Strata VI

FAULT FINDING

PROCEDURES

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01 GENERAL

01.01 This section describes the maintenance procedures used for the diagnosis of faults in the STRATA VI electronic key telephone system. Faults are classified and then cleared by replacing apparatus and performing operational tests in the sequences prescribed by the fault clearing flow charts in Paragraph **05.**

02 FAULT CLASSIFICATION

02.01 A fault classification flow chart is provided to ensure that fault clearing is pursued in a logical sequence (Chart No. 1).

02.02 In the flow charts an assumption is made that the fault was discovered and reported by an EKT user. All faults, therefore, are classified according to the way they would appear at the EKT.

02.03 Faults and associated flow charts are organized into the following categories:

Flow Chart Title	Number
• Fault Classification	1
• Power Faults	2
• Station Faults	3
• MKSU Faults	4
• CO Line Faults	5
• Intercom Faults	6
• Automatic Dialing Faults	7
• MOH, BGM, Page, Relay Service Faults	8

03 FAULT CLEARING PROCEDURES

03.01 Before attempting to clear any fault, ensure that it is in the STRATA VI system and not caused by associated external equipment such as wiring, MOH source, etc.

IMPORTANT:
Many features of the STRATA VI are assigned, enabled or disabled using software entries as described in Section 100-006-300, System Programming. Further, with the exception of Programs 5XX--9XX, programming changes are not effective until the SET switch on the MCCU has been released and the MTOU power switch has been cycled off/on (shifting the new data into permanent memory). It is important to verify that the system programming is correct and functional before troubleshooting the hardware.

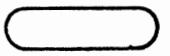
In new systems, or when the MCCU or CRDU has been changed, the initialize procedure must be performed before testing. The system data stored on the original MCCU or CRDU will be protected from loss by the battery on that PCB. Therefore, the initialize sequence should not be performed if the original PCB is reinstalled.

03.02 Faults in the STRATA VI are cleared by replacing PCBs, EKTs or the power supply, as instructed in the flow charts.

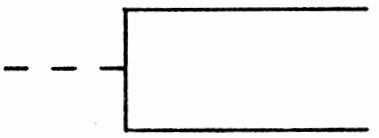
03.03 Five symbols are used in the flow charts. These symbols are identified in Figure 1.

03.04 The flow charts are sequentially arranged to permit rapid fault localization within the STRATA VI system. All fault clearing must begin with the Fault Classification Flow Chart, which is arranged in the correct fault locating sequence.

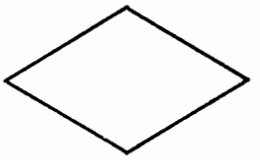
START AND END OF
A FLOW CHART SEQUENCE



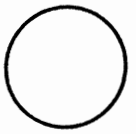
IMPORTANT NOTES
AFFECTING THE FAULT
CLEARING PROCEDURE



QUESTION TO BE ANSWERED
YES OR NO



PROGRESSION TO OR FROM
ANOTHER FLOWCHART LOCATION.
LETTER WILL DENOTE EXACT ENTRANCE
OR EXIT POINT



TO/FROM SPECIFIC FLOWCHART (FC)

STATEMENT OF A
REQUIRED ACTION

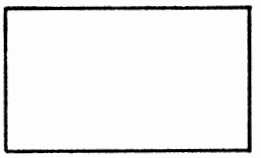


FIGURE 1

03.05 The following precautions must be observed when handling PCBs.

DO NOT:

- Drop a PCB
- Stack one PCB on top of another
- Handle a PCB without discharging any static electricity from your person by touching the grounded MKSU
- Touch PCB contacts with your fingers

IMPORTANT:
If the fault is not cleared by substituting a PCB, the original PCB must be reinserted into the MKSU.

04 DEFECTIVE APPARATUS RETURNS

04.01 When defective STRATA VI apparatus is shipped for repair, the apparatus must be packed in a suitable container (an original type box is highly recommended).

a) Anti-static container for the MSTU, MCOU and MTOU PCBs.

b) Paper container for the MCCU and CRDU PCBs.

c) Plastic bags for EKTs, MKSUs, etc.

04.02 NEVER WRITE ON THE APPARATUS ITSELF! Describe the nature of the defect on an information tag, and attach the tag to the front of the unit with string (not wire) so that the tag can remain attached during the testing and repair process.

04.03 If different and/or additional faults are created in the system by substituting a PCB, tag and return the substitute PCB as a defective unit.

05 FAULT IDENTIFICATION and ELIMINATION PROCEDURES

NOTE:
1) The CRDU PCB is not considered separately from the MCCU in any flow chart except the Automatic Dialing Fault flow chart.

2) If a CRDU is equipped--when substituting the MCCU, remove the CRDU and reinsert the same MCCU into the MKSU. If the fault is cleared, replace the defective CRDU.

TABLE A

STATION CABLE CONTINUITY CHECK USING VOLTMETER

NOTE:
Perform the following
- *Modular block--check all station cables*
- *MDF--check cable from MSTU to MDF*

1. Disconnect the EKT.

2. Using a DC voltmeter, measure between the wires of the two pairs to verify the presence of the following readings.

FROM			TO			VOLTAGE*
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	24
1	R	Red	2	T	Black	24
1	T	Green	2	R	Yellow	24
1	R	Red	2	R	Yellow	24
1	T	Green	1	R	Red	0
2	T	Black	2	R	Yellow	0

3. An improper reading indicates an open or crossed or shorted wire.

4. For the MDF-to-EKT cable, a more precise check is made using an ohmmeter per Table B.

Nominal voltage--within the power supply limits of 23.2~28.2VDC while under AC power.

TABLE B

STATION CABLE CONTINUITY CHECK USING OHMMETER

1. Disconnect the EKT at the wall.

2. At the MDF, remove the bridging clips.

3. Using an ohmmeter, measure the resistance between all combinations of the four wires at the modular block. All measurements should exceed 1 MOhm.

4. At the MDF, place shorting jumper wires between the T and R of pair #1 (green-red) and the T and R of pair #2 (black-yellow).

5. At the modular block, measure the resistance between all wire combinations. The proper readings are as follows:

FROM			TO			RESISTANCE
Pair	Wire	Color	Pair	Wire	Color	
1	T	Green	2	T	Black	1 MOhm
1	R	Red	2	T	Black	1 MOhm
1	T	Green	2	R	Yellow	1 MOhm
1	R	Red	2	R	Yellow	1 MOhm
1	T	Green	1	R	Red	55 ohms*
2	T	Black	2	R	Yellow	55 ohms*

NOTE:
The green-red and black-yellow measurements should be within 10% of each other.

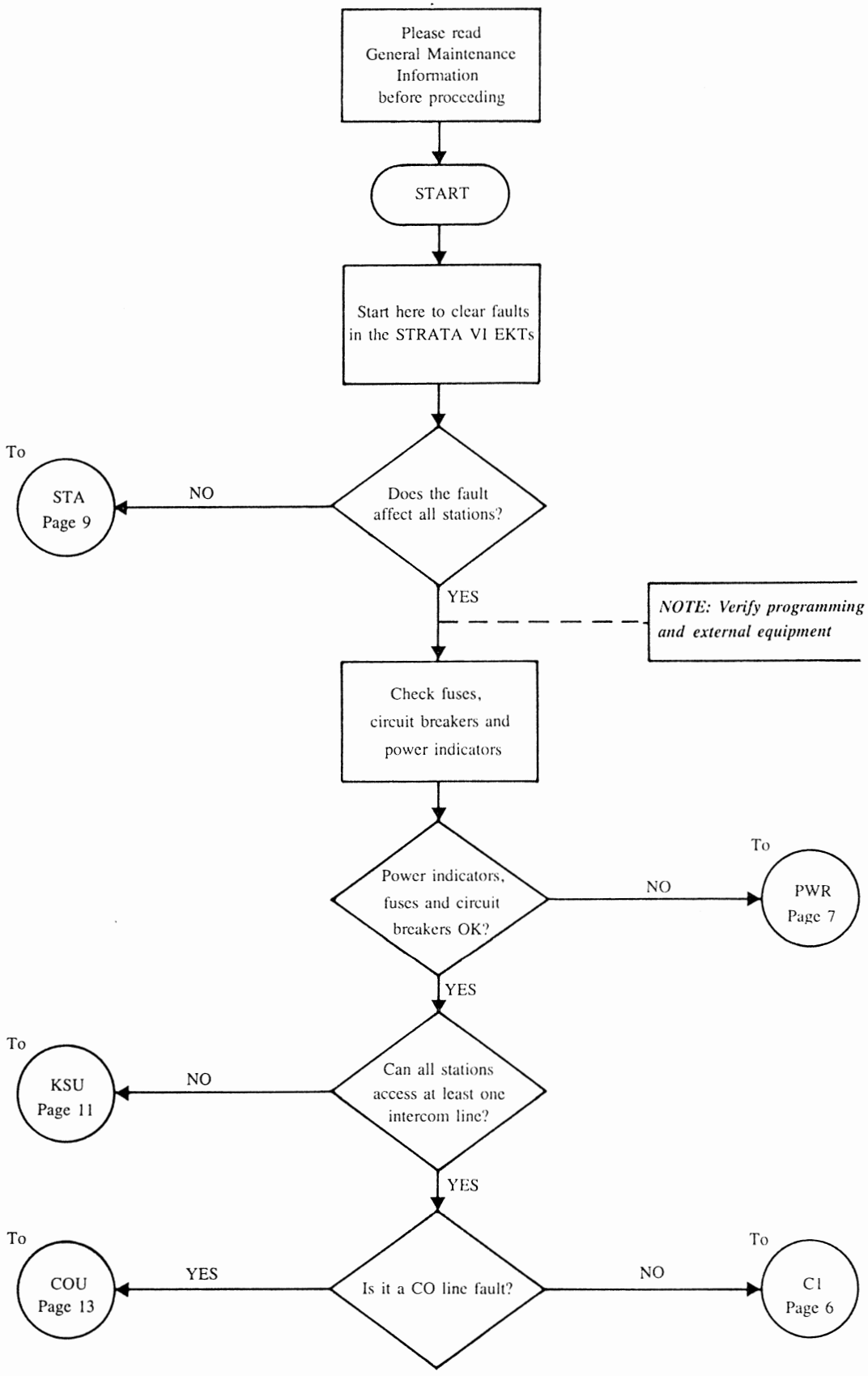
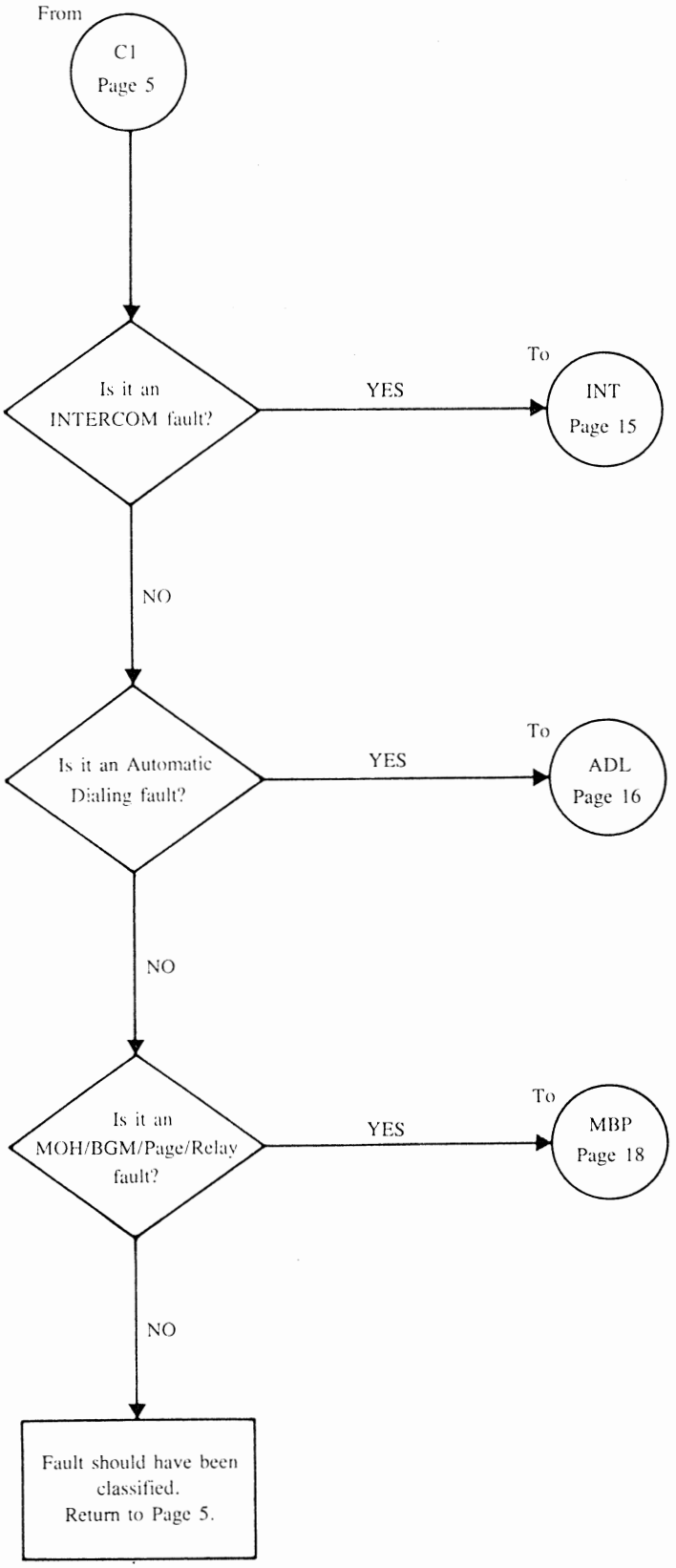

Please read General Maintenance Information before proceeding
START
Start here to clear faults in the STRATA VI EKTs
Does the fault affect all stations?
NO
To STA Page 9
YES
NOTE: Verify programming and external equipment
Check fuses, circuit breakers and power indicators
Power indicators, fuses and circuit breakers OK?
NO
To PWR Page 7
YES
Can all stations access at least one intercom line?
NO
To KSU Page 11
YES
Is it a CO line fault?
YES
To COU Page 13
NO
To C1 Page 6

CHART NO. 1
FAULT CLASSIFICATION (CON'T)



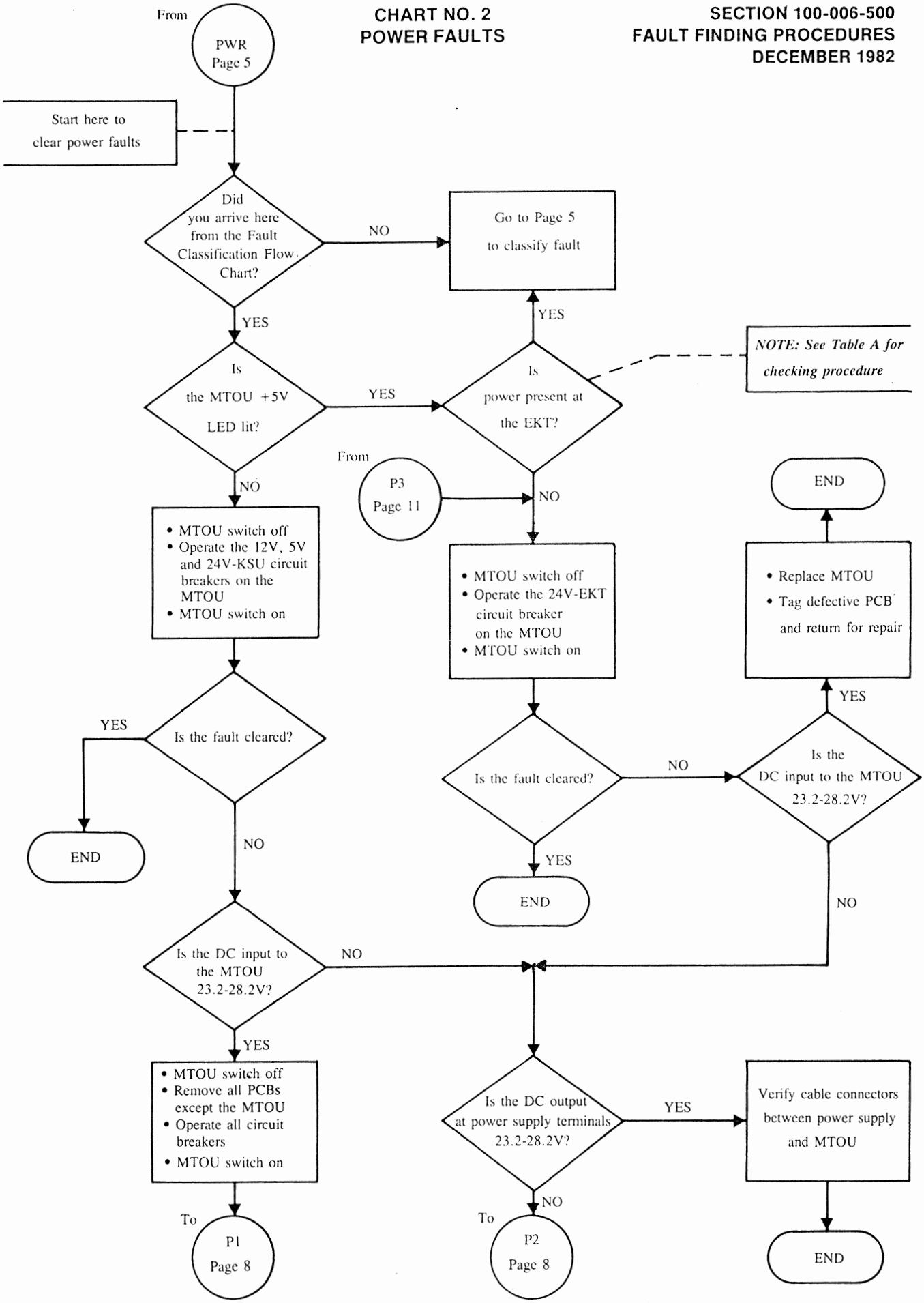

From
PWR
Page 5
Start here to clear power faults
Did you arrive here from the Fault Classification Flow Chart?
NO
Go to Page 5 to classify fault
YES
YES
Is the MTOU +5V LED lit?
YES
Is power present at the EKT?
NOTE: See Table A for checking procedure
From
P3
Page 11
NO
NO
• MTOU switch off
• Operate the 12V, 5V and 24V-KSU circuit breakers on the MTOU
• MTOU switch on
• MTOU switch off
• Operate the 24V-EKT circuit breaker on the MTOU
• MTOU switch on
END
• Replace MTOU
• Tag defective PCB and return for repair
YES
Is the fault cleared?
YES
Is the fault cleared?
NO
Is the DC input to the MTOU 23.2-28.2V?
END
NO
YES
END
NO
Is the DC input to the MTOU 23.2-28.2V?
NO
YES
• MTOU switch off
• Remove all PCBs except the MTOU
• Operate all circuit breakers
• MTOU switch on
Is the DC output at power supply terminals 23.2-28.2V?
YES
Verify cable connectors between power supply and MTOU
To
P1
Page 8
NO
To
P2
Page 8
END

CHART NO. 2
POWER FAULTS (CON'T)

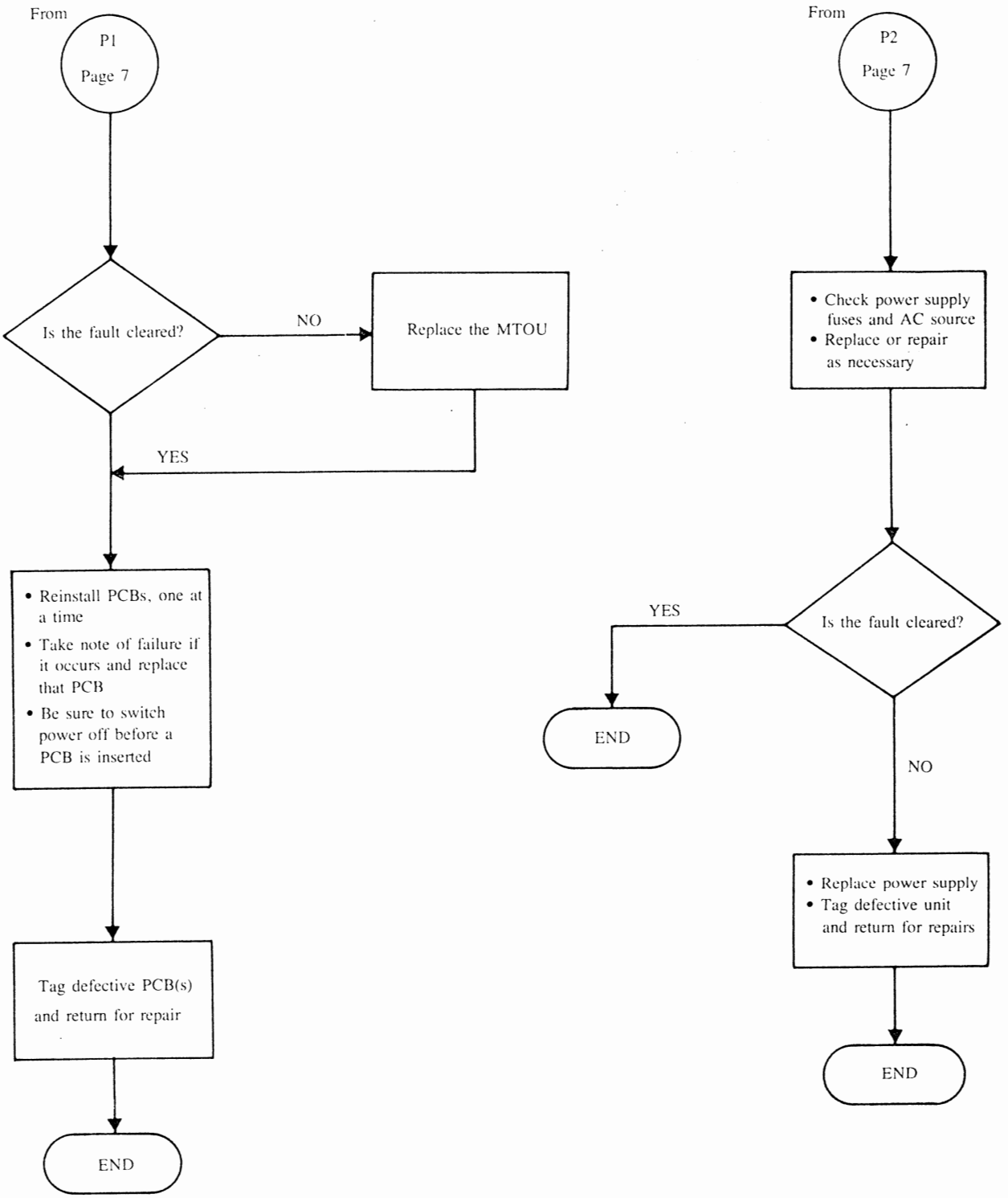


CHART NO. 3
STATION FAULTS

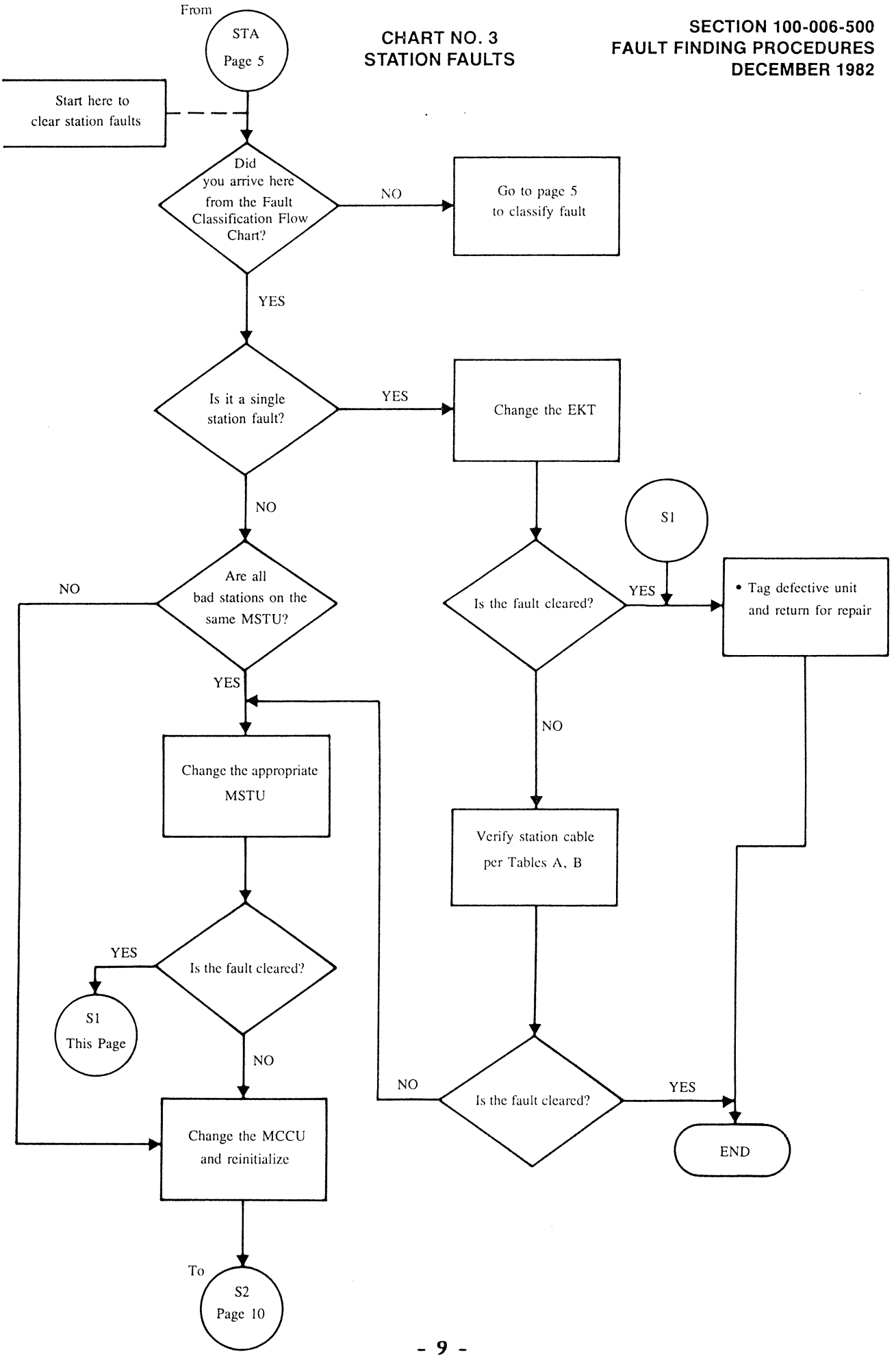
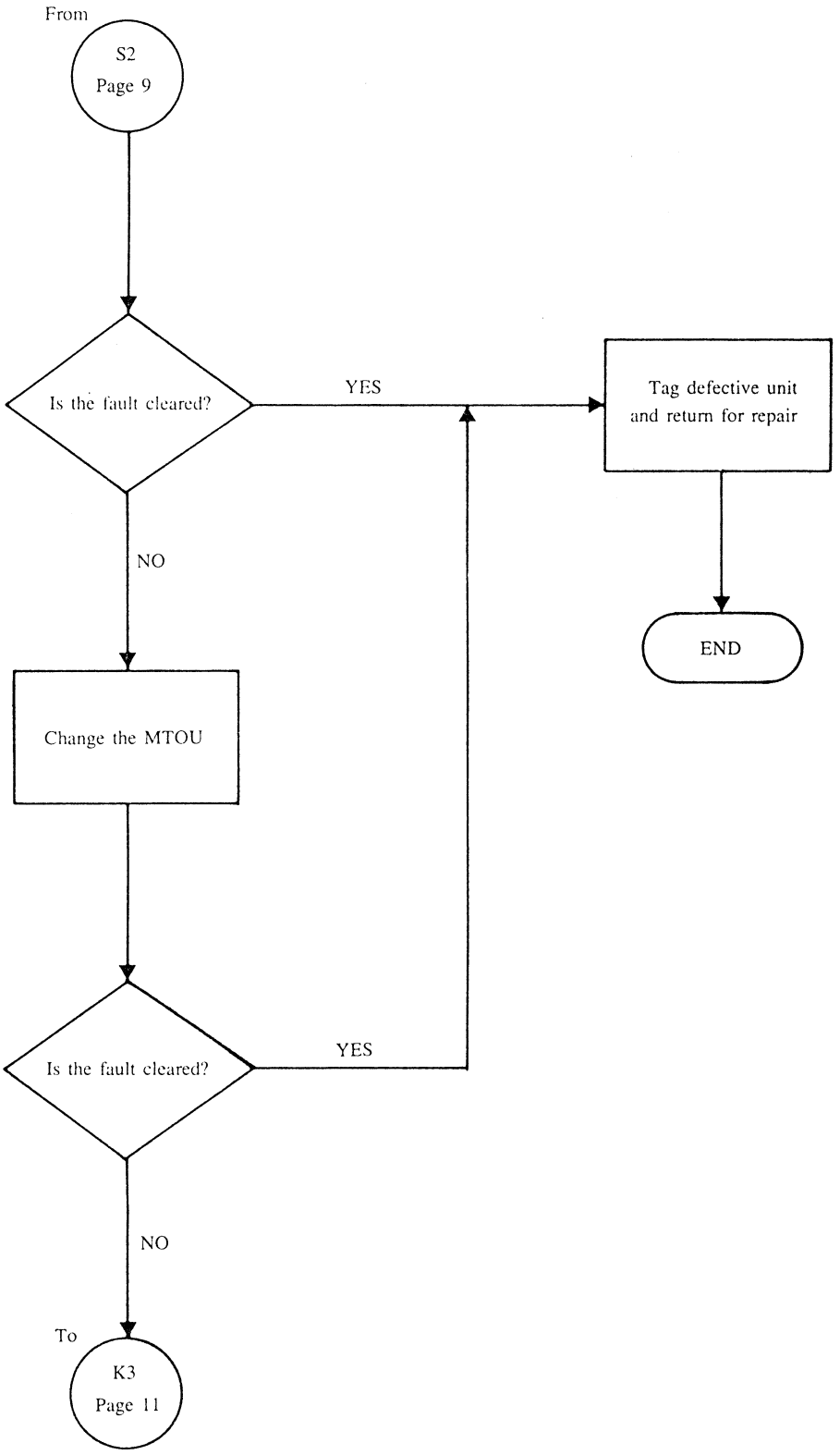


CHART NO. 3
STATION FAULTS (CON'T)



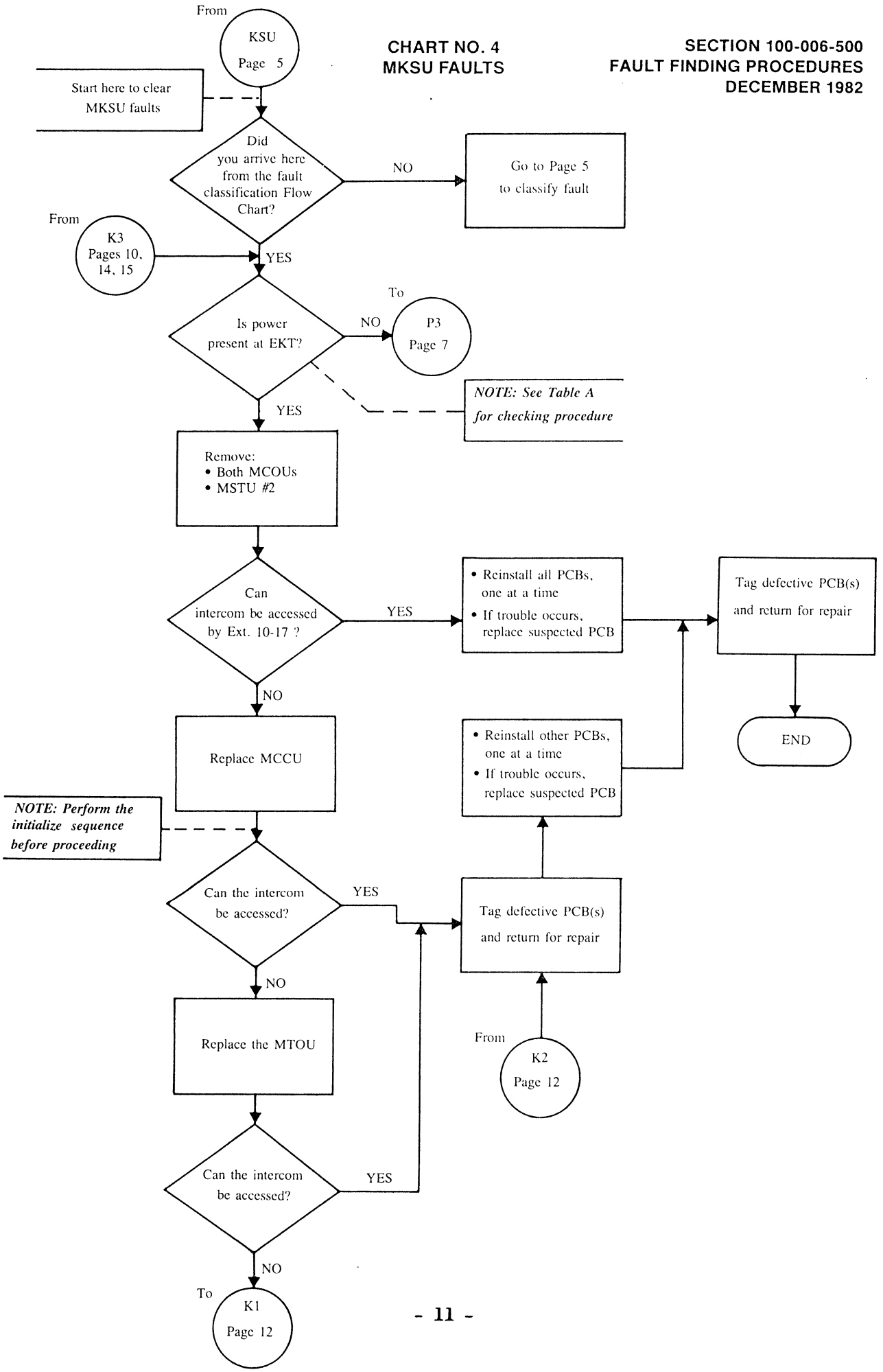
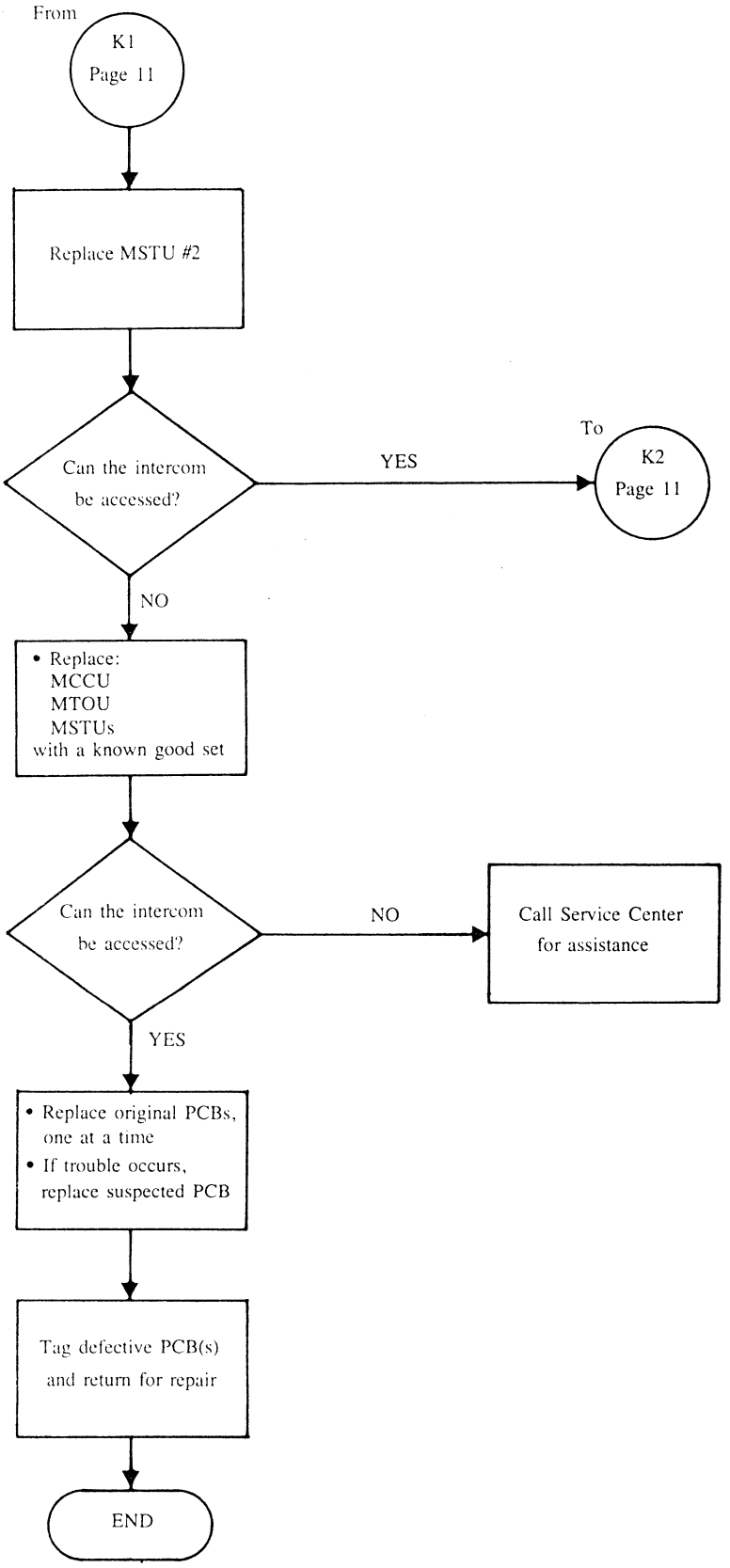

From
KSU
Page 5
Start here to clear MKSU faults
Did you arrive here from the fault classification Flow Chart?
NO
Go to Page 5 to classify fault
From
K3
Pages 10, 14, 15
YES
Is power present at EKT?
NO
To
P3
Page 7
NOTE: See Table A for checking procedure
YES
Remove:
• Both MCOUs
• MSTU #2
Can intercom be accessed by Ext. 10-17 ?
YES
• Reinstall all PCBs, one at a time
• If trouble occurs, replace suspected PCB
Tag defective PCB(s) and return for repair
END
NO
Replace MCCU
• Reinstall other PCBs, one at a time
• If trouble occurs, replace suspected PCB
NOTE: Perform the initialize sequence before proceeding
Can the intercom be accessed?
YES
Tag defective PCB(s) and return for repair
NO
Replace the MTOU
From
K2
Page 12
Can the intercom be accessed?
YES
NO
To
K1
Page 12

CHART NO. 4
MKSU FAULTS (CON'T)



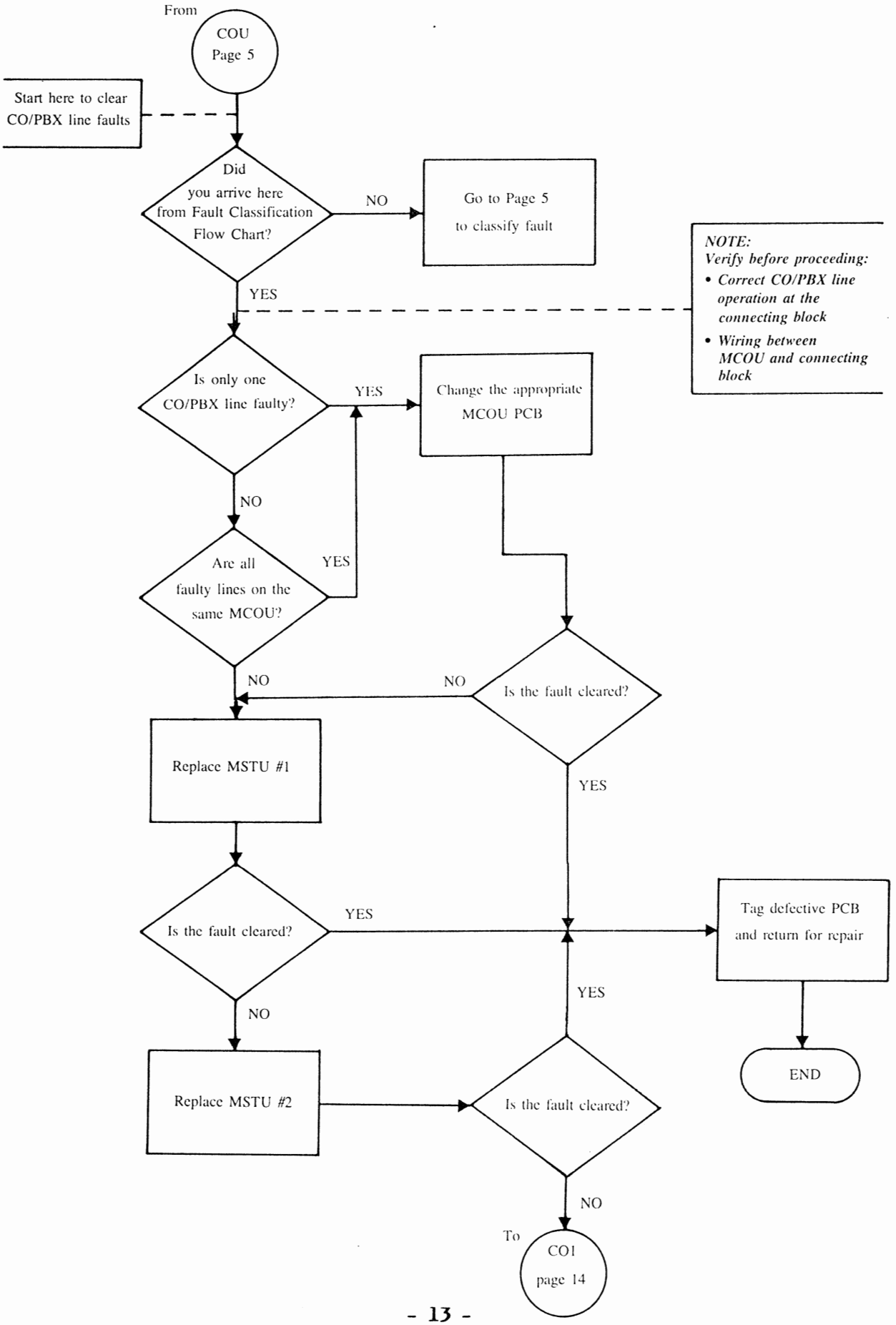
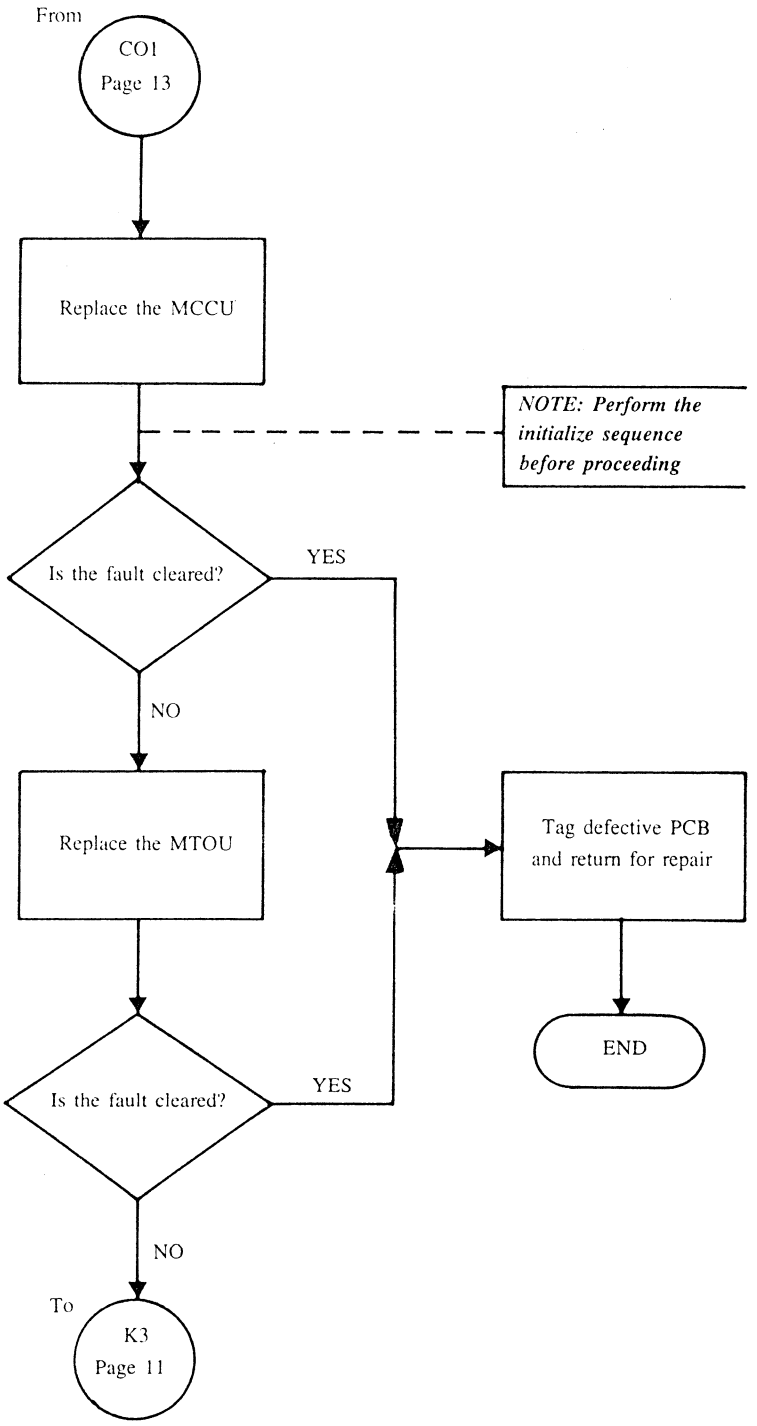

From
COU
Page 5
Start here to clear CO/PBX line faults
Did you arrive here from Fault Classification Flow Chart?
NO
Go to Page 5 to classify fault
YES
NOTE:
Verify before proceeding:
• Correct CO/PBX line operation at the connecting block
• Wiring between MCOU and connecting block
Is only one CO/PBX line faulty?
YES
Change the appropriate MCOU PCB
NO
Are all faulty lines on the same MCOU?
YES
NO
NO
Is the fault cleared?
Replace MSTU #1
YES
Is the fault cleared?
YES
Tag defective PCB and return for repair
NO
YES
Replace MSTU #2
Is the fault cleared?
END
NO
To
CO1
page 14

CHART NO. 5
CO LINE FAULTS (CON'T)



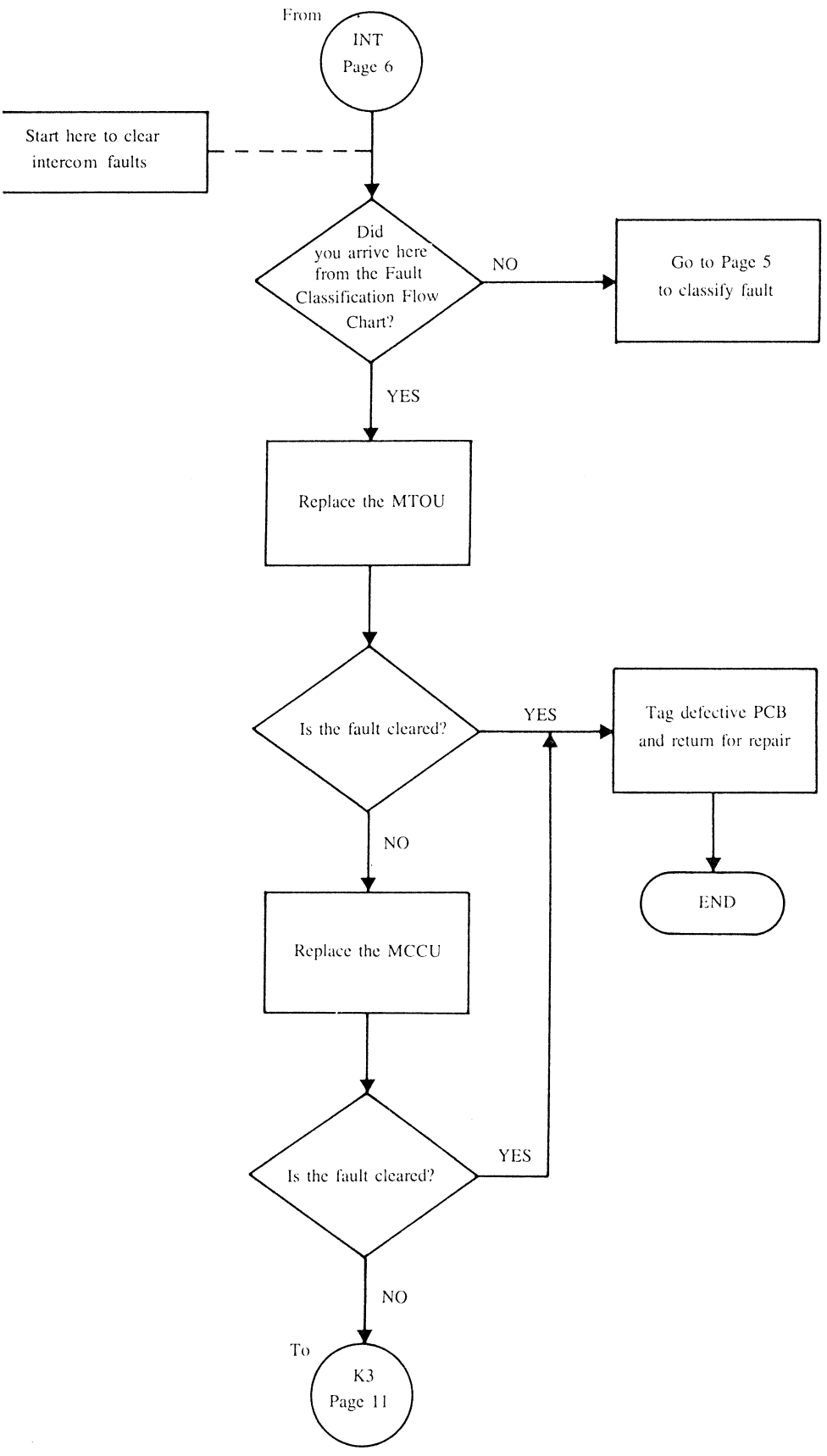
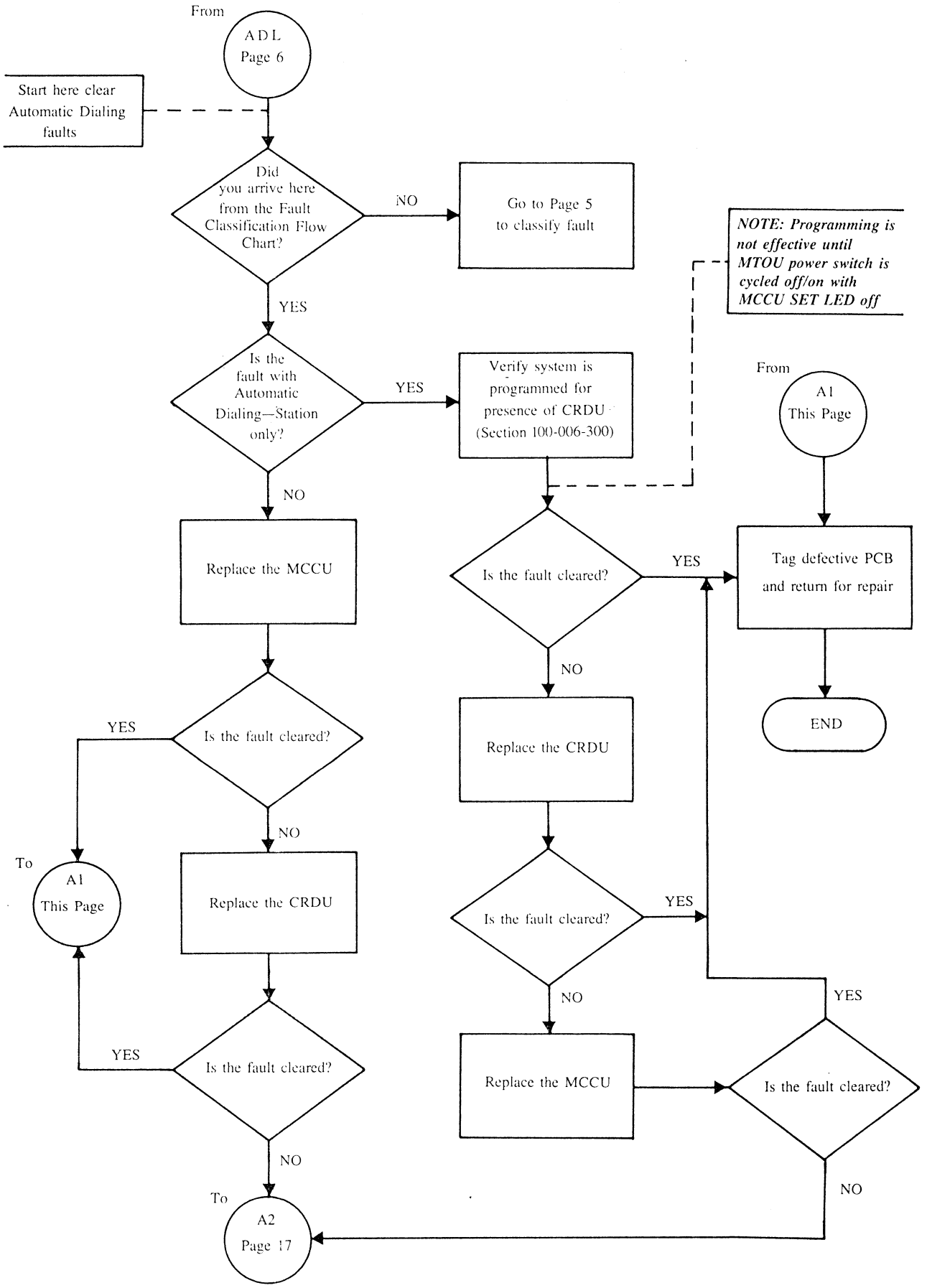

From
INT
Page 6
Start here to clear intercom faults
Did you arrive here from the Fault Classification Flow Chart?
NO
Go to Page 5 to classify fault
YES
Replace the MTOU
Is the fault cleared?
YES
Tag defective PCB and return for repair
END
NO
Replace the MCCU
Is the fault cleared?
YES
NO
To
K3
Page 11

CHART NO. 7
AUTOMATIC DIALING FAULTS



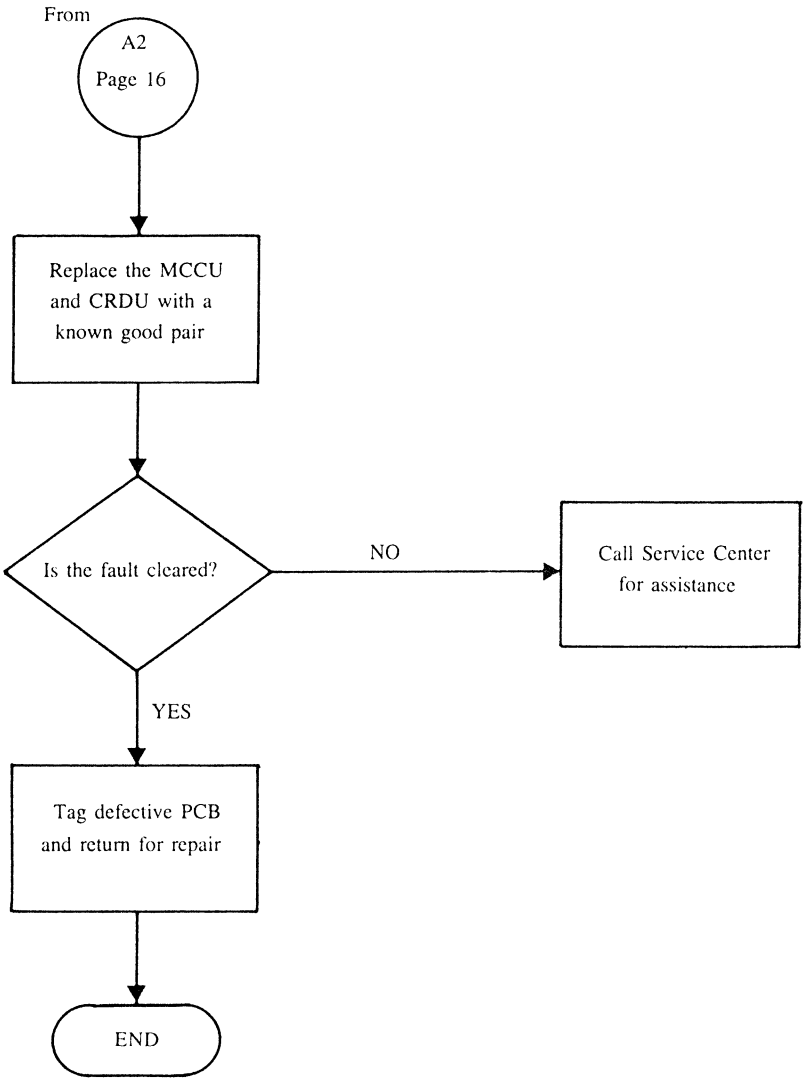
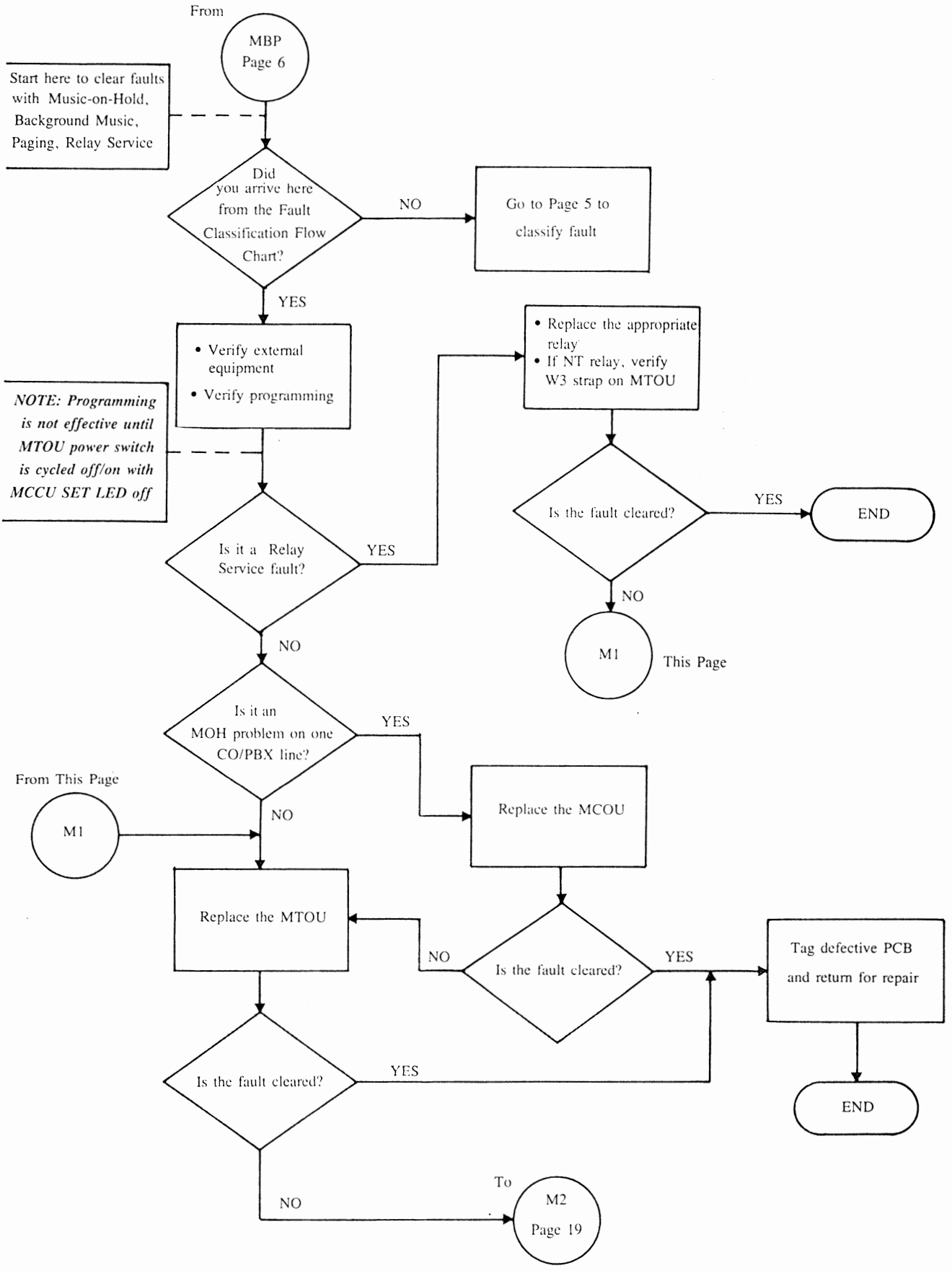
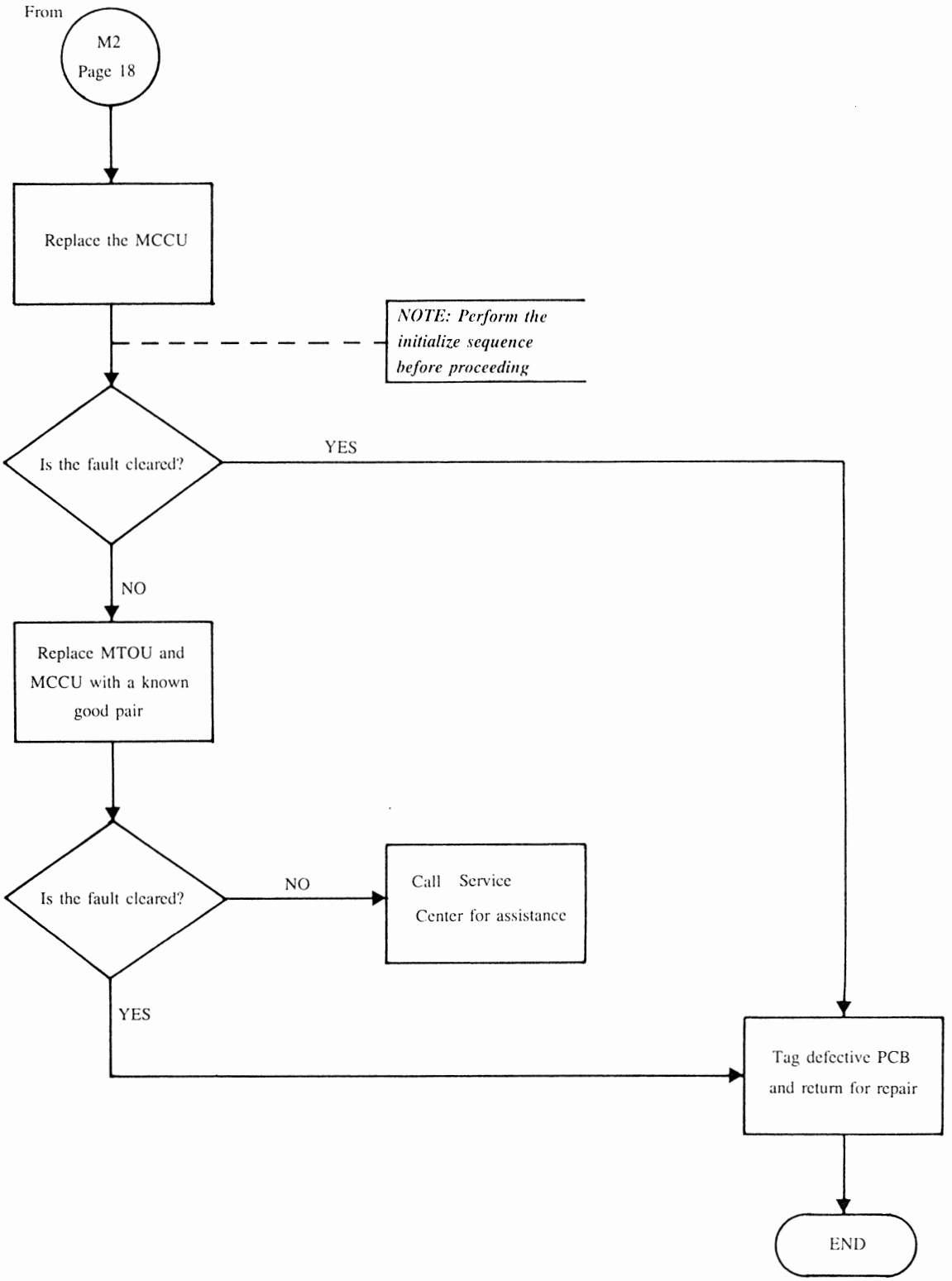

From
A2
Page 16
Replace the MCCU and CRDU with a known good pair
Is the fault cleared?
NO
Call Service Center for assistance
YES
Tag defective PCB and return for repair
END

CHART NO. 8
MOH, BGM, PAGE, RELAY SERVICE FAULTS




From
M2
Page 18
Replace the MCCU
NOTE: Perform the initialize sequence before proceeding
Is the fault cleared?
YES
NO
Replace MTOU and MCCU with a known good pair
Is the fault cleared?
NO
Call Service Center for assistance
YES
Tag defective PCB and return for repair
END