

SERIES/1 SYSTEM
IBM INSTALLATION INSTRUCTION

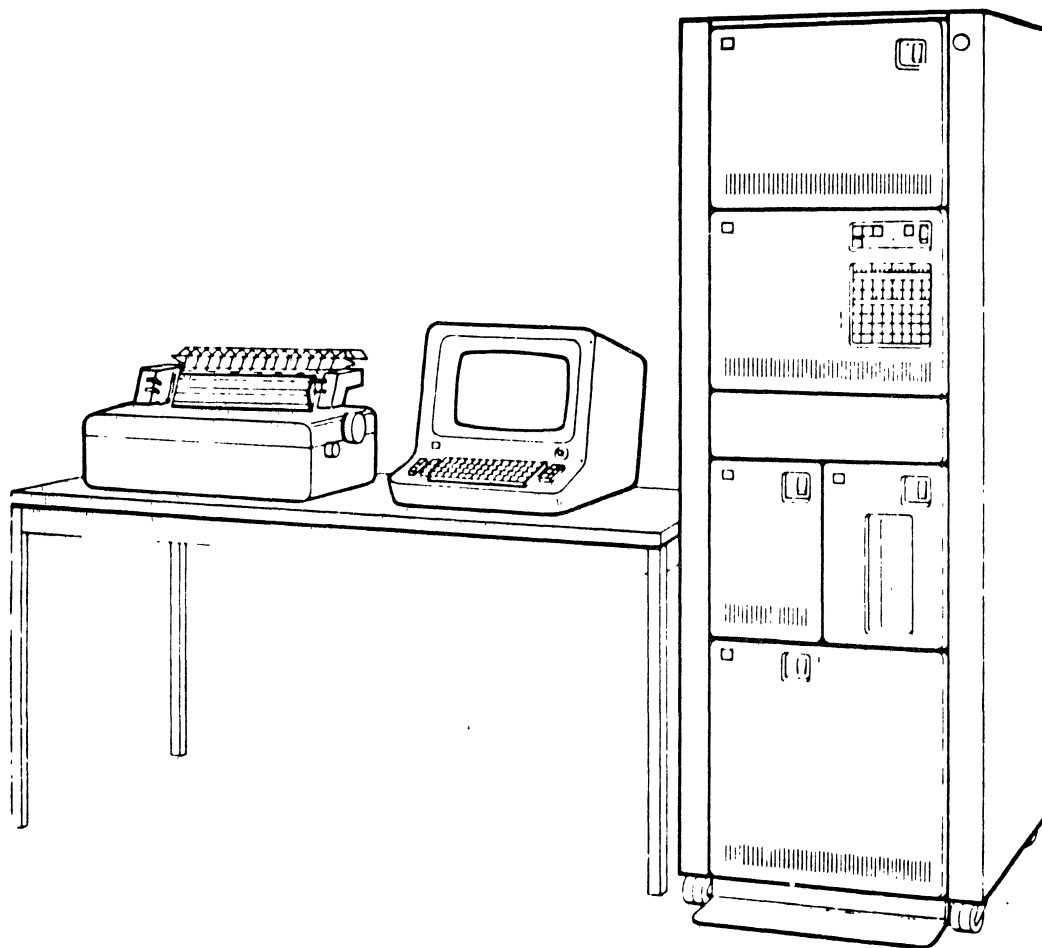
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PREFACE

THIS MANUAL IS PRIMARILY USED FOR THE INSTALLATION OF NON-PRECONFIGURED SYSTEMS (MEANING THOSE NOT FACTORY BUILT) AND "ADD-ON" FEATURES OR MACHINES. HOWEVER, THIS MANUAL CONTAINS INFORMATION NECESSARY FOR INSTALLATION OF ANY CONFIGURATION OF THE IBM SYSTEM. THE INFORMATION IS IN A STEP-BY-STEP FORMAT. THE INSTALLER SHOULD REFER TO AND INSTALL HIS SYSTEM IN DIRECT ACCORDANCE WITH THE MAPS CONTAINED IN THIS DOCUMENT.

THE SECTIONS AND THE STEPS WITHIN THE SECTIONS ARE ARRANGED SO THAT THE INSTALLER CAN PROCEED LOGICALLY THROUGH THE ENTIRE INSTALLATION SEQUENCE REGARDLESS OF THE CONFIGURATION INVOLVED.

THE MAJORITY OF THIS INSTALLATION INSTRUCTION IS WRITTEN AROUND A PRODUCT BUILD-UP OF SEPARATE MACHINES INTO A FINAL RACK SYSTEM. IF THE USER PURCHASES A SYSTEM WHICH IS IBM PLANT ASSEMBLED (PRE-CONFIGURED) PRIOR TO DELIVERY, THEN THE INSTALLER CAN IGNORE SECTIONS OF THIS DOCUMENT WHICH ARE NON-APPLICABLE, AND IN FACT, SHOULD REFER TO THE INSTALLATION PROCEDURES (P/N 8326725) SHIPPED WITH FACTORY BUILT SYSTEMS. THE INSTALLER SHOULD BEGIN BY READING THE MAPS AND FOLLOW THE SEQUENCE AS OUTLINED HEREIN, IF USING THIS INSTRUCTION.

FOR PROPER PERFORMANCE OF THE IBM MACHINES, IT IS RECOMMENDED THAT THE OEM ENCLOSURE BE METALLIC AND MEET U.L. 478 (OR EQUIVALENT) MECHANICAL REQUIREMENTS WITH THE RECOMMENDED SYSTEM GROUNDING AND SHIELDING TECHNIQUES.

EACH UNIT IS SPECIFICALLY DESIGNED TO BE SUPPORTED AND/OR ENCLOSED BY A SUITABLE RACK STRUCTURE OF A TYPE WHICH MEETS THE E.I.A. STANDARD. THIS STRUCTURE MUST INCLUDE PROVISION FOR INTERNAL ROUTING OF ANY INTERCONNECTING CABLES BETWEEN TWO OR MORE UNITS. CONFIGURATIONS OF THESE MACHINES WHICH ARE NOT SO ENCLOSED MAY NOT PERFORM ACCORDING TO FUNCTIONAL SPECIFICATION AND MAY NOT COMPLY WITH ICCAI CODES.

RACK MOUNTABLE UNITS (4962, 4963, 4964, 4966, 4969, 4982, 4987, 4993 AND THE 4999) ARE TO BE INSTALLED ACCORDING TO THE UNIT INSTALLATION INSTRUCTIONS ACCOMPANYING EACH UNIT. (IF NOT PREVIOUSLY IBM PLANT INSTALLED).

NON-RACK MOUNTED I/O UNITS ARE TO BE INSTALLED ACCORDING TO THE UNIT INSTALLATION INSTRUCTIONS ACCOMPANYING EACH UNIT. THE INSTALLER SHOULD READ THESE INSTALLATION PROCEDURES BEFORE BEGINNING THE ACTUAL INSTALLATION.

IT IS ASSUMED THAT THE INSTALLER HAS EQUIVALENT KNOWLEDGE AND SKILLS AS AN IBM TRAINED FIELD PERSON.

REFERENCE PUBLICATIONS:

1. CUSTOMER SITE PREPARATION MANUAL GA34-0050.
2. PRE-CONFIGURED (FACTORY-BUILT) INSTALLATION INSTRUCTION, P/N 8326725.
3. UNIT INSTALLATION INSTRUCTIONS FOR:
 - A) DISK STORAGE (4962) UNIT PUBLICATION (#S131-0602 PARTS CATALOG).
 - B) DISK SUBSYSTEM (4963) UNIT (P/N 0712322 INSTALLATION INSTRUCTIONS).
 - C) DISKETTE UNIT (4964) PUBLICATION (#S131-0601 PARTS CATALOG).
 - D) DISKETTE MAGAZINE UNIT (4966) (P/N 2462159 INSTALLATION INSTRUCTIONS).
 - E) TAPE SUBSYSTEM (4969) INSTALLATION INSTRUCTIONS (P/N 6838831).
 - F) PRINTER - 4973 (P/N 4411198 INSTALLATION INSTRUCTIONS).
 - G) PRINTER (4974) (P/N 4410779 INSTALLATION INSTRUCTIONS).
 - H) DISPLAY STATION (4979) (P/N 1633744 INSTALLATION INSTRUCTIONS).
 - I) SENSOR INPUT/OUTPUT (4982) UNIT (P/N 1633742 INSTALLATION INSTRUCTIONS).
 - J) PROGRAMMABLE COMMUNICATIONS SUBSYSTEM (4987) (P/N 4414980 INSTALLATION INSTRUCTIONS).
 - K) SERIES/1 - SYS/370 TERMINATION ENCLOSURE (4993) (P/N 6827309 INSTALLATION INSTRUCTIONS).
 - L) BATTERY BACK-UP UNIT (4999) (P/N 1633741 INSTALLATION INSTRUCTIONS).

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4. MAINTENANCE INFORMATION, THEORY DIAGRAMS AND ILLUSTRATED PARTS CATALOGS.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE FOR EACH MACHINE AND SHOULD BE REFERENCED FOR UNIT MAINTENANCE, CHECKOUT AND THEORY OF OPERATION:

	<u>THEORY DIAGRAM MANUAL</u>	<u>MAINTENANCE INFORMATION MANUAL</u>	<u>PARTS CATALOG</u>
PROCESSOR (#4952 MACHINE)	SY34-0089	SY34-0090	S134-0049
PROCESSOR (#4953 MACHINE)	SY34-0042	SY34-0051	S134-0028
PROCESSOR (#4955 MACHINE)	SY34-0041	SY34-0050	S134-0028
DISK STORAGE UNIT (#4962 MACHINE)	SY34-0045	SY34-0054	S131-0602
DISK SUBSYSTEM (#4963 MACHINE)	SY34-0082	SY34-0083	S134-0034
DISKETTE UNIT (#4964 MACHINE)	SY34-0044	SY34-0053	S131-0601
DISKETTE MAGAZINE UNIT (#4966 MACHINE)	SY34-0084	SY34-0085	S134-0035
TAPE SUBSYSTEM (#4969 MACHINE)	SY34-0092	SY34-0093 OR SY34-0097	S134-0037 OR S134-0038
PRINTER (#4973 MACHINE)	SY34-0077	SY34-0078	S134-0027
PRINTER (#4974 MACHINE)	SY34-0046	SY34-0055	S134-0025
DISPLAY STATION (#4979 MACHINE)	SY34-0047 (SY19-6055)	SY34-0056 SY19-6056	S134-0026 W.T. ONLY)
SENSOR INPUT/OUTPUT UNIT (#4982 MACHINE)	SY34-0048	SY34-0057	S134-0024 OR S134-0029
PROGRAMMABLE COMMUNICATIONS SUBSYSTEM (#4987 MACHINE)	SY34-0087	SY34-0088	S134-0033
SERIES/1 SYS/370 TERMINATION ENCLOSURE (#4993 MACHINE)	SY34-0091	SY34-0050 SY34-0051	S134-0036
RACKS 4997	N/A	N/A	S134-0030
BATTERY BACKUP UNIT (#4999 MACHINE)	SY34-0091		S134-0031

SPECIFIC THEORY DIAGRAMS FOR THE PRODUCTS LISTED BELOW ARE FOUND IN THE "SERIES/1 COMMON FEATURES THEORY DIAGRAM MANUAL", SY34-0091. MANUAL(S):

- o BATTERY BACKUP UNIT (#4999 MACHINE)
- o INPUT/OUTPUT EXPANSION UNIT (#4959 MACHINE)
- o TELETYPEWRITER ADAPTER #7850
- o INTEGRATED DIGITAL INPUT/OUTPUT NON-ISOLATED #1560.
- o CHANNEL REPOWER FEATURE #1565.
- o TIMER(S) (7840)
- o CUSTOMER DIRECT PROGRAM CONTROL ADAPTER #5430.
- o POWER SUPPLY (FOR FULL WIDTH AND HALF WIDTH CARD FILE).

THEORY DIAGRAMS FOR COMMUNICATIONS PRODUCTS ARE CONTAINED IN THE "SERIES/1 COMMUNICATIONS THEORY DIAGRAMS", SY34-0059.

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TOOL AND TEST EQUIPMENT

BRANCH OFFICE OR CE TOOLS AND TEST EQUIPMENT INCLUDE:

BRANCH OFFICE TOOLS	<u>PART NUMBERS</u>
OSCILLOSCOPE - TEKTRONIC #465 OR EQUIVALENT (FOR 4963)	453214
DIGITEC METER/WESTON 901 METER	453046/460879
OSCILLOSCOPE (TEKTRONIC 453 OR EQUIVALENT)	453047
FLUKE METER	453191
SIGNAL TRACING AND RECORDING DEVICE	1638080
VACUUM GAUGE	5495384
*MAINTENANCE PROGRAM LOAD DEVICE	
DOM 60HZ IO VOLT	1635514
DOM 60HZ HI VOLT	4413747
WTC 50HZ IO VOLT	4413748
WTC 50HZ HI VOLT	4413749
JAPANESE 60HZ IO VOLT	4414798
JAPANESE 60HZ HI VOLT	4414801
*CE CONSOLE (EQUIVALENT TO PROGRAMMER'S CONSOLE)	1635512
ADAPTOR CABLE FOR 4952A POWER SUPPLY	6837326
D. B. METER	453545
CE CARD CADDY (CASE ONLY)	963400
CANADIAN TRAF	243963
N.U. DATA TESTER	453637
COMMUNICATIONS INDICATOR PANEL	1635513
4987 C.E. CONSOLE	4414642
CE TOOLS	
CE METER	1749231
METRIC TOOL SET (SUGGESTED)	1749235
GENERAL LOGIC PROBE	453212
STANDARD CE TOOLS	-----

*REQUIRED TO SUPPORT NON-MINIMUM SYSTEM CONFIGURATIONS.

THE FOLLOWING LIST OF TOOLS WILL BE SHIPPED WITH THE SYSTEM/ MACHINE IF THE FEATURE USING THESE TOOLS IS ORDERED. THEY ARE TO REMAIN AT THE ACCOUNT AS PART OF THE CUSTOMER OWNED EQUIPMENT.

	<u>PART NUMBER</u>
CARD EXTENDER (4982 ONLY)	4412650
CABLE EXTENDER (4982 ONLY)	1637824
4982 (001) TEST CONNECTORS	
D1/P1 (ISOLATED)	4412726
D1/P1 (NON-ISOLATED)	4412728
DC	4411660
AI	4410181
A1 JUMPER	4410235
A1 CABLE ASM	4410236
INTEGRATED DI/DO WRAP CONNECTOR	1633813
TIMER (DC 7840) WRAP CABLE	1633835
4964 TIMING PINS	5562019
TTY ATTACHMENT WRAP CABLE	1633834
CUSTOMER ACCESS PANEL WRAP CONNECTORS	
TIMER	1632917
TTY	5130483
INTEGRATED DI/DO	1633840
COMMUNICATIONS WRAP CONNECTORS	
S/S DIRECT	1633811
BSCA HS	1633810
S/S EIA	2704136
BSCA EIA	2704136
SDLC EIA	2740136
BSCA H.S. V35	1633812
MTT WRAP CABLE (JAPAN ONLY)	2722052
PMLC CURRENT INTERFACE WRAP CABLE	6825399
EIA CABLE JUMPER	4413770
4974 - SHIP GROUP TOOLS	1637990
4979 - VIDEO ADJUSTING TOOL (APE)	1634878
VIDEO ADJUSTING TOOL (EMEA)	2419989

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4999 - LOAD LOW VOLT	1637844
4999 - JUMPER	1632914
4999 - LOAD HIGH VOLT	4412946
4987 - EXTENDER CARD	4411568
4987 - INTERFACE WRAP CARD	4413920
4987 - TEST PLUG LOOP BACK	1864271
4987 - TEST PLUG LOOP BACK	1864272
4963 - JUMPER BRAKE ASM	8326945
4952A - STUBBY SCREW STARTER	1550543
4952 A,B - MODULE REMOVAL TOOL	1715889

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(B)
SYSTEM
INSTALLATION
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SERIES/1
INSTALLATION
DOCUMENTS

(B)
CUSTOMER SITE
PREF. MANUAL
GA34-0050

(A)
SYSTEM
CONFIGURATOR
GA34-0042

THE FOLLOWING MACHINES HAVE 3 SEPARATE MANUALS:

- (*) 4952 PROCESSOR
- (*) 4953 PROCESSOR
- (*) 4955 PROCESSOR
- 4962 DISK STORAGE UNIT
- 4963 DISK SUBSYSTEM
- 4964 DISKETTE UNIT
- 4966 DISKETTE MAGAZINE UNIT
- 4969 TAPE SUBSYSTEM
- 4973 PRINTER
- 4974 PRINTER
- 4979 DISPLAY STATION
- 4982 SENSOR INPUT/OUTPUT UNIT
- 4987 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM
- 4993 SERIES/1 - SYSTEM 370 TERMINATION ENCLOSURE

(B)
THEORY DIAGRAM
MANUAL

(B)
MAINTENANCE
INFORMATION
MANUAL

(B)
PARTS
CATALOG

THE FOLLOWING MACHINES INSTALLATION INSTRUCTIONS ARE CONTAINED IN PUBLICATIONS MANUALS:

- 4962 DISK STORAGE UNIT -----> PUB #S131-0602 (B)
- 4964 DISKETTE UNIT -----> PUB #S131-0601 (B)

THE FOLLOWING MACHINES INSTALLATION INSTRUCTIONS ARE CONTAINED IN INSTALLATION INSTRUCTION DOCUMENTS:

- 4963 DISK SUBSYSTEM -----> P/N 0712322 (B)
- 4966 DISKETTE MAGAZINE UNIT -----> P/N 2462159 (B)
- 4973 PRINTER -----> P/N 4411198 (B)
- 4974 PRINTER -----> P/N 4410779 (B)
- 4979 DISPLAY STATION -----> P/N 1633744 (B)
- 4982 SENSOR INPUT/OUTPUT UNIT -----> P/N 1633742 (B)
- 4987 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM -----> P/N 4414980 (B)
- 4993 SERIES/1 - SYS/370 TERMINATION ENCLOSURE -----> P/N 6827309 (B)
- 4999 BATTERY BACK UP UNIT -----> P/N 1633741 (B)

NOTES:

*THESE MANUALS ALSO INCLUDE INFORMATION FOR THEORY DIAGRAMS AND MAINTENANCE INFORMATION ON THE FOLLOWING:

BATTERY BACKUP (4999 MACHINE)
TELETYPEWRITER (7850 FEATURE)
INTEGRATED DIGITAL INPUT/OUTPUT (1560 FEATURE)
CHANNEL REPOWER FEATURE (1565 FEATURE)
TIMERS (7840 FEATURE)
CUSTOMER DIRECT PROGRAM CONTROL ADAPTER (5430 FEATURE)
COMMUNICATIONS
POWER SUPPLIES
INPUT/OUTPUT EXPANSION UNIT (4959 MACHINE)

(A) MUST BE REQUESTED FROM IEM

(B) SHIPPED WITH MACHINE

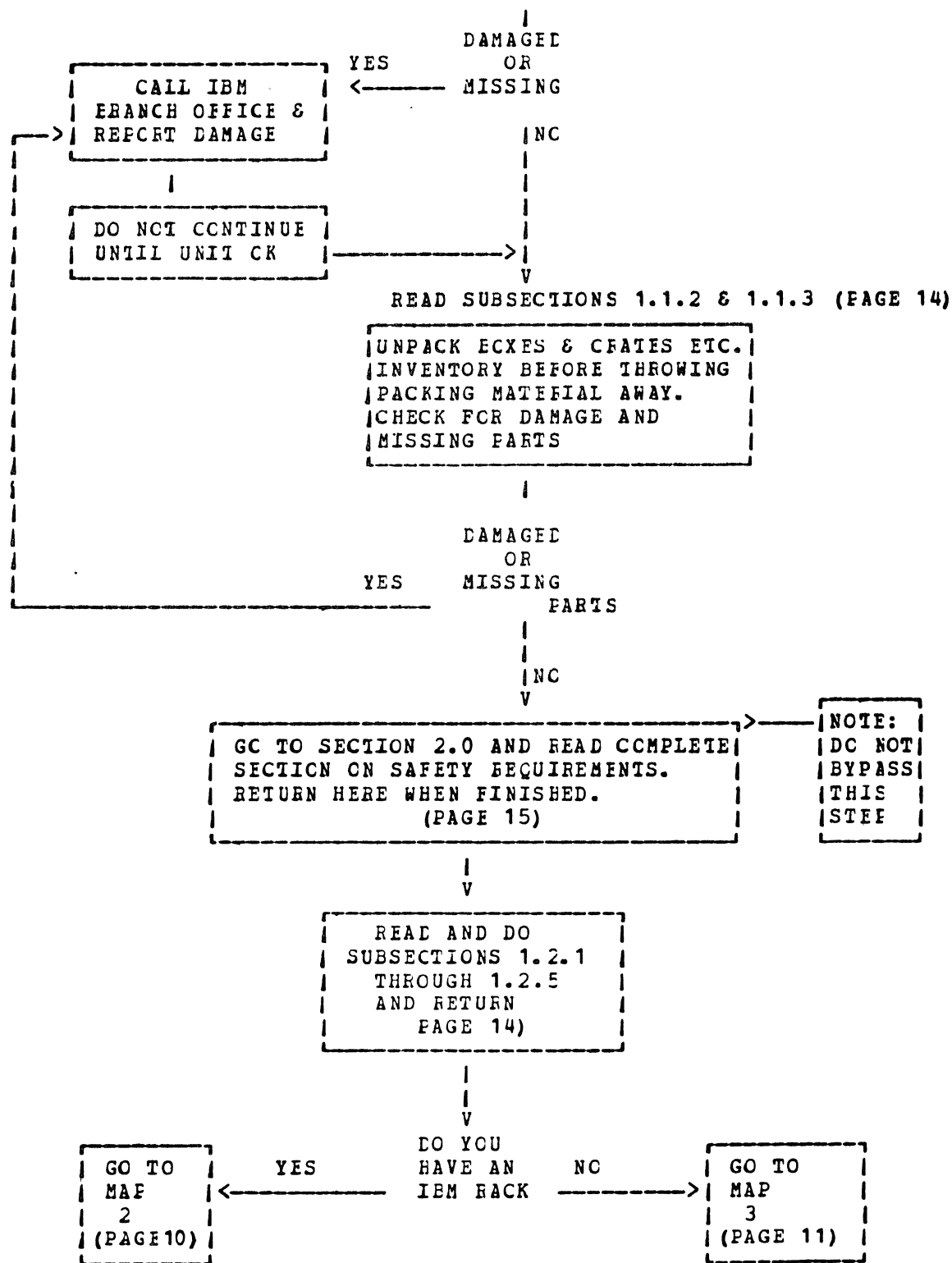
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START OF INSTALLATION

MAP 1

READ SUBSECTION 1.1.1 (PAGE 14)

INVENTORY BOXES, CRATES, ETC.
CHECK FOR DAMAGE, (VISIBLE)

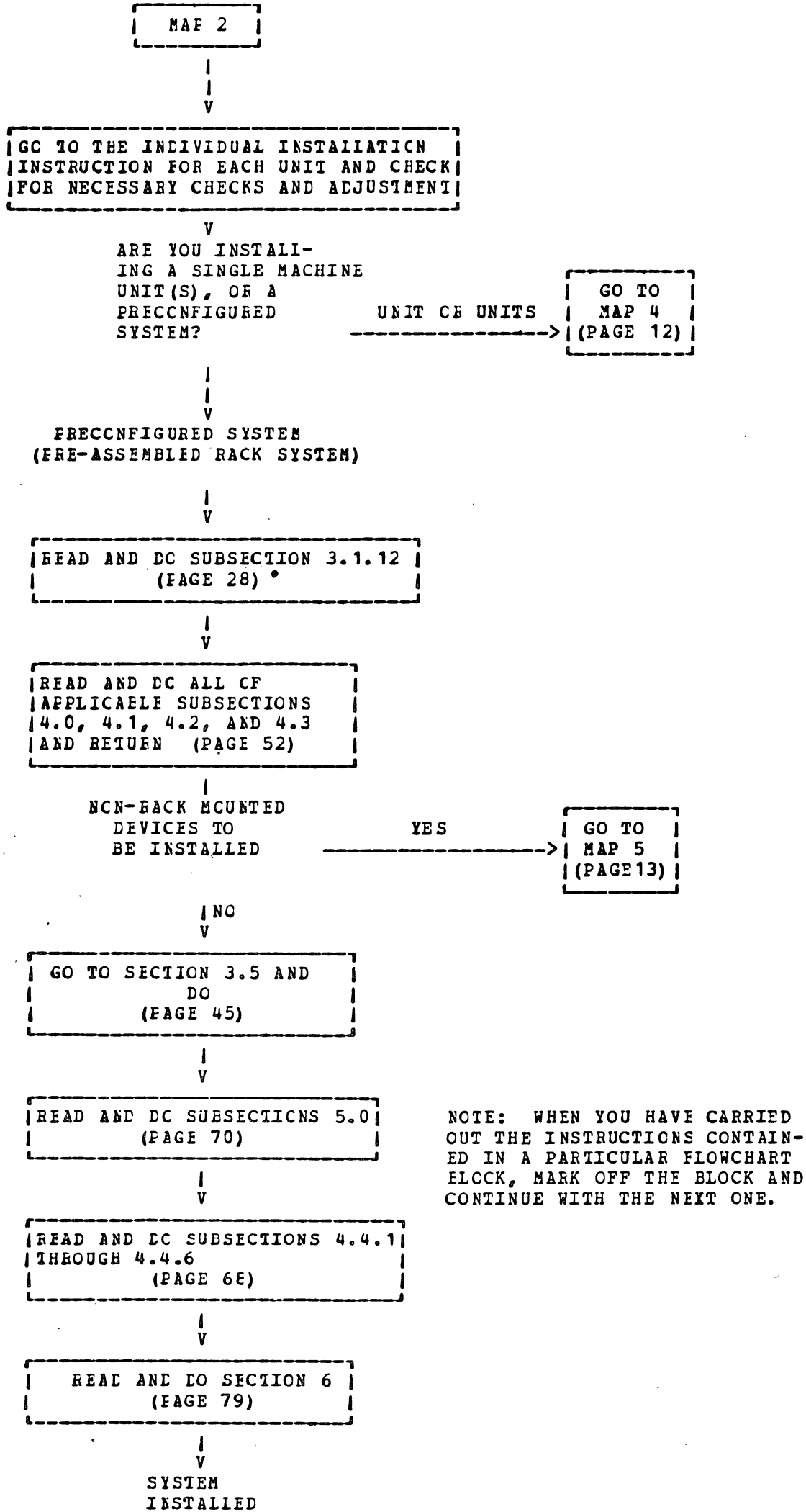


NOTE:

WHEN YOU HAVE CARRIED OUT THE INSTRUCTION
CONTAINED IN A PARTICULAR BLOCK, MARK OFF
THAT BLOCK AND CONTINUE TO THE NEXT ONE.

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YOU HAVE AN IBM RACK



NOTE: WHEN YOU HAVE CARRIED OUT THE INSTRUCTIONS CONTAINED IN A PARTICULAR FLOWCHART BLOCK, MARK OFF THE BLOCK AND CONTINUE WITH THE NEXT ONE.

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YOU DO NOT HAVE AN IEM RACK

MAP 3

GO TO 3.0A AND READ
(PAGE 18)

CHECK TO SEE IF O.E.M. RACK WILL CARRY
NECESSARY KVA FOR YOUR PRESENT CONFIGUR-
ATION. GO TO SECTION 4.3 AND DC.
(PAGE 66)

GO TO SECTION 4.0 AND READ AND DO ALL OF
SUBSECTIONS 4.0 AND 4.2 (PAGE 52)

GO TO 3.0E AND READ
(PAGE 18)

READ AND DO SUB-
SECTIONS 3.1.1
THRU 3.1.12 AND
INSTALL YOUR UNIT
(PAGE 23)

ADDITIONAL FEATURE
CARDS TO INSTALL

NO

YES

READ SECTION
3.0C
(PAGE 19)

READ AND DO SUBSECTION
3.5 (PAGE 45)

READ AND DO
SUBSECTIONS
3.2 AND 3.2.1
THRU 3.2.10
(PAGE 32)

READ AND DO
SECTION 5.0
(PAGE 74)

READ & DO SUBSECTIONS 4.4.1
THRU 4.4.6 (PAGE 68)

NON-BACK MOUNTED
DEVICE

NO

YES

GO TO MAP 5
(PAGE 13)

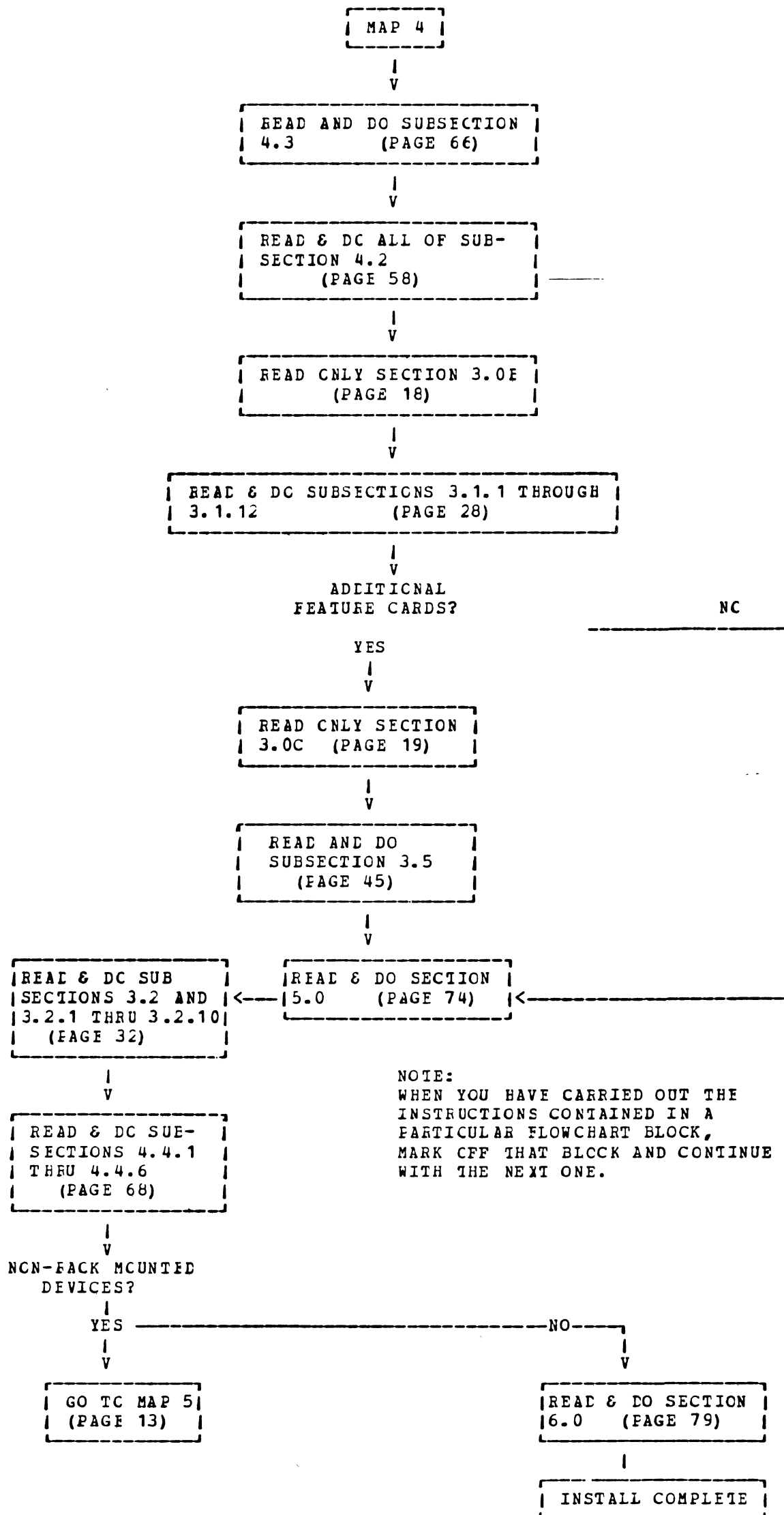
READ AND DO
SECTION 6.0
(PAGE 79)

NOTE:
WHEN YOU HAVE CARRIED OUT THE INSTRUCTIONS
CONTAINED IN A PARTICULAR FLOWCHART BLOCK,
MARK OFF THAT BLOCK AND CONTINUE WITH THE
NEXT ONE.

INSTALL COMPLETE

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YOU ARE INSTALLING MORE FEATURES OR UNITS IN AN
EXISTING IBM SYSTEM & IBM RACK



INSTALLATION OF NON-RACK MOUNTED AND EXTERNAL DEVICES

MAF 5

↓
v

READ INSTALL INSTRUCTIONS PACKAGED
WITH NON-RACK MOUNTED DEVICE
AND RETURN

↓
v

READ & DO SUBSECTION 3.3.1 THRU
3.3.3 AND SUBSECTIONS 3.4 AND
3.4.1 THRU 3.4.2
(PAGE 44)

↓
v

READ ONLY SECTION 3.0C
(PAGE 19)

↓
v

READ AND DO SUBSECTION 3.5
(PAGE 45)

↓
v

READ ONLY SECTION 5.0
(PAGE 74)

↓
v

READ AND DO SECTION 6.0
(PAGE 79)

↓
v

INSTALL COMPLETE

NOTE: WHEN YOU HAVE CARRIED OUT THE INSTRUCTION CONTAINED
IN A PARTICULAR FLOWCHART BLOCK, MARK OFF THAT BLOCK
AND CONTINUE WITH THE NEXT ONE.

SECTION 1.0 UNPACK AND INITIAL SETUP

1.1 INVENTORY OF PACKAGES

- 1.1.1 MAKE AN INITIAL INVENTORY OF PACKAGES AGAINST THE ORDER INVOICE TO CHECK THAT ALL BOXES HAVE BEEN RECEIVED. NOTE: THIS INVENTORY SHOULD BE DONE TO ENSURE THAT ALL UNITS AND BOXES WERE RECEIVED AND THAT NO VISIBLE DAMAGE EXISTS.
- 1.1.2 REMOVE PACKAGING AS PER INSTRUCTIONS AND INSPECT THE UNITS FOR PHYSICAL DAMAGE.
- 1.1.3 REMOVE CONTENTS OF BOXES IN ACCORDANCE WITH THE UNPACKING INSTRUCTIONS WHICH ACCOMPANY EACH UNIT.
 - 1. CHECK EACH ITEM AS BOXES ARE OPENED TO INSURE THAT ALL PARTS HAVE BEEN DELIVERED.
 - 2. CHECK THE EQUIPMENT AND THE CABLES FOR NOMENCLATURE AS WELL AS PART NUMBER AND QUANTITIES.
 - 3. CHECK FOR CUSTOMIZED BLUE DISKETTE BOX TAPED TO THE MACHINE. CARD CONFIGURATION SHEET SHOWING FEATURE CARD PLUGGING LOCATIONS FOR THE INSTALLED CARDS CAN BE FOUND INSIDE THE BOX.

1.2 INITIAL SETUP

- 1.2.1 HAVE MOVERS PLACE NON-RACK MOUNTED DEVICES IN THE VICINITY OF THE FINAL INSTALLATION.
- 1.2.2 FOR AN IBM RACK MOUNTED SYSTEM, HAVE MOVERS PLACE THE RACK IN THE VICINITY OF THE FINAL INSTALLATION.
- 1.2.3 FOR NON-IBM RACK MOUNTED INSTALLATION, HAVE MOVERS PLACE THE MACHINE UNITS IN THE VICINITY OF THE FINAL INSTALLATION.
- 1.2.4 REMOVE PACKING MATERIAL AND UNLOCK THE SPINDLE AND ACTUATOR ARM ON THE DISK FILE (4962), AND DISC SUBSYSTEM (4963) AS PER THE 4962 AND 4963 UNIT INSTALLATION INSTRUCTION.

NOTE: DO NOT PERFORM THIS STEP UNTIL THE 4962 OR 4963 IS INSTALLED INTO THE RACK.
- 1.2.5 REVIEW NON-RACK MOUNTED DEVICE INSTALLATION INSTRUCTIONS FOR SPECIFIC UNPACK AND SET UP PROCEDURES.

SECTION 2.0 SAFETY

2.1 GENERAL

PERSONAL SAFETY CANNOT BE OVEREMPHASIZED. SERVICE PERSONNEL MUST NOT WORK ALONE WHEN PERFORMING ANY MAINTENANCE OR REPAIR WITH POWER ON. AT LEAST TWO PERSONS SHOULD BE PRESENT WHENEVER ANY WORK IS DONE ON A MACHINE WITH POWER ON. SERVICE PERSONNEL SHOULD WEAR SAFETY GLASSES DURING ANY MAINTENANCE REPAIR OPERATION.

FIRE EXTINGUISHERS SHOULD BE AVAILABLE IN EACH ROOM WHERE THERE ARE SYSTEM COMPONENTS. EXTINGUISHERS SHOULD BE OF THE CO₂ TYPE, WHICH ARE RECOMMENDED FOR ELECTRICAL FIRES.

REPLACE ANY SAFETY COVERS THAT HAVE BEEN REMOVED BEFORE GOING ON TO ANOTHER OPERATION. HAZARDOUS VOLTAGES ARE PRESENT IN THIS EQUIPMENT; FORGETFULNESS COULD BE FATAL. DON'T USE UNGUARDED TOOLS OR TEST EQUIPMENT. THEY CAN KILL!

2.2 PERSONAL SAFETY

2.2.1 EXPOSURE TO ENVIRONMENTAL HAZARDS

THE INSTALLER SHOULD GIVE SPECIAL ATTENTION TO THE USER'S I/O LINES FOR THEY MAY CONTAIN VOLTAGES. THE SYSTEM CAN BE LINKED DIRECTLY TO THE USER'S PROCESS, AND VOLTAGES CAN BE INTRODUCED INTO THE SYSTEM FROM A NUMBER OF SOURCES. WITH POWER REMOVED FROM THE SYSTEM, VOLTAGES CAN STILL BE PRESENT IN THE USER'S TERMINATION AREA. ALL LINES ARE POTENTIALLY DANGEROUS AND SHOULD BE REGARDED AS LIVE CIRCUITS. WHEN ENTERING ANY PART OF THE PROCESS AREA, OBSERVE ALL SAFETY PRECAUTIONS AND REGULATIONS. CHECK THE FOLLOWING ITEMS WITH PRINCIPAL CUSTOMER PERSONNEL:

1. THE NEED FOR SAFETY GLASSES, HARD HATS, OR SPECIAL CLOTHING.
2. PARTICULAR SCUTE THAT MUST BE TAKEN TO AND FROM INSTALLATION. ESCORT REQUIRED?
3. SMOKING RESTRICTIONS.
4. RESTRICTIONS ON USE OF ELECTRICAL OR OTHER SPARK-PRODUCING TOOLS.
5. EXPOSURE TO HIGH VOLTAGES.
6. EXPOSURE TO HEAVY MACHINERY OR OTHER EQUIPMENT.
7. EXPOSURE TO SPLASHING ACIDS, MOLTEN METAL, HOT LIQUIDS, ETC.
8. EXPOSURE TO TOXIC GASES AND VAPORS.
9. WARNING ALARMS AND EMERGENCY EXITS.

2.2.2 MACHINE WARNING LABELS

HEED THE WARNING LABELS PLACED IN HAZARDOUS AREAS OF THE MACHINE. THEY ARE PLACED THERE FOR YOUR PROTECTION.

2.2.3 POWER SUPPLIES

BEFORE WORKING ON ANY POWER SUPPLY, REMOVE POWER FROM THE UNIT AND ALLOW AT LEAST ONE MINUTE FOR CAPACITORS TO DISCHARGE TO A SAFE VOLTAGE LEVEL.

2.2.4 POWER CORDS

CHECK POWER CORDS FOR SAFE CONDITION AND PROPER THIRD-WIRE GROUND CONNECTION. CHECK WITH A METER FROM GROUND ON THE PLUG TO FRAME AND INSURE THAT THERE IS A ZERO OHM READING. IF NOT, REFER TO THE MAPS.

2.2.5 LINE-POWERED EQUIPMENT

OSCILLOSCOPES AND OTHER LINE-POWERED EQUIPMENT MUST ALWAYS BE GROUNDING THROUGH THE THIRD-WIRE GROUNDING CONDUCTOR IN THE POWER CORD.

2.3 EQUIPMENT PRECAUTIONS

2.3.1 USER'S INTERFACE

THE SYSTEM MAY BECOME (DEPENDING UPON PRODUCT MIX) AN INTEGRAL PART OF THE USER'S OPERATION. DO NOT, UNDER ANY CIRCUMSTANCES, WORK ON ANY PART OF THE SYSTEM WITHOUT THE PRIOR KNOWLEDGE AND CONSENT OF THE PRINCIPAL USER.

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2.3.2 PRODUCT HARDWARE

USE CAUTION WHEN WORKING AROUND HARDWARE. DO NOT LEAVE FRONT COVERS OFF WHEN POWER IS ON. INSURE THE TILT STABILIZER ON THE RACK IS FASTENED TO FRAME IN DOWN POSITION. FIGURE 2.1 ILLUSTRATES HOW TO ENGAGE THE STABILIZER ON THE IBM 4997 RACK FOR MACHINES PRIOR TO EC 374920.

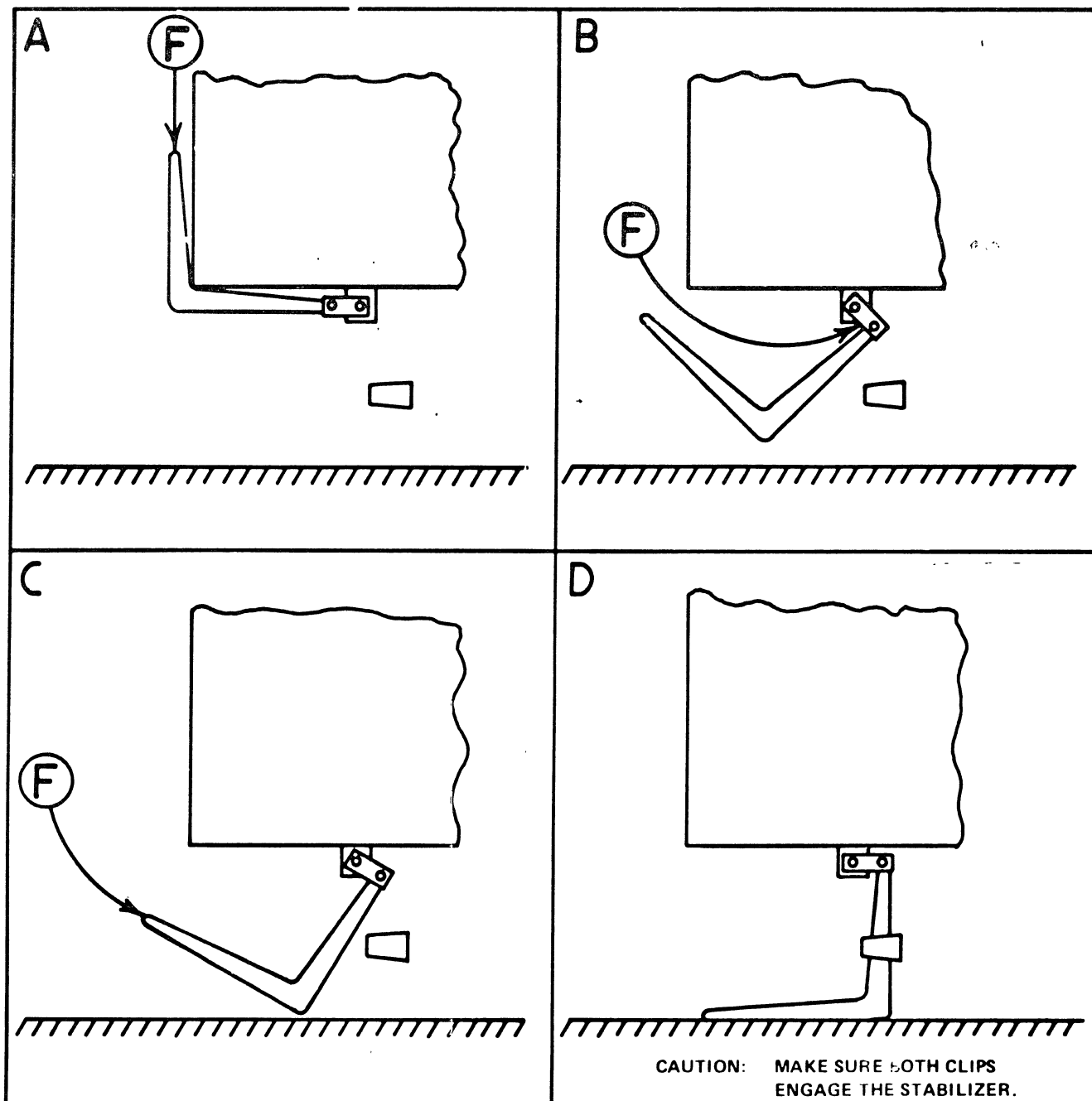
FIGURE 2.2 ILLUSTRATES HOW TO ENGAGE THE STABILIZER ON THE IBM 4997 RACK FOR MACHINES WITH EC 374920. NOTE THAT THIS STABILIZER MUST BE FASTENED TO THE FRAME AS SHOWN IN STEP C USING THE 4 SCREWS, P/N 52580, RECEIVED IN 4997 SHIP GROUP.

2.3.3 LOGIC COMPONENTS

ELECTRICAL OVERLOADS FOR PERIODS AS SHORT AS A FEW MICROSECONDS CAN SERIOUSLY DAMAGE COMPONENT MODULES. CARE MUST BE EXERCISED WHEN GROUNDING SIGNAL LINES, BECAUSE APPLYING A VOLTAGE INSTEAD OF A GROUND OR GROUNDING THE OUTPUT OF DRIVERS, EMITTER FOLLOWERS, ETC., WILL DESTROY LOGIC MODULES.

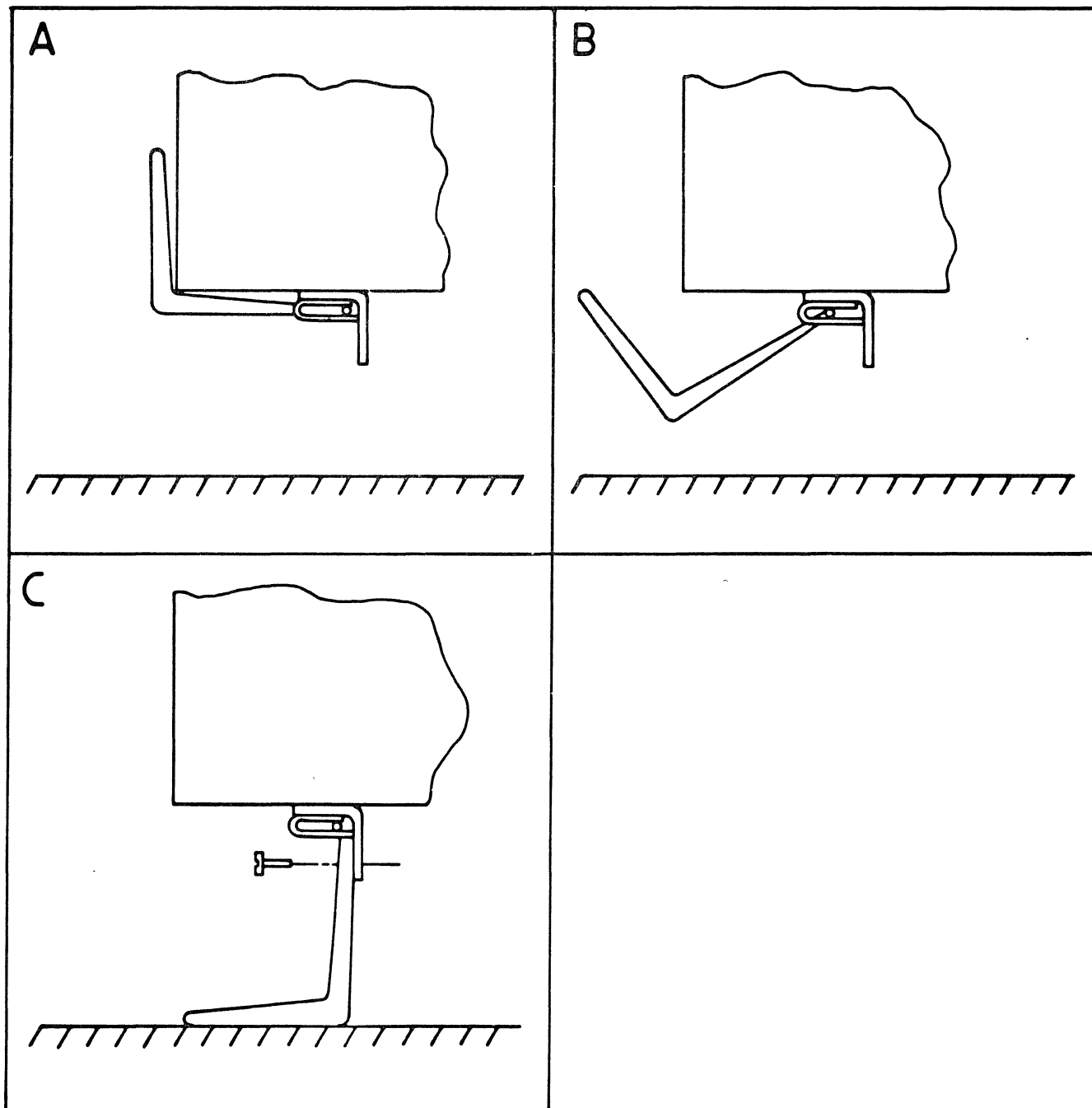
2.3.4 I/O CARDS

USE CARE WHEN REMOVING AND INSERTING I/O CARDS. FINGERPRINTS, PENCIL MARKS, AND OTHER CONTAMINANTS DECREASE THE LEAKAGE RESISTANCE OF THESE CARDS. DO NOT USE CLEANING SOLVENTS OR CARD LUBRICANTS, AND DO NOT PERMIT THE PLASTIC COATING ON THE CARD TO BECOME DAMAGED. INSERTING OR REMOVING CARDS WHILE THE MACHINE IS POWERED ON MAY DAMAGE THE CARDS.



NOTE: AFTER SETTING & LOCKING THE STABILIZER,
ALIGN THE RACK WITH THE REAR ALIGNING
BOLTS.

(STABILIZER LOCK & SET - IBM 4997 RACK)
FIGURE 2.1



NOTE:

1 AFTER SETTING AND SECURING THE STABILIZER,
ALIGN THE RACK WITH THE REAR ALIGNING BOLTS

(STABILIZER SECURE AND SET - IBM 4997 RACK)
FIGURE 2.2

SECTION 3.0 PHYSICAL INSTALLATION

INTRODUCTION

SECTIONS 3.1 THROUGH 3.2 ARE APPLICABLE TO USERS WHO HAVE PURCHASED IBM FEATURES AND MACHINES TO BE INSTALLED INTO C.E.M. (OTHER EQUIPMENT MANUFACTURERS) RACK ENCLOSURES. THIS SECTION DETAILS THE SEQUENCE OF STEPS TO BE FOLLOWED BY THE USER WHEN INSTALLING IBM MACHINES.

IF THE MACHINE HAS BEEN IBM PLANT ASSEMBLED (PRE-CONFIGURED), AND THERE IS NO MULTIPLE RACK ENCLOSURE INSTALLATION, THE INSTALLER CAN GO DIRECTLY TO SECTION 3.3, OR TO THE PRE-CONFIGURED INSTALLATION INSTRUCTION, P/N 8326725.

A. NON-I.E.M. RACK ENCLOSURES

SERIES/1 RACK MOUNTED UNITS ARE DESIGNED TO FIT A 482.6 MM (19 IN.) RACK ENCLOSURE. THE IBM 4997 RACK ENCLOSURE IS DESIGNED TO MEET THE MOUNTING REQUIREMENTS OF SERIES/1 UNITS. FIGURE (3.1 E) IS INCLUDED FOR REFERENCE.

A) IF YOU ARE PLANNING TO USE A NON-IBM RACK ENCLOSURE FOR YOUR SERIES/1 UNITS, THE NON-IBM RACK ENCLOSURE MUST

- 1) BE EQUIVALENT IN MOUNTING HARDWARE AND UNIT SERVICE ACCESS TO THE IBM 4997 ENCLOSURE. SEE CHART 3.0.
 - CHART 3.0 LISTS THE RACK ENCLOSURE FEATURE REQUIRED FOR IBM INSTALLATION AND SERVICE OF SERIES/1 UNITS IN A NON-IBM RACK ENCLOSURE. THE NUMBERS IN THE FIRST COLUMN REFERENCE THE EQUIVALENT ITEM IN THE IBM 4997 ENCLOSURE. SEE FIGURE 3.1E.
 - ALL SERIES/1 UNITS IN A NON-IBM RACK ENCLOSURE MUST BE SUPPORTED INDEPENDENTLY OF THE FRONT MOUNTING SCREWS FOR IBM TO COMPLETE INSTALLATION AND TO SERVICE. OTHERWISE, THE CUSTOMER IS REQUIRED TO MOUNT THE UNITS IN THE BACK AND TO REPOSITION THEM AS NECESSARY FOR IBM INSTALLATION AND SERVICE.
- 2) CONFORM TO THE DIMENSIONS SPECIFIED IN FIGURE 3.1A. THESE DIMENSIONS ARE E.I.A. STANDARD.
- 3) PRESENT NO SAFETY HAZARDS TO THE IBM CUSTOMER ENGINEER.

B) IBM WILL INSTALL AND SERVICE SERIES/1 UNITS IN A NON-IBM RACK ENCLOSURE WHEN ALL REQUIREMENTS IN A) ARE MET. WHERE THESE REQUIREMENTS ARE NOT MET, THE CUSTOMER IS RESPONSIBLE FOR MOUNTING SERIES/1 UNITS IN A NON-IBM RACK ENCLOSURE.

C) IBM WILL NOT ASSEMBLE, OR ALTER, A NON-IBM RACK ENCLOSURE TO INSTALL SERIES/1 UNITS.

B. HARDWARE INSTALLATION RULES

- A) INSTALL MULTIPLE RACK ENCLOSURES BY FASTENING TOGETHER VIA SCREWS AND BOLTS AS DEFINED IN SUBSECTION 3.1.9 AND FIGURES 3.7 AND 3.8. NOTE: MULTIPLE RACKS ARE TO BE ASSEMBLED BEFORE CABLING NON-RACK MOUNTED ATTACHMENTS.
- B) INSTALL THE 4993 (TERMINATION ENCLOSURE) IN THE LOWER MOST POSITION IN THE RACK.
- C) INSTALL THE 4962 (DISK STORAGE DEVICE) OR 4963 (DISK SUB-SYSTEM), AT THE LOWER LOCATION(S) OF THE RACK, BUT ABOVE THE 4993. IF FEATURED, THIS UNIT SHOULD BE INSTALLED BEFORE OTHER UNITS IN THE RACK (SAFETY). (REFER TO PUBLICATION #S131-0602). IT IS SUGGESTED THAT THE TOP OF THE UNIT SHOULD NOT MEASURE MORE THAN 41.5 INCHES FROM THE FLOOR (37 INCHES (940 MM) FOR THE 4963). REMOVE PACKING AND UNLOCK ACTUATOR AND SPINDLE PER DEVICE INSTALLATION INSTRUCTIONS. NOTE: DO NOT UNLOCK THE SPINDLE AND ACTUATOR UNTIL THE 4962 OR 4963 IS MOUNTED.
- D) INSTALL THE 4966 AT THE LOWER LOCATIONS BUT ABOVE THE 4962 (DISK STORAGE DEVICE) OR THE 4963 (DISK SUB-SYSTEMS) IF FEATURED. IT IS SUGGESTED THAT THE TOP OF THE UNIT SHOULD NOT MEASURE MORE THAN 60 INCHES FROM THE FLOOR.
- E) TO INSTALL 4969 (TAPE SUBSYSTEM), INSTALL 3.5 INCH FILLER PANEL (P/N 6839030) IN THE UPPER MOST POSITION OF THE RACK. INSTALL THE 4969 DIRECTLY BELOW THE FILLER PANEL. IF THE INSTALLATION IS A MULTIPLE DRIVE SYSTEM, THEN THE SECOND DRIVE MUST BE INSTALLED THE SAME AS DRIVE ONE IN AN ADJACENT RACK, OR BELOW DRIVE ONE IN THE SAME RACK.
- F) INSTALL 4952'S, 4953'S OR 4955'S (PROCESSORS) AND THE 4959'S (I/O EXPANSION UNITS) ADJACENT TO ONE ANOTHER. UNITS SHOULD BE INSTALLED VERTICALLY OR HORIZONTALLY ADJACENT TO ONE ANOTHER.
- G) INSTALL 4952'S, 4953'S OR 4955'S (PROCESSORS) AND THE 4959'S (I/O EXPANSION CARD FILE UNITS) IN THE TOP MOST LOCATIONS OF THE RACK.
- H) INSTALL ALL HALF-WIDE DEVICES INTO THE BACK MOUNTING FIXTURE P/N 1632229.
- I) INSTALL THE 4952 A, 4953 A & C MODELS (HALF-WIDE PROCESSORS) TO THE LEFT SIDE OF

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THE RACK MOUNTING FIXTURE.

- J) CABLE THE 4952'S, 4953'S OR 4955'S (PROCESSORS) TO THE 4959 (INPUT/OUTPUT EXPANSION UNIT) WITH FOUR FLAT CABLES (SEE FIGURE 3.9).
- K) INSTALL SPECIFIC MACHINES PER THE APPROPRIATE INSTRUCTION MANUALS.
- L) VERIFY FEATURE CARD PRIORITY AND ADDRESS ASSIGNMENT AS PER SECTION 5.0 OF THIS DOCUMENT.
- M) CABLE THE FEATURE ATTACHMENT CARDS FROM THE CARD FILE TO THE APPROPRIATE RACK MOUNTED DEVICE (SEE FIGURE 3.9).

NOTE: THE CARD CONFIGURATION SHEET SHOWING FEATURE CARD PLUGGING LOCATIONS IN THE CARD FILE CAN BE FOUND IN THE BLUE DISKETTE BOX.

- N) PLACE THE NON-RACK MOUNTED UNITS (PRINTER(S), DISPLAY) IN THEIR FINAL POSITION AND CONNECT THE SIGNAL AND POWER CABLES AS DIRECTED BY THE SPECIFIC DEVICE INSTALLATION INSTRUCTIONS.

FOR SIGNAL CABLE IDENTIFICATION AND FEATURE CARD USAGE, REFER TO TABLE 3.4.1. THIS INFORMATION, AND HELP IN IDENTIFYING FEATURE CARDS IS FOUND IN M.L.D. VOL I, MANUAL ALSO.

C. FEATURE ATTACHMENT CARD RULES

IN MOST CASES CARD PLUGGING AND JUMPER INSTALLATION WILL BE INSTALLED BY IBM PRIOR TO SHIPMENT TO THE USER; HOWEVER, IF THE USER ALTERS THE DEVICE ADDRESS, SELECT FEATURES, CARD PLUGGING OR PURCHASES ADDITIONAL FEATURES AFTER THE INITIAL MACHINE PURCHASE, THEN REFERENCE TO THIS INFORMATION IS REQUIRED. VERIFICATION OF INSTALL JUMPERING ON THE FEATURE CARD AT INSTALLATION IS RECOMMENDED. (SEE SECTION 5.0 OF THIS DOCUMENT AND LOGICS FOR THE APPROPRIATE FEATURE).

- A) THE FEATURE CARD PLUGGING SEQUENCE IS DEFINED IN THE SYSTEM MAP SHIPPED WITH THE MACHINE.
- B) PRIOR TO FEATURE CARD PLUGGING, REFERENCE SHOULD BE MADE TO ALL EXISTING CUSTOMER ASSIGNED ADDRESS AND IFL REQUIREMENTS. JUMPERS ARE INSTALLED ON EACH CARD, AS SHOWN IN THE LOGICS FOR THE SPECIFIED FEATURE ATTACHMENT CARD. THE APPROPRIATE DEVICE ADDRESS IS INSTALLED VIA THE DEVICE ADDRESS JUMPERS. FOR PHYSICAL PLACEMENT OF JUMPERS, REFER TO THE SPECIFIC FEATURE CARD LOGICS SHIPPED WITH THE MACHINE AND/OR FEATURE.
- C) POPULATING OF THE CARD FILE IS RECOMMENDED TO BE SEQUENTIALLY FROM OPERATOR'S RIGHT TO LEFT AS VIEWED FROM FRONT OF THE MACHINE, WITH CARDS PLUGGED IN ADJACENT OR EVERY OTHER SOCKET. (REFER TO SECTION 4.0, FIGURE 4.8 FOR PIN DEFINITION).
NOTE: THIS FIGURE IS VIEWED FROM THE REAR OF THE MACHINE

WHEN THERE ARE TWO OR MORE SEQUENTIAL CARD SOCKET SPACES EMPTY BETWEEN PLUGGED FEATURE CARDS (BUT NOT BETWEEN MEMORY CARD), JUMPERS (A ONE INCH LONG, RED JUMPER ASSEMBLY) MUST BE INSTALLED TO ASSURE PROPER CHANNEL OPERATION. THE JUMPER FOR EACH VACANT SOCKET IS INSTALLED ON THE PIN SIDE OF THE BACK PANEL, AND ITS INTRA-SOCKET CONNECTION IS BETWEEN PIN M11 AND PIN M12. IF THE "Q" CARD SOCKET OF THE EXPANSION INPUT/OUTPUT UNIT IS EMPTY, A JUMPER (A ONE INCH LONG, RED JUMPER ASSEMBLY) MUST BE INSTALLED FROM PIN M11 TO PIN M12 OF THE "Q" SOCKET. ALSO, ALL VACANT I/C EXPANSION CARD FILE SOCKETS FOLLOWING THE VACANT "Q" SOCKET (IN REVERSE ALPHABETIC ORDER) MUST BE JUMPED ACCORDING TO THE ABOVE DESCRIBED PROCEDURE.

- D) FOR POWER-CN-RESFT FOR CARD LOCATION A, INSTALL A ONE INCH LONG, RED JUMPER ASSEMBLY ON THE PIN SIDE OF THE BACKPANEL FROM PIN S05 OF SOCKET POSITION B TO PIN S05 OF SOCKET POSITION A. ALWAYS INSTALL A JUMPER EXCEPT WHEN I/O CABLES ARE PLUGGED DIRECTLY INTO THE BOARD A SOCKET LOCATION.
- E) FIELD INSTALLATION OF THE FLOATING POINT FEATURE #3920 REQUIRES THAT THE CARD BE PLUGGED IN THE B CARD SOCKET ONLY, FOR MACHINE #4955A; THE C CARD SOCKET ONLY, FOR MACHINE #4955B; THE "K" CARD SOCKET ONLY, FOR MACHINE 4955-C; AND THE "G" CARD SOCKET ONLY, FOR MACHINE 4955-D, E. THE INSTALLER IS TO CONNECT THE HALF WIDE FLAT CABLE PROVIDED WITH THE FEATURE CARD TO THE BOTTOM ONE HALF OF THE TOP CONNECTOR ON THE PROCESSOR DATA CARD. THE DATA CARD IS LOCATED IN THE J CARD SOCKET POSITION FOR THE 4955A MACHINE, IN THE D CARD SOCKET POSITION FOR THE 4955B MACHINE, IN THE "L" CARD SOCKET POSITION FOR THE 4955C, AND IN THE "H" CARD SOCKET POSITION FOR THE 4955D AND E.

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FIGURE 3.1B REF.	NON-IBM RACK ENCLOSURES	
①	SCREW HOLES FOR MOUNTING RACK UNITS	REQUIRED
②	IPO (INSTANT-POWER-OFF)	RECOMMENDED
③	HORIZONTAL UNIT SUPPORTS (APPARATUS SUPPORTS)	REQUIRED
④	VERTICAL SUPPORT COLUMNS	REQUIRED (FOUR)
⑤	VERTICAL SUPPORT-COLUMN SPACING FOR 482.6 mm (19 IN) RACK UNITS	REQUIRED
⑥	VERTICAL SUPPORT-COLUMN SPACING FOR 4962 DISK STORAGE UNIT	REQUIRED
⑦	ENCLOSURE VENTS (TOP AND BOTTOM COVERS)	REQUIRED
⑧	TILT STABILIZER	REQUIRED
⑨	RACK ADAPTER FOR HALF-WIDTH UNITS	AS REQUIRED
⑩	CASTERS AND LEVELING PADS	RECOMMENDED
⑪	USER-CABLE OPENING	REQUIRED
⑫	USER-CABLE ROUTING AREA	REQUIRED
⑬	ENCLOSURE COVERS	REQUIRED
⑭	PRIMARY POWER AND GROUND DISTRIBUTION	REQUIRED
-	FITS STANDARD 2.03 m (6 FT, 8 IN) DOOR	RECOMMENDED
-	STRENGTH TO SUPPORT TOTAL WEIGHT	REQUIRED
-	WELDED FRAME	RECOMMENDED
-	QUALIFIES AS COMPUTER ENCLOSURE	RECOMMENDED

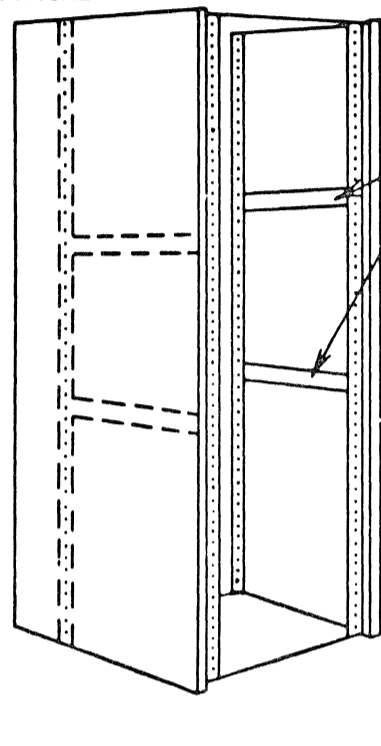
CHART 3.0

DIMENSIONS OF SERIES/1 RACK-MOUNTED UNITS								
RACK-MOUNTED UNITS			METRIC DIMENSIONS (mm)			ENGLISH DIMENSIONS (IN)		
TYPE	MODEL	UNIT DESCRIPTION	WIDTH	DEPTH	HEIGHT	WIDTH	DEPTH	HEIGHT
4952	A	PROCESSOR	216	572	313	8.50	22.50	12.30
4952	B	PROCESSOR	483	476	356	19.00	18.75	14.00
4953	A, C	PROCESSOR	216	527	356	8.50	20.75	14.00
4953	B, D	PROCESSOR	483	476	356	19.00	18.75	14.00
4955	A,B,C,D,E	PROCESSOR	483	476	356	19.00	18.75	14.00
4959	A	I/O EXPANSION	483	476	356	19.00	18.75	14.00
4962	1, 1F, 3	DISK STORAGE	483	610	489	19.00	24.00	19.25
4962	2,2F,4	DISK STORAGE	483	610	489	19.00	24.00	19.25
4963	23/58A,B 29/64A,B	DISK STORAGE	483	584	356	19.00	23.00	14.00
4964	1	DISKETTE	216	590	356	8.50	23.25	14.00
4966		DISKETTE MAGAZINE	483	610	356	19.00	24.00	14.00
4969	4D,4N,4P	TAPE UNIT	483	573	620	19.00	22.50	24.40
4969	7D,7N,7P	TAPE UNIT	483	573	620	19.00	22.80	24.40
4982	1	SENSOR I/O	216	503	356	8.50	19.75	14.00
4987		PCS	483	610	356	19.00	24.00	14.00
4993		TERM. ENCLOSURE	483	325	133	19.00	12.8	5.25
4999	1, 2 2	BATTERY BACKUP	216	508	356	8.50	20.00	14.00

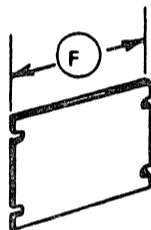
TABLE 3.0

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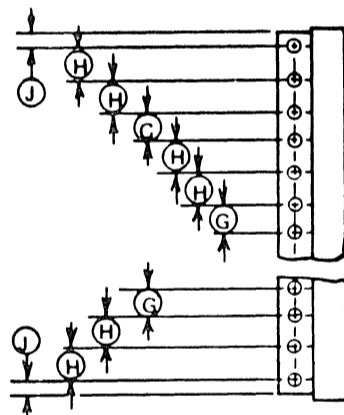
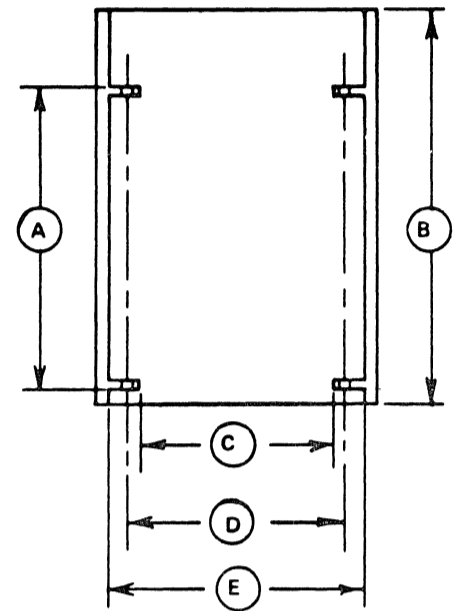
TYPICAL NON-IBM RACK ENCLOSURE



APPARATUS SUPPORTS
 (SPACING IS DEPENDENT
 ON SERIES/1 UNITS TO BE
 MOUNTED. SEE THE
 DIMENSIONS FOR SERIES/1
 RACK-MOUNTED UNITS IN
 TABLE 3.0



TOP VIEW



REQUIRED DIMENSIONS...

- Ⓐ = 609.6 mm (24.0 IN.) REQUIRED FOR MOUNTING 4962 DISK STORAGE UNIT
- Ⓑ = 711.2 mm (28.0 IN.) MINIMUM RACK DEPTH
- Ⓒ = 451.0 mm (17.75 IN.)
- Ⓓ = 465.1 mm (18.312 IN.)
- Ⓔ = 483 mm (19.031 IN.)
- Ⓕ = 482.6 mm (19.0 IN.)
- Ⓖ = 12.7 mm (0.5 IN.)
- Ⓕ = 15.9 mm (0.625 IN.)
- Ⓖ = 7.9 mm (0.312 IN.)

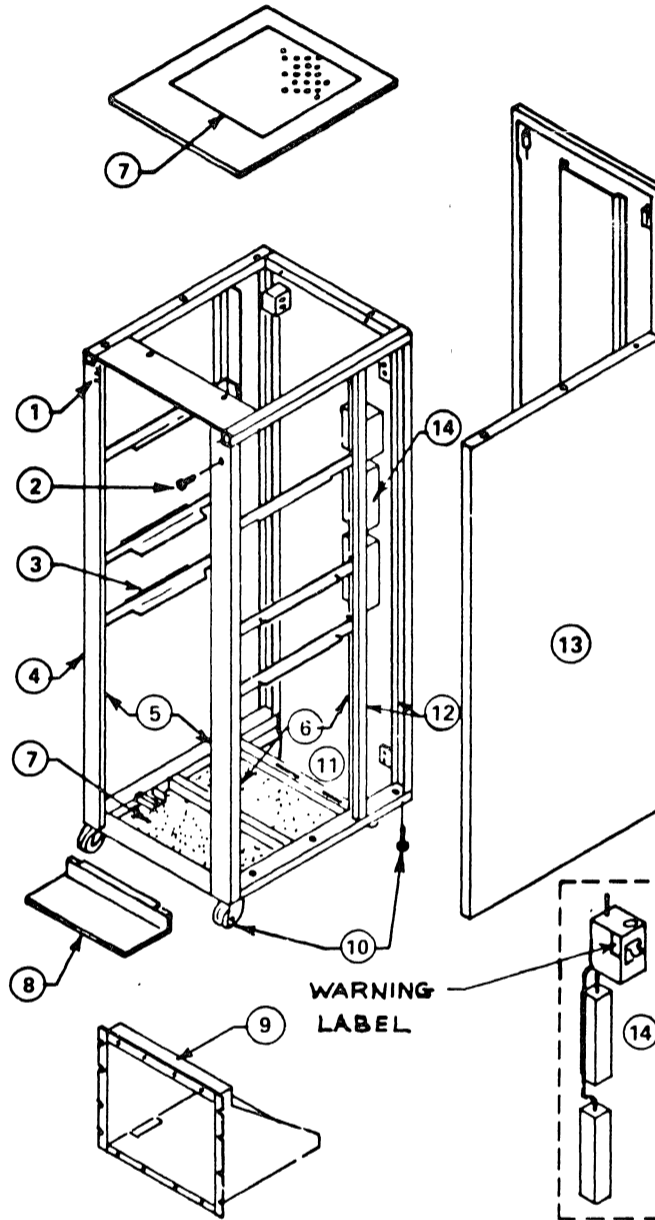
NON-IBM RACK-ENCLOSURE DIMENSIONS

FIGURE 3.1A

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REF. NO.	4997 MODEL 2 FEATURES *
①	SCREW HOLES FOR MOUNTING RACK UNITS
②	IPO (INSTANT-POWER-OFF)
③	HORIZONTAL UNIT SUPPORTS (APPARATUS SUPPORTS)
④	VERTICAL SUPPORT COLUMNS (SIX)
⑤	VERTICAL SUPPORT-COLUMN SPACING FOR 482.6 mm (19 IN) RACK UNITS
⑥	VERTICAL SUPPORT-COLUMN SPACING FOR 4962 DISK STORAGE UNIT
⑦	ENCLOSURE VENTS (TOP AND BOTTOM COVERS)
⑧	TILT STABILIZER
⑨	RACK ADAPTER FOR HALF-WIDTH UNITS
⑩	CASTERS AND LEVELING PADS
⑪	USER-CABLE OPENING
⑫	USER-CABLE ROUTING AREA
⑬	ENCLOSURE COVERS
⑭	PRIMARY POWER AND GROUND DISTRIBUTION
-	FITS STANDARD 2.03 m (6 FT, 8 IN) DOOR
-	STRENGTH TO SUPPORT TOTAL WEIGHT
-	WELDED FRAME
-	QUALIFIES AS COMPUTER ENCLOSURE (UL LISTED IN THE U.S.)

* NOTE...
 THE 4997 MODEL 1 HAS THE SAME FEATURES AS THE MODEL 2. THE MAIN DIFFERENCES ARE HEIGHT AND VENTING.



IBM 4997 RACK ENCLOSURE MODEL 2
 FIGURE 3.1B

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3.1 **HARDWARE INSTALLATION OF RACK MOUNTABLE UNITS**

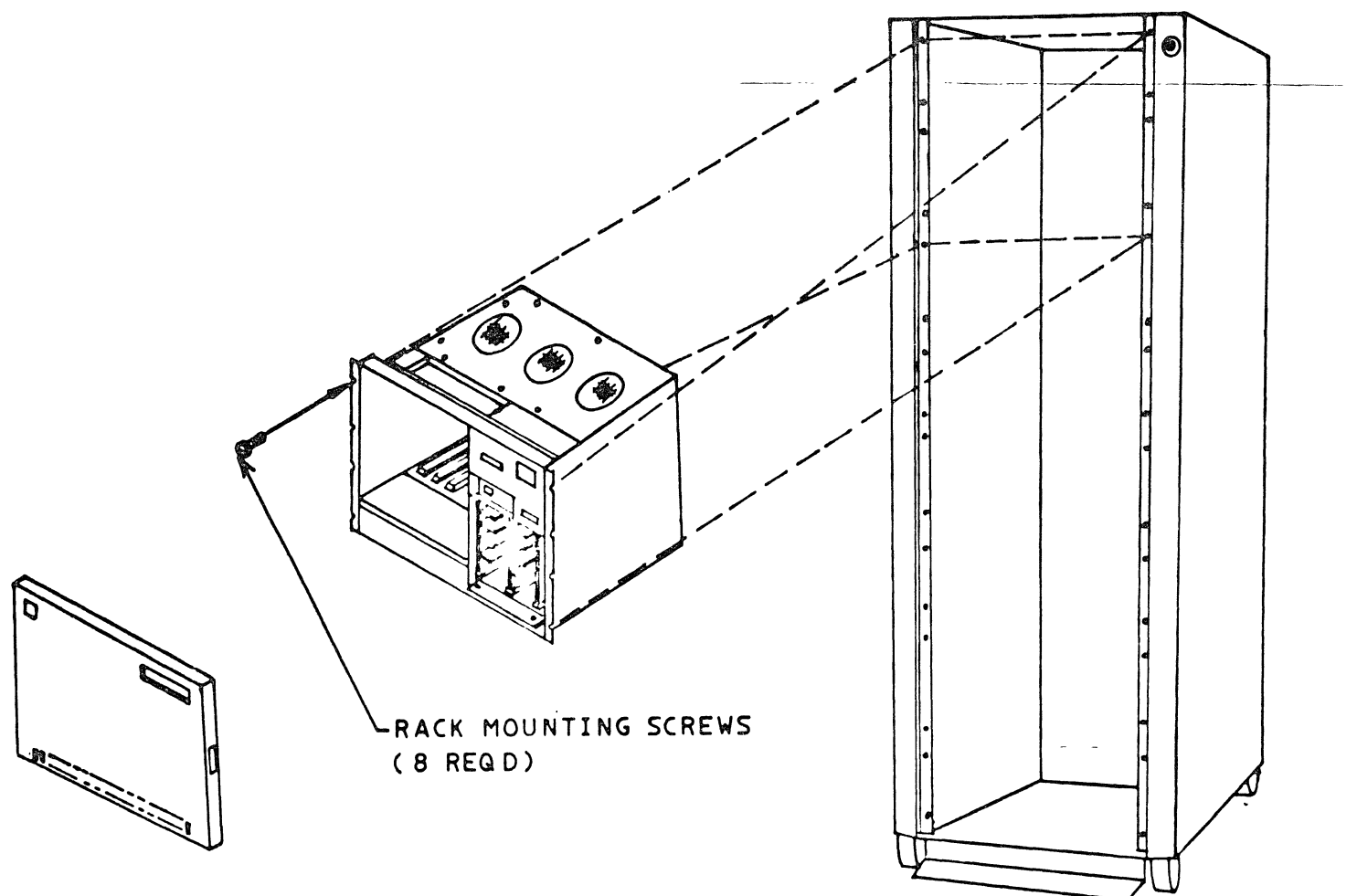
3.1.1 **FULL WIDTH UNIT INSTALLATION (*)**: 4952 MOD B, 4953 MOD B & D, 4955 ALL, 4959 ALL, 4962 ALL, 4963 ALL, 4966 ALL, 4969 ALL, 4987, AND 4993.

MOUNT THE UNIT FROM THE FRONT OF THE RACK AND FASTEN WITH EIGHT BLACK #10-32 SCREWS. (SEE FIGURE 3.2). (4 SCREWS FOR 4993).

ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE CARD FILE AND THE RACK.

(*) FOR SPECIFIC INSTRUCTIONS, REFER TO THE APPROPRIATE INSTALLATION INSTRUCTIONS FOR EACH UNIT (4962, 4963, 4966, 4969 AND 4987).

NOTE: IF ANY NON-RACK MOUNTED DEVICES ARE TO BE INSTALLED AT THIS TIME ALSO, IT IS ADVISABLE TO WAIT UNTIL THE UNIT'S SIGNAL CABLES ARE ROUTED PRIOR TO FASTENING DOWN THE CARD FILE (4952B, 4953B AND D, 4955, AND 4959).



FULL WIDTH CARD FILE INSTALLATION
FIGURE 3.2

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3.1.2 HALF WIDE UNIT INSTALLATION (*): 4952 A, 4953 A & C, 4964, 4982, 4999.

- A) MOUNT THE RACK MOUNTING FIXTURE (FEATURE CODE #4540) FROM THE FRONT OF THE RACK AND FASTEN WITH EIGHT BLACK #10-32 SCREWS (SEE FIGURE 3.3).

ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE HALFWIDE UNITS AND THE FIXTURE.

- B) MOUNT HALF WIDE UNITS INTO THE MOUNTING FIXTURE AND FASTEN WITH FOUR BLACK #10-32 SCREWS (SEE FIGURE 3.4).

FOR 4952A, LOWER POWER SUPPLY, ADD A SCREW (#10/32 - P/N 332620) THRU A HOLE IN THE BOTTOM OF THE CARD FILE INTO THE BOTTOM OF THE RACK MOUNTING FIXTURE.

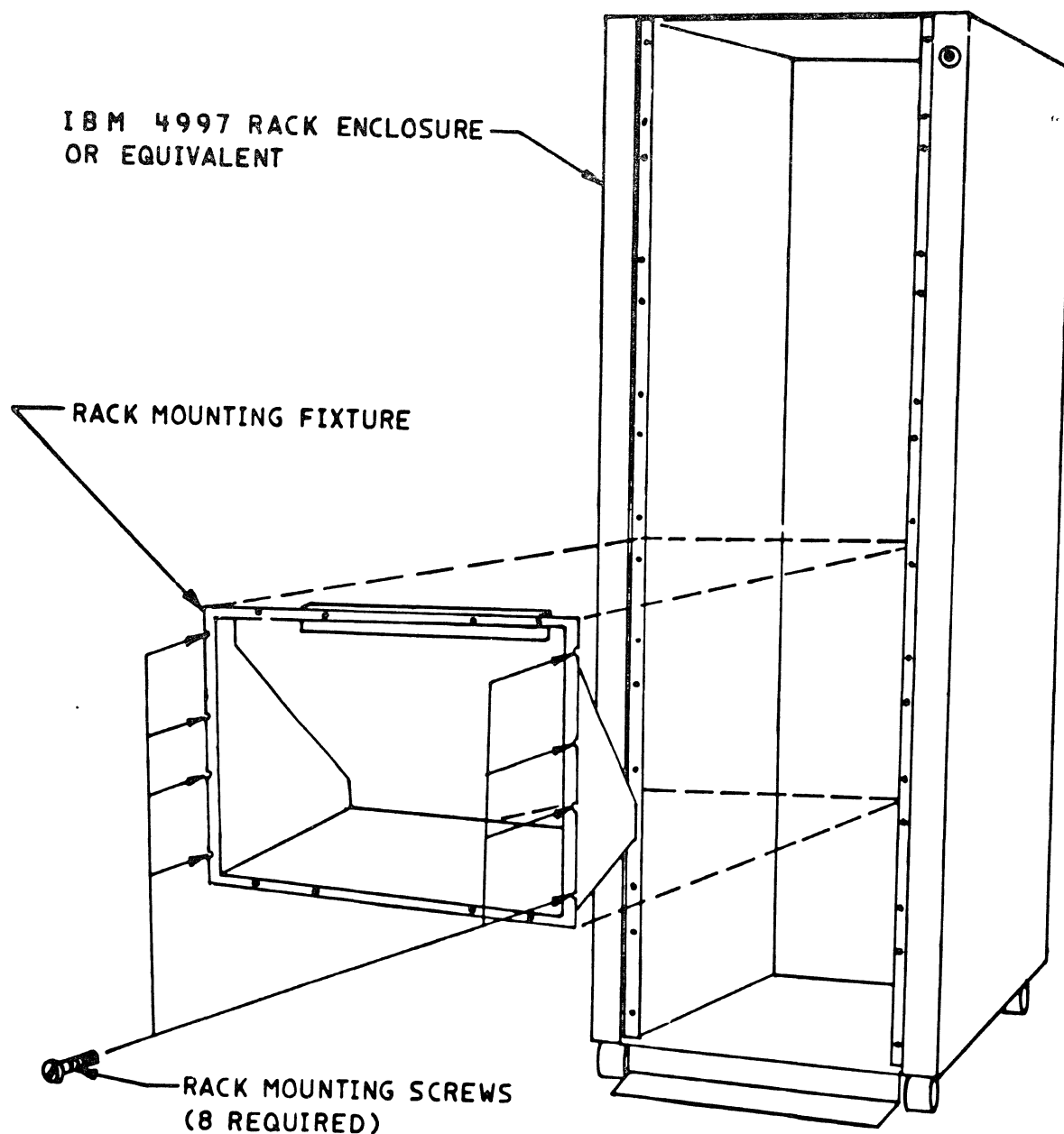
ENSURE THAT THE MOUNTING SCREWS ARE FIRMLY TIGHTENED SO AS TO MAKE GOOD ELECTRICAL GROUND BETWEEN THE FIXTURE AND THE RACK.

IT SHOULD BE NOTED THAT THE 4964 SERVICE GUIDE PIN IS TO BE INSTALLED TO THE RACK MOUNTING FIXTURE PRIOR TO THE UNIT BEING INSTALLED. REFER TO THE 4964 DISKETTE INSTALLATION INSTRUCTION DOCUMENT.

- C) ADJUST FRONT COVER BY LOOSENING SCREWS AND BRACKET LATCH, CENTERING THE ON-OFF SWITCH AND RETIGHTEN.

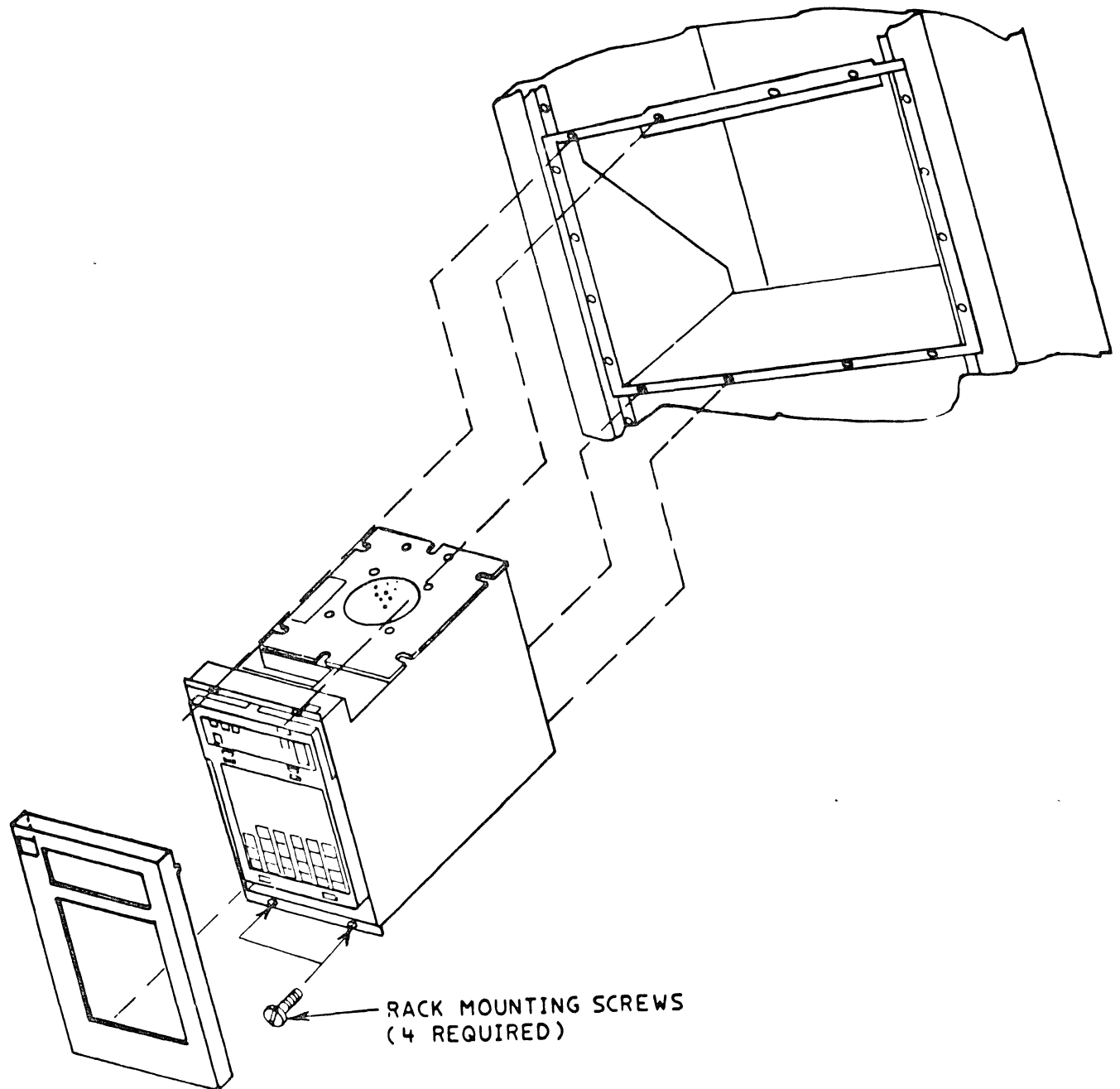
- (*) FOR SPECIFIC INSTRUCTIONS REFER TO THE APPROPRIATE INSTALLATION INSTRUCTION FOR EACH UNIT. (4964, 4982, AND 4999).

NOTE: IF ANY NON-RACK MOUNTED DEVICES ARE TO BE INSTALLED AT THIS TIME ALSO; IT IS ADVISABLE TO WAIT UNTIL THE UNIT'S SIGNAL CABLES ARE ROUTED PRIOR TO FASTENING DOWN THE CARD FILE (4953 A&C).



RACK MOUNTING FIXTURE INSTALLATION

FIGURE 3.3



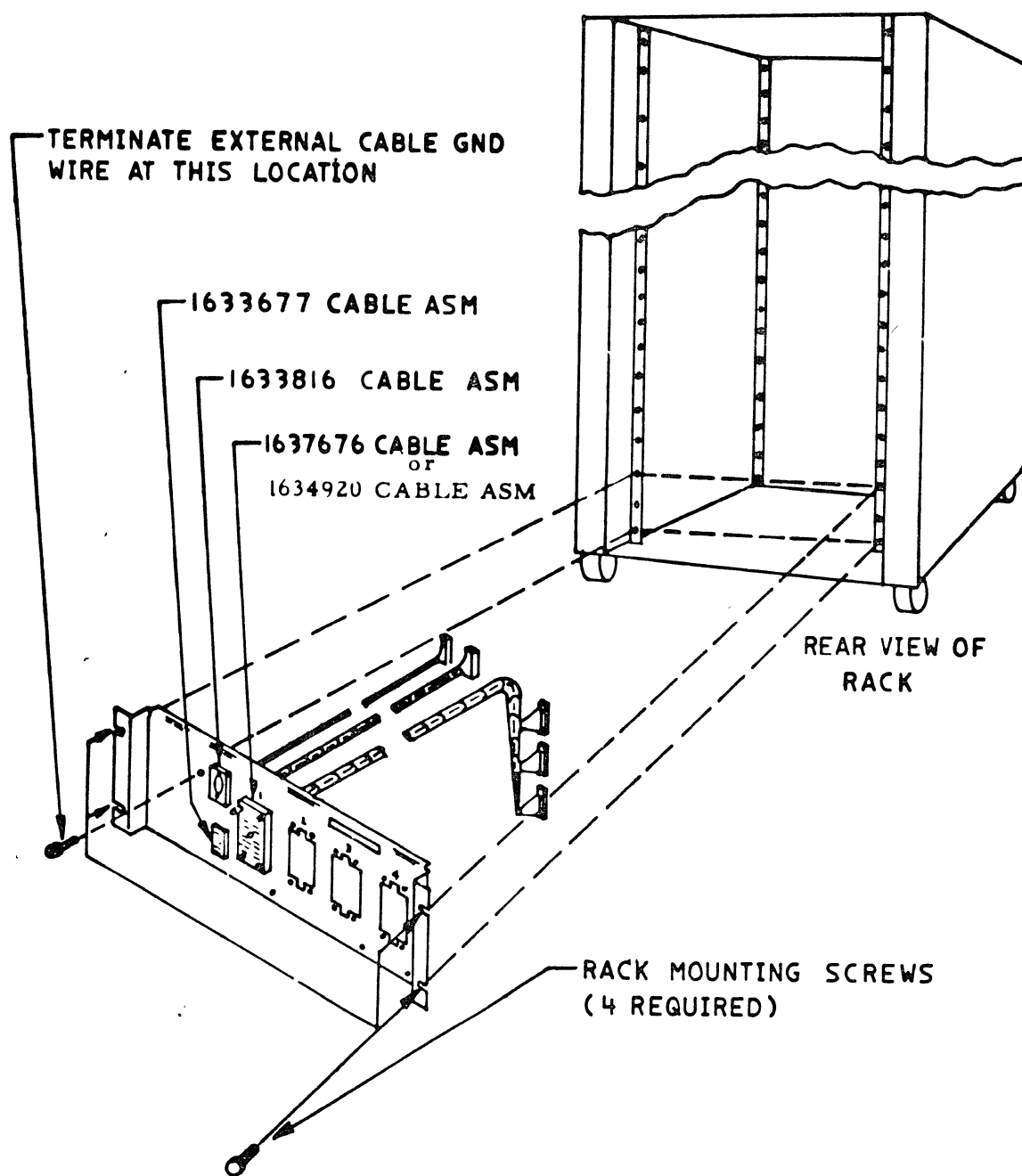
HALF WIDE CARD FILE INSTALLATION

FIGURE 3.4

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3.1.3 CUSTOMER ACCESS PANEL INSTALLATION (#1590 FEATURE) REFER TO FIGURE 3.5.

IF NOT INSTALLED AT THE IBM PLANT OF MANUFACTURE, INSTALL INTO ANY STANDARD 19" EIA RACK. THE PANEL (5 1/4" HIGH X 19" WIDTH) MOUNTS TO THE REAR OF THE RACK ENCLOSURE VIA FOUR BLACK #10-32 SCREWS. EACH FEATURE IS CABLED INTERNALLY WITHIN THE RACK FROM EACH FEATURE ATTACHMENT CARD TO THE PANEL VIA THE APPROPRIATE CABLE SUPPLIED WITH THE SELECTED FEATURE. CABLING FROM THE PANEL TO THE USER'S EXTERNAL SOURCE IS THE USER'S RESPONSIBILITY. TABLE 3.1.3 ITEMIZES THE CONNECTOR DEFINITIONS AT THE USER'S SIDE OF THE PANEL. IT IS RECOMMENDED THAT THE PANEL BE INSTALLED AT THE REAR OF THE RACK AND OPPOSITE THE 5 1/4" BLANK PANEL OR THE RACK ADAPTER UNITS (EXCLUDING 4982 AND 4964). THE PANEL MAY NOT BE MOUNTED BEHIND A 4952A, 4962, 4963, 4964, 4966, 4969, 4987, 4993, 4999.



CUSTOMER ACCESS PANEL INSTALLATION
FIGURE 3.5

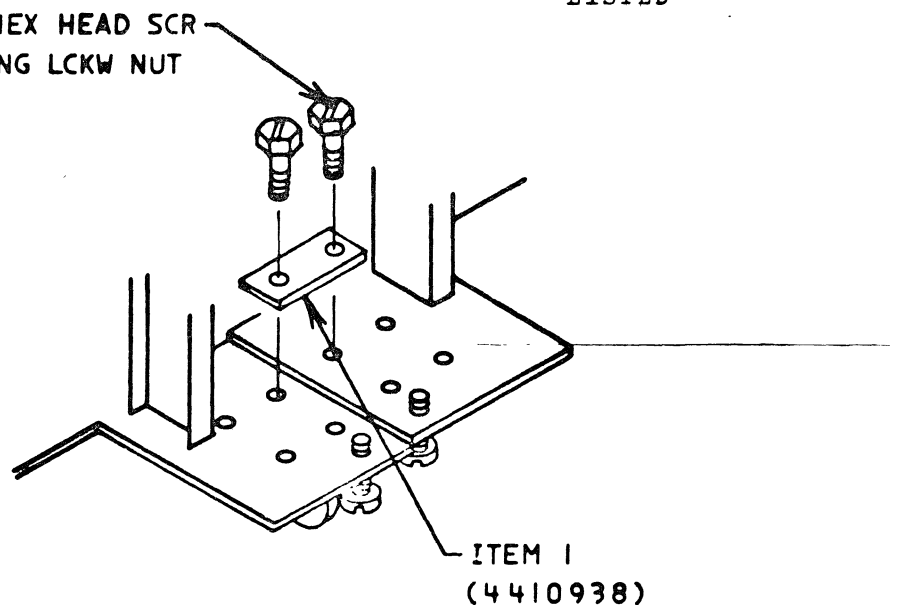
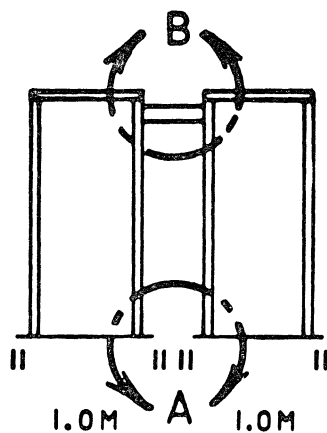
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CONNECTOR DEFINITION

TABLE 3.1.3

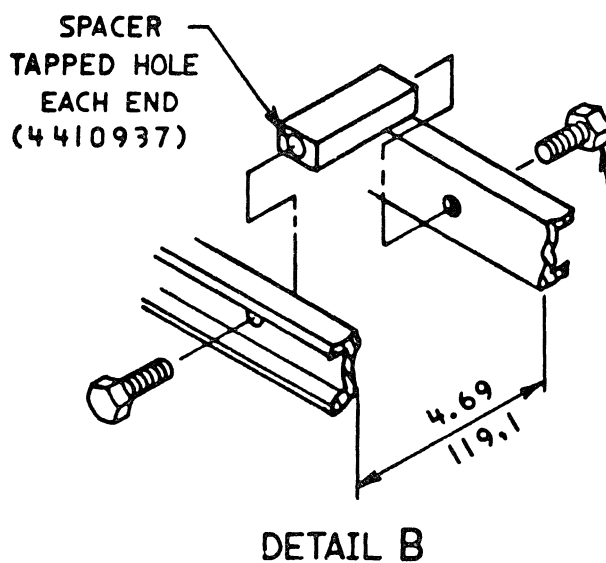
	IBM P/N	VENDOR P/N	VENDOR	QTY	DESCRIPTION
INTEGRATED	2191077	202799-2	AMP	1	160 POS BLOCK
DIGITAL INPUT/ OUTPUT	2191079	202798-1	AMP	1	SHIELD
(1560 FEATURE OR OEM DPC 5430 FEATURE)	4413606	66109-1	AMP	176	SOCKET CONTACT
	2122636	201047-4	AMP	1	GUIDE-SOCKET
KIT-PACKAGE	8326777				CONTAINS ALL LISTED COMPONENTS
TELETYPEWRITER (785C FEATURE)	5130483	91-458	AMPHENOL	1	CONNECTOR
KIT-PACKAGE	8326775				CONTAINS ALL LISTED COMPONENTS
TIMER (7840 FEATURE)	2122837	200512-2	AMP	1	26 POS. BLOCK
	2127895	201169-2	AMP	1	SHIELD
	4413608	66109-1	AMP	29	SOCKET CONTACT
	2122202	200390-4	AMP	1	GUIDE-SOCKET
	2122203	200389-4	AMP	1	GUIDE-PIN
KIT PACKAGE	8326776				CONTAINS ALL LISTED

38688 (2) .250-20 HEX HEAD SCR
 USE EXISTING LCKW NUT

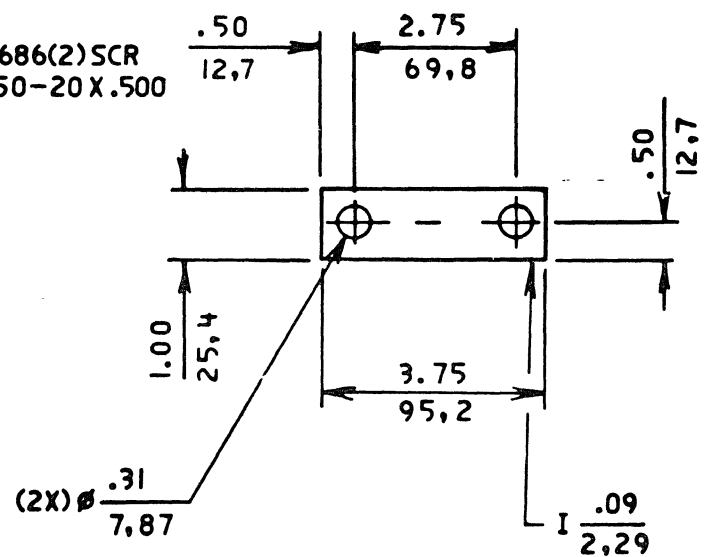


DETAIL A

REAR VIEW
 OF ADJACENT CASTER
 PLATES



DETAIL B



ITEM I
 (4410938)

NOTE:
 I PROVISIONS EXIST FOR
 EXPANSION LEFT OR RIGHT

Figure 3.7A
 1.0 Meter Multiple Bay Assembly

3.1.4 DISK STORAGE UNIT (MACHINE #4962) INSTALLATION

INSTALL THE DEVICE PER SEPARATE PUBLICATION PARTS CATALOG #S131-0602.

NOTE THAT THE INSTALLATION INSTRUCTIONS IS MADE PART OF THE ABOVE REFERENCED PUBLICATION.

3.1.5 DISK SUBSYSTEM (MACHINE 4963) INSTALLATION:

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTIONS (P/N 0712322) SUPPLIED WITH THE DEVICE.

3.1.6 DISKETTE UNIT (MACHINE #4964) INSTALLATION

INSTALL THE DEVICE PER SEPARATE PUBLICATION PARTS CATALOG #S131-0601

NOTE THAT THE INSTALLATION INSTRUCTIONS IS MADE PART OF THE ABOVE REFERENCED PUBLICATION.

3.1.7 DISKETTE MAGAZINE UNIT (MACHINE 4966) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTION 2462159 SHIPPED WITH THE DEVICE.

3.1.8 TAPE SUBSYSTEM (MACHINE 4969) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTIONS P/N 6838831 SUPPLIED WITH THE MACHINE.

3.1.9 SENSOR INPUT/OUTPUT UNIT (MACHINE #4982) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTIONS P/N 1633742 SHIPPED WITH THE DEVICE.

3.1.10 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM (MACHINE 4987) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTION P/N 4414980 SUPPLIED WITH THE DEVICE.

3.1.11 SERIES/1 - SYS/370 TERMINATION ENCLOSURE (MACHINE 4993) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTIONS P/N 6827309 SUPPLIED WITH THE DEVICE.

3.1.12 BATTERY BACKUP UNIT (MACHINE #4999) INSTALLATION

INSTALL THE DEVICE PER SEPARATE DEVICE INSTALLATION INSTRUCTIONS P/N 1633741 SHIPPED WITH THE DEVICE.

3.1.13 MULTIPLE BAY ENCLOSURE INSTALLATION (IF FEATURED)

MULTIPLE BAY CONFIGURATIONS WILL BE SHIPPED AS INDIVIDUAL ENCLOSURES BECAUSE OF THE FIXED WHEELS AT THE FRONT. ALL ENCLOSURES WITH A SPECIFY CODE #9197 (PRIMARY RACK ENCLOSURES) WILL BE SHIPPED WITH A FULL SET OF COVERS. ALL ENCLOSURES WITH A SPECIFY CODE #9198 (SUBSEQUENT BAY ENCLOSURES) ARE SHIPPED WITHOUT SIDE COVERS, BUT WITH THE ATTACHMENT HARDWARE AND FILLER PANELS NEEDED, INCLUDED. SUBSEQUENTLY, THIS ENCLOSURE IS CONSIDERED AN "ADD ON" ENCLOSURE.

INSTALLATION IN THE CUSTOMER AREA WILL REQUIRE REMOVAL OF THE SIDE COVER OF THE INITIAL ENCLOSURE ON THE SIDE THAT WILL BECOME THE INTERFACE FOR THE MULTIPLE BAY CONFIGURATION. REMOVE THE IPO KNOB BEFORE ATTEMPTING TO REMOVE THE RIGHT SIDE COVER. THE REMOVED COVER WILL BE REINSTALLED ON THE FAR SIDE OF THE LAST ADD ON ENCLOSURE

THE ENCLOSURES TO BE ATTACHED SHALL BE MOVED TOGETHER AND ALIGNED WITH THE REAR LEVELING SCREWS, THEN ECITED AT THE TOP AND BOTTOM WITH HARDWARE PROVIDED (SEE FIGURE 3.7A OR 3.7B). NOTE ON EARLY MODELS OF THE 1.8M ENCLOSURES, THE HOLE IN THE 2.00" TUBING (SEE FIGURE 3.7B, DETAIL "A") MAY BE MISSING. IF SO, DRILL A .344" DIAMETER HOLE IN HOLE IN ALIGNMENT WITH THE HOLE IN THE "ADD-ON" ENCLOSURE.

FOR 1.8M ENCLOSURES ONLY, 4 SPRINGS (P/N 4410811) CAN BE INSTALLED FRONT AND REAR WITH HARDWARE PROVIDED. "L" SHAPED FRONT AND REAR FILLER COVERS CAN THEN BE INSTALLED, THE FRONT COVER P/N IS 4410808 WHILE THE REAR COVER IS P/N 4410810. THESE PARTS CAN BE IDENTIFIED EASILY BECAUSE THE FRONT FILLER COVER HAS A HOLE FOR THE IPO KNOB. BOTH COVERS ARE INSTALLED BY HOLDING AGAINST THE VERTICAL SURFACE OF THE INTERFACE AND THEN PRESSING DOWNWARD UNTIL SEATED AND SECURED WITH TWO SCREWS AT THE TOP. THE TOP FILLER COVER IS INSTALLED WITH FOUR SCREWS PROVIDED. (SEE FIGURE 3.8A).

FOR 1.0M ENCLOSURES ONE COUPLER CAN BE INSTALLED AT THE LOWER FRONT P/N 4410821 WITH HARDWARE PROVIDED. MACHINE TYPES INSTALLED IN THE UPPER POSITION OF EITHER ENCLOSURE MUST BE PULLED OUT PARTIALLY TO PROVIDE ACCESS FOR THE TWO SCREWS AT THE TOP OF THE ENCLOSURES THAT SECURES THE FRONT FILLER COVER P/N 4410819. THE FRONT COVER IS INSTALLED BY PLACING THE BOTTOM END IN THE COUPLER THEN SWINGING THE TOP IN WHILE PRESSING DOWNWARD AND SECURING WITH THE SCREWS PROVIDED. THE REAR FILLER COVER P/N

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4410820 IS HELD IN PLACE AND SECURED WITH FOUR SCREWS PROVIDED. (SEE FIGURE 3.8B).

NOTE:

PERFORM THIS ASSEMBLY OF MULTIPLE RACKS BEFORE CABELING OF EXTERNAL CABLES.

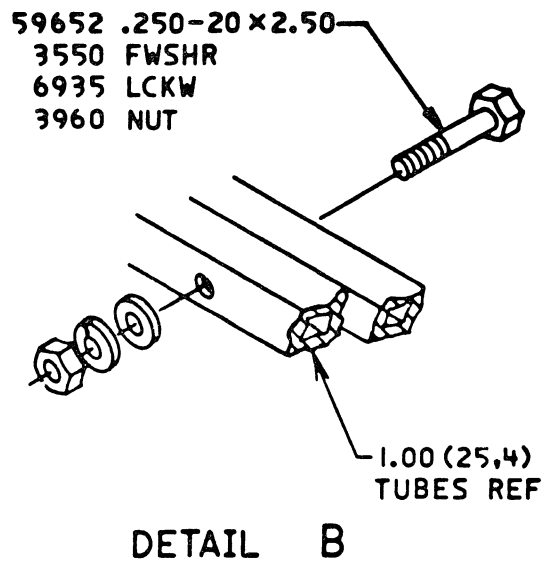
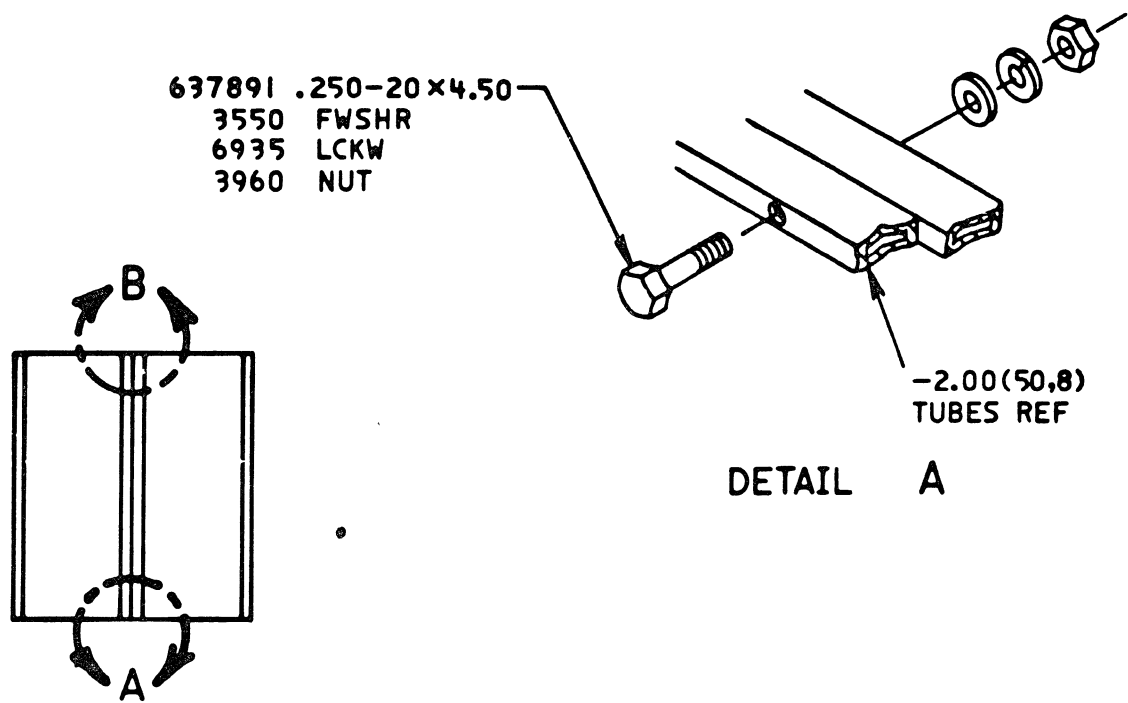
EACH BAY OF THE MULTI-BAY SYSTEM HAS A PRIMARY POWER LINE CORD. UNITS MUST BE POWERED FROM THE POWER DISTRIBUTION PANEL IN THE BAY IN WHICH THEY ARE INSTALLED. NO PRIMARY POWER CORDS MAY CROSS A TWO-BAY INTERFACE. SIGNAL CABLES BETWEEN ENCLOSURES MAY BE NORMAL INTERNAL SYSTEM CABLES. I/O CHANNEL SIGNAL CABLES TO AND FROM A 4959 MACHINE MAY ONLY GO BETWEEN ADJACENT UNITS.

EACH BAY IN A MULTI-BAY SYSTEM IS EQUIPPED WITH AN INDIVIDUAL IPO BUTTON (INSTANT POWER OFF) ON THE FRONT END, RIGHT HAND PORTION OF THE ENCLOSURE. THE IPO BUTTON CONTROLS THE PRIMARY POWER ONLY FOR THAT BAY.

INSTALL THE WARNING LABEL SHIPPED WITH THE ADD ON ENCLOSURE ON THE SIDE OF THE POWER DISTRIBUTION CIRCUIT BREAKER HOUSING IN THE FIRST BAY WHICH IS THE INITIAL SYSTEM (SEE FIGURE 3.1B). THE WARNING LABEL STATES "THIS CONFIGURATION HAS MULTIPLE PRIMARY SOURCES". PLEASE OBSERVE THAT THIS LABEL IS PRESENT ON ALL ADD ON ENCLOSURES. IF MORE THAN ONE ADD ON ENCLOSURE IS BEING ADDED, THERE MAY BE EXTRA LABELS WHICH MAY BE DISCARDED.

CUSTOMER SIGNAL CABLES SHOULD ENTER THE SYSTEM IN THAT BAY IN WHICH THE CABLE WILL BE TERMINATED. RACKS ARE TO BE ASSEMBLED TOGETHER BEFORE CABLES ARE ROUTED INTO THE RACK ENCLOSURE. AFTER THE FINAL POSITIONING OF EACH ENCLOSURE, SWING DOWN THE ENCLOSURE STABILIZER AND PUSH THE STABILIZER TO THE REAR UNTIL LATCHED ON BOTH ENDS. (SEE FIGURE 2.1 OR 2.2).

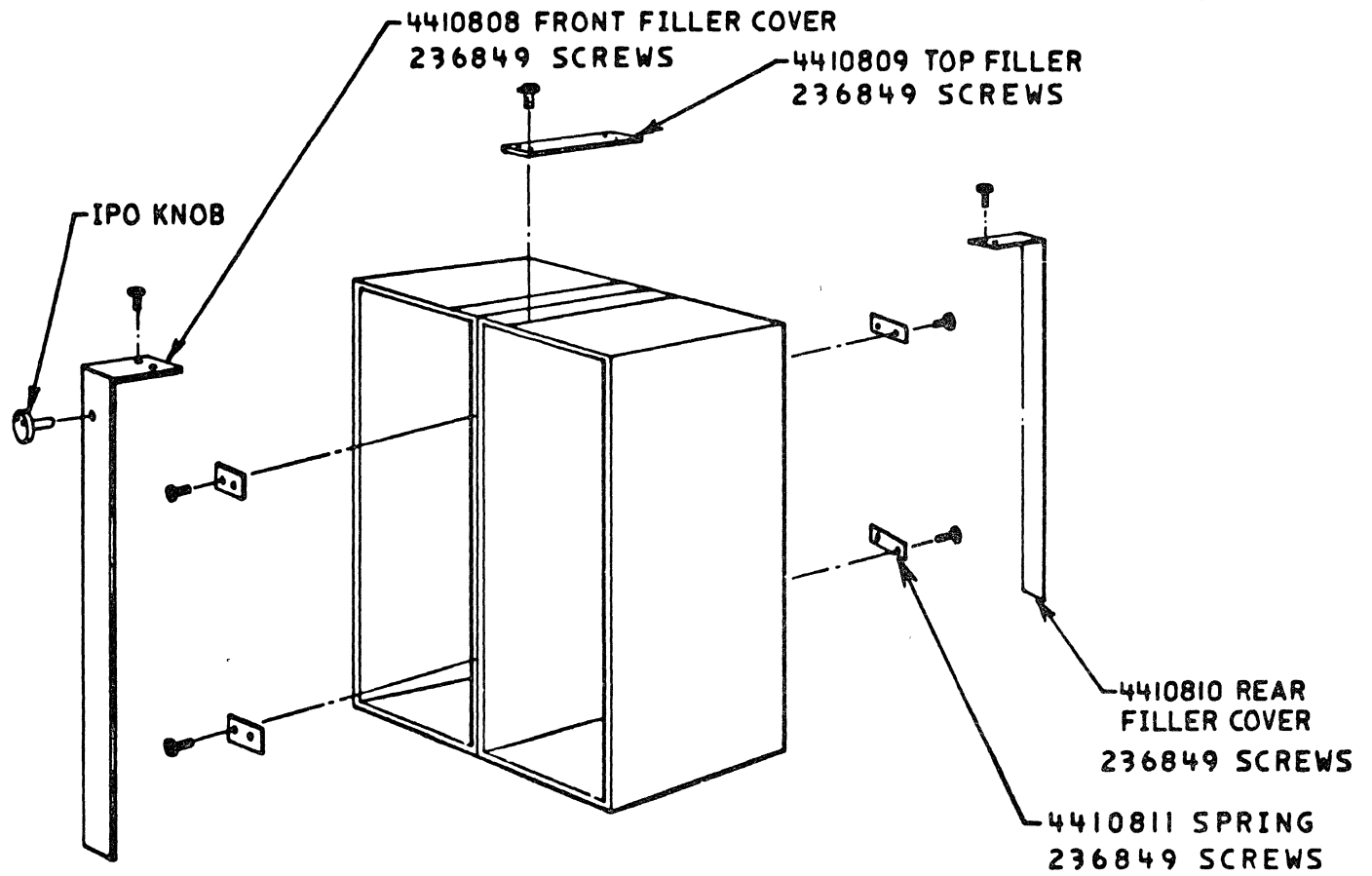
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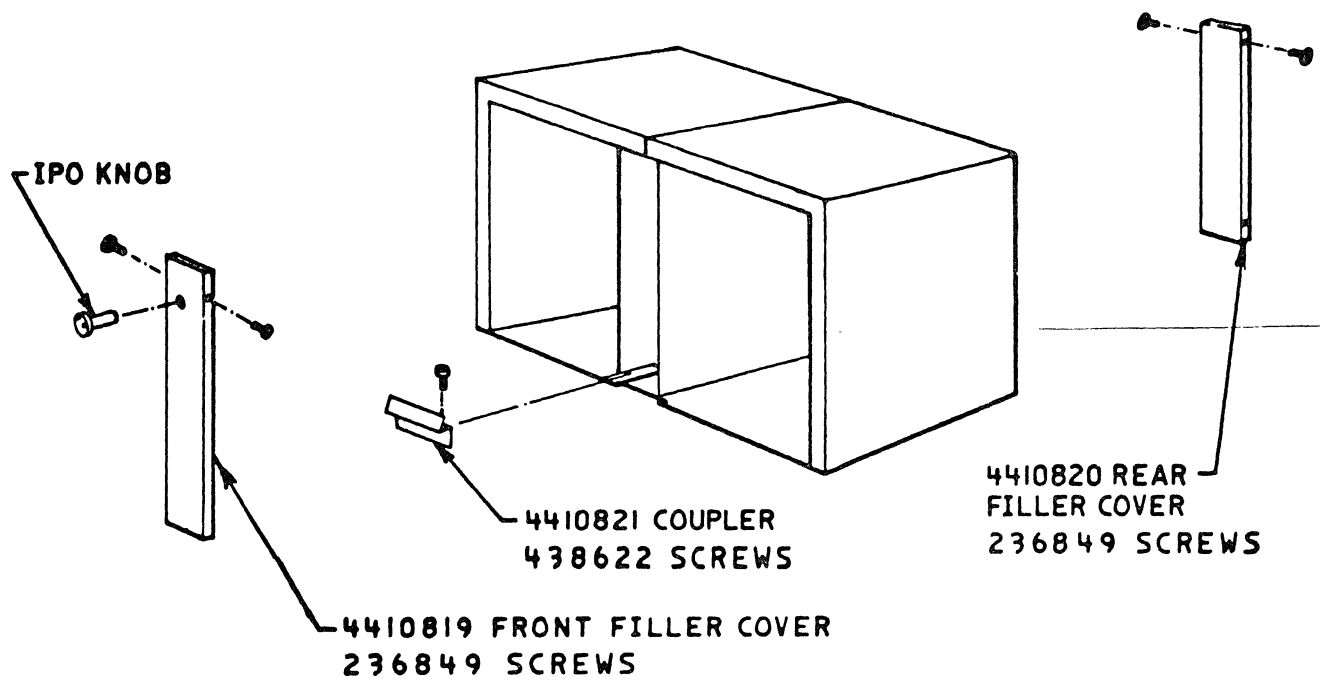
NOTE :
I PROVISIONS EXIST FOR
EXPANSION LEFT OR RIGHT

Figure 3.7B
1.8 Meter Multiple Bay Assembly

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I.8 ENCLOSURE ASSEMBLY-FILLER COVERS (TRIM)
FIGURE 3.8 A

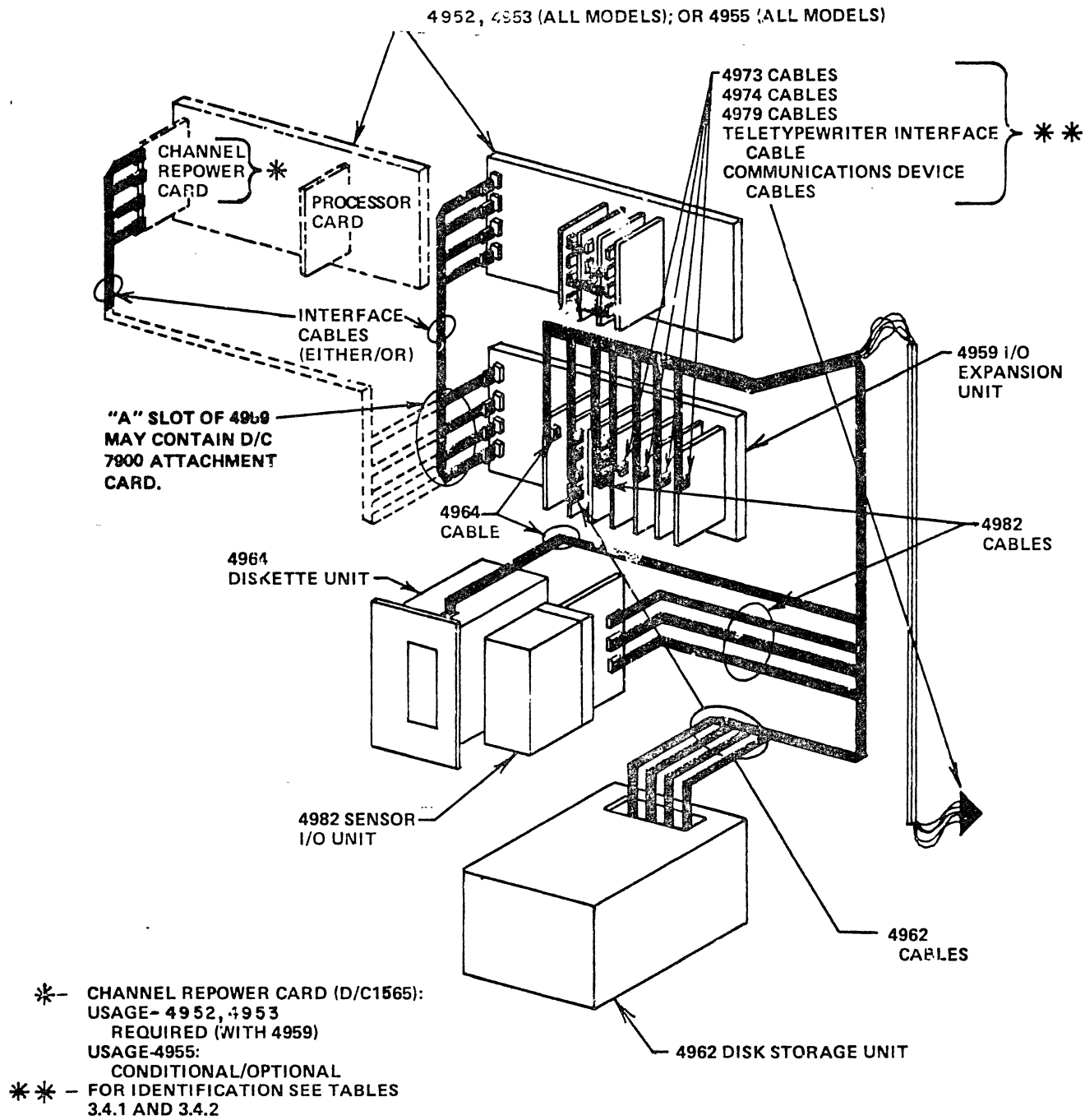


I.0 ENCLOSURE ASSEMBLY - FILLER COVERS (TRIM)
FIGURE 3.8 B

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3.2 CABLING RACK MOUNTED UNITS

REFERENCE FIGURE 3.9 FOR THE SUGGESTED INSTALLATION OF A TYPICAL UNIT CABLING WITHIN THE RACK. CABLING OF NON-RACK MOUNTED UNITS AND EXTERNAL CABLING SHOULD NOT BE PERFORMED UNTIL MULTIPLE RACKS (IF FEATURED) ARE ASSEMBLED TOGETHER (REFER TO SUBSECTION 3.1.9).



TYPICAL RACK CABLING
 FIGURE 3.9

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3.2.1 4952, 4953, 4955, AND 4959 UNIT CABLING

THE 4952, 4953 OR 4955 (PROCESSORS) AND THE 4959 (I/O EXPANSION UNIT) ARE ATTACHED TO ONE ANOTHER VIA FOUR FLAT INTERFACE CABLES. THE CABLE EXITS THROUGH THE OPENING WITHIN THE UNIT AND IS ROUTED VERTICALLY DOWN THROUGH A SIMILAR OPENING IN THE TOP OF THE 4959 (INPUT/OUTPUT EXPANSION) UNIT.

IF UNITS ARE MOUNTED HORIZONTALLY ADJACENT IN A MULTIRACK CONFIGURATION, CABLES ENTER AND EXIT THE CARD FILE IN THE SAME METHOD AS IF VERTICAL TO ONE ANOTHER.

CABLES ARE RETAINED VIA THE CABLE CLAMP BRACKET WITHIN THE CARD FILE UNIT CHASSIS. IT IS IMPORTANT THAT THIS CLAMP BE CLOSED IN ORDER FOR THE SYSTEM COOLING TO FUNCTION PROPERLY. THE CLAMP IS CLOSED BY THE TIGHTENING OF THE TWO SCREWS AS SHOWN IN FIGURE 3.10.

PROCEDURES FOR CABLING FEATURE CABLES INTO THE PROCESSOR OR 4959 IS AS FOLLOWS: (REFER TO FIGURE 3.10).

A) REMOVE FRONT COVER AND REMOVE SCREWS WHICH FASTEN THE UNIT TO THE RACK. PULL THE UNIT OUT FROM THE RACK APPROXIMATELY 6 INCHES.

NOTE: W.T.C. COUNTRIES MUST ALSO REMOVE ELASTIC SAFETY SHIELD FOUND IN CARD FILE AREA. ON 4952 A, 4953 A & C MODELS, THE CONSOLE GATE MUST BE SWUNG OPEN.

NOTE: PULL OUT UNIT DIRECTLY BELOW 4952A 6 INCHES TO ALLOW ACCESS TO BOTTOM MOUNTING SCREW.

WARNING: CARE MUST BE TAKEN TO AVOID DAMAGE TO 4959 INTERCONNECTING CABLES.

B) ROUTE THE CABLES (FLAT OR ROUND) FROM THE MACHINE REAR TO FRONT.

C) ROUTE THE CABLES INTO THE PROCESSOR OR 4959 VIA THE LARGE OPENING ON TOP OF THE UNIT. INSERT CONNECTORS ONTO THE APPROPRIATE CARD AND TIGHTEN CABLE CLAMP BRACKET.

D) GROUP CABLES TOGETHER AND INSERT CABLE CLAMP P/N 1634983 INTO THE TOP OF THE UNIT TO RETAIN THE CABLES.

E) ATTACH THE CABLE SHIELD GROUND WIRE TO THE GROUND BUS LOCATED ON TOP OF THE PROCESSOR AND 4959. USE THE SCREW AND LOCKWASHER LOCATED THERE. SEE FIGURE 3.10.

NOTE: IF A GOOD ELECTRICAL GROUND CAN BE MADE BETWEEN THE CABLE SHIELD AND CLAMP IN STEP H, THIS STEP MAY BE OMITTED.

F) PUSH THE UNIT INTO THE RACK AND FASTEN WITH THE SCREWS REMOVED IN STEP A). REPLACE SAFETY SHIELD IF APPLICABLE, CLOSE GATE ON 4952 A, 4953A & C AND SNAP ON FRONT COVER.

G) GROUP CABLES AT THE REAR OF THE UNIT AND PERFORM ITEM #D, ABOVE.

H) CLAMP EACH EXTERNAL CABLE TO THE VERTICAL MOUNTING STRIP IN THE REAR OF THE RACK AS SHOWN IN FIGURE 3.11.

I) FOR REMOVAL OF CABLES, PERFORM THE ABOVE STEPS IN REVERSE ORDER.

3.2.2 4962 UNIT CABLING

THE 4962 UNIT ATTACHMENT CARD, LOCATED WITHIN THE PROCESSOR OR 4959 MATES TO THE DEVICE VIA FOUR FLAT CABLES FOR MODELS 1,1F OR FIVE FLAT CABLES FOR MODEL 2,2F. THE CABLE GROUP EXITS THE PROCESSOR OR 4959 UPWARD AND TO THE REAR. THE CABLE GROUP IS THEN ROUTED TO THE RACK MOUNTED DEVICE. (SEE FIGURE 3.9).

3.2.3 4963 UNIT CABLING

THE 4963 UNIT IS CABLED TO THE UNIT ATTACHMENT CARD LOCATED WITHIN THE PROCESSOR OR 4959 PER THE SEPARATE INSTALLATION INSTRUCTIONS (P/N 0712322) SUPPLIED WITH THE UNIT.

3.2.4 4964 UNIT CABLING

THE 4964 UNIT ATTACHMENT CARD, LOCATED WITHIN THE PROCESSOR OR 4959 MATES TO THE DEVICE VIA ONE FLAT CABLE. THE CABLE EXITS THE PROCESSOR OR 4959 UPWARD AND TO THE REAR. THE CABLE IS THEN ROUTED TO THE RACK MOUNTED DEVICE. (SEE FIGURE 3.9).

3.2.5 4966 UNIT CABLING

THE 4966 UNIT ATTACHMENT CARD, LOCATED WITHIN THE PROCESSOR OR 4959 MATES TO THE DEVICE VIA ONE FLAT CABLE. THE CABLE EXITS THE PROCESSOR OR 4959 UPWARD AND TO THE REAR. THE CABLE IS THEN ROUTED TO THE RACK MOUNTED DEVICE (SEE SEPARATE INSTALLATION INSTRUCTIONS, P/N 2462159 SUPPLIED WITH UNIT).

3.2.6 4969 TAPE SUBSYSTEM CABLING

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THE 4969 TAPE SUBSYSTEM ATTACHMENT CARD, LOCATED WITHIN THE PROCESSOR OR 4959 MATES TO THE DEVICE VIA TWO FLAT CABLES. THE CABLE GROUP EXITS THE PROCESSOR OR 4959 UPWARD AND TO THE REAR. THE CABLE GROUP IS THEN ROUTED TO THE DEVICE CONTROLLER. THE CONTROLLER IS MOUNTED ON THE REAR OF THE TAPE DRIVE. (SEE SEPARATE INSTALLATION INSTRUCTIONS, P/N 683881, SUPPLIED WITH THE DEVICE).

3.2.7 4982 UNIT CABLING

THE 4982 UNIT ATTACHMENT CARD, LOCATED WITHIN THE PROCESSOR OR 4959 MATES TO THE 4982 UNIT VIA THREE CABLES OF TWISTED PAIR. THE CABLE EXITS THE PROCESSOR OR 4959 UPWARD AND TO THE REAR. THE CABLE IS THEN ROUTED TO THE 4982 AND PLUGS ON THE CONNECTORS OF THE TERMINATOR CARD AT THE REAR OF THE 4982. (SEE FIGURE 3.9). (REFER TO UNIT INSTALLATION INSTRUCTIONS, P/N 1633742).

3.2.8 4987 UNIT CABLING

THE 4987 UNIT IS CABLED TO THE UNIT ATTACHMENT CARD LOCATED WITHIN THE PROCESSOR OR 4959 PER THE SEPARATE INSTALLATION INSTRUCTIONS (P/N 4414980) SUPPLIED WITH THE UNIT.

3.2.9 4993 UNIT CABLING

THE 4993 UNIT IS CABLED TO THE UNIT ATTACHMENT CARD PER THE SEPARATE INSTALLATION INSTRUCTIONS (P/N 6827309) SUPPLIED WITH THIS UNIT.

3.2.10 4995 UNIT CABLING

INSTALL THE FREE END OF THE SIGNAL CABLE AT THE BACK OF THE PROCESSOR OR 4959 BOARD AND FASTEN THE CABLE WITH THE CLAMP ON THE COVER.

FOR DETAIL CUSTOMER BATTERY CABLE INSTALLATION, REFER TO THE UNIT INSTALLATION INSTRUCTIONS, P/N 1633741.

3.2.11 D/C 7900 FEATURE CABLING (TWO CHANNEL SWITCH)

NOTES:

- A) WHEN ATTACHING TWO CHANNEL SWITCH SPECIAL CONSIDERATIONS ARE NECESSARY AS TO WHERE THE D/C 7900 (TWO CHANNEL SWITCH) CAN BE IN RELATION TO THE TWO PROCESSORS IT SUPPORTS.

BEFORE INSTALLATION IT MUST BE DETERMINED HOW MANY UNITS AND BAYS ARE PRESENT TO ASSEMBLE THE UNIT(S) INTO THEIR CORRECT LOCATION USING THE FOLLOWING GUIDELINES.

1. HOW TO DETERMINE WHAT A UNIT IS BY LOOKING AT THE SYSTEM MLC.
PROCESSOR:

NOTE: 92AA WHERE AA IS THE NUMBER OF PROCESSORS
93BB WHERE BB IS THE SEQUENCE OF PRIORITY NUMBER OF THE PROCESSOR.

IF 92 AA IS NOT PRESENT, THEN THERE IS ONLY ONE PROCESSOR.
IF 92 AA IS 9201, THERE IS ONLY ONE PROCESSOR; AND
IF 92 AA IS 9202, THERE ARE 2 PROCESSORS IN SERIES 1; AND IF 92 AA IS 9203,
THERE ARE 3 PROCESSORS IN SERIES/1; AND SO ON.

IF 93 BB IS NOT PRESENT, THEN THERE IS ONLY ONE PROCESSOR.

IF 93 BB IS 9301, THERE IS ONE, OR FIRST PROCESSOR IN SERIES/1; AND IF 93 BB IS 9302, THIS IS THE SECOND PRIORITY PROCESSOR IN SERIES/1; AND IF 93 BB IS 9303, THIS IS THE THIRD PRIORITY PROCESSOR IN SERIES/1; AND SO ON.

2. SYSTEM MLC DEFINITIONS:

NOTE: 7900 TWO CHANNEL SWITCH
93 BB PRIORITY OF SEQUENCE NUMBER OF PROCESSOR
9450 A COMMON 4959 WITHOUT TCS

4959 EXPANSION I/O CARD FILE

IF 7900 NOT PRESENT
IF 93 BB NOT PRESENT
IF 9450 NOT PRESENT
NORMAL EXPANSION I/O CARD FILE

IF 7900 NOT PRESENT
IF 9450 NOT PRESENT
IF 93 BB PRESENT
IS EXPANSION FOR PROCESSOR WITH 93 BB

IF 7900 NOT PRESENT
IF 9450 PRESENT
IF 93BB, 93 BB PRESENT (OPTIONAL)
IS A COMMON EXPANSION EX AFTER TCS FOR
PROCESSOR INDICATED WITH 93 BB (OPTIONAL)

- B) WHEN A PROCESSOR IS ASSOCIATED WITH ADDITIONAL 4959'S (I/O EXPANSIONS) IN A CHAIN OF 4959'S ON A CHANNEL, THE D/C 7900 INTERFACE CABLING COMES FROM THE LAST PRIVATE 4959 (I/O EXPANSION) IN THE CHAIN. HOWEVER, THE POWER CABLE MUST GO TO THE PROCESSOR DRIVING THAT CHAIN. (A PRIVATE 4959 IS ONE WHICH IS NOT SHARED BETWEEN TWO PROCESSORS VIA I/C 7900, BUT IS A PRIVATE TO THE PROCESSOR AT THE BEGINNING OF THE CHANNEL ONLY).
- C) PROCESSORS (4952, 4953, OR 4955) MUST BE WITHIN TWO "WIRE" METERS OF THE 4959 WITH D/C 7900.
- D) D/C 7900 FEATURE ATTACHMENT CARD RESIDES IN THE "A" SOCKET OF A 4959.
- E) D/C 7900 CONNECTS TO THE PROCESSORS (OR THE LAST PRIVATE 4959) AT THE FOLLOWING LOCATIONS:
 - 1. THE REPOWER CARD (D/C 1565) IN THE "A" SOCKET (4952, 4953, & 4955).
 - 2. "A" SOCKET IF NO D/C 1565.
 - 3. "B" SOCKET OF A 4959 THAT IS THE LAST IN A CHAIN OF 4959'S ON A CHANNEL.
- F) D/C 7900 ONLY SUPPORTS TWO PROCESSORS.
- G) THE F.O.R. CABLE PLUGGED INTO THE "A" CONNECTOR AT THE CONSOLE, AND THE FLAT INTERFACE CABLE PLUGGED INTO "A" ROW OF THE D/C 7900 FEATURE CARD MUST GO TO THE SAME PROCESSOR. THIS PROCESSOR IS THEN "A" PROCESSOR. SEE LOGIC PAGE SW140.
- H) IT DOES NOT MATTER WHICH PROCESSOR IS "A" OR PBP PROCESSOR, ONLY THAT "G" ABOVE IS FOLLOWED.
- I) INSTALL FEATURE AND ADDRESS DEVICE JUMPERS PER LOGIC PAGE SW140. USE JUMPER P/N 4420751.

3.2.11.1 THE FOLLOWING ARE THE SUPPORTED CONFIGURATIONS FOR D/C 7900.

NOTE: FOR DETAILED PLUGGING LOCATIONS, LABEL INFORMATION AND POSSIBLE REWORK REQUIRED ON CIBER MODEL 4953'S AND 4955'S REFER TO STEP 3.2.11.2.

- A) SUPPORTED 'Y' CONFIGURATIONS: - SEE FIGURE 3.15.
 NOTE: THERE SHOULD BE THE FOLLOWING PRESENT -

NOTE - THE 'X' REPRESENTS ANY PROCESSOR

495X	495X
9202	9202
9301	9302
(OPTIONAL) 4959	4959 (OPTIONAL)
(PRIV) 9301	9302

4959
4959 (OPTIONAL) (COMMON #1)
9301
9302
9450
4959 (OPTIONAL) (COMMON #2)
9301
9302
9450
4959 (OPTIONAL) (COMMON #3)
9301
9302
9450

- 1. DETERMINE QUANTITY OF UNITS (3, 4, 5, OR 6).
- 2. FOR 3 UNITS, CHECK FOR PROCESSOR A TO HAVE 93 BB AND PROCESSOR B TO HAVE 93 BB. CHECK FOR 4959 WITH 7900 TO HAVE 93 BB, 93 BB TO AGREE WITH ABOVE.
- 3. IF 2 BAY, GO TO #5; IF 3 BAY GO TO #6; IF ONE BAY PUT PROCESSOR "A" IN LOCATION X12, 4959 IN LOCATION X34, AND PROCESSOR "B" IN LOCATION X56. (SEE FIGURE 3.12 FOR CODE IDENTIFICATION.)
- 4. USE THE TWO CABLE GROUPS (3') 4413776 TO GO FROM THE TCS CARD TO EACH PROCESSOR.

NOTE: IF PROCESSOR IS NOT 4955, PLUG PROCESSOR END OF CABLE ONTO A CHANNEL REPOWER CARD THAT IS RIGHT JUSTIFIED.
- 5. FOR TWO BAYS, PUT PROCESSOR A IN LOCATION 112, PROCESSOR B IN LOCATION 212, AND THE 4959 IN LOCATION 134, (WHEN THE 2 BAYS ARE ADJACENT). (SEE FIGURE 3.12 FOR CODE IDENTIFICATION).
 - A. USE CABLE GROUP 4413776 (3') TO GO FROM TCS CARD ROW A TO PROCESSOR A. (SEE NOTE IN 4).

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- B. USE CABLE GROUP 4413777 (6') TO GO FROM TSC CARD ROW B TO PROCESSOR B. (SEE NOTE IN 4).
6. FOR 3 BAYS, PUT PROCESSOR A IN 312, 4959 IN 112, PROCESSOR B IN 212, (WHEN THE 3 BAYS ARE ADJACENT) (SEE FIGURE 3.12 FOR CODE IDENTIFICATION).
- A. USE TWO CABLE GROUPS 4413777 (6') TO GO FROM TSC CARD ROWS A AND B TO PROCESSOR A AND B RESPECTIVELY. (SEE NOTE IN 4).
- B. IF 4 UNITS, CHECK THAT A 4959 WITHOUT 7900 HAS BOTH A PAIR OF 93 BB NUMBERS AND A 9450, SPECIFY CODE.
- B) SUPPORTED 'QUAL' CONFIGURATIONS - SEE FIG. 3.15
NOTE: THERE WOULD BE THE FOLLOWING PRESENT -
- | 4959 (OPTIONAL) | 4959 (OPTIONAL) |
|-----------------|-----------------|
| 9301 | 9302 |
| 4959 | 4959 |
| 7900 | 7900 |
| 9301 | 9301 |
| 9302 | 9302 |
1. DETERMINE QUANTITY OF UNITS (4, 5, OR 6).
2. FOR 4 UNITS, CHECK FOR 2 PROCESSORS AND TWO 4959'S WITH TCS 7900 IN EACH 4959.
3. IF ONE BAY, PLACE PROCESSOR A IN 112, PROCESSOR B IN 178, AND PLACE THE TWO 4959'S IN 134, AND 156 RESPECTIVELY. (SEE FIGURE 3.12 FOR CODE IDENTIFICATION).
- A. USE CABLE GROUP 4413776 TO GO FROM 4959 IN LOC 134, TCS CARD ROW A TO PROCESSOR A IN ICC 112.
- B. USE CABLE GROUP 4413776 TO GO FROM 4959 IN LOC 156, TCS CARD ROW B TO PROCESSOR B IN ICC 178.
- C. USE CABLE GROUP 4413776 TO GO FROM 4959 IN LOC 134, TCS CARD ROW B TO 4959 IN LOC 156.
- D. USE CABLE GROUP 4413776 TO GO FROM 4959 IN LOC 156 TCS CARD ROW A TO 4959 IN LOC 134.
4. IF TWO BAYS, PLACE PROCESSOR A IN 112, PROCESSOR B IN 212, AND THE TWO 4959'S IN 134 AND 234 RESPECTIVELY. (SEE FIGURE 3.12 FOR CODE IDENTIFICATION).
- A. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 134, TCS CARD ROW A TO PROCESSOR A IN ICC 112.
- B. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 234, TCS CARD ROW B TO PROCESSOR B IN ICC 212.
- C. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 134, TCS CARD ROW B TO 4959 IN LOC 234.
- D. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 234, TCS CARD ROW A TO 4959 IN LOC 134.
5. FOR 5 UNITS, CHECK FOR TWO PROCESSORS AND THREE 4959'S, TWO OF WHICH WILL CONTAIN TCS 7900 IN EACH 4959.
6. IF TWO BAYS, PLACE PROCESSOR A IN 156, PROCESSOR B IN 234, AND TWO 4959'S WITH TCS 7900 IN 112.
- A. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 112, TCS CARD ROW A TO 4959 IN LOC 234.
- B. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 212, TCS CARD ROW B TO PROCESSOR B IN ICC 234.
- C. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 112, TCS CARD ROW B TO 4959 IN LOC 212.
- D. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 212, TCS CARD ROW A TO 4959 IN ICC 112.
- E. USE STANDARD I/C CABLES TO GO FROM THE 4959 IN LOC 134 TO PROCESSOR IN A LOCATION 156.
7. FOR 6 UNITS, CHECK FOR TWO PROCESSORS AND FOUR 4959'S, TWO 4959'S OF WHICH WILL CONTAIN TCS 7900 IN EACH.
8. IF TWO BAYS, PLACE PROCESSOR A IN 112, PROCESSOR B IN 212, AND TWO 4959'S WITH TCS 7900 IN 156 AND 256 RESPECTIVELY. AND THE 4959'S WITHOUT TCS 7900 IN 134 AND 234 RESPECTIVELY. (SEE FIGURE 3.12 FOR CODE IDENTIFICATION).

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- A. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 156, TCS CARD ROW A TO 4959 IN LOC 134.
- B. USE CABLE GROUP 4413776 TO GO FROM THE 4959 IN LOC 256, TCS CARD ROW B TO 4959 IN LOC 234.
- C. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 156, TCS CARD ROW B TO 4959 IN LOC 256.
- D. USE CABLE GROUP 4413777 TO GO FROM THE 4959 IN LOC 256, TCS CARD ROW A TO 4959 IN LOC 156.
- E. USE STANDARD I/O CABLES TO GO FROM THE 4959 IN LOC 134 TO PROCESSOR A IN LOC 112.
- F. USE STANDARD I/O CABLES TO GO FROM THE 4959 IN LOC 234 TO PROCESSOR B IN LOC 212.

3.2.11.2 CABLE PLUGGING, LABEL, PROCESSOR BOARD INFORMATION.

- A) FLAT INTERFACE CABLES WILL BE FOUND (ON MULTI-RACK SYSTEMS AND INDEPENDENT 4959'S ONLY). THERE IS AN EXISTING LABEL AT THE CONNECTOR END OF SEQUENCE 001 CABLE. THIS LABEL WILL BE MARKED WITH EITHER AN "A" OR A "B".

CHECK FIGURE 3.12 AND BELOW THE "A" OR "B" THAT IS WRITTEN ON THE LABEL, ADD THE PROCESSOR LOCATION IN A THREE DIGIT CODE AS SHOWN ON FIGURE 3.12.

INSTALL THESE I/O INTERFACE CABLES IN THE PROCESSOR (4952, 4953, OR THE LAST PRIVATE 4959 (I/O EXPANSION) IN THE FOLLOWING MANNER:

THE SEQ 001-W (A2) LABELED CABLE GOES TO THE TOP CARD SOCKET; SEQ 002-X (A3) LABELED CABLE GOES TO THE SECOND FROM THE TOP SOCKET; SEQ 003-Y (A4) LABELED CABLE GOES TO THE THIRD FROM THE TOP SOCKET AND SEQ. 004-Z (A5) LABELED CABLE GOES TO THE BOTTOM SOCKET. THIS IS FOR THE CARD BOARD LOCATIONS OF THE PROCESSOR OR LAST PRIVATE 4959. THE 4959 (WITH D/C 7900) CABLE END WILL BE NUMBERED. #1 CABLE WILL GO TO THE TOP SOCKET ON D/C 7900 CARD.

- B) THE P.O.R. CABLES MUST BE ROUTED TO THE PIN SIDE OF THE BACK BOARD AS SHOWN IN FIGURES 3.13 AND 3.14, 3.13 IS FOR 4952 A, 4953 A OR C.

NOTE: IF PROCESSOR "A" OR "B" IS THE LAST PRIVATE 4959, THE P.O.R. CABLE MUST GO TO THE PROCESSOR (4952, 4953, 4955) DRIVING THAT CHANNEL. IT MUST ALSO BE WITHIN TWO "WIRE" METERS OF THE 4959 WITH D/C 7900.

1. IF AN OLDER MACHINE IS ENCOUNTERED, THEN THE REAR COVER WILL HAVE TO BE NOTCHED AS SHOWN IN FIGURES 3.13 AND 3.14. AFTER REMOVING THE REAR COVER DO THIS IF REQUIRED.
2. ON THE PIN END OF THE P.O.R. CABLE, THREE LABELS WILL BE FOUND. EITHER AN "A" OR "B" WILL BE MARKED ON THE ONE ATTACHED TO THE CABLE JACKET. REMEMBER, IF THE CABLE IS PLUGGED INTO THE "A" CONNECTOR AT THE CONSOLE, IT MUST BE LABELED "A" AT THE PROCESSOR END AND THAT PROCESSOR IS THE "A" PROCESSOR.
3. ON EACH LEAD THAT PLUGS TO THE PINS WILL BE FOUND ANOTHER LABEL. ON THIS LABEL, WRITE THE APPROPRIATE PIN INFORMATION AS SHOWN BELOW:

4952, 4953: WRITE THE FOLLOWING PIN INFORMATION:

FOR P.O. R. SIGNAL CABLE (RED WIRE) WRITE F2-S05.

FOR GROUND (YELLOW WIRE) WRITE F2-U08.

4955: WRITE THE FOLLOWING PIN INFORMATION:

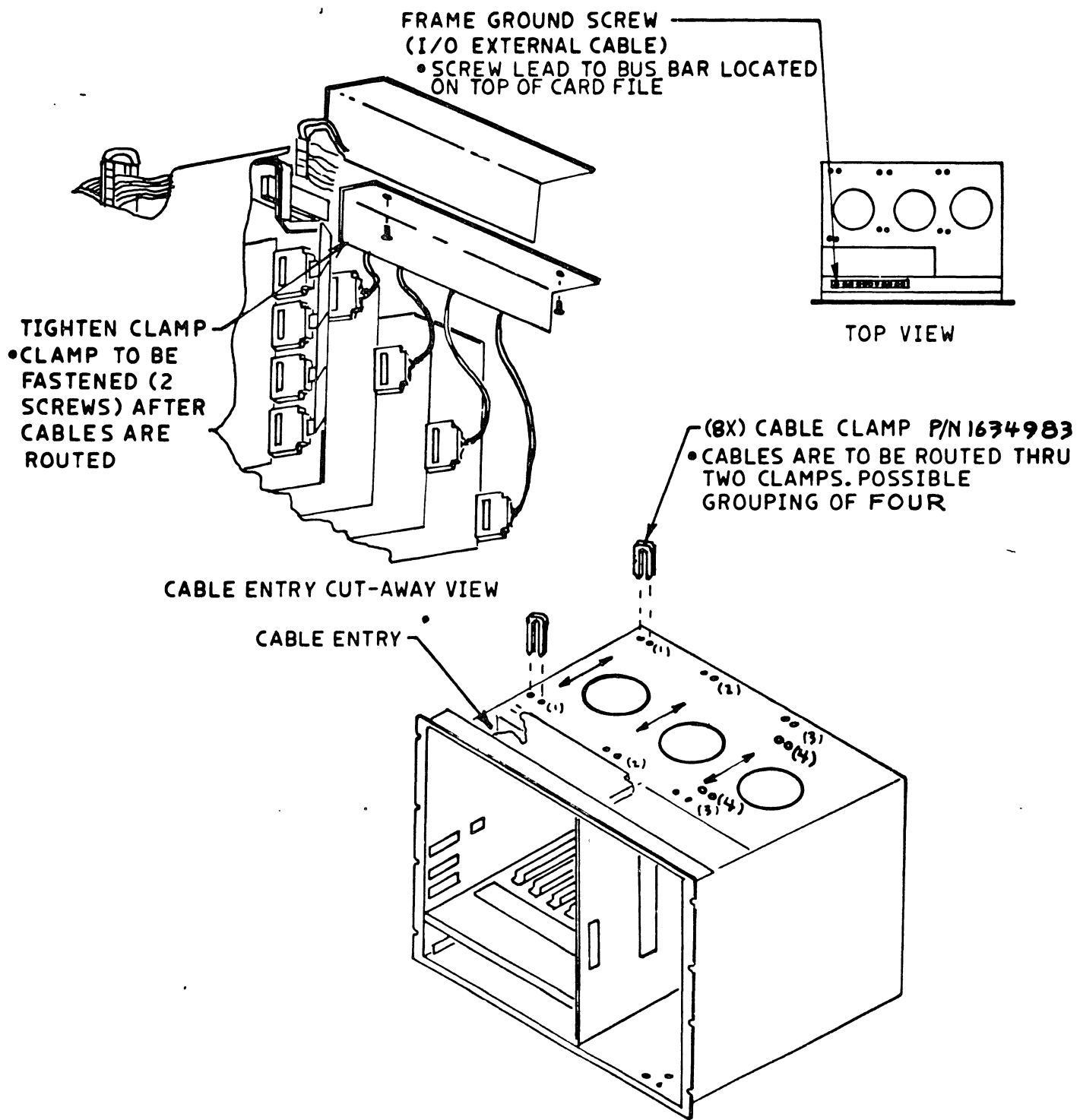
FOR P.O. R. SIGNAL CABLE (RED WIRE) WRITE Q2-M04.
4. NOW PLUG THE P.O.R. CABLE ONTO THE APPROPRIATE PINS. REFER TO FIGURE 4.8 TO FIND THE LOCATIONS OF THE PINS YOU HAVE WRITTEN ON THE LABELS. REINSTALL THE BOARD COVER.

3.2.12.3 EXPLANATION OF THE REMAINING HARDWARE. (SUPPLIED ON B/M 6826831).

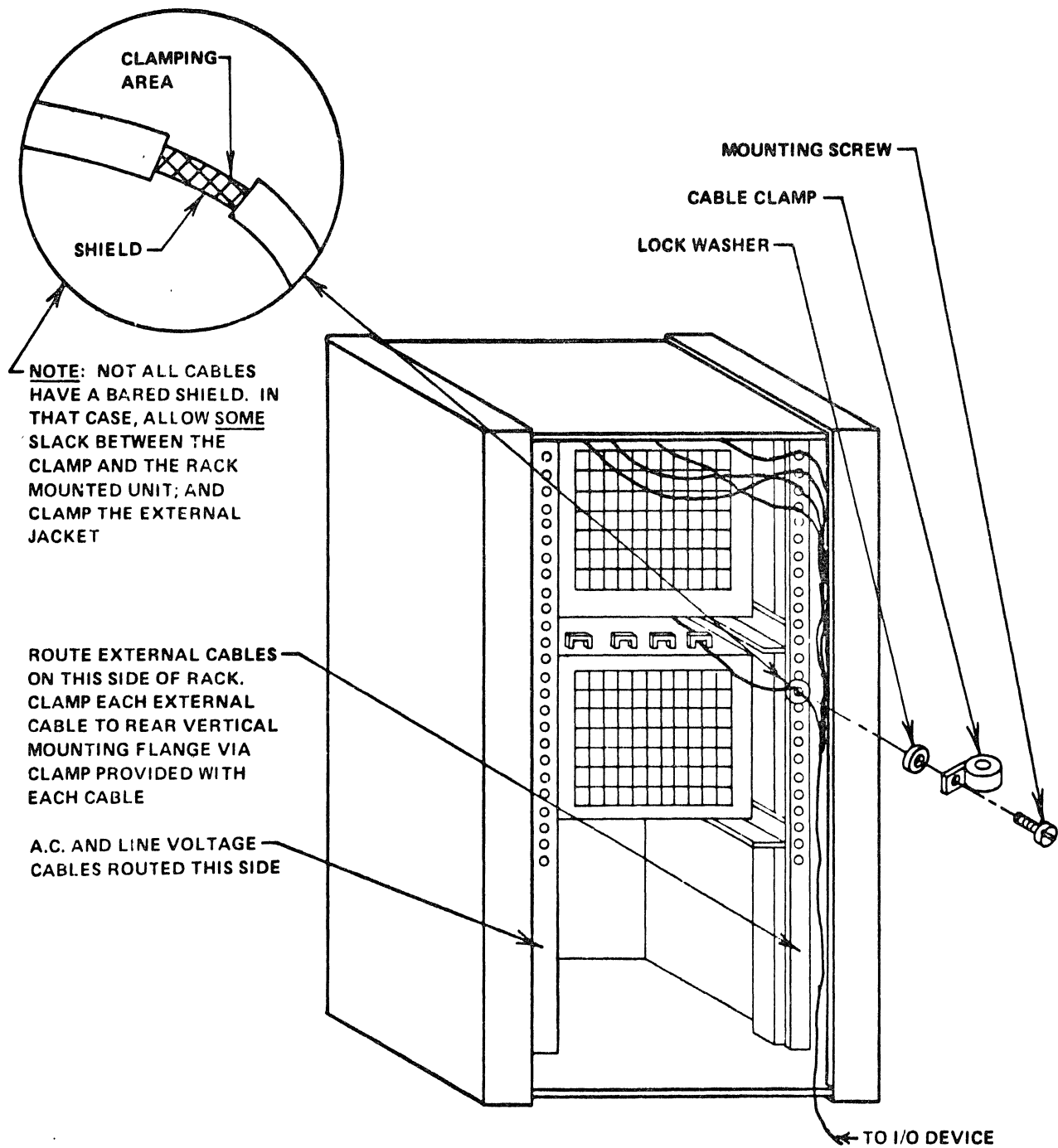
SUPPLIED SEPARATELY IS A CONNECTOR HOUSING (P/N 1847524) AND TWO (2) PINS (P/N 1847520). THESE PARTS ARE SUPPLIED SO THAT THE CUSTOMER CAN MAKE HIS ALARM, AUDIO OR WHATEVER, TO LET HIM KNOW WHEN A PROCESSOR IS DOWN. THIS ALARM AND CABLE ARE THE CUSTOMER'S RESPONSIBILITY. THE PARTS ARE SUPPLIED SO THAT HE CAN MAKE HIS ALARM AND PLUG IT INTO THE "C" CONNECTOR ON THE D/C 7900 CONSOLE CARD.

EXPLAIN THIS TO THE CUSTOMER AND HAND HIM THE HARDWARE.

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CARD FILE CABLE INSTALLATION
FIGURE 3.10



REAR VIEW OF RACK
EXTERNAL CABLE INSTALLATION AND CLAMPING
FIGURE 3.11

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RACK ENCLOSURE LOCATIONS

FIGURE 3.12 SHOWS HOW THE 1.8 METRE AND THE 1.0 METRE RACK ENCLOSURE LOCATIONS ARE NUMBERED.

A LOCATION IS EXPRESSED AS A THREE DIGIT NUMBER. THE FIRST DIGIT IS THE BAY NUMBER. THE SECOND DIGIT IS EITHER THE LEFTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT, AND A THIRD DIGIT IS THE RIGHTHAND LOCATION, IF USED, OR A ZERO IF NOT USED FOR THIS UNIT.

FOR EXAMPLE: A 4955 PROCESSOR (A) MOUNTED IN THE FIRST BAY OF A 1.8 METRE MULTIPLE BAY ENCLOSURE WOULD NORMALLY BE ASSIGNED 134. THE 1 INDICATING BAY 1, THE 3 INDICATING THAT THE LEFTHAND HALF UNIT LOCATION AND THE 4 THAT THE RIGHTHAND UNIT LOCATIONS WERE BEING USED.

SIMILARLY, A 150 FOR A 4999 BATTERY BACKUP UNIT (B) WOULD USE THE 5 SPACE IN THE FIRST BAY IMMEDIATELY UNDER THE PROCESSOR AND LEAVE THE RIGHTHAND OR 6 SPACE, OPEN FOR SOME OTHER HALF-WIDTH UNIT LIKE A 4964 DISKETTE UNIT OR A 4982 SENSOR I/O UNIT.

*NOTE: A BAY IS A RACK

1.8 METRE ENCLOSURES (4997-2)

BAY	BAY		BAY		BAY		BAY	
4	2		1		3		5	
2	1	2	1	2	1	2	1	
				(A)				
4	3	4	3	4	3	4	3	
				(B)				
6	5	6	5	6	5	6	5	
8	7	8	7	8	7	8	7	

1.0 METRE ENCLOSURES (4997-1)

BAY	BAY		BAY		BAY		BAY	
4	2		1		3		5	
2	1	2	1	2	1	2	1	
8	7	8	7	8	7	8	7	

FIGURE 3.12

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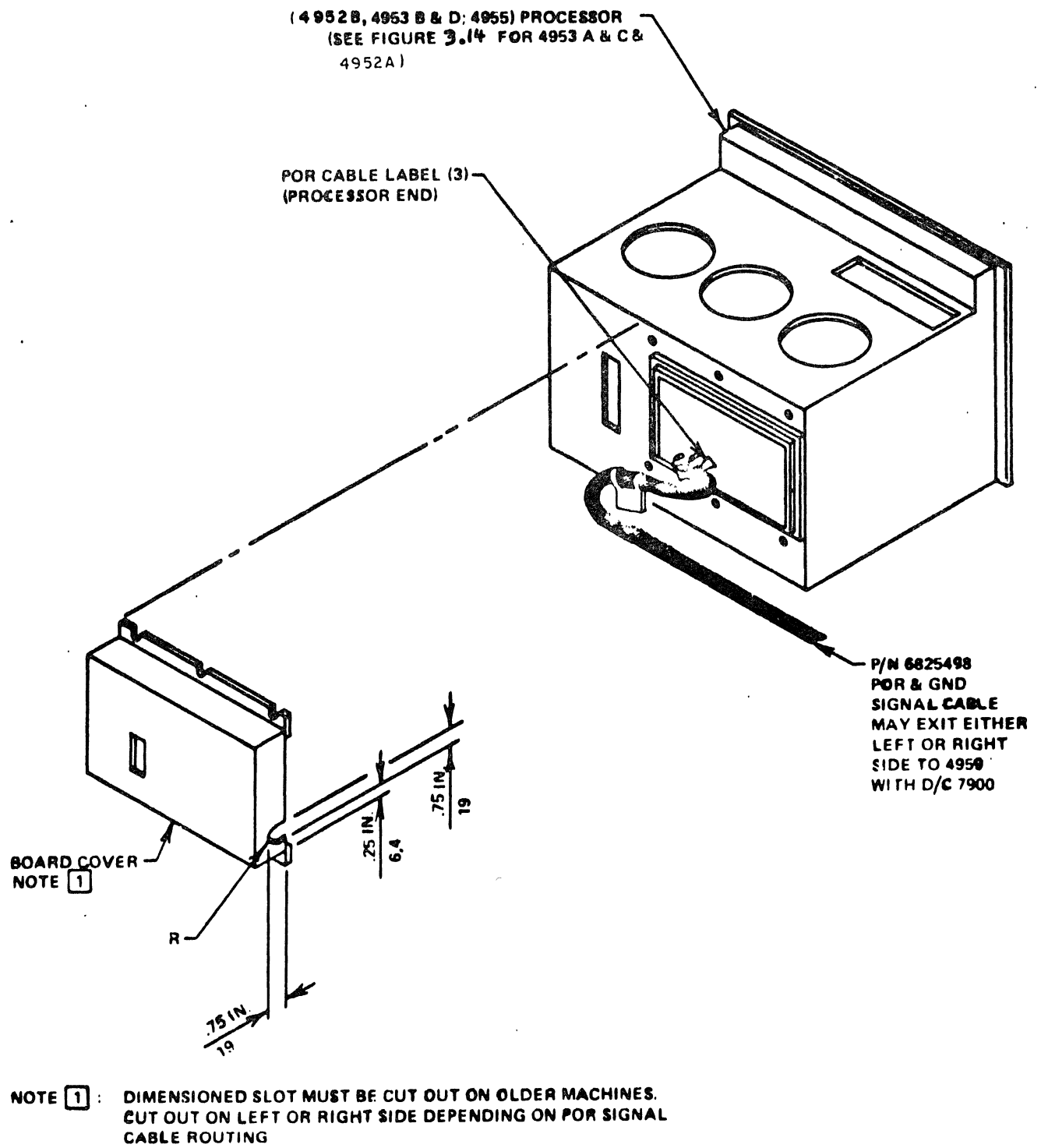
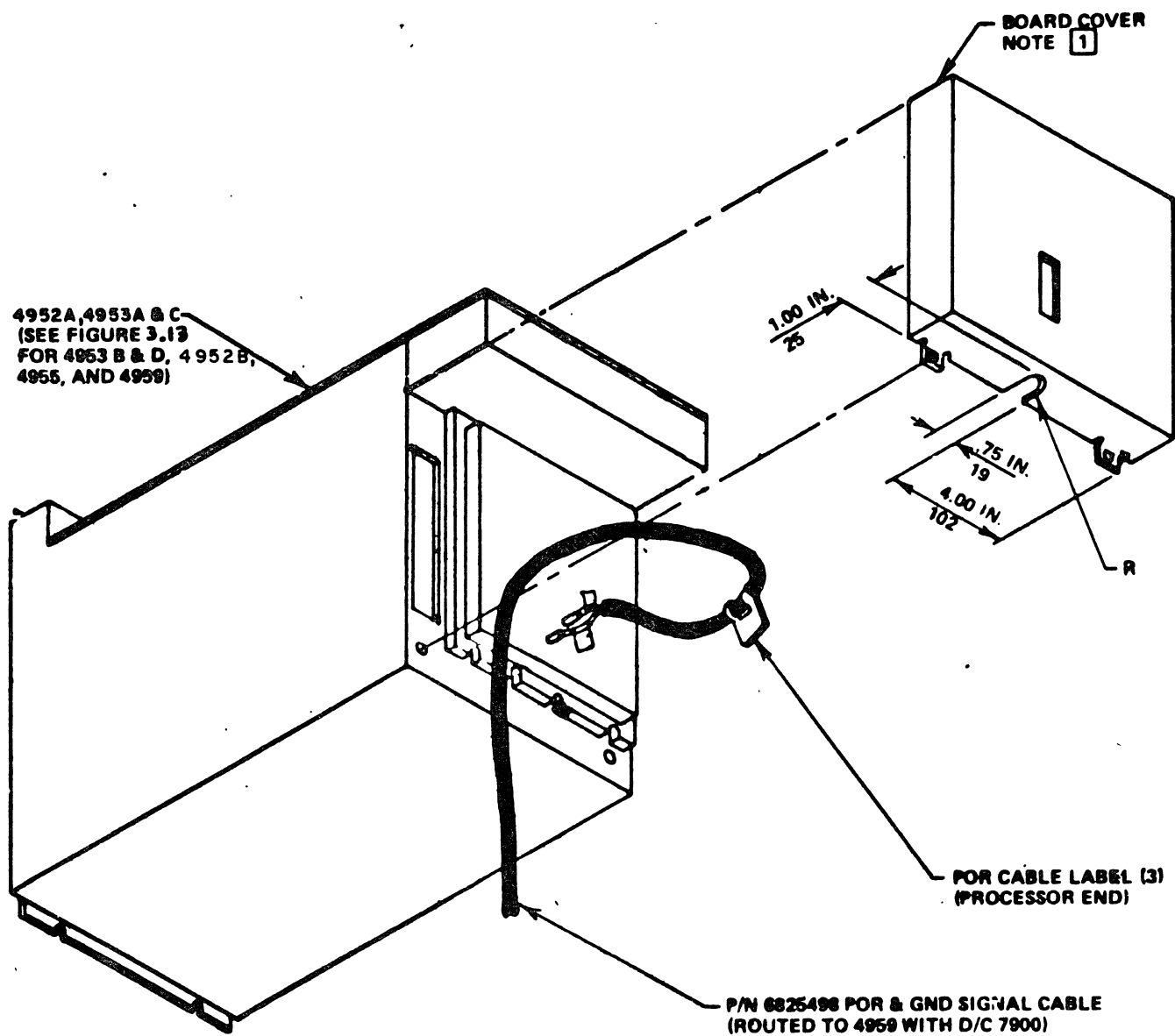


FIGURE 3.13
POR SIGNAL CABLE ROUTING FROM PROCESSOR

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NOTE:
1 SLOT DIMENSIONED ON BOARD COVER
WILL HAVE TO BE CUT OUT ON OLDER
MACHINES.

FIGURE 3.14
(POR SIGNAL CABLE ROUTING FROM PROCESSOR)

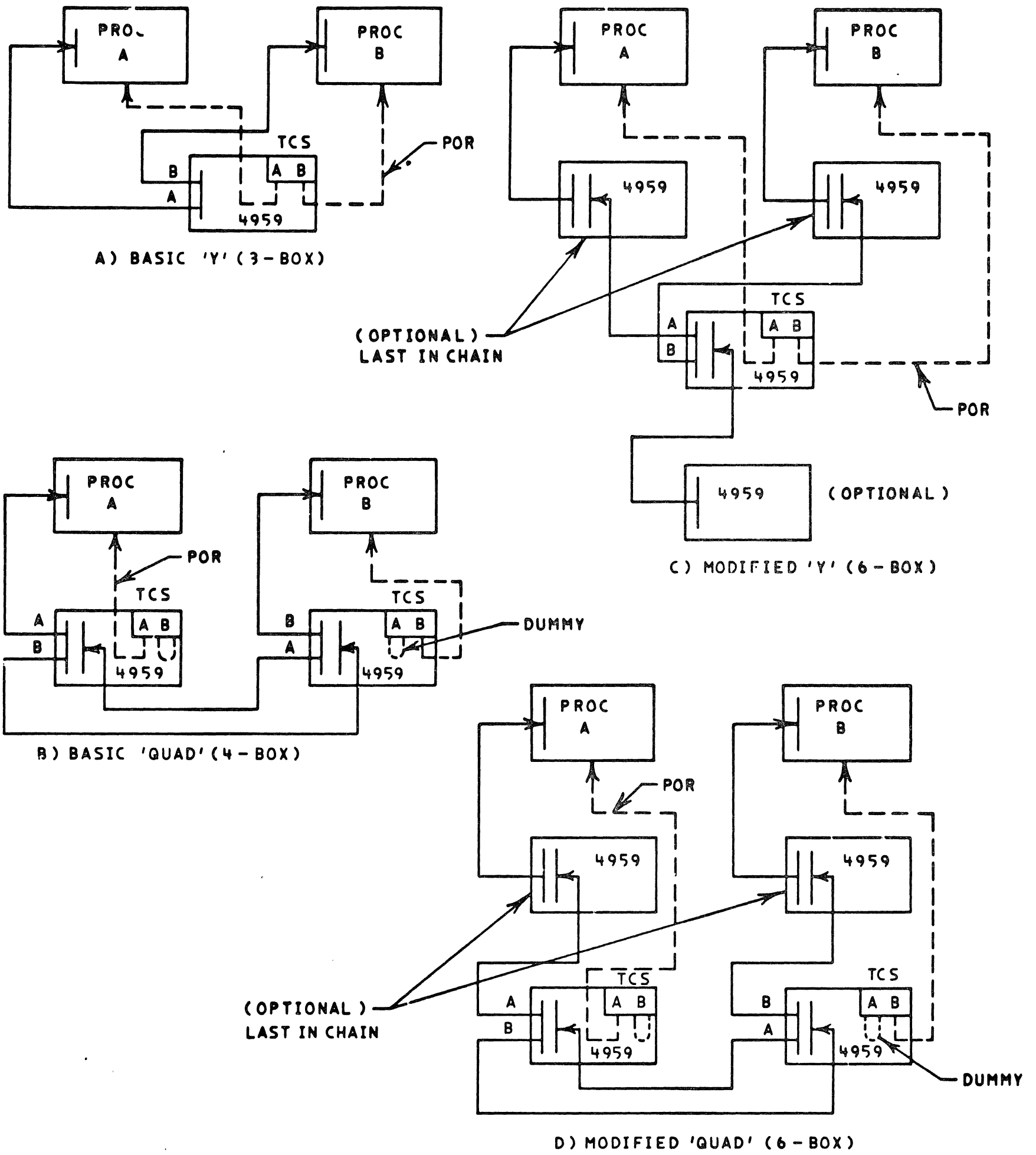


FIGURE 3.15

TCS SUPPORTED CONFIGURATIONS

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3.3 HARDWARE INSTALLATION OF NON-RACK MOUNTED UNITS.

3.3.1 DISPLAY STATION UNIT (MACHINE #4979, MODEL 001)

INSTALL THE UNIT PER THE SEPARATE INSTALLATION INSTRUCTIONS, P/N 1633744 SHIPPED WITH THE MACHINE.

3.3.2 PRINTER UNIT (MACHINE #4974, MODEL 001)

INSTALL THE UNIT PER THE SEPARATE INSTALLATION INSTRUCTIONS P/N 4410779 SHIPPED WITH THE MACHINE.

3.3.3 PRINTER UNIT (MACHINE #4973, MODEL 001 OR 002).

INSTALL THE UNIT PER THE SEPARATE INSTALLATION INSTRUCTION, P/N 4411198 SHIPPED WITH THE MACHINE.

3.4 EXTERNAL CABLING (REFER TO FIGURE 3.10 AND 3.11)

EXTERNAL CABLING IS THAT CABLING USED TO CONNECT I/O OR NON-RACK MOUNTED DEVICES TO THE APPROPRIATE FEATURE CARD LOCATED WITHIN THE RACK MOUNTED HARDWARE. (4952, 4953, 4955, 4959, 4982, AND 4987). FOR SPECIFIC DETAILS OF EXTERNAL CABLE INSTALLATION IN THE FOLLOWING DEVICES, REFER TO THE APPROPRIATE INSTALLATION INSTRUCTIONS SHIPPED WITH THAT DEVICE.

- A) 4973 - P/N 4411198
- B) 4974 - P/N 4410779
- C) 4979 - P/N 1633744
- D) 4982 - P/N 1633742
- E) 4987 - P/N 4414980
- F) 4993 - P/N 6827309

FOR SPECIFIC DETAILS OF EXTERNAL CABLING OF "ADD-ON" FEATURES, REFER TO THE APPROPRIATE INSTALLATION INSTRUCTION SHIPPED WITH THE ORDERED M.E.S.

ALL CABLES ARE ROUTED AND STRAIN RELIEVED WITH THE CLAMP PROVIDED AS SHOWN IN FIGURE 3.10.

IF THE CABLE IS TO BE TERMINATED AT THE CUSTOMER ACCESS PANEL, REFER TO FIGURE 3.5 AND SUB-SECTION 3.1.3.

3.4.1 ON PRE-CONFIGURED (FACTORY ASSEMBLED) SYSTEMS; WITH CERTAIN, BUT FEW, EXCEPTIONS; THE EXTERNAL CABLING WILL HAVE BEEN INSTALLED ONTO THE APPROPRIATE FEATURE AND CLAMPED TO THE 4997 RACK. FOR THE DETAIL CABLING INFORMATION OF THESE EXCEPTIONS REFER TO THE APPROPRIATE INSTALLATION INSTRUCTION LISTED PREVIOUSLY.

FOR CABLE IDENTIFICATION AND FEATURE CARD USAGE REFER TO TABLE 3.4.1. THIS INFORMATION, AND HELP IN IDENTIFYING FEATURE CARD, IS FOUND IN M.I.D. - VOL. 1 MANUAL ALSO.

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3.4.2 ON NON-PRECONFIGURED (NOT FACTORY ASSEMBLED) SYSTEMS, THE EXTERNAL CABLING WILL HAVE TO BE INSTALLED BY THE IBM CUSTOMER ENGINEER EMPLOYING THE FOLLOWING GENERAL GUIDELINES.

3.4.2.1 THE 4952, 4953, 4955, AND 4959 MACHINES HAVE ATTACHMENT FEATURE CARDS LOCATED WITHIN THAT ARE CONNECTED TO I/C DEVICES VIA EXTERNAL CABLING. THIS CABLING IS ROUTED INTO THE REAR OF THE RACK AND THEN INTO THE INSTALLED 4952, 4953, 4955, OR 4959 THROUGH THE MACHINES CABLE ENTRY PORT OPENING.

A) ACCESS TO THE CABLE ENTRY PORT IS ATTAINED BY REMOVING THE MOUNTING SCREWS (IF INSTALLED), GAINING ACCESS TO THE MACHINE CARD FILE AREA, AND THEN PULLING THE MACHINE FORWARD FROM THE RACK (APPROXIMATELY SIX INCHES). NOTE THAT THE INTERFACE CABLES BETWEEN THE 4952, 4953 OR 4955 AND THE 4959 ARE ENDANGERED AT THIS TIME. TO AVOID DAMAGE, UNPLUG THE INTERFACE CABLE AT ONE END; THUS, ALLOWING ENOUGH SLACK IN THE CABLES TO AVOID SUCH DAMAGE.

B) FASTEN THE CABLE CONNECTOR ON THE APPROPRIATE CONNECTOR OF THE EFFECTED FEATURE ATTACHMENT CARD.

C) CLAMP AND STRAIN RELIEVE THE CABLE VIA THE TWO SCREWS ON THE CABLE PORT CLAMP. THE CABLE SHIELD IS FRAME GROUND TERMINATED AT THE CABLE PORT VIA THE GROUND BUS.

NOTE: IF A GOOD ELECTRICAL GROUND CAN BE MADE BETWEEN THE CABLE CLAMP, CABLE SHIELD AND FRAME GROUND IN STEP F), THE ATTACHMENT TO THE GROUND BUS MAY BE OMITTED.

D) ROUTE AND CLAMP THE CABLE PER FIGURE 3.10.

E) RE-INSTALL THE MACHINE INTO THE RACK AND RE-PLUG THE INTERCONNECTING CABLES BETWEEN THE 4952, 4953 OR 4955 AND THE 4959.

F) ROUTE AND STRAIN RELIEF THE CABLE PER FIGURE 3.11.

G) FOR CABLE IDENTIFICATION AND FEATURE CARD USAGE, REFER TO TABLE 3.4.1. THIS INFORMATION, AND HELP IN IDENTIFYING FEATURE CARDS IS FOUND IN M.L.D. VCI #1 ALSO.

H) IF THE CABLE IS TO BE TERMINATED AT THE CUSTOMER ACCESS PANEL, REFER TO FIGURE 3.5 AND SUB-SECTION 3.1.3.

3.4.2.2 THE 4973, 4974, 4979, 4982, 4987, AND THE 4993 ARE EITHER I/O DEVICES, OR DO CONNECT TO SUCH DEVICES VIA EXTERNAL CABLING.

SINCE THESE MACHINES MAY HAVE UNIQUE APPLICATIONS (ESPECIALLY THE 4982 AND THE 4987), REFER TO THE APPROPRIATE INSTALLATION INSTRUCTION LISTED PREVIOUSLY FOR THE DETAILS OF CABLING THESE MACHINES.

ROUTE AND STRAIN RELIEVE ALL CABLES AS SHOWN IN FIGURE 3.11.

NONE OF THESE DEVICES ARE ATTACHED TO THE CUSTOMER ACCESS PANEL.

3.4.3 3101 TERMINAL CURRENT LOCC CABLE.

THE 3101 TERMINAL MAY BE ATTACHED TO ADAPTER CARDS LOCATED IN THE FOLLOWING MACHINE TYPES: 4952, 4953, 4955, 4959, 4987. PRE-CONFIGURE CABLE FOR ATTACHMENT TO BE USED PER INSTRUCTION 6839562 SUPPLIED WITH B/M 6839561 (3101 CURRENT LOCC CABLE). FOR 4952, 4953, 4955, 4959 MACHINES SEE PARA. 3.4.2.1 OF THIS DOCUMENT. FOR 4987 MACHINE, SEE INSTRUCTION 4414980, AND DISCONNECT CABLE FROM 4904 TTY ADAPTER/ADDRESS TO BE USED AND SAVE FOR CUSTOMER DISPOSITION. INSTALL CABLE PER 4414980 INSTRUCTION AND SEE FIGURE 3.19 OF THIS INSTRUCTION FOR STRAIN RELIEF INFORMATION. FIGURES 3.16, 3.17, 3.18 PROVIDE ADDITIONAL GENERAL INFORMATION FOR THE 3101 TERMINAL INTERFACE.

3.5 SYSTEM SHIELDING AND GROUNDING

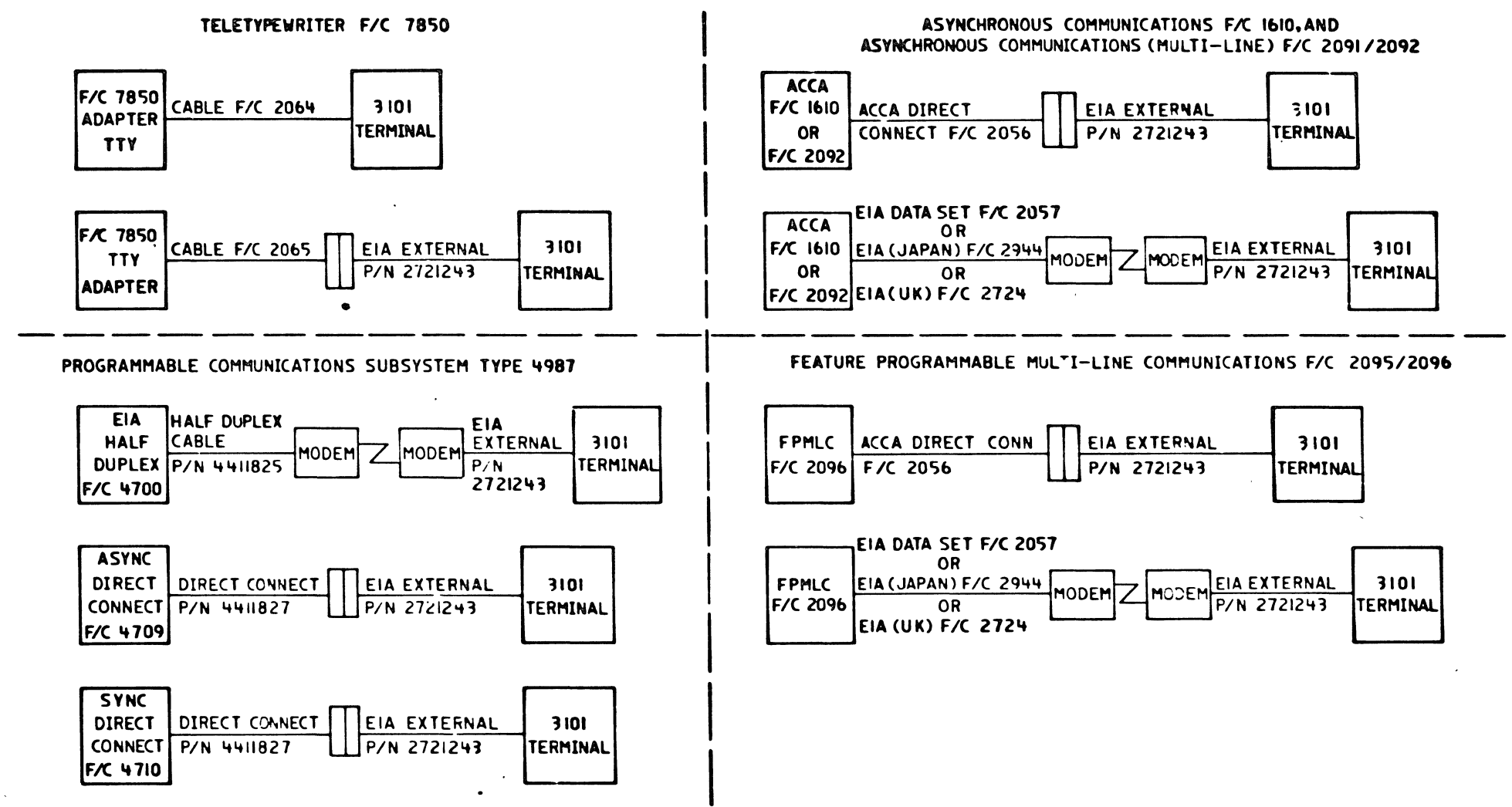
THE SIGNAL CABLES ARE ELECTRICALLY SHIELDED. THIS SHIELDING IS ACCOMPLISHED BY ROUTING ALL UNSHIELDED CABLES WITHIN A METAL RACK, INSURING ALL SHIELDED CABLES HAVE THEIR SHIELDS CONNECTED TO FRAME GROUND AT BOTH ENDS. GROUND CABLES INTERNAL TO THE RACK MOUNTED MODULES AS PER FIGURE 3.10. ATTACH CABLES EXTERNAL OF THE MODULES AS PER FIGURE 3.11.

ALL FRAME GROUNDS WILL BE CONNECTED TOGETHER BY THE FOLLOWING:

SAFETY GREEN WIRE AVAILABLE WITH PRIME POWER DISTRIBUTION.

STAND ALONE DEVICES SHALL HAVE THE GROUNDING CONNECTOR AS DESCRIBED ABOVE AND THE SIGNAL CABLE SHIELD CONNECTED TO FRAME GROUNDS AT BOTH ENDS.

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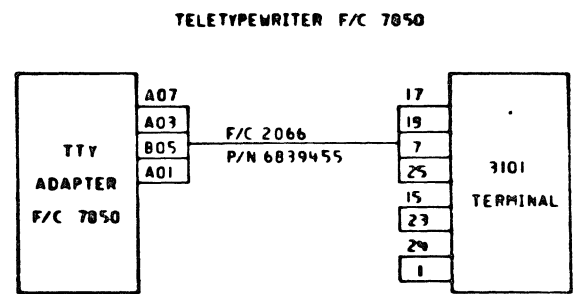


NOTE:
 ALSO SEE GENERAL INFORMATION
 ON FIGURE 3.18

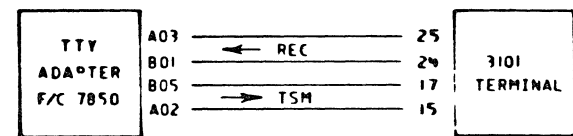
FIGURE 3.16

AA100

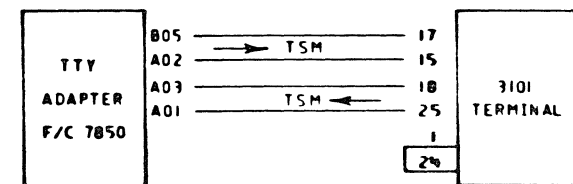
AA100



CONNECTION WITH 3101 SUPPLYING ALL CURRENT

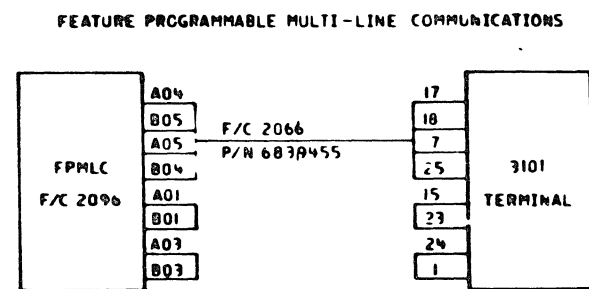


CONNECTIONS WITH TTY ADAPTER F/C 7850 SUPPLYING ALL CURRENT. CABLE NOT SUPPLIED

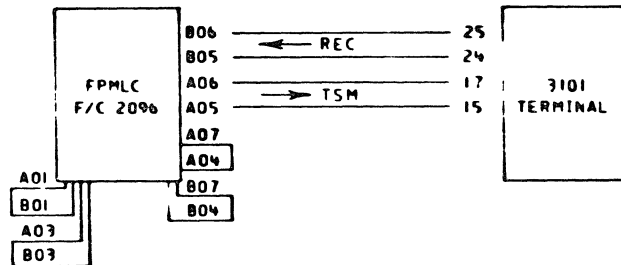


CONNECTIONS WITH EACH END SUPPLYING ITS TSM LOOP CURRENT. CABLE NOT SUPPLIED

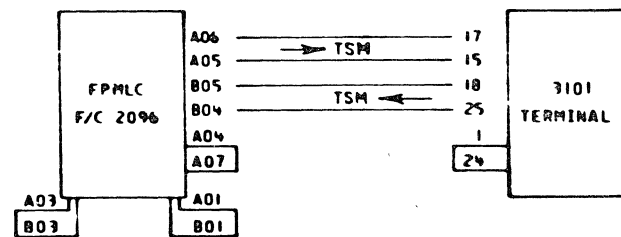
NOTE:
ALSO SEE GENERAL INFORMATION ON FIGURE 3.18



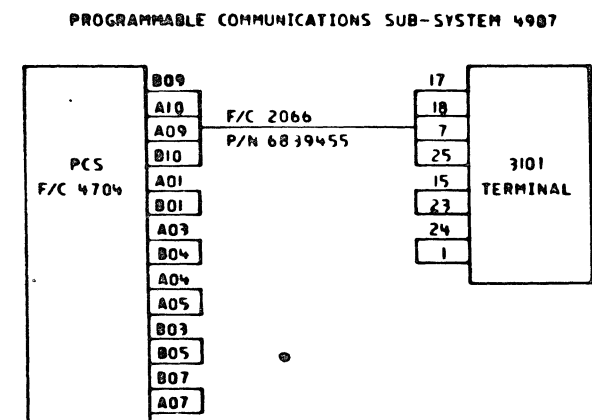
CONNECTION WITH 3101 SUPPLYING ALL CURRENT



CONNECTION WITH FPMLC ADAPTER F/C 2096 SUPPLYING ALL CURRENT. CABLE NOT SUPPLIED



CONNECTIONS WITH EACH END SUPPLYING ITS TSM LOOP CURRENT. CABLE NOT SUPPLIED



CONNECTIONS WITH 3101 SUPPLYING ALL CURRENT. PCS DOES NOT HAVE A CURRENT SUPPLYING CONFIGURATION

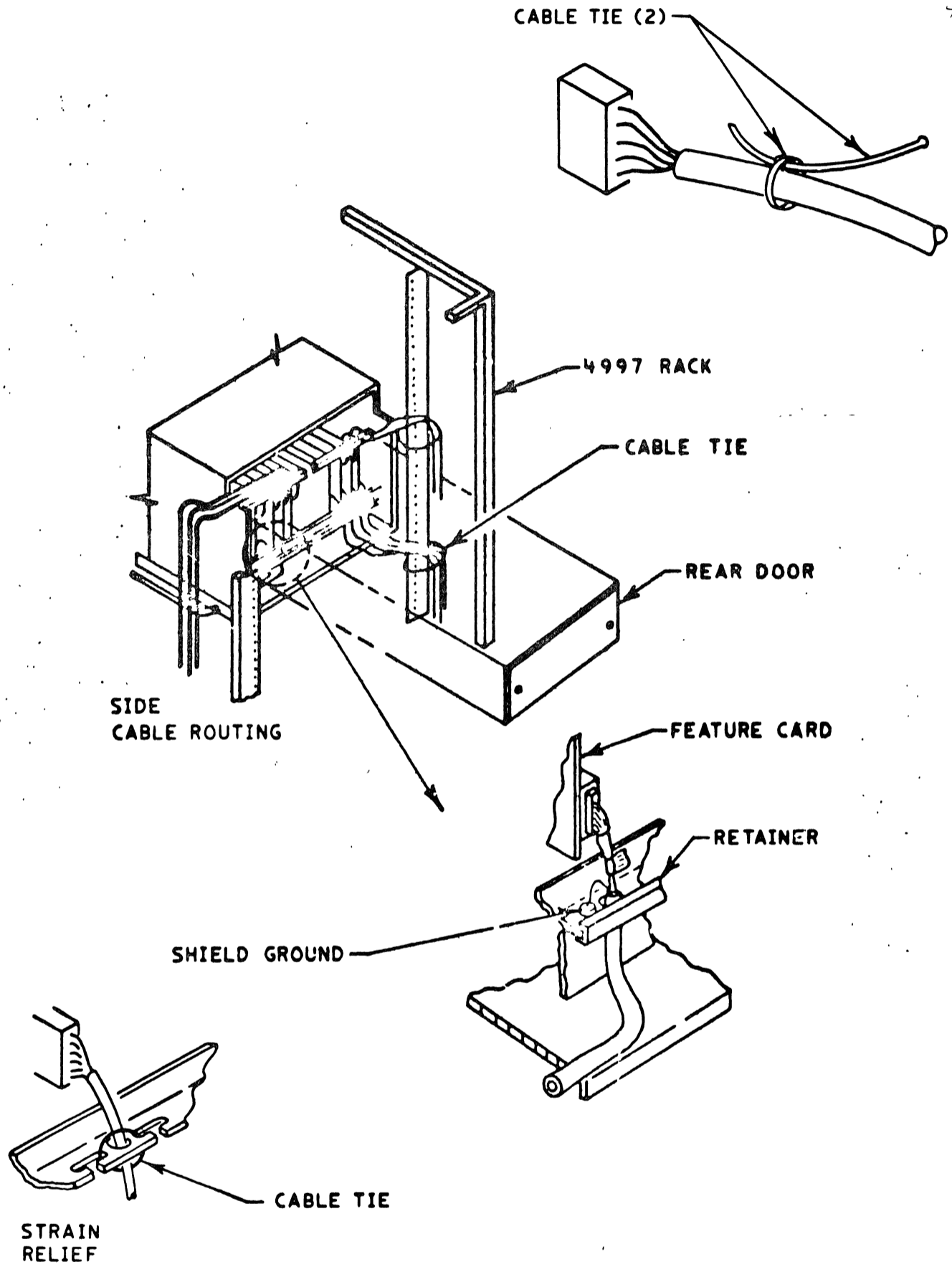
FIGURE 3.16

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GENERAL INFORMATION
SERIES 1 TO 3101 TERMINAL INTERCONNECT

1. IF CARRIER DETECT IS UP TO THE 3101 ALL THE TIME (S/1 ATTACHMENT JUMPERED FOR PERMANENT RTS), THEN THE 3101 HAS TO HAVE 'PRTS' SWITCH ON TO BE ABLE TO SEND DATA. (EIA OPERATION).
2. WHEN THE 3101 'CRTS' SWITCH ON, RTS IS BROUGHT UP WHEN FIRST KEY IS DEPRESSED AND KEEPS IT UP UNTIL EOT/ETX (DEPENDS ON THE 3 SWITCH SETTING) IS SENT (EIA CE).
3. WITH CURRENT LOOP OPERATION, THE ONLY SWITCH ON THE 3101 WHICH AFFECTS THE OPERATION OF THE XMIT/REC DATA IS THE 'PDX' SWITCH WHEN THIS IS ON, IT REQUIRES THE S/1 ATTACHMENT TO ECHO THE DATA.
4. IF OPERATING THE 3101 IN 'FDX' MODE (ECHOPLEX) WITH FPMLC ATTACH, RTS SHOULD BE JUMPERED ACTIVE ON THE FOUR LINE CABD SO AS TO PROVIDE CARRIER DETECT TO THE 3101. THIS ALLOWS THE ECHCED DATA TO BE RECEIVED BY THE 3101 (EIA OPERATION).
5. IF OPERATING THE 3101 IN 'FDX' MODE (ECHOPLEX) WITH THE PCS DIRECT CONNECT, THE SERIES/1 PROGRAM OF PCS FUNCTION STRING HAS TO ENSURE THAT CARRIER DETECT IS ACTIVE TO THE 3101 (EIA OPERATION).
6. THE TTY ATTACHMENT ALWAYS ECHOES THE DATA AND XMITS 2 STOP BITS.
7. WHEN USING THE TTY ATTACHMENT IN CURRENT LOOP MODE, THE TTY CARD SHOULD BE JUMPERED FOR ISOLATED CURRENT LOOP TO ALLOW THE 3101 TO SUPPLY THE CURRENT.
8. SINGLE LINE AND MULTILINE ACCA CANNOT ECHO THE DATA SO SHOULD OPERATE WITH THE 3101 'HDX' SWITCH ON AND 'PRTS' SWITCH ON, AND THE SERIES/1 ADAPTER JUMPERED FOR RTS ALWAYS ON.
9. WHEN USING THE SINGLE LINE AND MULTILINE ACCA, THE SERIES 1 DATA HAS TO BE THE MIRROR IMAGE OF THE ASC II CHARACTERS USED BY THE 3101 (I. E., AN ASC II ETX=03, IN SERIES/1 IT IS = CO WITH EVEN OR NO PARITY: CB C1 ODD PARITY).
10. ACCA SINGLE STOP BIT BPC 102236, SAME AS P/C 1610 EXCEPT FOR STOP BIT SWITCH SETTING ON THE 3101.

FIGURE 3.18



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TABLE 3.4.1
 CABLE IDENTIFICATION

CABLE E/N	* I/C	DESCRIPTION	FEAT. D/C	DESCRIPTION
0984023	5700	30 (9,1) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984024	5700	40 (12,2) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984025	5700	50 (15,2) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984026	5700	60 (18,3) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984027	5700	70 (21,3) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984028	5700	80 (24,4) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984029	5700	90 (27,4) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984030	5700	100 (30,5) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984031	5700	110 (33,5) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984032	5700	120 (36,6) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984033	5700	130 (39,6) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984034	5700	140 (42,7) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
0984035	5700	150 (45,7) FT-4973 EXTENDED CABLE	5630	4973 PRINTER ATTACHMENT
1632206	2060	ESC V35/H.S. DDN CABLE	2075	BSC SINGLE LINE CONT. (H.S.)
1632207	5721	20 (6,1)-4574 BASIC ATT CABLE	5620	4974 PRINTER ATTACHMENT
1632208	2057	EIA DATA SET CABLE	1610	A/C. SINGLELINE CONTROL **
			2074	BSC SINGLE LINE CONTROL
			2090	SDLC SINGLE LINE CONTROL
			2092	A/C.-4 LINE ADAPTOR
			2094	BSC-4 LINE ADAPTOR
			2096	PRCG COMM 4 LINE ADAPTOR
1632209	2055	T.T.Y. 20 (6,1) FT CABLE	7850	T.T.Y. ATTACHMENT
1632210	2058	BSC/ HIGH SPEED CABLE	2075	BSC SINGLE LINE CONT. (H.S.)
1632211	2056	ASYN LOCAL COMM CABLE	1610	A/C. SINGLELINE CONT. **
			2092	A/C. -4 LINE ADAPTOR
			2096	PRCG COMM 4 LINE ADAPTOR
1632919	2944	JAPANESE EIA DATA SET CABLE	2057	EIA DATA SET CABLE
1632924	2064	TTY TC EIA DIB. CCNN. (MALE)	7850	TTY ATTACHMENT
1633096		COMM. CRCSS-CVCR CABLE	2091	A/C. - 8 LINE CONT. **
			2093	BSC-8 LINE CONT.
			2095	PRCG COMM 8 LINE CONTROL
1634981	5701	20 (6,1)-4573 BASIC ATT CABLE	5630	4973-PRINTER ATTACHMENT
1727744	2724	U.K. MODEM ADAPTOR CABLE	2057	EIA DATA SET CABLE
4411751	2065	TTY TO EIA DIB. CCNN (FEMALE)	7850	TTY ATTACHMENT
4412661	5741	20 (6,1) FT. - 4979 BASIC CABLE	3585	4979 VIDEO ATTACHMENT
4412662	5740	30 (9,1) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412663	5740	40 (12,2) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412664	5740	50 (15,2) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412665	5740	60 (18,3) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412666	5740	70 (21,3) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412667	5740	80 (24,4) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412668	5740	90 (27,4) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412669	5740	100 (30,5) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412670	5740	110 (33,5) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412671	5740	120 (36,6) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412672	5740	130 (39,6) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412673	5740	140 (42,7) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412674	5740	150 (45,7) FT 4979 EXTENDED CABLE	3585	4979 VIDEO ATTACHMENT
4412703	5720	30 (9,1) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412704	5720	40 (12,2) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412705	5720	50 (15,2) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412706	5720	60 (18,3) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412707	5720	70 (21,3) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412708	5720	80 (24,4) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412709	5720	90 (27,4) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412710	5720	100 (30,5) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412711	5720	110 (33,5) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412712	5720	120 (36,6) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412713	5720	130 (39,6) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412714	5720	140 (42,7) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
4412715	5720	150 (45,7) FT-4974 EXTENDED CABLE	5620	4974 PRINTER ATTACHMENT
6839455	2066	50 (15,2) FT 3101 CURRENT LCCP		2096 FPMLC 4-LINE ADAPTOR
				7850 TTY ATTACHMENT
				4704 TTY ADAPTOR
8326751	5760	IDS ATTACHMENT FEATURE CABLE	1210	5250 IDS ATTACHMENT FEATURE
8327455	2061	20 (6,1) FT-E/C 20MA I-LOOP CABLE	2096	PRCG COMM 4-LINE ADAPTOR

* NOTE:

SOME OF THESE DEVICE CODES HAVE WRAP-BACK TOOLS SUPPLIED WITH THEM FOR USAGE OF THESE TOOLS, SEE TABLE 3.4.2.

** "ASYNCHRONOUS COMMUNICATIONS" ALSO KNOWN AS "START/STOP".

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TABLE 3.4.2
WRAP - BACK TCCLS

TCCL E/N	REQ'D FCB D/C
1633810	205E
1633811	2056
1633812	2060
1633834	2055 2064 2065
2704136	2057
2722052	2944
4413770*	2057
6825399	2061

* NOTE: THIS TOOL WILL BE PRESENT ONLY WITH FEATURE CODES 2092 AND 2094. THIS P/N 4413770-QTY 16) SHOULD BE JUMPED FCB PINS 4 THRU 5, 6 THRU 20 ON SPECIFIED CABLE FOR INITIAL INSTALLATION CHECKOUT.

SECTION 4.0 POWER CHECKOUT

4.0 PRIMARY POWER GROUNDING AND CONNECTIONS

A) PRIMARY POWER GROUNDING

IBM RECOMMENDED GROUNDING AND POWER DISTRIBUTION ARE SHOWN IN FIGURE 4.1. THE PERFORMANCE OF IBM UNITS CAN BE AFFECTED BY ELECTRICAL NOISE AND/OR TRANSIENTS ENTERING THE SYSTEM UNITS FROM THE PRIMARY POWER GROUNDING NETWORK.

ALL IBM MACHINE POWER CORDS CONTAIN AN INSULATED EQUIPMENT GROUNDING CONDUCTOR (GREEN OR GREEN WITH YELLOW STRIPES) CONNECTED BETWEEN THE MACHINE FRAME GROUND AND A PIN ON THE POWER CORD PLUG. THE WALL OR CORD RECEPTACLES RECOMMENDED BY IBM PROVIDE CONNECTION TO THIS GROUND PIN. THIS GROUND PIN MUST BE PROPERLY TERMINATED TO PROVIDE AN INSTALLATION WHICH IS SAFE, RELIABLE, AND RELATIVELY UNAFFECTED BY ELECTRICAL NOISE.

HOWEVER, IN GBG/I COUNTRIES USING 50HZ POWER, AND IN JAPAN, CERTAIN CONFIGURATIONS PROHIBIT THE USE OF POWER PLUGS AND WALL RECEPTACLES. THESE EXCEPTIONS ARE AS FOLLOWS:

- IN GBG/I COUNTRIES USING 50HZ POWER, THE GROUND CONDUCTOR LEAKAGE CURRENT MAY BE OF SOME CONCERN IF IT IS GREATER THAN 3.5 MILLIAMPERES. IF THIS GROUNDING CONDUCTOR CURRENT IS A CONCERN, SPECIAL CONSIDERATIONS MAY BE NECESSARY WHEN CONNECTING THE 4997 POWER CABLE TO THE A.C. POWER SOURCE. REFER TO TABLE 4.0 AND DETERMINE THE LEAKAGE CURRENT OF THE SYSTEM TO BE INSTALLED BEFORE PROCEEDING WITH THE INSTALLATION.
- IN GBG/I COUNTRIES USING 50HZ POWER, IF THE GROUND CONDUCTOR LEAKAGE CURRENT IS GREATER THAN 1 AMPERE, THE SYSTEM CANNOT BE INSTALLED. HOWEVER, THIS CONDITION CANNOT OCCUR WITH SERIES/1.
- IN JAPAN THESE SPECIAL CONSIDERATIONS MUST BE TAKEN INTO ACCOUNT ALSO. IF JAPAN ONLY, REFER TO SECTION 4.1 BEFORE PROCEEDING WITH THE INSTALLATION.

TO MEET THE REQUIREMENTS FOR THE USAGE OF POWER PLUG AND WALL RECEPTACLES (IF IT HAS BEEN DETERMINED THAT THEY CAN BE USED), THE FOLLOWING CONDITIONS MUST BE MET.

- THE GROUND PIN OF THE GROUNDING BUS MUST BE CONNECTED DIRECTLY TO THE SERVICE ENTRANCE GROUND ELECTRODE WITH A CONDUCTOR AT LEAST EQUAL IN SIZE TO THE PHASE CONDUCTOR. THIS GROUNDING CONDUCTOR MUST BE CONNECTED TO THE SERVICE ENTRANCE GROUND ELECTRODE, AT THE ELECTRODE, UNDER THE EXACT SAME LUG WHICH IS USED TO CONNECT THE CENTER TAP OF THE SERVICE TRANSFORMER TO THE ELECTRODE.
- THESE GROUNDING CONDUCTORS MUST BE PHYSICALLY ISOLATED FROM NEUTRAL CONDUCTORS AND OTHER GROUNDING CONDUCTORS, EXCEPT FOR INTER CONNECTIONS WHICH ARE REQUIRED BY LOCAL CODES.
- IF EQUIPMENT OTHER THAN IBM SYSTEM UNITS IS POWERED FROM THE SAME DISTRIBUTION PANEL AS IBM SYSTEM UNITS, SUFFICIENT NOISE MAY BE INDUCED IN THE GROUNDING NETWORKS TO AFFECT PERFORMANCE.

B) INITIAL SYSTEM (CIRCUITS) GROUNDING AND CUSTOMER SIGNAL GROUNDING

IF THE SYSTEM BEING INSTALLED CONTAINS A 4982 (SENSOR I/O EQUIPMENT), ~~ADDITIONAL~~ GROUNDING AND SHIELDING PRECAUTIONS MUST BE TAKEN.

THE USE OF MULTIPLE GROUNDING POINTS ON AN INPUT/OUTPUT SIGNAL CABLE BY THE USER CAN CAUSE ELECTRICAL NOISE AND SHOULD BE AVOIDED.

CONDUCTORS THAT ARE EFFECTIVE SHORT CIRCUITS TO DIRECT CURRENT MAY PRESENT HIGH IMPEDANCE TO HIGH-FREQUENCY ELECTRICAL NOISE. MODERN HIGH-SPEED, LOW-LEVEL CIRCUITS ARE PARTICULARLY SUSCEPTIBLE TO THIS ELECTRICAL NOISE, OFTEN OF MICROSECONDS DURATION, ENTERING THE SYSTEM ON SIGNAL LINES, POWER LINES, OR GROUNDING MEDIA. SELECTIVE FILTERING AND DECOUPLING METHODS ARE USED WHERE APPLICABLE IN IBM UNITS TO MINIMIZE THE EFFECTS OF NOISE BY SHUNTING IT TO FRAME GROUND.

SINCE IT IS RARELY POSSIBLE TO ACHIEVE COMPLETE SUPPRESSION OR ISOLATION OF NOISE, THE GROUNDING SYSTEM MUST PROVIDE MINIMUM RESISTANCE TO THE PRIMARY POWER GROUND. THE GROUNDING SYSTEM SHOULD HAVE SUFFICIENT ISOLATION FROM ELECTRICAL NOISE SO THAT IT WILL NOT BE A MEDIUM FOR TRANSMITTING SUCH NOISE INTO THE SYSTEM.

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C) EMERGENCY POWER OFF CONTROL

IF AN IBM 4997 ENCLOSURE IS BEING INSTALLED, AN INSTANT POWER OFF (IPO) SWITCH IS PROVIDED WHICH WILL POWER OFF THE SINGLE BAY WITHIN TWO SECONDS AFTER PULLING THE IPO BUTTON. THE IPO BUTTON POWERS OFF ONLY THE UNITS MOUNTED WITHIN ITS 4997 RACK ENCLOSURE. IN SYSTEMS WITH MULTIPLE ENCLOSURES, THE IPO POWERS OFF ONLY THE UNITS MOUNTED WITHIN THAT SINGLE ENCLOSURE. SAFETY PRACTICES PREVENT ANY ENCLOSURE FROM BEING POWERED BY ANOTHER ENCLOSURE. EACH ENCLOSURE MUST BE INDIVIDUALLY CONNECTED TO THE MAIN POWER SOURCE.

FOR INSTALLATIONS NOT USING AN IBM ENCLOSURE OR FOR NON-RACK MOUNTED DEVICES, CONTROLS FOR DISCONNECTING THE MAIN POWER SERVICE SUPPLYING THE COMPUTER EQUIPMENT SHOULD BE CONVENIENT TO THE OPERATOR. CONTROLS SHOULD ALSO BE LOCATED NEXT TO EACH EXIT DOOR TO REALLY DISCONNECT POWER TO ALL EQUIPMENT IN THE COMPUTER AREA AND ALSO TO THE AIR CONDITIONING SYSTEM. PROVISION SHOULD BE MADE FOR EMERGENCY LIGHTING.

D) LIGHTNING PROTECTION

IBM RECOMMENDS THAT THE USER INSTALL LIGHTNING PROTECTION ON HIS SECONDARY POWER SOURCE AND SIGNAL LINES THAT ARE EXPOSED TO LIGHTNING WHEN:

- THE UTILITY COMPANY INSTALLS LIGHTNING PROTECTORS ON THE PRIMARY.
- PRIMARY POWER IS SUPPLIED BY AN OVERHEAD POWER SERVICE.
- THE AREA IS SUBJECT TO ELECTRICAL STORMS OF EQUIVALENT POWER SURGES.

THE USER SHOULD DETERMINE WHETHER LIGHTNING PROTECTION IS DESIRABLE, AND SELECT AND INSTALL THE SERVICE PROTECTOR NEEDED.

E) CONVENIENCE OUTLETS

A SUITABLE NUMBER OF CONVENIENCE OUTLETS SHOULD BE (AT REQUIRED LOCAL COUNTRY VOLTAGE) INSTALLED IN THE SYSTEM AREA. THESE CONVENIENCE OUTLETS SHOULD BE ON BUILDING CIRCUITS OTHER THAN THE COMPUTER POWER PANEL (OR RISER), OR LIGHTNING CIRCUITS.

OUTLETS FOR REMOTE IBM MACHINES (4973, 4974 AND 4979) SHOULD BE SINGLE OUTLET RECEPTACLES TO DISCOURAGE INCORRECT APPLICATION.

F) ATTACHED EQUIPMENT (NON-IBM)

EQUIPMENT NOT SUPPLIED BY IBM BUT ATTACHED TO, OR MOUNTED IN, THE IBM ENCLOSURE MUST NOT USE OR SHARE A.C. OR D.C. POWER FROM THE INTERNAL SYSTEM POWER DISTRIBUTION PANEL-EXCEPT AS FOLLOWS:

*TEMPORARY POWER USE FOR SERVICE EQUIPMENT BEING USED BY EXPERIENCED MAINTENANCE PERSONNEL.

*I/O CHANNEL ATTACHMENT CARDS DESIGNED ACCORDING TO THE GUIDELINES CONTAINED IN GA34-0033 TO MOUNT IN AN IBM 4952, 4953, 4955, OR 4959 MAY DRAW D.C. POWER FROM THAT UNIT.

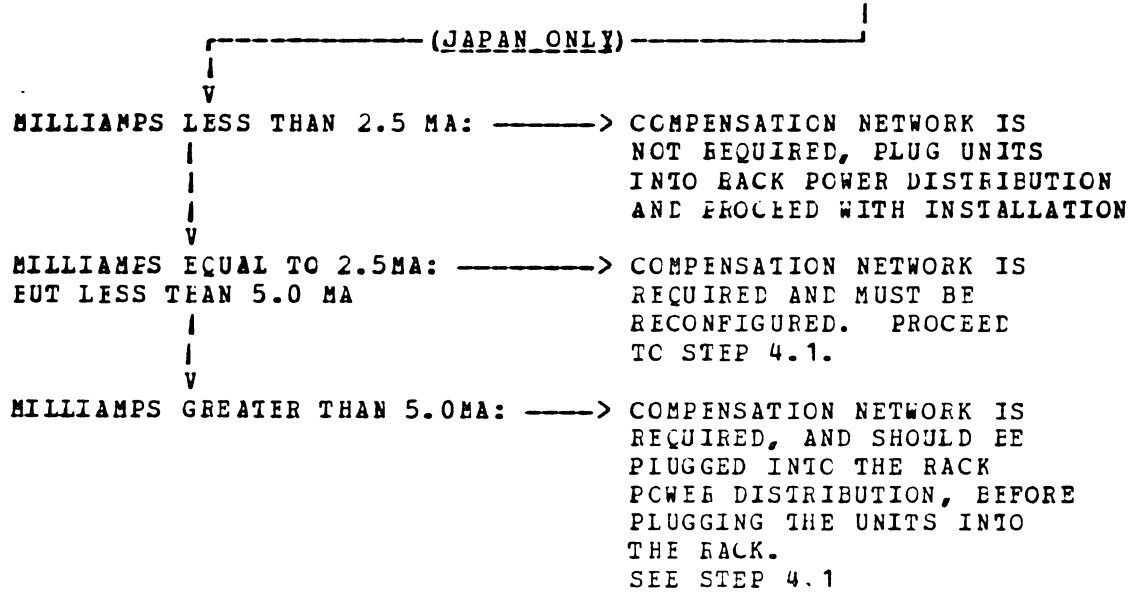
MOUNTING NON-IBM EQUIPMENT IN THE SAME ENCLOSURE WITH IBM UNITS CAN AFFECT SYSTEM PERFORMANCE DUE TO ELECTRICAL NOISE, INCREASED THERMAL LOAD, OR ALTERED AIR-FLOW.

CAUTION: GROUNDING CIRCUIT CONTINUITY IS VITAL. ON A SYSTEM WITH 4982 (SENSOR I/O) ATTACHMENTS, THE POWER PLUGS MUST NOT BE DISCONNECTED WITHOUT FIRST DISCONNECTING ALL USER INPUT/OUTPUT CIRCUITS.

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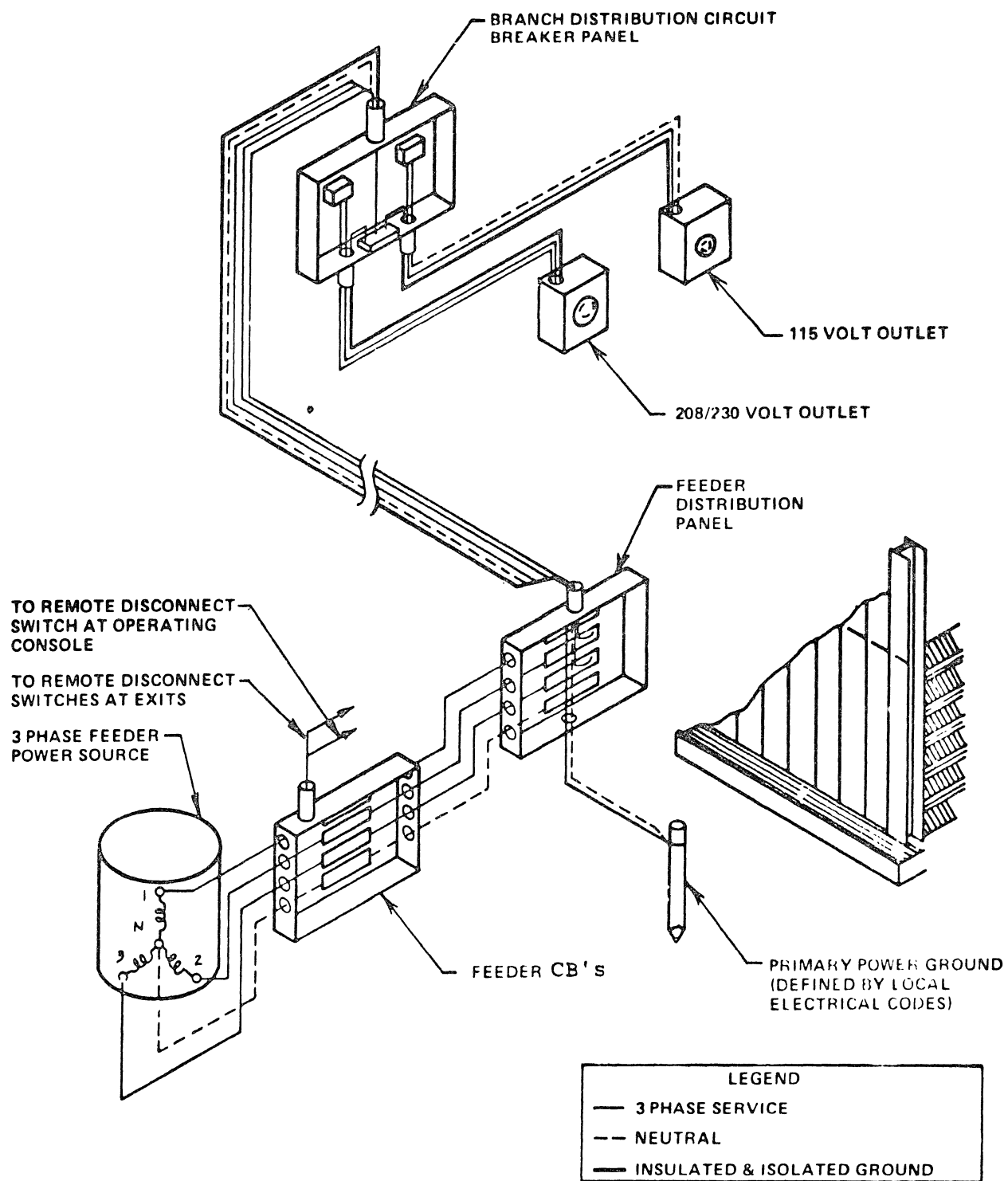
UNIT	LEAKAGE CURRENT (IN MILLIAMPS)	X	NUMBER OF UNITS	=	UNIT TOTALS
4952	0.4	X	-----	=	-----
4953	1.2	X	-----	=	-----
4955	1.2	X	-----	=	-----
4959	1.0	X	-----	=	-----
4962	1.5	X	-----	=	-----
4963	2.0	X	-----	=	-----
4964	1.0	X	-----	=	-----
4966	2.0	X	-----	=	-----
4969	3.0	X	-----	=	-----
4982	0.0	X	-----	=	-----
4987	1.0	X	-----	=	-----
4993	1.0	X	-----	=	-----
4999	0.0	X	-----	=	-----

TOTAL 4997 LEAKAGE CURRENT =
 (IN MILLIAMPS)



EIA LEAKAGE CURRENT CHART
 TABLE 4.0

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PRIMARY POWER - GROUNDING
 FIGURE 4.1

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4.1 FOR JAPAN ONLY:

- 4.1.1 SINCE JAPAN CANNOT HAVE GROUND CONDUCTOR LEAKAGE CURRENT IN EXCESS OF 3.5 MILLIAMPS, ALL 4097 ENCLOSURES INSTALLED IN JAPAN WILL HAVE A COMPENSATION NETWORK INSTALLED. THE COMPENSATION NETWORK IS MOUNTED ON THE RIGHT, REAR RAIL, ABOVE THE POWER DISTRIBUTION. THE PURPOSE OF THE COMPENSATION NETWORK IS TO REDUCE THE GROUND CONDUCTOR LEAKAGE CURRENT BELOW 3.5 MA - IF REQUIRED.
- 4.1.2 THE GROUND CONDUCTOR LEAKAGE CURRENT MUST BE DETERMINED FOR SINGLE PHASE POWER WHERE NONE OF THE CURRENT CARRYING CONDUCTORS ARE AT GROUND POTENTIAL. TO DETERMINE IF THIS CONDITION EXISTS, USE A SIMPSON 260 METER, OR SIMILAR METER ($\pm 3\%$); AND CHECK THE PHASES AT THE SERVICE OUTLETS AS SHOWN IN FIGURE 4.3, TABLE "A".
- A) IF CONDITION "A" IS FOUND TO EXIST, CONTACT INSTALLATION PLANNING, AS AN IMPROPER POWER CONFIGURATION HAS BEEN PROVIDED FOR THE UNIT.
 - B) IF CONDITION "B" IS FOUND TO EXIST, THE COMPENSATION NETWORK IS NOT NEEDED. INSURE THAT THE NETWORK IS NOT PLUGGED INTO THE RACK POWER DISTRIBUTION AND PROCEED WITH THE INSTALLATION. OMIT THE REST OF THIS SECTION.
 - C) IF CONDITION "C" IS FOUND TO EXIST, THE COMPENSATION NETWORK MAY BE REQUIRED, AND THE LEAKAGE CURRENT FOR THE RACK CONFIGURATION MUST BE DETERMINED.
- 4.1.3 REFER TO TABLE 4.0 AND DETERMINE THE LEAKAGE CURRENT BEFORE PROCEEDING.
- 4.1.4 NOTE: THE FOLLOWING STEPS ARE TO BE DONE ONLY IF THE TOTAL LEAKAGE CURRENT FOR THE RACK WAS DETERMINED TO BE BETWEEN 2.5 AND 5.0 MILLIAMPERES IN TABLE 4.0.
- A) LOCATE THE COMPENSATION NETWORK ASSEMBLY MOUNTED TO THE RIGHT REAR VERTICAL MEMBER OF THE RACK ABOVE THE POWER DISTRIBUTION.
 - B) REMOVE THE THREE SCREWS (TWO ON THE BOTTOM AND ONE ON THE TOP MIDDLE OF THE COVER) AND REMOVE THE COVER. OBSERVE TB1 INSIDE THE COMPENSATION NETWORK ASSEMBLY. SEE FIGURE 4.2.
 - C) NOTICE THAT THERE ARE TWO JUMPERS ON TB1. ONE CONNECTS TB1-2 TO TB1-3. THE OTHER CONNECTS TB1-3 TO TB1-4. REMOVE THE JUMPER BETWEEN TB1-2 AND TB1-3. REFER TO FIGURE 4.2.
 - D) REASSEMBLE THE COMPENSATION NETWORK COVER TO THE ASSEMBLY, AND PLUG THE NETWORK INTO THE RACK POWER DISTRIBUTION.
- 4.1.5 PLUG THE UNITS MOUNTED IN THE RACK INTO THE POWER DISTRIBUTION AND CONTINUE WITH THE INSTALLATION IN STEP 4.0.a.

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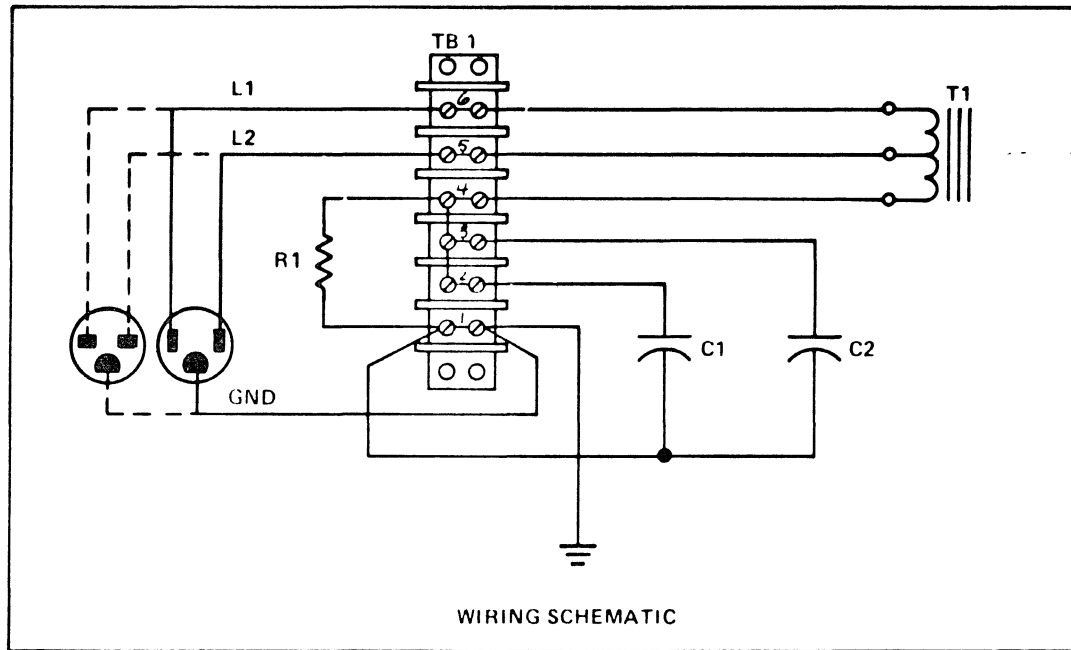
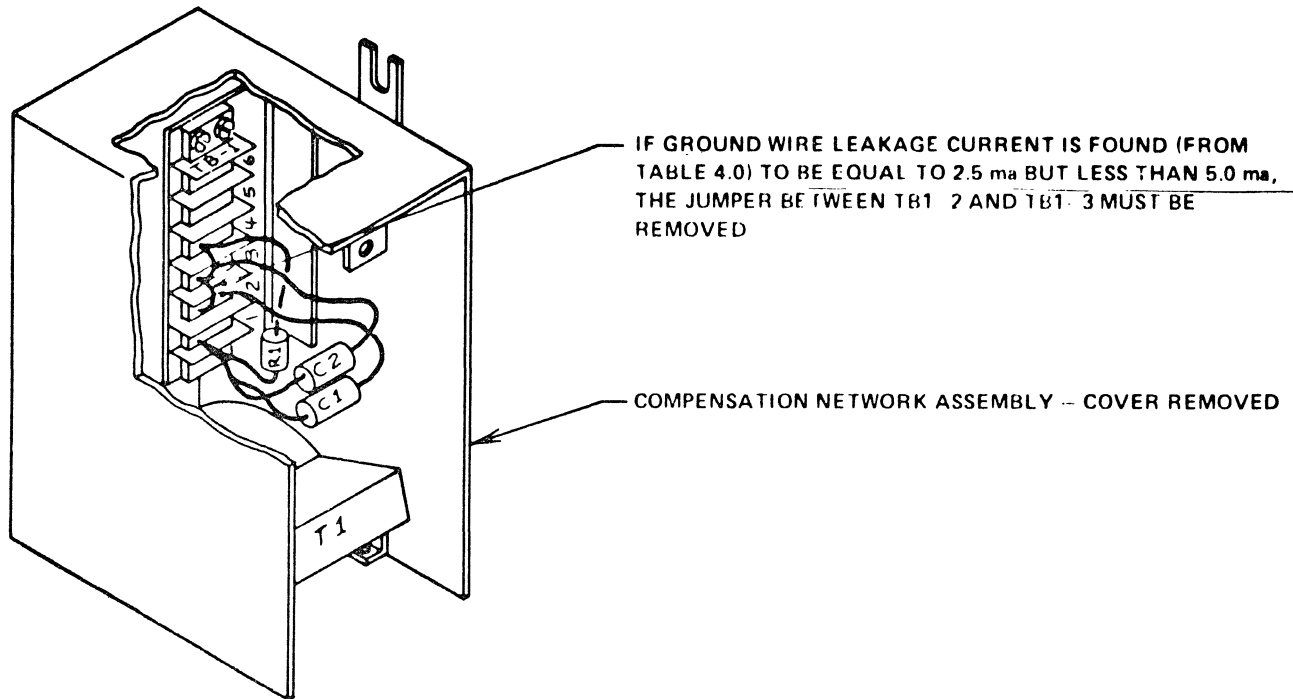


FIGURE 4 2
(JAPAN ONLY)

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4.2 PRE-POWER CHECKS

4.2.1 CHECK AC LINE-TO-LINE VOLTAGE AT SERVICE OUTLET AND VERIFY THAT THEY ARE WITHIN THE LIMITS GIVEN IN TABLE 4.2.1 FOR APPLICABLE POWER SOURCE. USE SIMPSON 260 METER OR EQUIVALENT ($\pm 3\%$). CHECK ALL PHASES. IF THE LINE VOLTAGES ARE NOT WITHIN TOLERANCE, IT MUST BE CORRECTED BEFORE PROCEEDING WITH THE INSTALLATION.

AT THE SAME TIME THAT THE VOLTAGES ARE BEING CHECKED, CHECK THE CUSTOMERS WIRING AGAINST FIGURE 4.3, TABLE "B", TO DETERMINE WHICH CONDITION EXISTS.

- A) IF CONDITION "A" EXISTS, CONTACT INSTALLATION PLANNING, AS AN IMPROPER POWER CONFIGURATION HAS BEEN PROVIDED FOR THE UNIT. INSTALLATION IS NOT TO PROCEED.
- B) IF CONDITION "B" EXISTS, OMIT SECTIONS 4.2.2 AND 4.2.3 AND PROCEED TO SECTION 4.2.4.
- C) IF CONDITION "C" EXISTS, THE FUSE IN THE 4953, 4955, AND 4959 POWER SUPPLIES (HIGH VOLTAGE ONLY) ACROSS THE GROUND CONDUCTOR MUST BE DISCONNECTED. (THIS ONLY APPLIES TO U.K. AND ONLY IF THE POWER SUPPLY WAS NOT WIRED FOR U.K. AT THE FACTORY)

U.K. ONLY:

IF YOU HAVE A HIGH VOLTAGE POWER CONFIGURATION AND CONDITION "C" ABOVE EXISTS:

- PROCEED TO STEP 4.2.2 FOR INFORMATION ON THE 125 WATT SUPPLY (4953 A AND C).
- PROCEED TO STEP 4.2.3 FOR INFORMATION ON THE 300 WATT SUPPLY (4953 B AND D, 4955, AND 4959).
- THE 400 WATT SUPPLY (4952E & 4955E) AND THE FERRO SUPPLY (4952A) ARE NOT AFFECTED. PROCEED TO STEP 4.2.4.

TABLE 4.2.1

60HZ AC INPUT VOLTAGE (EXCEPT 4952A) 4952A

	MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE		MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE	
		HIGH	LOW		HIGH	LOW
LOW VOLTAGE	100 VOLT AC	110	90	100 VOLT AC	110	90
	110 VOLT AC	121	99	110 VOLT AC	119	96.5
	115 VOLT AC	126	104	120 VOLT AC	127	104
	123.5 VOLT AC	136	111	127 VOLT AC	137	111
HIGH VOLTAGE	200 VOLT AC	220	180	200 VOLT AC	220	180
	208 VOLT AC	229	187	208 VOLT AC	220	180
	220 VOLT AC	242	198	220 VOLT AC	238	193
	230 VOLT AC	253	207	230 VOLT AC	249	202
	235 VOLT AC	258	212	240 VOLT AC	254	208

50HZ AC INPUT VOLTAGE (EXCEPT 4952A) 4952A

	MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE		MACHINE VOLTAGE LABEL (NOMINAL INPUT)	ACCEPTABLE RANGE	
		HIGH	LOW		HIGH	LOW
LOW VOLTAGE	100 VOLT AC	110	90	100 VOLT AC	110	90
	110 VOLT AC	121	99	110 VOLT AC	121	96.5
	123.5 VOLT AC	136	111			
HIGH	200 VOLT AC	220	180	200 VOLT AC	220	180
	220 VOLT AC	242	198	220 VOLT AC	238	193
	235 VOLT AC	258	212	230 VOLT AC	249	202
				240 VOLT AC	259	210

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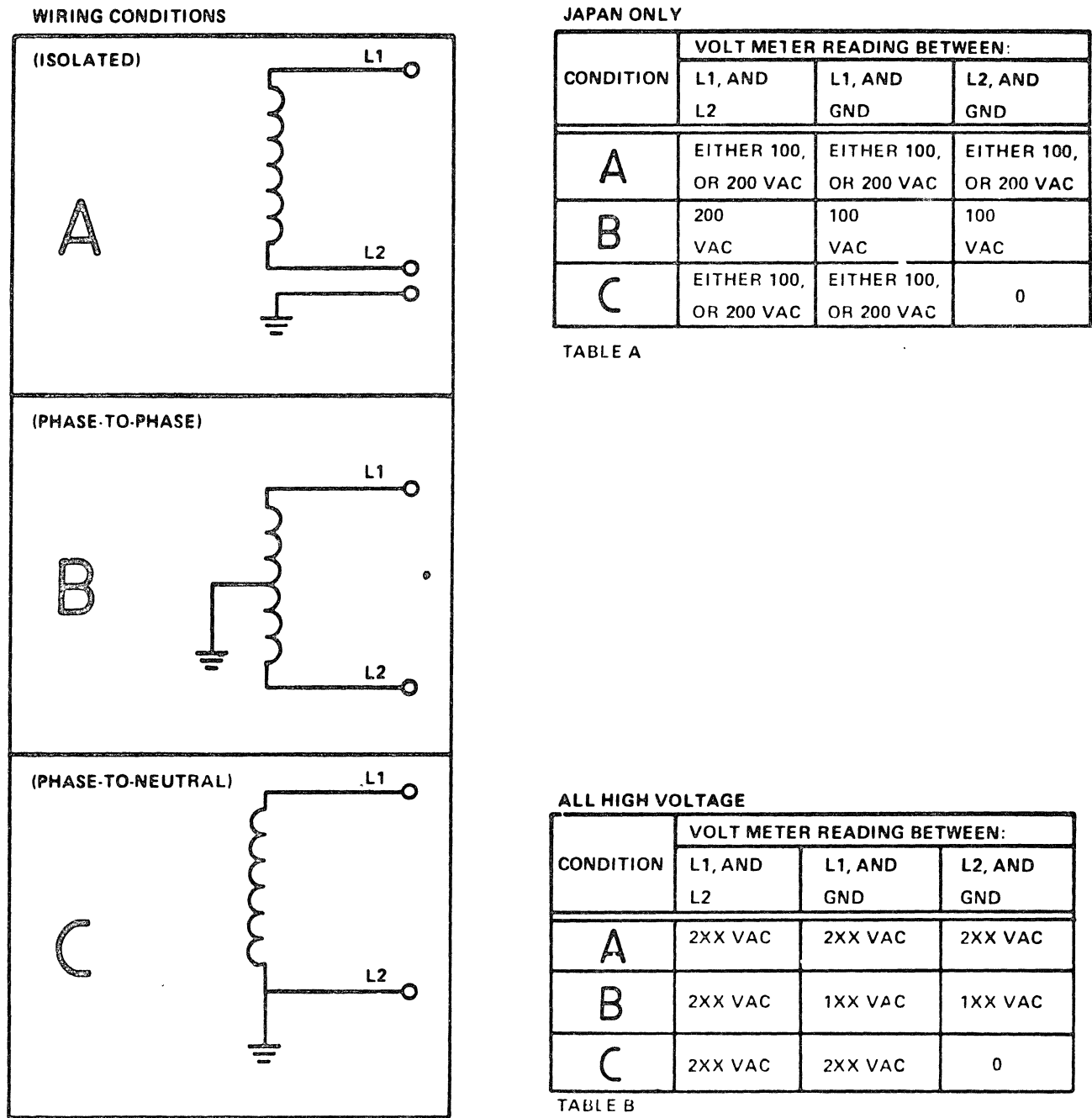


FIGURE 4.3

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4.2.2 125 WATT POWER SUPPLY (U.K. HIGH VOLTAGE ONLY) CONVERSION TO PHASE-TO-NEUTRAL POWER FROM PHASE-TO-PHASE WIRING (IF NOT FACTORY WIRED FOR U.K.). IF IN DOUBT AS TO CONFIGURATION, PROCEED AS FOLLOWS AND VERIFY.

THE CONVERSION WILL CONSIST OF CHANGING ONE LEAD ON TB1 INSIDE THE POWER SUPPLY. PROCEED AS FOLLOWS:

4.2.2.1 GAIN ACCESS TO THE POWER SUPPLY. (FIG. 4.4A).

- A. REMOVE THE DECORATIVE FRONT COVER.
- B. OPEN THE CONSOLE GATE BY LOOSENING THE SCREW LOCATED AT THE TOP AND BOTTOM - CENTER OF THE CONSOLE GATE AND SWING THE GATE OPEN.
- C. REMOVE THE FRONT COVER MOUNTING BRACKET, LOCATED AT THE RIGHT FRONT CORNER OF THE 4953 A & C IN THE FRONT OF THE POWER SUPPLY, BY REMOVING THE TWO SCREWS.
- D. REMOVE THE BACK BOARD COVER BY REMOVING THE SCREWS LOCATED AT THE RIGHT AND LEFT LOWER REAR CORNERS OF THE UNIT.
- E. UNPLUG THE IWC TOP CABLES LOCATED AT THE TOP REAR OF THE POWER SUPPLY. REMOVE THE FOUR FLAT CABLES LOCATED AT THE LOWER SECTION OF THE POWER SUPPLY, BY REMOVING THE FOUR SCREWS. SEE FIG. 4.4B.

NOTE: POWER SUPPLY, AT EC 578375 REWORK LEVEL, WILL HAVE TWO BLACK WIRES ATTACHED HERE ALSO. REMOVE THESE AND NOTE THEM AS TO LOCATION FOR ASSEMBLY.
- F. OBSERVE AND ABIDE BY ALL WARNING LABELS ON THE POWER SUPPLY.
- G. UNPLUG ALL CONNECTIONS ON THE FRONT OF THE POWER SUPPLY (J8, J9, AND 10). SEE FIG. 4.4A.
- H. REMOVE THE POWER SUPPLY FROM THE UNIT BY REMOVING THE ONE SCREW LOCATED AT THE TOP OF THE POWER SUPPLY. CAREFULLY PULL THE SUPPLY OUT OF THE FRONT OF THE UNIT - BEING CAREFUL NOT TO DAMAGE THE CABLES. SEE FIG. 4.4A.

4.2.2.2 GAIN ACCESS TO TB1.

- A. REMOVE THE SIX SCREWS HOLDING THE SIDE PLATE ASSEMBLY ON THE POWER SUPPLY. CAREFULLY REMOVE THE SIDE PLATE ASSEMBLY. SEE FIG. 4.4C.
- B. REMOVE THE TERMINAL BLOCK SAFETY SHIELD AND OBSERVE TB1 AT THE TOP CENTER OF THE POWER SUPPLY.

4.2.2.3 REWIRE TB1 AS SHOWN ON FIGURE 4.4E.

4.2.2.4 REASSEMBLE THE UNIT BY REVERSING PROCEDURES ABOVE. BE SURE ALL CONNECTIONS ARE SECURE AND WIRING IS ROUTED PROPERLY TO AVOID BEING PINCHED DURING ASSEMBLY.

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DATE OF CHANGE 20DEC78 08FEB79 30MAY79 28JUN79 09NOV79 27DEC79

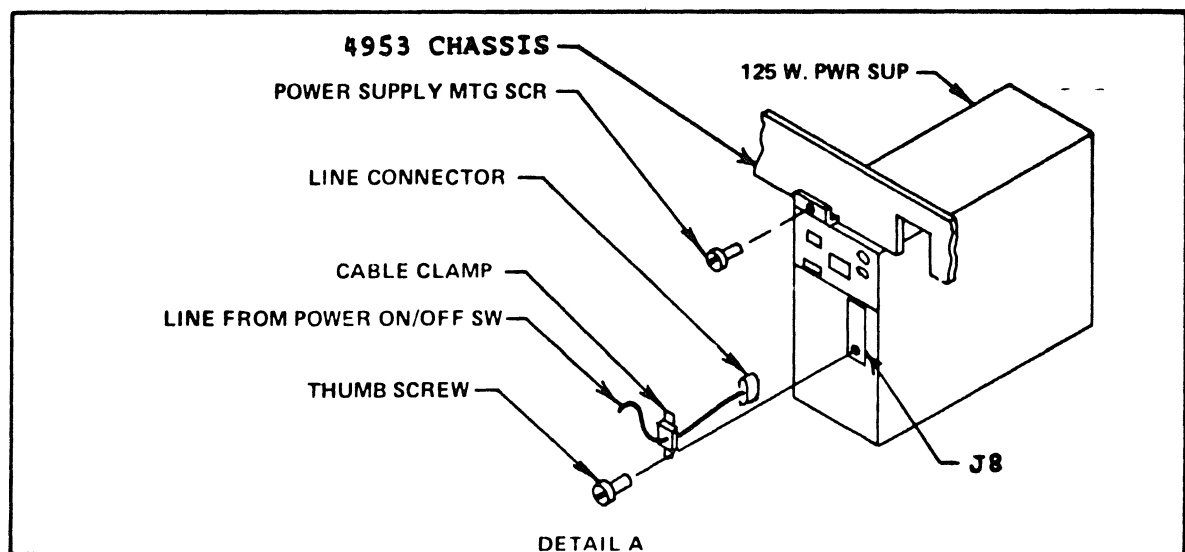
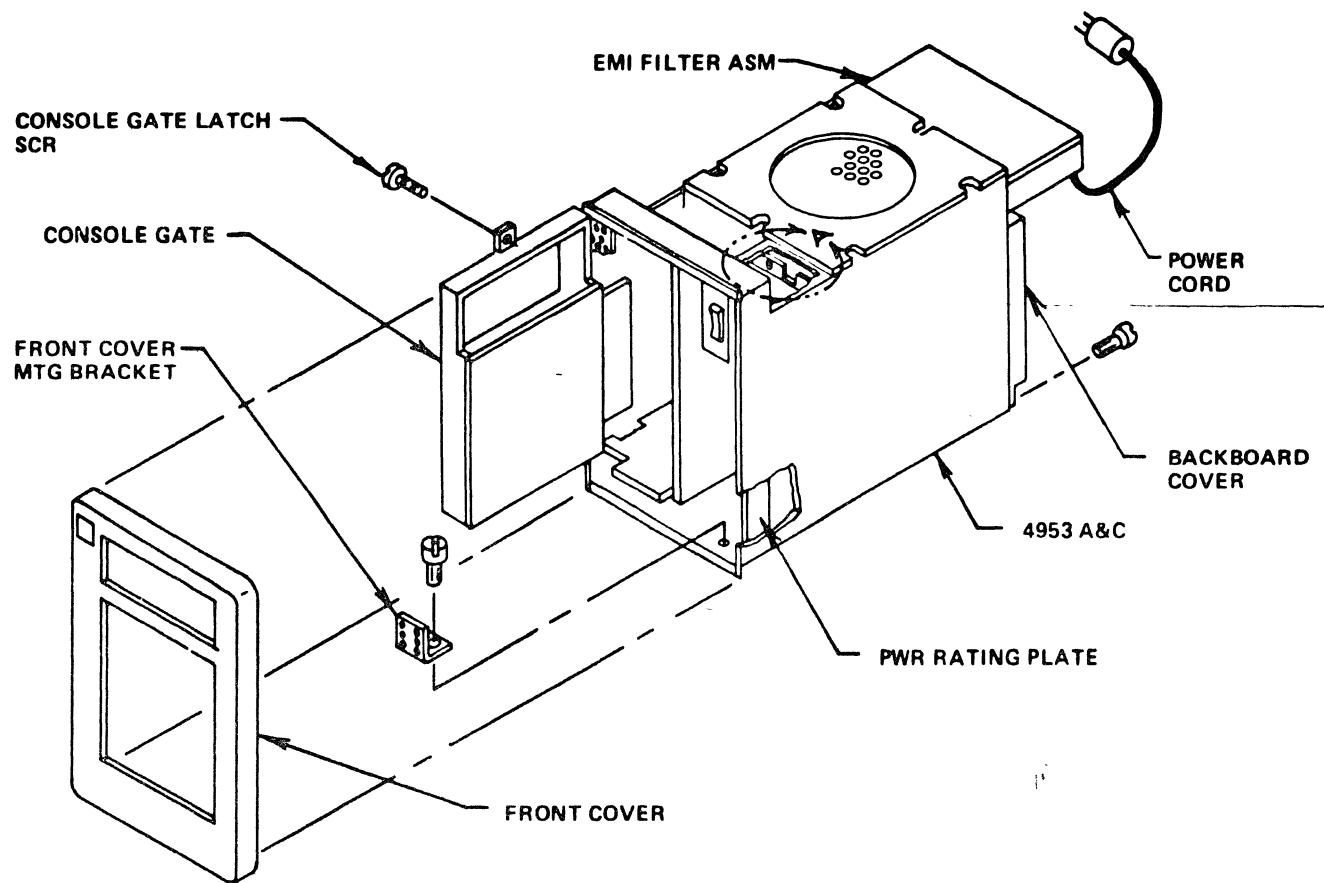


FIGURE 4.4A

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
DATE OF CHANGE 20DEC78 08FEB79 30MAY79 28JUN79 09NOV79 27DEC79

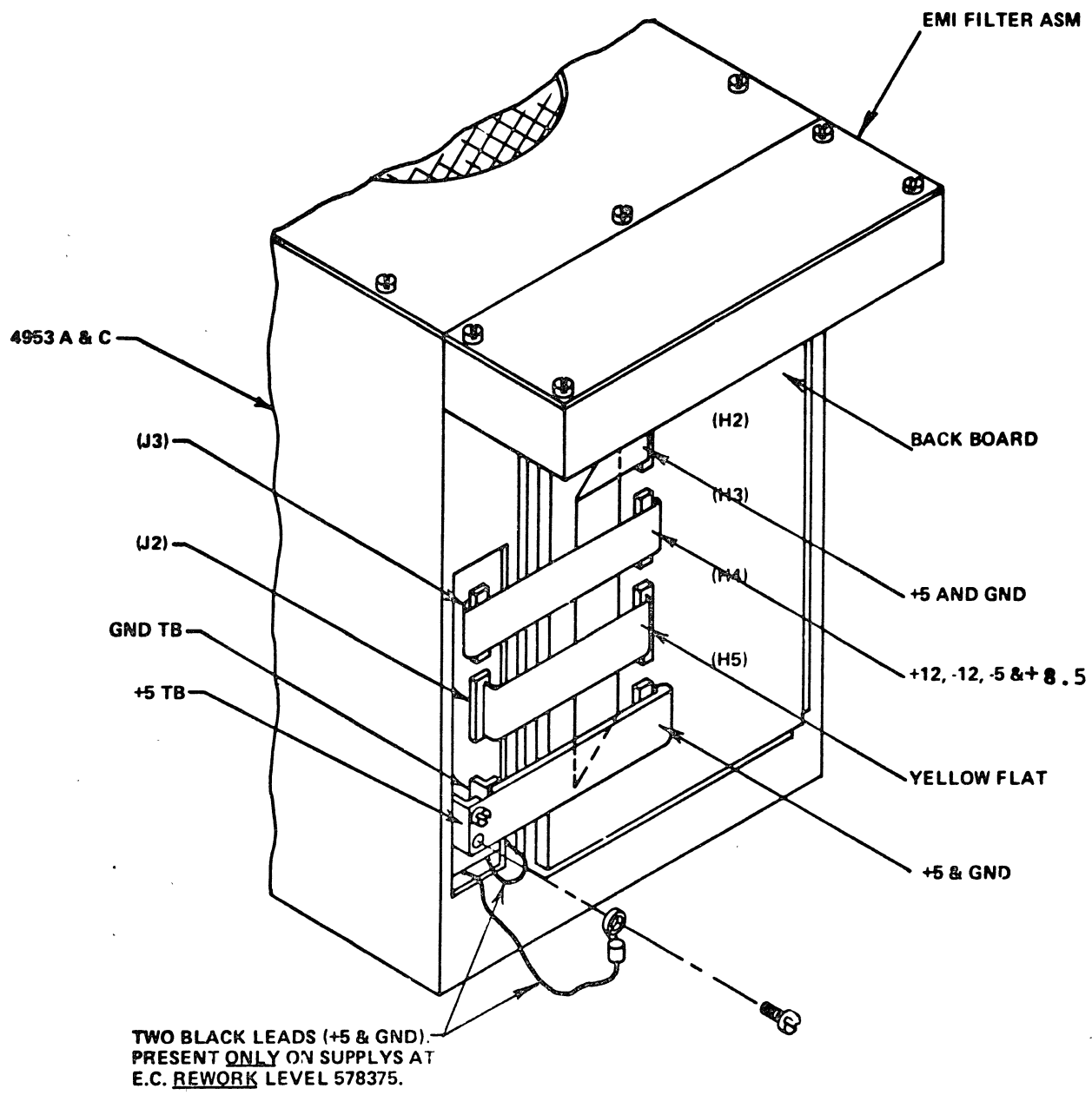


FIGURE 4.4B

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
 DATE OF CHANGE 20DEC78 08FEB79 30MAY79 28JUN79 09NOV79 27DLC79

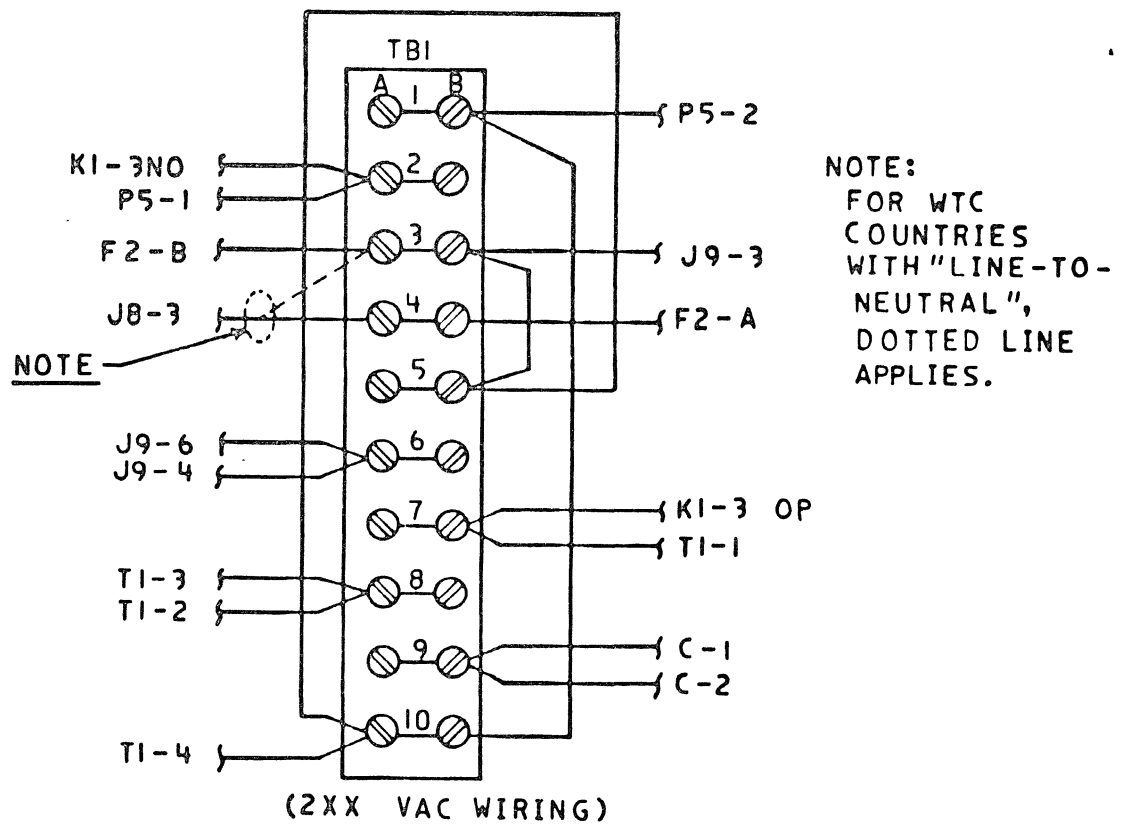
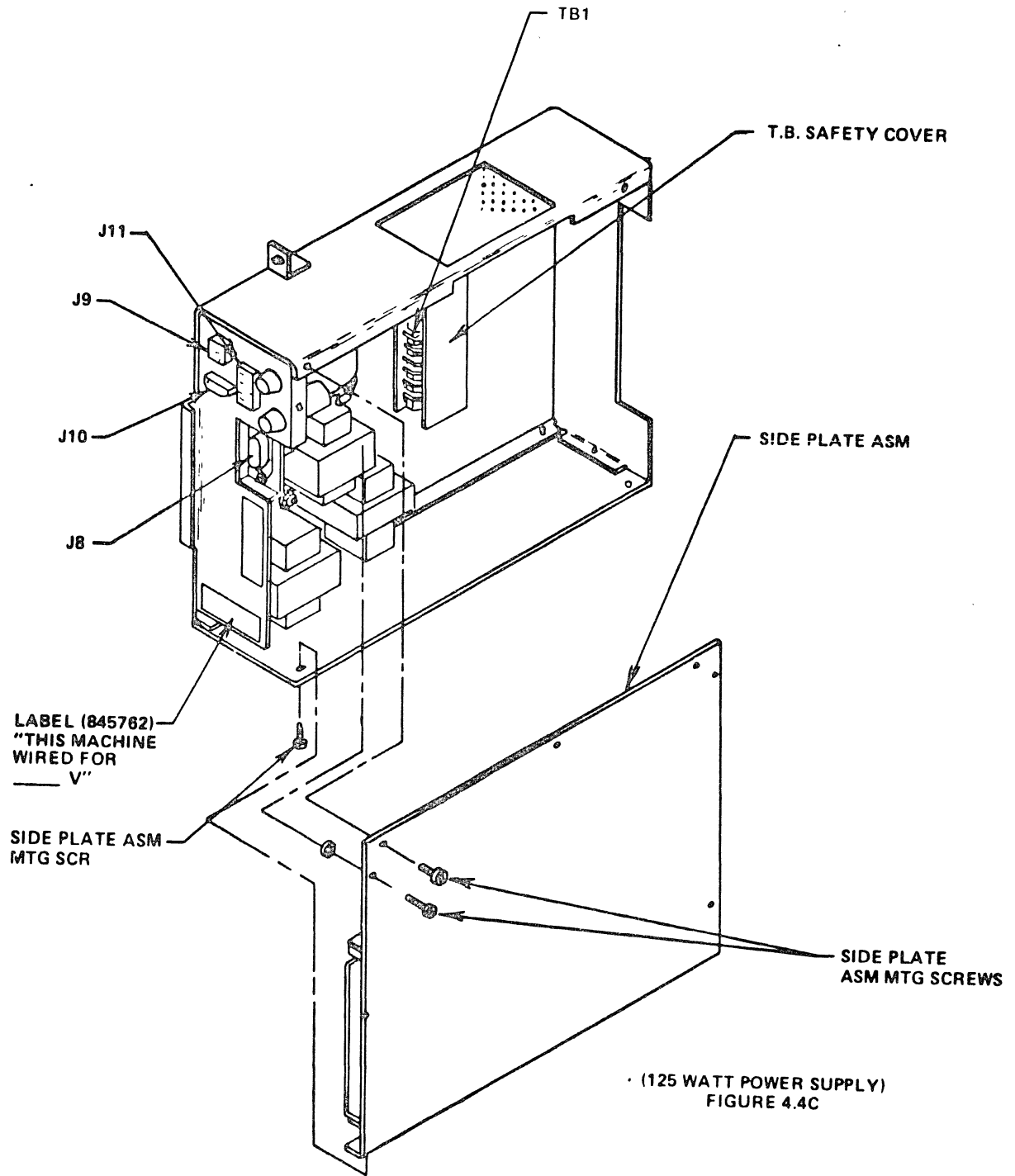


FIGURE 4.4D

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
DATE OF CHANGE 20DEC78 08FEB79 30MAY79 28JUN79 09NOV79 27DEC79

4.2.3 **300 WATT POWER SUPPLY (U.K. HIGH VOLTAGE ONLY) CONVERSION TO PHASE-TO-NEUTRAL POWER FROM PHASE-TO-PHASE WIRING (IF NOT FACTORY WIRED FOR U.K.) IF IN DOUBT AS TO CONFIGURATION, PROCEED AS FOLLOWS AND VERIFY. THE CONVERSION WILL CONSIST OF CHANGING ONE LEAD ON TB1 INSIDE THE POWER SUPPLY. PROCEED AS FOLLOWS:**

4.2.3.1 GAIN ACCESS TO THE POWER SUPPLY.

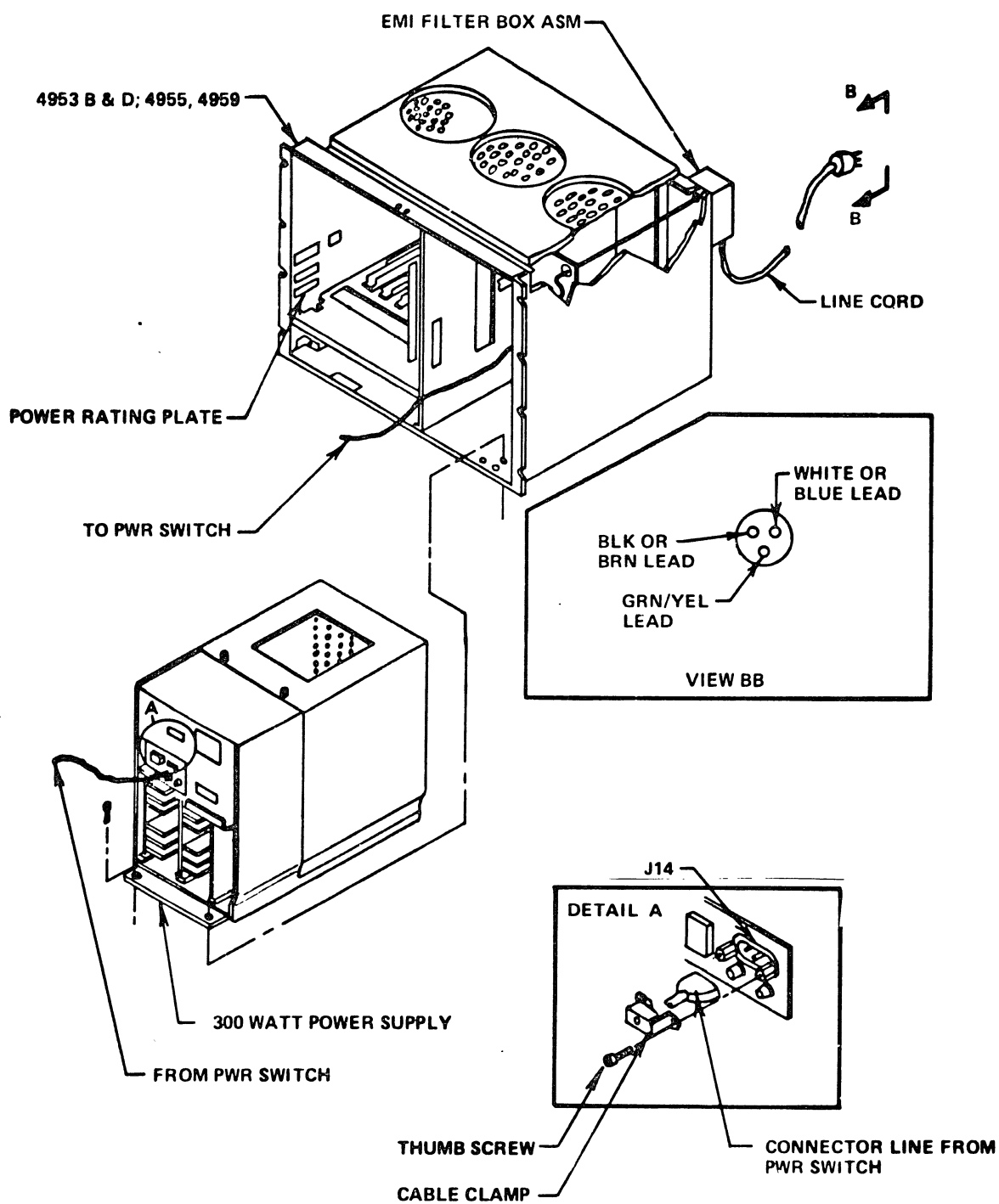
- A. REMOVE THE DECORATIVE FRONT COVER.
- B. OPEN THE CONSOLE GATE BY LOOSENING THE SCREWS LOCATED ON THE RIGHT HAND SIDE OF THE CONSOLE GATE AND SWING THE GATE OPEN.
- C. OBSERVE AND ABIDE BY ALL WARNING LABELS ON THE POWER SUPPLY.
- D. REMOVE THE POWER CORD FROM THE FRONT OF THE POWER SUPPLY BY REMOVING THE TWO (2) THUMB SCREWS AND UNPLUGGING (SEE FIG. 4.5A).

4.2.3.2 GAIN ACCESS TO TB1 (SEE FIG. 4.5B).

- A. REMOVE THE FOUR SCREWS HOLDING THE FRONT COVER ON THE POWER SUPPLY. CAREFULLY REMOVE THE FRONT COVER.
- B. REMOVE THE TERMINAL BLOCK SAFETY SHIELD AND OBSERVE TB1 AT THE TOP CENTER OF THE POWER SUPPLY.

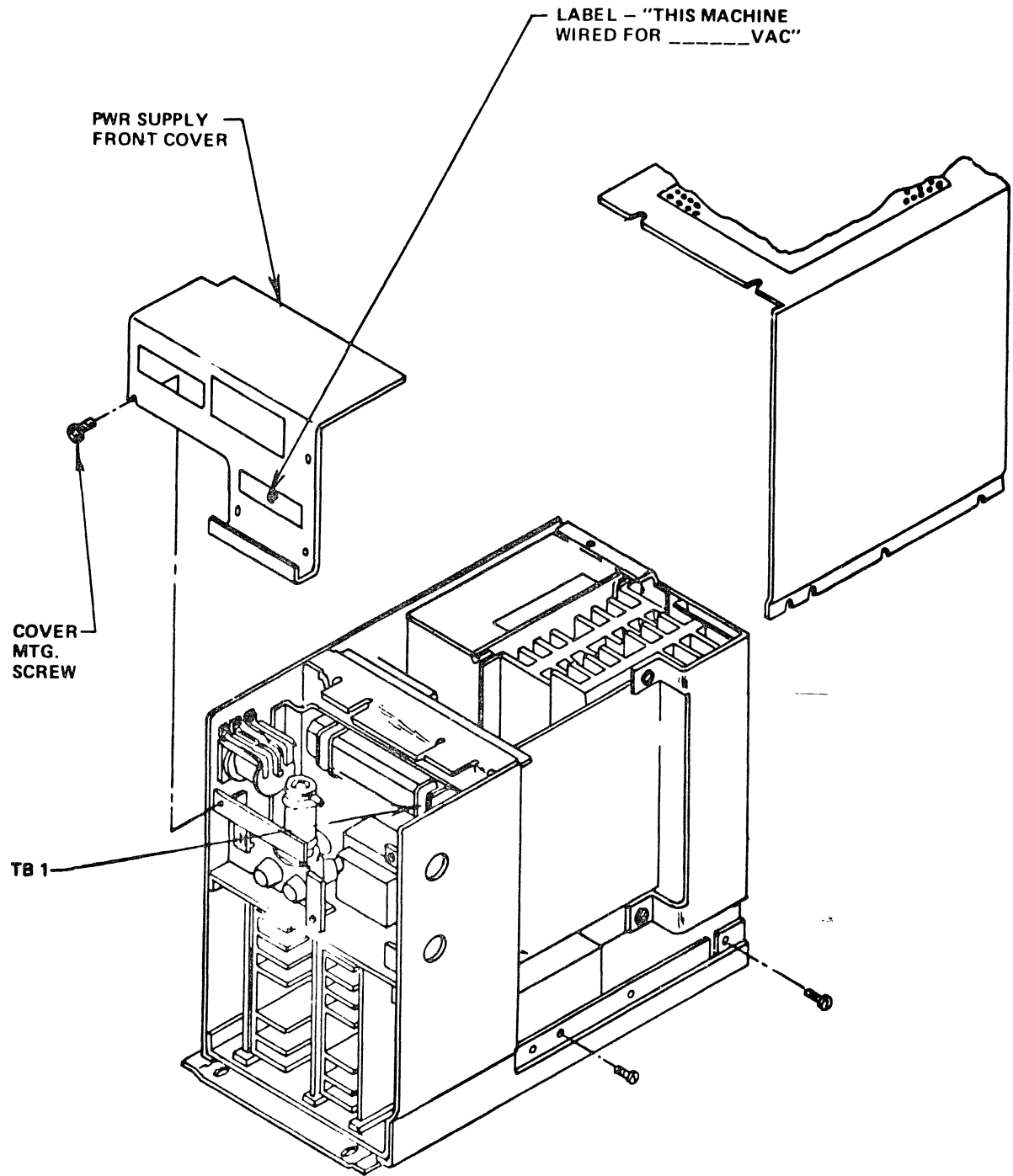
4.2.3.3 REWIRE TB1 AS SHOWN ON FIGURE 4.5C.

4.2.3.4 REASSEMBLE THE UNIT BY REVERSING PROCEDURES ABOVE. BE SURE ALL CONNECTIONS ARE SECURE AND WIRING IS ROUTED PROPERLY TO AVOID BEING PINCHED DURING ASSEMBLY.



(CONSOLE GATE REMOVED & POWER SUPPLY SHOWN REMOVED FOR CLARITY)
FIGURE 4.5A

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
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(PWR SUPPLY SHOWN REMOVED FROM UNIT, WITH SIDE COVER REMOVED FOR CLARITY)
 FIGURE 4.5B

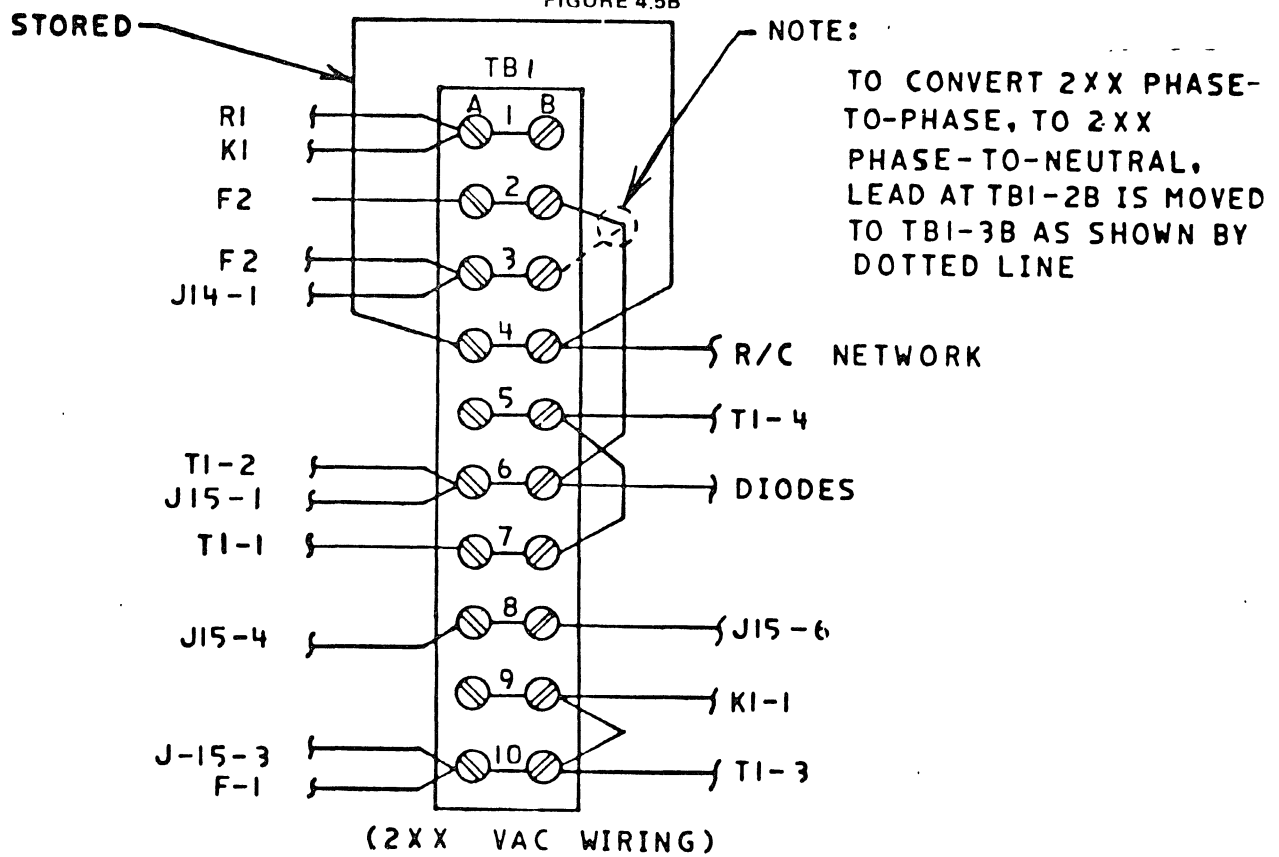


FIGURE 4.5C

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
DATE OF CHANGE 20DEC78 08FEE79 30MAY79 28JUN79 09NCV79 27DEC79

4.2.4 VERIFY THAT THE MACHINE VOLTAGE TAG AND CUSTOMER'S SERVICE VOLTAGES AGREE.

THE 4952B, 4953, 4955 AND THE 4959'S USE A HIGH FREQUENCY POWER SUPPLY AND AS SUCH ARE NOT SENSITIVE TO ABSOLUTE VOLTAGES BUT RATHER OPERATE OVER A RANGE OF EITHER HIGH LEVEL (200-235 VAC) OR ICW LEVEL (100-123.5 VAC). AS SUCH, THE INSTALLER IS TO INSURE THAT THE CORRECT LEVEL OF THE MACHINE MATCHES THE AC INPUT LEVEL, ONLY (HI OR LOW).

HOWEVER, PRODUCTS WHICH USE A FERRO-RESONANT POWER SUPPLY ARE SENSITIVE TO ABSOLUTE AC INPUT VOLTAGES. THEREFORE THE FOLLOWING PRODUCTS MUST BE MEASURED IN ACCORDANCE WITH TABLE 4.2.1.

- 4952A (PROCESSOR) - REMOVE THE BACK COVER. THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL IS ON THE BACK OF THE TRANSFORMER BOX.
- 4962 (DISK STORAGE) - PULL THE UNIT OUT FROM THE RACK ENCLOSURE AND REMOVE THE OUTER COVER. LOCATE THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL ON THE VOLTAGE BARRIER TERMINAL STRIP.
- 4963 (DISC SUBSYSTEM) - REMOVE DECORATIVE COVERS AND UNIT SAFETY COVER, AND LOCATE LABEL "THIS MACHINE IS WIRED FOR _____ VAC" ON TOP SURFACE OF POWER SUPPLY.
- 4964 (DISKETTE) OR 4966 (DISKETTE MAGAZINE) - PULL THE UNIT 1/2 OUT OF THE RACK ADAPTER. LOCATE THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL ON TOP OF THE UNIT'S OUTER COVER.
- 4969 (TAPE DRIVE) FROM THE REAR OF THE MACHINE AT THE LOWER RIGHT HAND CORNER, LOCATE THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL. IF THIS IS DRIVE ONE WITH CONTROLLER FEATURE, THEN THE CONTROLLER COVER MUST BE REMOVED TO GAIN ACCESS TO THE LABEL.
- 4982 (SENSOR I/O) - REMOVE THE FRONT COVER AND OPEN THE GATE. LOCATE THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL ON FRONT OF THE POWER SUPPLY.
- 4987 (PROGRAMMABLE COMMUNICATIONS SUBSYSTEM) - REMOVE THE FRONT COVER. LOCATE THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL ON THE FRONT OF THE POWER SUPPLY ABOVE THE FUSES.
- 4993 (TERMINATION ENCLOSURE) - REMOVE FRONT COVER. REMOVE THE POWER SUPPLY RETAINING CLAMP AND SLIDE POWER SUPPLY OUT. THE "THIS MACHINE IS WIRED FOR _____ VAC" LABEL IS LOCATED ON THE TOP OF THE PRIMARY POWER BOX.

IF VOLTAGE CHANGES ARE TO BE MADE TO THE FERRO-RESONANT POWER SUPPLY TO AGREE WITH THE AC INPUT SERVICE VOLTAGES, THE INSTALLER IS TO INSTALL PER AN IBM PFBM VOLTAGE CONVERSION (FEATURE FIELD BILL MATERIAL).

IF THE AC SERVICE INPUT VOLTAGES ARE NOT WITHIN THE HIGH AND LOW RANGE AS SPECIFIED IN TABLE 4.2.1, DO NOT PROCEED WITH THE INSTALLATION UNTIL THE DISCREPANCIES ARE RESOLVED.

4.2.5 INSPECT ALL CARDS AND CABLES FOR PROPER SEATING. FLAT CABLES AND CARDS MAY VIBRATE LOOSE DURING SHIPMENT AND CAN CAUSE VERY ELUSIVE PROBLEMS.

4.3 POWER LIMITATIONS

VERIFY THAT THE LINE LOAD DOES NOT EXCEED THE BRANCH CIRCUIT SERVICE. VERIFY AGAINST THE TABLE 4.6.

USE THIS CONFIGURATION TO DETERMINE THE VOLTAGE SOURCE NECESSARY TO POWER THE RACK DISTRIBUTION SYSTEM AND WHICH VOLTAGE OPTION TO SELECT. IF THE MACHINES ARE ASSEMBLED AS A SYSTEM AT THE IEM FACILITY, THE VOLTAGE WILL HAVE BEEN PRE-CONFIGURED.

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
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UNIT	KVA	X	NUMBER OF MODULES INSTALLED IN RACK	=	MODULE KVA
4952A	.3	X	_____	=	_____
4952B	1.0	X	_____	=	_____
4953 A & C UNIT	.4	X	_____	=	_____
4953 B & I, 4955 A,E,C,D AND 4959	.8	X	_____	=	_____
4955E	1.0	X	_____	=	_____
4962 UNIT					
MODEL 1 & 1F	.65	X	_____	=	_____
MODEL 2 & 2F	.7	X	_____	=	_____
4963 UNIT	.4	X	_____	=	_____
4964 UNIT	.2	X	_____	=	_____
4966 UNIT	.5	X	_____	=	_____
4969 - 4X	.5	X	_____	=	_____ X _____
4969 - 7X	1.0	X	_____	=	_____
4969 - 7X -50HZ	1.30	X	_____	=	_____
4982 UNIT	.2	X	_____	=	_____
4987 UNIT	.24	X	_____	=	_____
4993	.04	X	_____	=	_____
4999 UNIT	.1	X	_____	=	_____
OTHER EQUIPMENT		X	_____	=	_____

TOTAL RACK KVA

V

KVA EQUAL OR LESS THAN: 1.6 (FOR JAPAN)
 1.7 (FOR CANADA WITH 4997-1)
 1.8 (FOR U.S., GBG/I, AND CANADA
 WITH 4997-2) ----->EITHER LOW
 OR HIGH VOLTAGE POWER MAY BE USED.

V

KVA GREATER THAN: 1.6 (FOR JAPAN)
 1.7 (FOR CANADA WITH 4997-1)
 1.8 (FOR U.S., GBG/I, & CANADA WITH
 4957-2 ----->POWER SOURCE MUST BE
 200-235 VOLT.

POWER CONFIGURATION CHART
 TABLE 4.6

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
DATE OF CHANGE 20JUN78 06FEE79 30MAY79 28JUN79 09NCV79 27DEC79

4.4 APPLICATION OF SYSTEM POWER

4.4.1 APPLY POWER

IF A THOROUGH VISUAL INSPECTION OF MACHINE REVEALS NO EVIDENCE OF SHIPPING DAMAGE, APPLY AC POWER TO THE MACHINE AS FOLLOWS:

- A) TURN "OFF" ALL THE MAIN POWER SWITCHES FOR EACH UNIT.
- B) INSURE THAT THE LOCKING PIN ON THE DISK DRIVE HAS BEEN UNLATCHED AND THAT THE SPINDLE AND ACTUATOR ARM ARE UNLOCKED AS PER THE INSTALLATION INSTRUCTIONS FOR THE 4962 DISK UNIT AND THE 4963 DISK SUBSYSTEM.
- C) INSERT FREE END OF AC POWER CABLE INTO CUSTOMER SERVICE OUTLET. NOTE: GBG/I COUNTRIES SHOULD REFER TO SECTION 4.0, STEP A).
- D) TURN ON THE RACK IFO (INSTANT POWER OFF) CIRCUIT BREAKER IN THE REAR OF THE RACK TO THE "CN" POSITION.
- E) TURN ON ALL SWITCHES INDIVIDUALLY WITH PROCESSOR UNIT LAST. NOTE: IF POWER DOES NOT COME UP, REFER TO POWER SUPPLY MAP CHARTS FOR CORRECTING POWER SUPPLY PROBLEMS. IF ALL VOLTAGES ARE NOT PRESENT, THE POWER WILL DRIFT. IF REQUIRED, A DC VOLTMETER OF $\pm 1\%$ TOLERANCE SHOULD BE USED, SUCH AS SIMPSON MODEL 260, WESTON MODEL 901, FLUKE MODEL 885A/CC. NOTE: SEE SECTION 4.2.1 FOR VOLTAGE TOLERANCE.

4.4.2 ADJUST OVERCURRENT SETTING (4952, 4953, 4955, AND 4959)

IF NOT SEALED, ADJUST THE OVERCURRENT SETTING ON BOTH THE FULL WIDTH (4952B, 4953 B & D, 4955 AND 4959) AND HALF WIDTH (4953 A & C) UNITS ONLY IF FEATURES ARE ADDED TO THE PRODUCT BEYOND THE ORIGINAL PLANT ORDER. (THERE IS NO ADJUSTMENT REQUIRED ON THE 4952A).

NOTE:

DO NOT ADJUST IF NO FEATURE CARDS ARE ADDED TO THE MACHINE BEYOND ORIGINAL PLANT SHIPMENT CONFIGURATION.

IF ADJUSTMENT IS REQUIRED, PROCEED AS FOLLOWS:

- A) REFER TO FIGURE 4.7 AND TURN THE CURRENT LIMIT POTENTIOMETER ON THE SEQUENCE AND CONTROL CARD COUNTER CLOCKWISE UNTIL THE POWER UNIT POWERS OFF.
- B) RESET THE POTENTIOMETER AS FOLLOWS:
 - 1) 4953 A & C (125 WATT SUPPLY) - TURN THE POTENTIOMETER EIGHT (8) FULL TURNS CLOCKWISE.
 - 2) 4953 B & D, 4955 A, B, C, D, AND 4959 (300 WATT SUPPLY) - TURN THE POTENTIOMETER FOUR (4) FULL TURNS CLOCKWISE.
 - 3) 4952B, 4955E (400 WATT SUPPLY) - TURN THE POTENTIOMETER SEVEN (7) FULL TURNS CLOCKWISE.
- C) TURN THE POWER SWITCH "OFF" THEN "ON".

4.4.3 MINIMUM LOAD RESISTOR SETTING (4952A)

THE MINIMUM LOAD RESISTOR SWITCH MUST BE IN THE ON (UP) POSITION IF 4 LOGIC CARDS OR LESS ARE PLUGGED INTO THE BOARD. THE SWITCH MUST BE IN THE OFF (DOWN) POSITION IF 5-6 CARDS ARE PLUGGED INTO THE BOARD. TO CHECK FOR THE CORRECT SWITCH POSITION, REMOVE THE REAR COVER AND DROP THE HINGED TRANSFORMER BOX DOWN (SEE FIG. 4.6).

4.4.4 ADJUST ± 5 VOLTS DC POTENTIOMETER (4952, 4953, 4959).

IF NOT SEALED, ADJUST THE ± 5 VOLT DC POTENTIOMETER (LOCATED ON THE POWER SUPPLY SEQUENCE AND CONTROL CARD FOR 125 AND 300 WATT AND ON THE LOW VOLTAGE CARD FOR 400 WATT) BETWEEN 5.0 AND 5.2 VDC FOR BOTH THE FULL (4952 B, 4953 B & D, 4955 AND 4959) AND HALF WIDTH (4953 A & C) UNITS (REFER TO FIGURE 4.7.1 FOR 400 WATT, FIGURE 4.7.2 FOR 125 WATT AND 300 WATT). MEASURE VOLTAGE AT THE BACKPANEL AS SHOWN IN FIGURE 4.8 AND AS DEFINED IN TABLE 4.4.4.1. (THERE IS NO ADJUSTMENT REQUIRED ON THE 4952A).

4.4.5 MEASURE IC VOLTAGES (4952B, 4953, 4955 AND 4959)

CAUTION

IF THE INSTALLER ACCIDENTIY TOUCHES A SIGNAL AND VOLTAGE PIN AT THE SAME TIME, HE WILL DESTROY ONE OF THE CPU CARDS. NOTE: TURN POWER OFF BEFORE THE BACKPANEL COVER IS REMOVED. POWER ON AFTER THE COVER IS REMOVED AND PERFORM THE STEPS BELOW, TURN POWER OFF AND REPLACE THE COVER AFTER THE COMPLETION OF THIS SUBSECTION. ADDITIONALLY, IT IS RECOMMENDED THAT THE PIN EXTENDER P/N 2594238 (SHIPPED IN THE CPU SHIP GROUP) BE USED WHEN TESTING VOLTAGES ON THE PIN SIDE OF THE BOARD.

4.4.5.1 FOR FULL WIDTH UNITS: (MACHINES #4955, 4959, 4953B & D, 4952B).

- A. INSURE THAT THE +8.5 VDC, -5 VDC, +12 VDC, AND -12 VDC LEVELS ARE PRESENT AND WITHIN THEIR APPROPRIATE TOLERANCE, AS MEASURED AT THE REAR OF THE BACKBOARD. THE +12 VDC AND -12 VDC LEVELS WILL ALWAYS BE PRESENT ON THE 400 WATT SUPPLY AND WILL BE PRESENT ON THE 300 WATT SUPPLIES ONLY IF THE OPTIONAL ± 12 REGULATOR CARD IS INSTALLED IN THE POWER SUPPLY. THIS REGULATOR CARD IS THE LEFT MOST CARD POSITION ON THE FRONT OF THE POWER SUPPLY. NOTE THAT THESE DC LEVELS ARE NOT ADJUSTABLE.
- B. REMOVE REAR BACK BOARD COVER (SEE CAUTION).
 - MEASURE EACH D.C. VOLTAGE SHOWN FOR THE ABOVE MACHINE TYPES ON TABLE 4.4.1. THIS TABLE IS USED TO DETERMINE THE CORRECT TEST POINTS FOR EACH VOLTAGE.
 - FOR THE LOCATION OF THE TEST POINTS, REFER TO FIGURE 4.8.
 - INSURE THAT ALL VOLTAGES ARE WITHIN THE TOLERANCES AS SHOWN ON TABLE 4.4.1.
- C. REPLACE REAR COVER ON MACHINE. (SEE CAUTION STEP 4.4.4).

4.4.5.2 FOR HALF WIDTH UNITS (MACHINE 4953, MODEL A00 & C00).

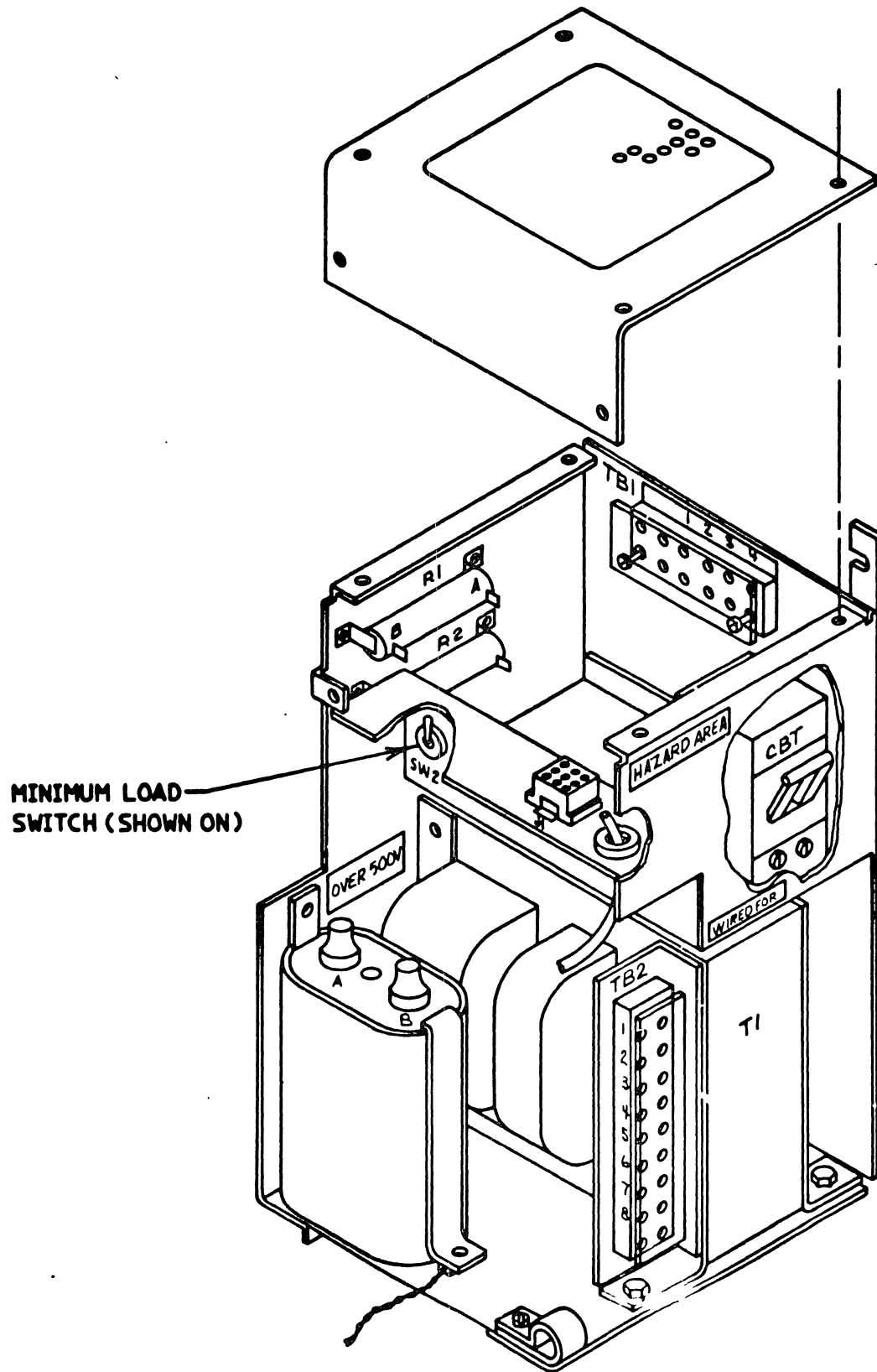
NOTE: THERE IS NO ADJUSTMENT OF D.C. VOLTAGE ON THE 4952A. IF VOLTAGES ARE NOT IN TOLERANCE, CHECK LINE VOLTAGE.

- A) THE ± 12 VOLTS ARE ALWAYS PRESENT ON THESE MACHINES. ALL D.C. VOLTAGES OF THE 4953 (MODELS A & C) ARE ADJUSTED TO LEVEL WITHIN TOLERANCE BY THE ADJUSTMENT OF THE POTENTIOMETER ON THE POWER SUPPLY SEQUENCE AND CONTROL CARD. (REFER TO FIGURE 4.7 OF INSTALLATION INSTRUCTIONS). OBSERVE THE VOLTAGE ON J11. PIN 1 IS THE TOP PIN ON THE LEFT SIDE OF THE J11 CONNECTOR. THE J11 CONNECTOR IS LOCATED ON THE FRONT OF THE POWER SUPPLY. THE VOLTAGE ON THIS PIN WITH RESPECT TO GROUND WILL BE $+5 \pm .05V$, WHEN THE POTENTIOMETER IS PROPERLY SET. ALL D.C. OUTPUT WILL BE WITHIN TOLERANCE WHEN THIS IS DONE.
- B. REMOVE REAR BACKBOARD COVER. NOTE: SEE CAUTION STATEMENT IN SECTION 4.4.4.
 - MEASURE EACH D.C. VOLTAGE SHOWN FOR THE ABOVE MACHINE TYPES ON TABLE 4.4.1. THIS TABLE IS USED TO DETERMINE THE CORRECT TEST POINTS FOR EACH VOLTAGE.
 - FOR THE LOCATIONS OF THE TEST POINTS SEE FIGURE 4.8.
 - TOLERANCES FOR EACH VOLTAGE IS SHOWN IN TABLE 4.4.1.
- C) FIGURE 4.8 ILLUSTRATES THE PIN LOCATION ON THE BACKBOARD. THE HALF WIDE CARD FILE PIN LOCATIONS ARE THE SAME AS THE FULL BOARD FOR COLUMNS A THROUGH K. (NOTE THAT A THROUGH F COLUMNS ARE USED FOR CARD SOCKET LOCATIONS, ONLY).
- D) REPLACE REAR COVER ON MACHINE.

NOTE: SEE CAUTION STATEMENT IN SECTION 4.4.4.

4.4.6 FOR VOLTAGE CHECKS ON OTHER RACK AND NON-RACK MOUNTED I/O UNITS, REFER TO THE PARTICULAR DEVICE INSTALLATION INSTRUCTION SHIPPED WITH THAT UNIT.

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4952A — REAR-POWER SUPPLY

FIGURE 4.6

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
 DATE OF CHANGE 20DEC78 CEFEE79 30MAY79 28JUN79 09NCV79 27DEC79

MACHINE TYPE/MODEL	VCLTAGE LEVEL	TEST POINT	GROUND PCINT
4952/A00	+5.0	D2 D03	
4953/A00	+8.5	B3 G11	
AND	-5.0	B2 G06	C2 D08
4953/C00	+12.0	B2 E11	
	-12.0	B2 E06	
	+5.0	F2 E03	F2 D08
4953/B00	+8.5	G3 B11	G3 D08
AND	-5.0	G3 E06	
4953/D00	+12.0	G2 B11	G2 D08
	-12.0	G2 E06	
	+5.0	H3 E03	H3 D08
	+8.5	M3 E10	M3 D08
4955/A00	-5.0	M3 E05	
	+12.0	G2 B11	G2 D08
	-12.0	G2 E06	
	+5.0	C2 E03	C3 D08
	+8.5	G3 E10	G3 D08
4955/B00	-5.0	G3 D05	
	+12.0	E2 E11	B2 D08
	-12.0	E2 E06	
	+5.0	K3 D03	K3 D08
	+8.5	P3 D10	P3 D08
4955/C00	-5.0	P3 E05	
	+12.0	F2 B11	F2 D08
	-12.0	J2 E06	
4952/B00	+5.0	G3 D03	G3 D08
	+8.5	L3 E10	L3 D08
4955/D00/E00	-5.0	L3 D05	
	+12.0	F2 B11	F2 D08
	-12.0	F2 E06	
	+5.0	F2 E03	F2 D08
	+8.5	G3B11	G3D08
4959/A00	-5.0	G3 E06	
	+12.0	G2 B11	G2 D08
	-12.0	G2 E06	

NOTE:

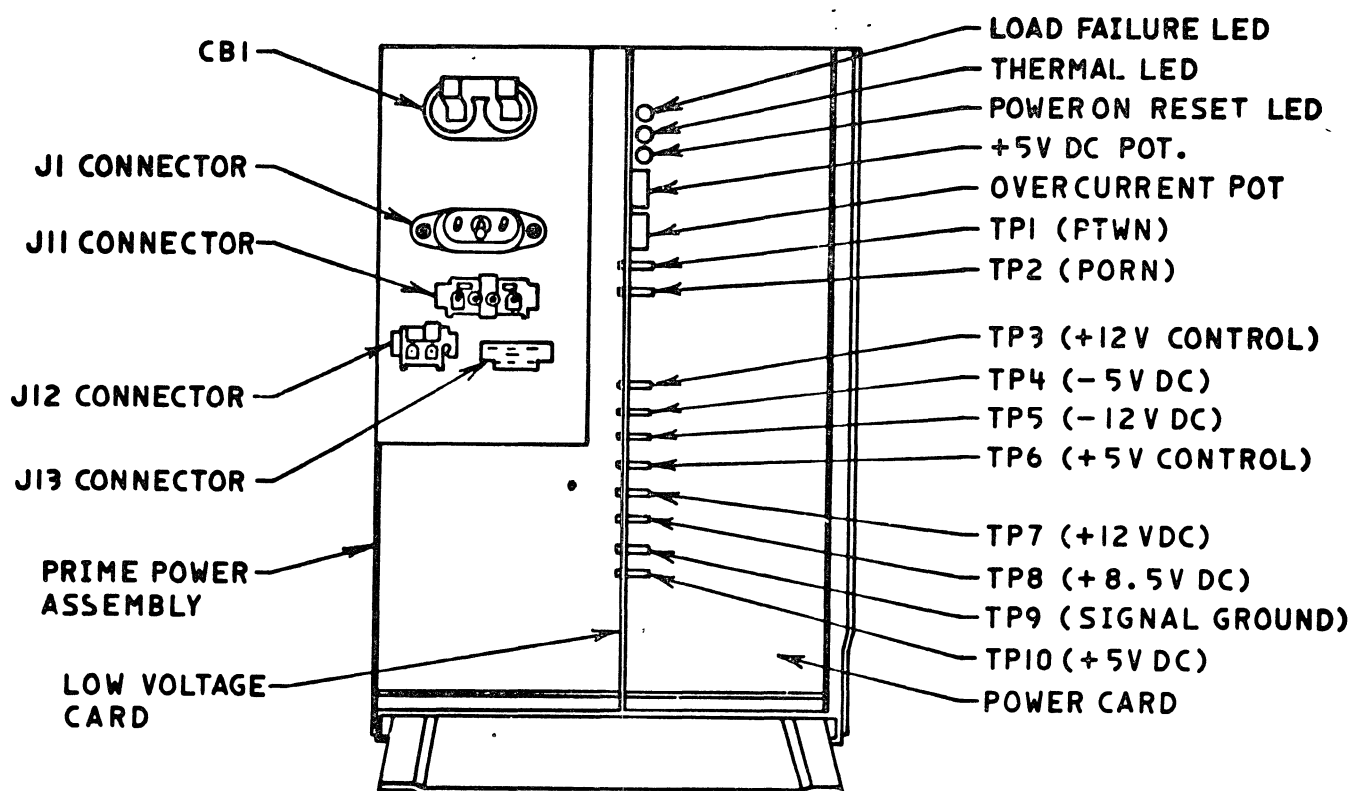
DC VOLTAGE RANGE AT EACH LEVEL AS MEASURED ON THE BOARD PINS ARE;

- +5.0 = (+4.5 TO +5.5 VOLTS)
- +8.5 = (+9.35 TO +7.82 VOLTS)
- 5.0 = (-5.5 TO -4.55 VOLTS)
- +12.0 = (+13.2 TO +10.92 VOLTS)
- 12.0 = (-13.2 TO -10.92 VOLTS)

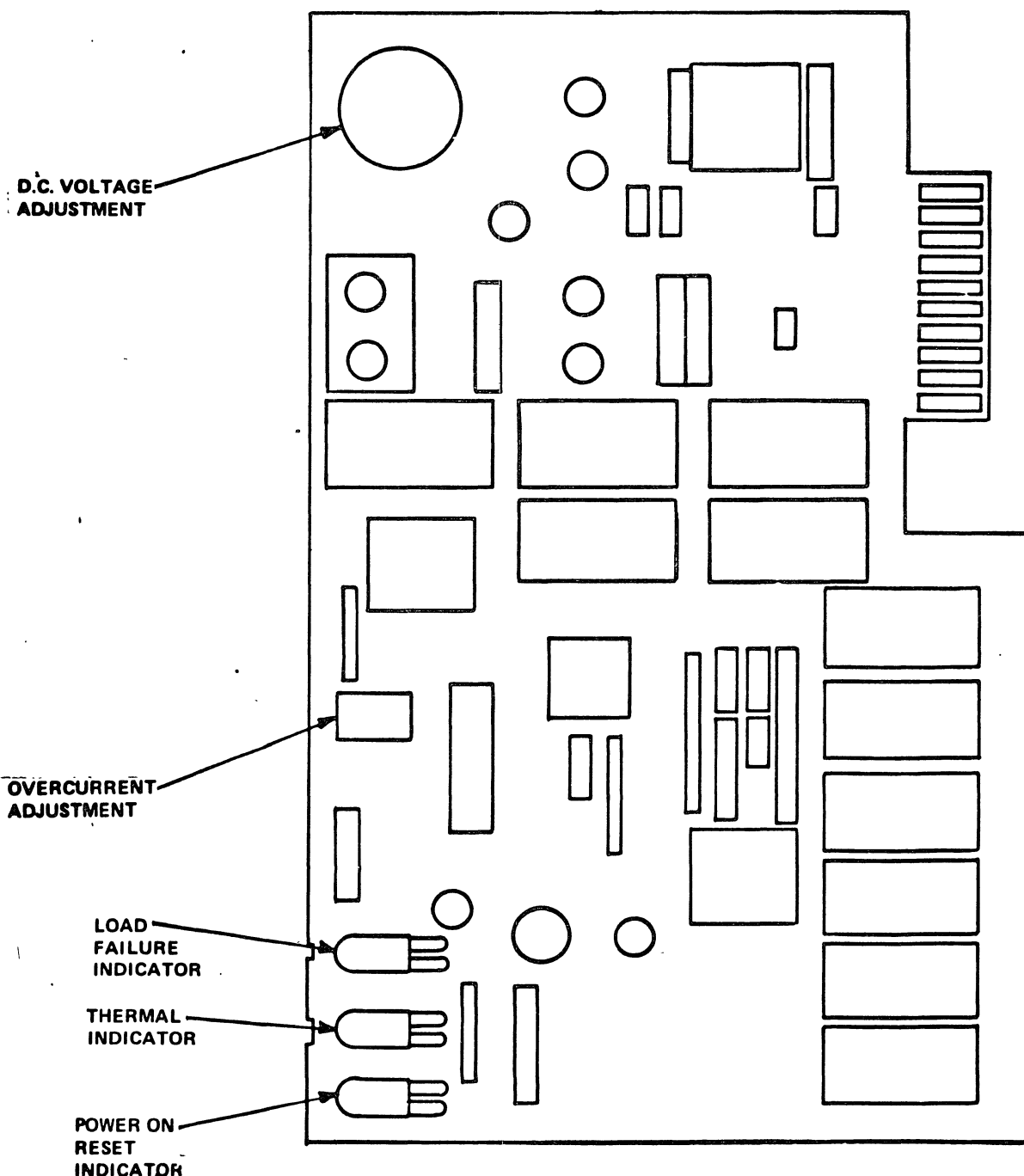
IF VOLTAGES ARE NOT WITHIN SPECIFICATIONS AS SET FORTH IN
 SUBSECTION 4.4.4.1 AND 4.4.4.2 MAPS, REFER TO THE MAINTENANCE MAPS.

TABLE 4.4.1

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
 DATE OF CHANGE 20DEC78 08FEB79 30MAY79 28JUN79 09NOV79 27DEC79



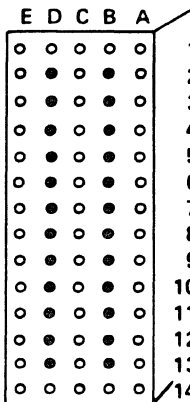
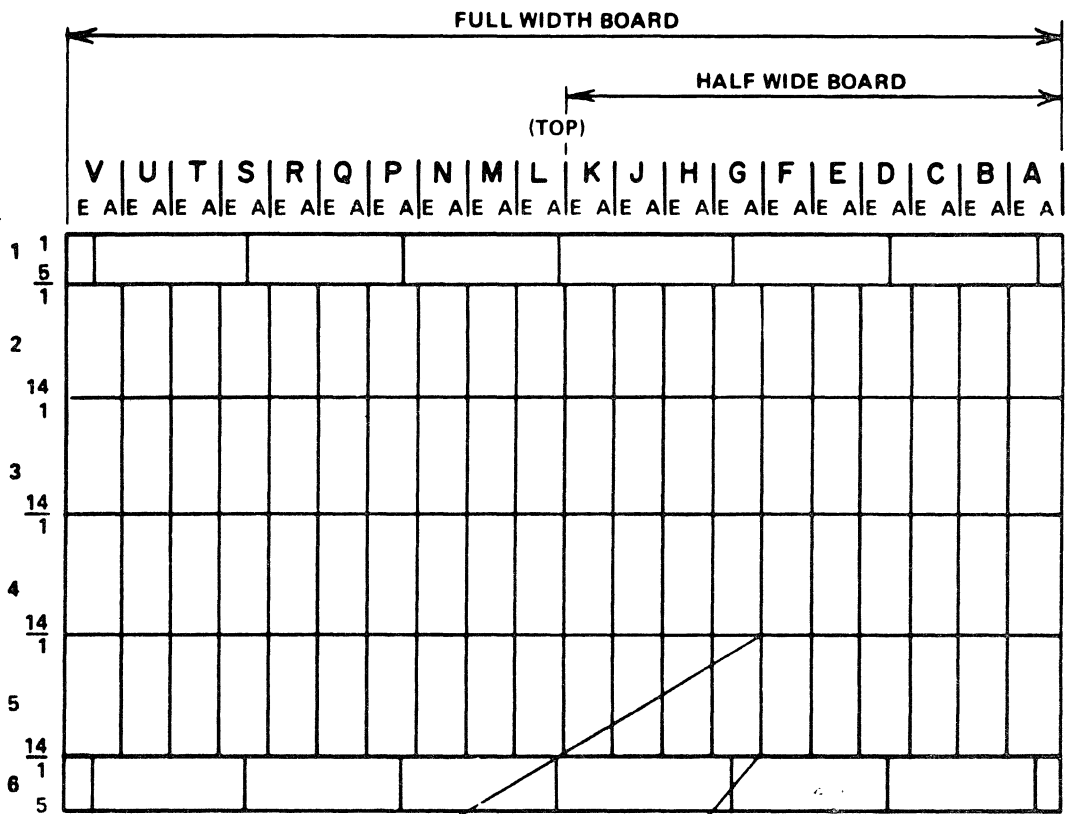
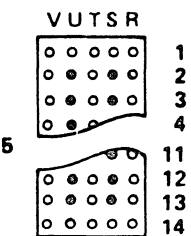
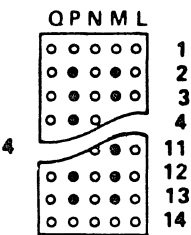
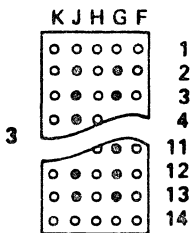
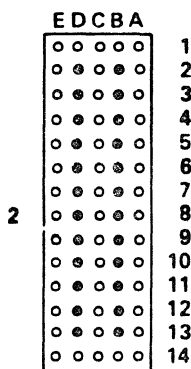
SEQUENCE AND CONTROL CARD - 400 WATT
 FIGURE 4.7.1.



SEQUENCE AND CONTROL CARD - 125 AND 300 WATT

FIGURE 4.7.2

4 HIGH CARD
 ANY LOCATION



● PINS ARE USED BY CARDS AND CABLES
 ○ PINS ARE USED AS VIA PINS
 REFER TO ALDS FOR LINE NAMES AND
 PIN DESIGNATIONS

BOARD PIN LOCATION DIAGRAM (PIN SIDE)
 FIGURE 4.8

ENG. CHANGE NO. 375114 375342 375512 375342A 876782 876782A
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~~SECTION 5.C FEATURE PRIORITY AND ADDRESS ASSIGNMENT (4952, 4953, 4955 & 4959).~~

5.1 FEATURE LOCATION PRIORITY ASSIGNMENTS

(SEE SUBSECTION 5.3 FOR FEATURE CODE IDENTIFICATION).

PRIORITY 1 - PROCESSOR A-SLOT ASSIGNMENT FOR 4952-B, 4953-B, 4953-D, 4955A, 4955B, 4955C, 4955D, 4955E.

- PROCESSOR A-SLOT ASSIGNMENT IS LIMITED TO ONE OF THE FOLLOWING LISTED IN ORDER OF PRIORITY:

#1565 MUTUALLY EXCLUSIVE - USED WITH 4959
#9900 MUTUALLY EXCLUSIVE - USED WITH 4959
#7840
#6305
#1560
#5430
#7850 IF INTERNAL POWER (± 12 VDC) NOT REQUIRED

HOWEVER, THESE FEATURES DO NOT NECESSARILY HAVE TO BE IN "A" SLOT WHEN PRESENT.

PRIORITY 2 - OTHER PROCESSOR ASSIGNMENTS

- #6315, #6316, #6325, #6326, #6327, #3920, AND #6335 MUST BE IN THE PROCESSOR IF THEY ARE CEDEEEEL.
- #1205 OR #3581 IS RECOMMENDED TO BE IN THE PROCESSOR.
- #2074 OR #2075 (WITH 9154 AND 9155 SPECIFIED) SHOULD BE IN THE PROCESSOR IF THE 4999 OR #2010 IS INCLUDED IN THE PROCESSOR.

PRIORITY 3 - UNITS CONTAINING COMMUNICATION FEATURES

- #2010 IS REQUIRED FOR ALL UNITS EXCEPT 4952-ALL, 4953-A, 4953-C AND 4955-E.
- #2092 ADAPTERS MUST BE MOUNTED ADJACENT TO THE #2091 CONTROLLER.
- #2094 ADAPTERS MUST BE MOUNTED ADJACENT TO THE #2093 CONTROLLER.
- #2096 ADAPTERS MUST BE MOUNTED ADJACENT TO THE #2095 CONTROLLER.
- UP TO 24 LINES ALLOWED PER UNIT.
- #2000 IS RECOMMENDED FOR ALL UNITS EXCEPT 4952-A, 4953-A & 4953-C.
- IF REMOTE IPL AND 4999, #2074 OR #2075 SHOULD BE ASSIGNED TO THE PROCESSOR.
- IF ALL COMMUNICATIONS FEATURES WILL NOT FIT IN THE PROCESSOR, GROUPS OF 24 LINES SHOULD BE ASSIGNED TO 4959. PRIORITY WILL THEN BE GIVEN TO REMOTE IPL FEATURE #2074 WITH 9154 OR #2075 WITH 9155 OR 9520 WITH 1200 IN THE PROCESSOR.
- IF NO REMOTE IPL, THEN COMMUNICATIONS FEATURE SHOULD BE ASSIGNED TO UNITS IN GROUPS OF 24 LINES.

PRIORITY 4 - ALL OTHER ASSIGNMENTS IN ORDER OF PRIORITY:

790C
7850 IF 4999
ALL-3581
1205 (IF IPL SOURCE)
2074 IF 9154
2075 IF 9155
1200
1210
1610
D02236 ASYNCH
2090
2ND OR 2P OCCURRENCE 2096
1ST OR P OCCURRENCE 2095
1ST OR P-1 OCCURRENCE 2096
D02350 8 LINE ATTACH
2ND OR 2M OCCURRENCE 2092
1ST OR N OCCURRENCE 2091
1ST OR 2N-1 OCCURRENCE 2092
2ND OR 2M OCCURRENCE 2094
1ST OR M OCCURRENCE 2093
1ST OR 2N-1 OCCURRENCE 2094
D02312 5230 ATTACH - FIRST
D02313 5230 ATTACH - ADDITIONAL
D02314 5230 ATTACH - EXPAND
D02313 5230 ATTACH - ADDITIONAL
2074 IF NOT 9154

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2075 IF NOT 9155
D02045 5010 ATTACH
D02198 BSC
1300 (REQUIRES TWO CHANNEL POSITICNS)
D02302 3600 ATTACH
DC211E GP18
D02241 S/1 TO S/1 (MSTR)
D02242 S/1 TO S/1 (SLAVE)
D02038 4978 ATTACH
1205
3585
D0231E SEARS ATTACH
3590 4963 ATTACH
ALL-358C
1215 4969 ATTACH
8T1066 4974 ATTACH, SPEC CHAR
8T1067 HD1C ATTACH
D02320 SDIC ATTACH
5620
5630
7850 IF NO 4999
5430
1560
D02013
D02349 3684 ATTACH
6305
7840
D02234 TIMER & ON MONITOR
1595

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5.2 ADDRESS ASSIGNMENT OVERVIEW

AS A PART OF SYSTEM CONFIGURATION SINGLE DEVICE FEATURES ARE ASSIGNED DEVICE ADDRESSES STARTING WITH THE SPECIFIED FIRST OCCURRENCE ADDRESS. MULTIPLES OF EACH FEATURE WILL BE ASSIGNED ADDRESS IN THE SAME COLUMN IN ROWS 0 TO 3. THE SPECIFIED FIRST OCCURRENCE OF A DEVICE WILL ALWAYS TAKE PRIORITY OVER THE MULTIPLE ASSIGNMENT OF ANOTHER FEATURE IN THE SAME COLUMN. TABLE 5.2 SHOWS THE PRIORITIES FOR ASSIGNMENTS IN ONE COLUMN. WHEN A COLUMN IS FULL OVERFLOW ASSIGNMENTS ARE MADE IN THE WORK AREA IN THE FOLLOWING SEQUENCE.

0C, 1C, 2C, 3C, 3D, 2D, 1D, 0D, 0E, 1E, 2E, 3E, 3F, 2F, 1F, 0F.

RPQ (REQUEST FOR PRICE QUOTATIONS) FEATURES ARE ASSIGNED IN THE WORK AREA IN THE FOLLOWING SEQUENCE:

0F, 1F, 2F, 3F, 3E, 2E, 1E, 0E, 0D, 1D, 2D, 3D, 3C, 2C, 1C, 0C.

NOTE THAT ALL DEVICE ADDRESSES ARE STATED IN HEXADECIMAL.

Column = Least significant digit of DA

		FIXED ASSIGNMENT AREA DA 00-3F										Work Area					
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Row = Most significant digit of DA	0	7850	5620	3581	3580	3585	1210			1610	2074 2075	2090					
	1																
	2	1200	5630	1205	7900												
	3																
	4	2 Device Start addr (40) 7840								4 Device start addr (48) { 1560 1215 3590							
	5																
	6	8 Device start addr (60) { 2091 2095 2093 6305															
	7																
	8																
	9	16 Device start addr (90) { 5430															
	A																
	B																
	C	32 Device addr (C0) { 1300															
	D																
	E																
	F																

VARIABLE ASSIGNMENT AREA
DA 40-FF

SERIES/1 DEVICE ADDRESS CONFIGURATION CHART

TABLE 5.2

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5.3 FEATURE CODE IDENTIFICATION

1060 4982 A.D.C. 11 BIT + SIGN
 1065 4982 A.O. 10 BIT
 1070 4982 INSTRUMENTATION AMPLIFIER
 1200 SERIES/1 - SYSTEM/370 CHANNEL ATTACHMENT FEATURE
 1205 4966 DISKETTE MAGAZINE UNIT ATTACHMENT
 1210 5250 IDS ATTACH FEATURE
 1215 4969 MAGNETIC TAPE SUBSYSTEM
 1300 PROGRAMMABLE COMMUNICATIONS SUB-SYSTEM CONTROLLER
 1540 NRZI CONTROLLER SUB-SYSTEM
 1545 P.E. CONTROLLER SUB-SYSTEM
 1550 DUAL CONTROLLER SUB-SYSTEM
 1560 INTEGRATED DIGITAL I/C NON-ISOLATED
 1565 CHANNEL REPOWER
 1590 CUSTOMER ACCESS PANEL
 1593 INTERNAL CUSTOMER ACCESS PANEL DI/DO ATTACH CABLE
 1594 INTERNAL CUSTOMER ACCESS PANEL D.P.C. ATTACH CABLE
 1595 CHANNEL SOCKET ADAPTOR
 1610 ASYNCHRONOUS COMM. SINGLE LINE CONTROL
 (S/S - 1 LINE CONTROL)
 2000 COMMUNICATIONS INDICATOR PANEL
 2010 COMMUNICATIONS POWER (+/- 12VDC)
 2055 TTY 20 FT. CABLE (4 WIRE)
 2056 ASYNCHRONOUS LOCAL COMMUNICATIONS CABLE
 (S/S - 20 FT. DIRECT CONNECT)
 2057 E.I.A. DATA-SET CABLE (20 FT).
 2058 B.S.C./HIGH-SPEED D.D.N. CABLE
 2059 CUSTOMER ACCESS PANEL T.T.Y. 20 FT. ATTACH CABLE
 2060 B.S.C. V-35/HIGH-SPEED D.D.N. CABLE
 2061 P.M.L.C. CURRENT INTERFACE CABLE
 2064 TTY TO EIA DIR CONN (MALE)
 2065 TTY TO EIA DIR CONN (FEMALE)
 2074 B.S.C. SINGLE LINE CONTROL
 2075 B.S.C. SINGLE LINE CONTROL/HIGH-SPEED
 2090 S.D.L.C. SINGLE LINE CONTROL
 2091 ASYNCHRONOUS COMMUNICATIONS 8 LINE CONTROL
 (S/S - 8 LINE CONTROL)
 2092 ASYNCHRONOUS COMMUNICATIONS 4 LINE ADAPTER
 (S/S - 4 LINE ADAPTOR)
 2093 B.S.C. 8 LINE CONTROL
 2094 B.S.C. 4 LINE ADAPTOR
 2095 FEATURE-PROGRAMMABLE MULTI-LINE CONTROLLER
 2096 FEATURE-PROGRAMMABLE MULTI-LINE ADAPTOR
 2100 EIA EXTENSION CABLE
 2724 U.K. MODEM ADAPTOR CABLE
 2944 JAPAN EIA DATASET CABLE
 2946 WRAP-AROUND CABLE (A/FE)
 3525 4982 DI/PI NON-ISOLATED (16 PTS)
 3530 4982 DI/PI ISOLATED (16 PTS)
 3535 4982 DO NON-ISOLATED (16 PTS)
 3580 4962 DISK STORAGE UNIT ATTACHMENT
 3581 4964 DISKETTE UNIT ATTACHMENT
 3585 4979 DISPLAY STATION ATTACHMENT
 3590 4963 DISK SUBSYSTEM ATTACHMENT
 3600 PROGRAMMABLE COMMUNICATIONS SUB-SYSTEM SCANNER
 3920 4955 FLOATING POINT PROCESSOR
 4540 RACK ADAPTOR
 4700 EIA DATASET INTERFACE
 4701 FULL DUPLEX EIA INTERFACE
 4704 TTY CURRENT INTERFACE
 4706 DIGITAL NETWORK INTERFACE
 4709 EIA ASYNCH DIRECT CONNECT
 4710 EIA SYNCH DIRECT CONNECT
 4713 AUTO CALL
 4716 1200 BPS ASYNCH SM
 4717 1200 BPS ASYNCH LL (SNEU)
 4718 1200 BPS ASYNCH LL
 4719 1200 BPS ASYNCH LL (GBG/I)
 4721 1200 BPS W/CLOCK SM
 4722 1200 BPS W/CLOCK LL (SNEU)
 4723 1200 BPS W/CLOCK LL
 4724 1200 BPS W/CLOCK LL (GBG/I)
 4940 4982 AI M.P.X. - REED RELAY (8 PTS)
 4950 4982 AI M.P.X. - SS (16 PTS)
 5430 CUSTOMER DIRECT PROGRAM CONTROL (OEMI INTERFACE)
 5620 4974 PRINTER ATTACHMENT
 5630 4973 PRINTER ATTACHMENT
 5650 PROGRAMMER CONSOLE
 5700 4973 EXTENDED CABLE (10 FT. INCH)
 5720 4974 EXTENDED CABLE (10 FT. INCH)
 5740 4979 EXTENDED CABLE (10 FT. INCH)
 5760 CABLE ASM - 5250 IDS ATTACH

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6305 4982 ATTACHMENT
6306 4952 STORAGE INCREMENT - MODULE
6315 4953 16KB SIG INCREMENT
6316 4953 32 KE SIG INCREMENT
6325 4955 16KB SIG INCREMENT
6326 4955 32KE SIG INCREMENT
6327 4955 64KB SIG INCREMENT
6335 4955 RELCCATICN TRANSLATOR
7840 TIMERS (2 CARD)
7850 TELETYPEWRITER ADAPTOR
7900 TWO CHANNEL SWITCH
9154 REMOTE IFL FOR FEATURE 2074
9155 REMOTE IFL FOR FEATURE 2075

MACHINE TYPE IDENTIFICATION

4952 - A PROCESSOR 5 I/O (WITH 32KB) - 128KE MAX
4952 - E PROCESSOR 14 I/O (WITH 32KB) - 128KB MAX
4953 - A PROCESSOR 4 I/O (WITH 16KB) - 64KB MAX
4953 - B PROCESSOR 13 I/C (WITH 16KB) - 64KE MAX
4953 - C PROCESSOR 4 I/O (WITH 32KB) - 64KB MAX
4953 - D PROCESSOR 13 I/O (WITH 32KB) - 64KE MAX

NOTE:

4952 A, 4953 A AND C ARE ONE-HALF MODULES
4952 B, 4953 B AND D ARE FULL MODULES

4955 - A PROCESSOR 8 I/O (WITH 16KB) -64KE MAX
4955 - B PROCESSOR 3 I/O (WITH 16KB) -128KB MAX
4955 - C PROCESSOR 10 I/O (WITH 32KB) -64KB MAX
4955 - D PROCESSOR 7 I/O (WITH 32KB) -128KB MAX
4955 - E PROCESSOR 7 I/O (WITH 64KB) -256KB MAX
4959 - A I/O EXPANSION CARD FILE
4962 - 1 DISK STORAGE UNIT -9.3 M.B.
4962 - 1F DISK STORAGE UNIT -9.3 M.B. WITH 8 FIXED HEADS
4962 - 2 DISK STORAGE UNIT -9.3 M.B. AND DISKETTE
4962 - 2F DISK STORAGE UNIT -9.3 M.B. WITH 8 FIXED HEADS AND DISKETTE
4963 - 23A DISK SUBSYSTEM - 23MB - PRIMARY DISK UNIT WITH 131 KB FIXED HEAD
4963 - 23B DISK SUBSYSTEM - 23MB - PRIMARY DISK UNIT WITH 131 KB FIXED HEAD
4963 - 29A DISK SUBSYSTEM - 29MB - PRIMARY DISK UNIT
4963 - 29B DISK SUBSYSTEM - 29MB - PRIMARY DISK UNIT
4963 - 58A DISK SUBSYSTEM - 58MB - PRIMARY DISK UNIT WITH 131KB FIXED HEAD
4963 - 58B DISK SUBSYSTEM - 58MB - EXPANSION DISK UNIT WITH 131KB FIXED HEAD.
4963 - 64A DISK SUBSYSTEM - 64MB - PRIMARY DISK UNIT
4963 - 64B DISK SUBSYSTEM - 64MB - EXPANSION DISK UNIT
4964 DISKETTE (ONE-HALF MODULE)
4966 DISKETTE MAGAZINE UNIT
4969 -4X TAPE SUBSYSTEM, 45 IPS DRIVE, SWING ARM TAPE BUFFER
4969 -7X TAPE SUBSYSTEM, 75 IPS DRIVE, VACUUM COLUMN TAPE BUFFER
4973 - 1 PRINTER (150 I.F.M.)
4973 - 2 PRINTER (400 I.F.M.)
4974 - 1 PRINTER (120 CHARACTERS PER SECOND)
4979 VIDEO DISPLAY STATION
4982 SENSOR I/O
4987 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM (WITH BASIC SCANNER)
4990 COMMUNICATIONS CONSOLE FOR THE 4987 (HAND HELD)
4993 SERIES/1 - SYS/370 TERMINATION ENCLOSURE
4997 - 1A 1 - METER RACK ENCLOSURE (WITH METAL FILLER PANELS)
4997 - 1B 1 - METER RACK ENCLOSURE (WITH MOLDED FILLER PANELS)
4997 - 2A 1.8 METER RACK ENCLOSURE (WITH METAL FILLER PANELS)
4997 - 2B 1.8 METER RACK ENCLOSURE (WITH MOLDED FILLER PANELS)
4999 - A BATTERY BACK-UP (100 - 123.5 VAC)
4999 - B BATTERY BACK-UP (200 - 235 VAC)
5251 - 1 DISPLAY STATION (960 CHARACTER)
5251 - 2 DISPLAY STATION (1920 CHARACTER)
5252 DUAL DISPLAY STATION
5256 - 1 PRINTER (40 CHARACTERS PER SECOND)
5256 - 2 PRINTER (80 CHARACTERS PER SECOND)
5256 - 3 PRINTER (120 CHARACTERS PER SECOND)

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SECTION 6.0 SYSTEM CHECK-OUT

THIS SECTION GIVES A SUMMARY OF THE PROCEDURE FOR SYSTEM CHECK-OUT (TEST) OF HARDWARE WITH DIAGNOSTICS.

SYSTEM CHECKOUT STARTS WITH VERIFYING THE POWER, AN INTERNAL TEST OF THE BASIC PROCESSOR OPERATIONS, AND A TEST OF THE PROGRAM LOAD ABILITY. THE TESTING CONTINUES OUTWARD FROM THE PROCESSOR TO INCLUDE ALL PARTS OF THE SYSTEM.

INSIDE THE MACHINE SHIP GROUP ARE THE FOLLOWING DISKETTES WHICH ARE USED TO VERIFY THAT THE MACHINE IS OPERATIONAL:

1. DIAGNOSTIC DISKETTE (ONE OR MORE)
2. SYSTEM TEST DISKETTE

THE MAINTENANCE DOCUMENTS ARE INCLUDED TO AID THE USER IN DETERMINING AND LOCATING PROBLEMS IF THE SYSTEM DOES NOT PERFORM CORRECTLY DURING ITS CHECKOUT PHASE.

6.1 DIAGNOSTIC TEST

A DIAGNOSTIC DISKETTE IS SHIPPED WITH ALL SYSTEMS. THIS DISKETTE IS PRECONFIGURED AT THE FACTORY TO MATCH THE ORDERED SYSTEM. IF ANY CHANGES ARE MADE TO THE SYSTEM, THE DISKETTE IS TO BE CHANGED TO MATCH THE SYSTEM. THE PERSON INSTALLING THE CHANGES WILL ENTER THE REAL DEVICE INFORMATION AS SPECIFIED IN DIAGNOSTIC SERVICE GUIDE, P/N 1635010; (MAP 10.00); SUBSECTION 08.00.00 FOR THE CONFIGURATOR PROGRAM.

IF A DISKETTE UNIT IS NOT PART OF THE SYSTEM, THEN THE DISKETTE MAINTENANCE PROGRAM LOAD DEVICE MUST BE USED.

NOTE: BEFORE USING THE PROGRAM LOAD DEVICE, CHECK TO SEE THAT THE SHIPPING LOCK-CUTS HAVE BEEN REMOVED. (REFER TO THE PACK/UNPACK INSTRUCTIONS FOR THE DEVICE).

6.2 SYSTEM TEST

THE SYSTEM TEST IS ON A SEPARATE DISKETTE. THE PURPOSE OF THE SYSTEM TEST IS TO RUN DEVICE EXERCISES IN AN OVERLAP MODE UNDER A SYSTEM TEST SUPERVISOR. THE TEST IS TO VERIFY THE HARDWARE SYSTEM.

SEE M.A.P. 10.00; SUBSECTION 16.00.00 FOR SYSTEM INSTALLATION CHECK-OUT PROCEDURE FOR THE COMPLETE OPERATING DETAILS. THE PROCEDURE IN THE SUBSECTION IS SEQUENCED TO ENABLE YOU TO CHECK-OUT THE HARDWARE SYSTEM, STARTING WITH A MINIMUM CONFIGURATION, AND WORKING TO A MAXIMUM CONFIGURATION. WHEN A PROBLEM IS FOUND IN LOADING, OR RUNNING, A PROGRAM; REFER TO THE DIAGNOSTIC SERVICE GUIDE TO DETERMINE THE CAUSE.