Prodigy™

PABX SYSTEM INSTALLATION

| GENERAL |
| PRE-INSTALLATION PROCEDURES |
| EQUIPMENT INSTALLATION |
| INITIALIZING AND START-UP |
| PRELIMINARY TESTS |

All Interconnect Companies must meet the following conditions before connecting a PABX System to the switched telephone network:

a. Notify the telephone company of the line numbers to which the direct connection is to be made, and provide them with the system model number which is to be installed. Be sure to include the registration number and ringer equivalence number which is listed for the equipment. The FCC registration number for the PABX is **ABB978-68863-PF-E**. The Ringer Equivalence number is:

LOOP START: 1.0B
AC GND START: 1.3B
DC GND START: 4.0B

The customer must notify the telephone company of the final disconnection of the equipment.

b. Notify the telephone company of the means for connecting the equipment to the telephone net-work, specifically, the universal service ordering code (USOC) number of the jack(s) installed by the telephone company. The jack that shall be installed is type RJ21X.

c. When a problem occurs, the customer must dis-connect the equipment from the telephone network to determine if it is malfunctioning, and if so, the equipment must not be used until the malfunc-tion has been corrected. Return all malfunctioning equipment to Ericsson Communications, Inc.

d. Do not connect the equipment to party lines unless the equipment is provided with a Telco coupler. Equip-ment must not be used on coin telephone lines.

e. If the telephone company makes changes in its communi-cations facilities which renders any customer's ter-minal equipment incompatible with the telephone com-pany's facilities, or require modification, the cus-tomer shall be given adequate written notice to allow the customer an opportunity to maintain uninterrupted service.

f. Provide the customer with a copy of the service manual. FCC regulations require that the above in-formation be provided to the end user.

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(continued)

FIGURES

TABLES

1.   INTRODUCTION

1.01   Ｇeneral.   This practice provides installation procedures
       and pre-cutover testing instructions for the Ericsson
Communications Prodigy PABX system.

1.02   Scope.   This practice contains the following information:

a.   Pre-installation Procedures
b.   Equipment Installation
c.   System Initialization
d.   Pre-cutover Tests.

Section 2, Prodigy Installation Guide, lists a summary of
installation procedures which are further discussed in detail
in the succeeding sections.

System description and technical characteristics are provided in
related practices, listed below.

1.03   Related Practices. The following Ericsson Prodigy practices
       are recommended for use with this manual:

a.   General Description (Section 7700-GD)
b.   System Maintenance Manual (Section 7700-SM)
c.   Station User's Manual (Section 7700-SUM)
d.   Attendant's Manual (Section 7700-AM)
e.   Feature Definition Manual (Section 7700-FD)

1.04   Assistance and Information.   Direct all requests for
       installation assistance and information to the Field
Service Department:

                  Ericsson Communications, Inc.
                  7465 Lampson Avenue
                  Garden Grove, California 92462

                  Telephone: (714) 895-3962

Field   Service   provides   technical   support.   For assistance,
call (714) 895-3962 from 8:00 a.m. to 5 p.m., Pacific time.
Emergency support is available 24 hours a day by calling
(714) 761-4911.

For information regarding product applications, write Ericsson Communications, Inc.'s Prodigy Marketing Department at the above address; or call (714) 895-3962 between 8 a.m. and 5 p.m. PDT/PST.

1.05 <u>Repairs and Returns</u>. Any item in need of repair, whether in or out of warranty,should be returned to Ericsson Communications, Inc.:

> Ericsson Communications, Inc.
> Repair Department
> 1551 Harris Court
> Anaheim, California 92805

For information regarding charges on out-of-warranty equipment, call the Customer Service Department, (714) 999-1521.

All items returned must be properly identified and accompanied by a copy of the Repair Order Form which has been completely filled out (see next page, Repair Order Form).

PRODIGY REPAIR ORDER FORM

DATE
SHIPPED:_____

RETURN ANY ITEM FOUND TO BE DAMAGED, DEFECTIVE, OR IN NEED OF
REPAIR TO ERICSSON COMMUNICATIONS, INC. EACH ITEM MUST BE
ACCOMPANIED BY A REPAIR ORDER.

BILL TO   SHIP TO

COMPANY   COMPANY
NAME_____   NAME_____

ADDRESS_____   ADDRESS_____

CITY,STATE,ZIP_____   CITY, STATE, ZIP_____

YOUR   EQUIPMENT
NAME_____   UNDER WARRANTY: ___ YES ___ NO

AUTHORIZED   YOUR P.O. #
SIGNATURE_____   (If Required)_____
                                 (P.O. Number needed with all out-
                                 of-warranty items)
SIGNATURE
DATE:_____   (Hardcopy Follow-up: 10 days)

GENERAL INFORMATION: SEND ITEMS FOR REPAIR TO:
ITEM   Repair Department: PRO
NAME:_____   Ericsson Communications, Inc.
                        Harris Court
                        Anaheim, CA 92805
                        (714) 895-3962

                        REPAIR
                        AUTHORIZATION NO.:_____

DESCRIPTION OF REPAIR PROBLEM:

CALL _____ (TELEPHONE)_____
IF ERICSSON COMMUNICATIONS, INC. HAS ANY QUESTIONS.

FOR ECI USE ONLY:

DATE RECEIVED:_____ REPAIR NO.:_____

2.   PRODIGY INSTALLATION GUIDE

2.01 <u>General</u>.   This section provides a quick reference guide to
      the installation of the Prodigy. Refer to the succeeding
sections for details, supporting figures and tables.

2.02 <u>Installation Procedure</u>.

      a.   Check shipping cartons for any signs of damage.

      b.   Unpack all cartons and check contents for damage.

      c.   Check the following printed circuit boards for loose
           integrated circuits (IC), and set switches accordingly:

               . Processor
               . Switch-tone
               . Memory Expansion
               . DTMF.

      d.   Place feature package ICs in appropriate sockets.

      e.   Insert the Line card in Slot 1 and the Processor, Memory
           Expansion and Switch-tone cards in their designated
           slots.

      f.   Remove bottom cover from Attendant Console: check for
           loose ICs.

      g.   Check switch settings on Console and Busy Lamp Field
           (BLF) modules.

      h.   Replace Console bottom cover.

      i.   Connect Console cable from left rear connector of the
           Console to J7 of the Prodigy PABX.

      j.   Place blank EPROM in designated slot in Configuration
           PCB.

      k.   Insert Configuration PCB in side of PROM Programmer.

      l.   Place Extender on PROM Programmer and insert in slot at
           the rear of PABX.

           CAUTION: The blue switch on the side of Programmer must
                      be in the DOWN POSITION, otherwise Programmer
                      will be damaged.

m.   Place the Console in the training mode by placing the
     toggle switch (located under the right side of the con-
     sole) to the rear position.

n.   Turn on power to PABX.

o.   After initialization, the red LEDs on the Line card,
     Processor card and minor alarm on the Console are on.
     REVISION XX is displayed on the Console.

p.   Place overlays on the Console.

q.   Press TENANT key: SERVICE CONSOLE 1 is displayed on the
     console.

r.   Program by entering information from the programming
     forms.

s.   Press BURN PROM key when programming is completed.

t.   COMMANDS: Valid commands -- 1 through 6.
     After a command is keyed in, press INSERT to initiate.

     1.   Determine checksum of PROM in socket * A5.
     2.   Copy contents of PROM in socket * A3 into that of
          PROM in socket * A5.
     3.   Verify contents of PROM in socket * A3 into that of
          PROM in socket * A5.
     4.   Determine which PROMS on the Configuration card are
          empty.
     5.   Determine the number of bytes that are needed to store
          the configuration data into the configuration PROMs.
     6.   Store the configuration data into the configuration
          PROMs.

     NOTE: If commands 2 or 6 are desired, place the blue
             switch on the Programmer in the UP position.

u.   Place the blue switch on the Programmer to the DOWN
     position.

v.   Turn off power to the PABX.

w.   Remove Programmer from PABX.

x.   Remove Configuration PCB from Programmer and insert into
     the PABX.

y. Insert the remaining Line cards. Strap the trunk cards
    and insert into designated slots.

z. Flace Console in Day Mode by placing the toggle switch
    in the forward position.

i. Connect power to the FABX.

ii. After initialization (approximately 90 seconds), the
    only LED(s) that should be on are in the Console parts
    assigned.

3.   PRE-INSTALLATION PROCEDURE

3.01 <u>Installation Documentation</u>.   A job folder is shipped with
every PABX.   The folder contains:

    . System Configuration Forms and Programming Instructions
    . Attendant Console Overlay for system configuration
    . Related practices.

3.02 <u>Equipment Location</u>.   The following factors must   be
considered when planning system installation:

    a.   Environmental conditions.   The Prodigy operates at
ambient temperatures of 41 degrees to 95 degrees F (5 to 35
degrees C).   For extended operations with maximum reliabilty, the
temperature must not exceed 78 degrees F (25.5 degrees C).

    b.   Location. Carefully select equipment location to avoid
proximity to heavy, vibrating or heat producing equipment, dust-
producing or corrosive environments, electrical machinery which
generate strong magnetic fields, and environments which exceed
the temperature specifications.

The   availability of power and the location of the   main
distribution frame   must also be considered.

If the cabinet is to be wall-mounted, a special rack or shelf is
required.   Be sure that the wall is strong enough to support the
equipment.

    c.   Access to Equipment. Equipment location must allow for
easy access to the front, rear and sides of the PABX cabinet.
Cooling vents must not be blocked.

    d.   Power Requirements. A dedicated power outlet for 115VAC
at 60 Hz, protected by a 15-ampere circuit breaker or fuse is
required.   The   outlet   must be three 3-wire, with third wire
ground.   It must be located within five feet of the cabinet for
normal operation.   The circuit provided must not power any other
equipment.

        CAUTION: If the main ac circuit breaker is turned OFF,
                    power must not be restored for at least 30
                    seconds.   This precaution helps extend the life
                    of the power supply by limiting power surges that
                    occur when the ac circuit breaker is turned ON
                    and OFF too rapidly.

e. System Wiring. A standard 25-pair cable with a male amphenol plug is required to provide access to line and trunk circuits. Each 25-pair cable can accommodate up to three card slots. These cables are connected to the Prodigy via the amphenol connectors located at the rear of the cabinet. These connectors, in turn, should be terminated on the Main Distribution Frame (MDF) for actual connection to the wiring going to telephones and telco equipment.

3.03 Tools and Test Equipment. In addition to the standard PABX installation tools, the following are required:

- Programmer PCB (Product No. 7700-72)
- Complete spare PCBs must be available.

4.0 UNPACKING AND HANDLING

4.01 Preliminary Checks.   Before unpacking, check all boxes
     carefully for any sign of damage which, if present, could
mean damage to the equipment inside.

     a.   Notify the shipper immediately if any sign of damage is
evident.

     b.   Remove packing list from the envelope attached to the
outside of one of the boxes.   Check packing list against the
number of boxes received, to confirm that all boxes were
delivered.

4.02 Unpacking.   Equipment cabinets are packed in a cardboard
     carton which contains an inner assembly consisting of foam
inserts surrounding a cardboard cover protecting the cabinet.

The PCBs are packed separately from the cabinet. The Attendant
Console also comes in a separate container.   Each box is
identified on the outside with the appropriate part number so
that it can be checked against the packing slip. If there are
any discrepancies, a claim should immediately be filed with the
freight company.   For any questions concerning the shipment that
relates to the packing slip, call or write:

            Ericsson Communications, Inc.
            1000 E. Ball Road
            Anaheim, California 92805
            Telephone: (714) 999-1521

     a.   Place the boxed PABX near the installation site.   Keep
the equipment upright at all times.

     b.   Unpack the cartons.   Carefully remove each item from
its shipping carton.   Inspect Each equipment for any sign of
damage in the presence of the carrier's agent.

            CAUTION: To prevent damage to the cabinet finish,
                       avoid the use of sharp instruments when
                       removing the protective covering from the
                       equipment cabinets.

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c. Remove the cardboard shipping carton and foam inserts from around the cabinet.

d. Visually inspect the cabinet for scratches, dents, etc.

e. Remove front panel from cabinet. Inspect inside of cabinet for apparent signs of damage due to shipment.

f. Make sure that all screws on the cabinet are tightened and that the power supply and connectors are securely mounted.

g. Inspect the PCBs. Check for loose ICs and signs of damage.

h. Carefully inspect the Attendant Console for damage.

i. If any shipment damage is found, file a claim with the carrier immediately.

4.03 Reshipment Procedure. To prepare the equipment for reshipment to the manufacturer, the original container(s) must be used, following the unpacking procedure above, in reverse.

4.04 Inventory. Any discrepancies must be reported immediately.

a. Make sure that all equipment, assemblies, components, and accessories are present, are in sufficient quantities, and have the correct product numbers.

b. Make sure that at least one Prodigy Programmer (P/N 7700-59) is present. It is recommended that one spare PCB of each type be available.

c. Check if all documentation are present and complete.

4.05 Equipment Mounting. The cabinet can be either mounted on the wall or a rack, or set on a stand or table.

a. Table-top Mounting. Make sure that the vents on both sides of the cabinet are not obstructed.

b. Wall Mounting. Wall Mounting Bracket Assembly, 7700-56 is required (see Figure 4-1, Wall Mount Bracket).

WALL MOUNTING THE PRODIGY PABX:

    a.   Determine the approximate location on the wall where the
bracket is to be mounted.   Find nearest wall stud.   Using the
bracket mounting plate as a template, mark the three bolt
openings so that these are located over the center of the stud.
Use a level to assure uniform perpendicular distance.   With a
5/32 in. bit, drill a pilot hole for each of the lag bolts.

    b.   Position each wall bracket.   Fasten to the wall with the
three lag bolts (provided).

    c.   Insert a 5/16 -18 x 2 in. Phillips Truss Head Machine
screw (provided) upwards into the tilt bracket.   Slide a 5/16 in.
split lockwasher (provided) over the screw and run two hex nuts
(provided) into the screw shaft.   Engage the screw tip into the
5/16 in. weld nut at the bottom of the platform.   Determine
desired table tilt.   Secure by tightening the two hex nuts.

    d.   If applicable, remove face plate, all PC boards, and all
cabling from the Prodigy cabinet.

    e.   Remove the baseplate from the cabinet, retaining the
mounting hardware.

    f. Remove the four rubber feet from the baseplate,
retaining the mounting hardware.

    g.   Mount the two adapter brackets (P/N 7700-1438-02) to the
bottom of the baseplate, using the rubber feet mounting holes and
the hardware from Step f.

    h.   Re-attach the baseplate to the cabinet, using the
hardware from Step e.

    i.   Attach the cabinet to the platform by securing the
adaptor brackets to the platform, using the hardware provided.
Finish by capping the four screw ends with the four plastic
bonnets.

    j. Connect all cabling, power cord and ground lead to the
cabinet.   However, all cables must be loose, i.e., the opposite
ends of the cables must not be attached, and the power cord must
not be connected to a power source.

        WARNING: To prevent any possible bodily injury, and
                     possible damage to the equipment, the following
                     step should NOT be attempted by a single person.

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k. Place the nylon washer (provided) over the pivot hole in the mounting arm. Lift the cabinet/platform assembly and, while holding the cables in approximate arrangement for final routing, place the assembly in position on the bracket arm, letting the pivot pin engage the pivot opening in the bracket arm.

l. Determine the desired rotational angle of the cabinet, then fasten in place with the interlock screw.

m. Route and harness cables.

n. Insert all PC boards.

o. Replace face plate and fasten with its four-corner screw.

p. Connect all interface cables, the ground lead and the power cord.

q. Optionally, lock the cabinet assembly into the bracket with the key lock. Remove and tag key.

RACK MOUNTING THE PRODIGY PABX:
To rack-mount the Prodigy cabinet, a Rack Mounting Bracket assembly, P/N 7700-33 (Figure 4-2) is required.

a. If applicable, remove face plate, all PC boards and all cabling from the Prodigy cabinet.

b. Place appropriate bracket flush against one side of the cabinet and push back against rear of the cabinet.

c. Place a spacer, or four 3/4 in. washers, between the bracket inside, and the slotted ventilation window of the cabinet.

d. Insert mounting screw (provided) through the bracket mounting opening and, via the spacer(s), into the sixth ventilation slot.

e. On the inside of the cabinet, slide a 3/4 in. washer over the screw and fasten with nut provided.

f. Repeat Steps b through e for the bracket on the opposite side of the cabinet.

g. The cabinet is now ready for mounting in a 19-inch rack. For 21-inch or 23-inch rack mounting, use 2-inch or 4-inch adapter pieces (customer-provided), respectively.

CAUTION: To prevent possible physical damage to the
           equipment, it is recommended that the next
           step be performed by two persons.

     h. Lift the bracket-equipped cabinet and place into
position   inside   the rack.   Fasten each bracket flange to   the
corresponding rack beam with four rack screws.

     i.   Insert   all   PC boards, and replace the front   plate.
Fasten the front plate into place with its four corner screws.

     j.   Attach all cables, the ground lead and the power cord.
Route and harness cables downward via one of the rack beams.

Figure 4-1. Wall Mount Bracket

USE ⅝" X 3"
LAG SCREWS (FURNISHED)
INTO WALL STUD
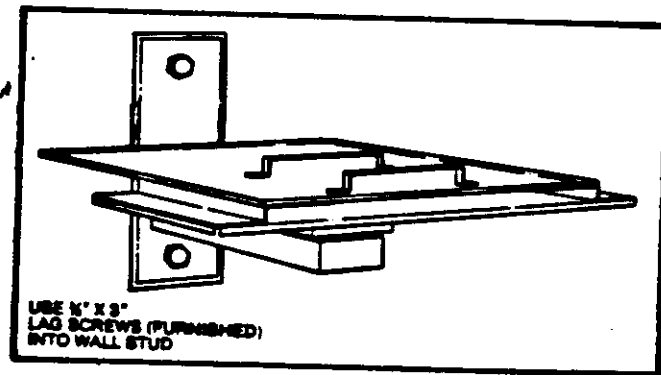
Figure 4-2. Rack Mount Installation
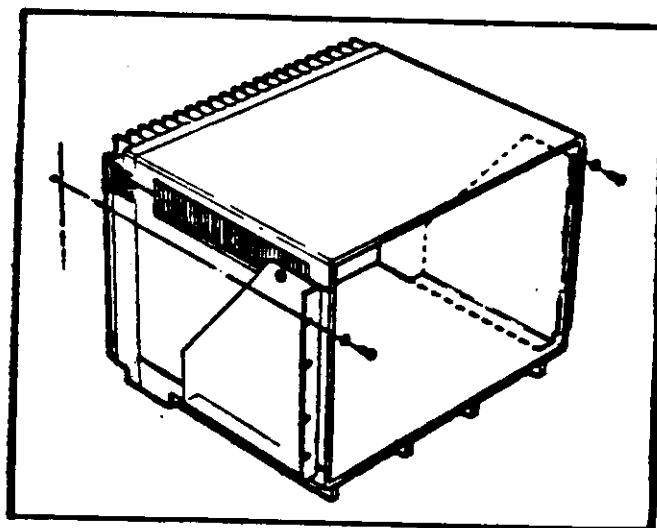
5.   EQUIPMENT INSTALLATION

5.01 Cabinet Preparation.

     a. Position the cabinet to provide easy visibility of the
front panel and access to the connectors located at the rear of
the cabinet.

     b.   Place the Prodigy cabinet in the general area of the
installation site.   With a slotted screwdriver, loosen the four
retaining screws holding the front cover against the cabinet.
Turn the screws·manually, all the way out of the cabinet but
leave them in the front cover.

     c. Gently remove the front cover from the cabinet and place
on a clean surface, preferably a soft, clean cloth.

5.02 Printed Circuit Board Installation.   Before inserting the
     PCBs into the cabinet:

     a. Inspect each PCB for any defect, loose connection of
components, dirt, etc.

     b. Gently press down on each plug-in IC (ICs with sockets)
of each card to ensure proper connection.

     c.   Place feature package ICs in appropriate sockets (see
Figure 5-6, Memory Expansion PCB strapping chart).

     d.   Prepare the Processor PCB, DTMF PCB, Memory Expansion
PCB, and all trunk PCBs for insertion by checking whether they
are properly strapped, in accordance with the functions to be
implemented.

          1. Trunk PCB (Product No. 7700-61).   See Figure 5-1.

          2. PABX Processor PCB (Product No. 7700-63).   See
             Figure 5-2.

          3. Switchtone PCB (Product No. 7700-64).   See Figure 5-3.

          4. Dual Tone Multifrequency (DTMF) PCB (Product No.
             7700-67). See Figure 5-4.

          5. PABX Power Supply (Product No. 7700-68).   See Figure
             5-5.

6. Memory Expansion PCB (Product No. 7700-70). See Figure 5-6.

7. Direct Station Select (DSS) (Product No. 7700-17). See Figure 5-7.

8. Console Processor PCB (Product No. 7700-11). See Figure 5-8.

Figure 5-1. TRUNK PCB STRAPPING CHART
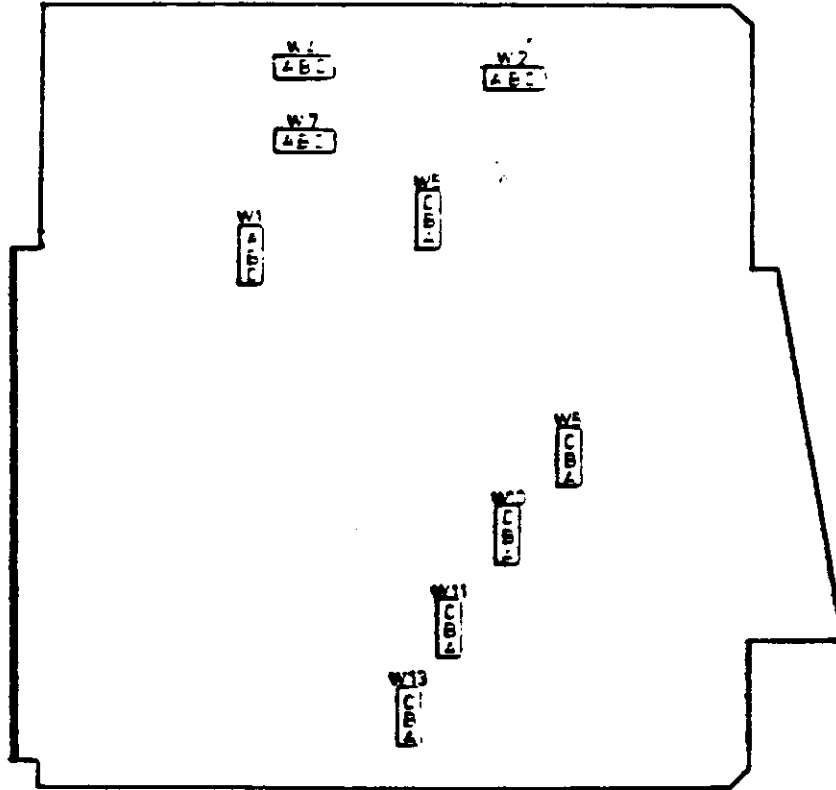
	IDENTITY	CKT 1	CKT 2	CKT 3	CKT 4
STRAP LOCATION	W1	W4	W7	W10	W13
GROUND START	AB	AB	AB	AB	AB
LOOP START	BC	BC	BC	BC	BC

	CKT 1	CKT 2	CKT 3	CKT 4
STRAP LOCATION	W2	W5	W8	W11
900 OHM	AB	AB	AB	AB
600 OHM	BC	BC	BC	BC

NOTES:

1). EQUIP W1 STRAP (AB) IF ANY TRUNKS ON A PCB ARE GROUND START.

2) LOOP AND GROUND START TRUNKS CAN BE MIXED ON THE SAME PCB.

Figure 5-2.   PROCESSOR PCB STRAPPING CHART
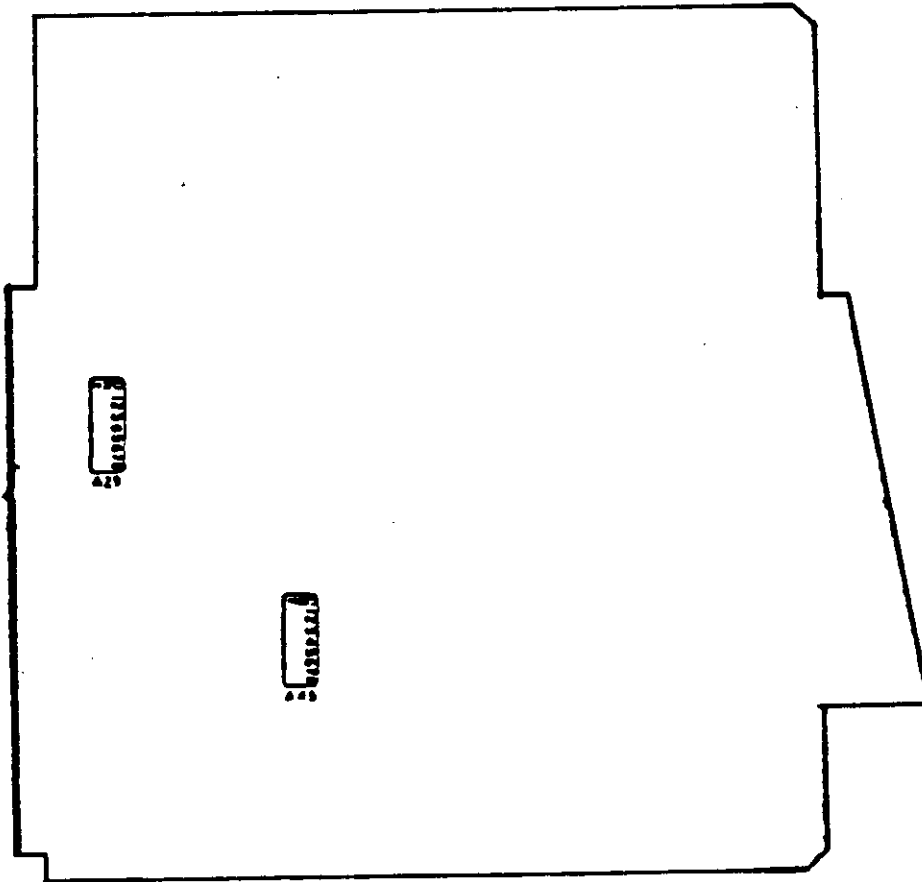
PLACE ALL EIGHT (8) DIPSWITCHES ON A29 AND A45 TO ON.

Figure 5-3. SWITCH-TONE PCB STRAPPING CHART
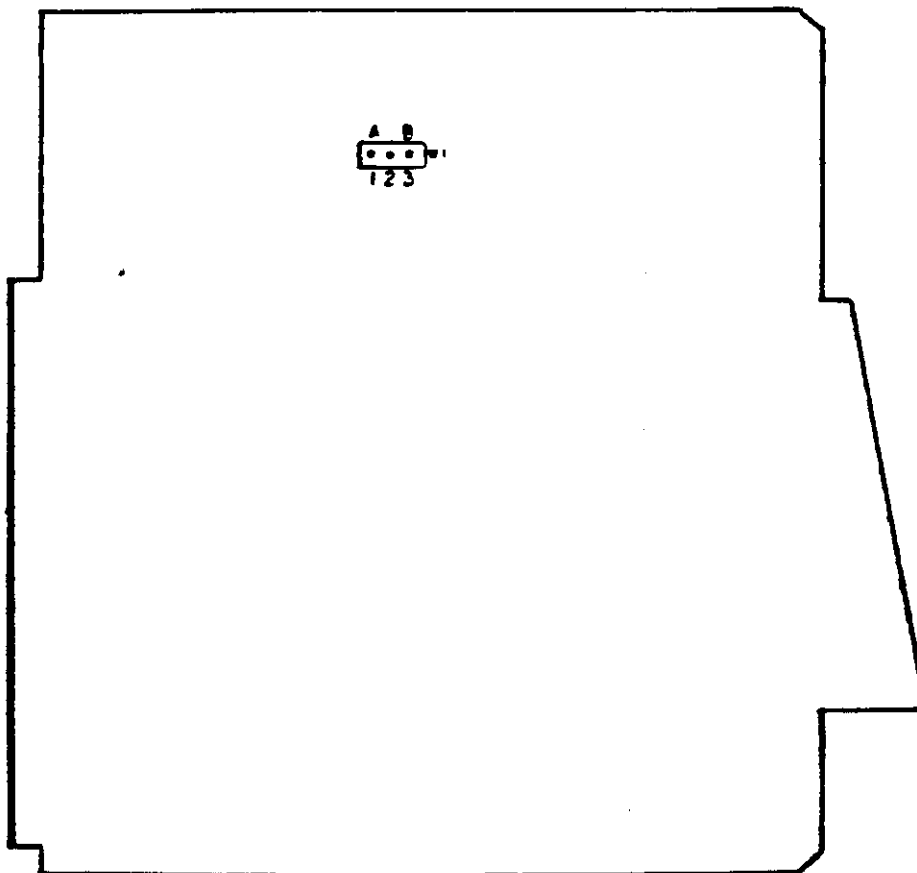
STRAPPING FOR MUSIC ON HOLD

W2 STRAP - CONNECT 23

STRAPPING FOR NORMAL HOLD

W1 STRAP - 12

NOTE: MUSIC SOURCE CONNECTS TO HANG-OFF CABLE 107, PINS 17 AND 42 (Y/O, O/Y PAIR).

Figure 5-4.   DTMF PCB STRAPPING CHART
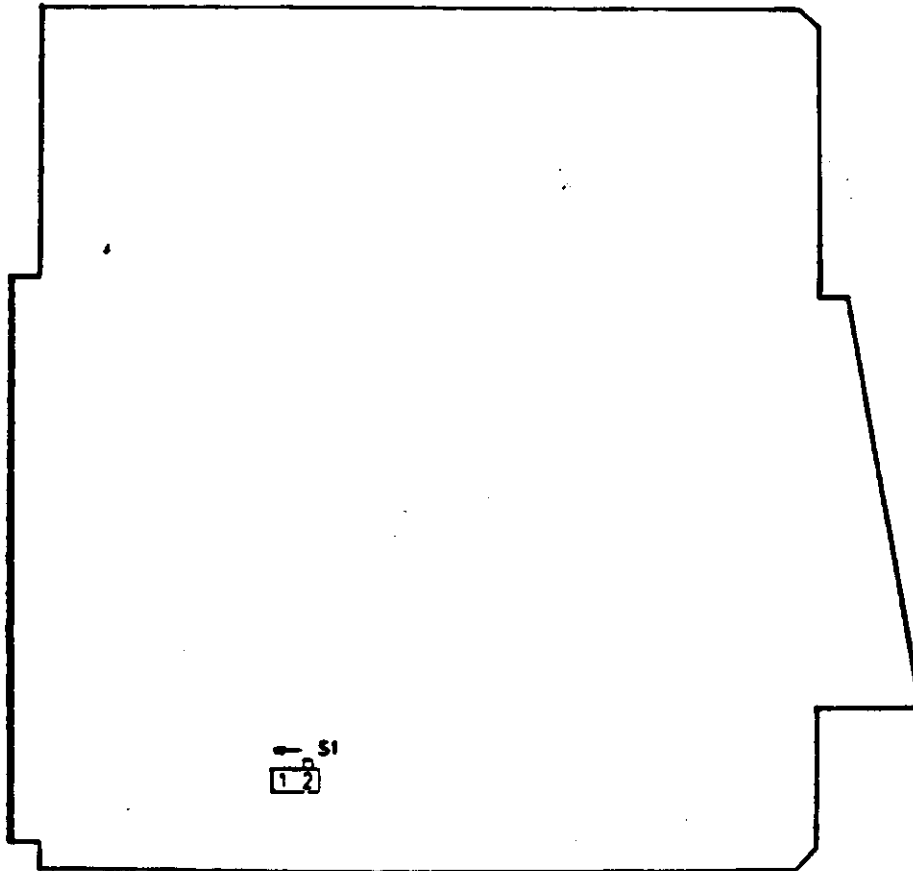
IF ONE DTMF BOARD IS USED, S1 CAN BE AT EITHER POSITION.

IF TWO DTMF BOARDS ARE USED, PLACE S1 ON EACH BOARD IN OPPOSITE POSITIONS.

Figure 5-5.   POWER SUPPLY STRAPPING OPTIONS
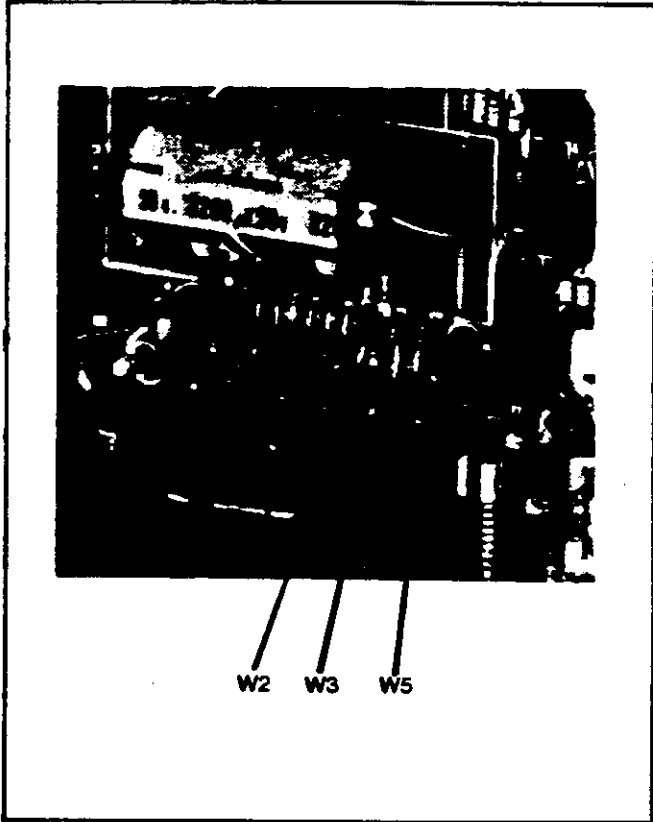
Figure 5-6.   MEMORY EXPANSION PCB STRAPPING CHART
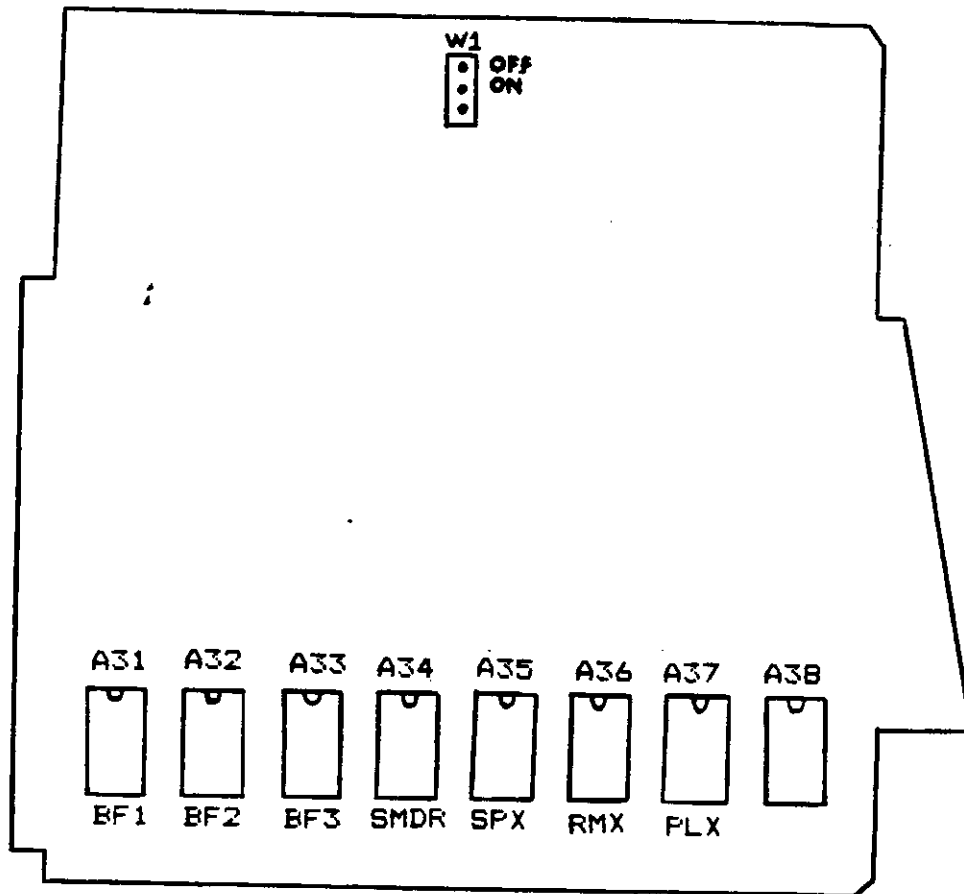
LEGEND:

    BF1, BF2, BF3 = BUSINESS FEATURE PACKAGES 1, 2, 3
    SMDR = STATION MESSAGE DETAIL RECORDING
    SPX = SPEED CALLING
    RMX = REMOTE MAINTENANCE
    PLX = PRIVATE LINE BUSINESS
    IP   = INTERPROCESSOR

PLACE W1 TO ON POSITION.

NOTE:
(a) W1 ON, PROVIDES BACK-UP BATTERY FOR THE 2K SCRATCHPAD AND
     THE TIME CLOCK.
(b) IF MULTI-CABINET CONFIGURATION IS USED, IP MUST BE INSTALLED
     IN A31, AND ALL OTHER IPs INSTALLED IN CONSECUTIVE SEQUENCE,
     AS INDICATED.

Figure 5-7. DIRECT STATION SELECT PCB STRAPPING CHART

If applicable, remove each BLF/DSS and/or Trunk Group module as follows:

a. Insert a long pin (medium sized, partially unfolded paper clip will do) into the pin hole at the top center of each module and push down to release interlock.

b. While holding the interlock down, release the module by sliding it upward.

c. Lift the module up at the bottom edge and remove.

Place the modules face down on a towel. Check whether they are strapped properly. If not, prepare the modules by setting the dipswitches of SW1 as follows:

a. BLF/DSS 00-39 module - set dipswitches 1,2, and 3 to OFF. Set dipswitch 4 to ON.

b. BLF/DSS 40-79 module - set dipswitches 1 and 4 to OFF. Set dipswitch 2 and 3 to ON.

c. BLF/DSS 80-99 module - set dipswitches 1, 3 and 4 to OFF. Set dipswitch 2 to ON.

d. Trunk Group module - set dipswitches 1 and 2 to OFF, dipswitches 3 and 4 to ON.
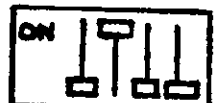
Replace the modules in the console as follows:

a. Insert module, top edge first, into the appropriate console opening.

b. Forcing down on the interlock, slide the module's top edge upward under the retaining lip of the console opening.

c. Gently work module until it is flush in the console opening.

d. Slide module downward to lock it into place.

Figure 5-8.   CONSOLE PROCESSOR PCB STRAPPING CHART

Check   whether the Console Processor board is properly strapped.
If not, prepare the board by setting the dipswitches of SW1 as
follows:

    a.   Single console - set all dipswitches to ON.

    b.   Dual console - on first console, set
            dipswitches 1 and 2 to OFF,
            dipswitches 3 and 4 to ON.

            On second console, set
            dipswitches 1, 2, and 3 to ON,
            and dipswitch 4 to OFF.

    c.   Triple console - on first console, set
            dipswitches 1 and 2 to OFF,
            dipswitches 3 and 4 to ON.

            On second console, set
            dipswitches 1, 2, and 4 to OFF,
            and dipswitch 3 to ON.

            On third console, set
            dipswitches 1, 2, and 4 to ON,
            and dipswitch 3 to OFF.

e. Insert Line card in Slot 1. Insert all Trunk boards, one or both DTMF board(s), and the Switch-tone board in the slots designated in Figure 5-9, Equipment Numbering. Leave out the Processor and Memory Expansion boards for the feature preparation described in Paragraph 5.03.

NOTE: The extraction tabs on the PCBs are color-coded to coincide with the colors on the PCB identification strip inside the bottom front of the cabinet. Color coding designations are shown in Table 5-1.

Table 5-1. PRINTED CIRCUIT BOARD IDENTIFICATION STRIP

SLOT NUMBER	PRINTED CIRCUIT BOARD	COLOR CODE
1 THROUGH 16	LINE PCB TRUNK PCB	WHITE ORANGE
17	SWITCH-TONE	BLUE
18	MEMORY EXPANSION	RED
19	PROCESSOR	GREEN
20 & 21	DTMF	YELLOW/BROWN
22	INTERPROCESSOR	BLACK

f. Make sure that each printed circuit board is properly seated in its assigned backplane connector. Verify if the color-coded board pullers on each board are flush against the front edge of the board, and if they match the PCB color identification guide.

Figure 5-9.   EQUIPMENT NUMBERING

L I N E E Q U I P M E N T N U M B E R S	T R K E Q U I P #																S W I T C H T O N E	M E M O R Y E X P A N S I O N	P R O C E S S O R	D T M F	D T M F	I N T E R P R O C E S S O R
		1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121						
		2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122						
		3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123						
		4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124						
		5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125						
		6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126						
		7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127						
		8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	CARD POSITION					
		101			102			103			104			105			106	HANG-OFF CABLE JACK					

NOTE: 1) EQUIPMENT POSITION IS RESERVED FOR CONSOLE IF EQUIPPED AND MUST HAVE A LINE CARD IN POSITION 1.
2) ONLY THE FIRST FOUR EQUIPMENT NUMBERS ARE USED WHEN A CARD POSITION IS EQUIPPED WITH A TRUNK.

b. Turn console over and lay it face down on towel.

c. With a slotted screw driver, loosen the two front and one rear retaining screws on the console baseplate. Manually turn screws out of the top shell.

d. Turn console over and place it back on its feet.

e. Gently pry the top shell off the baseplate and, turning it over, lift it away. Place top shell face down on towel.

f. Check strapping of Console Processor board (refer to Figure 5-8).

g. Turn the console top half over and cradle it back onto the baseplate.

h. Grasp console top and baseplate and, holding both firmly together, turn console over and place it face down on the towel.

i. Secure the two halves together with the three retaining screws.

j. Place console back on its feet.

k. Check BLF/DSS modules for proper strapping (refer to Figure 5-7).

6.   CABLING

6.01 Prerequisites.   The following prerequisites must be met
      prior to the installation of the Prodigy system:

      a.   The customer must furnish 110 Vac, 15 amp, 60 Hz
service.

      b.   AC surge protection must be provided.

      c.   All   installation personnel must be trained and
certified by Ericsson Communications, Inc.

      d.   All systems connecting to any portion of telephone
company lines must meet FCC regulations, Part 68.

      e.   Provisions must be made for instant disconnection of
the equipment from the telephone company's central office trunks.
This is normally facilitated through the use of the USOC RJ21X
universal quick disconnect jack.

      f.   Only FCC-registered equipment can be interconnected.
The FCC Registration Number for the Prodigy is: ABB978-68863-
PFOE.

      g.   The Main Distribution Frame (MDF) must be either:

           1.   Located in a restricted access room, or
           2.   Contain a protective cover to assure adequate
                insulation   from commercial power wiring and
                grounded surfaces.

6.02 Interconnection Preparation. Place all system components in
      their appropriate installation site, or measure relative
distance between components.

Unpack, loosen and lay out all system interconnect cables and
determine if all have correct length and sufficient slack when
connected.

Verify correct termination of cables,   such as: connector
profile, male or female, top or side entry, flush or protruded,
as defined by parts and system layout.

6.03 Cabling Plan.   All external connections to the cabinet are
      made via the 10 connectors at the rear of the cabinet
(Figure 6-1, Prodigy Cabinet, Rear View). Nine of the connectors
are standard AMP plug/connectors, (Type RP2-552000-1).   The
remaining connector is a three-prong power cord.

Figure 6-2 shows a typical system cabling configuration. Figure 6-2A shows detail of the Station Message Detail Recording interface and printer unit.

Tables 6-3 and 6-3A list cable connector designations.

6.04 Trunk Cables. Verify all trunk pairs against the service order. Verify that loop resistance complies with FCC Specification, Part 68. Any deviations from the service order, or cable-pair problems, must be cleared with the local test board.

6.05 Cabinet Cabling. Connect interface cables to the cable connectors at the back of the cabinet (Figure 6-1). In the case of multi-cabinet systems, connect interface cables on top of cabinet. See Tables 6-3 and 6-3A for cable designations.

Bring cables out to the MDF and connect to the MDF according to configuration parameters of the system (see Figure 6-2).

For multi-cabinet system installations, connect cabinets with 50-wire, flat ribbon intercabinet interface cable.

6.06 Grounding. Local telephone company requirements must be complied with. Ericsson recommends that a No. 6 AWG wire be connected from the ground lug located on the left rear of the cabinet to a ground rod that has been driven at least 10 feet into the ground.

    NOTE: A good ground is required for ground-start operation. If water pipe is used, be sure that it is galvanized or copper, not PVC, and that no PVC segments are part of the overall plumbing circuit.

The resistance between the approved ground source and the framework of the PABX cabinet must be less than three ohms.

6.07 Power. Power is applied to the cabinet by connecting the three-wire power cord with the third wire ground to Connector J10. At this point, do not connect the power cord to the power source yet.

The Prodigy PABX system can be directly plugged into the power outlet.The PABX must be connected through a circuit breaker completely independent of any other electrical equipment. In areas where power outages are common, a power back-up source is recommended. Up to four Prodigy cabinets can be plugged into a single power outlet.

Before connecting the power cord to the power source, the following must always be checked first:

    a. Are all the printed circuit boards properly strapped?
    b. Are all printed circuit boards properly inserted into the backplane connectors in the cabinet?
    c. Is there a No. 6 ground wire from the PABX to a galvanized (not PVC) cold water pipe?
    d. Are all dipswitches correct?
    e. Is a separate power supply (battery back-up) needed?

If all the above conditions have been met, the cabinet can be connected to the power source.

6.08   <u>Attendant Console Cabling</u>.

    a. Single Console Cabling, or First Console in a Multi-console System Cabling:

        1. Connect the six-foot long, 25-pair interface cable to Connector J1 at the back of the console.
        2. Connect the other end of the cable directly to the MDF, if distance allows, or via a customer-furnished extension cable, if the MDF is farther than six feet.

    b. Multi-console Cabling:

        1. Connect a 25-conductor interface cable (P/N 7700-47) to Connector J1 at the back of the console.

        2. Connect the other end to Connector J2 at the back of the preceding console.

Grounding is supplied to the console by the cabinet via the interface cabling.

The cabinet supplies operational power to the console via the interface cabling.

Figure 6-1.   PRODIGY PABX CABINET, REAR VIEW

POWER SUPPLY
110 VAC, 15 AMP
60 HZ

J108
J105
J103
J109
J106
J107
J104
J102
J101
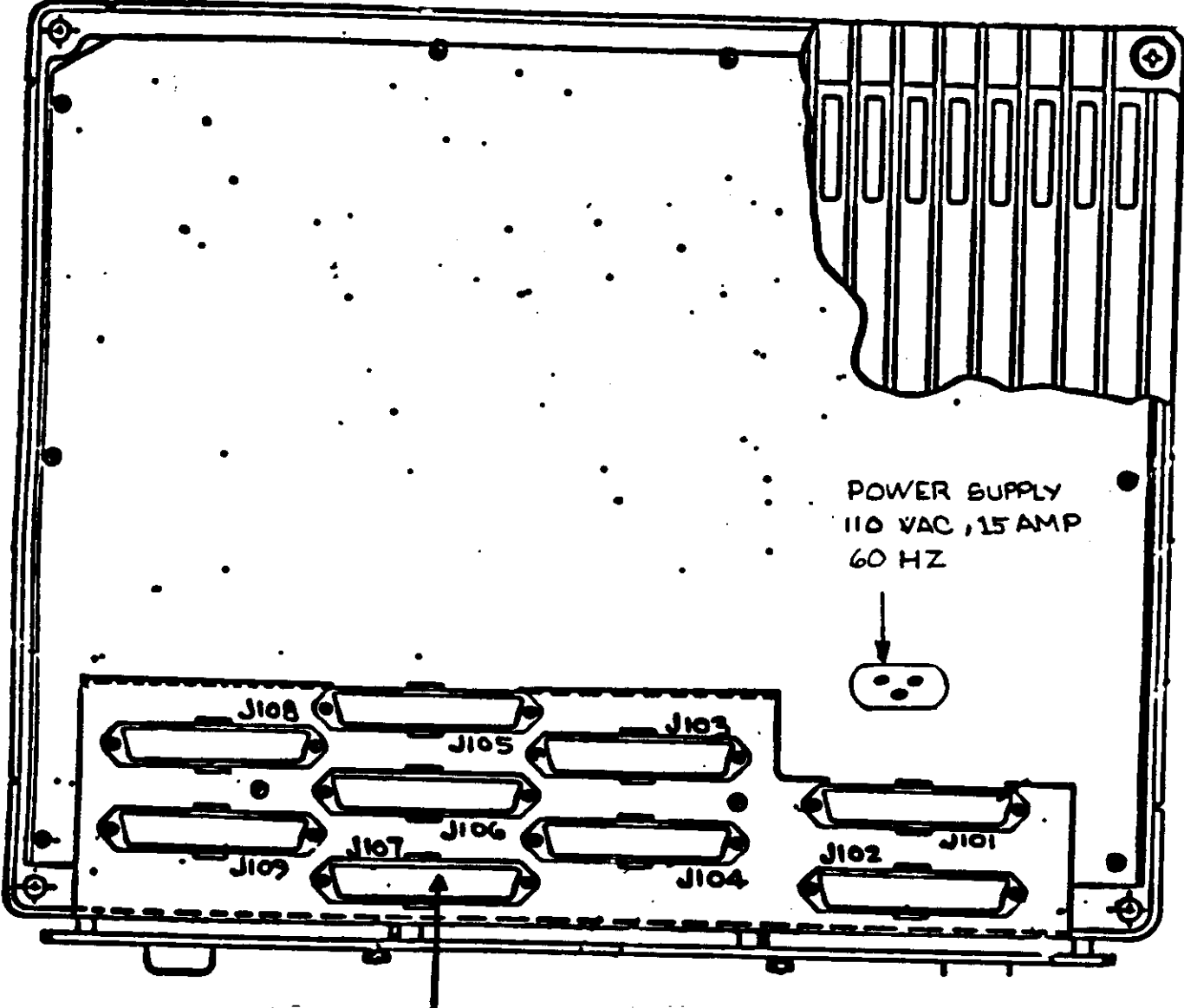
ATTENDANT CONSOLE JACK

Figure 6-2.   CABLING PLAN
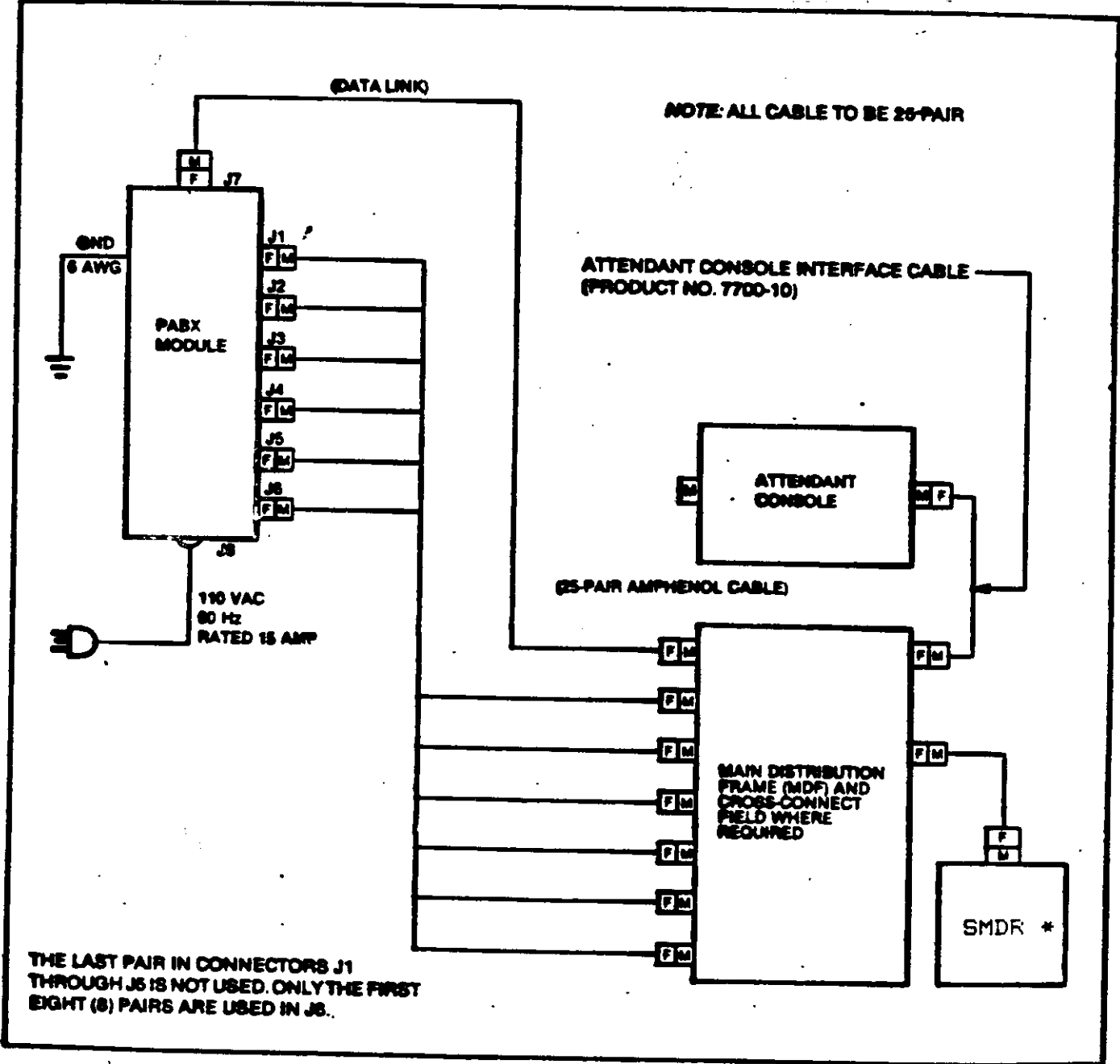
* SEE FIGURE 6-2A, HARD COPY PRINTER INTERFACE AND PRINTER UNIT.

```
+---+
¦ F ¦  =  FEMALE PLUG
+---+
```

```
+---+
¦ M ¦  =  MALE PLUG
+---+
```

Figure 6-2A. HARD COPY PRINTER INTERFACE AND PRINTER UNIT

DESCRIPTION Printer Requirements:

1. Received data only
2. Standard RS232 interface
3. Baud rate: 300, 600 or 9600 baud
4. Printer busy or Printer buffer full signal is required if operating at a baud rate faster than the printer's actual printing speed. (Mark (-V) condition indicates printer busy or printer buffer full.)
5. 40 characters or more per line.
6. Print speed - 60 characters or more per second.
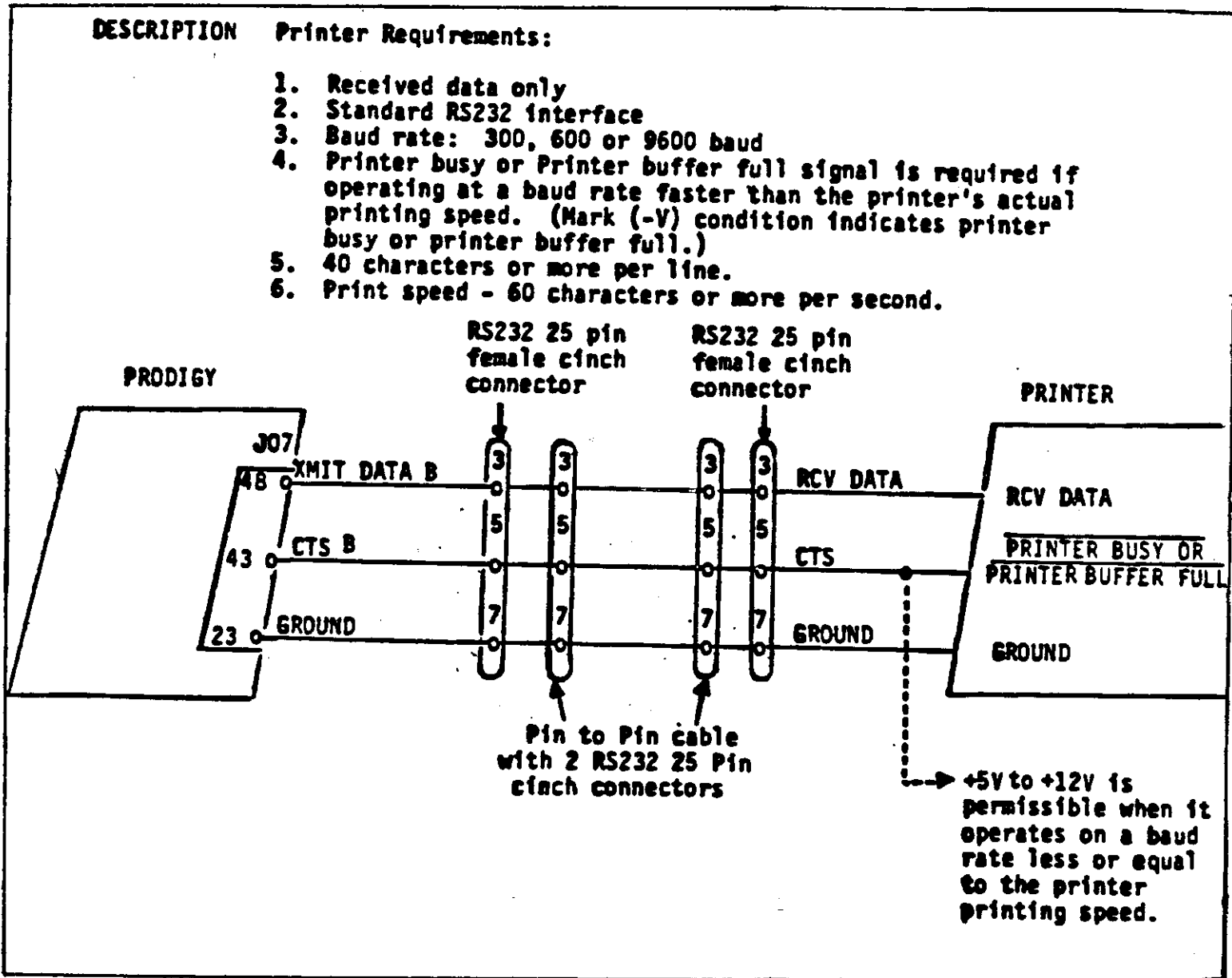
Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION

J1					
PIN	COLOR	LEAD DESIGNA- TION (LINE)	LEAD DESIGNA- TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	T1	CT1	1	1
01	BL/W	R1	CR1	1	
27	W/O	T2	CT2	1	2
02	O/W	R2	CR2	1	
28	W/G	T3	CT3	1	3
03	G/W	R3	CR3	1	
29	W/BR	T4	CT4	1	4
04	BR/W	R4	CR4	1	
30	W/S	T5	MM1	1	5
05	S/W	R5	M1	1	
31	R/BL	T6	MM2	1	6
06	BL/R	R6	M2	1	
32	R/O	T7	MM3	1	7
07	O/R	R7	M3	1	
33	R/G	T8	MM4	1	8
08	G/R	R8	M4	1	
34	R/BR	T1	CT1	2	9
09	BR/R	R1	CR1	2	
35	R/S	T2	CT2	2	10
10	S/R	R2	CR2	2	

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION
J1 (continued)

36	BK/BL	T3	CT3	2	11
11	BL/BK	R3	CR3	2	
37	BK/O	T4	CT4	2	12
12	O/BK	R4	CR4	2	
38	BK/GK	T5	MM1	2	13
13	G/BK	R5	M1	2	
39	BK/BR	T6	MM2	2	14
14	BR/BK	R6	M2	2	
40	BK/S	T7	MM3	2	15
15	S/BK	R7	M3	2	
41	Y/BL	T8	MM4	2	16
16	BL/YK	R8	M4	2	
42	Y/O	T1	CT1	3	17
17	O/Y	R1	CR1	3	
43	Y/G	T2	CT2	3	18
18	G/Y	R2	CR2	3	
44	Y/BR	T3	CT3	3	19
19	BR/Y	R3	CR3	3	
45	Y/S	T4	CT4	3	20
20	S/Y	R4	CR4	3	
46	V/BL	T5	MM1	3	21
21	BL/V	R5	M1	3	
47	V/OL	T6	MM2	3	22
22	O/V	R6	M2	3	

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION
J1 (continued)

48	V/G	T7	MM3	3	23
23	G/V	R7	M3	3	
49	V/BR	T8	MM4	3	24
24	BR/V	R8	M4	3	
50	V/S	—	—	NOT USED	—
25	S/V	—	—	NOT USED	

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Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION (Continued)

PIN	COLOR	LEAD DESIGNA-TION (LINE)	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
J2					
26	W/BL	T1	CT1	4	25
01	BL/W	R1	CR1	4	
27	W/O	T2	CT2	4	26
02	O/W	R2	CR2	4	
28	W/G	T3	CT3	4	27
03	G/W	R3	CR3	4	
29	W/BR	T4	CT4	4	28
04	BR/W	R4	CR4	4	
30	W/S	T5	MM1	4	29
05	S/W	R5	M1	4	
31	R/BL	T6	MM2	4	30
06	BL/R	R6	M2	4	
32	R/O	T7	MM3	4	31
07	O/R	R7	M3	4	
33	R/G	T8	MM4	4	32
08	G/R	R8	M4	4	
34	R/BR	T1	CT1	5	33
09	BR/R	R1	CR1	5	
35	R/S	T2	CT2	5	34
10	S/R	R2	CR2	5	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION
J2 (continued)

36	BK/BL	T3	CT3	5	35
11	BL/BK	R3	CR3	5	
37	BK/O	T4	CT4	5	36
12	O/BK	R4	CR4	5	
38	BK/GK	T5	MM1	5	37
13	G/BK	R5	M1	5	
39	BK/BR	T6	MM2	5	38
14	BR/BK	R6	M2	5	
40	BK/S	T7	MM3	5	39
15	S/BK	R7	M3	5	
41	Y/BL	T8	MM4	5	40
16	BL/YK	R8	M4	5	
42	Y/O	T1	CT1	6	41
17	O/Y	R1	CR1	6	
43	Y/G	T2	CT2	6	42
18	G/Y	R2	CR2	6	
44	Y/BR	T3	CT3	6	43
19	BR/Y	R3	CR3	6	
45	Y/S	T4	CT4	6	44
20	S/Y	R4	CR4	6	
46	V/BL	T5	MM1	6	45
21	BL/V	R5	M1	6	
47	V/OL	T6	MM2	6	46
22	O/V	R6	M2	6	

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION

J2 (continued)

48	V/G	T7	MM3	6	47
23	G/V	R7	M3	6	
49	V/BR	T8	MM4	6	48
24	BR/V	R8	M4	6	
50	V/S	–	–	NOT USED	–
25	S/V	–	–	NOT USED	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION (Continued)

PIN	COLOR	LEAD DESIGNA-TION (LINE)	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
J3					
26	W/BL	T1	CT1	7	49
01	BL/W	R1	CR1	7	
27	W/O	T2	CT2	7	50
02	O/W	R2	CR2	7	
28	W/G	• T3	CT3	7	51
03	G/W	R3	CR3	7	
29	W/BR	T4	CT4	7	52
04	BR/W	R4	CR4	7	
30	W/S	T5	MM1	7	53
05	S/W	R5	M1	7	
31	R/BL	T6	MM2	7	54
06	BL/R	R6	M2	7	
32	R/O	T7	MM3	7	55
07	O/R	R7	M3	7	
33	R/G	T8	MM4	7	56
08	G/R	R8	M4	7	
34	R/BR	T1	CT1	8	57
09	BR/R	R1	CR1	8	
35	R/S	T2	CT2	8	58
10	S/R	R2	CR2	8	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION
J3 (continued)

36	BK/BL	T3	CT3	8	59
11	BL/BK	R3	CR3	8	
37	BK/O	T4	CT4	8	60
12	O/BK	R4	CR4	8	
38	BK/GK	T5	MM1	8	61
13	G/BK	R5	M1	8	
39	BK/BR	T6	MM2	8	62
14	BR/BK	R6	M2	8	
40	BK/S	T7	MM3	8	63
15	S/BK	R7	M3	8	
41	Y/BL	T8	MM4	8	64
16	BL/YK	R8	M4	8	
42	Y/O	T1	CT1	9	65
17	O/Y	R1	CR1	9	
43	Y/G	T2	CT2	9	66
18	G/Y	R2	CR2	9	
44	Y/BR	T3	CT3	9	67
19	BR/Y	R3	CR3	9	
45	Y/S	T4	CT4	9	68
20	S/Y	R4	CR4	9	
46	V/BL	T5	MM1	9	69
21	BL/V	R5	M1	9	
47	V/OL	T6	MM2	9	70
22	O/V	R6	M2	9	

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION
J3 (continued)

48	V/G	T7	MM3	9	71
23	G/V	R7	M3	9	
49	V/BR	T8	MM4	9	72
24	BR/V	R8	M4	3	
50	V/S	—	—	NOT USED	—
25	S/V	—	—	NOT USED	—

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION (Continued)

				J4	
PIN	COLOR	LEAD DESIGNA-TION (LINE)	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	T1	CT1	10	73
01	BL/W	R1	CR1	10	
27	W/O	T2	CT2	10	74
02	O/W	R2	CR2	10	
28	W/G	T3	CT3	10	75
03	G/W	R3	CR3	10	
29	W/BR	T4	CT4	10	76
04	BR/W	R4	CR4	10	
30	W/S	T5	MM1	10	77
05	S/W	R5	M1	10	
31	R/BL	T6	MM2	10	78
06	BL/R	R6	M2	10	
32	R/O	T7	MM3	10	79
07	O/R	R7	M3	10	
33	R/G	T8	MM4	10	80
08	G/R	R8	M4	10	
34	R/BR	T1	CT1	11	81
09	BR/R	R1	CR1	11	
35	R/S	T2	CT2	11	82
10	S/R	R2	CR2	11	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION
J4 (continued)

36	BK/BL	T3	CT3	11	83
11	BL/BK	R3	CR3	11	
37	BK/O	T4	CT4	11	84
12	O/BK	R4	CR4	11	
38	BK/GK	T5	MM1	11	85
13	G/BK	R5	M1	11	
39	BK/BR	T6	MM2	11	86
14	BR/BK	R6	M2	11	
40	BK/S	T7	MM3	11	87
15	S/BK	R7	M3	11	
41	Y/BL	T8	MM4	11	88
16	BL/YK	R8	M4	11	
42	Y/O	T1	CT1	12	89
17	O/Y	R1	CR1	12	
43	Y/G	T2	CT2	12	90
18	G/Y	R2	CR2	12	
44	Y/BR	T3	CT3	12	91
19	BR/Y	R3	CR3	12	
45	Y/S	T4	CT4	12	92
20	S/Y	R4	CR4	12	
46	V/BL	T5	MM1	12	93
21	BL/V	R5	M1	12	
47	V/OL	T6	MM2	12	94
22	O/V	R6	M2	12	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION

J4 (continued)

48	V/G	T7	MM3	12	95
23	G/V	R7	M3	12	
49	V/BR	T8	MM4	12	96
24	BR/V	R8	M4	12	
50	V/S	—	—	NOT USED	—
25	S/V	—	—	NOT USED	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION (Continued)

| | | | | | J5 | | | | |
PIN	COLOR	LEAD DESIGNA-TION (LINE)	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	T1	CT1	13	97
01	BL/W	R1	CR1	13	
27	W/O	T2	CT2	13	98
02	O/W	R2	CR2	13	
28	W/G	T3	CT3	13	99
03	G/W	R3	CR3	13	
29	W/BR	T4	CT4	13	100
04	BR/W	R4	CR4	13	
30	W/S	T5	MM1	13	101
05	S/W	R5	M1	13	
31	R/BL	T6	MM2	13	102
06	BL/R	R6	M2	13	
32	R/O	T7	MM3	13	103
07	O/R	R7	M3	13	
33	R/G	T8	MM4	13	104
08	G/R	R8	M4	13	
34	R/BR	T1	CT1	14	105
09	BR/R	R1	CR1	14	
35	R/S	T2	CT2	14	106
10	S/R	R2	CR2	14	

Figure 6-3. TIP AND RING PABX CABLE DESIGNATION
J5 (continued)

36	BK/BL	T3	CT3	14	107
11	BL/BK	R3	CR3	14	
37	BK/O	T4	CT4	14	108
12	O/BK	R4	CR4	14	
38	BK/GK	T5	MM1	14	109
13	G/BK	R5	M1	14	
39	BK/BR	T6	MM2	14	110
14	BR/BK	R6	M2	14	
40	BK/S	T7	MM3	14	111
15	S/BK	R7	M3	14	
41	Y/BL	T8	MM4	14	112
16	BL/YK	R8	M4	14	
42	Y/O	T1	CT1	15	113
17	O/Y	R1	CR1	15	
43	Y/G	T2	CT2	15	114
18	G/Y	R2	CR2	15	
44	Y/BR	T3	CT3	15	115
19	BR/Y	R3	CR3	15	
45	Y/S	T4	CT4	15	116
20	S/Y	R4	CR4	15	
46	V/BL	T5	MM1	15	117
21	BL/V	R5	M1	15	
47	V/OL	T6	MM2	15	118
22	O/V	R6	M2	15	

Figure 6-3.   TIF AND RING PABX CABLE DESIGNATION

J5 (continued)

48	V/G	T7	MM3	15	119
23	G/V	R7	M3	15	
49	V/BR	T8	MM4	15	120
24	BR/V	R8	M4	15	
50	V/S	−	−	NOT USED	−
25	S/V	−	−	NOT USED	−

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION (Continued)

PIN	COLOR	LEAD DESIGNATION (LINE)	LEAD DESIGNATION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	T1	CT1	16	121
01	BL/W	R1	CR1	16	
27	W/O	T2	CT2	16	122
02	O/W	R2	CR2	16	
28	W/G	T3	CT3	16	123
03	G/W	R3	CR3	16	
29	W/BR	T4	CT4	16	124
04	BR/W	R4	CR4	16	
30	W/S	T5	MM1	16	125
05	S/W	R5	M1	16	
31	R/BL	T6	MM2	16	126
06	BL/R	R6	M2	16	
32	R/O	T7	MM3	16	127
07	O/R	R7	M3	16	
33	R/G	T8	MM4	16	128
08	G/R	R8	M4	16	
34	R/BR	–	–	NOT USED	–
09	BR/R			NOT USED	
35	R/S	–	–	NOT USED	–
10	S/R			NOT USED	

J6

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Figure 6-3. TIP AND RING PABX CABLE DESIGNATION
J6 (continued)

36	BK/BL			NOT USED	
11	BL/BK			NOT USED	
37	BK/O			NOT USED	
12	O/BK			NOT USED	
38	BK/GK			NOT USED	
13	G/BK			NOT USED	
39	BK/BR			NOT USED	
14	BR/BK			NOT USED	
40	BK/S			NOT USED	
15	S/BK			NOT USED	
41	Y/BL			NOT USED	
16	BL/YK			NOT USED	
42	Y/O			NOT USED	
17	O/Y			NOT USED	
43	Y/G			NOT USED	
18	G/Y			NOT USED	
44	Y/BR			NOT USED	
19	BR/Y			NOT USED	
45	Y/S	T LINE CARD	PWR/FAIL		
20	S/Y	R LINE CARD	PWR/FAIL		
46	V/BL				
21	BL/V				
47	V/OL	T STATION	PWR/FAIL		
22	O/V	R STATION	PWR/FAIL		

Figure 6-3.   TIP AND RING PABX CABLE DESIGNATION

J6 (continued)

48	V/G	T TRUNK CARD	PWR/FAIL			
23	G/V	R TRUNK CARD	PWR/FAIL			
49	V/BR					
24	BR/V					
50	V/S	T CO TRUNK	PWR/FAIL			
25	S/V	R CO TRUNK	PWR/FAIL			

Figure 6-3A. ATTENDANT CONSOLE CABLE DESIGNATION

PIN	COLOR	LEAD DESIGNA-TION (LINE)	SLOT POSITION
| J7			
26	W/BL	-BATT	16
01	BL/W	GND3	16
27	W/O	-BATT	16
02	O/W	GND3	16
28	W/G	-BATT	16
03	G/W	GND3	16
29	W/BR	-BATT	15
04	BR/W	GND3	15
30	W/S	-BATT	15
05	S/W	GND3	15
31	R/BL	-BATT	15
06	BL/R	GND3	15
32	R/O	-BATT	14
07	O/R	GND3	14
33	R/G	-BATT	14
08	G/R	GND3	14
34	R/BR	-BATT	14
09	BR/R	GND3	14
35	R/S	RING 1	1
10	S/R	TIP 1	1

Figure 6-3A. ATTENDANT CONSOLE CABLE DESIGNATION
J7 (continued)

36	BK/BL	RING 2	1
11	BL/BK	TIP 2	1
37	BK/O	RING 3	1
12	O/BK	TIP 3	1
38	BK/GK	XS1 RTN	19
13	G/BK	XS1	19
39	BK/BR	RS1 RTN	19
14	BR/BK	RS1	19
40	BK/S	CTS2 RTN	19
15	S/BK	CTS2	19
41	Y/BL	EARTH GND	26
16	BL/YK		
42	Y/O	MUSIC IN	17
17	O/Y	MUSIC	17
43	Y/G	CTS B	19
18	G/Y	CTS B RTN	20
44	Y/BR	RTS B	19
19	BR/Y	RTS B RTN	20
45	Y/S	RS DAT B1	19
20	S/Y	RS DAT B1 RTN	19
46	V/BL	TS DAT B1	19
21	BL/V	TS DAT B1 RTN	19

Figure 6-3A. ATTENDANT CONSOLE CABLE DESIGNATION

J7 (continued)

47	V/OL	RS DAT B2	19
22	O/V	RS DAT B2 RTN	19
48	V/G	TS DAT B2	19
23	G/V	TS DAT B2 RTN	19
49	V/BR	RS DAT A2	19
24	BR/V	RS DAT A2 RTN	19
50	V/S	TS DAT A2	19
25	S/V	TS DAT A2 RTN	19

Figure 6-3B. INTERFACE CONNECTOR   J8

PIN	COLOR	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	SB1	11	81
01	BL/W	SG1	11	
27	W/O	SB2	11	82
02	O/W	SG2	11	
28	W/G	SB3	11	83
03	G/W	SG3	11	
29	W/BR	SB4	11	84
04	BR/W	SG4	11	
30	W/S	SB1	12	85
05	S/W	SG1	12	
31	R/BL	SB2	12	86
06	BL/R	SG2	12	
32	R/O	SB3	12	87
07	O/R	SG3	12	
33	R/G	SB4	12	88
08	G/R	SG4	12	
34	R/BR	SB1	13	89
09	BR/R	SG1	13	
35	R/S	SB2	13	90
10	S/R	SG2	13	

Figure 6-3B.   INTERFACE CONNECTOR
J8 (Continued)

36	BK/BL	SB3	13	91
11	BL/BK	SG3	13	
37	BK/O	SB4	13	92
12	O/BK	SG4	13	
38	BK/GK	SB1	14	93
13	G/BK	SG1	14	
39	BK/BR	• SB2	14	94
14	BR/BK	SG2	14	
40	BK/S	SB3	14	95
15	S/BK	SG3	14	
41	Y/BL	SB4	14	96
16	BL/YK	SG4	14	
42	Y/O	SB1	15	97
17	O/Y	SG1	15	
43	Y/G	SB2	15	98
18	G/Y	SG2	15	
44	Y/BR	SB3	15	99
19	BR/Y	SG3	15	
45	Y/S	SB4	15	100
20	S/Y	SG4	15	
46	V/BL	SB1	16	101
21	BL/V	SG1	16	
47	V/OL	SB2	16	102
22	O/V	SG2	16	

Figure 6-3B. INTERFACE CONNECTOR
J8 (continued)

48	V/G	SB3	16	103
23	G/V	SG3	16	
49	V/BR	SB4	16	104
24	BR/V	SG4	16	
50	V/S			
25	S/V			

Figure 6-3B (Continued). INTERFACE CONNECTOR J9

			J9		
PIN	COLOR	LEAD DESIGNA-TION (LINE)	LEAD DESIGNA-TION (C.O)	SLOT POSITION	PORT EQUIP. NO.
26	W/BL	-48V		11	ALL
01	BL/W		-48V	16	ALL

Figure 6-3B(Continued).   INTERFACE CONNECTOR P2
(INTERCABINET CABLE CONNECTOR)

FROM/ TO	P2 SIGNAL	PIN NUMBER
	MCNTR-	J22-5
	MCNTR+	J22-6
	CLR-	J22-7
	CLR+	J22-8
	ADDA 3	J22-13
	ADDA 5	J22-15
	ADDA 4	J22-16
	ADDA 6	J22-18
	ADDB 4	J22-21
	ADDB 3	J22-22
	ADDB 6	J22-23
	ADDB 5	J22-24
	EQUENB	J22-25
	EQUENA	J22-26
	DATA 0-	J22-27
	DATA 0+	J22-28
	CLK 0-	J22-29
	CLK 0+	J22-30
	DATA 1-	J22-31
	DATA 1+	J22-32
	CLK 1-	J22-33
	CLK 1+	J22-34
	DATA 2-	J22-35
	DATA 2+	J22-36
	CLK 2-	J22-37
	CLK 2+	J22-38
	DATA 3-	J22-39
	DATA 3+	J22-40
	CLK 3-	J22-41
	CLK 3+	J22-42
	GND	J22-43
	GND	J22-44
	IFB 1	J22-45
	IFB 0	J22-48
	IFB 3	J22-47
	IFB 2	J22-50
	IFB 5	J22-49
	IFB 7	J22-51
	IFB 4	J22-52
	IFB 6	J22-54
	BUSY 1	J22-53
	BUSY 3	J22-55
	BUSY 0	J22-56

Figure 6-3B (Continued).   INTERFACE CONNECTOR P2
(INTERCABINET CABLE CONNECTOR)

```
---------------------------------------------
|           | BUSY 2          | J22-58      |
|           | INTENBL         | J22-89      |
|           | OUT             |             |
|           | BSW 0           | J22-90      |
|           | BSW 1           | J22-96      |
|           | BSW 2           | J22-102     |
|           | BSW 3           | J22-106     |
|           | SYNC            | J22-105     |
|           |                 |             |
---------------------------------------------
```

Figure 6-4. SINGLE CABINET, MULTI-CONSOLE PABX
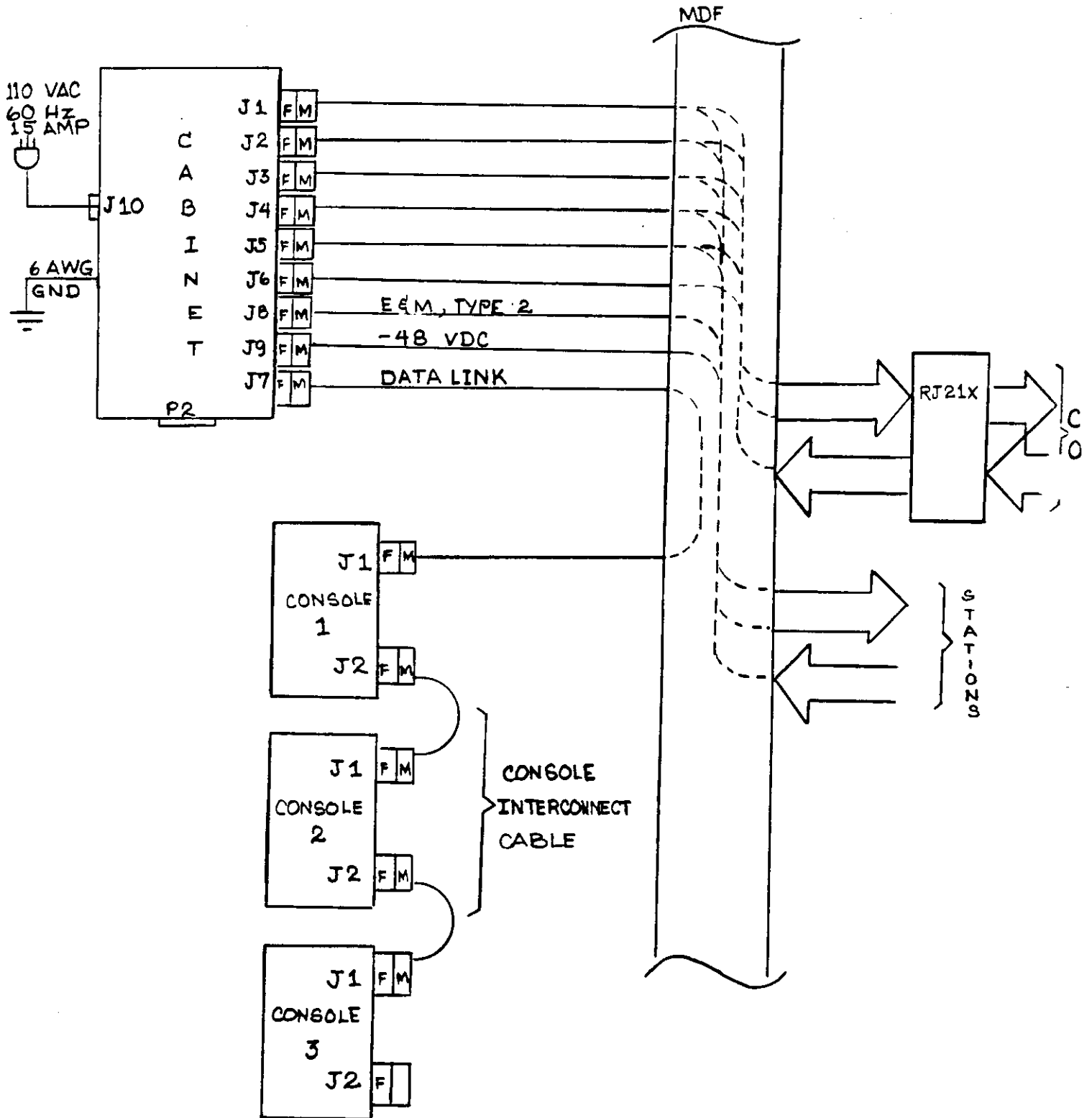
Figure 6-5. POWER FAIL CUT-THROUGH

POWER FAIL CUT THRU BLOCK DIAGRAM

A
C

CO TRUNK

B

C

D

TRUNK CARD

PABX

LINE CARD

E

F

G

STATION RING

H

I

J
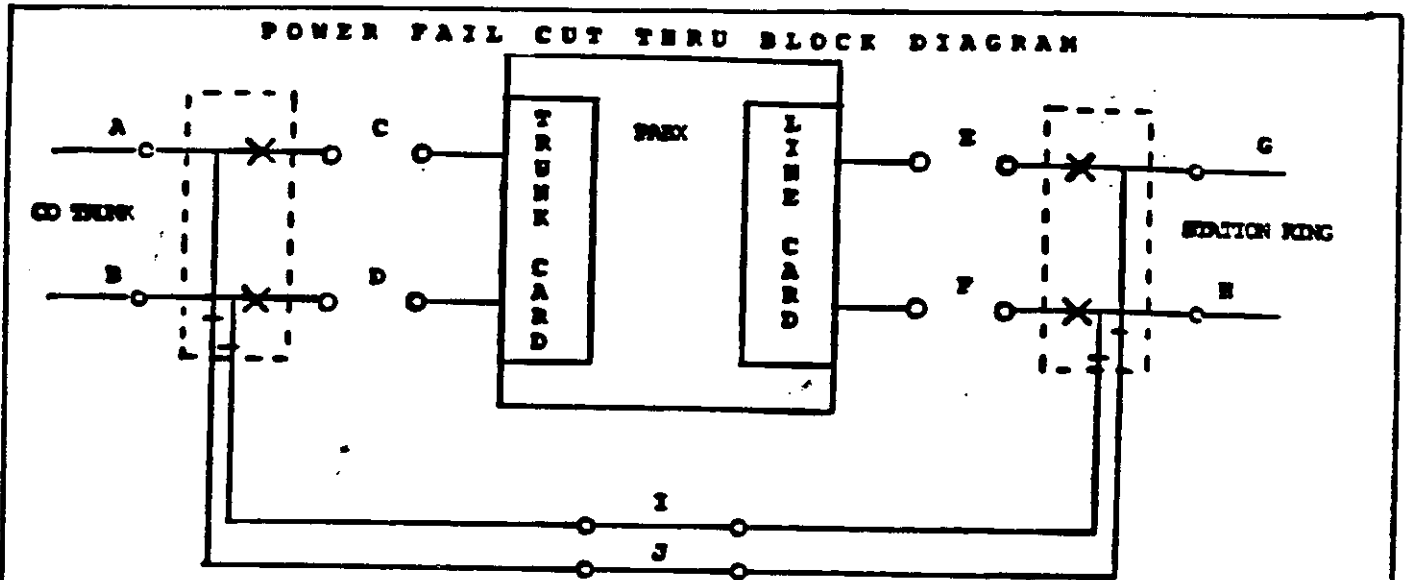
* NOTE
X - POWER ON
- - POWER OFF

JUMPER	FROM	TO
A	T CO TRUNK	J6 PIN 50
B	R CO TRUNK	J6 PIN 25
C	T TRUNK CARD	J6 PIN 48
D	R TRUNK CARD	J6 PIN 23
E	T LINE CARD	J6 PIN 45
F	R LINE CARD	J6 PIN 20
G	T STATION	J6 PIN 47
H	R STATION	J6 PIN 22
I	J6 PIN 46	J6 PIN 49
J	J6 PIN 21	J6 PIN 24

J-6

45
47
46

48
50
49

20
22
21

23
25
24
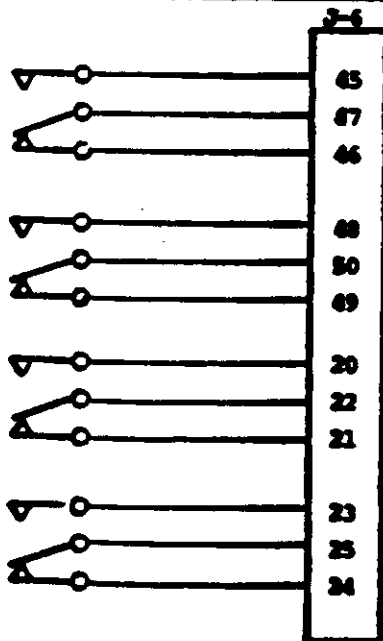
FOUR EXTERNAL CIRCUITS CAN BE USED BY USING CONTACT CLOSURES
CONNECTED TO CABLE J-6.

EXTERNAL POWER FAILURE CUT THRU

7.   INITIALIZATION AND CUT-OVER

7.01 The Prodigy PABX has continuous self-diagnostics. Before
     cutover, the system line, trunk, and feature assignments
must be entered into the configuration program by the installer.

Feature integration is accomplished by PROM modules containing
the parameters for each feature. The PROM modules are inserted
into the Prodigy programmer board.

The Prodigy Programmer comes standard with the PROM modules
containing the parameters for all the available features.

The Programmer unit, is inserted into the configuration card slot
located at the rear of the PABX cabinet. The configuration
card itself is inserted piggy back onto the programmer board.

The Programmer unit is removed after programming is completed.
The configuration card is then inserted into the configuration
card slot. Refer to the System Configuration Manual for details
and instructions regarding the use of the Programmer and the
programming procedures.

7.03 Initialization. Connect the power cord to a customer-
furnished, 110 Vac, 15 amp, 60 Hz, local power
source. The Prodigy PABX must be connected to a circuit breaker
completely independent of any electrical equipment. Ericsson
also recommends that ac surge protection be furnished by the end-
user.

        NOTE: All power supply voltages have been factory-adjusted
               and require no further adjustments.

The self-diagnostics sequence is automatically performed when
power is applied to the PABX:

    . Red LEDs on the line and trunk PCBs light up.
    . Minor and major alarm LEDs located on the Processor PCB
       flash ON and OFF during self-diagnostics.
    . Minor alarm LEDs stay ON for approximately 1/2 second.
    . Green LEDs on the CPU, DTMF and Memory Extension boards
       remain ON when a test has been successfully completed.

If the alarm LED remains ON for three seconds or more, it
signifies that a failure has occurred. Depending on the test,
the alarm LED that remains OFF for up to five seconds should not
be interpreted as signifying a failure.

The LEDs on the line and trunk PCBs go out as each level of test is performed in the PABX. Refer to Table 7-1 for test sequencing.

When initialization has been completed, only the green power and clock LEDs on the Processor PCB and the green LED on the Memory Expansion board (if DTMF equipped) are illuminated. If any other LED is lit, it signifies the existence of an off-hook or alarm condition. Refer to the System Maintenance Manual (7700-SM) if a failure occurs.

> NOTE: The Prodigy PABX self-diagnostic testing takes approximately 30 seconds.

7.04 <u>Attendant Console.</u> The attendant console, when put on-line, automatically interrogates the system at regular intervals, until all software is loaded. At this point, the console becomes functional.

Perform the following before placing the console on-line:

. Position the Mode switch to DAY.

Connect console interface cable and verify the following:

a. Power indicator is lit.

b. Alphanumeric display indicates STANDBY. While the console is in the STANDBY mode (approximately 45 seconds), it loads the configuration data from the PABX into the console software tables.

After the software tables are loaded, verify the following:

a. Power indicator remains lit.

b. Alphanumeric display shows date and time of day.

c. DAY indicator is lit.

Perform the following tests after verifying the items listed above:
a. LAMP TEST

1. Press the LAMP TEST key to verify the following:

. All LED segments of the alphanumeric display are lit
. Sound signal is audible.

2. Press the LAMP TEST key again and verify:

    . All LEDs are OFF
    . Alarms are OFF.

b. MODE SWITCH TEST

    1. Set MODE switch to SERVICE and verify that the
        SERVICE indicator is lit.

    2. Set MODE switch to NIGHT. Verify that the SERVICE
        indicator is OFF and the NIGHT indicator is ON.

    3. Set the MODE switch to DAY. Verify the following:

        . NIGHT indicator is OFF.
        . DAY indicator is lit.

    4. Press POS BUS key. Verify the following:

        . POS BUSY indicator is lit.
        . DAY indicator is lit.

    5. Press POS BUSY key and verify the following:

        . POS BUSY indicator is OFF.
        . DAY mode indicator is lit.

    6. Press ANSW key and verify that the ??? indicator
        is lit.

    7. If console is equipped with DSS, press any one of
        the Hundreds Group key and verify the following:

        . Associated group indicator is lit.
        . The ??? is OFF.

Table 7-1.   CUT-OVER SELF-TEST SEQUENCE

TEST LEVEL	LED STATUS	TYPE OF TEST
1	First (top) LED of each line and trunk PCB will all extinguish simultaneously.	Tests line and configuration.
2	Second LED of each line and trunk PCB will extinguish one at a time.	Functionally tests system transmission.
3	Remaining LEDs of each line and trunk PCB will all extinguish simultaneously.	During "start-up" serves no functional tests, but in normal a steady ON light (on a line or trunk card) indicates an off-hook condition; a continuous flashing light indicates a malfunction.

8.   SYSTEM CONFIGURATION

8.01 <u>System Configuration Procedures.</u>   The Prodigy system is
      configured by using the Attendant Console as an interactive
terminal.   Two keyboard overlays which reassign the console keys
are   shipped   with   each   system.   System   configuration   is
accomplished   by   completing the programming forms and   inputting
the data via the Attendant Console.

Use the Customer Data Management System (CDMS) to configure the
system.   The   CDMS implemented by the Prodigy Programmer   which,
with the Configuration card plugged into it, is inserted in J23
at the back of the equipment cabinet.

The   CMDS works in conjunction with the Attendant   Console.   The
console   works   as   an   interactive terminal when   placed   in   the
Service Mode.

When   programming is completed,   the commands are transferred   to
the   PROMS   in the Prodigy cabinet until the   next   configuration
change is needed.   When this occurs,   the entire program is then
re-entered, to assure programming accuracy.

The   field   engineer must be properly certified by   the   Ericsson
Communications Prodigy Training School.

Refer to Section 2, Prodigy Installation Guide, Procedures 'i.'
through 'ii' of this manual for the configuration procedures.

8.02 <u>Programming</u>. A copy of the programming/configuration manual
     is included in the job folder. The commands must be checked
by the installer as part of system installation. The program is
ready for use if all commands are correct.

If   the commands displayed on the Attendant Console do not   agree
with the program sheets, re-program on-site.

If re-programming on-site, carefully enter the commands from the
programming   sheets,   using   the   Programming Manual as guide.

If calling Ericsson Communications for assistance, call the Garden
Grove office:(714) 895-3962,Field Service Department. Information
regarding the problem encountered, how and when a new program will
be sent to the installation site, will be provided.

9. SYSTEM PERFORMANCE TESTS

9.01 This section contains procedures which provide verification of each aspect of the sytem. It also provides procedures for station operation, console operation and trunk operation.

A check list is provided in order to assure test validation and fault isolation.

Turn system power off before performing any wiring changes that may be needed.

Ensure that Tip & Ring on all lines are terminated at the MDF, and trunk lines are connected before performing the following tests.

Equipment required to perform these tests are:

a. Three telephone sets (STA 1, STA 2, and STA 3)
  - One connected to the Station Line (extension)
  - One connected to the Night Answer
  - One connected to the Position Busy Assignment
  - STA 1 must have a rotary dial
  - STA 2 can be either touch tone or rotary dial
  - STA 3 must have a touch tone pad and a Message Waiting Lamp

b. Attendant Console(s)

Label each telephone set with both directory and station numbers.

Perform the tests in the order shown. The sequence was designed to check maximum capability with minimum testing.

Omit tests for which a feature is not provided.

NOTE: Whenever possible, the console should be located at the PABX (temporarily) during testing. This will reduce the required personnel to one (1) person. If a failure is noted during the tests, check cable runs to the MDF and console. Also check strapping and seating of PCBs. Repeat the tests. If failure reoccurs, consult the maintenance practice for corrective action.

As stated in Section 4, initialization is a function of the PABX unit and the attendant console. This is a completely automatic function. However, prior to applying power, all prerequisites must be followed and the console mode switch must be set in the DAY position.

The following tests are monitored first from the PABX unit and then from the console.

9.02 TEST PROCEDURES
STATION OPERATION:

Dial Tone
1. Lift the receiver on STA 3.
   a. Verify dial tone is present at STA 3. ____
   b. Verify the busy LED on the PABX) for STA 3 is on. ____
2. Hang up STA 3.
   a. Verify the busy LED for STA 3 is off. ____
3. Lift the receiver on STA 3 and leave off for 30 seconds (or as programmed).
   - Verify howler tone is received. ____
4. Keep off hook for an additional 15 seconds.
   - Lock out condition will exist. ____
   - Verify that ringback tone is received. ____
5. Hang up STA 3 and then lift the receiver.
   - Verify that dial tone is present. ____

DTMF Dialing:
1. From STA 3 dial STA 1.
   - Verify ringback received at STA 3. ____
   - Verify ringing at STA 1. ____
2. Hang up STA 3.
   - Verify the busy LED for STA 3 is off. ____
   - Verify STA 1 no longer rings. ____
3. From STA 3, dial STA 1.
   - Answer STA 1 and confirm talking. ____
4. Hang up STA 3.

Rotary Dialing:
1. From STA 1 dial STA 3.
   - Verify STA 3 is ringing. ____
   - Answer STA 3 and confirm talking. ____
2. Hang up STA 3.
   - Verify STA 1 has dial tone. ____

Busy Station Dialed:
1. From STA 1 dial STA 2.
   - Answer STA 2 and verify talking. ____

2. From STA 3 dial STA 2.
   * Verify busy tone received. _____
3. Hang up STA 1, STA 2, and STA 3. _____

Switchhook Hold (Depress/Release Switch-hook not more than 1½ seconds):

1. From STA 1, dial STA 2
   * Answer STA 2 and confirm talking. _____
2. Switchhook from STA 1.
   * Verify recall dial tone on STA 1. _____
   * Verify hold on STA 2. _____

Three-Party Conference:

1. From STA 1 dial STA 3.
   * Answer STA 3 and confirm talking with STA 1. _____
2. Switchhook from STA 1.
   * Confirm 3-party conference between stations 1, 2, and 3. _____
3. Hang up STA 1.
   * Verify STA 2 and STA 3 are talking. _____
4. Switchhook STA 2, dial STA 1, and answer STA 1.
   * Verify STA 1, STA 2, and STA 3 are talking. _____

Call Transfer, Calling:

1. Hang up STA 2.
2. Switchhook from STA 1.
3. From STA 1 dial STA 2 (but don't answer it).
   Hang up STA 1.
   a. Verify STA 3 has ringback. _____
   b. Verify STA 2 is ringing. _____
   c. Answer STA 2 and confirm talking to STA 3. _____
4. Hang up Stations 2 and 3.

Station Hold:

a. From STA 1 dial STA 2 and answer STA 2.
b. Switchhook STA 1, dial STA 3 and answer STA 3.
c. Switchhook STA 1.
   * Verify STA 1, STA 2, and STA 3 are talking. _____

d. Switchhook STA 1 and dial (customer assigned) hold access code.
   * Verify STA 2 and STA 3 are talking. _____
   * Verify STA 1 has dial tone present. _____
e. From STA 1 dial (customer assigned) hold access code.
   * Verify STA 1, STA 2, and STA 3 are talking. _____
f. Switchhook STA 1 and dial (customer assigned) alternate hold access code.
   * Verify STA 2 and STA 3 are talking. _____
   * Verify STA 1 has dial tone present. _____
g. From STA 1 dial (customer assigned) second alternate hold access code.
   * Verify STA 1, STA 2, and STA 3 are talking. _____
h. Switchhook STA 1 and dial (customer assigned) third alternate hold access code.
   * Verify STA 2 and STA 3 are talking. _____
   * Verify STA 1 has dial tone present. _____
9. From STA 1 dial (customer assigned) third alternate hold access code.
   * Verify STA 1, STA 2, and STA 3 are talking. _____
10. Hang up stations 1, 2, and 3.

Message Waiting:

1. From STA 1 dial assigned access code.
   * Verify STA 1 has dial tone. _____
2. From STA 1 dial STA 3.
   a. Message Waiting lamp on STA 3 is flashing. _____
   b. Verify STA 1 has confirmation tone present. _____
3. Lift the receiver on STA 2, dial 32, and dial STA 3.
   a. Message Waiting lamp on STA 3 is off. _____
   b. Verify STA 2 has confirmation tone present. _____

9.03 ATTENDANT CONSOLE OPERATION:
The test procedures for the attendant console are with respect to a fully configured unit. This includes an alphanumeric display, direct station select LEDs and switches.

Night Answer Call Tests:

1. Set console's mode switch to the NIGHT position.
   Lift the receiver at STA 1 and wait 60 seconds.
   a. Verify STA 1 has ringback present. _____
   b. Verify the Assigned Night Answer station is ringing. _____

2. Lift the receiver at the Assigned Night Answer station.
   • Verify STA 1 and Night Answer station are talking. _____

Console To Station Call Tests:

1. Depress SNDR key.
   • Verify dial tone is heard on console's receiver. _____

2. Depress directory number for STA 3 on console's key pad.
   a. Each digit is displayed as the keys are depressed. _____
   b. STA 3 class of service digit is displayed. _____
   c. STA 3 is ringing. _____
   d. Console's receiver has ringback present. _____
   e. STA 3 busy LED is on. (Direct Station Select lamp) _____

3. Depress the CNCL key.
   a. Verify the display is blank. _____
   b. STA 3 stops ringing. _____
   c. STA 3 busy LED is off. _____

4. Depress TALK EXT keyswitch.
   a. STA 1 class and extension number is displayed. _____
   b. STA 1 is ringing. _____
   c. Console has ringback present. _____
   d. STA 1 busy LED is on. _____
   e. TALK EXT LED is on. _____

5. Depress CNCL keyswitch.
   • Verify console lights are off. _____

6. Depress STA 3 DSS touch switch
   a. STA 3 class and extension is displayed. _____
   b. STA 3 is ringing. _____
   c. Console has ringback. _____
   d. STA 3 busy LED is on. _____
   e. TALK EXT LED is on. _____

7. Depress CNCL keyswitch.
   • Verify console lights are off. _____

8. From console, dial STA 2 and answer STA 2.
   • Verify console and STA 2 are talking. _____

9. Hang up STA 2.
   • Verify console has dial tone. _____

10. Depress CNCL keyswitch.
    • Verify console no longer has dial tone. _____

Console Transfer Station Tests:

1. Have the console talking to STA 3, then depress SNDR.
   a. Verify console has recall dial tone present. _____
   b. TALK EXT is flashing and TALK CITY LED is on. _____
   c. STA 3 is on hold. _____
   d. STA 3 busy LED is flashing. _____

2. Dial STA 1 from the console key pad.
   a. Verify STA 1 class and extension is displayed on left side. _____
   b. STA 1 is ringing. _____
   c. Verify ringback is heard in the console's receiver. _____

3. Lift the receiver on STA 1.
   a. Verify STA 1 and console are talking. _____
   b. STA 1 busy LED is on. _____
   c. TALK CITY LED is on. _____
   d. Verify STA 1 and STA 3 are talking. _____

4. Hang up STA 1, and STA 3. Depress SNDR, dial STA 1, answer STA 1. Depress STA 3 3 DSS key.
   a. Verify STA 3 is ringing. _____
   b. Console is blank. _____
   c. STA 1 has ringback. _____

5. Answer STA 3.
   • Verify STA 1 and STA 3 are talking. _____

6. Hang up STA 1 and STA 3.

Console Conference Tests:

1. Have console talking to STA 3.
Depress SNDR, and dial STA. 1
Lift the receiver on STA 1.
   - Verify console and STA 1
     are talking. _____

2. Depress BOTH TALK
keyswitch
   a. Verify 3-party conference
      between STA 1, STA 3 and
      console. _____
   b. TALK CITY and TALK
      EXT LEDs are both on. _____
   c. Class and extensions are
      displayed for both station 1
      and 3. _____
   d. Both busy LEDs are on for
      STA 1 and STA 3. _____

3. Depress CNCL, and hang up
STA 1 and STA 3.

Exclusive Talk Tests:

1. Depress SNDR, dial STA 1 and
answer STA 1. Depress SNDR,
dial STA 3, answer STA 3.
Depress BOTH TALK and then
TALK EXT keyswitch.
   a. Verify TALK CITY LED
      and STA 3's busy LED
      flashes. _____
   b. Verify STA 1 and console
      are talking. _____
   c. Class and extension number
      for STA 1 is displayed on
      right side of display. _____

2. Depress TALK CITY keyswitch.
   a. Verify TALK EXT LED and
      STA 1's busy LED flashes. _____
   b. TALK CITY LED is on. _____
   c. Verify STA 3 and console
      are talking. _____
   d. Class and extension for
      STA 3 is displayed on left
      side. _____

3. Depress BOTH TALK keyswitch
   a. Verify 3-party conference
      between console, STA 1 and
      STA 3. _____
   b. TALK CITY and TALK
      EXT are both on. _____

c. Class and extensions are
   displayed for both STA 1
   and STA 3. _____

9.04 CONSOLE QUEUE TESTS

Lockout Tests:

1. Lift the receiver on STA 1 and
wait 60 seconds.
   a. Verify STA 1 busy LED
      is on. _____
   b. LOCKOUT LED is flashing. _____
   c. Console is ringing. _____
   d. STA 1 has ringback tone
      present. _____

2. Depress LOCKOUT
keyswitch.
   a. LOCKOUT LED is on
      momentarily. _____
   b. TALK EXT LED is on. _____
   c. Verify STA 1 and console
      are talking. _____
   d. Class and extension for
      STA 1 are displayed. _____

3. Hang up STA 1.
   a. TALK EXT LED is off. _____
   b. Console display is blank. _____

Operator Call Tests:

1. Take STA 3 off hook and
dial "0".
   a. OPER LED is flashing. _____
   b. Console is ringing. _____
   c. Station's busy LED
      flashes. _____
   d. STA 3 has ringback present. _____

2. Depress OPER keyswitch.
   a. Verify console and
      STA 3 are talking. _____
   b. OPER LED is on
      momentarily. _____
   c. Console stops ringing. _____
   d. STA 3 class and extension
      number is displayed. _____
   e. TALK EXT LED is on. _____
   f. STA 3 busy LED is on. _____

3. Hang up STA 3.
   a. Verify OPER LED is
      off. _____
   b. The display is blank. _____
   c. STA 3 busy LED is off. _____

Operator Recall Tests:

1. Have STA 3 talking to STA 1, then switchhook from STA 3. Have STA 3 dial "0" and then hang up.
   a. Verify OPER RCL LED is flashing. _____
   b. Console is ringing. _____
   c. OPER RCL lamp is on momentarily. _____
   d. TALK EXT LED is on. _____
   e. Verify STA 1 and the console are talking. _____
   f. Console stops ringing. _____

2. Switchhook STA 1 and dial STA 2.
   • Verify STA 1, STA 2 and console are talking. _____

3. Depress RLSE keyswitch.
   a. Verify STA 1 and STA 2 are talking. _____
   b. Console is idle. _____

4. Hang up STA 1 and STA 2.

Answer Call Tests:

1. Lift receiver on STA 3 and dial "9". Dial the telephone number for trunk line T2.
   a. Console is ringing. _____
   b. ANSW LED is flashing. _____
   c. The busy LED on the trunk card is in the ringing pattern for trunk T2. _____

2. Depress ANSW keyswitch.
   a. ANSW LED is on momentarily. _____
   b. Verify console and STA 3 are talking. _____
   c. Console stops ringing. _____
   d. TALK CITY LED is on. _____
   e. The busy LEDs for both trunks are on. _____

3. Hang up STA 3.
   a. TALK CITY LED is off. _____
   b. The busy LEDs for both trunks are off. _____

Auto Recall Tests:

1. Have STA 1 dial "9" and then the other trunk. Depress ANSW, SNDR, dial STA 2 and then depress RLSE key. Wait 30 seconds.

   a. Console is ringing. _____
   b. AUTO RCL LED is flashing. _____
   c. STA 2 is still ringing. _____

2. Depress AUTO RCL keyswitch.
   a. AUTO RCL LED is on momentarily. _____
   b. TALK CITY led is on and console stops ringing. _____
   c. STA 2 stops ringing. _____
   d. Verify STA 1 and console are talking. _____

3. Depress CNCL key and hand up STA 1.
   a. TALK CITY LED is off. _____
   b. Console is blank. _____
   c. Both trunk busy LEDs are off. _____

Intercept Tests:

1. From STA 1, dial "9" and then the other trunk. Depress ANSW and SNDR keys and dial 500.
   • Verify console has equipment busy tone. _____

2. Depress RLSE keyswitch.
   a. INCPT LED is flashing. _____
   b. Console is ringing. _____
   c. STA 1 has ringback. _____

3. Depress INCPT keyswitch.
   a. INCPT LED is on momentarily. _____
   b. TALK CITY LED is on. _____
   c. Verify STA 1 and console are talking. _____
   d. Class and extension for STA 1 trunk is displayed. _____

4. Hang up STA 1.
   • Console is blank. _____

Console Hold Tests:

1. Depress SNDR, dial STA 1, and answer STA 1. _____

2. Depress SNDR, dial STA 2, and answer STA 2. _____

3. Depress BOTH TALK keyswitch.
   a. Verify STA 1, STA 2, and console are talking. _____
   b. Class and extensions for STA 1 and STA 2 are displayed. _____

4. Depress the center HOLD keyswitch.
   a. Console's display is blank. _____
   b. Center HOLD LED is flashing. _____
   c. Verify STA 1 and STA 2 are talking. _____
   d. STA 1 and 2 Busy LEDs are flashing. _____
5. Depress the center HOLD keyswitch.
   a. Verify STA 1, STA 2, and the console are talking. _____
   b. The center HOLD LED is off. _____
   c. Class and extensions for STA 1 and STA 2 are displayed. _____
6. Depress lower HOLD keyswitch.
   a. Verify console is blank. _____
   b. Verify lower HOLD LED is flashing. _____
   c. Verify STA 2 and STA 1 are talking. _____
7. Depress lower HOLD keyswitch.
   • Verify STA 2, STA 1, and console are talking. _____
8. Depress top HOLD keyswitch.
   a. Verify STA 2 and STA 1 are talking. _____
   b. Top HOLD LED is flashing. _____
9. Depress top HOLD keyswitch.
   • Verify STA 2, STA 1, and console are talking. _____
10. Hang up STA 1 and STA 2.

Call Waiting Tests:

1. Lift the receiver at STA 1, dial STA 2, and answer STA 2.
2. Depress SNDR and dial STA 1.
   • Verify console has busy tone present. _____
3. Depress CALL WAIT keyswitch.
   a. Verify CALL WAIT LED is on momentarily. _____
   b. STA 1 hears two short beeps. _____
   c. Console still has busy tone present. _____

4. Hang up STA 2 and then STA 1.
   a. Verify STA 1 is ringing. _____
   b. Console has ringback tones present. _____
5. Lift the receiver at STA 1.
   • Verify console and STA 1 are talking. _____
6. Hang up STA 1.

Console Hold Test:

1. Depress SNDR, dial STA 1, and answer STA 1. Depress HOLD QUE keyswitch.
   a. HOLD QUE LED is flashing. _____
   b. TALK EXT LED is off. _____
   c. STA 1's busy LED is flashing. _____
   d. STA 1 has hold tone present. _____
2. Depress HOLD QUE keyswitch.
   a. TALK EXT LED is on. _____
   b. Verify console and STA 1 are talking. _____
   c. HOLD QUE LED is off. _____

Trunk Select Tests:

1. Depress TRK SEL keyswitch.
   a. Console has dial tone present. _____
   b. TALK EXT LED is on. _____
2. Dial the trunk directory number (last 4 digits)
   a. The trunk's class and directory is displayed on the left side with a flashing "T". _____
   b. Console has dial tone present. _____
   c. TALK CITY LED is on and TALK EXT LED is off. _____
3. Dial local number for "time of day".
   • Verify the time is heard. _____
4. Depress CNCL keyswitch.

Console Message Waiting Tests:

1. Depress SNDR and dial assigned access code.
   • Verify console has dial tone. _____
2. Dial STA 3.
   • Verify console has confirmation dial tone present. _____

- STA 3 message waiting
  lamp is flashing.
3. Dial STA 3.
   - Verify console has ringback. _____
   - STA 3 class and extension is
     displayed with flashing M. _____
4. Depress SDPL key with field
   select key.
   - STA 3 busy LED is flashing. _____
5. Depress CNCL and SNDR keys,
   dial assigned access code and
   then STA 3.
   - Message Waiting lamp is no
     longer flashing. _____
   - Console has confirmation
     dial tone. _____
6. Depress SNDR and dial STA 3.
   - STA 3 class and extension
     is displayed without
     flashing M. _____
7. Depress CNCL keyswitch.

9.05 AUTOMATIC ANSWERING TESTING:

The automatic ANSW tests are divided into two
groups. The first group of tests pertain to the
operation of a single console while the second group
tests the operation of two consoles operating
simultaneously. Each console must be tested in-
dividually by the first group prior to conducting
the second group of tests.

Single Console Call Distribution Tests:

1. From STA 1, dial "0".
2. Depress OPER keyswitch.
3. Depress AUTO ANSW
   keyswitch.
   - AUTO ANSW LED is on. _____
4. From STA 2, dial "0".
   a. OPER LED is flashing. _____
   b. Verify console and STA 1
      are talking. _____
5. Depress CNCL keyswitch.
   a. Console has two short beeps. _____
   b. Verify console and STA 2
      are talking. _____
   c. TALK CITY LED is on and
      OPER is off. _____
6. Hang up STA 1 and STA 2.
   - Console is blank except for
     AUTO ANSW LED. _____

7. Depress AUTO ANSW
   keyswitch.
   - AUTO ANSW LED is off. _____

Multiple Console Call Distribution Tests:

1. Depress AUTO ANSW key at
   each console.
   - AUTO ANSW LED is on at
     each console. _____
2. Lift the receiver on STA 1 and
   dial "0" for the operator.
   a. Console 1 has a short beep
      and its TALK EXT LED
      is on. _____
   b. Verify console 1 and STA 1
      are talking. _____
   c. Console 2 is idle. _____
3. From STA 2, dial "0" for the
   operator.
   a. Console 2 has a short beep
      and its TALK EXT lamp
      is on. _____
   b. Verify console 2 and STA 2
      are talking. _____
4. From STA 3, dial "0".
   - Both console's OPER LED
     is flashing. _____
5. Hang up STA 2.
   a. Console 2 has a short beep
      and TALK EXT LED is on. _____
   b. Verify Console 2 and STA 2
      are talking. _____
6. Hang up STA 1 and STA 3.
   - Both consoles are idle. _____
7. Depress the AUTO ANSW at
   both consoles.

9.06 TRUNK OPERATION:

The system under
test must be equipped with trunk driver cards
and trunk lines connected to it. The trunk lines shall
be identified as T1 and T2. The console or a station may
gain access to an outgoing trunk line (T1) by dialing
"9". In order to gain access to the other incoming
trunk line (T2), the station or console must dial its
seven digit telephone number. This will cause the
console to ring and the ANSW LED to flash.

Station To Trunk Call Tests:

1. Lift the receiver on STA 3 and
   dial "9".
   a. Verify that the trunk's dial
      tone is present. _____

b. The PABX busy LED is on for trunk T1. _____

2. Dial the telephone number for time from STA 3.
   - Verify STA 3 and the time station are talking. _____

3. Hang up STA 3.
   - The busy LED for trunk T1 is off. _____

Console To Trunk Call Tests:

1. Depress SNDR and "9" keys on the console.
   a. Verify that the trunk's dial tone is present. _____
   b. The busy LED is on for trunk T1. _____
   c. TALK CITY LED is on. _____
   d. T1's class and extension is displayed with a flashing "T". _____

2. Dial the number for time from the console's key pad.
   - Verify the console and time station are talking. _____

3. Depress CNCL keyswitch.
   a. The busy LED for trunk T1 is off. _____
   b. TALK CITY LED is off. _____
   c. Display is clear. _____

Trunk To Trunk Call Tests:

1. From another PBX's telephone, dial "9" and then the site seven-digit number.
   - ANSW LED is flashing and console is ringing. _____

2. Depress ANSW and SNDR keys and dial "9".
   a. Verify other telephone has hold tone. _____
   b. Console has the trunk's dial tone. _____
   c. Display shows the trunk's class and extension with a flashing "T" on the left side. _____

3. Depress BOTH TALK keyswitch.
   a. Verify other telephone and console are talking and both have trunk dial tone. _____

b. Display shows both trunk class and extensions with flashing "T". _____

4. Hang up the other telephone.

Trunk To No Console Answer Tests:

1. From STA 1 dial "9" and then the other trunk. Wait for 60 seconds.
   a. Verify Assigned Night Answer station is ringing. _____
   b. ANSW LED is flashing. _____
   c. UNA bell is ringing. _____

2. Depress ANSW keyswitch.
   a. UNA bell stops ringing. _____
   b. TALK CITY LED is on. _____
   c. Assigned Night Answer station stops ringing. _____
   d. STA 1 and console are talking. _____

3. Hang up STA 1 . . . lift receiver, dial "9", and then the other trunk. Wait 60 seconds and lift the receiver on the assigned answer station.
   a. Verify STA 1 and Assigned Night Answer station are talking. _____
   b. ANSW LED is off and console stops ringing. _____
   c. UNA bell stops ringing. _____

4. Hang up STA 1 and 3. . . lift STA 1 receiver, dial "9", and then the other trunk. Wait 60 seconds, lift the receiver on STA 2 and dial 33.
   a. Verify STA 1 and STA 2 are talking. _____
   b. ANSW LED is off and console stops ringing. _____
   c. UNA bell stops ringing. _____
   d. STA 3 stops ringing. _____

5. Hang up STA 1 and STA 2.

Trunk to Night Answer Tests:

1. Set console's mode switch to NIGHT mode position.

2. From STA 1 dial "9" and then the other trunk.
   a. Verify Assigned Night Answer station is ringing. _____
   b. STA 1 has ringback tone. _____
   c. ANSW LED is off. _____

3. Lift receiver on the night
   answer station.
   a. Verify STA 1 and night
      answer station are talking. _____
   b. ANSW LED is off. _____

4. Hang up STA 1 and the night
   answer station.
   Lift the receiver on STA 1, dial
   "9" and then the other trunk.
   Set the console's mode switch to
   DAY position and depress
   ANSW keyswitch.
   a. Verify STA 1 and console
      are talking. _____
   b. Night answer station stops
      ringing. _____

5. Depress CNCL keyswitch.

   Trunk To No Night Answer Tests:

1. Set console mode switch to
   NIGHT position.

2. From STA 1 dial "9" and then the
   other trunk. Wait 30 seconds.
   a. Verify Assigned Night
      Answer station is ringing. _____
   b. ANSW LED is off. _____
   c. UNA bell is ringing. _____

3. Lift the reciver on the
   Night Answer station.
   a. Verify STA 1 and Night
      Answer station are talking. _____
   b. UNA bell stops ringing. _____

4. Hang up STA 1 and the
   Night Answer station.

5. From STA 1 dial "9" and the
   other trunk. Wait 30 seconds.

6. From STA 2 dial assigned
   access code.
   a. Verify STA 1 and STA 2 are
      talking. _____
   b. UNA bell stops ringing. _____
   c. Night Answer station stops
      ringing. _____

7. Hang up STA 1 and STA 2.

8. From Night Answer station dail
   STA 2, and answer STA 2.

9. From STA 1 dial "9" and then
   the other trunk.
   a. Verify Night Answer
      station has two short beeps
      present. _____
   b. STA 1 has busy tone present. _____

10. Hang up Night Answer
    station and STA 2.
    a. Verify STA 1 has ringback. _____
    b. Night Answer station is
       ringing. _____

11. Answer Night Answer
    station.
    • Verify STA 1 and Night
      Answer station are talking. _____

12. Hang up STA 1 and Night
    Answer station.

    Trunk To Position Busy Tests:

1. Depress POS BUSY key.

2. From STA 1 dial "9" and
   then the other trunk.
   a. Verify Position Busy
      station is ringing. _____
   b. ANSW LED is flashing. _____
   c. Console is ringing. _____

3. Depress the ANSW
   keyswitch.
   a. Verify STA 1 and
      console are talking. _____
   b. ANSW LED is on
      momentarily. _____
   c. TALK CITY LED is on and
      console stops ringing. _____
   d. Position busy station stops
      ringing. _____

4. Hang up STA 1.

5. From STA 1, dial "9" and
   then the other trunk.

6. Lift the receiver on the
   Position Busy station.
   a. Verify Position busy
      station and STA 1 are
      talking. _____
   b. ANSW LED is off and
      the console stops
      ringing. _____

7. Hang up STA 1 and the
   Position Busy station.

   Trunk To Busy No Answer Tests:

1. From STA 1 dial "9", then the
   other trunk, and wait 30 seconds.
   a. ANSW LED is flashing and
      the console is ringing. _____
   b. Position Busy station is
      is ringing. _____
   c. UNA bell is ringing. _____

2. Depress the ANSW Keyswitch.
   a. Verify STA 1 and console are talking.
   b. Position Busy station stops ringing. ____
   c. UNA bell stops ringing. ____
3. Hang up STA 1.
4. From STA 1 dial "9", and then the other trunk. Wait 30 seconds and depress POS BUSY switch.
   • Verify "Standby code 99" is displayed at the console. ____
   Wait 8 seconds.
   a. Verify Display is blank. ____
   b. ANSW LED is flashing. ____
   c. Console is ringing. ____
   d. STA 1 has ringback. ____
   e. Position Busy station stops ringing. ____
   f. UNA bell continues to ring. ____
5. Depress ANSW keyswitch.
   a. Verify console and STA 1 are talking.
   b. TALK CITY LED is on. ____
   c. Trunk's class and extension is displayed. ____
6. Hang up STA 1 and depress CNCL keyswitch.

Console Transfer Trunk Call Tests:

1. Have STA 3 dial "9" and then the other trunk.
2. Depress ANSW keyswitch.
3. Depress SNDR keyswitch.
   a. Verify console has recall dial tone.
   b. TALK CITY LED flashes. ____
   c. TALK EXT LED is on. ____
   d. STA 3 has hold tone present. ____
4. Dial STA 1 from the console's key pad.
   a. Verify class and extension number for STA 1 is displayed. ____
   b. STA 1 is ringing. ____
   c. Verify console's receiver has ringback present. ____
5. Depress RLSE keyswitch.
   a. Verify STA 3 has ringback present. ____
   b. STA 1 continues to ring. ____

   c. Console display is blank. ____
   d. TALK EXT and TALK CITY LEDs are off. ____
6. Lift receiver on STA 1.
   a. Verify STA 1 and STA 3 are talking. ____
   b. STA 1 stops ringing. ____
7. Hang up STA 1.
   a. Verify STA 3 is not talking. ____
   b. Trunk busy LEDs are off. ____
8. Hang up STA 3.

Station Transfer Trunk Call Tests:

1. From STA 3 dial "9" and then the other trunk.
2. Depress ANSW, SNDR, dial STA 1, and then depress RLSE key.
3. Lift the receiver on STA 1. Switchhook STA 1.
   a. Verify recall dial tone on STA 1.
   b. Verify STA 3 has hold tone. ____
4. From STA 1 dial STA 2 and then hang up.
   a. Verify STA 3 has ringback present.
   b. STA 2 is ringing. ____
5. Lift the receiver on STA 2.
   • Verify STA 2 and STA 3 are talking. ____
6. Hang up STA 3.
   a. Verify STA 3 trunk (T1) busy LED is off. ____
   b. STA 2 trunk (T2) busy LED is off. ____
7. Hang up STA 2.

Station Transferred Trunk No Answer Tests:

1. From STA 1, dial "9", then the other trunk, and depress ANSW.
2. Depress SNDR, dial STA 2, and depress RLSE key.
3. Lift receiver on STA 2, switchhook, dial STA 3, and hang up. Wait 120 seconds.
   a. Verify Assigned Night Answer station continues to ring. ____
   b. UNA bell is ringing. ____
   c. AUTO RCL LED is flashing. ____
   d. Console continues ringing. ____

4. Lift the receiver on STA 2 and dial 33.
   a. Verify STA 1 and STA 2 are talking. _____
   b. UNA bell stops ringing. _____
   c. AUTO RCL LED is off. _____
   d. Assigned Answer station stops ringing. _____

5. Switchhook STA 2, dial STA 3, and hang up. Wait 20 seconds and depress AUTO RCL key.
   a. Verify AUTO RCL LED is on momentarily and TALK CITY LED is on. _____

b. UNA bell stops ringing. _____
c. Assigned Answer station stops ringing. _____
d. Verify STA 1 and console are talking. _____
e. Class and extension of trunk are displayed on left side of display. _____

6. Depress CNCL key and hang up STA 1.
   a. Both trunk busy LEDs are off. _____
   b. AUTO RCL and TALK CITY LEDs are off.

FEATURE
PACKAGE

802

SMDR - TRUNK GROUPS WITH SMDR

TRUNK GROUPS WITH SMDR ENABLED

| FEATURE PACKAGE |

| 803 | SMDR – STATION EQUIPMENT WITH SMDR

STATION EQUIPMENT WITH SMDR ENABLED

FEATURE PACKAGE

804

SMDR - TRUNK EQUIPMENT WITH SMDR

TRUNK EQUIPMENT WITH SMDR ENABLED

FEATURE
PACKAGE

806

SMDR - CALL RECORD PARAMETERS

RECORD FORMAT	LINE FEEDS	DIRECTORY # FORMAT	NO SMDR BLOCKS	ANSWER TIME

<u>CDMS</u> <u>Application</u> <u>Notes</u>

1: <u>TOLL</u> <u>RESTRICTIONS</u>

1.0   INTRODUCTION

        Toll Restriction refers to the capability of the PABX system to deny
        completion of toll calls or calls to the toll operator of selected
        stations without the assistance of the attendant.

        To implement this capability, certain information must be supplied to
        the toll restriction feature (Business 1 feature).

        Essentially, two types of information are needed: the type of
        restricitons to be checked for the trunk group of the originating
        call (e.g. area code/office code check), and the specific checks
        to be made (e.g. which area code/office code).

        It is the intent of this document to describe the data requirements
        for the toll restriction feature.

2.0   SCOPE OF THIS DOCUMENT

        This document intends to assist the customer in formulating his toll
        restriction requirements in a format that will enable the PABX system
        to meet those requirements.

        Section 3 defines the terminology of the different formats used by the
        toll restriction feature. Two examples are given and a short discussion
        of the examples is provided. Section 3 also details some guidelines
        that should be used in order to arrive at the information needed by
        toll restriction feature to implement all the toll restriction require-
        ments of the customer.

        Section 4 briefly describes the procedures to generate or update the
        various data tables.

        Finally, Section 5 concludes this document with delineating the system
        limitations, the alarm messages that may be output, and the recovery
        actions that may be taken.

3.0   TERMINOLOGY

3.0.1   Dialing Methods

        Three (3) dialing methods are distinguished. These methods deal with
        instances where a prefix (digit "1") is used to differentiate an area-
        office code (10 digit) from an office code (7 digit), or where an area
        code is represented by NO/IX (N = 2-9, X = 0-9, 0/1 = 0 or 1):

        A) Type 1   1) Area code = NO/IX; second digit of office (NX)
                      code can never be 0 or 1.
                      2) Prefix may or may not be used.

        B) Type 2   1) No distinction in digits between area and office
                      codes. Distinction is in number of digits dialed
                      (10 digits vs. 7 digits).
                      2) Prefix may or may not be used.

3.0.1   Dialing Methods (Cont'd.)

        C) Type 3   Prefix determines area code.   Absence of prefix
                      Identifies an office code.

3.0.2   Toll Restriction Tables

        Toll restriction tables contain specifications concerning the toll
        restrictions that will exist in the PABX system. Three types of
        restriction may be defined as follows:

                1. Discrimination based on single digits or a sequence of
                specific digits (Type 1, see section 3.0.5)

                2. Restriction based on specific area or office codes
                (Type 3, see section 3.0.6)

                3. Restrictions based on specific area-office codes
                (Type 6, see section 3.0.7)

        Many toll restriction tables may be defined. By distributing the
        restriction tables among the trunk groups, the user is capable of
        applying unique and different toll restrictions to each trunk group.

3.0.3   Toll Sets

        The toll restriction tables that are assigned to a given trunk group
        is called a toll set. A toll set thus identifies all the restrictions
        that are to be applied for the trunk group.

3.0.4   Seven-Digit Timer

        When the dialing method is the CO Type 2 case (section 3.1) a timeout
        is required, following the dialing of the 7th digit or 8th digit (if a
        prefix is used) to determine whether a 7-digit (office) or 10-digit
        (area-office) code is dialed. The timeout is preset to three seconds.
        The customer has the option to change the preset.

3.0.5   Special Treatment Tables (Type 1 Toll Restriction Tables)

        Special treatment tables contain the single digit or sequence of specific
        digits that require special attention from the toll restriction feature.
        The contents of the tables are in encoded format as follows:

                (d = digit - 0 to 9)

                od = allow digit (d)

                1d = deny digit, i.e. deny call if the first digit dialed
                        on the trunk is digit (d)

                2d = ignore digit, i.e. if digit (d) is dialed on the trunk,
                        outpulse digit (d), but ignore (d) from toll restriction
                        considerations.

3.0.5   Special Treatment Tables (Type 1 Toll Restriction Tables) (Cont'd.)

3d = ignore repeat digit, similar to ignore digit, except an
     unbroken sequence of digit d is ignored.

4d = absorb digit, i.e., if digit d is dialed, d is not out-
     pulsed on the trunk and is ignored by the toll restriction
     feature.

5d = absorb repeat digit, similar to absorb digit, except
     performed on an unbroken sequence of digit d.

6ddd*= ignore 3-digit sequence, similar to ignore digit, except
     performed on the specified 3-digit sequence (ddd).

7ddd*= absorb 3-digit sequence, similar to absorb digit, except
     performed on the specified 3-digit sequence (ddd).

8ddd*= allow 3-digit sequence, no additional toll restriction
     checking is done after the corresponding 3-digit
     sequence (ddd) is dialed.

9ddd*= deny 3-digit sequence, the call is denied if the
     corresponding 3-digit sequence (ddd) is dialed.

     * = 3-digit sequence (ddd) is limited to the first 3 digits
         dialed on the trunk.

3.0.6   Area-Office Code Tables (Type 3 Toll Restriction Tables)

Area-office code tables consist of those specific 3-digit codes (NNX)
that are intended to be treated differently (allow or deny) than other
codes not contained in the table. A table may contain any number of
3-digit codes; however, area codes and office codes should not be
mixed in a single table.

*Note: The toll restriction feature accesses area-office code tables
        for additional checking after the dialed digits have undergone
        the checks made by the Type 1 toll tables (1-digit check).

3.0.7   <u>Area-Office Code Tables (Type 6 Toll Restriction Tables)</u>*

Area-Office code tables consist of those area codes and corresponding
office code(s) that are meant to be treated differently (allow or deny).
A Type 6 table differs from a Type 3 table in that a Type 6 specifically
targets a 6-digit sequence (NO/IX-NNX) while a Type 3 table differen-
tiates 3-digit codes (NO/IX or NNX).

One Type 6 table entry consists of an area code (NO/IX) and an associated
Type 3 table (consisting of office codes). A maximum of 66 entries (area
code-Type 3 table) are allowed for a given Type 6 table.

*Note: The toll restriction feature performs an area/office code check
        after the digits dialed on a trunk have undergone a Type 1 and
        a Type 3 check (area code and office code) that may be applicable
        for that trunk.

3.1   <u>A Workable Case</u>

The following configuration was defined:

1) Toll Set:

Trunk Group	Dial Meth	AC Table (Type 3)	AO Table (Type 6)	OC Table (Type 3)	ADI Table (Type 1)
1	1	2*	105*	3*	1

         AC = Area Code   AO = Area/Office Code
         OC = Office Code

    * = It will be explained later (section 4) that adding 100 to
        the actual table number identifies the table as a deny
        table; otherwise the table is an allow table.

    Allow Table = allow codes contained in table deny all other
                  codes.

    Deny Table = deny codes contained in table allow all other codes.

3.1   A Workable Case (Cont'd.)

2) Toll Restriction Tables:

Table #	Type	Contents
1	1	14 9816 01
2	3	20# 21# 91# 90# 81# 80# *
3	3	76# 78# 53# 52#
4	3	786 522 532 537
5	6	817 4 807 4

* = It will be explained later (section 4) that "#" denotes the range 0-9; thus, 20# means any area code in the range 200, 201...209.

The effects of the above defined configuration is as follows:

Digits Dialed	Action	Explanation
403-532-8756	Call Denied	Table 1 (ADI-Type 1) is not passed, since "4" is denied.
503-532-8756	Call Denied	Table 2 (AC-Type 3) is not passed. Since table 2 is an allow table, any area code not stated in the table is denied.
803-532-8756	Call Allowed	Digits dialed passed table 1, passed tables 2 and 3, and was not denied by table 5.
807-532-8756	Call Denied	Digits did not pass table 5 (deny table), since table 5 disallows all calls with area code 807 if the office code is 786, 522, 532, or 537.
815-522-1111	Call Allowed	Passed all tables.
816-522-1111	Call Denied	Denied 3-digit sequence "816" (table 1).

3.1.2 A Configuration Containing Conflicts

A) Toll sets defined:

Trunk Group	Dial Meth	AC Table (Type 3)	AO Table (Type 6)	OC Table (Type 3)	ADI Table (Type 1)
2	1	20	10	105	6

B) Toll Restriction tables generated:

Table #	Type	Contents
6	1	16 06 971#
5	3	33# 35# 48#
8	3	34# 36# 35#
10	6	20#880# 8
20	3	20# 71# 60#

The above example illustrates several conflicts:

1. "971#" in table 6 conflicts with "71#" of table 20.

2. "80#" in table 10 conflicts with table 20. Table 20 is an allow table, thus "20#" is not allowed, since it is not part of table 20.

3. "60#" of table 20 conflicts with table 6 ("16" means deny digit "6").

4. "35#" of table 8 conflicts with "35#" of table 5 (a deny table).

3.2 Guidelines for Defining Toll Restriction Data

The following steps should be used in order to arrive at an effective toll restriction data configuration:

1. Identify the requirements of each trunk group.

   a. Define the dialing method (see section 3.0.1)
   b. Define the Type 1 (single digit treatment, see section 3.0.4) requirements. Omit the requirements that address specific area, office, or area-office codes.

3.2   Guidelines for Defining Toll Restriction Data (Cont'd.)

       c. Consider the specific area, office, or area-office codes and
start with area codes, followed by office codes and terminating
with area-office codes. Attempt to define "deny" tables. If
the number of deny codes far outweighs the number of allow
codes, then define "allow" tables, but include those codes that
will be processed in following tables of sequence area, office,
and area-office code tables.

      2. Consolidate the requirements for all trunk groups and identify
identical requirements.

      3. Generate the toll restriction tables, starting with Type 1 toll
tables, followed by Type 3, and ending with Type 6 (Feature Pkg 301).

      4. Generate the toll sets: correlate the trunk groups with the
respective dialing methods and toll restriction tables
(Feature Pkg 302).

4.0   Generation/Updating Toll Restriction Data

The toll restriction data generation capabilities of the system allow
the customer a wide variety of functions: Any data can be recalled for
examination and inspection; can be deleted on a total table or table
entry basis; can be changed; or can be expanded. The distinction of
generating and updating toll restriction data resides in whether or not
any previously formulated data is already present.

4.0.1   Generating Data

Generation of table entries is done by performing a sequence of code
selections (numeric keyboard) and depressing the "insert" key.

Note: If an erroneous code is selected, the user can recover by either
selecting the desired code (software will overlay the erroneous code
with the desired code) or can depress the "delete" key to clear the
display.

Generation of tables is carried out by depressing the "enter" key
following the last table entry. Depressing the "delete" key causes
a restart.

4.0.2   Updating Data

Three types of data updates are possible: deletion, insertion, and changing. Updates are done by depressing the "insert," "delete," or "insert" followed by "delete" keys:

1. Delete an existing item - "delete" key
2. Insert a new item - select added code, "insert" key
3. Change an existing item - do step 2 followed by step 1

4.1   Toll Restriction Tables

Toll Restriction tables are generated/modified by entering the information described in section 3. The contents of a specific table must conform to the table type.

A range may be specified by using "#;" however, a range cannot be specified in 1-digit processing, e.g. (Type 1 table) "1#" will be rejected, while "977#" is allowed.

4.2   Toll Sets

Toll sets are defined by entering the dialing methods and the toll restriction tables used for each trunk group in sequential order. If no toll set is defined, the default is dialing method 1 and all codes are allowed. If a particular toll set entry is set to zero, the default is no toll restriction check for that entry.

Entering a table number for a toll set entry identifies the toll restriction for that trunk group according to the contents of the table.

Note: 1. If the table number is in the range 1-64 and the table type is either 3 or 6, the contents of the table is considered "allowed" codes and codes not in the table are "denied" codes. If 100 is added to the table number and table type is either 3 or 6, the contents of the tables have the reverse effect (table is a "deny" table)--codes contained in the table are denied, other codes are allowed.

2. To define new toll sets or update existing toll sets, feature package 301 must be called first.

5.0   System Limitations

There are primarily two (2) system limitations:

1. The system maximum capability is exceeded
2. A toll restriction table capacity is exceeded

The alarms output and possible remedial actions for these three limitations are:

Alarm	Recovery Action
Conf RAM full	System capability has been exceeded. Last table is not entered into the system. Check if any tables are physically present in the system but are not used in the toll sets. Method: enter table numbers not identified in toll sets and using the "right arrow" key, test if there are table entries. Delete unused tables. If there are no unused tables, check if two identical tables exist. If all attempts fail, reformulate the requirements.
Bfr Ful Ky Enter	More than 66 entries have been defined for toll restriction tables Type 1 or Type 6. The last entry caused a buffer overflow and is excluded. The "Enter" key should be depressed. Table contents should be examined (method: call table back and using the right and/or left arrows, examine the table contents). Check for redundant information. If all attempts fail, some of the requirements should be rephrased (allow/deny).

TOLL RESTRICTION TABLES - BUSINESS 1 FEATURE

FEATURE
PACKAGE |30T| |INSERT|

TOLL TABLE	TABLE TYPE	TABLE ENTRIES										ENTER
XX |INSERT|	X |INSERT|	XXX |INSERT| or XX# |INSERT|										
XXX = 1-64	X = 1, 3, 6	XXX = code # = range : 0-9										ENTER

- AN-10 -

TOLL SETS - BUSINESS 1 FEATURE

FEATURE PACKAGE
302		INSERT

TRUNK GROUP	CO TYPE (DIALING METH)	AREA CODE (TYPE 3 TABLE)	AREA-OFFICE (TYPE 6 TABLE)	OFFICE CODE (TYPE 3 TABLE)	SPECIAL TREATMENT (TYPE 1 TABLE)
XX |INSERT| XX = 1-32	X |INSERT| X = 1, 2, 3	XXX |INSERT| XX=1-64=allow 1XX = deny	XXX |INSERT| XX=1-64=allow 1XX = deny	XXX |INSERT| XX=1-64=allow 1XX = deny	XX |INSERT| XX = 1-64

CDMS Application Notes

2: PRINTER OPTION

CDMS PRINTER OPTION

1. Place CDMS printer PROM in socket A30 of the programming adapter.

2. Connect printer to PBX as indicated in Figure 1.

3. Start up PBX and get into CDMS mode.

4. Initialize the CDMS printer driver by depressing the "Init Printer" key on the console and setting the information on Figure 2.

5. Use the "tenant" key to match the current cabinet with that of the configuration within the PBX.

6. To print information for the desired function, depress the desired function key followed by the "Print" key.

   NOTE: 1) Information for the "tenant" function is not printed.)
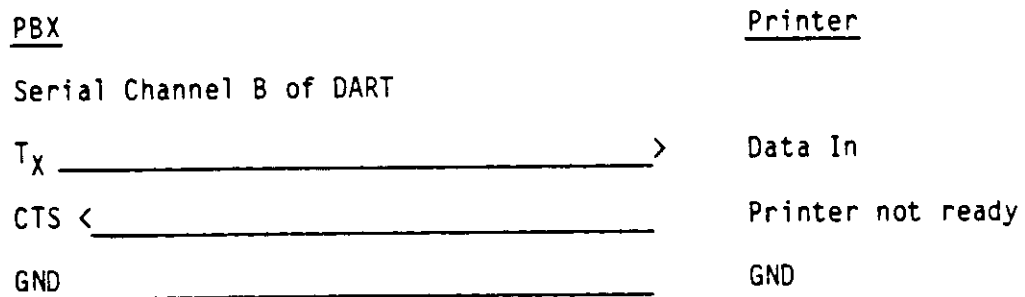
FIGURE 1: CDMS PRINTER CONNECTIONS

PBX   Printer

Serial Channel B of DART

T_X ——————————————————>   Data In

CTS <——————————————————   Printer not ready

GND ——————————————————   GND

FIGURE 2:   CDMS PRINTER DRIVER PARAMETERS*

Parameter	Represents
1	# characters on a "line" (126+1 = 127)
2	Tab size (7)
3	# lines per "line feed" (1)
4	# lines per page (56)
5	# lines per eject (10)
6	Serial driver characteristics (12) (Write register 4 of DART)

BB	XX	SS	E	P

BB: Baud rate
    00 = 9600 bits/sec.
    01 = 600   "
    10 = 300   "
    11 = 150   "

SS: Stop bits
    00 = not used
    01 = 1 stop bit
    10 = 1 1/2
    11 = 2

E: Parity
    0 = Odd
    1 = Even

P: Parity Enable
    1 = Enabled
    0 = Not enabled

7.   Printer ready on 0 or 1. (1)

 * All parameter values are entered as decimal.

ERROR MESSAGES

ERROR CODE	ERROR MESSAGE

1 -   CDMS not operational. Check CDMS PROMS.

2 -   Invalid key depressed. Key not recognized by CDMS.

3 -   Control key disabled. Software did not enable control key for use in this field.

4 -   Function key not used.

12 - Switch-hook time invalid. Based on OFF-Hook timeout value, the computed switch-hook timeout is too large.

13 - OFF-Hook timeout invalid. Based on SWITCH-Hook timeout selection, the computed OFF-Hook timeout is too large.

14 - Invalid data. Data entered as toll restriction criteria does not conform to required format.

15 - Invalid equipment. Equipment selected does not belong to the current tenant, is not configured, or is the wrong type of equipment.

16 - Not enough room for access code. System limitation (memory space) has been reached. Current access code cannot be accommodated.

17 - Invalid access code. Same feature has different access code. Delete existing access code before selecting new access code.

18 - Illegal option for system. A feature has been selected when feature is not configured for system.

19 - Incorrect card type. Type selected for card slot is not one of the legal types.

20 - Range error. The data value is out of range of legal limits.

21 - Duplicate attendant queue priority. A duplicate priority number exists.

22 - Invalid directory number. Directory number selected does not conform to the directory number plan.

23 - Duplicate directory number. Directory number selected has already been defined for another equipment.

24 - Invalid attendant group.

25 - Invalid equipment (port) for designated purpose.

26 - Invalid directory number (duplicate) or system capacity overflow.

27 - Selected equipment is not in the same attendant group.

ERROR CODE	ERROR MESSAGE
28 -	Equipment is not a console or attendant station.
29 -	Equipment is not a hotline or is not a station.
30 -	Invalid numbering scheme. Scheme does not conform to the encoding rules.
31 -	No equipment specified when one is mandatory, or equipment in different tenant group.
32 -	Invalid origination type specified. Check the legal values.
33 -	Invalid termination type specified, or conflicting type have been selected.
34 -	No more room available in list. List contains too many members. Last equipment is rejected.
35 -	E&M is specified when trunk origination type is not normal.
36 -	Invalid equipment or equipment not configured.
37 -	Too many members in hunt group. Last member has not been included in the group.
38 -	Not enough room to add equipment.
39 -	Cannot remove equipment from the list.
40 -	Improper option selected. Check list of valid options.
41 -	Invalid table number. Toll restriction table has not been defined or the selected table is of a different type.