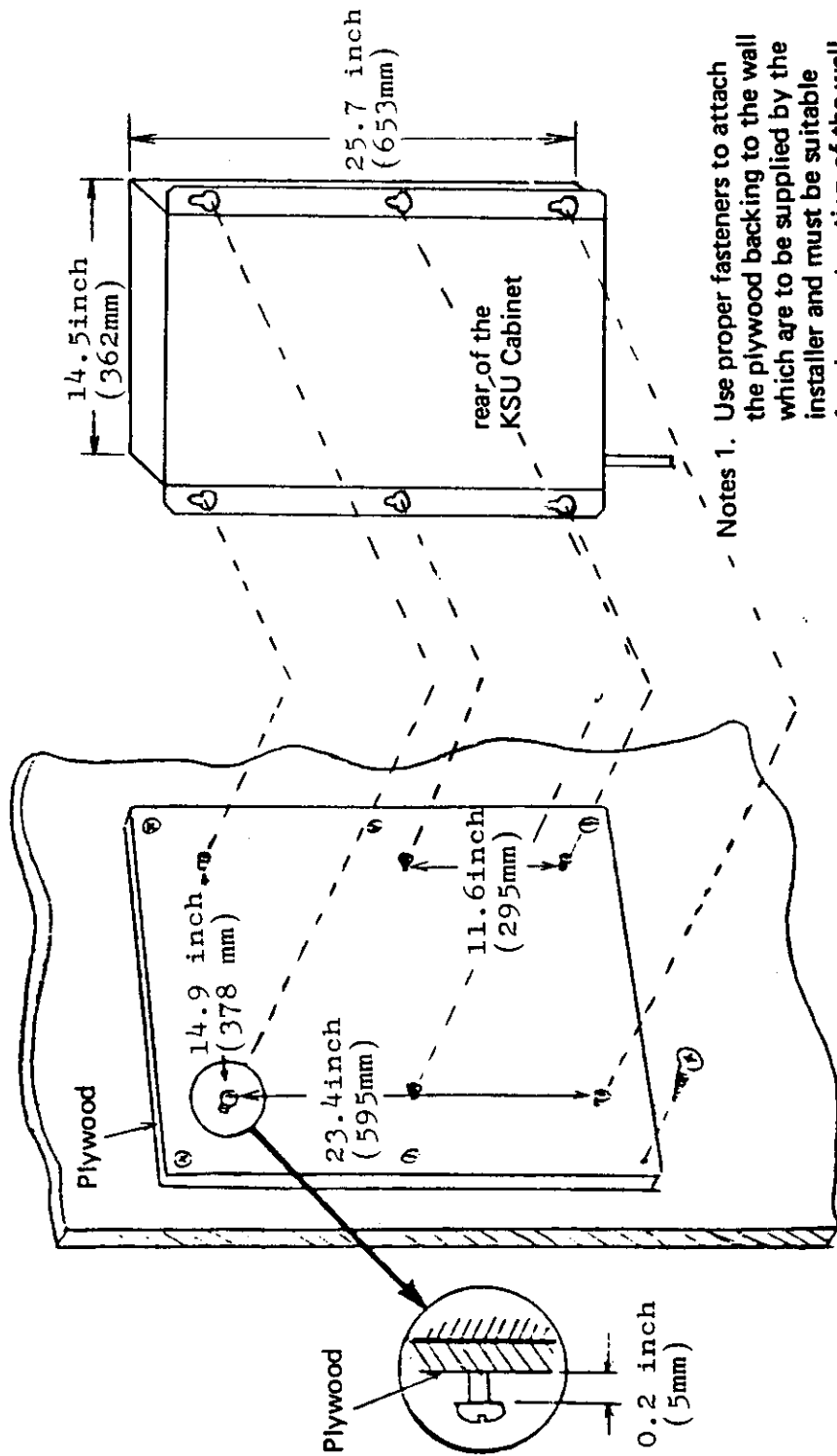
3.1 MOUNT KSU CABINET ON THE WALL

STEP	PROCEDURE
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For STEPS 1 to 5, refer to Figure 1.

- | | |
|---|---|
| 1 | Attach a piece of 3/4 inch (20mm) plywood to the wall. |
| 2 | Using the template, mark the location of the four wood-screws to support the cabinet on the plywood backing. |
| 3 | Screw the woodscrews into the plywood at the upper side locations marked in STEP 2 and leave a 0.2 inch (5mm) gap between the screw head and the plywood. |
| 4 | Mount the cabinet onto the plywood backing by the keyhole slots on the rear of the cabinet over the heads of the woodscrews, then screw the woodscrews. |
| 5 | Insert the woodscrews through holes on the rear of the cabinet, then screw them into the plywood backing at the lower side locations marked in STEP 2. |

Note: Any four of six holes must be used for wall mounting.



Notes 1. Use proper fasteners to attach the plywood backing to the wall which are to be supplied by the installer and must be suitable for the construction of the wall.

2. The plywood backing used for mounting of the cabinet to the wall is supplied by the installer.
3. To mount KSU on concrete wall, use appropriate anchor bolts.

Fig. 1 Wall Mounting of KSU Cabinet

3.2 GROUND KSU CABINET

Proper grounding must be provided to protect the HMS-1032 system.

STEP	PROCEDURE
1	Use a 12 AWG or larger copper wire, which should be as short as possible.
2	Screw one end of the ground wire at the ground terminal provided on the lower right in the rear of the KSU cabinet (see Fig.2 below) and bind tightly the other end around a metal cold water pipe or a ground stake which needs to be grounded. The cold water pipe should not contain PLASTIC JOINTS OR COMPOUNDS.

CAUTION: DO NOT USE THE THIRD WIRE (GREEN) OF THE AC CORD FOR THE GROUNDING OF THE SYSTEM.

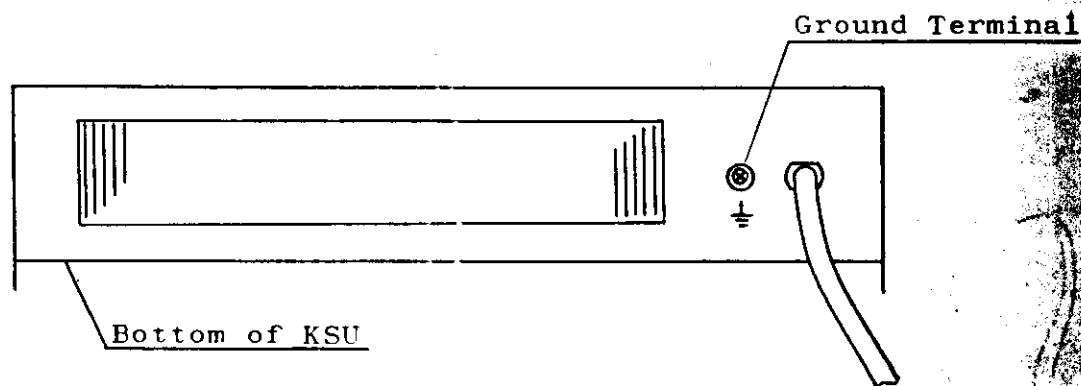


Fig.2 Location of Cabinet Grounding Screw

3.3 INSTALL CIRCUIT CARDS

ENSURE THE POWER OF THE SYSTEM IS TURNED OFF BEFORE INSTALLING EACH CIRCUIT CARD.

Circuit cards must be stored in their anti-static bags when not in use. The installer should discharge any static buildup on his body by touching the frame of the KSU cabinet before removing the circuit card from the anti-static bag, or installing the card into the cabinet.

STEP	PROCEDURE
1	Unplug the power cord from the AC socket.
2	Unpack the circuit card from its shipping carton.
3	Holding the circuit card by edges of the card, install it in the assigned position in the KSU cabinet. Refer to Fig.3.

NOTE: TO HANDLE CIRCUIT CARDS, SPECIAL ATTENTION MUST BE PAID ACCORDING TO THE LIST BELOW.

CAUTION IN CIRCUIT CARD HANDLING

THE FOLLOWING CARES MUST BE TAKEN WHEN HANDLING CIRCUIT CARDS.

- Do not drop or rattle the circuit card.
- Do not stack the circuit cards directly on top of each other.
- Do not handle the cards by the components.
- Do not touch the wiring of the components. Handle the cards by the edges of the card.
- Do not handle or unpack the cards near electrical machines such as facsimile machines.
- Do not remove the circuit card from its container until ready to be installed into the KSU cabinet.
- Do not install and remove the circuit card from the KSU cabinet unnecessarily.
- Do not attempt field repairs.
- Do not expose or store the unit in high humidity or temperature.

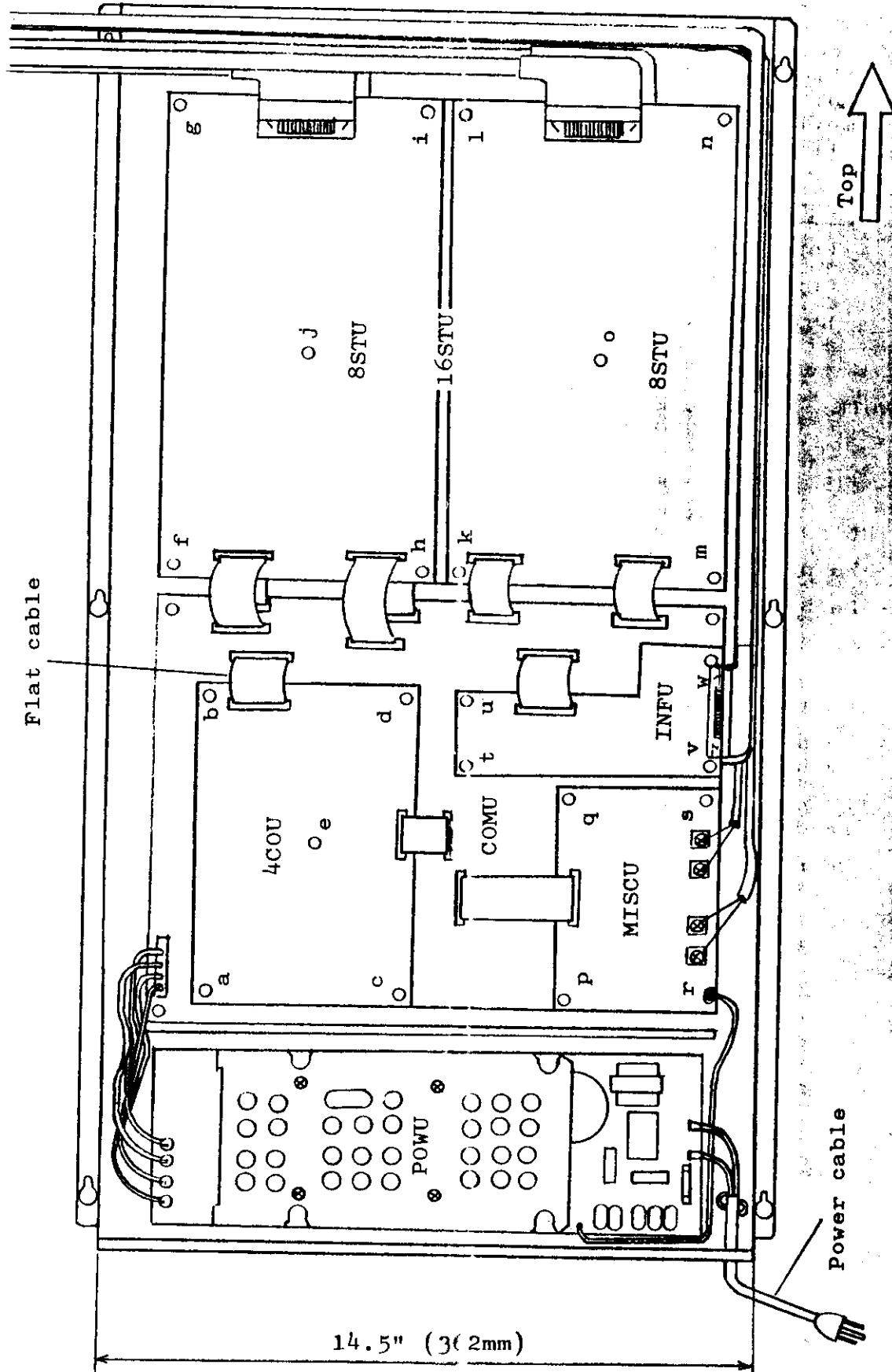


Fig. 3 Circuit Card Installation

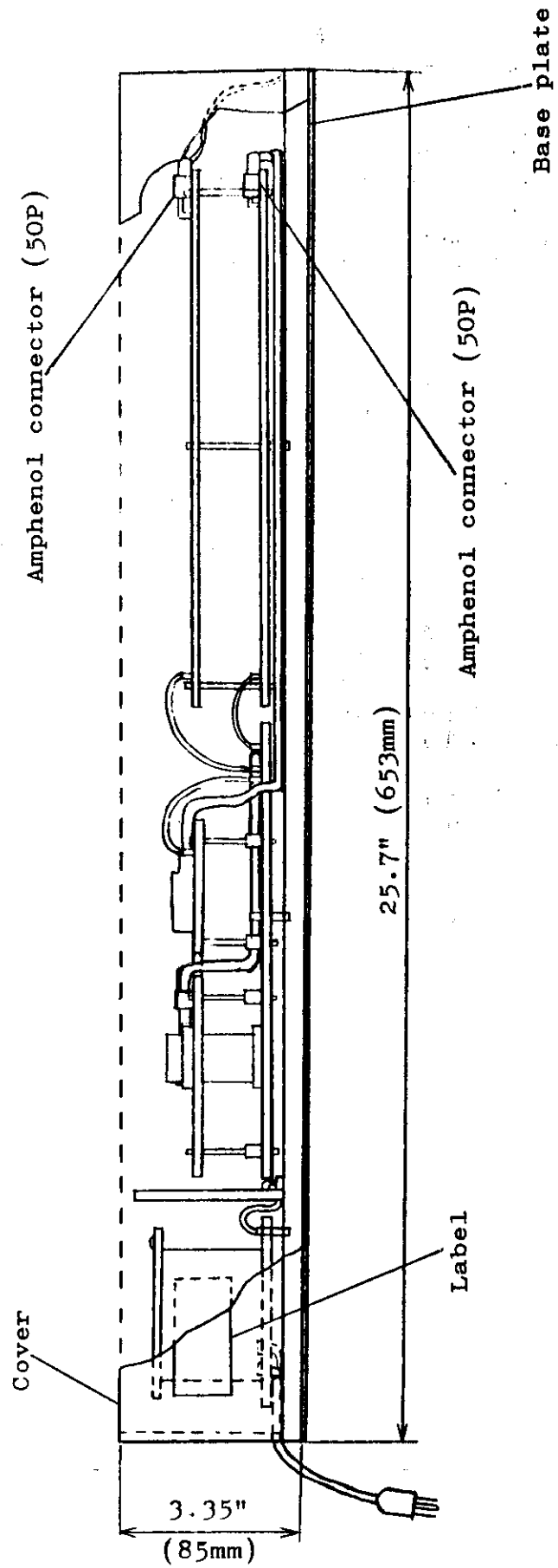


Fig. 4 Circuit Card Installation (Side View)

3.3.1 INSTALL 4COU CARD (optional)

Note: The basic HMS-1032 KSU is shipped from the factory with COMU card which contains 6 C.O.line circuits and the 16STU card which contains 16 station interface circuits.

To expand the system up to 10 C.O.line capacity, one optional 4COU card must be added to the KSU.

STEP	PROCEDURE
------	-----------

- | | |
|---|---|
| 1 | Unplug the AC cord from the AC socket. |
| 2 | Insert five(5) LCBS-16N spacers into the appropriate holes a, b, c, d and e through the COMU card (Fig.3). |
| 3 | Insert one end of the 34x110BD flat cable furnished with the 4COU card into the connector "CND" on the 4COU card. |
| 4 | Insert one end of the 10x110BD flat cable furnished with the 4COU card into the connector "CNQ" on the 4COU card. |
| 5 | Mount the 4COU card in its position as shown in Fig.3 and secure by above spacers. |
| 6 | Insert the other ends of two flat cables into the connectors "CND" and "CNQ" on the COMU card. |

3.3.2 INSTALL 8STU CARD (optional)

Note: The basic HMS-1032 KSU is shipped from the factory with 16 station interface circuit. To expand the system up to 24 extensions capacity, one optional 8STU card, (up to 32 extensions capacity, two optional 8STU cards) must be added to the KSU.

STEP	PROCEDURE
------	-----------

- | | |
|---|---|
| 1 | Unplug the AC cord from the AC socket. |
| 2 | Insert five(5) stand-offs into the appropriate holes, f, g, h, i and j through the 16STU card (Fig.3). |
| 3 | Insert one end of two flat cables furnished with the 8STU card into the connector "CNH" and "CNI" on the 8STU card. |
| 4 | Mount the 8STU card in its position as shown in Fig.3 and fasten it with M3x6S screws provided. |
| 5 | Insert the other end of the flat cables into the connector "CNH" and "CNI" on the COMU card. |

CNH to CNH }
CNI to CNI } 30x110BD flat cable

If it is need to install 2nd 8STU card, follow the procedures below.

- | | |
|---|--|
| 1 | Insert five(5) stand-offs into the appropriate holes, k, l, m, n and o through the 16STU card (Fig.3). |
| 2 | Insert one end of two flat cables furnished with the 8STU card into the connectors "CNK" and "CNL" on the 8STU card. |
| 3 | Mount the 8STU card in its position as shown in Fig.3 and fasten it with M3x6S screws provided. |
| 4 | Insert the other end of the flat cables into the connector "CNK" and "CNL" on the COMU card. |

CNK to CNK }
CNL to CNL } 30x110BD flat cable

3.3.3 INSTALL MISCOU CARD (optional)

- Notes:
1. The Music-on-hold is provided by installing one optional MISCOU card.
 2. This card provides the screw terminals to connect external Music Source for Music-on-hold and B.G.M. and to connect the external amplifier for external paging.

STEP	PROCEDURE
1	Unplug the AC cord from the AC socket.
2	Insert four (4) LCBS-16N spacers into the appropriate holes, p,q,r and s on the COMU card (Fig.3).
3	Remove the shorted flat cable from the connector "CNG" provided on the COMU card.

CAUTION!

If, for any reason, the installed MISCOU card needs to be removed from the system, the flat cable must be replaced in the connector "CNG" on the COMU card, to short its Pins 1 and 2.

Failure in installing the shorted flat cable will adversely affect C.O.lines hold function.

4. Insert one end of the flat cable furnished with the MISCOU card into the connector "CNG" on the MISCOU card (Fig.8).
5. Mount the MISCOU card in its position as shown in Figure 3 and secure by four spacers stated in STEP 2 above.
6. Insert the other end of the flat cable into the connector "CNG" on the COMU card (Fig.3).
CNG to CNG 10x110ED flat cable
7. Select the desired tune using the short-connector "MJ" as shown in Figure 9 below.

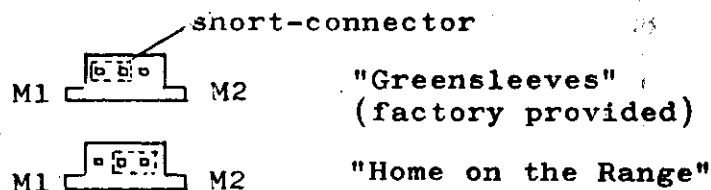


Fig.9 Selection of Tune

3.3.4 INSTALL DB INFU CARD (optional)

Note: In order to operate the DSS/BLF telephone set and DSS/BLF console, the optional DB INFU card must be installed in the KSU.

STEP	PROCEDURE
1	Unplug the AC cord from the AC socket.
2	Insert four(4) stand-offs into the appropriate holes t, u, v and w through the COMU card (Fig.3).
3	Insert one end of the flat cable furnished with the INFU card into the connector "CNC" on the DB INFU card.
4	Mount the DB INFU card in its position as shown in Fig:3 and secure by above stand-offs.
5	Insert the other end of the flat cable into the connector "CNC" on the COMU card.

CNC to CNC: 30x110BD flat cable

3.4 CONNECT CUSTOMER-PROVIDED EQUIPMENT

3.4.1 CONNECT EXTERNAL MUSIC SOURCE EQUIPMENT

Note: The music-on-hold and background music features are provided by the connection of customer-provided music source to the MISCUC card in the KSU.

STEP	PROCEDURE
1	Unplug the AC cord from the AC socket.
2	Pass a 2-conductor cable from the customer-provided music source through the cable entrance located on the top of the KSU.
3	Connect the cable to the terminals TE1 and TE2 on the MISCUC card (Fig.8).
4	Secure the cable in the wiring strap.
5	Cut two wires marked "S0" and "S1" on the MISCUC card apart from each other (Fig.8).

Note: Input voltage = 100mV

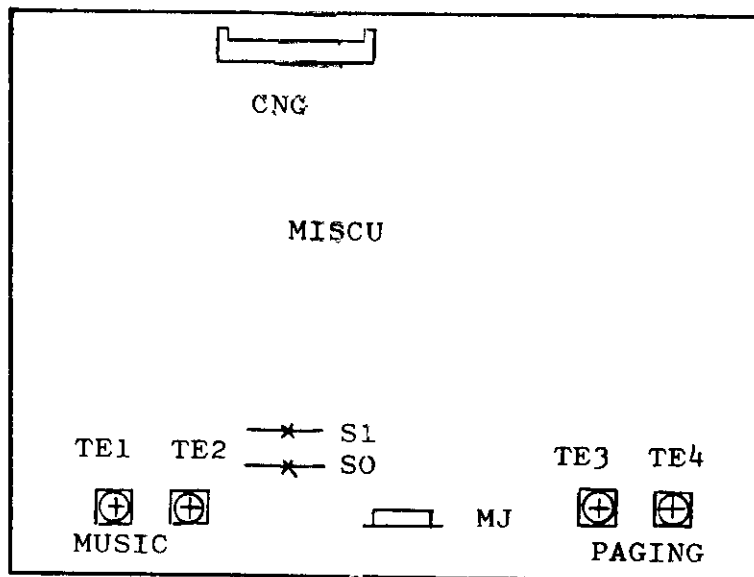


Fig.8 MISCUC Card

3.4.2 CONNECT EXTERNAL PAGING/AMPLIFIER SYSTEM

Note: When the external paging/amplifier is used, announcements can be heard on all loud-speakers installed.

STEP	PROCEDURE
1	Unplug the AC cord from the AC socket.
2	Pass a 2-conductor cable from the customer-provided paging/amplifier system through the cable entrance located on the top of the KSU.
3	Connect the cable to the terminals "TE3" and "TE4" on the MISCU card (Fig.8 of Section 3.4).

Notes: Output impedance = 500Ω
Output level = 200mV

3.5 INSTALL C.O.LINES

ACCESSORY: 25-pair double-amphenol-ended cable
Maximum length=25 feet (7.6m)

STEP	PROCEDURE
------	-----------

- | | |
|---|---|
| 1 | Connect one end of the 25-pair double-amphenol-ended cable to the connector "CNR" on the COMU card. |
| 2 | Connect the other end of above 25-pair cable to the RJ 21X connector provided by telephone company. |

The C.O.lines must appear in the RJ21X connector as shown in the following table.

Circuit	LEAD DESIGN	Conductor	Pin NO.
C01	1T	WH-BL	26
	1R	BL-WH	1
C02	2T	WH-OR	27
	2R	OR-WH	2
C03	3T	WH-GN	28
	3R	GN-WH	3
C04	4T	WH-BR	29
	4R	BR-WH	4
C05	5T	WH-SL	30
	5R	SL-WH	5
C06	6T	RD-BL	31
	6R	BL-RD	6
C07	7T	RD-OR	32
	7R	OR-RD	7
C08	8T	RD-GN	33
	8R	GN-RD	8
C09	9T	RD-BR	34
	9R	BR-RD	9
C010	10T	RD-SL	35
	10R	SL-RD	10

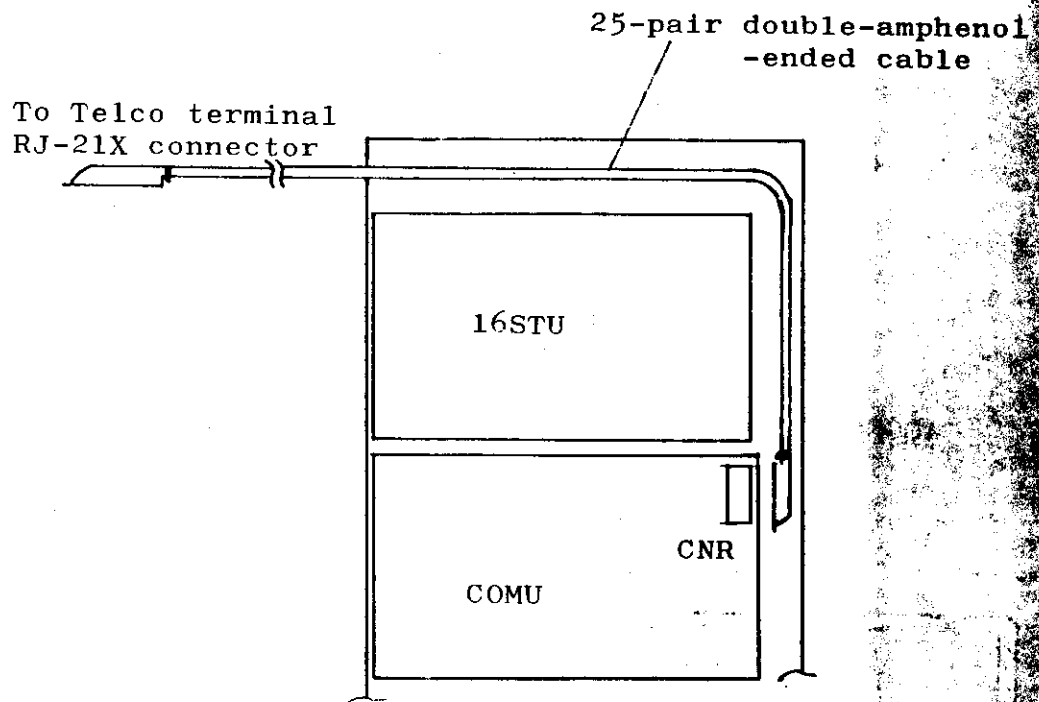


Fig. 10 C.O.Line Connection

3.6 CONNECT TELEPHONE LINES

3.6.1 CONNECT TELEPHONE LINES (CONNECTORIZED VERSION) IN BUILDINGS NOT PREWIRED WITH HOUSE CABLE

INSTALLATION: For each telephone line:

- (1) Route a 4-conductor cable from the KSU cabinet to the telephone set location.
- (2) Install the MDF near the KSU cabinet.
- (3) Mount a USOCRJ14C jack near the telephone set location.
- (4) Connect a telephone to the MDF using the 4-conductor cable and a jack installed between the telephone and the MDF (Fig.11).
- (5) Connect the MDF to the 16STU card using the 50-conductor cable with the Amphenol connector (Fig.11).

ACCESSORIES: -50-conductor AMPHENOL Connector
-MDF
-USOCRJ14C Jacks
-50-conductor cable

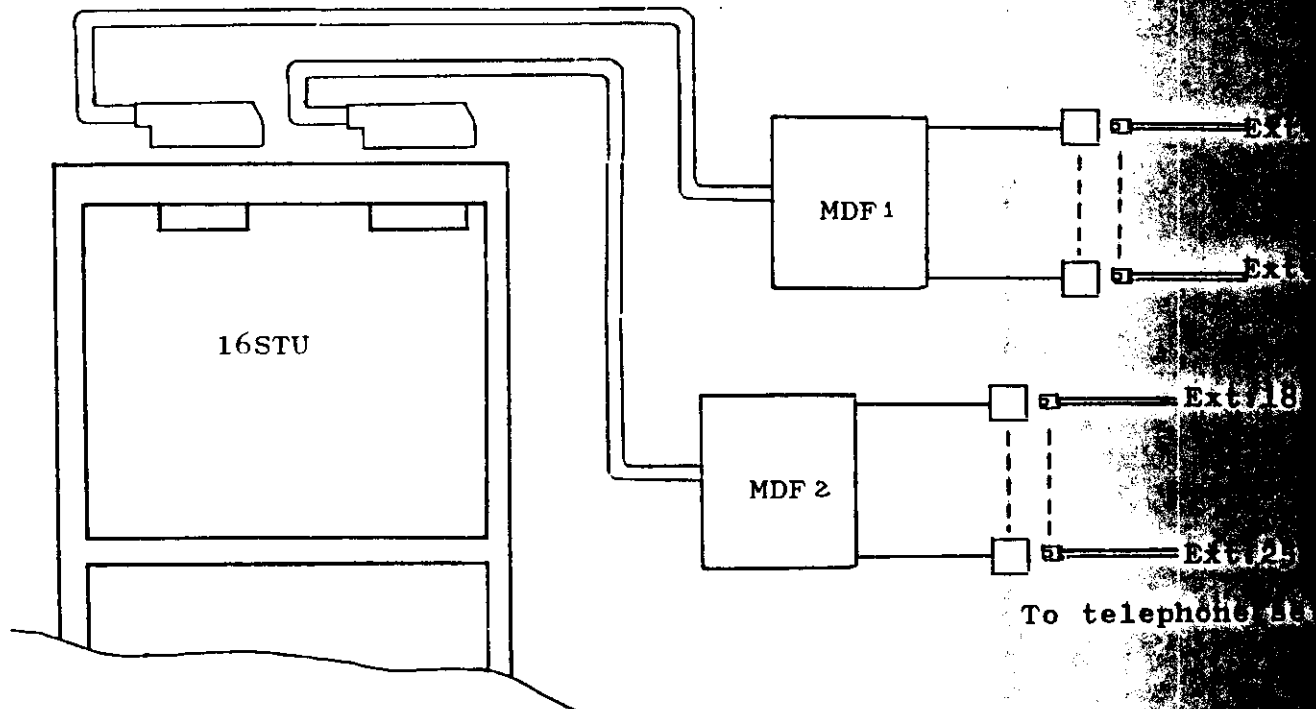


Fig.11 Station Line Connection

STEP	PROCEDURE
1	Referring to Table A, connect one end of the 50-conductor cable to the Amphenol connector (Fig.12).
2	Install the MDF at a suitable place.
3	Connect the other end of the 50-conductor cable to the MDF.
4	Mount a USOCRJ14C jack near the telephone set location (Fig.13).
5	Connect one end of the 4-conductor cable to the MDF and the other end to the jack (Fig.11 and 14).
6	Using the D4BU cord furnished with the telephone set, connect the telephone to the jack.
7	Repeat STEPS 4 to 6 to connect each remaining telephone set (Station 10 to 17)
8	Repeat STEPS 1 to 7 to connect Station 18 to 25.

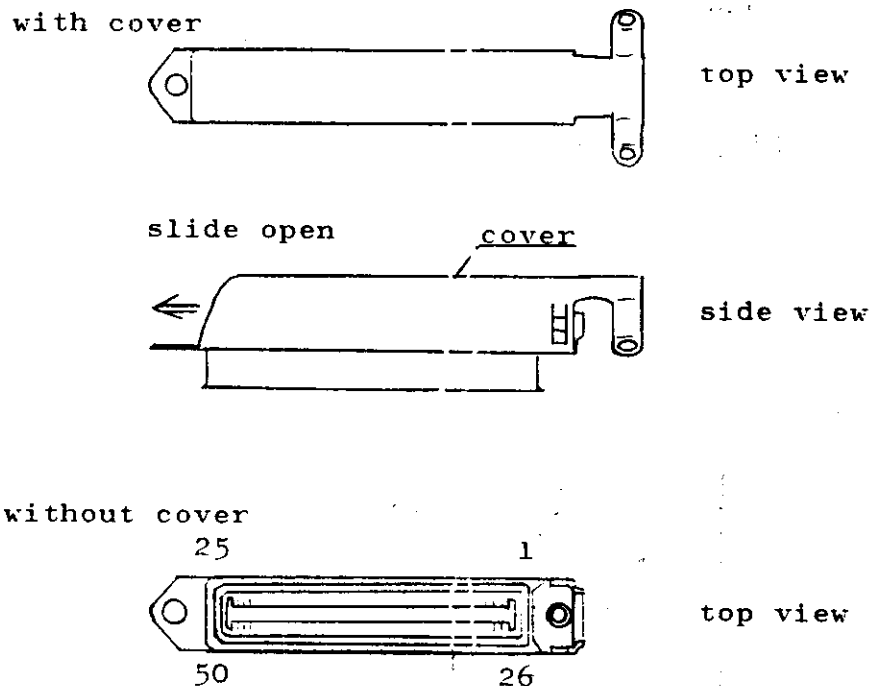


Fig.12 Amphenol connector

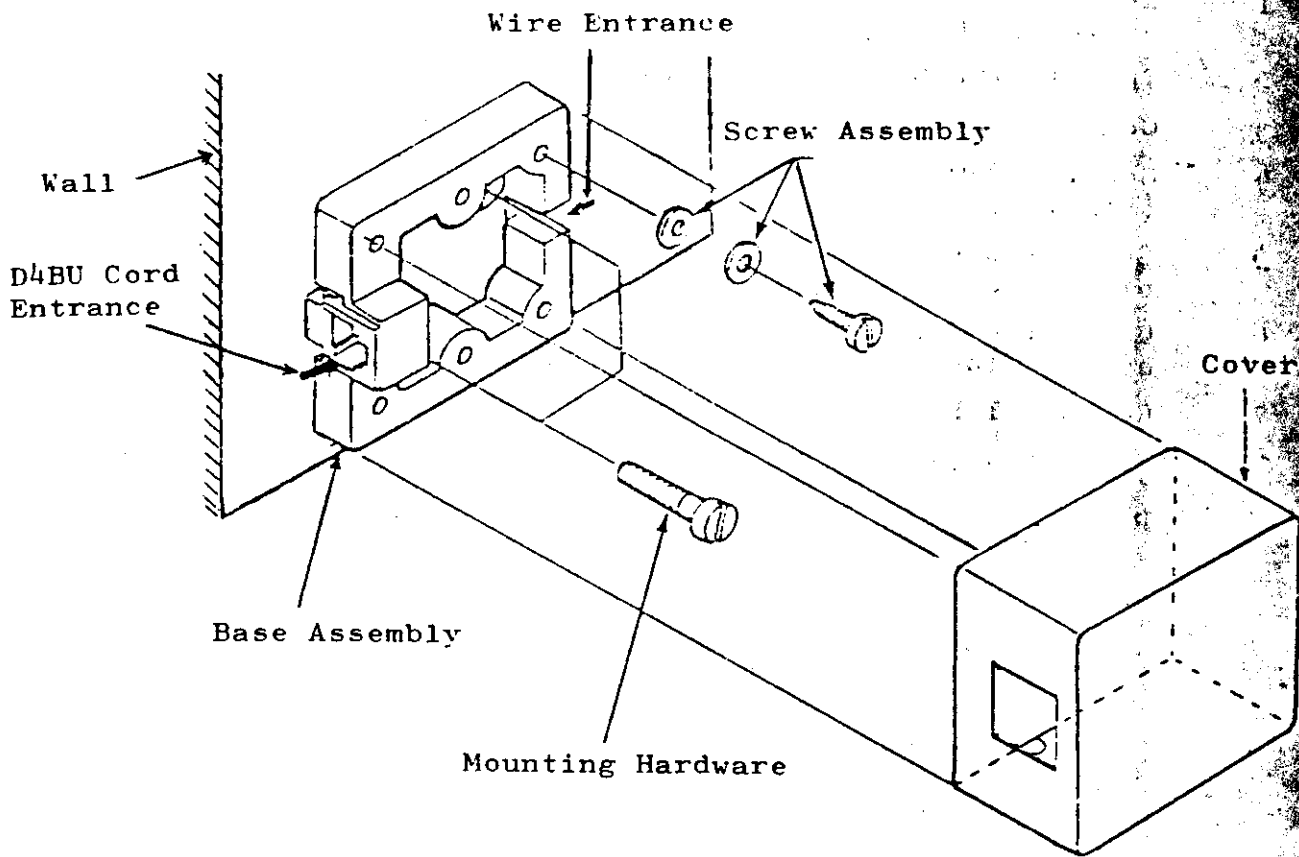


Fig.13 Mounting RJ14C Jack

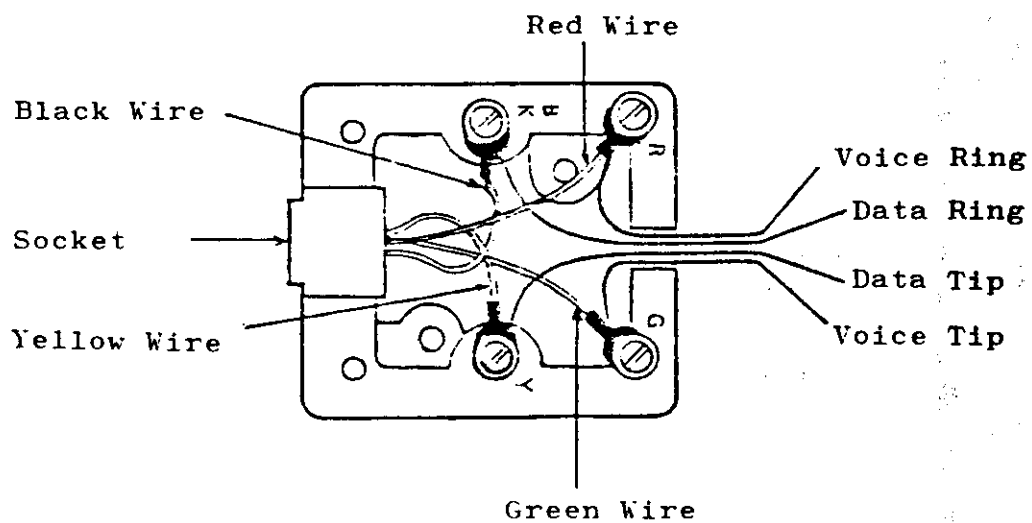


Fig.14 Connection on Inside of RJ14C Jack

Table A Wiring

1st Amphenol Connector

PIN	LEAD DESIG	CABLE KSU	COLOR TEL	EXT. NO.
26	1VT	WH-BL	GN	10
1	1VR	BL-WH	RD	
27	1DT	WH-OR	YL	11
2	1DR	OR-WH	BK	
28	2VT	WH-GN	GN	12
3	2VR	GN-WH	RD	
29	2DT	WH-BR	YL	13
4	2DR	BR-WH	BK	
30	3VT	WH-SL	GN	14
5	3VR	SL-WH	RD	
31	3DT	RD-BL	YL	15
6	3DR	BL-RD	BK	
32	4VT	RD-OR	GN	16
7	4VR	OR-RD	RD	
33	4DT	RD-GN	YL	17
8	4DR	GN-RD	BK	
34	5VT	RD-BR	GN	18
9	5VR	BR-RD	RD	
35	5DT	RD-SL	YL	19
10	5DR	SL-RD	BK	
36	6VT	BK-BL	GN	20
11	6VR	BL-BK	RD	
37	6DT	BK-OR	YL	21
12	6DR	OR-BK	BK	
38	7VT	BK-GN	GN	22
13	7VR	GN-BK	RD	
39	7DT	BK-BR	YL	23
14	7DR	BR-BK	BK	
40	8VT	BK-SL	GN	24
15	8VR	SL-BK	RD	
41	8DT	YL-BL	YL	25
16	8DR	BL-YL	BK	

2nd Amphenol Connector

PIN	LEAD DESIG	CABLE KSU	COLOR TEL	EXT. NO.
26	9VT	WH-BL	GN	18
1	9VR	BL-WH	RD	
27	9DT	WH-OR	YL	19
2	9DR	OR-WH	BK	
28	10VT	WH-GN	GN	20
3	10VR	GN-WH	RD	
29	10DT	WH-BR	YL	21
4	10DR	BR-WH	BK	
30	11VT	WH-SL	GN	22
5	11VR	SL-WH	RD	
31	11DT	RD-BL	YL	23
6	11DR	BL-RD	BK	
32	12VT	RD-OR	GN	24
7	12VR	OR-RD	RD	
33	12DT	RD-GN	YL	25
8	12DR	GN-RD	BK	
34	13VT	RD-BR	GN	26
9	13VR	BR-RD	RD	
35	13DT	RD-SL	YL	27
10	13DR	SL-RD	BK	
36	14VT	BK-BL	GN	28
11	14VR	BL-BK	RD	
37	14DT	BK-OR	YL	29
12	14DR	OR-BK	BK	
38	15VT	BK-GN	GN	30
13	15VR	GN-BK	RD	
39	15DT	BK-BR	YL	31
14	15DR	BR-BK	BK	
40	16VT	BK-SL	GN	32
15	16VR	SL-BK	RD	
41	16DT	YL-BL	YL	33
16	16DR	BL-YL	BK	

VT: Voice Tip
 VR: Voicer Ring
 DT: Data Tip
 DR: Data Ring

3.6.2 CONNECT TELEPHONE LINES (ADD EACH 8 STATION SETS)

Note: - Follow the same procedures as those stated in Section 3.6.1 by taking STEPS 1 to 8.

- Wiring detail is shown in Table I below.

Table I Wiring

3rd Amphenol Connector

PIN	LEAD DESIG	CABLE KSU	COLOR TEL	EXT. NO.
26	17VT	WH-BL	GN	26
1	17VR	BL-WH	RD	
27	17DT	WH-OR	YL	
2	17DR	OR-WH	BK	
28	18VT	WH-GN	GN	27
3	18VR	GN-WH	RD	
29	18DT	WH-BR	YL	
4	18DR	BR-WH	BK	
30	19VT	WH-SL	GN	28
5	19VR	SL-WH	RD	
31	19DT	RD-BL	YL	
6	19DR	BL-RD	BK	
32	20VT	RD-OR	GN	29
7	20VR	OR-RD	RD	
33	20DT	RD-GN	YL	
8	20DR	GN-RD	BK	
34	21VT	RD-BR	GN	30
9	21VR	BR-RD	RD	
35	21DT	RD-SL	YL	
10	21DR	SL-RD	BK	
36	22VT	BK-BL	GN	31
11	22VR	BL-BK	RD	
37	22DT	BK-OR	YL	
12	22DR	OR-BK	BK	
38	23VT	BK-GN	GN	32
13	23VR	GN-BK	RD	
39	23DT	BK-BR	YL	
14	23DR	BR-BK	BK	
40	24VT	BK-SL	GN	33
15	24VR	SL-BK	RD	
41	24DT	YL-BL	YL	
16	24DR	BL-YL	BK	

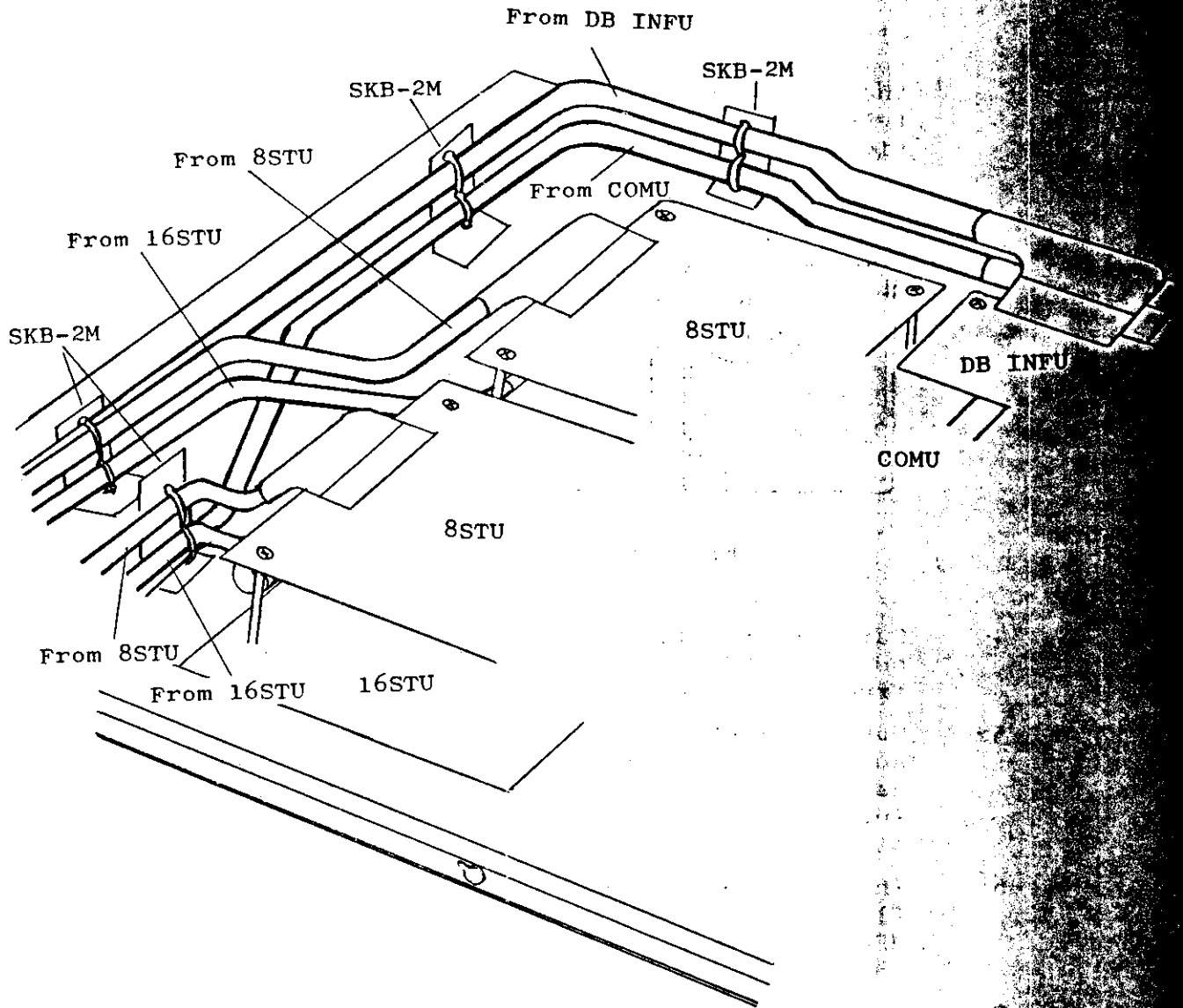
4th Amphenol Connector

PIN	LEAD DESIG	CABLE KSU	COLOR TEL	EXT. NO.
26	25VT	WH-BL	GN	34
1	25VR	BL-WH	RD	
27	25DT	WH-OR	YL	
2	25DR	OR-WH	BK	
28	26VT	WH-GN	GN	35
3	26VR	GN-WH	RD	
29	26DT	WH-BR	YL	
4	26DR	BR-WH	BK	
30	27VT	WH-SL	GN	36
5	27VR	SL-WH	RD	
31	27DT	RD-BL	YL	
6	27DR	BL-RD	BK	
32	28VT	RD-OR	GN	37
7	28VR	OR-RD	RD	
33	28DT	RD-GN	YL	
8	28DR	GN-RD	BK	
34	29VT	RD-BR	GN	38
9	29VR	BR-RD	RD	
35	29DT	RD-SL	YL	
10	29DR	SL-RD	BK	
36	30VT	BK-BL	GN	39
11	30VR	BL-BK	RD	
37	30DT	BK-OR	YL	
12	30DR	OR-BK	BK	
38	31VT	BK-GN	GN	40
13	31VR	GN-BK	RD	
39	31DT	BK-BR	YL	
14	31DR	BR-BK	BK	
40	32VT	BK-SL	GN	41
15	32VR	SL-BK	RD	
41	32DT	YL-BL	YL	
16	32DR	BL-YL	BK	

VT: Voice Tip
 VR: Voice Ring
 DT: Data Tip
 DR: Data Ring

3.7 CABLE MOUNTING

Bundle all the cables coming out from the top left of the KSU together and secure to the L-shaped brackets provided on the KSU with the SKB-2M cable ties as illustrated.



4. INSTALL TELEPHONE SET
 4.1 INSTALL HFU CARD (optional)

Total handsfree conversation on both intercom and C.O. lines is enabled by installing one HFU card in the telephone set.

STEP PROCEDURE

- 1 Unplug the modular line cord from the telephone.
- 2 Turn the telephone over and remove two screws from the bottom of the telephone (Fig.15).
- 3 Lift the bottom(base)of the telephone and carefully lay by the side of the top of the telephone with its component side up (Fig.16).

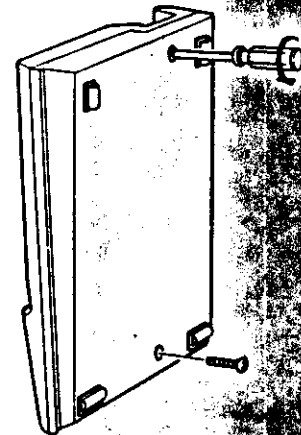


Fig. 15

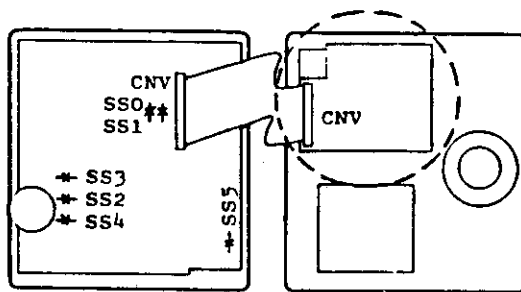
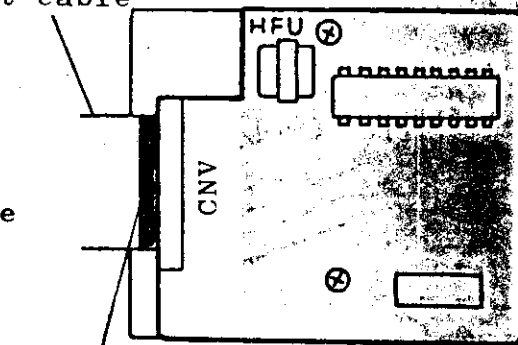


Fig. 16

- 4 Cut six straps, "SS0" to "SS5" on the TELU circuit card apart from each other (Fig.16).
- 5 Mount the HFU card in its place and secure to the telephone, using M3x10S tapping screws furnished with the HFU card at two locations. (Fig.17).
- 6 Insert both ends of the 17x90 flat cable furnished with the HFU card into the "CNV" connectors on the HFU and TELU cards (Fig.16).
- 7 Mount the base of the telephone carefully on its top and fasten together with screws at two locations (Fig.15).

flat cable



blue tape

Fig. 17

4.2 MOUNT TELEPHONE SET ON THE WALL (optional)

The HMS-1032 wall mount kit comprises the following parts.

- 1 Plastic wall bracket
- 1 Plastic handset hook
- 1 Modular adapter cord
- 2 Phillips M3x8S self-tapping screws
- 4 Phillips M4.1x16S wood screws

STEP	PROCEDURE
------	-----------

- | | |
|---|---|
| 1 | Remove the telephone number plate and its plastic overlay located below the hook button (Fig.18). |
|---|---|

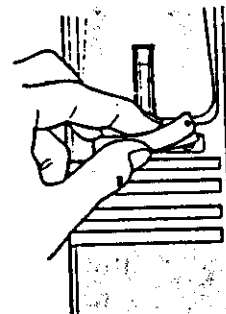


Fig. 18

- | | |
|---|---|
| 2 | Mount the handset hook, fasten to the top cover of the telephone using two M3x8S self-tapping screws and insert the telephone number plate and the overlay into their place (Fig.19). |
|---|---|

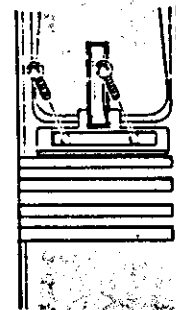


Fig. 19

- | | |
|----------|---|
| (Case 1) | If the telephone is to be mounted on the wall directly; |
| 3 | Install the wall bracket on the wall and fasten at four locations with M4.1x16S wood screws (Fig.20). |

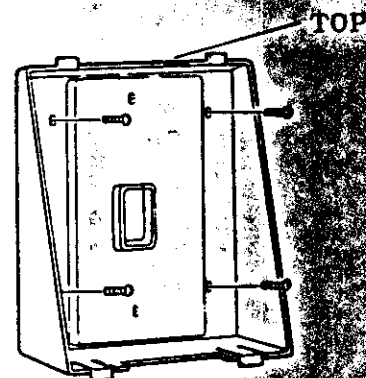


Fig. 20

- 4 Mount the telephone on the wall bracket by first inserting its two top tabs into the appropriate holes provided on the bottom of the telephone and snapping two lower spring-action tabs into the appropriate holes as they are being pushed up.

The side view of a wall mounted telephone is shown in Figure 21.

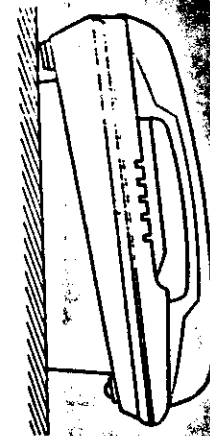


Fig. 21

- (Case 2) If the telephone is mounted over the plastic modular jack assembly installed on the wall;

- 3 Route the adapter cord furnished through the opening provided in the center of the wall bracket and plug into the modular jack assembly.
- 4 Secure the wall bracket to the modular jack assembly and fasten at four locations with M4.1x16S wood screws (Fig.20).
- 5 Route the other end of the adapter cord through the opening provided at the top of the wall bracket and mount the telephone on the wall bracket following STEP 4 of Case 1 (Fig.22).
- 6 Connect the telephone to the modular jack assembly by plugging the adapter cord into the telephone jack.

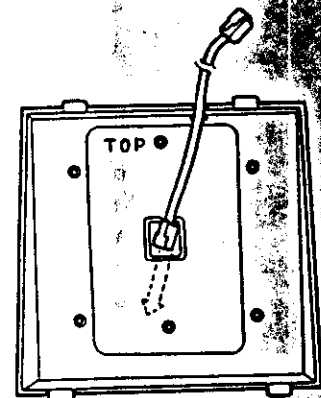


Fig. 22

- (Case 3) If the telephone needs to be mounted over the metal modular jack assembly;

- 3 Route the adapter cord through the opening of the wall bracket and plug into the modular jack assembly (Fig.22).
- 4 Secure the wall bracket to the modular jack assembly and fasten at four locations with M4.1x16S wood screws (Fig.20).
- 5 Follow STEP 5 of Case 2 above.
- 6 Follow STEP 6 of Case 2 above.

4.3 INSTALL ADJUSTABLE BRACKET (optional)

The angle of the control board of the HMS-1032 telephone and DSS/BLF console are adjustable by attaching the bracket to the bottom of them.

Various angles, when adjusted, at the dial pad and the function key board are listed below.

	<u>Dial pad</u>	<u>Function keyboard</u>
Standard	11 degrees	4.5 degrees
Bracket in rear position	20 degrees	13 degrees
Bracket in front position	22 degrees	15 degrees

STEP PROCEDURE

(Telephone)

- 1 Select the desired angle and mount the adjustable bracket with its bare side in the appropriate groove provided on the bottom of the telephone and fasten together with a M3x12S tapping screw furnished with the bracket (Fig.23).

Note: In case of HMS-1032DSS Telephone, only Front position can be selected because of fitting with DSS/BLF console.

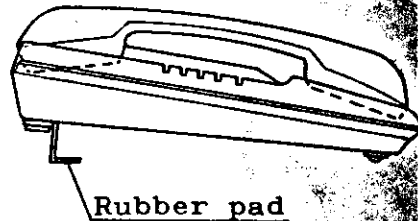
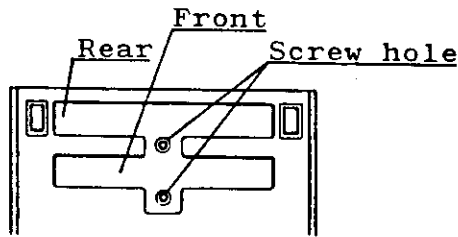


Fig. 23

(Console)

Unscrew the screw from the base of console. Mount the adjustable bracket with its bare side to the screw hole. Fasten the bracket securely by screwing the unscrewed screw (Fig.24).

Do not use tapping screw furnished with the bracket.

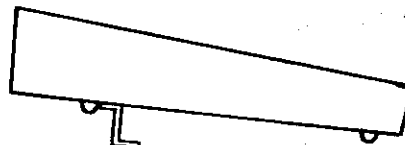
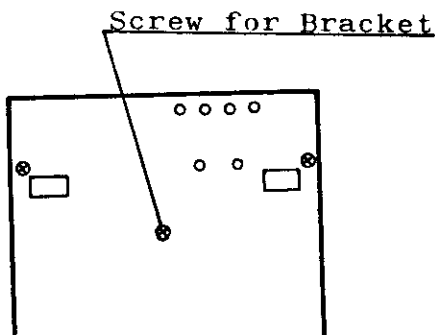


Fig. 24

4.4 ATTACH FUNCTION DESCRIPTION PLATE

A self-adhesive access code description plate may be installed at the dial pad for customers' ready reference when entering desired access codes.

STEP	PROCEDURE
------	-----------

- | | |
|---|--|
| 1 | Peel the function description plate off its base and affix it to the upper area of the dial pad properly (Fig.27). |
|---|--|

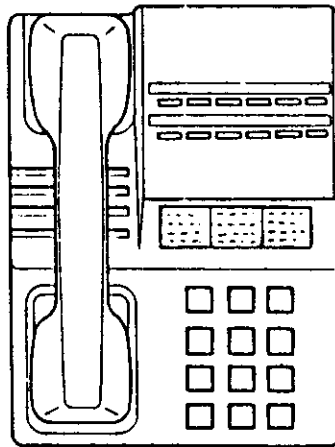


Fig.27

5 INSTALL DSS/BLF CONSOLE AND DSS/BLF TELEPHONE SET

5.1 PLUG IN DSS/BLF CONSOLE INTO THE DSS/BLF TELEPHONE SET

Maximum two DSS/BLF console and telephone sets can be installed to the HMS-1032 electronic key telephone system.

STEP	PROCEDURE
------	-----------

- | | |
|---|--|
| 1 | Turn the DSS/BLF telephone set over and remove two screws from the bottom of the telephone set (Fig.15 of Section 4.1). |
| 2 | Lift the bottom(base) of the DSS/BLF telephone set and carefully lay it by the side of the top of the telephone with its component side up (Fig.35). |

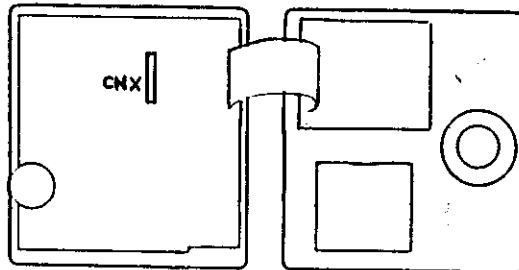


Fig.35

- | | |
|---|--|
| 3 | Bring the 12pin cord from the DSS/BLF console through to the opening on the telephone set provided adjacent to the modular jack. |
| 4 | Connect the 12pin plug to the designated "CNX" jack (Fig.35). |
| 5 | Mount the base of the telephone carefully on its top and fasten together with screws at two locations (Fig.15 of Section 4.1). |

5.2 PLUG IN OF AMPHENOL CONNECTOR FROM DSS/BLF CONSOLE TO THE KSU

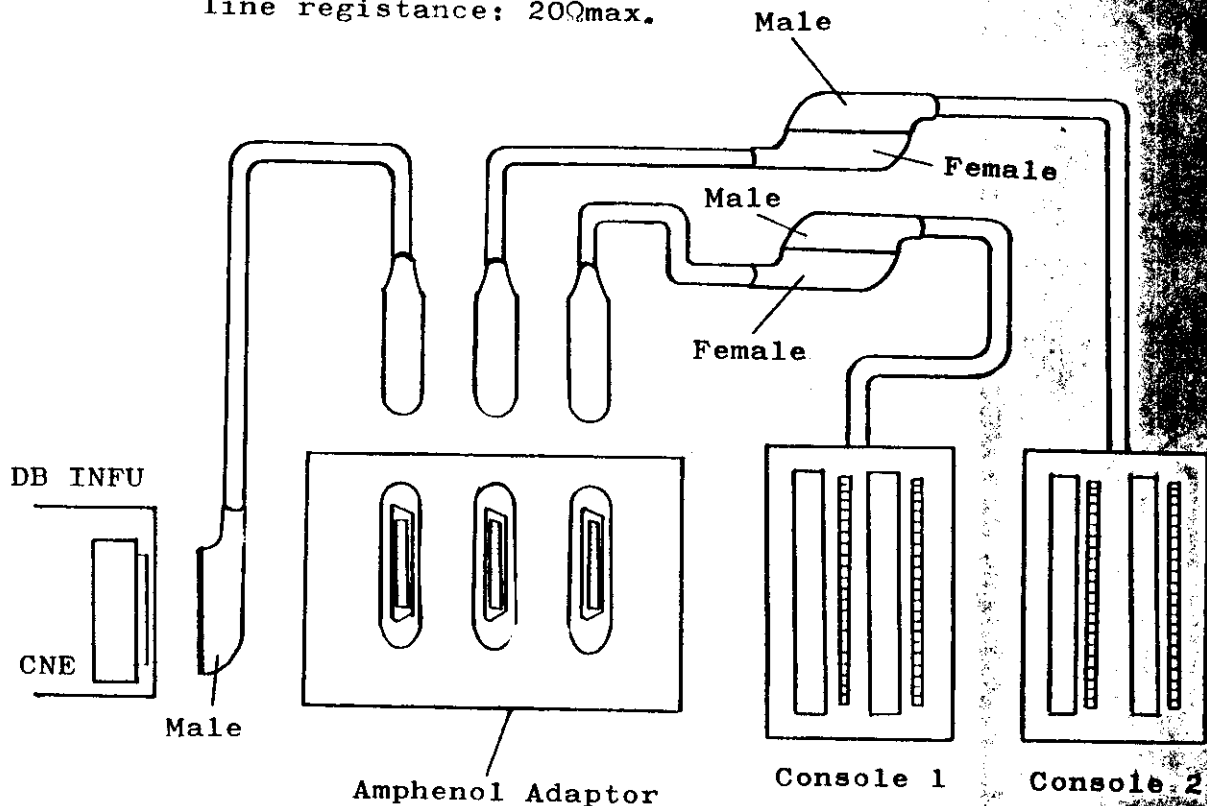
Maximum two DSS/BLF consoles can be installed to the HMS-1032 system.

- ACCESSORY:
- 25-pair double-amphenol-ended cable
 - 25-pair amphenol to amphenol adaptor

STEP PROCEDURE

- 1 Connect KSU and amphenol adaptor; Connect "CNE" on the DB INFU card and 25-pair amphenol to amphenol adaptor, using 25-pair double-amphenol-ended cable (Fig.36).
- 2 Connect amphenol adaptor and DSS/BLF console; Connect above amphenol adaptor and DSS/BLF console using 25-pair double-amphenol-ended cables (Fig.36).
- 3 For second DSS/BLF console; Repeat STEP 2 above.

Note: Maximum cable run
500 feet for 26 gauge(AWG) cable
700 feet for 24 gauge(AWG) cable
900 feet for 22 gauge(AWG) cable
line resistance: 200max.



6. INSTALL POWER FAILURE UNIT (optional)

When power failure occurs, the power failure unit (PFU) optionally installed switches a C.O. line in the HMS-1032 system to the single line telephone provided at option. One PFU is capable of switching up to three C.O. lines, each requiring a customer-provided single line telephone.

- ACCESSORIES: For each telephone line
- Three pair modular cord
 - D4BU cord
 - PFU cable (2-conductor with connector furnished with the PFU)
 - +M3.1x16S wood screw
 - 25-pair double-amphenol-ended cable
 - 25-pair amphenol to 6 position modular jack adaptor

STEP	PROCEDURE
1	Uncover the lid of the PFU by unscrewing two screws.
2	Attach a piece of appropriate plywood to the wall.
3	Screw the wood screw into the plywood at the lower side location. Leave 1/10 inch (2.5mm) gap between the screw head and the plywood (Fig.33).
4	Mount the PFU cabinet onto the plywood by the keyhole slot on the rear of the cabinet over the head of the screw.

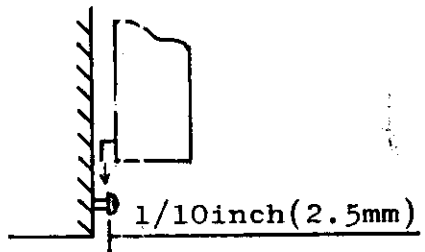


Fig.33

- 5 Secure the PFU at the upper and lower locations to the backboard using wood screws provided (Fig.34).

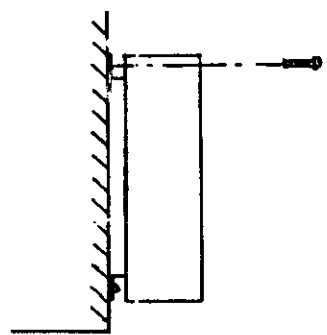


Fig.34

- 6 Unplug the KSU power cord from the AC power outlet.
- 7 Connect "CNR" on the COMU card and 25-pair adaptor using 25-pair double-amphenol-ended cable.
Connect 1st 6 position modular jack of 25-pair adaptor and "CNK" on the PFU, using three pair modular cord.
- 8 Connect a single line telephone to the PFU at the corresponding "T1T" to "T3T" jack, using a D4BU cord.
- 9 Connect the C.O. line to the PFU at its "TC" jack.

Cabling configurations are as follows;

GN and RD = C01, 4, 7, 10
 YL and BK = C02, 5, 8
 WH and BL = C03, 6, 9

- 10 Connect the PFU to the KSU at the "CNJ" connectors on both ends, using one pair cable furnished with the PFU.
 For STEPS 7 to 10 above, refer to Fig. 28 below.

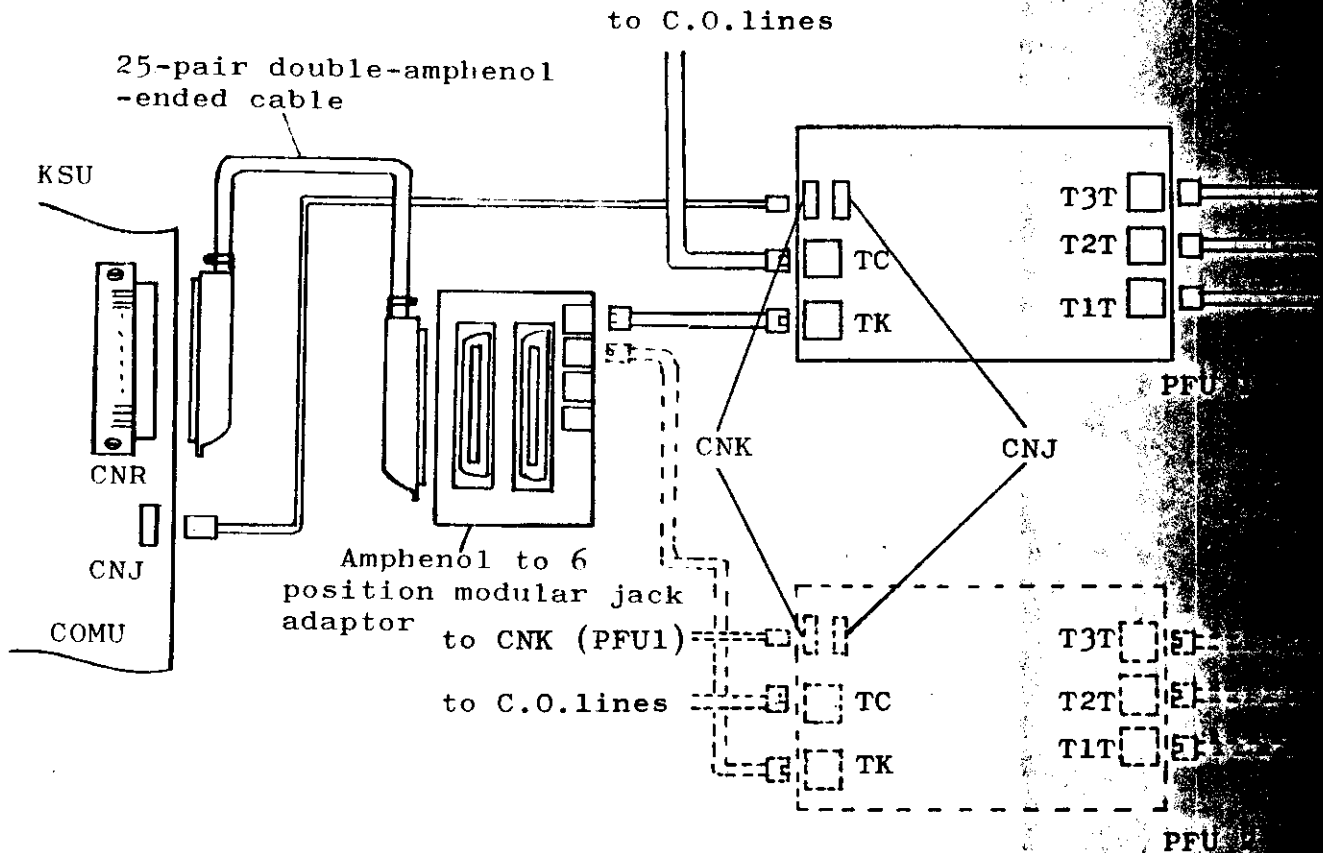


Fig. 28 PFU Connection

If more than three C.O. lines need to be switched to single line telephones in case of power failure, the second, third, fourth PFUS are required. To install PFU2, PFU3, PFU4, take the following steps.

- | STEP | PROCEDURE |
|------|--|
| 1 | Unplug the KSU power cord from the AC power outlet. |
| 2 | Connect PFU2 to the KSU; connect 2nd 6 position modular jack of the 25-pair adaptor and "CNK" on the 2nd PFU, using three pair modular cord. |
| 3 | Connect a single line telephone to the 2nd PFU at the corresponding "T1T" to "T3T" jack, using a D4BU cord. |
| 4 | Connect the C.O. line to the 2nd PFU at its "TC" jack. |
| 5 | Connect 2nd PFU to 1st PFU at "CNK" (PFU1) and "CNJ" (PFU2) connectors using one pair cable furnished with PFU.
For STEPS 2 to 5 above, refer to Fig. 28 of this section. |
| 6 | To connect 3rd and 4th PFUS, follow above STEPS 2 to 5.
Note: Forth PFU is switched only one C.O. line. |

7. PROGRAMMING

It is necessary for installation personnel to program the features shown in Table B below according to the requirements by the client at the time of installation.

Table B

NO.	ITEM	CONTENTS
1	Hold Recall Time	1, 2, or 3 minutes or non
2	PB Ratio	55mS, 75mS
3	Flash/Recall	Recall or Flash
4	Flash/Recall Time	250mS, 500mS, 1000mS, 3000mS
5	PBX Pause Number	7, 8, 9 or 0
6	C.O. line	Behind PBX, Without PBX
7	Outgoing Call Restriction by C.O. line	Restrict or Not Restrict
8	Toll Restriction and Outgoing Call Restriction	Class A, B or C
9	Night Transfer	
10	Private Line	
11	Flexible Ringing Assignment	
12	Zone Page	

- CAUTION: (1) Prior to programming the features, unplug the "BJ" switch on the COMU card from off position and plug into "ON" position (Fig.29).
- (2) The programmed services are backed up by the lithium battery provided on the COMU card when power failure occurs.
- (3) The life of the backup battery will become as short as thirty(30) days if the "BJ" short connector switch is left on and the system power is not turned on.

Be sure that the "BJ" switch is off during transit time or installation of the system to save the battery life.

Under normal operation when the system is turned on and the "BJ" switch is on, the backup battery will last as long as ten years as the memory is backed up by the system power.

- (4) If you falsely turn off the "BJ" switch after the completion of programming, repeat STEPS 1 to 14 stated Section 6.1.
- (5) While programming the system cannot be operated.



Fig.29 Set BJ Switch

7.1 PROGRAM AT THE INSTALLATION OF THE SYSTEM

STEP	PROCEDURE
1	Connect station set No.10.
2	Plug the KSU power cord to the AC socket.
3	Set the dip switch "DS" on at position 1 on the COMU card.
4	Set the dip switch "DS" on at position 2 on the COMU card.
5	Depress the "RESET" switch on the COMU card.
6	Set the dip switch "DS" off at position 1.
7	Depress the "RESET" switch on the COMU card again.
8	Depress the <input checked="" type="checkbox"/> key. The INT LED of Station 10 lights.
9	Depress the associated 3-digit access codes on the dial pad according to "ACCESS CODE" of Table C.
10	Select and depress the access keys according to "ACCESS KEY" of Table C. The associated LED of Station 10 lights as each access key is pressed according to "LED" indication of Table C.
11	Repeat STEPS 9 and 10 above for each remaining service.
12	Depress the <input checked="" type="checkbox"/> key. All associated LED's of Station 10 stated in STEP 10 above go out.
13	Set the dip switch "DS" off at position 2 on the COMU card. All programmings have been completed.
14	Depress the "RESET" switch on the COMU card. The system is in normal operation.

Note: If an error is made in STEPS 9 to 11, repeat the procedure from STEP 10 again.
This will retrieve the original programming status.

IMPORTANT: In case of HMS-616 key system, above STEP 7 can be skipped, but in case of HMS-1032 key system this STEP is needed.

7.2 CHANGE PROGRAMMED SERVICE

- | STEP | PROCEDURE |
|------|--|
| 1 | Make telephone set No.10 available for programming. |
| 2 | Make sure the HMS-1032 system is turned on. |
| 3 | At the KSU, set the dip switch "DS" on at position 2 on the COMU card.

Note: In this case, make sure the dip switch "DS" is off at position 1 on the COMU card. |
| 4 | Depress the "RESET" switch on the COMU card. |
| 5 | Depress the <input checked="" type="checkbox"/> key.
The INT LED of Station 10 lights. |
| 6 | Depress new 3-digit access codes on the dial pad according to "ACCESS CODE" of Table C.
Associated LED's of Station 10 light as previously programmed. |
| 7 | Select and depress the access keys according to "ACCESS KEY" of Table C.
Associated LED's of Station 10 light or go out as each new item is programmed according to "LED" indication of Table C.
Previously programmed service has been cancelled automatically and new data have been programmed. |
| 8 | Repeat STEPS 6 and 7 for each remaining service. |
| 9 | Depress the <input checked="" type="checkbox"/> key.
All associated LED's of Station 10 stated in STEP 7 above go out. |
| 10 | Set the dip switch "DS" off at position 2 on the COMU card. The new programmings have been completed. |
| 11 | Depress the "RESET" switch on the COMU card.
The system is in normal operation under the new programmings. |

Table C

No.	ITEM TO PROGRAM	ACCESS CODE	ACCESS KEY	L E D		FACTORY PROVIDED
				ON	OFF	
1	Hold Recall Time	0 1 0	C01 C02	Table D		Not Restricted
2	PB Ratio		C03	55mS	75mS	75mS
3	Flash/Recall		HOLD	Recall	Flash	Flash
4	Flash/Recall Time	0 3 0	C03 HOLD	Table E		250mS
5	PBX Pause Number	0 4 0	C01 C02 C03 HOLD	Table F		Non
6	C.O.Line	0 6 0	C01 C02 C03 C04 C05 C06 C07 C08 C09 C010	PBX PBX PBX PBX PBX PBX PBX PBX PBX PBX	C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O.	C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O. C.O.
7	Outgoing Call Restriction by C.O. line	0 7 0	C01 C02 C03 C04 C05 C06 C07 C08 C09 C010	Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted Restricted	Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted	Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted Not Restricted

(Cont'd)

Table D. HOLD RECALL TIME

ACCESS KEY		HOLD RECALL TIME
CO1	CO2	
x	x	No recall
o	x	One minute
x	o	Two minutes
o	o	Three minutes

Table E. FLASH TIME

ACCESS KEY		FLASH TIME
CO3	HOLD	
x	x	250mS
o	x	500mS
x	o	1000mS
o	o	3000mS

Table F. PBX PAUSE NUMBER

ACCESS KEY				PAUSE NUMBER
CO1	CO2	CO3	HOLD	
o	x	x	x	7
x	o	x	x	8
x	x	o	x	9
x	x	x	o	0
x	x	x	x	Non

Table G. TOLL RESTRICTION AND OUTGOING CALL RESTRICTION

ACCESS KEY		CLASS	CONTENTS	
CO1	CO2		C.O.LINE	BEHIND PBX
x	x	A	No restriction	No restriction
o	x	B	(1) Dialing 0 and number is disabled. (2) Dialing 1 and number is disabled. (3) Dialing more than 8-digit number is disabled.	(1) Dialing PBX access code, 0 and number is disabled. (2) Dialing PBX access code, 1 and number is disabled. (3) Dialing PBX access code and number of more than 8-digits is disabled.
x	o	C	Dialing out on all C.O. lines is disabled.	Dialing PBX access code and number is disabled totally.

Of Class B, private speed dialing is toll-restricted. Common speed dialing is not toll-restricted.

Table H. ZONE PAGE

ACCESS KEY		GROUP NO.
INT	HOLD	
x	x	NO PAGE
o	x	Zone 1
x	o	Zone 2
o	o	Zone 3

Note: o: ON
x:OFF

Table C

No.	ITEM TO PROGRAM	ACCESS CODE	ACCESS KEY	L E D		FACTORY PROVIDED
				ON	OFF	
12	Toll Restriction and Outgoing Restriction	1 **	C01 C02	Table H		Not Restricted
13	Night Transfer	1 **	C03	Ring	No Ring	No Ring
14	Private Line	1 **	HOLD	Yes	No	No
15	Flexible Ringing Assignment	2 **	C01	Ring	No Ring	No Ring
			C02	Ring	No Ring	No Ring
			C03	Ring	No Ring	No Ring
			C04	Ring	No Ring	No Ring
			C05	Ring	No Ring	No Ring
			C06	Ring	No Ring	No Ring
			C07	Ring	No Ring	No Ring
			C08	Ring	No Ring	No Ring
			C09	Ring	No Ring	No Ring
			C010	Ring	No Ring	No Ring
12	Zone Page	2 **	HOLD INT	Table I		No Page

- Notes:
1. * means dial extension numbers on the dial pad.
 2. In Zone Page, a station cannot be programmed for more than one zone.
 3. If C.O. line 1 at one specific station programmed for the private line, it is needed to program the Flexible Ringing Assignment to ring mode.
 4. It is recommended that more than one station be programmed for night transfer to ensure continued night service in the event of a station malfunction.
 5. Only this system is connected behind a PABX which provides flash feature, it can be programmed for "Flash" mode. Failure in this program will affect toll-restriction function.

8. TURN THE SYSTEM ON

REVIEW THAT THE INSTALLATION OF THE HMS-1032 SYSTEM HAS BEEN COMPLETED BEFORE TURNING THE SYSTEM ON.

- (1) Each circuit board including optional boards is installed in its place securely.
- (2) The circuit boards are connected to each other by evenly fastening the appropriate flat cable in its connector at its both ends.
- (3) All C.O. line cables are connected between Telco terminals and the amphenol connector in the KSU.
- (4) All telephone line cables are connected between telephone sets and the KSU amphenol connector(s).
- (5) The programming of various services required by the user has been accomplished properly according to the procedures and instructions described in SECTION 6.1 and 6.2.

STEP	PROCEDURE
1	Check items (1) to (5) listed above have been accomplished
2	Check the KSU cabinet has been grounded properly according to the procedures and instructions described in SECTION 3.2.
3	Plug the power cord from the KSU into the AC power outlet.
4	Check the power is supplied to the system; the LED located at the output of the POWU card in the KSU lights.
5	Check the LED, "L", provided on the COMU card is flashing quickly. It indicates the central processor units (CPU) incorporated in the COMU card are functioning properly.
6	Check the LED's "LO" and "L1" provided on the 16STU card and "LO" on the 8STU card (if provided) are flashing quickly. They indicate the central processor units incorporated in the 16STU and 8STU cards are functioning properly.

9. RESET THE SYSTEM

There may be few cases that due to erroneous or random operation of the function keys of the telephone, according to instructions given in the User's Guide, the whole HMS-1032 system or several telephones go into temporary abnormal function, until the system is reset.

Such abnormal functioning will be corrected by pressing the RESET button located in about the center on the left side of the HMS-1032 key service unit (Fig. 30).

CAUTION: When resetting the system, ensure that no other stations are being used, as reset operation disconnects all external or intercom calls in progress.

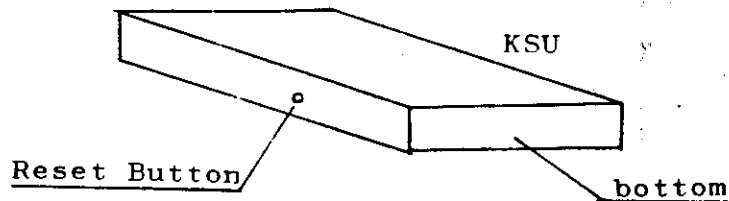


Fig. 30

Warning: This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.