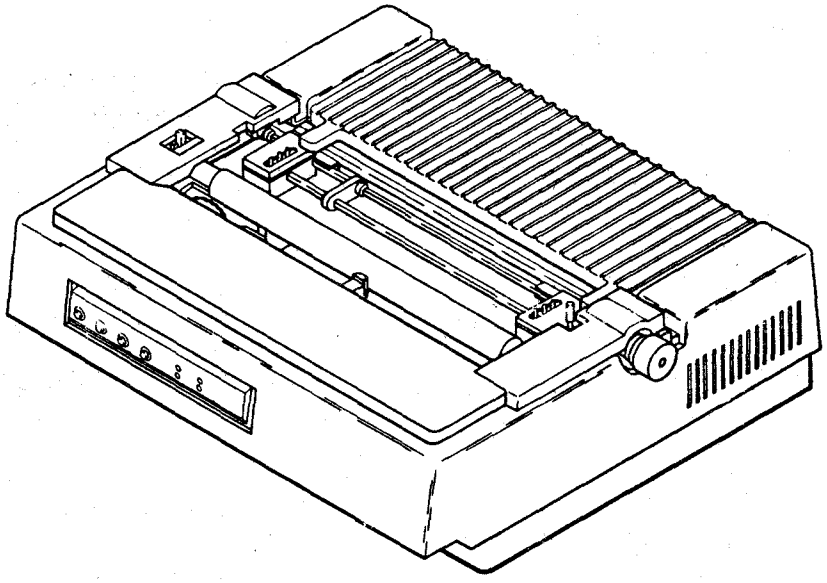
TM 11-7025-220-23

ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL

TELEPRINTER TT-756/MYQ-4



(NSN 5815-01-092-2650)

HEADQUARTERS DEPARTMENT OF THE ARMY
MARCH 1984

WARNING

HIGH VOLTAGE

is used in the operation of this equipment

ELECTROCUTION

may result if personnel fail to observe safety precautions.

Never work on electronic equipment unless there is another person nearby. He/she should be familiar with the operation and hazards of the equipment. He/she should also be competent in giving first aid. When you are helped by operators, you must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. If it is necessary to work on the equipment with power on, do not touch anything in the power supply area. Take special care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term "low voltage". Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working around electronic equipment. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

5 **DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL**

1 **IF POSSIBLE, TURN OFF THE ELECTRICAL POWER**

2

3 **IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL**

4 **SEND FOR HELP AS SOON AS POSSIBLE**

5 **AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION**

TECHNICAL MANUAL
No. 11-7025-220-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC., 8 March 1984

ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL TELEPRINTER TT-756/MYQ-4

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual, direct to: Commander, US Army Communications and Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

HOW TO USE THIS MANUAL

This manual tells you how to troubleshoot and maintain Teleprinter TT-756/MYQ-4.

LOCATION OF SUBJECTS IN MANUAL

In this manual, paragraphs are numbered in order by chapter. For example, paragraph 2-3 is the third paragraph in chapter 2. Pages are also numbered this way. Using this numbering system, there are three easy ways to locate the information you need in this manual.

- Front cover locators
- Alphabetical index
- Index of maintenance procedures

Use the front cover locators and marked pages to quickly find the parts of the manual shown on the cover. These locators mark portions of the manual which are used often. If the information you need is not listed on the front cover, use the alphabetical index at the back of this manual. It lists all subjects covered in the manual and directs you to the subject by paragraph number. When you need a specific maintenance procedure, use the index at the start of chapter 3 or 4. This index lists all the maintenance procedures in the chapter and directs you to each procedure by page number.

MAINTENANCE PROCEDURES

Maintenance procedures in this manual have two features which help you perform them more easily:

- Initial setup boxes
- First-time performance aids

An initial setup box is used at the start of any procedure which requires setup items before you perform it. This box lists items needed to perform the procedure. If the box does not appear at the start of a procedure, no setup items are needed.

If you are using this manual to perform a procedure for the first time, always read through the entire procedure before you start. Always perform the task steps in the order given. This will help assure correct performance. Use the illustrations beside the tasks steps to find the parts of the equipment called out in the steps. Some steps include a reference to another paragraph. Go to that paragraph if you are not sure how the step is done.

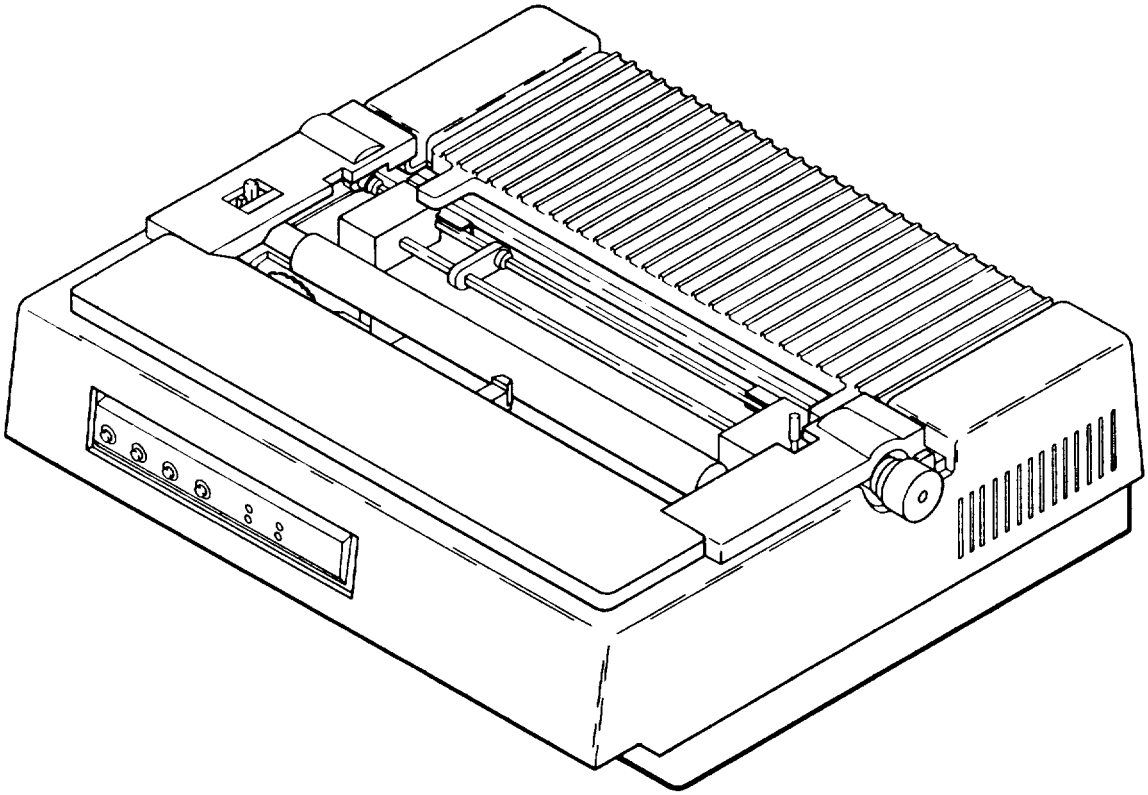


Figure 1-0. Teleprinter TT-756/MYQ-4

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

Teleprinter TT-756/MYQ-4 (fig. 1-0) is a slave serial printer unit which provides hard copy of console terminal transactions. In the rest of this manual it will be called the console printer. Use this manual for organizational and/or direct support maintenance of the console printer.

1-2. INDEX OF PUBLICATIONS

Refer to the latest issue of DA PAM 310-1 to determine whether there are new editions, changes or additional publications pertaining to the console terminal.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-4. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-5. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have Preventive Maintenance Checks and Services (PMCS) performed before storing. When removing the equipment from administrative storage, the PMCS checks should be performed to assure operational readiness. Disassembly and repacking of equipment for limited storage are covered in TM 740-90-1.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your console terminal needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, U. S. Army Communications and Electronics Command and Fort Monmouth, Attn: DRSEL-ME-MP, Fort Monmouth, NJ 07703. We'll send you a reply.

1-7. REFERENCE INFORMATION

This listing includes the nomenclature cross reference list, the list of abbreviations and an explanation of terms (glossary) used in this manual.

1-8. NOMENCLATURE CROSS REFERENCE LIST

Common names are used throughout this manual, but you must use the official nomenclature when filling out report forms, sending and EIR, or finding referenced technical manuals.

Common Name	Official Nomenclature
Console Printer	Teleprinter TT-756/MYQ-4

1-9. LIST OF ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
CPI	Characters per inch
CPM	Characters per minute
CPS	Characters per second
EIA	Electronic Industries Association
LED	Light emitting diode
LF	Line feed

1-10. GLOSSARY

ASCII. American Standard Code for Information Interchange. The standard used for transmission of data between computer systems and remote terminals over telephone lines.

ASYNCHRONOUS. Data communication mode which is not time related. Uses stop and start bits instead of time pulses to organize data for transmission.

BAUD. A unit of measure of data transmission.

BAUD RATE. Rate at which data bits are transmitted (bits per second).

DIODE BRIDGE. Full phase rectifier which provides dc operating voltages.

EIA. Electronic Industries Association. A trade organization of the electronics industry which sets technical standards used by government agencies and the electronics industry.

ERASABLE PROM CHIP. Programmable read only memory chip used on console printer logic board. It can be erased using ultraviolet light and reprogrammed.

FULL DUPLEX. Communications mode which allows transmission and reception at the same time.

HEAT SINK. A metal device used for absorbing and dissipating heat.

MISTOR. Magnetic transducer which senses carriage position.

RS-232-C. An EIA standard that defines data interface characteristics.

SELF-TEST. Off-line test of printer operation.

TRACTORS. Sprockets which guide and advance paper.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-11. EQUIPMENT PURPOSE, CAPABILITIES AND FEATURES

The console printer prints out everything that is displayed on the console terminal display unit. It is a slave printer device for the console. It can:

- Print characters in 132 print positions
- Print 10 characters per inch'(cpi) horizontal; 6 cpi vertical
- Print at an average speed of 30 characters per second
- Print on paper from 1 to 5 parts thick
- Automatically line feed paper
- Self-test its printing, line feed and carriage transport functions off line
- Sense paper out and stop print operation

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The console printer consists of electronic and mechanical components. Figure 1-1 shows and describes the major components of the console printer.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT)

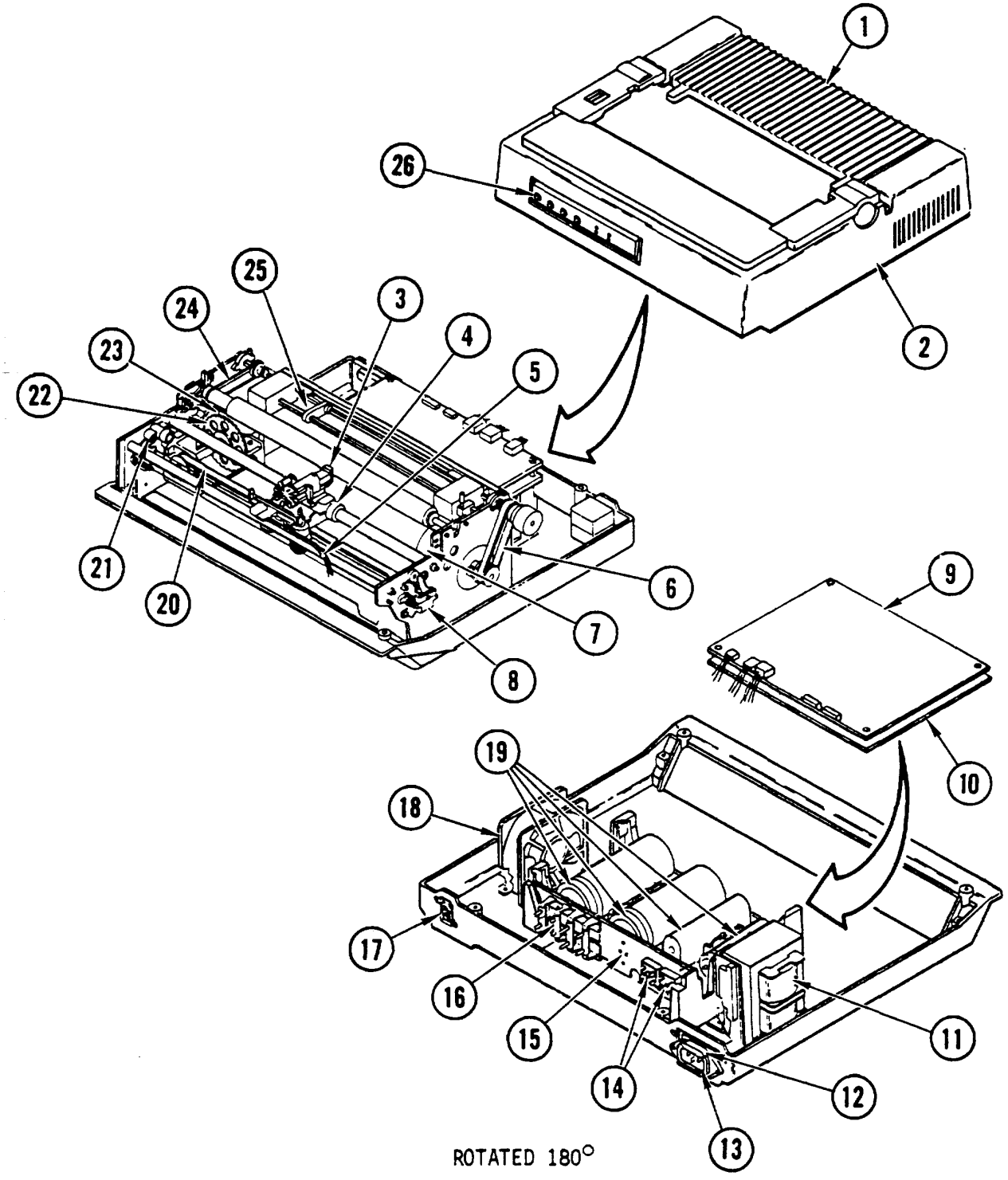


Figure 1-1. Console Printer Components (1 of 2)

(1)	Paper divider	Separates incoming paper from outgoing paper
(2)	Top cover	Protects internal parts of console printer
(3)	Printhead assembly	Imprints characters on paper
(4)	Carriage transport assembly	Supports printhead assembly and moves printhead across paper
(5)	Head cable assembly	Electrical interconnection between printhead assembly and driver board
(6)	Positive drive belt	Drives paper advance assembly
(7)	Paper stepper motor	Provides driver power for paper advance
(8)	Pulley assembly	Supports positive drive belt for carriage transport assembly
(9)	Driver board	Controls drive voltage for motors used in console printer
(10)	CPU board	Contains logic circuitry used by console printer
(11)	Transformer	Steps down ac input voltage for rectifiers
(12)	I/O connector	Mates with input/output cable connector
(13)	Ac power cord connector	Mates with removable power cord to provide ac input power
(14)	Diode bridge	Rectifies stepped down ac voltage to provide operating and control voltages
(15)	Transistor	Provides regulation of +5 V dc secondary voltage
(16)	Resistor	Provides current limiting for paper stepper and carriage stepper motors
(17)	Circuit breaker	Powers console printer on and off
(18)	Fan	Circulates cooling air in console printer
(19)	Capacitor	Filters rectified secondary voltages
(20)	Positive drive belt	Drives carriage transport assembly
(21)	Start of line switch	Determines left margin for carriage transport assembly
(22)	Timing wheel	Controls timing of carriage stepper motor
(23)	Carriage stepper motor	Provides driving power for carriage transport assembly
(24)	Round belt	Drives platen
(25)	Paper out switch	Powers off console printer when out of paper
(26)	Control panel	Houses operating controls and indicators

Figure 1-1. Console Printer Components (2 of 2)

1-13. EQUIPMENT IDENTIFICATION PLATE

An equipment identification plate (fig. 1-2) is located of the rear of the console printer.

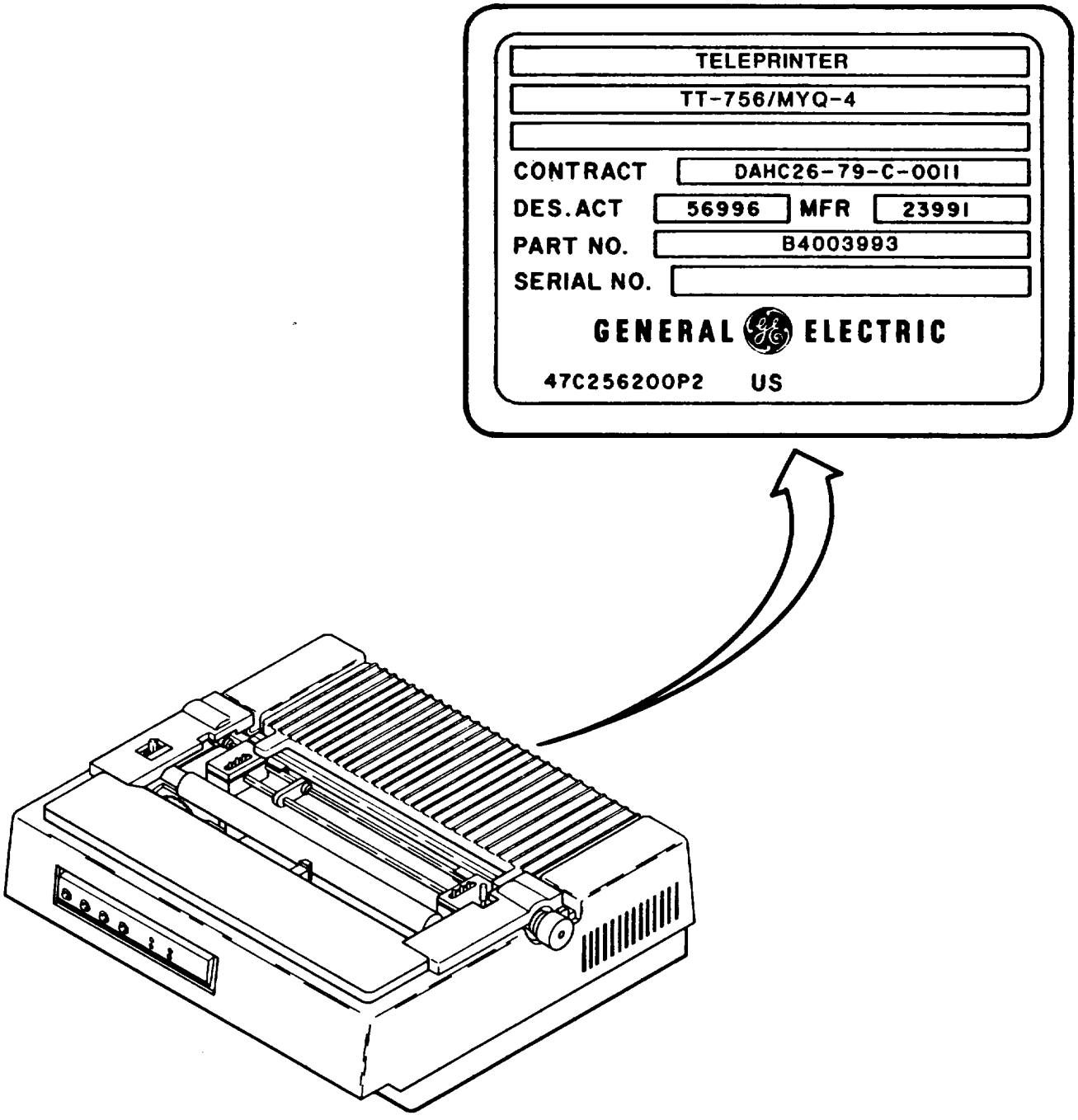


Figure 1-2. Console Printer Identification Plate

1-14. EQUIPMENT DATA

Weight and dimensions:

Weight	64.0 lb (29.0 kg)
Height	7.5 in. (19.1 cm)
Width	23.0 in. (58.4 cm)
Depth	20.5 in. (52.1 cm)

Operating environment:

Temperature 50°F to 100°F (10°C to 38°C)
Relative humidity 10% to 90% (noncondensing)

Power requirements:

Voltage 105 V ac to 128 V ac
Frequency 60 Hz

Functional characteristics:

Print speed 30 cps throughput with 120 cps catchup speed and internal 64-character buffer
Type Serial impact
Print positions 132 (maximum)
Print format 10 cpi, horizontal; 6 cpi, vertical
Print character set 95-character ASCII
Font 7 x 9 dot matrix

Transmission requirements:

Code ASCII, 7 + 1 (even/odd parity)
Interface EIA RS-232-C
Speed 300 baud
Mode Full-duplex
Type Asynchronous
Procedure TTY-like

CHAPTER 2
TECHNICAL PRINCIPLES OF OPERATION

2-1. GENERAL

This chapter explains how the electromechanical components of the console printer work and how they interface with one another.

2-2. FUNCTIONAL DESCRIPTION

The console printer is composed of a printing assembly, logic circuitry, and a power supply.

2-3. PRINTING ASSEMBLY

The printing mechanism consists of the electro-mechanical interface between the printhead assembly, the information flow, and the stepper motors, as explained below.

a. The printhead assembly (fig. 2-1), is a serial 7 x 9 dot matrix printer, each printed character consisting of a series of dots. When printing a dot, a driver transistor applies a voltage to the head solenoid. The arm moves and forces the wire needle forward, causing it to strike the ribbon and the paper. A return spring returns the wire needle to its home position. When printing a character (fig. 2-2) the same solenoid may fire as many as five times. For instance, when the character E is printed, all seven solenoids fire once, then solenoids 1, 4, and 7 fire three times. Finally, solenoids 1 and 7 fire once. When the head stops, the character E has been printed. The maximum number of vertical dots for any character is 7. The maximum number of horizontal dots for a straight line is 5. If the horizontal line is curved, the number of horizontal dots can reach 9, as in the character A.

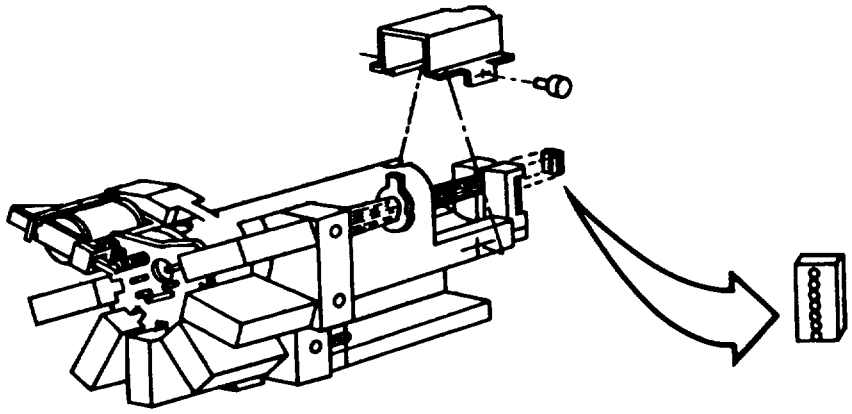


Figure 2-1. Console Printer Printhead Assembly

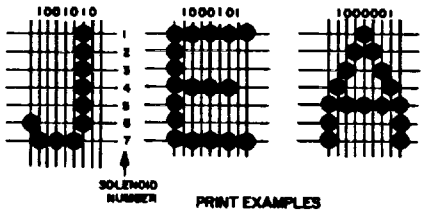


Figure 2-2. Console Printer Print Example

b. Information flows from the input/output connector through the logic circuitry and character generator of the CPU board. It is transmitted through the J07 rind P09 connectors to the print control logic circuitry of the drive board, and finally to the seven solenoids of the printhead. The solenoids punch out the printed character as shown.

c. The two stepper motors, one for moving the paper and the other for moving the printhead carriage transport, are identical and interchangeable. When the printer is powered on, current constantly flows through two of the phases, freezing the motor shaft in a set position. To advance the motor one step, one of the phase is brought low and one of the other phases is brought high. The timing for the carriage motor is basically the same, but only 4 steps are required to move the carriage 1/10 of one inch, the distance required for printing one character.

2-4. LOGIC CIRCUITRY

The CPU board contains the console printer control logic. In addition, the board has two usable ports. One port interfaces with the I/O connector, through which serial information is received from the console terminal. The other port connects to the control panel.

The driver board contains the drive logic which runs all the electromechanical assemblies.

2-5. POWER SUPPLY

The power supply includes both the bulk supply and the voltage regulator circuits on the driver board. Power enters through the circuit breaker, CBO1, and feeds the primary of the constant-voltage transformer. The circuit breaker trips if excessive current is drawn through it. One side of the coil is grounded. If +5 volts is applied at pin 5 of the circuit breaker, it trips the breaker. In this way, the printer logic can power the printer down if a fault occurs. The secondary of the transformer TO1 has two windings. The top one feeds the diode bridge, CRO1, and the bottom one feeds the diode bridge, CR02. Between these diode bridges there is a power pass transistor for the +5 volts. The two diode bridges and the QO1 are heat-sinked in the rear of the printer. The top diode bridge produces the +8.5 volts used in the CPU board and the driver board. The +8.5-volts also feeds the collector of the QO1. QO1 emitter is at 5 volts. The base is at +6.2 volts. This provides the 5 volts regulation. The +6.2 volts is supplied from the +5 voltage regulator contained in the driver board. The lower diode bridge CR02, provides the +19 volts which feeds the driver board and is regulated to +12 volts, -15 volts, and -5 volts. These voltages are used in the CPU board and the driver board.

The checking logic is below the regulators on the driver board. It checks for an over or under voltage, and also makes a hammer check. If the hammer current flows when it shouldn't, or one of the voltages goes too high or low, the output line goes high and trips the circuit breaker.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

3-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to TM 11-7010-203-23P for a complete listing and description of special tools, TMDE and support equipment required by organizational maintenance. Also refer to appendix B for a list of tools pertaining to the console printer.

3-3. SPARES AND REPAIR PARTS

Refer to TM 11-7010-203-23P for a complete listing and description of spares and repair parts required for organizational maintenance of this equipment.

Section II. SERVICE UPON RECEIPT

3-4. UNPACKING

Upon receipt of new equipment, check packing list and instructions for any precautions or specific unpacking procedures.

3-5. CHECKING UNPACKED EQUIPMENT

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Discrepancy in Shipment Report.

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750.

Check the equipment to ensure that required Modification Work Orders have been applied to accordance with DA PAM 310-1.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-6. GENERAL

Organizational maintenance PMCS is the required inspection and care of the equipment necessary to keep it in good operating condition. Routine checks like equipment inventory, cleaning, dusting, washing, checking for frayed cables, storing items not in use, covering unused receptacles and checking for loose nuts and bolts are not listed in your PMCS. They are things you should do anytime you see they must be done. If you find a routine check like one of these listed in your PMCS, it was listed because operators reported problems with this item.

3-7. PMCS PROCEDURES

PMCS procedures are done at fixed intervals for the following purposes:

- Make sure that the equipment is operable
- Prevent equipment problems in future operation
- Identify and resolve minor problems in the equipment before they become major problems
- Scheduled cleaning of the equipment

3-8. ITEM NUMBER COLUMN

The checks/services in the PMCS table are numbered in order of performance. Use this ITEM number when filling out DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

3-9. ITEM TO BE INSPECTED COLUMN

The items listed in this column are based on the major components or the equipment and use common names of these components.

3-10. PROCEDURE COLUMN

This column gives you the check or service procedure which you must perform on the item.

3-11. EQUIPMENT WILL BE REPORTED NOT READY/AVAILABLE IF COLUMN

This column tells you under what conditions the equipment will be unable to perform its primary mission. When you notice this condition during PMCS you must report it on the proper form and tell your supervisor.

Table 3-1. Organizational Preventive Maintenance Checks and Services

Legend

M - Monthly S - Semiannualy

ITEM NO.	INTERVAL		ITEM TO BE INSPECTED	PROCEDURES	EQUIPMENT Reported Not Ready/ Available If:
	M	S			
1	•		Console Printer Operation	Check operation of console printer as follows: 1. Power up console printer. 2. Run self-test. 3. Power down console printer.	Self-test does not run or shows faulty operation.
2		•	Console	Inspect and clean interior: 1. Power OFF.Pull ac power plug from outlet. 2. Remove paper. 3. Remove cover. 4. Remove ribbon cartridge. 5. Using vacuum cleaner with soft bristle brush, vacuum interior and head assembly. 6. Replace ribbon cartridge. 7. Replace cover. 8. Install paper. 9. Push ac power plug into outlet.	

Table 3-1. Organizational Preventive Maintenance Checks and Services -- Continued

- ITEM NO.	INTERVAL M	INTERVAL S	ITEM TO BE INSPECTED	PROCEDURES	EQUIPMENT Reported Not Ready/ Available If:
3		•	Fan Blades	Clean fan blades as follows: 1. Remove top cover. 2. Vacuum both sides of fan blades using soft-bristled, brush type nozzle. **WARNING** **Isopropyl alcohol is flammable. Do not use near heat or open flame.** 3. Wipe residue from fan blades with a clean, lint-free cloth dampened with isopropyl alcohol. If run or drip occurs, wipe up immediately. 4. Replace top cover.	Fan blade bent, broken or missing.

CHAPTER 4
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Index of Maintenance Procedures

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to TM 11-7010-203-23P for a complete listing and description of special tools, TMDE and support equipment required by direct support maintenance. Also refer to appendix B for a list of tools pertaining to the console printer.

4-3. SPARES AND REPAIR PARTS

Refer to TM 11-7010-203-23P for a complete listing and description of spares and repair parts required for direct support maintenance of this equipment.

Section II. TROUBLESHOOTING

4-4. GENERAL

The most effective way to troubleshoot a fault in this equipment is to follow a routine which guides you through the five phases of troubleshooting (fig. 4-1). By following this routine you assure accurate use of fault isolation and fix procedures. You also improve your troubleshooting skills.

4-5. TROUBLESHOOTING PHASES

Each of the five phases in this routine is designed to accomplish a specific goal.

a. Fault Discovery. Usually, the operators or supervisor will notice faulty performance first. They must report the fault on the proper form so you will have the facts you need for the next phase.

b. Failure Confirmation. Based on the facts provided, you must confirm the failure and define the symptom. The symptom is the first clue you will use in the troubleshooting process.

c. Troubleshooting Entry. Using the symptom defined during phase two, find the troubleshooting flow chart which will help you isolate the fault in the equipment. The checkout and symptom index chart (chart-OO) will help you do this.

d. Trouble Isolation. Follow the step-by-step procedures in the flow chart to isolate and correct the cause of the equipment failure.

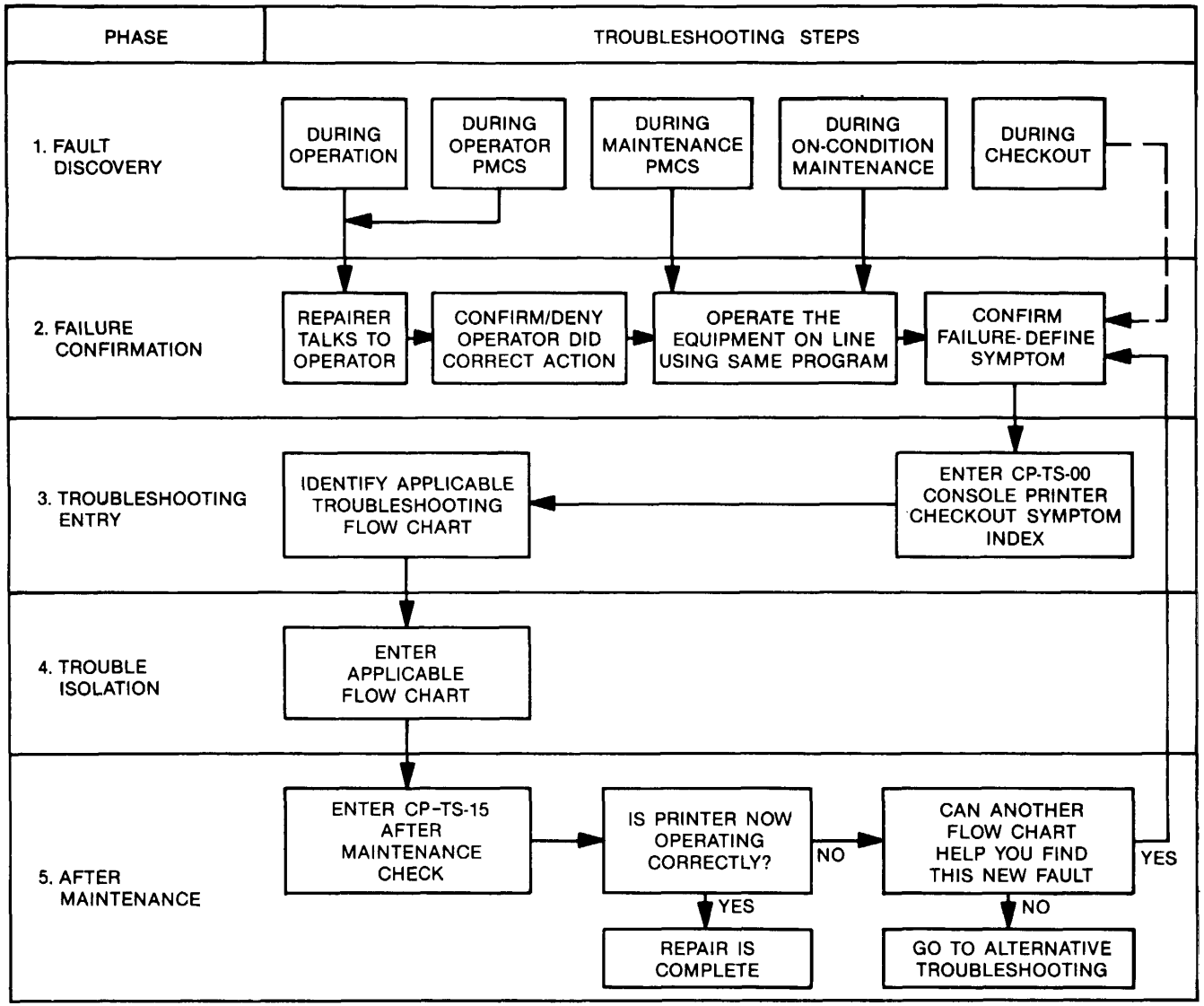


Figure 4-1. Troubleshooting Phases

e. After Maintenance. When you have made the fix recommended in the trouble-shooting procedure, you must check your work. Use the chart titled After Maintenance Check. It tells you how to test your repair and make sure the equipment now works as it should.

4-6. ALTERNATIVE TROUBLESHOOTING TECHNIQUES

When a failure causes a symptom which is not covered in the symptom index or not corrected by the troubleshooting procedure in the flow chart, you must try alternative techniques.

a. Understand Principles of Operation. Sometimes the symptom may have no specific procedure given to troubleshoot it. When this happens, remember that the equipment always operates the same way. By comparing the faulty operation with expected or normal operation you may find the cause of the failure and be able to fix it.

b. Check the Circuits. All electronic equipment uses circuits to route power through the components. Any break in continuity will cause some-type of failure. By running continuity checks on suspect circuits you may find the cause of the failure. Use the schematic diagrams in appendix D to check the circuits in this equipment.

c. Check Past Maintenance Records. If the unusual failure occurred before, it should appear in the maintenance records for the equipment. The records should also tell you how the failure was corrected. Use the same fix this time.

d. Trial and Error Repair. Usually trial and error repairs should be avoided. They are costly and can induce additional symptoms. However, when your experience with the equipment leads you to suspect a definite cause, you should try the repair as a last resort before shipping the equipment to depot for maintenance.

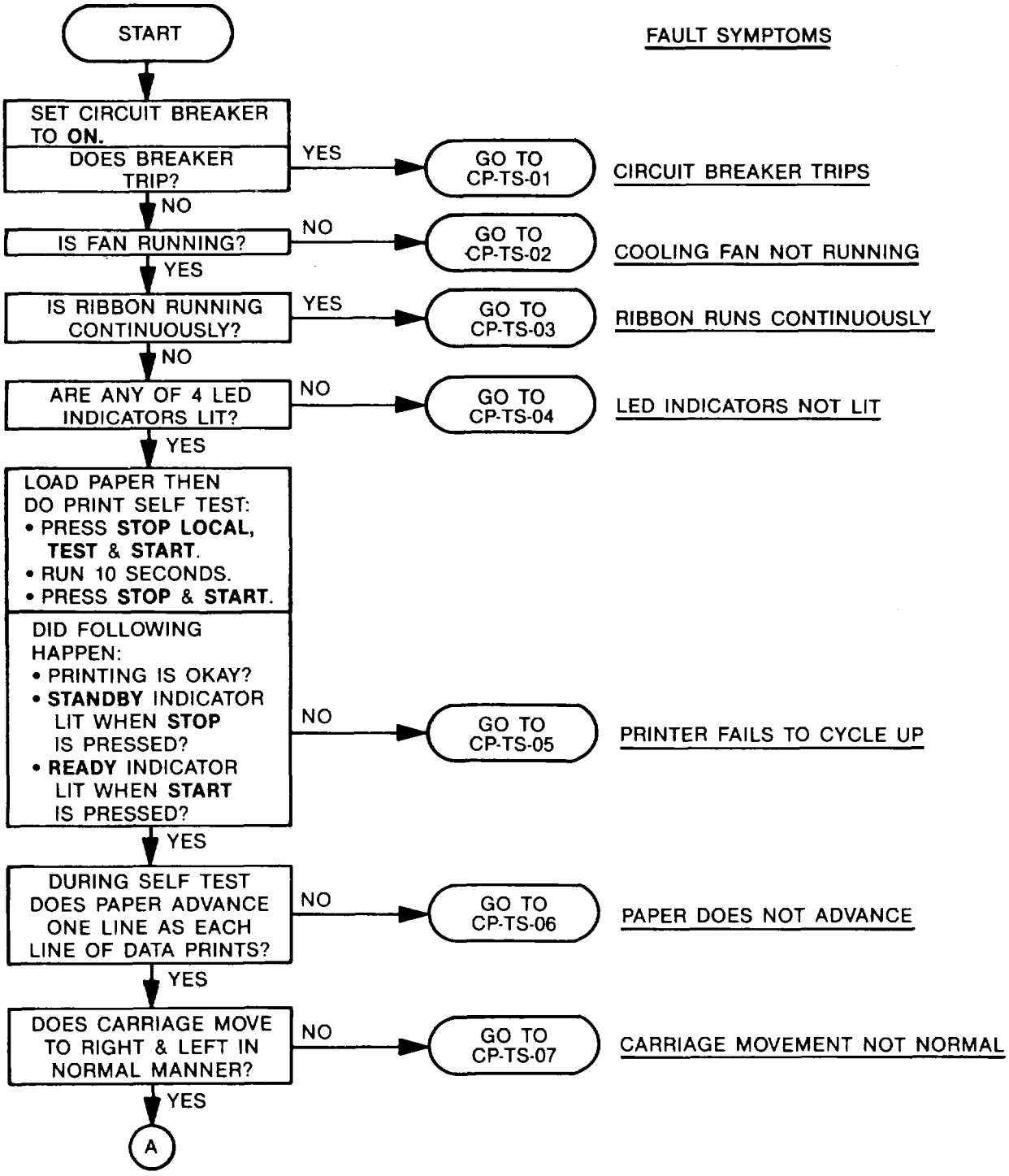
4-7. TROUBLESHOOTING PROCEDURES

The troubleshooting procedures are arranged as flow charts. The charts consist of background information, specific instructions and decision points. Symbols (table 4-1) are used to organize the charts and guide you through a step-by-step trouble isolation procedure for each known failure symptom.

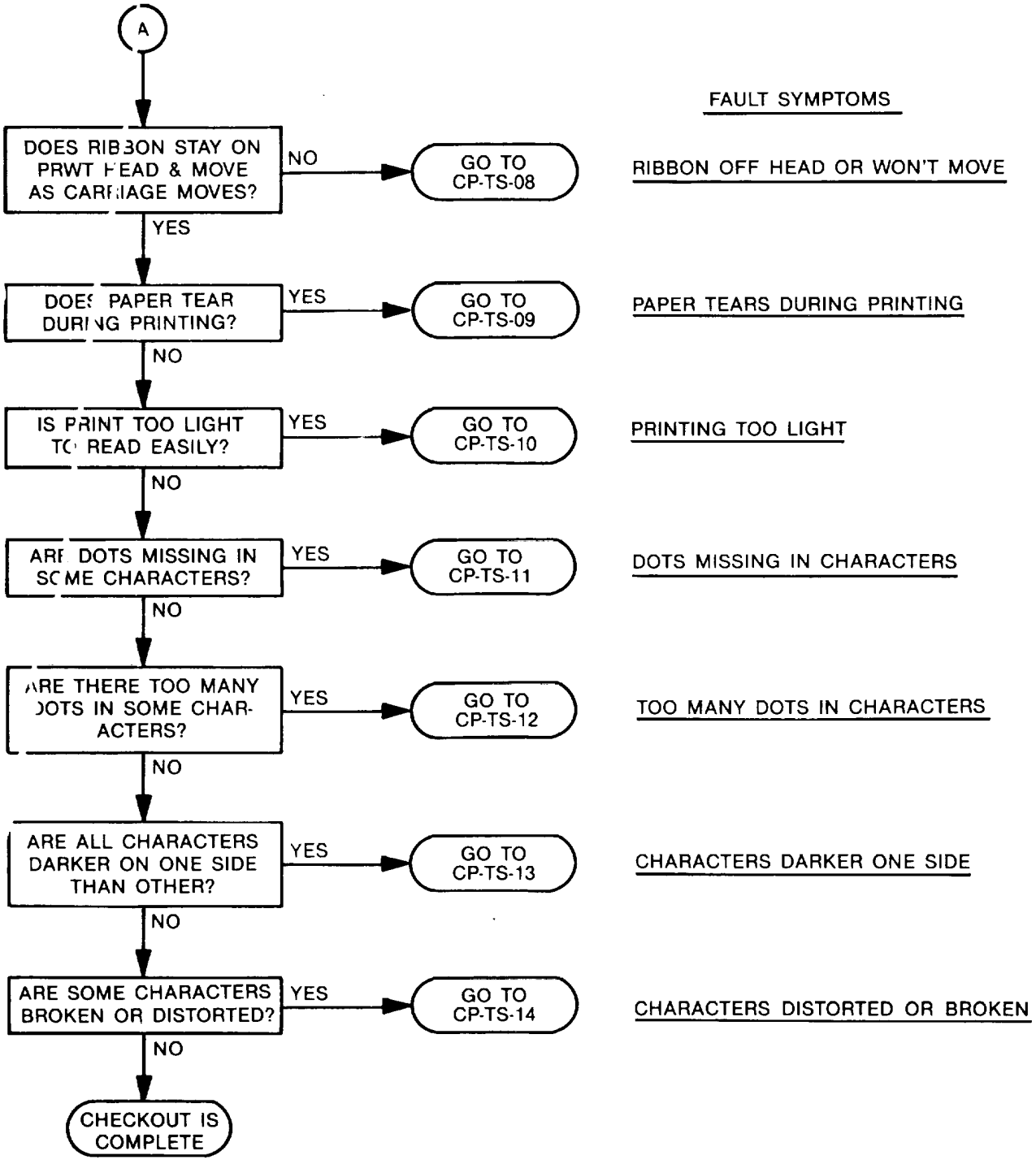
Table 4-1. Flow Chart Symbols

SYMBOL	MEANING
START	This is a STARTING POINT symbol. This is where you enter a troubleshooting flow chart.
NOTE	This is a NOTE symbol. It contains information you need to do your work, but which is not a procedural step.
CAUTION	This is a CAUTION symbol. It alerts you to the possible danger of breaking equipment in the steps that follow.
WARNING	This is a WARNING symbol. It alerts you to possible danger in the steps that follow.
INFORMATION	This is an INFORMATION symbol. It contains information that helps you make a test or understand the troubleshooting process.
TEST QUESTION NO	This is a TEST/DECISION SYMBOL. It contains a test you must do and a question you must answer. If the results of a test tell you the answer is YES, you will follow the YES arrow to the next symbol. If your answer is NO, you will follow the NO arrow.
YES A / A	These are CONNECTING POINT symbols. They are used in pairs. If the arrow points to the circle, it is the point where you leave a branch of the flow chart. If the arrow points away from the circle, it is the point where you go back into the flow chart. For example, you would go from (A) on one page to (A) on the next page.
INSTALL NEW ITEM (PARA 3-X)	This is a CORRECTIVE ACTION symbol. It tells you what to do to correct the problem. It will also refer you to the paragraph that contains the needed repair or adjustment procedure.
GO TO XX-XX-XX	This is a GO TO symbol. It tells you to go to another flow chart. The X's in the symbol at the left stand for a chart code.
GO TO TM FOR SYSTEM	Other forms for GO TO symbol: This symbol tells you to go to the system Technical Manual for further troubleshooting, such as running a T&V program.
GO TO START	This symbol tells you to go back to the START point of the same flow chart.

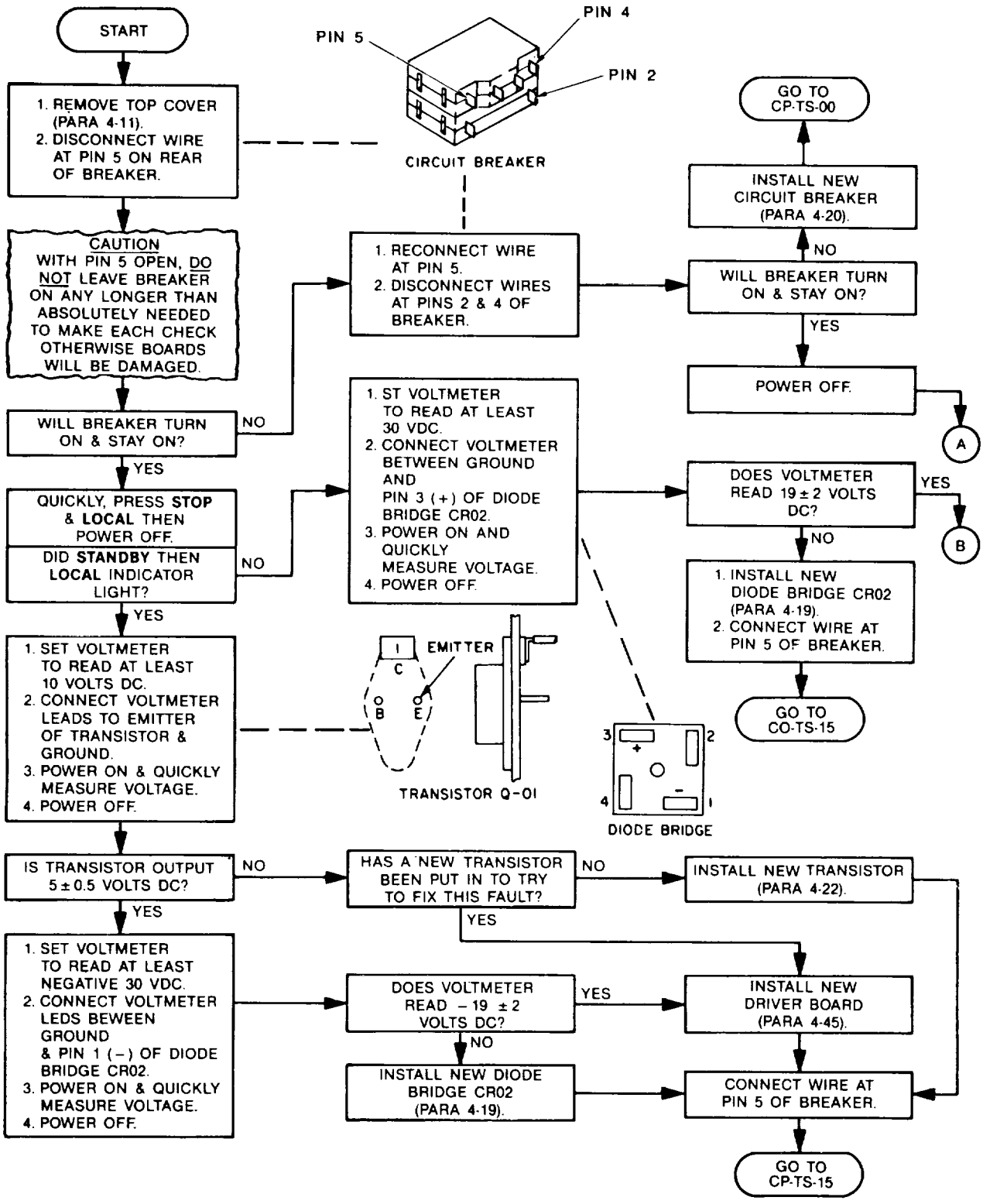
CP-TO-00	CONSOLE PRINTER CHECKOUT/SYMPTOM INDEX	1 OF 2



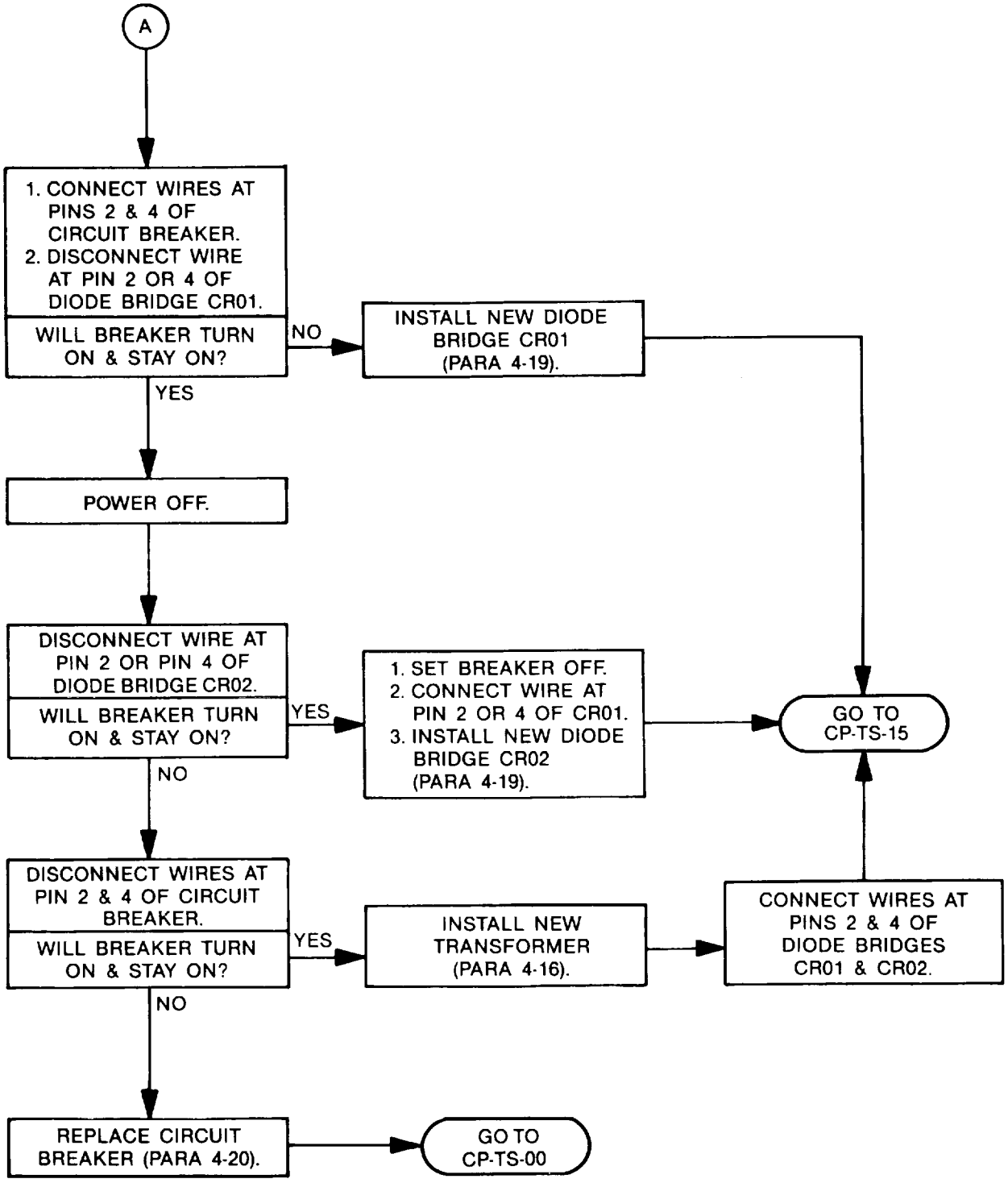
CP-TO-00	CONSOLE PRINTER CHECKOUT/SYMPTOM INDEX	2 OF 2



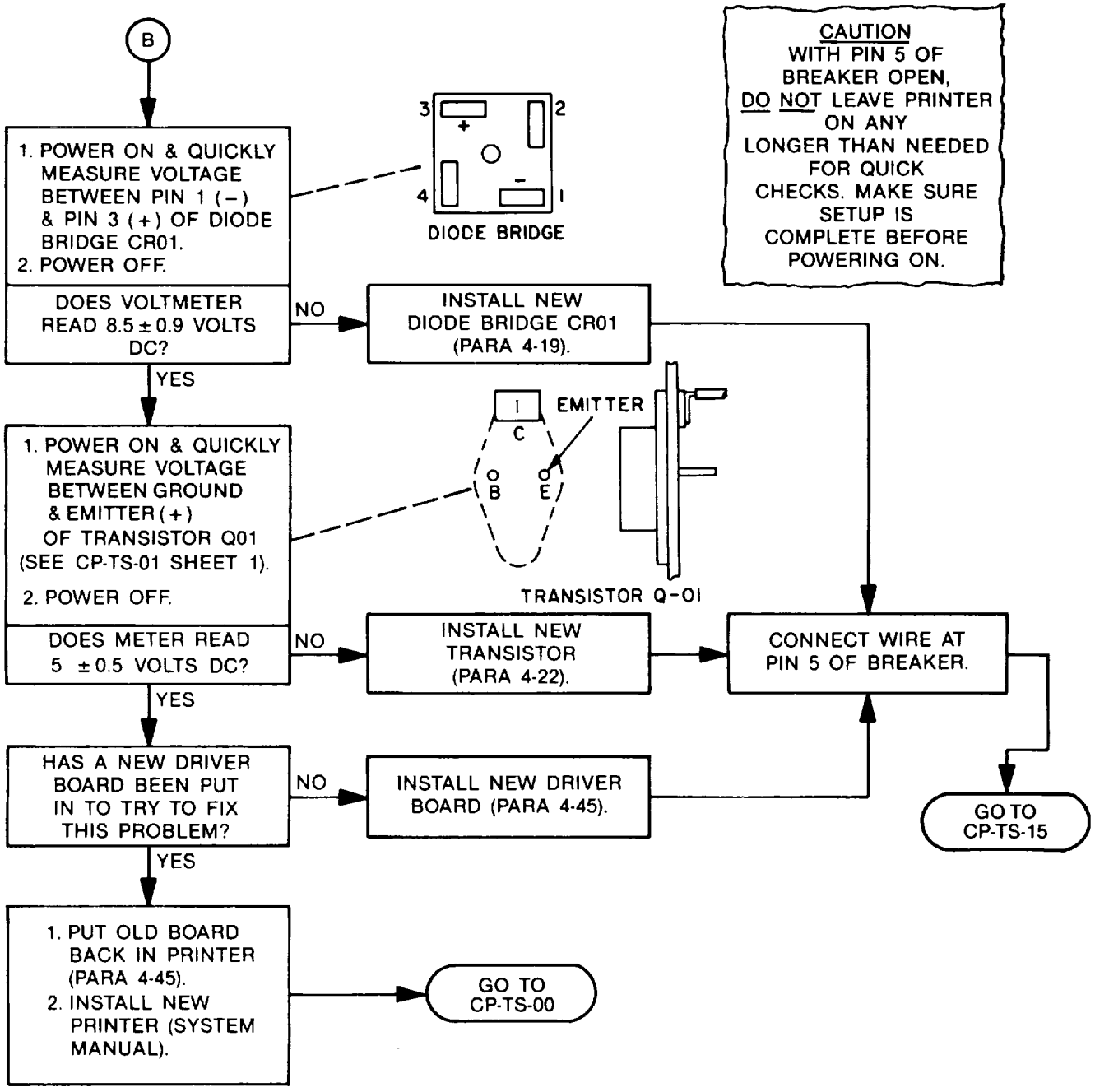
CP-TS-01	CIRCUIT BREAKER TRIPS	1 OF 3



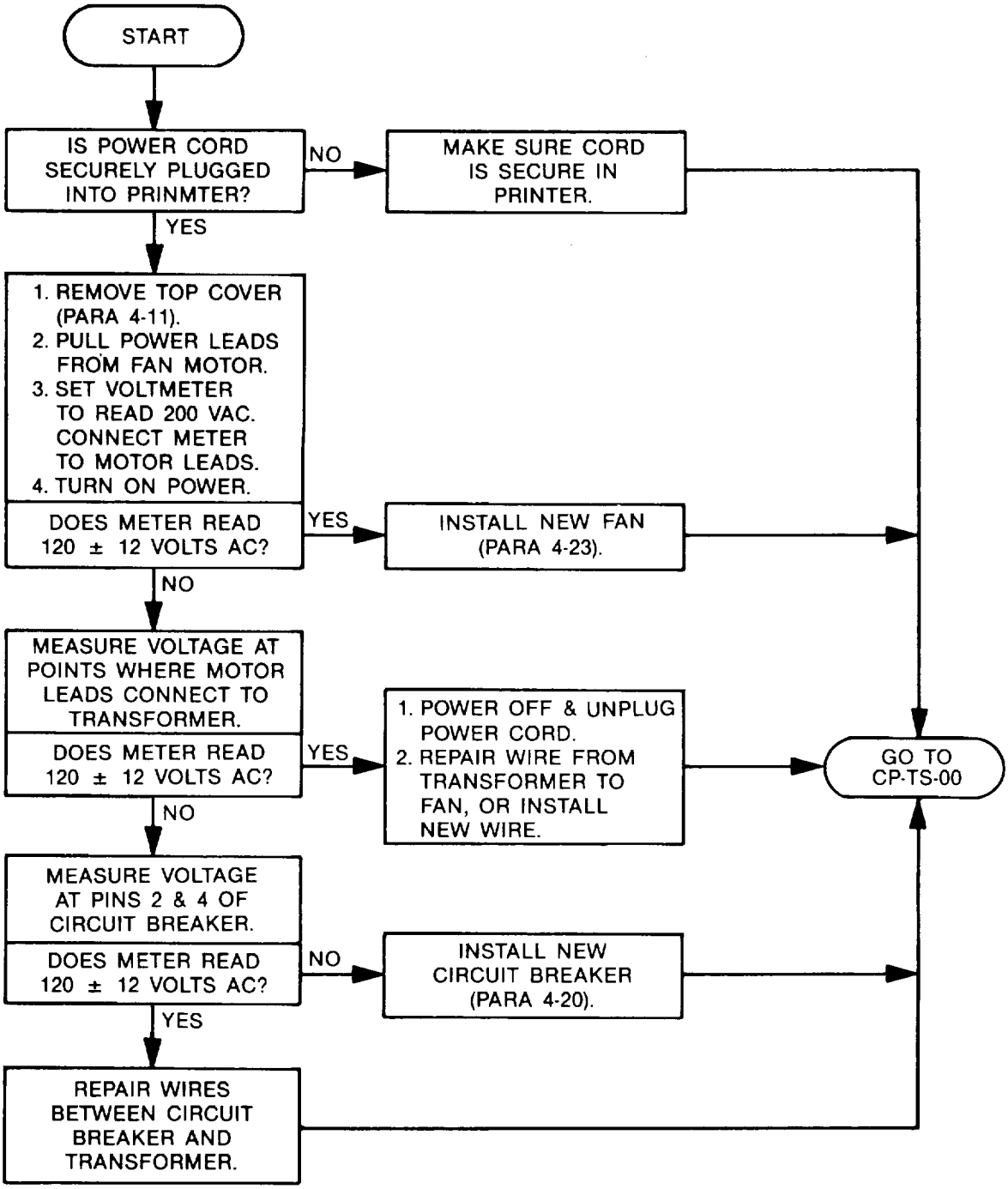
CP-TS-01	CIRCUIT BREAKER TRIPS	2 OF 3

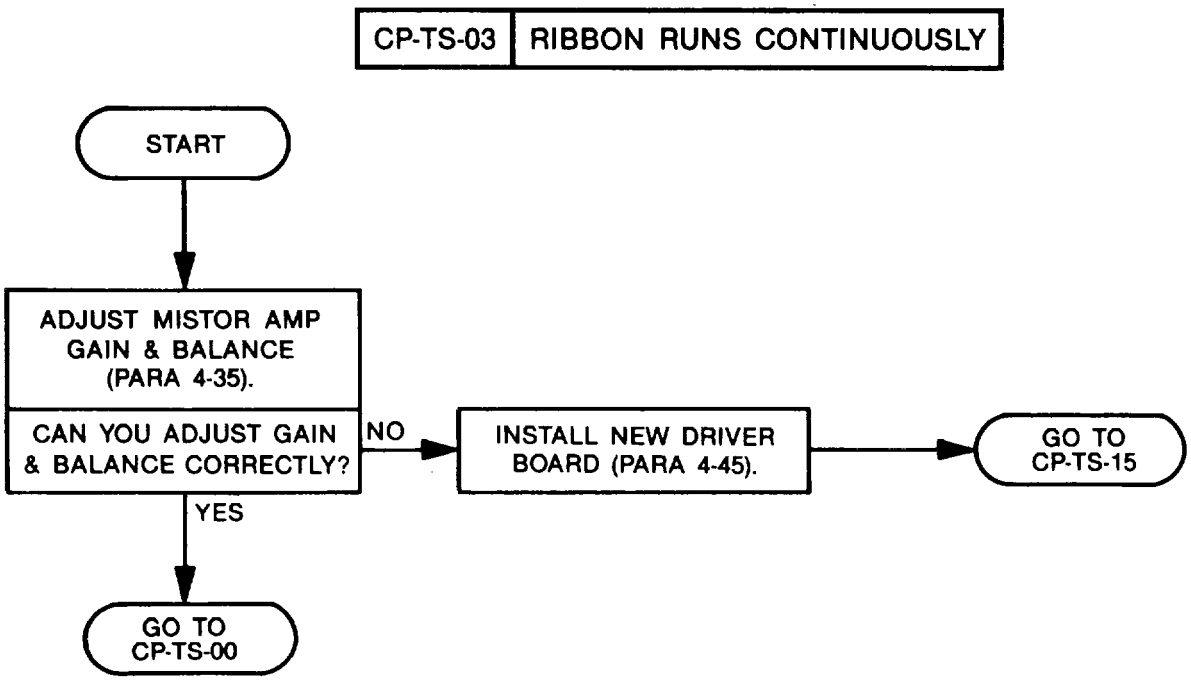


CP-TS-01	CIRCUIT BREAKER TRIPS	3 OF 3



CP-TS-02	COOLING FAN NOT RUNNING




CP-TS-03
RIBBON RUNS CONTINUOUSLY
START
ADJUST MISTOR AMP GAIN & BALANCE (PARA 4-35).
CAN YOU ADJUST GAIN & BALANCE CORRECTLY?
NO
INSTALL NEW DRIVER BOARD (PARA 4-45).
GO TO CP-TS-15
YES
GO TO CP-TS-00

CP-TS-04	LED INDICATORS NOT LIT

START

PRESS **LOCAL, STOP, START & STOP**

DID **LOCAL, READY** OR **STANDBY** INDICATOR LIGHT

YES

NO

1. EXPOSE LEADS ON ANY INDICATOR THAT DID NOT LIGHT (PARA 4.13).
2. POWER ON AND PRESS BUTTON THAT LIGHTS INDICATOR IN QUESTION.
3. SET VOLTMETER FOR 10 VDC. CHECK VOLTAGE ON LEADS

IS VOLTAGE AVAILABLE?

NO → INSTALL NEW CPU BOARD (PARA 4-46). → GO TO CP-TS-15

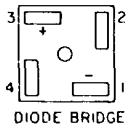
YES

INSTALL NEW LED INDICATOR (PARA 4-13).

GO TO CP-TS-00

NOTE
ON SOME PRINTERS LED INDICATORS ARE NOT REMOVABLE. IN SUCH CASES INSTALL A NEW CONTROL PANEL (PARA 4-14).

1. REMOVE TOP COVER (PARA 4-11).
2. SET VOLTMETER TO READ AT LEAST 30 VOLTS DC.
3. MEASURE VOLTAGE BETWEEN GROUND & PIN 3 (+) of DIODE BRIDGE CR02.



DIODE BRIDGE

DOES VOLTMETER READ 19 ± 2 VOLTS DC?

NO → INSTALL NEW DIODE BRIDGE CR02 (PARA 4-19).

YES

MEASURE VOLTAGE ACROSS PIN 3 (+) & PIN 1 (−). OF DIODE BRIDGE CR01.

DOES VOLTMETER READ 8.5 ± 0.9 VOLTS DC?

NO → INSTALL NEW DIODE BRIDGE CR01 (PARA 4-19). → GO TO CP-TS-15

YES

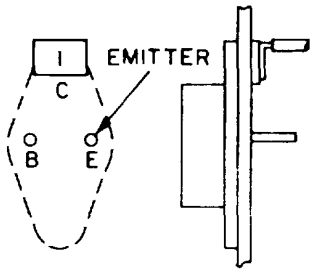
MEASURE VOLTAGE BETWEEN EMITTER (+) OF Q01 & GROUND.

DOES VOLTMETER READ 5 ± 0.5 VOLTS DC.

NO → INSTALL NEW TRANSISTOR (PARA 4-22).

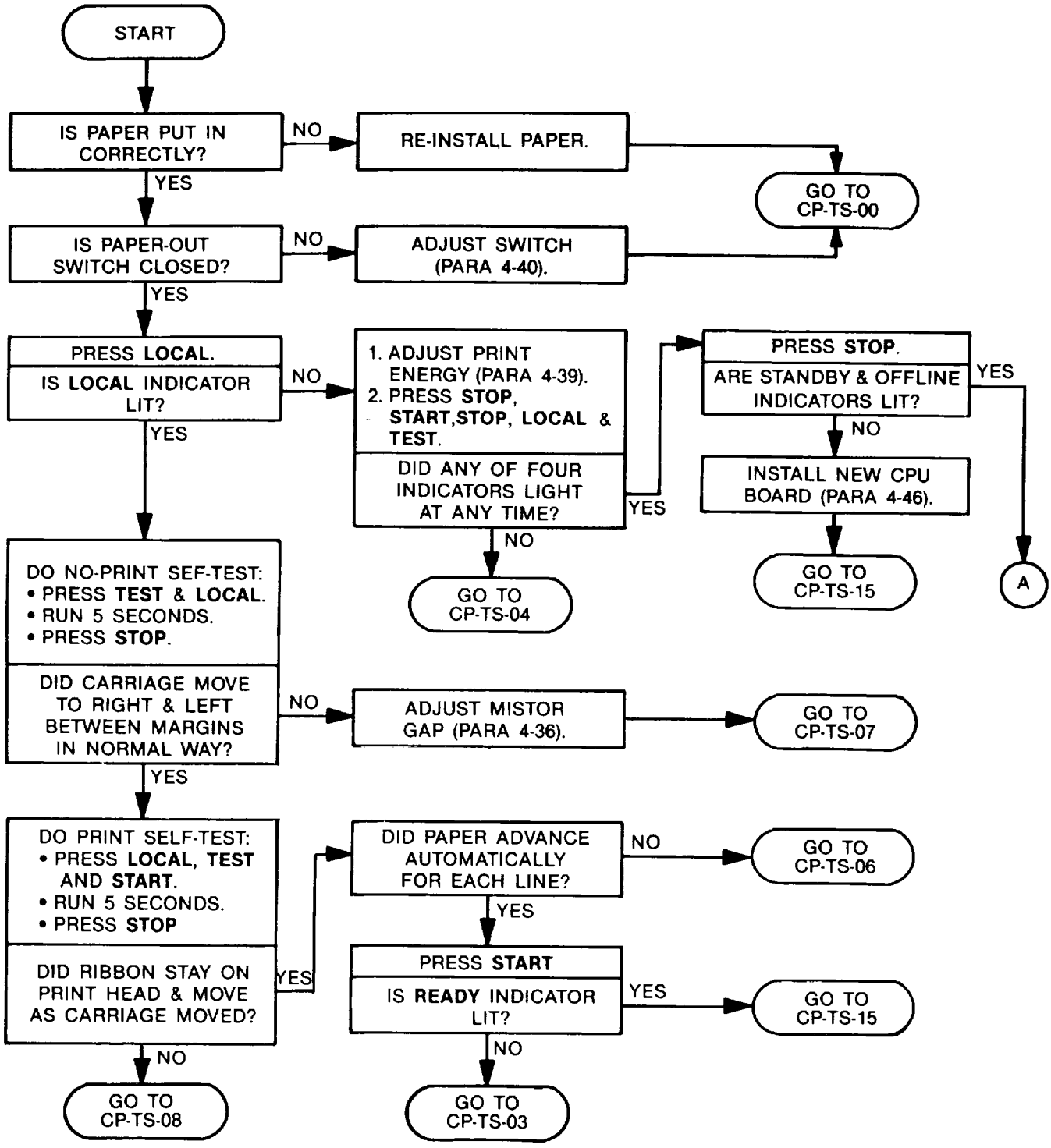
YES

INSTALL NEW DRIVER BOARD (PARA 4.45). → GO TO CP-TS-15

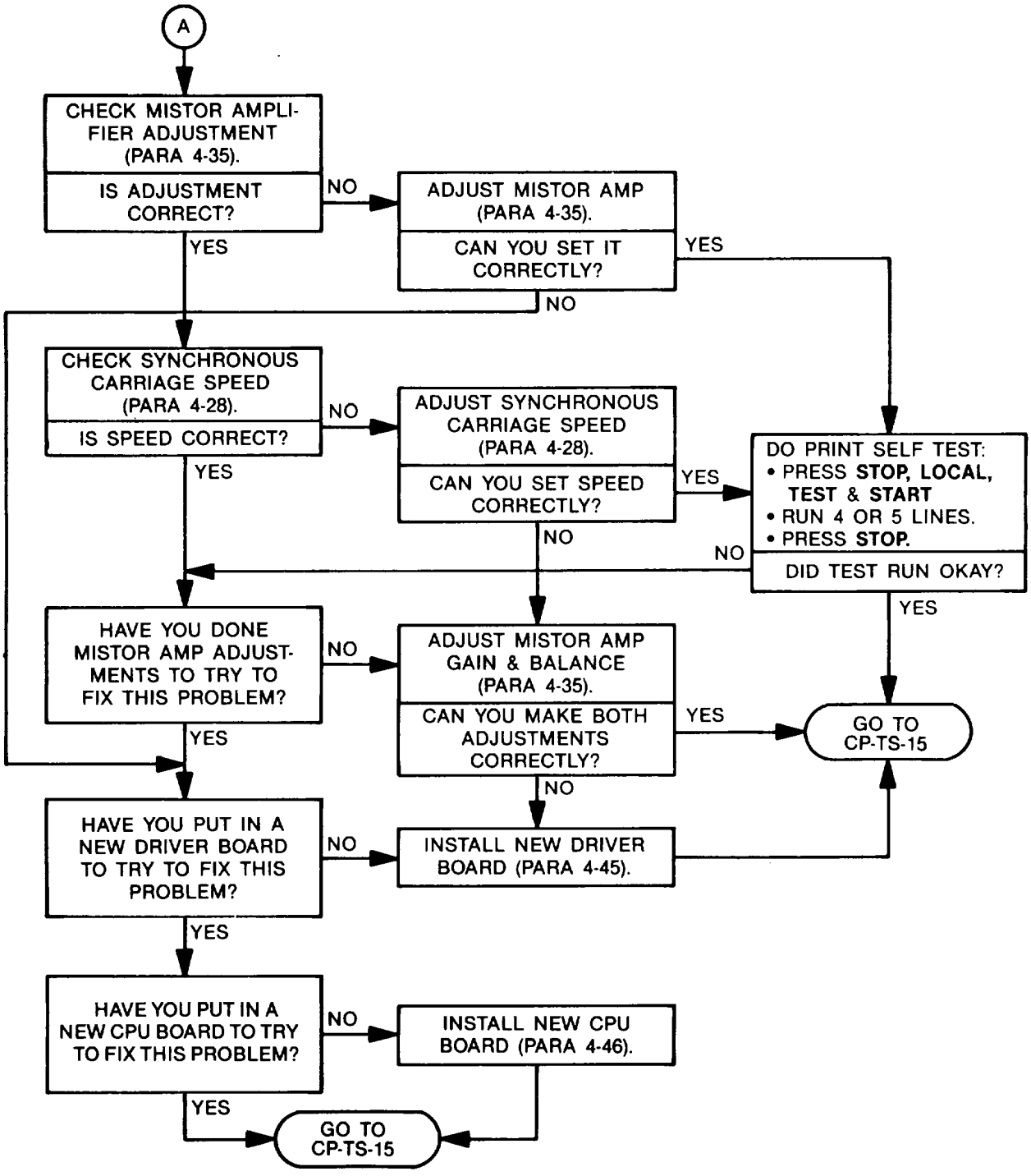


TRANSISTOR Q-01

CP-TS-05	PRINTER FAILS TO CYCLE UP	1 OF 2



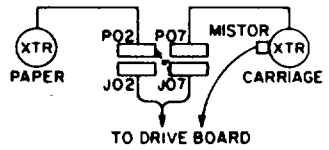
CP-TS-05	PRINTER FAILS TO CYCLE UP	2 OF 2



CP-TS-06	PAPER DOES NOT ADVANCE

START

1. SET PRINTER CIRCUIT BREAKER OFF.
2. REMOVE DRIVER & CPU BOARDS BUT DO NOT UNPLUG CABLE CONNECTORS (PARA 4-45 & 4-46).
3. DISCONNECT JO2/PO2 & JO7/PO7



4. CONNECT JO7 TO PO7 AS SHOWN.

1. SET CIRCUIT BREAKER ON.
2. MANUALLY MOVE CARRIAGE TO RIGHT MARGIN THEN TO LEFT MARGIN.
3. WATCH FOR MOTION OF PAPER STEPPER MOTOR.

DID PAPER STEPPER MOTOR MOVE AS CARRIAGE MOVED?

NO

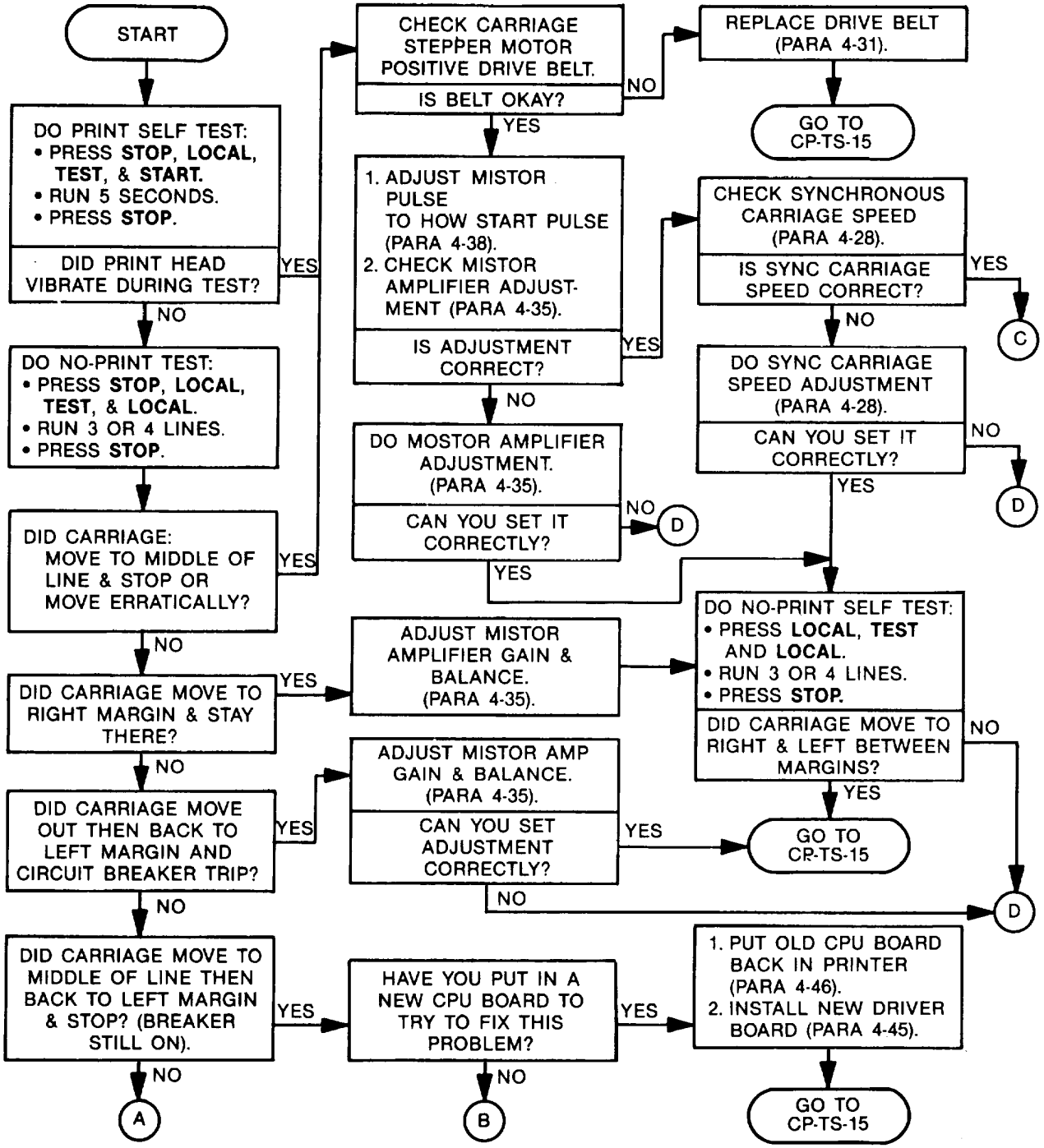
1. DISCONNECT JO7 FROM PO2.
2. PLUG IN JO2/PO2 AND JO7/PO7.
3. PUT DRIVER & CPU BOARDS BACK IN (PARA 4-45 & 4-46).
4. INSTALL NEW PAPER STEPPER MOTOR. (PARA 4-33).

YES

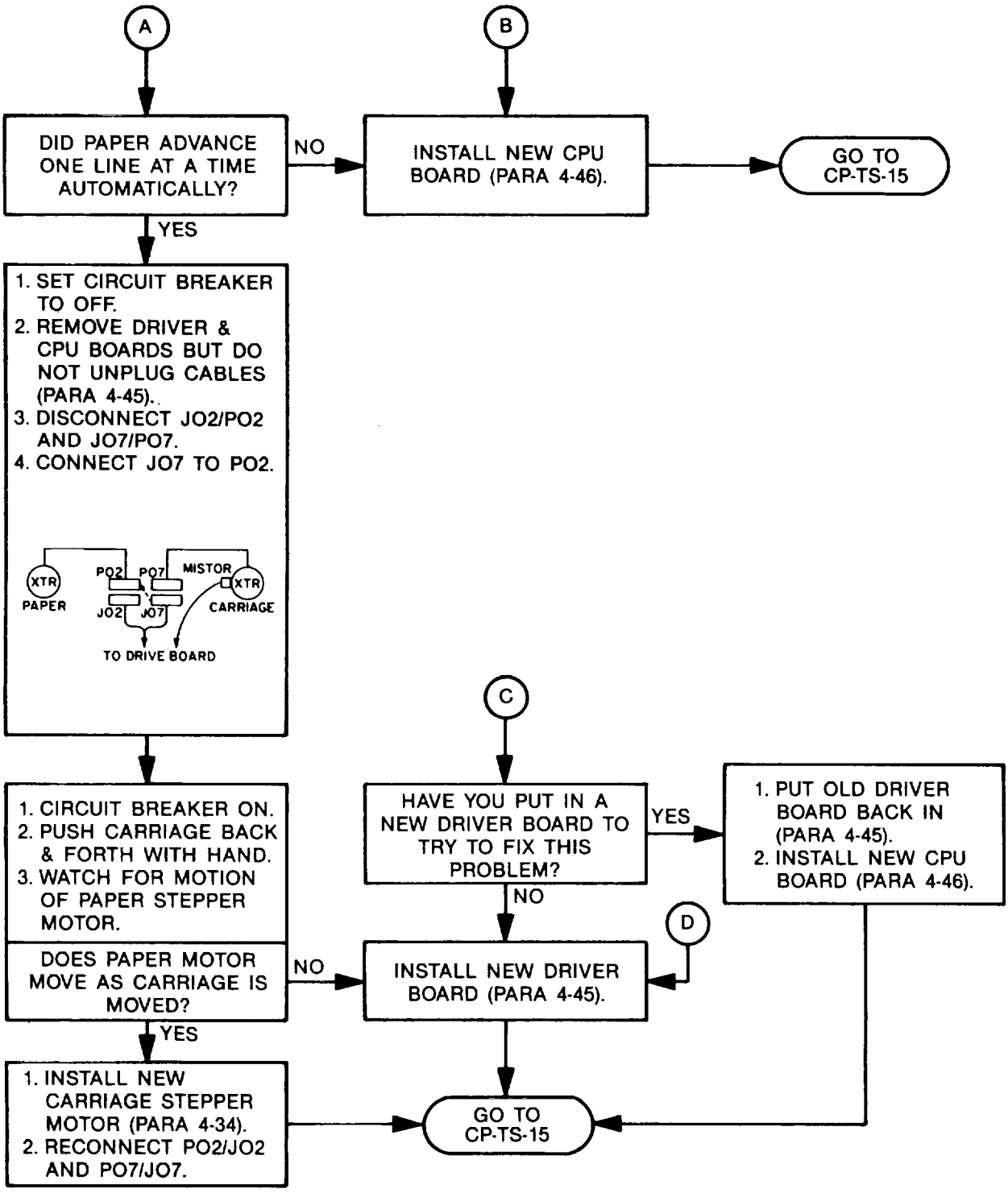
1. DISCONNECT JO7/PO2.
2. INSTALL NEW DRIVER BOARD (PARA 4-45).

GO TO CP-TS-15

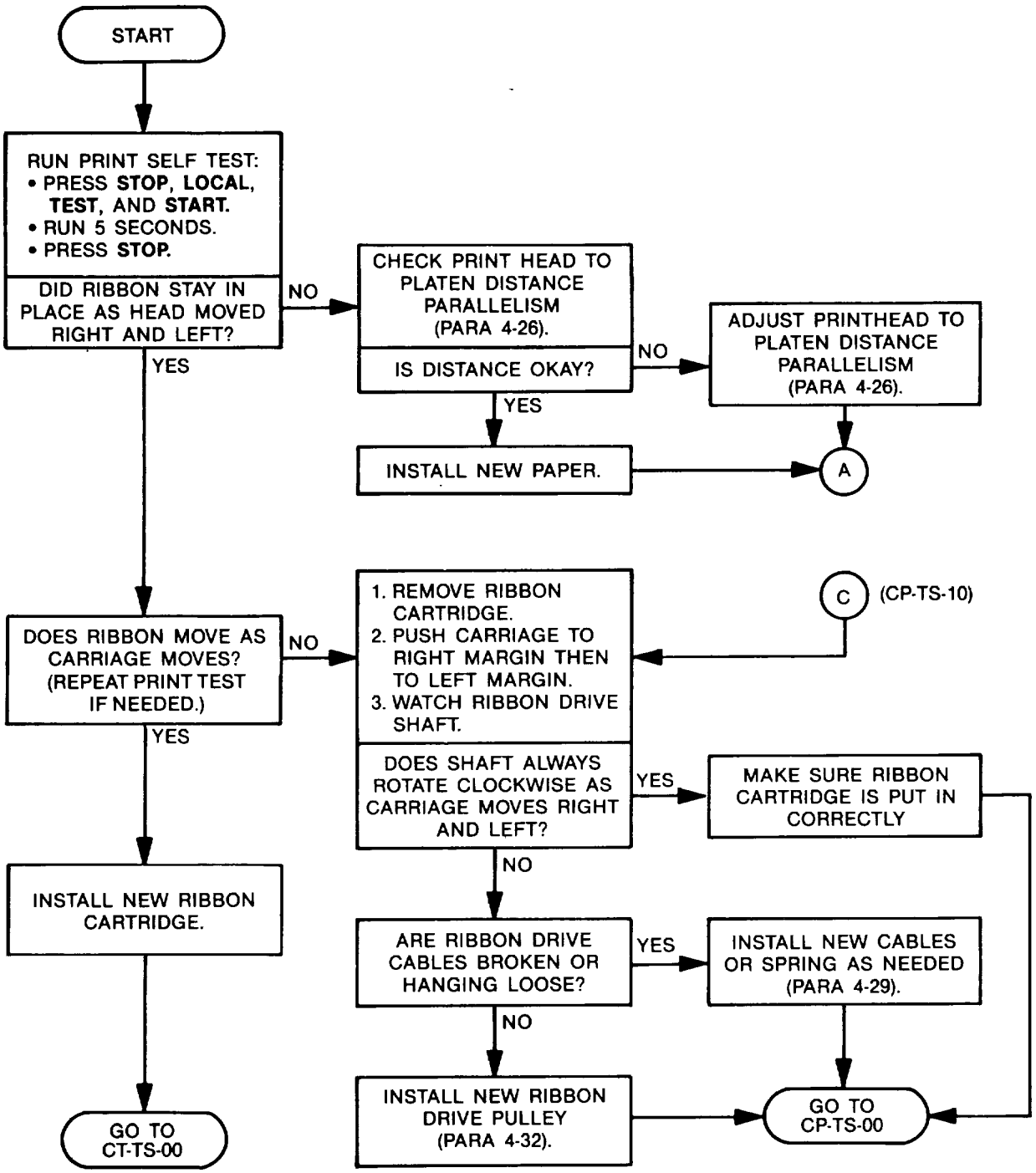
CP-TS-07	CARRIAGE MOVEMENT NOT NORMAL	1 OF 2



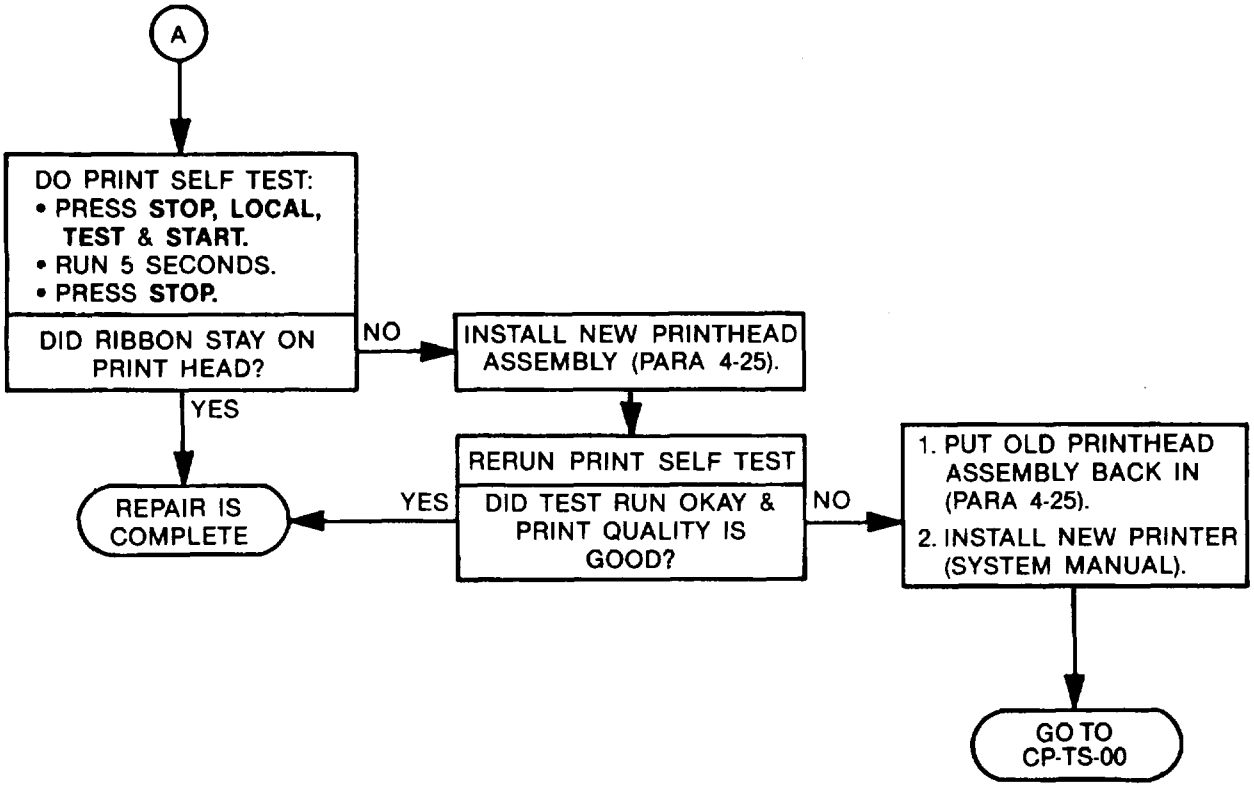
CP-TS-07	CARRIAGE MOVEMENT NOT NORMAL	2 OF 2

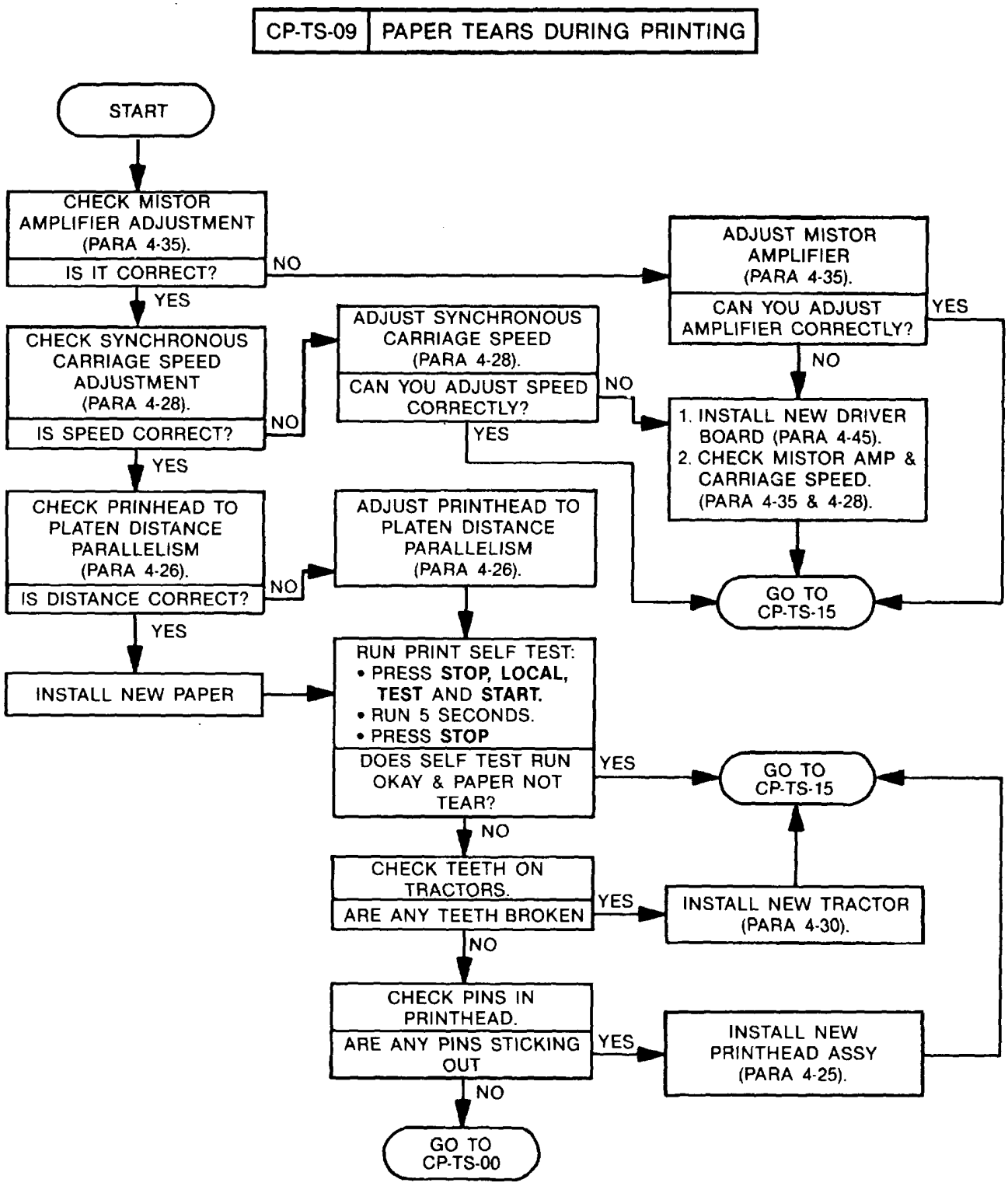


CP-TS-08	RIBBON OFF HEAD OR WON'T MOVE	1 OF 2

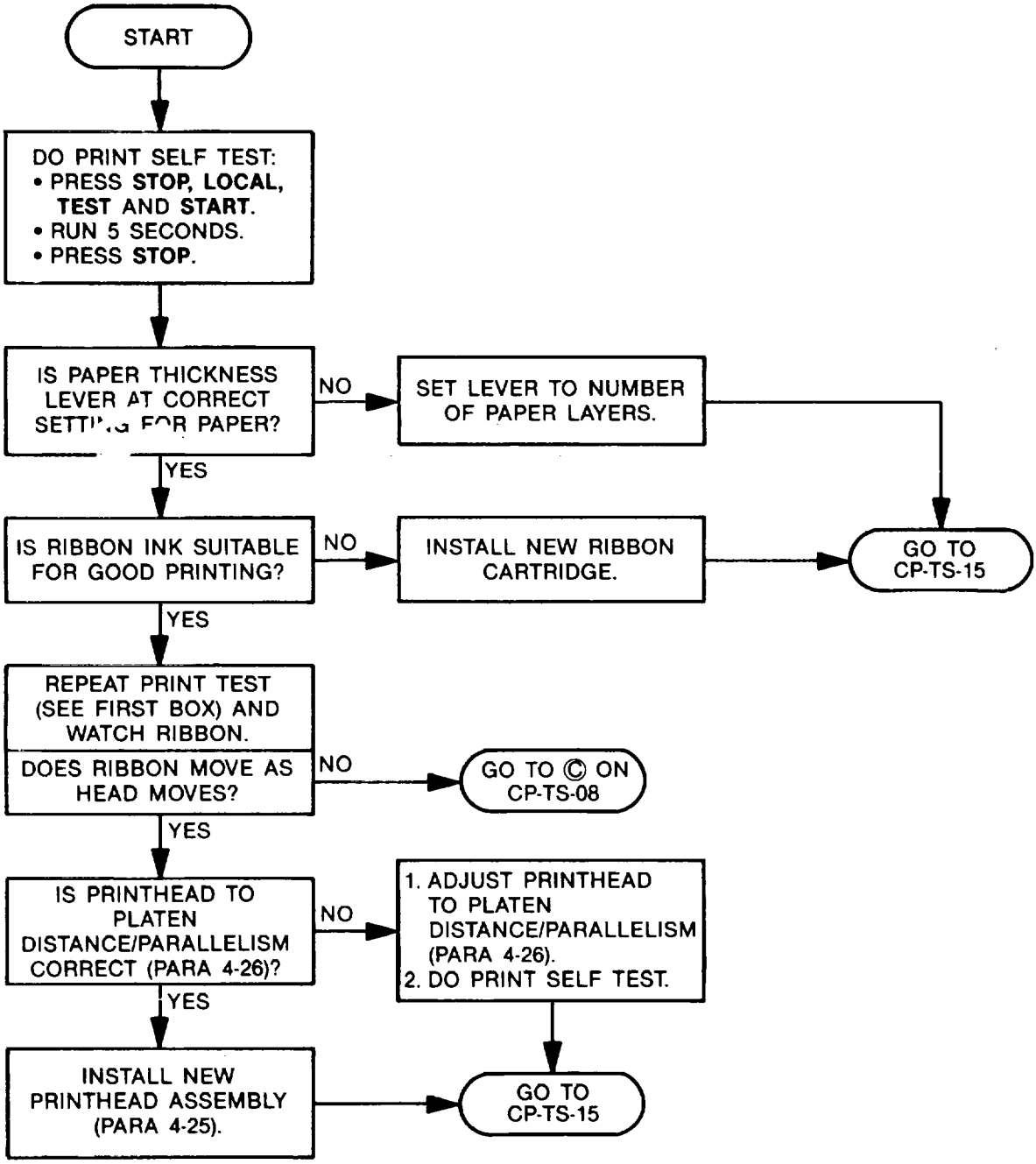


CP-TS-08	RIBBON OFF HEAD OR WON'T MOVE	2 OF 2

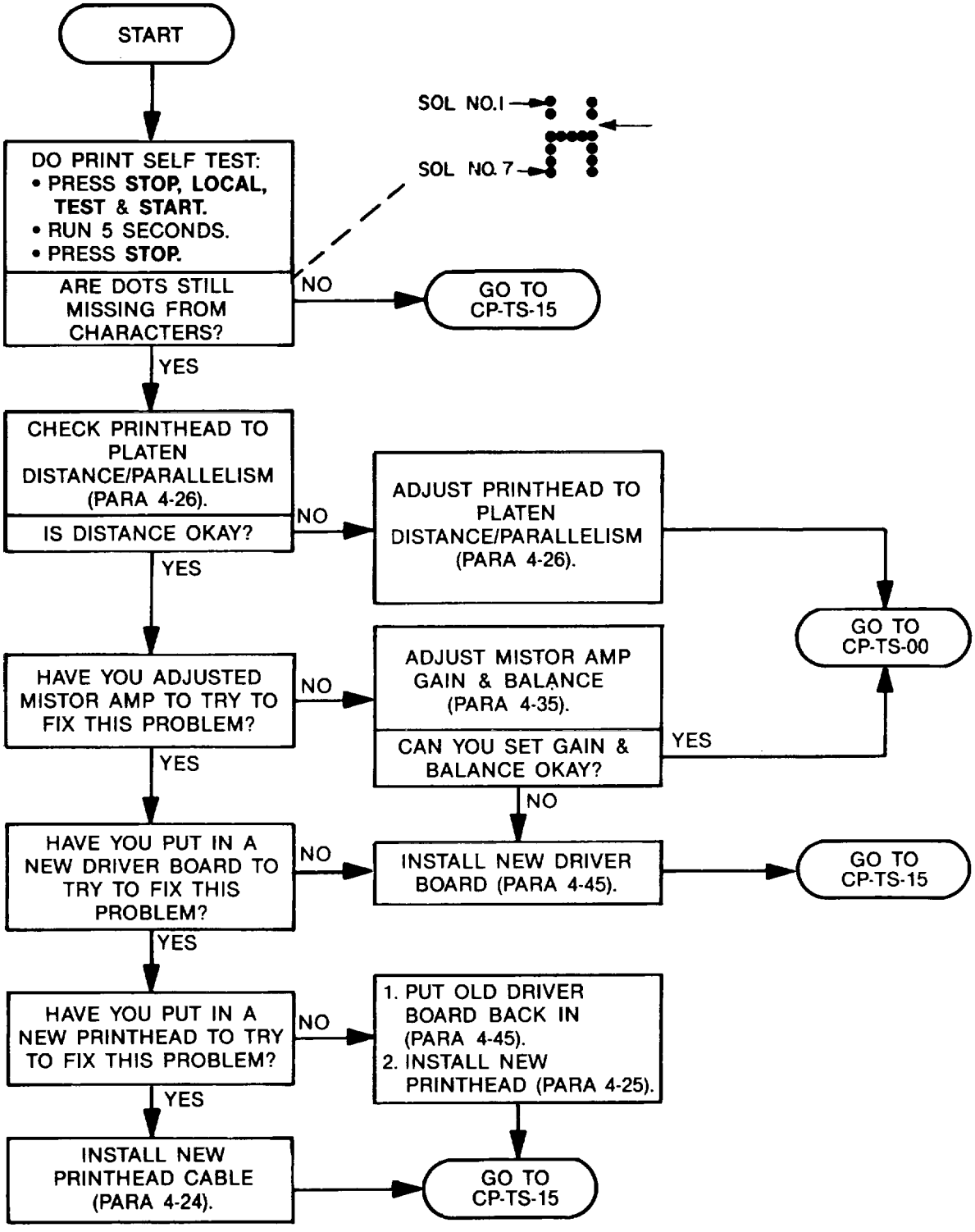



CP-TS-09
PAPER TEARS DURING PRINTING
START
CHECK MISTOR AMPLIFIER ADJUSTMENT (PARA 4-35).
IS IT CORRECT?
NO
YES
ADJUST MISTOR AMPLIFIER (PARA 4-35).
CAN YOU ADJUST AMPLIFIER CORRECTLY?
YES
NO
CHECK SYNCHRONOUS CARRIAGE SPEED ADJUSTMENT (PARA 4-28).
IS SPEED CORRECT?
NO
YES
ADJUST SYNCHRONOUS CARRIAGE SPEED (PARA 4-28).
CAN YOU ADJUST SPEED CORRECTLY?
NO
YES
1. INSTALL NEW DRIVER BOARD (PARA 4-45).
2. CHECK MISTOR AMP & CARRIAGE SPEED. (PARA 4-35 & 4-28).
CHECK PRINHEAD TO PLATEN DISTANCE PARALLELISM (PARA 4-26).
IS DISTANCE CORRECT?
NO
YES
ADJUST PRINTHEAD TO PLATEN DISTANCE PARALLELISM (PARA 4-26).
GO TO CP-TS-15
INSTALL NEW PAPER
RUN PRINT SELF TEST:
• PRESS STOP, LOCAL, TEST AND START.
• RUN 5 SECONDS.
• PRESS STOP
DOES SELF TEST RUN OKAY & PAPER NOT TEAR?
YES
GO TO CP-TS-15
NO
CHECK TEETH ON TRACTORS.
ARE ANY TEETH BROKEN
YES
INSTALL NEW TRACTOR (PARA 4-30).
NO
CHECK PINS IN PRINTHEAD.
ARE ANY PINS STICKING OUT
YES
INSTALL NEW PRINTHEAD ASSY (PARA 4-25).
NO
GO TO CP-TS-00

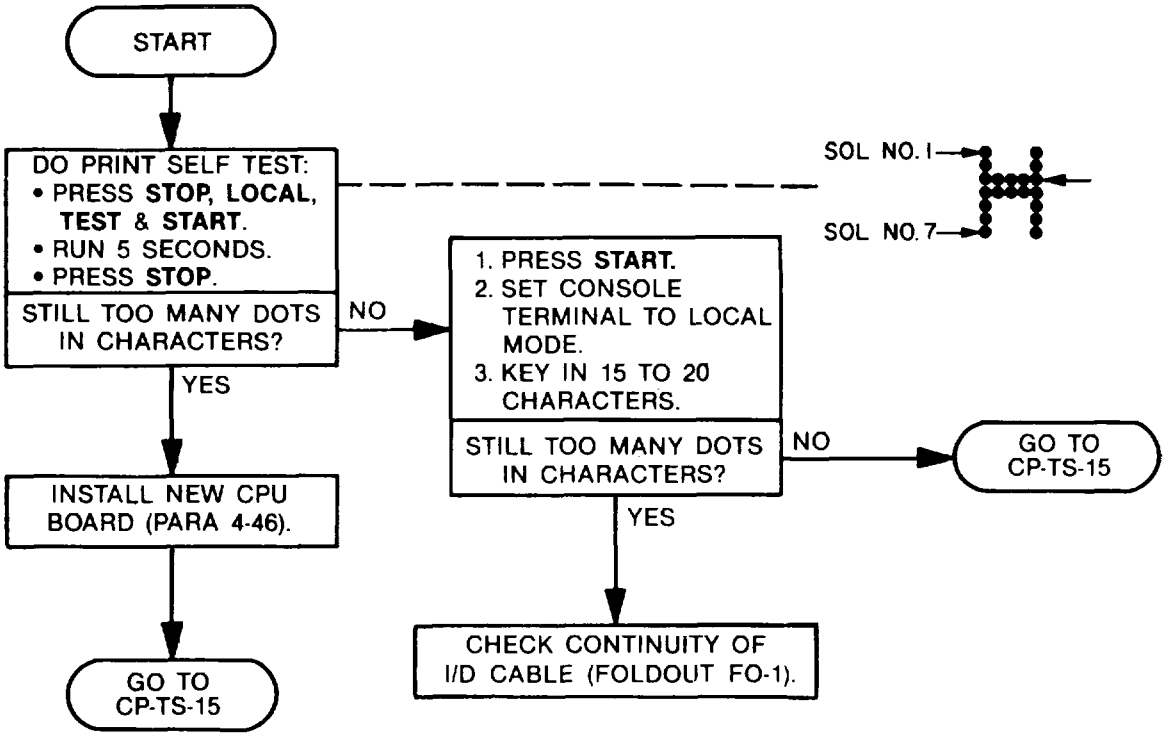
CP-TS-10	PRINTING TOO LIGHT



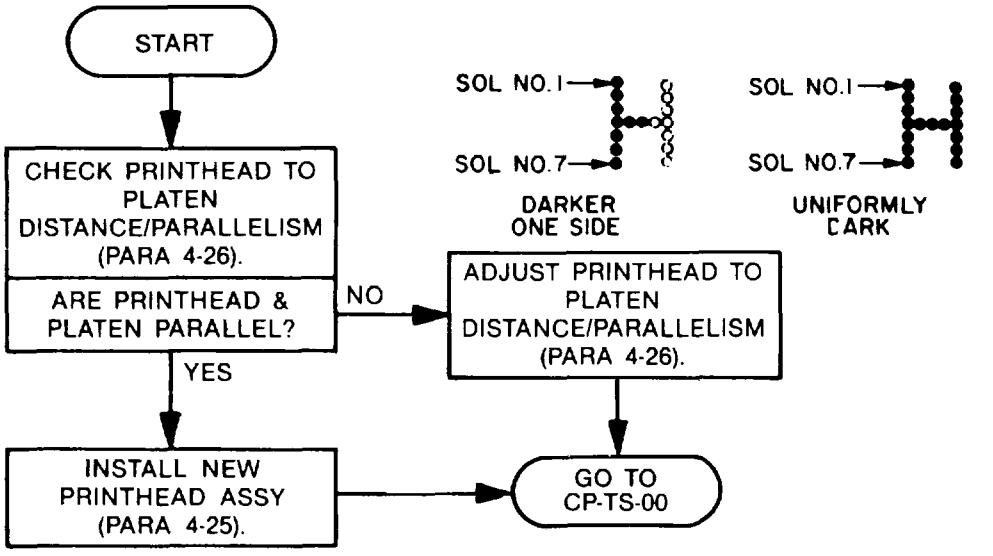
CP-TS-11	DOTS MISSING IN CHARACTERS

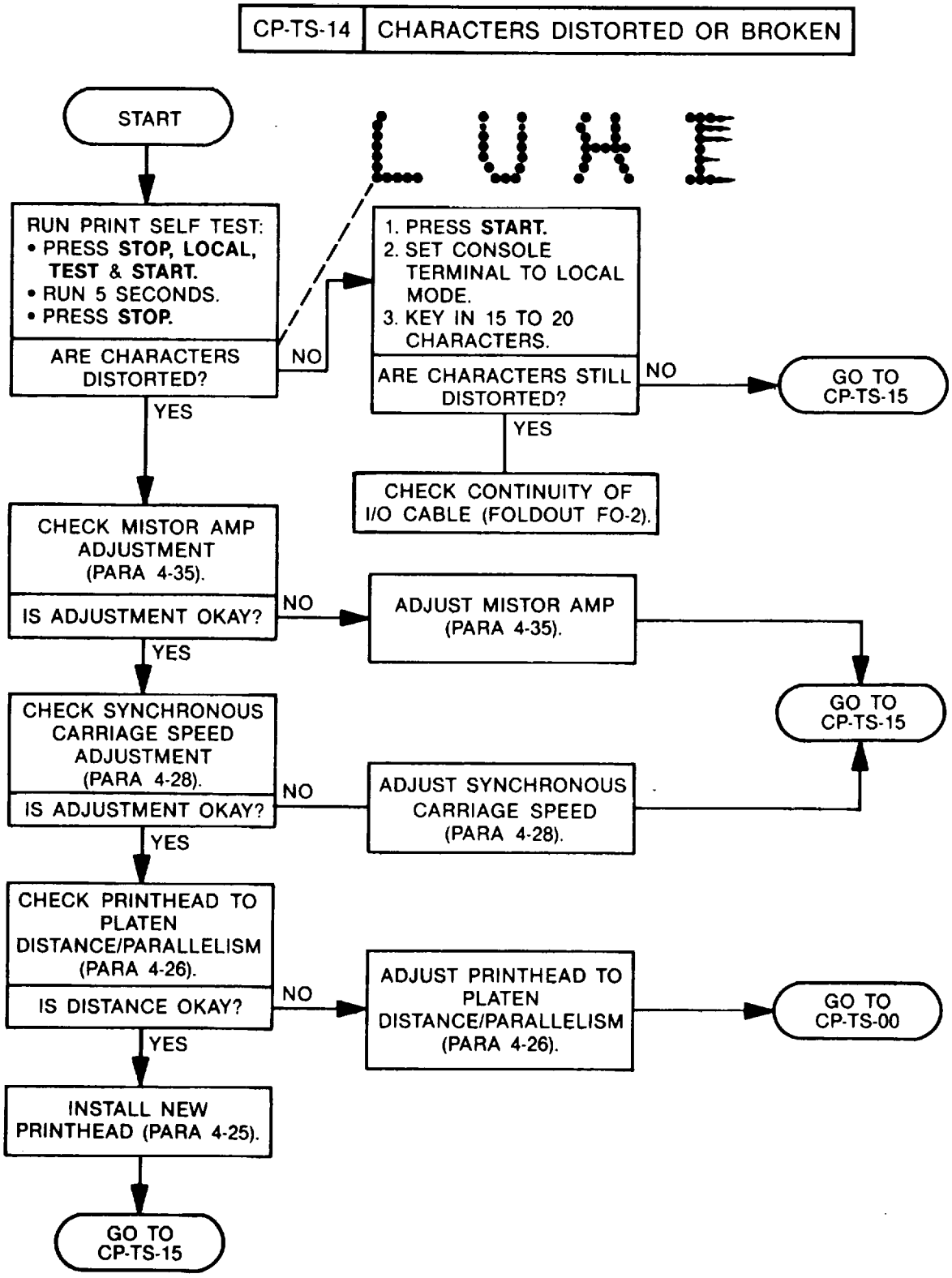


CP-TS-12 TOO MANY DOTS IN CHARACTERS

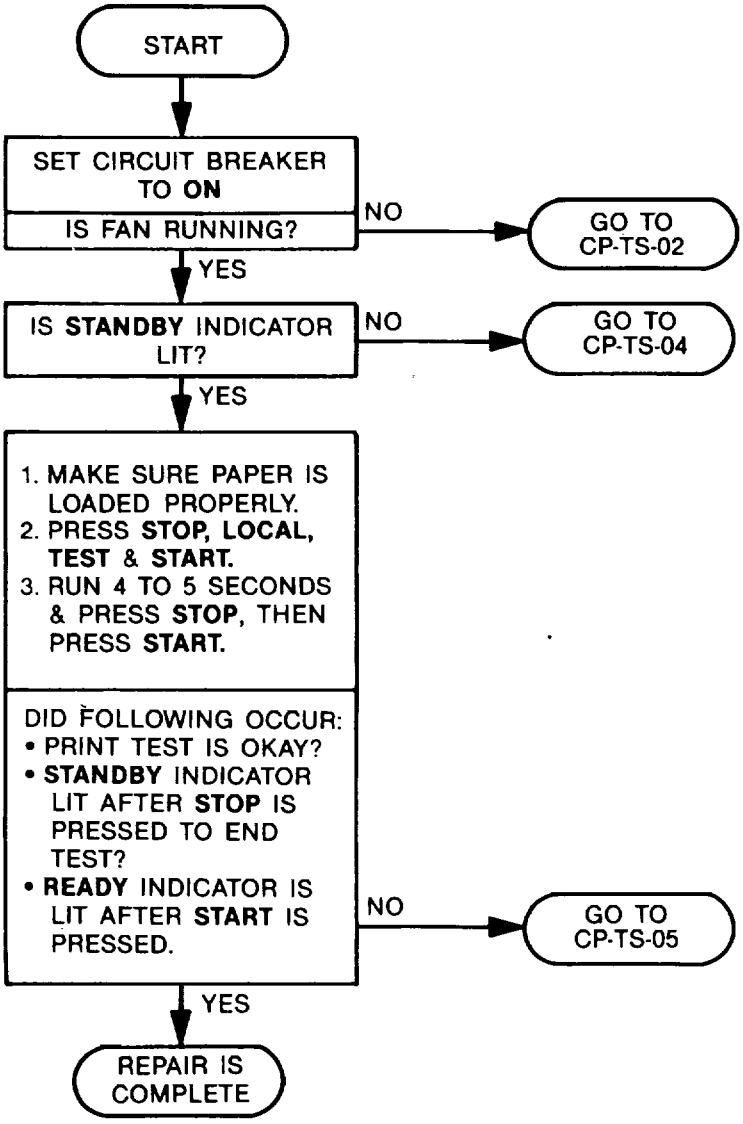


CP-TS-13 CHARACTERS DARKER ONE SIDE




CP-TS-14
CHARACTERS DISTORTED OR BROKEN
START
RUN PRINT SELF TEST:
• PRESS STOP, LOCAL, TEST & START.
• RUN 5 SECONDS.
• PRESS STOP.
ARE CHARACTERS DISTORTED?
NO
YES
1. PRESS START.
2. SET CONSOLE TERMINAL TO LOCAL MODE.
3. KEY IN 15 TO 20 CHARACTERS.
ARE CHARACTERS STILL DISTORTED?
NO
GO TO CP-TS-15
YES
CHECK CONTINUITY OF I/O CABLE (FOLDOUT FO-2).
CHECK MISTOR AMP ADJUSTMENT (PARA 4-35).
IS ADJUSTMENT OKAY?
NO
ADJUST MISTOR AMP (PARA 4-35).
YES
CHECK SYNCHRONOUS CARRIAGE SPEED ADJUSTMENT (PARA 4-28).
IS ADJUSTMENT OKAY?
NO
ADJUST SYNCHRONOUS CARRIAGE SPEED (PARA 4-28).
GO TO CP-TS-15
YES
CHECK PRINTHEAD TO PLATEN DISTANCE/PARALLELISM (PARA 4-26).
IS DISTANCE OKAY?
NO
ADJUST PRINTHEAD TO PLATEN DISTANCE/PARALLELISM (PARA 4-26).
GO TO CP-TS-00
YES
INSTALL NEW PRINTHEAD (PARA 4-25).
GO TO CP-TS-15

CP-TS-15	AFTER MAINTENANCE CHECK



Section III. MAINTENANCE PROCEDURES

4-8. GENERAL

The individual maintenance procedures in this section contain the corrective actions required to fix a failure which was isolated during troubleshooting.

4-9. EQUIPMENT HANDLING PRECAUTIONS

As with most data processing equipment, the console printer is very sensitive to dirt, dust, and even smoke. Follow the rules below to avoid damage to the equipment.

a. Make sure hands, hair, clothing, and shoes are clean before working on the console printer.

b. Do not touch board connector terminals with any tool, bare hands, or a dirty cloth. Tools will damage the fragile connector. Dirt or body sweat will cause corrosion.

c. If a board is to be transported, place it in its original shipping container. If unavailable, pack it carefully with clean packing material that will prevent physical damage and will not cause corrosion.

d. Ground your body to discharge static electricity by touching a metal chassis or cabinet before touching a board. A static discharge from you to a board can destroy integrated circuits on the board.

e. Do not use masking tape labels.

f. Hold boards by their edges whenever you handle them.

g. Store and ship boards in static free bags.

h. Store boards in a humidity controlled environment.

i Do not smoke in the area where boards are used or stored.

j. Do not put beverages on or near boards. An accidental spill can cause corrosion and chemical damage.

k. Never leave boards lying around unprotected.

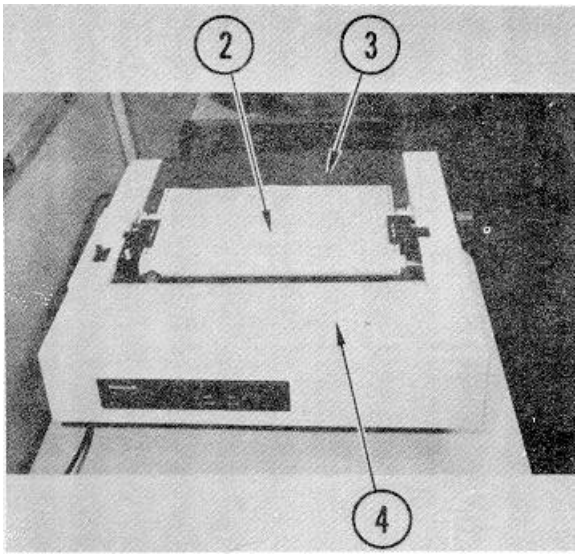
4-10. MAINTENANCE PROCEDURES

Before you start a corrective maintenance procedure, you should gather all the items or help listed in the initial setup box for that procedure. Read the procedure carefully and do only what each step tells you to do. Some steps are followed by a reference. Use the reference any time you are not sure what you must do for that step. Always do the steps in the order they are given unless the procedure requires decision steps. When decision steps are involved, go in the order indicated by the decision.

4-11. REMOVE/REPLACE TOP COVER

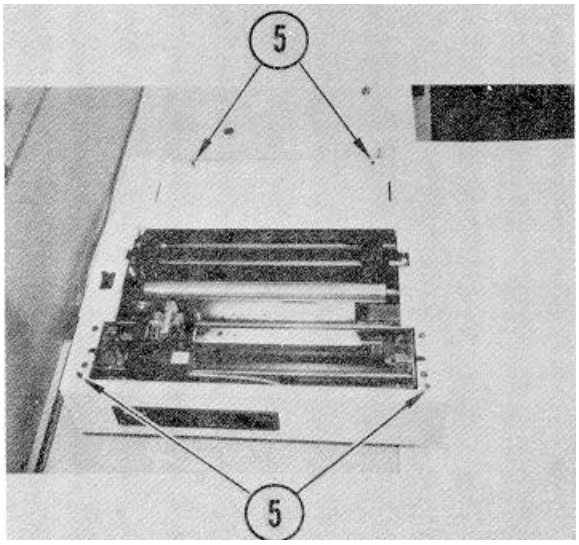
INITIAL SETUP

Common Tools
- Tool kit

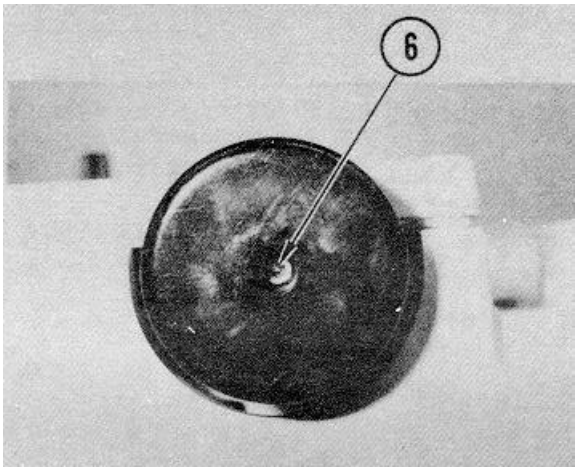


Remove

1. Power off. Pull ac plug from outlet.
2. Remove paper.
3. Pull off paper divider.
4. Pull off access panel.

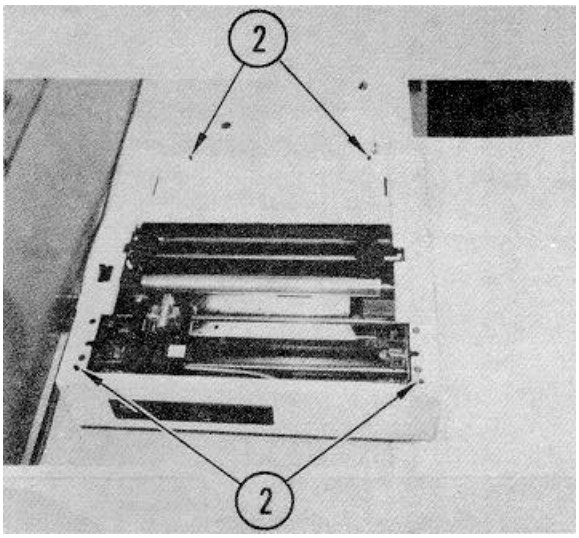


5. Remove four screws.



6. Remove screw in platen knob. Pull off knob.

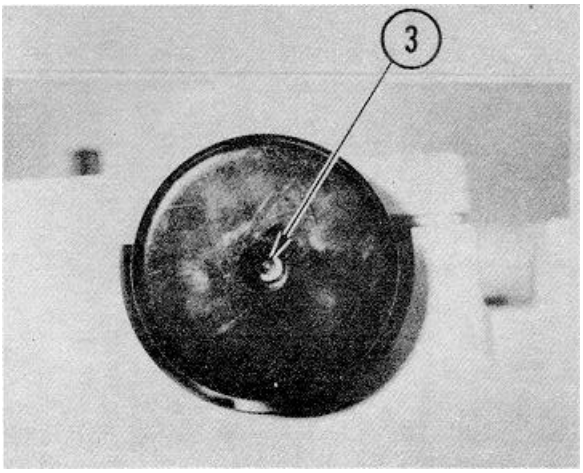
7. Lift off cover.



Replace

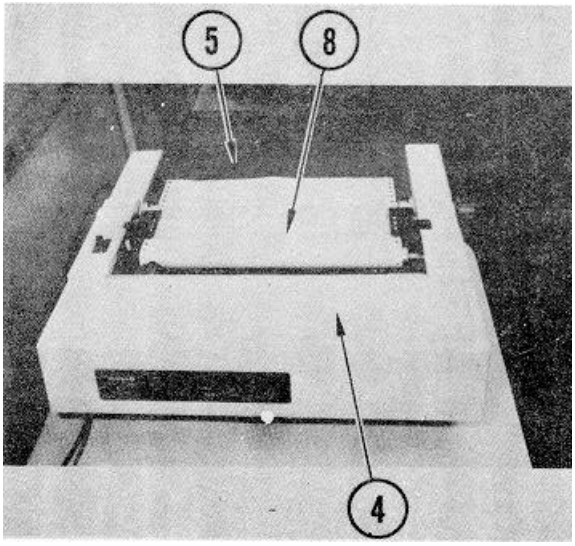
1. Set cover over chassis. Line up holes in cover with holes in chassis.

2. Replace four screws.



3. Push on platen knob. Replace screw.

4-11. REMOVE/REPLACE TOP COVER (CONT)

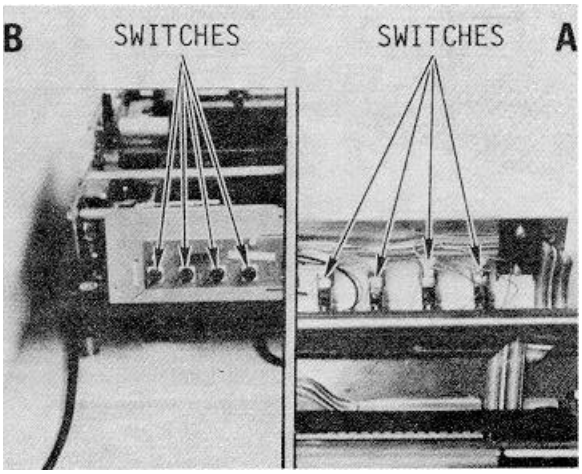


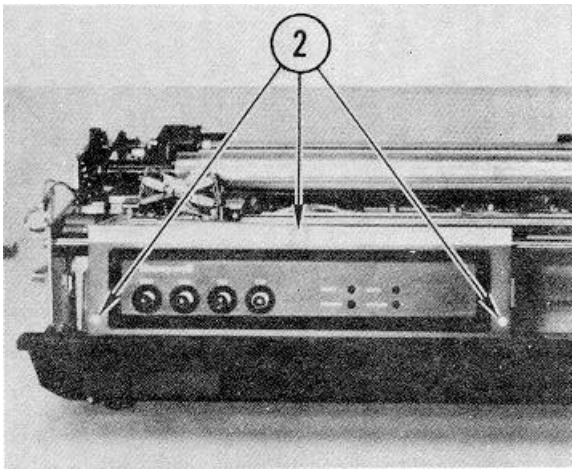
4. Push on access panel.
5. Push on paper divider.
6. Replace paper.
7. Push ac plug into outlet.
8. Run self test.

4-12. REMOVE/REPLACE CONTROL PANEL SWITCH

INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Paper • Pen or Pencil





NOTE

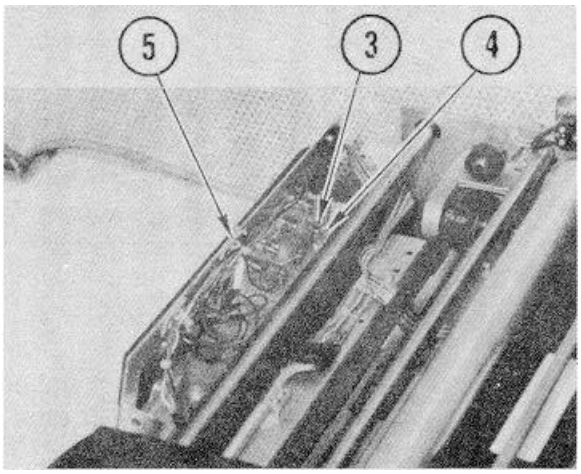
Control panel switches are mounted differently in some installations.

- **If switches are hard-wired, and look like the ones in photo A, do this procedure for removing/replacing any of them**
- **If switches are mounted on control panel circuit board, and look like the ones in photo B, remove and replace circuit board(para 4-14)**

Remove

1. Remove top cover (para 4-11).
2. Remove three screws. Pull off cover.

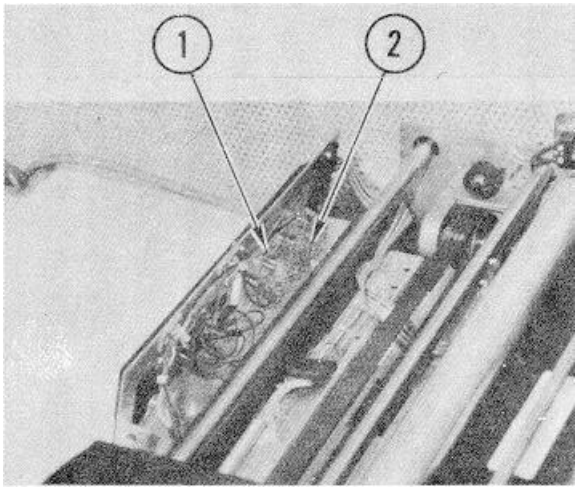
4-12. REMOVE/REPLACE CONTROL PANEL SWITCH (CONT)



3. Find switch to be removed.

4. Using paper, note position of wires on switch. Remove wires.

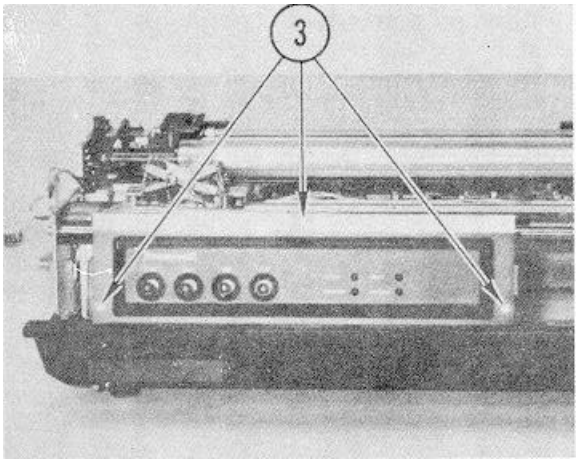
5. Remove pushbutton, nut and washer and remove switch.



Replace

1. Hold new switch in place and secure with washer and nut. Press on pushbutton.

2. Using your note, attach wires to switch.



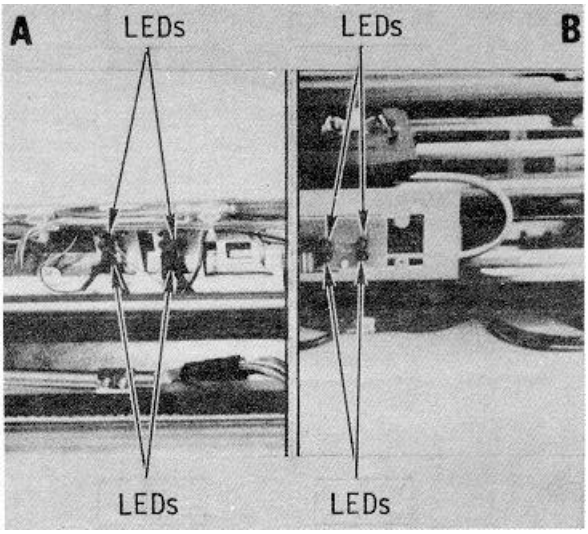
3. Push on cover. Replace three screws.

4. Replace top cover (para 4-11).

4-13. REMOVE/REPLACE CONTROL PANEL LED

INITIAL SETUP

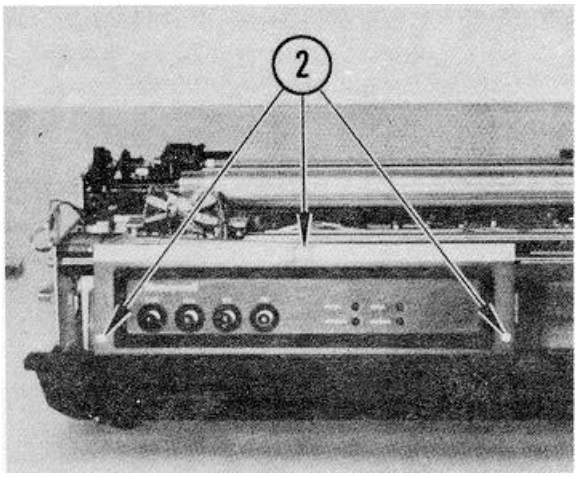
Common Tools	Materials/Spare parts
• Tool kit	• Tags (for wires) • Pen or pencil



NOTE

Control panel light emitting diodes (LED) are mounted differently in some installations.

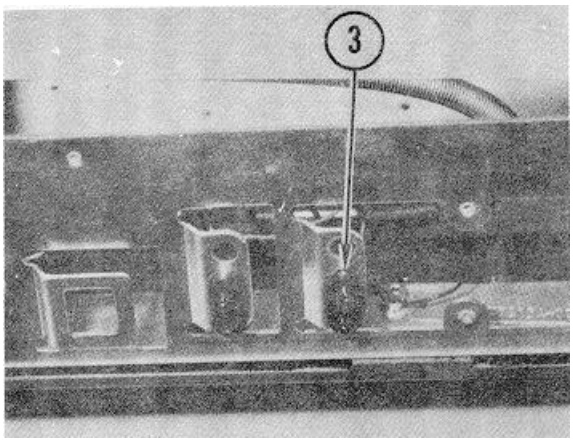
- **If LEDs are hard-wired, and look like the ones in photo A, use this procedure for removing/replacing any of them**
- **If LEDs are mounted on control panel circuit board, and look like the ones in photo B, you cannot remove/replace individual LEDs. You must remove/replace the entire control panel board (para 4-14)**



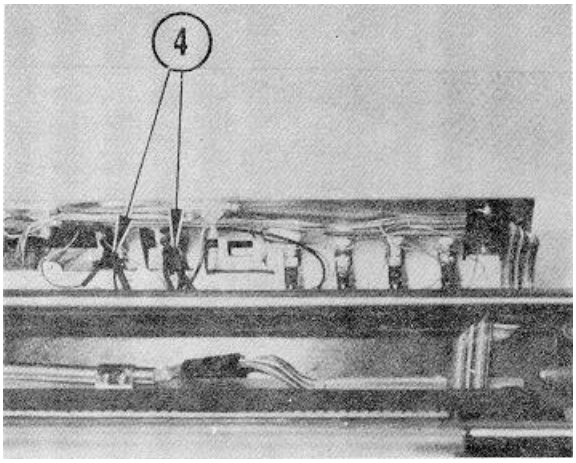
Remove

1. Remove top cover (para 4-11).
2. Remove three screws. Pull off cover.

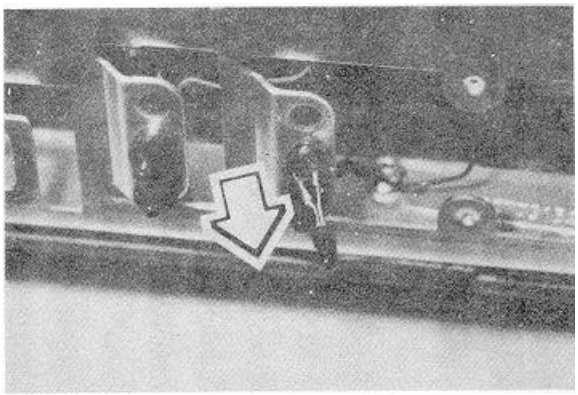
4-13. REMOVE/REPLACE CONTROL PANEL LED (CONT)



3. Pull off black collar.

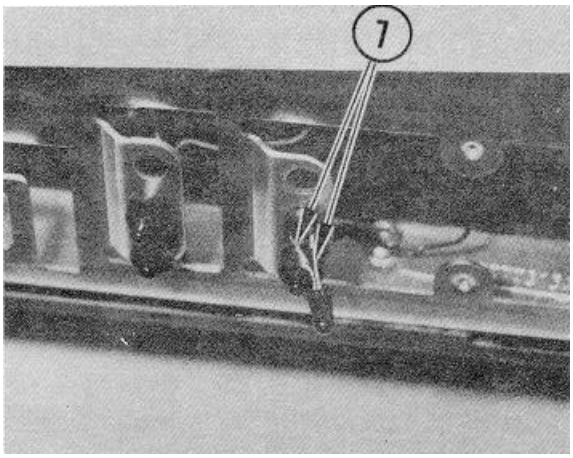


4. Push back black wire covers to uncover about one inch of wire.

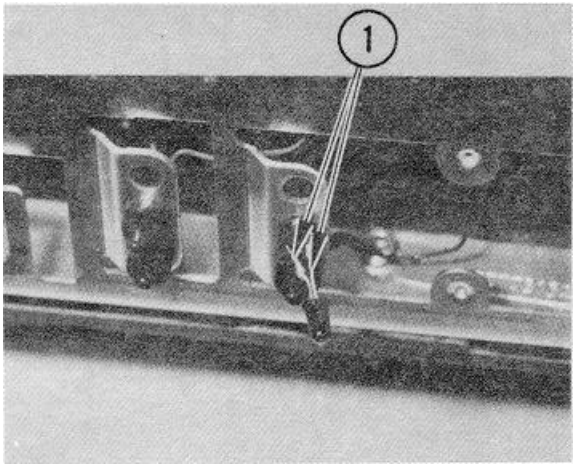


5. Push wire and LED through front of control panel.
6. Tag which lead goes to which pin on LED.

4-13. REMOVE/REPLACE CONTROL PANEL LED (CONT)

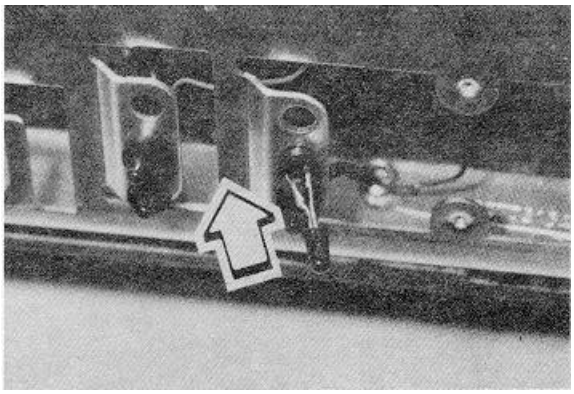


7. Unsolder leads. Pull off LED.



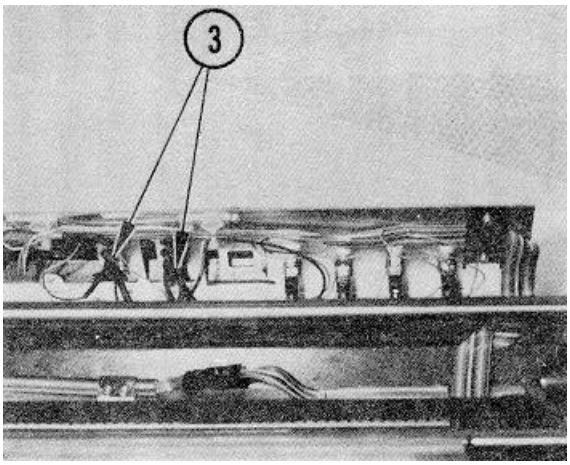
Replace

1. Solder leads to pins on LED.

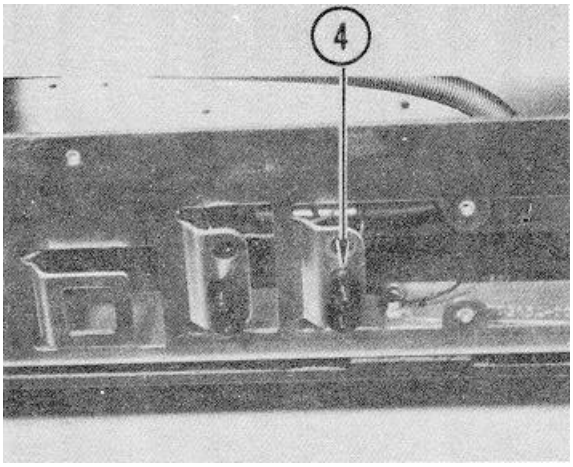


2. Push LED and wires back into control panel.

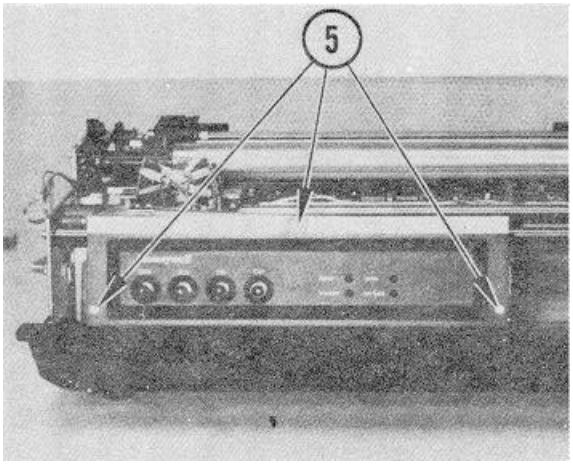
4-13. REMOVE/REPLACE CONTROL PANEL LED (CONT)



3. Pull black wire covers over wires.



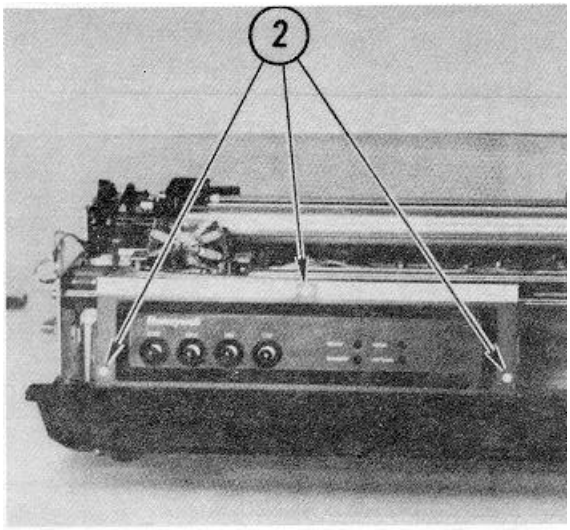
4. Push on black collar.



5. Push on cover. Replace three screws.
6. Replace top cover (para 4-11).

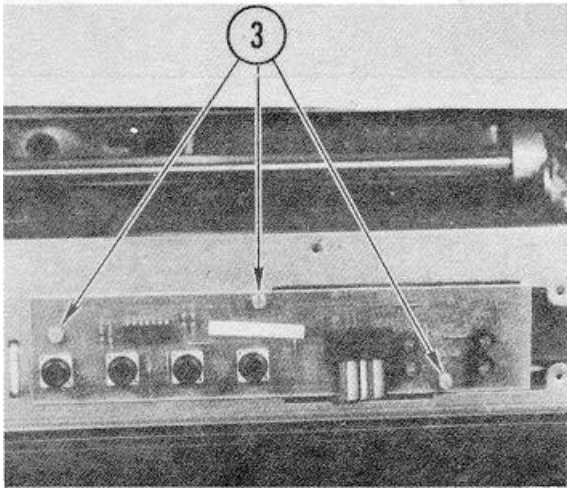
4-14. REMOVE/REPLACE CONTROL PANEL BOARD

INITIAL SETUP	
Common Tools	Materials/Spare Parts
• Tool kit	• Tie wraps



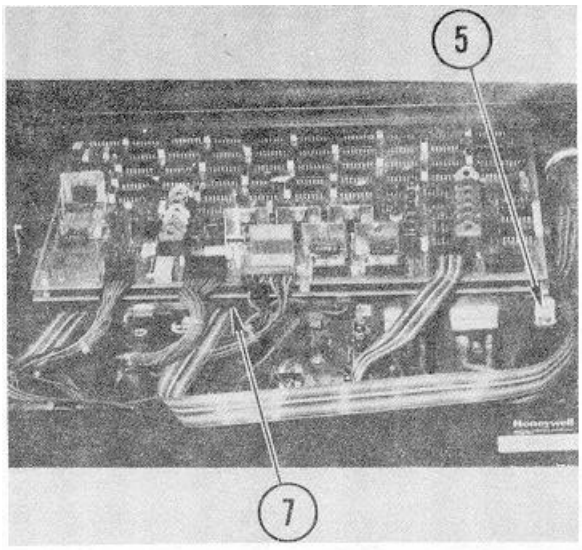
Remove

1. Remove top cover (para 4-11).
2. Remove screws. Pull off cover.

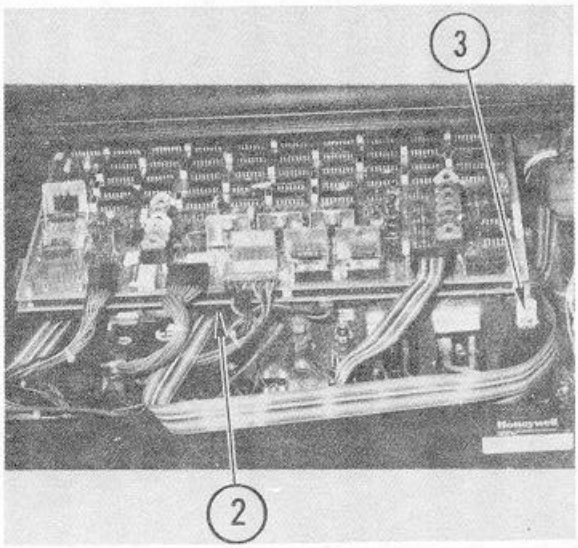


3. Remove screws. Let control panel board hang on ribbon cable.
4. Follow ribbon cable around to rear of CPU board. Cut all tie wraps as you go.

4-14. REMOVE/REPLACE CONTROL PANEL BOARD (CONT)

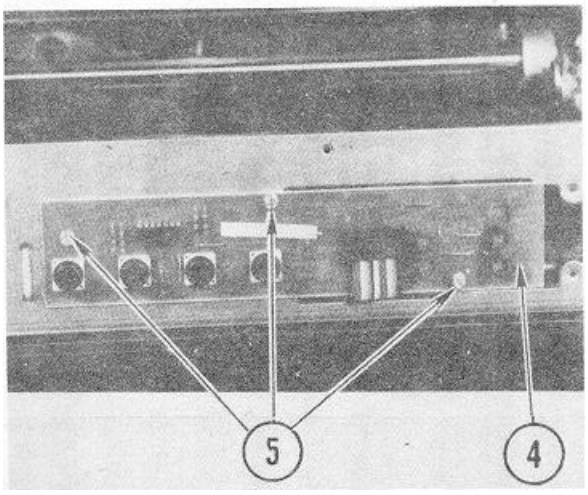


5. Loosen screw, washer, and retaining clamp.
6. Slide boards out far enough to access ribbon cable connector.
7. Remove clip and connector, fish ribbon cable through the chassis, and pull out with the control panel board.



Replace

1. Insert ribbon cable through opening for panel and fish through the chassis to the back of the CPU board.
2. Plug in connector underneath CPU board and replace clip and all tie wraps.
3. Slide boards back in and replace retaining clamp, screw, and washer. Tighten clamp screw.



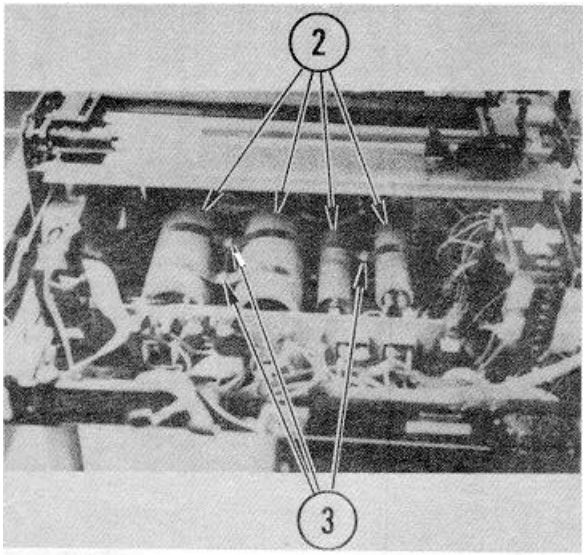
4. Hold new board in place.
5. Replace screws.
6. Push on cover. Replace screws.
7. Replace top cover (para 4-11).

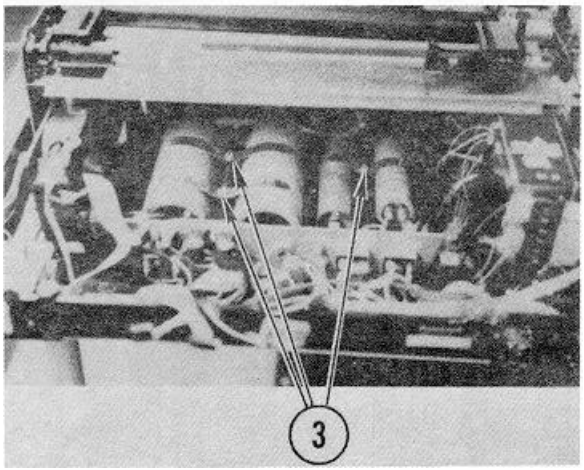
4-15. REMOVE/REPLACE CAPACITOR

INITIAL SETUP	
Common Tools • Tool kit	Materials/Spare parts • Tags (for wires) • Pen or pencil

NOTE

There are four capacitors. Use this procedure to remove/replace any or all capacitors.





Remove

1. Remove driver and CPU boards (para 4-45, Remove, steps 1-10).
2. Find capacitor to be removed.
3. Remove screw(s) and bracket(s) holding capacitor.
4. Lift up capacitor.
5. Tag wires to capacitor. Disconnect wires.
6. Lift out capacitor.

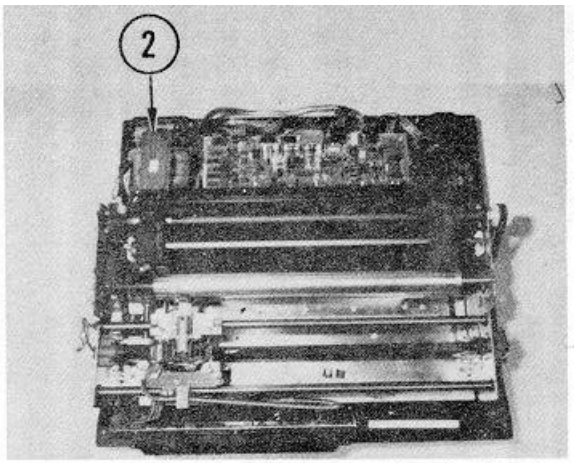
Replace

1. Attach wires to capacitor.
2. Place capacitor in console printer.
3. Secure capacitor with bracket(s) and screw(s).
4. Replace driver and CPU boards (para 4-45, Replace, steps 7-12, 14-16).

4-16. REMOVE/REPLACE TRANSFORMER

INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for wires)
• Open end wrench set - metric	• Pen or pencil
	• Tie wraps

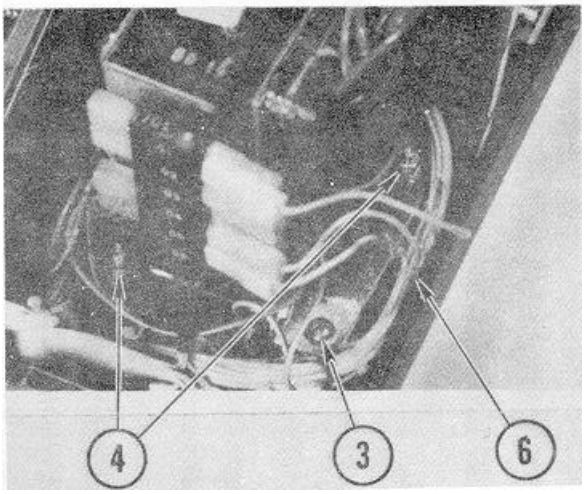


Remove

1. Remove top cover (para 4-11).
2. Find transformer.

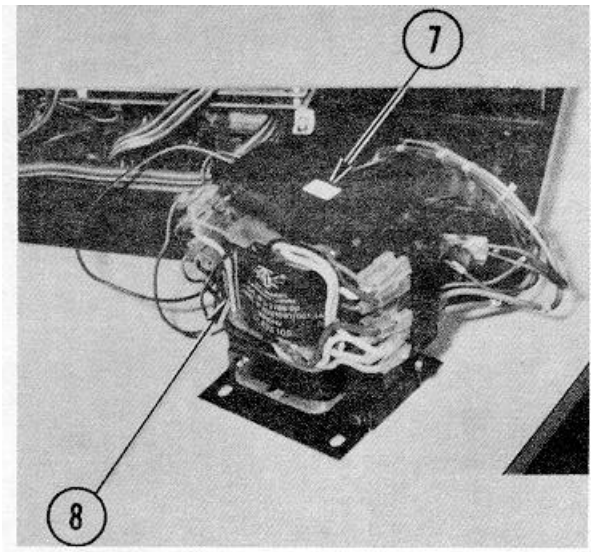
NOTE

In some installations, console printer tie down hardware must be removed to gain access to transformer mounting hardware. (See your system manual.)



3. Remove screw, washers, and nut.
4. Remove nuts and washers.
5. Lift up console printer to retrieve screws.
6. Cut tie wraps.

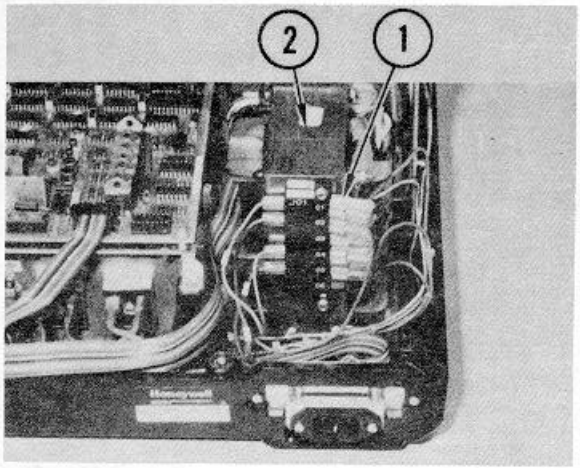
4-16. REMOVE/REPLACE TRANSFORMER (CONT)



7. Pull transformer out of printer, as shown.'

8. Tag all wires connecting transformer to printer. Mark their position on transformer.

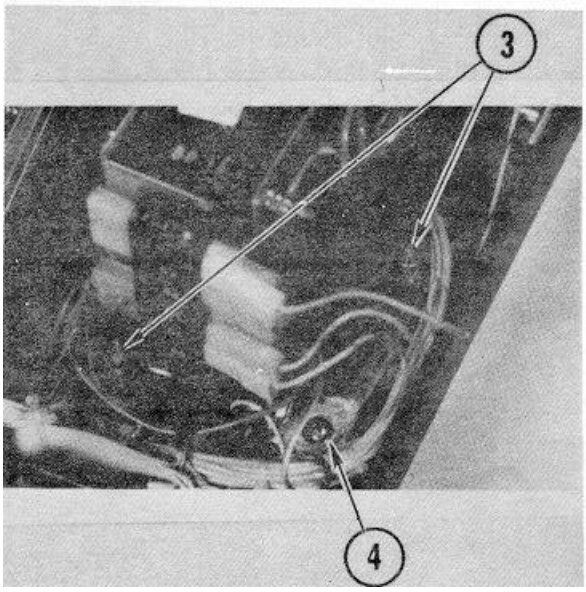
9. Pull off wires.



Replace

1. Connect wires from printer to transformer.

2. Place transformer in printer, as shown.



3. Lift corner of console printer. Replace three screws and attach washers and nuts.

4. Replace screw, washers, and nut.

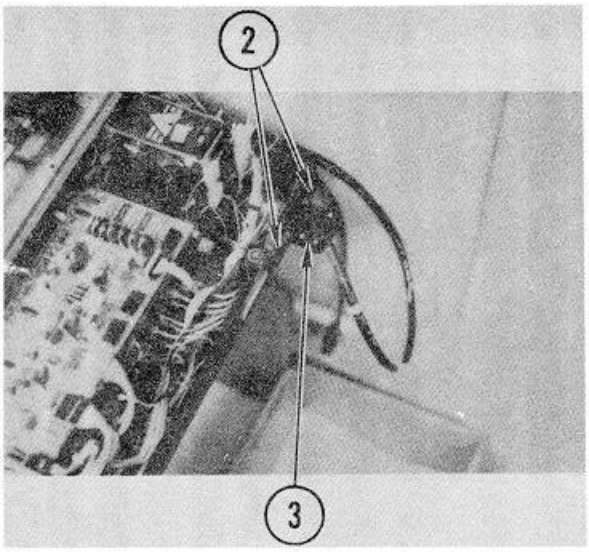
5. Replace tie wraps.

6. Replace top cover (para 4-11).

4-17. REMOVE/REPLACE INTERFACE CABLE CONNECTOR

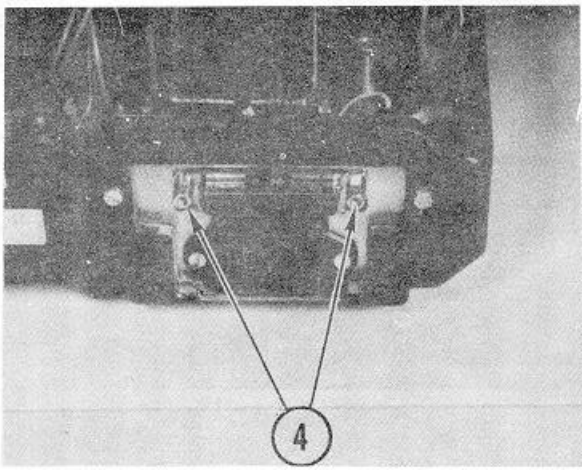
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for wires)
• Socket set - metric	• Pen or pencil



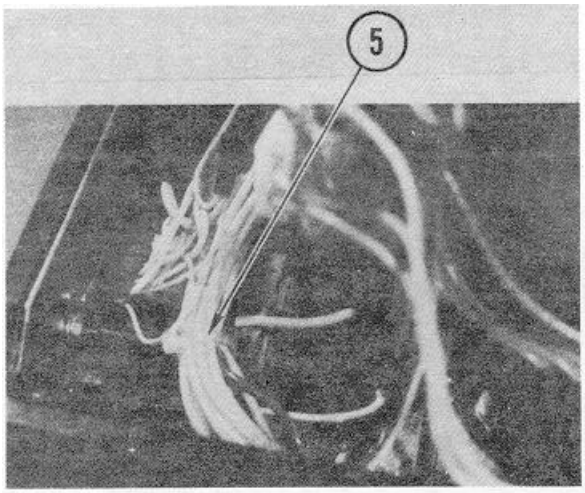
Remove

1. Remove top cover (para 4-11).
2. Loosen screws holding interface cable.
3. Remove interface cable.

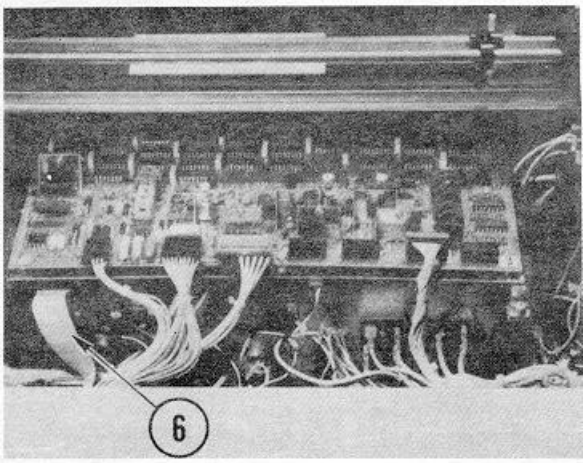


4. Remove stand-offs, washers, and nuts holding connector to frame.

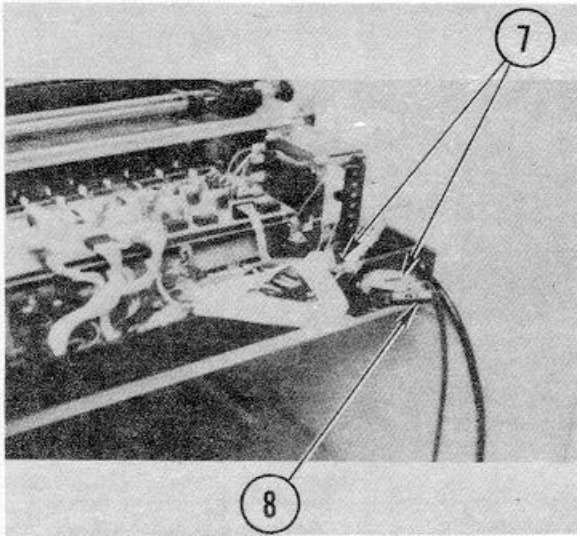
4-17. REMOVE/REPLACE INTERFACE CABLE CONNECTOR (CONT)



5. Cut tie wrap holding ribbon cable to wire bundle.



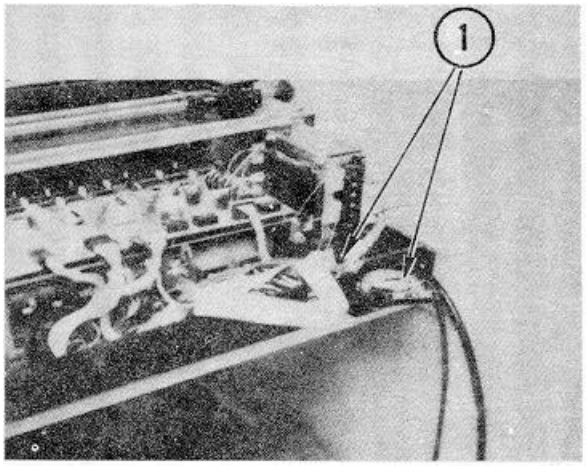
6. Follow ribbon cable to CPU board. Remove hold-down clip and connector (P-05) from board.



7. Guide ribbon cable and P-05 connector through opening in frame.

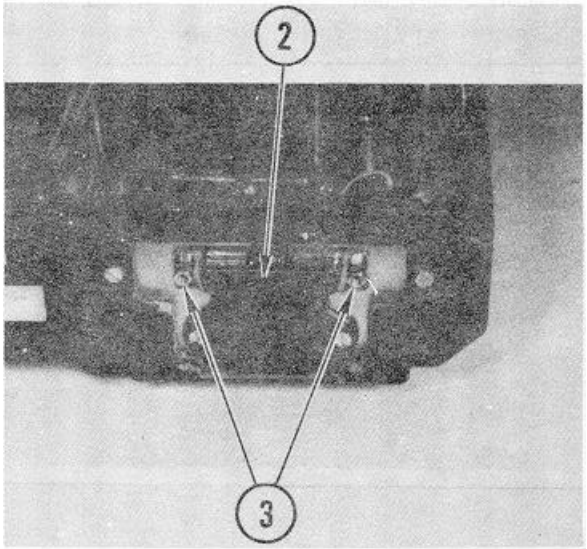
8. Lift out interface cable connector (P-26).

4-17. REMOVE/REPLACE INTERFACE CABLE CONNECTOR (CONT)

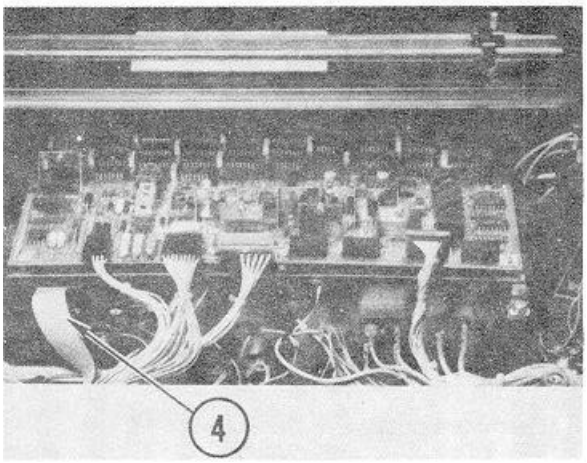


Replace

1. Guide P-05 connector and ribbon cable through opening in frame.

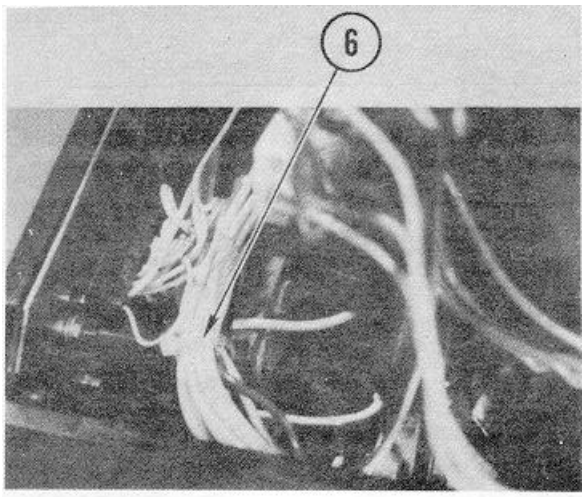


2. Set P-26 cable connector in place on frame.
3. Replace and tighten stand-offs, washers, and nuts.



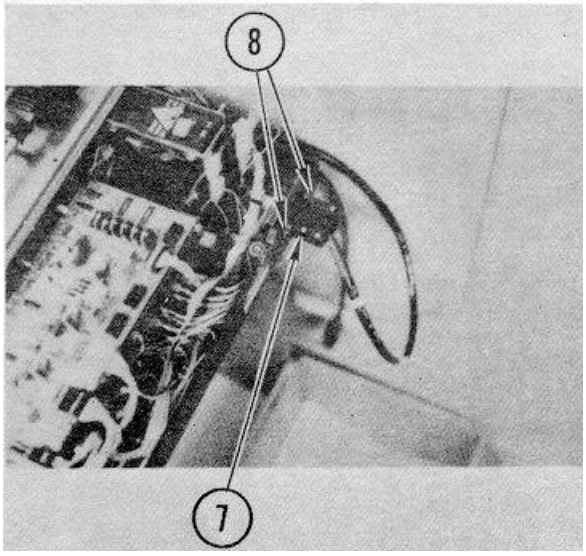
4. Push on P-05 connector to CPU board and install hold-down clip.

4-17. REMOVE/REPLACE INTERFACE CABLE CONNECTOR (CONT)



5. Position ribbon cable between wire harness and frame.

6. Install tie wrap connecting ribbon cable to wire bundle.



7. Push interface cable into P-26 interface cable connector.

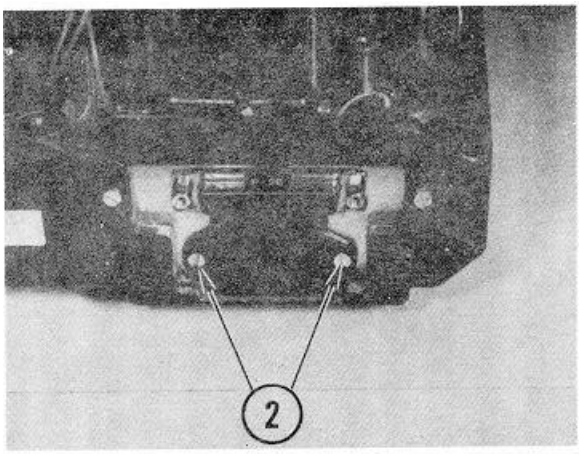
8. Tighten screws.

9. Replace top cover (para 4-11).

4-18. REMOVE/REPLACE ADAPTER CONNECTOR

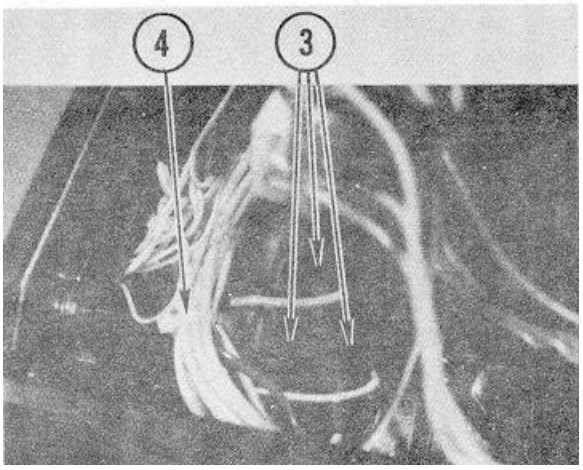
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tie wraps • Paper • Pen or pencil



Remove

1. Remove top cover (para 4-11).
2. Loosen two screws to free connector from frame.

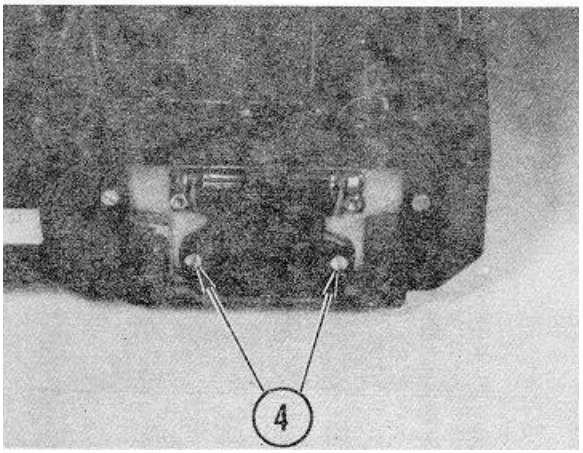


3. Note positions of three wires on connector.
4. Cut tie wraps holding three wires in wire bundle.
5. Pull connector out of frame to access wire connections.
6. Pull back sleeves. Unsolder wires.

4-18. REMOVE/REPLACE ADAPTER CONNECTOR (CONT)

Replace

1. Pull connector wires through opening in chassis.
2. Using your notes, solder wires to connectors. Push sleeves over connections.



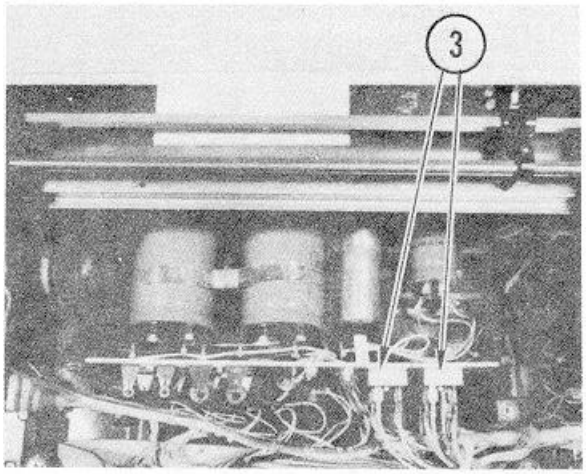
3. Push connector into frame.
4. Tighten two screws.
5. Replace tie wraps as required to secure wires.
6. Replace top cover (para 4-11).

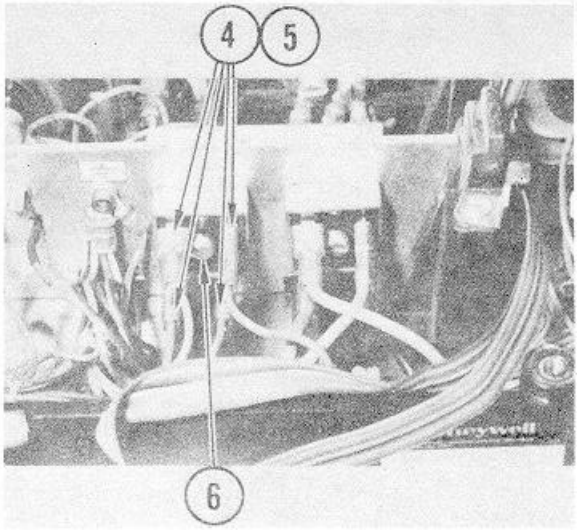
4-19. REMOVE/REPLACE DIODE BRIDGE

INITIAL SETUP	
Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for wires) • Pen or pencil • Paper

NOTE

There are two diode bridges. Follow these steps to remove/replace either or both.

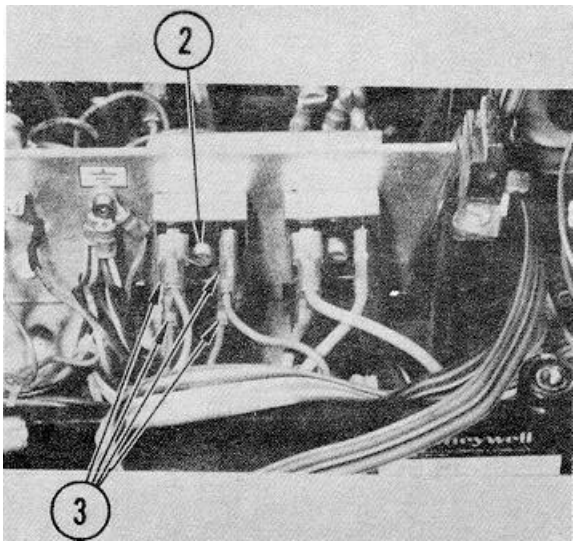




Remove

1. Remove top cover (paragraph 4-11).
2. Remove driver and CPU boards (para 4-45, Remove, steps 2-10).
3. Locate diode bridge in back of console printer.
4. Tag wires.
5. Pull off wires.
6. Remove bolt, nut, and washers.
7. Pull out diode bridge.

4-19. REMOVE/REPLACE DIODE BRIDGE (CONT)



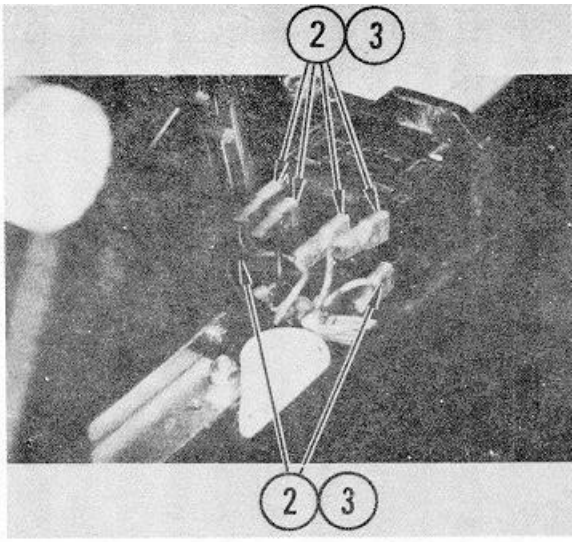
Replace

1. Note positions of + and - on diode. Push diode bridge into position so + is in top left corner.
2. Replace bolt, nut, and washers.
3. Push on wires.
4. Replace driver and CPU boards (para 4-45, Replace, steps 7-12, 14-16).

4-20. REMOVE/REPLACE CIRCUIT BREAKER

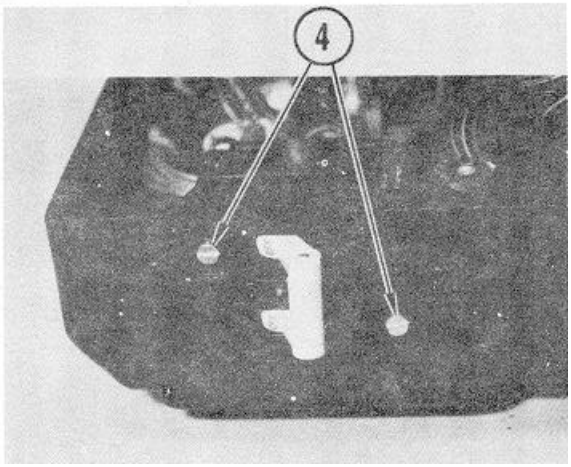
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Paper • Pen or pencil



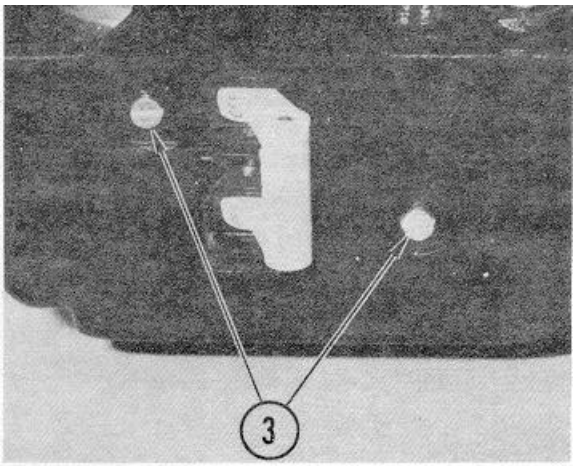
Remove

1. Remove top cover (para 4-11).
2. Before removing wires, note their position.
3. Pull off wires.



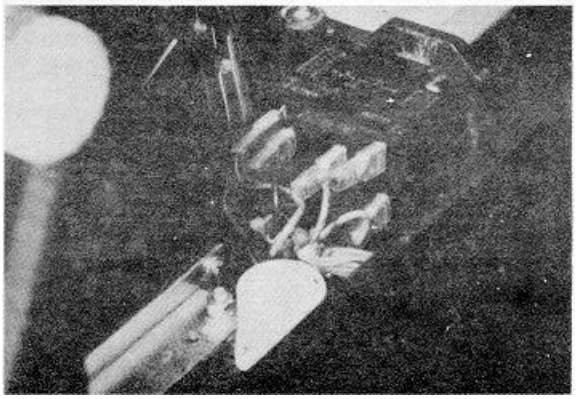
4. Remove two screws.
5. Slide out circuit breaker.

4-20. REMOVE/REPLACE CIRCUIT BREAKER (CONT)



Replace

1. Set replacement breaker to OFF position.
2. Insert circuit breaker as shown.
3. Replace two screws.



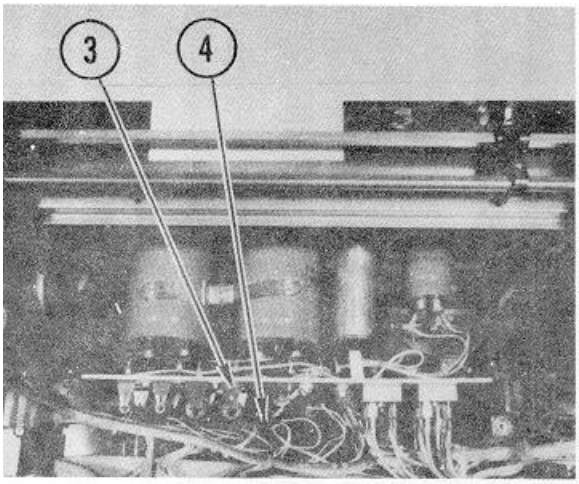
4. Using your notes, push on wires.
5. Replace top cover (para 4-11).

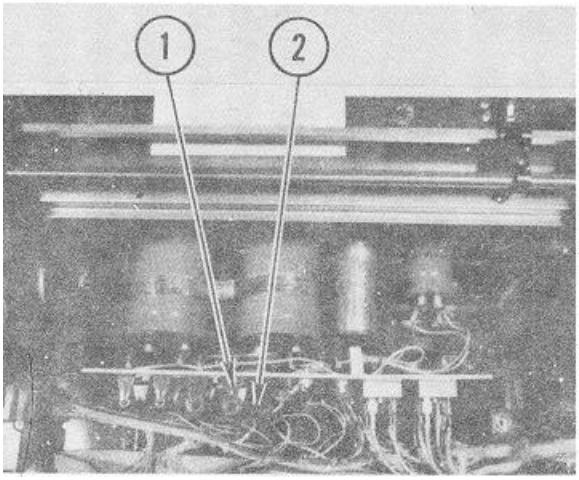
4-21. REMOVE/REPLACE RESISTOR

INITIAL SETUP	
Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for wires) • Pen or pencil

NOTE

There are four resistors. Use these procedures to remove/replace any or all of them.





Remove

1. Remove top cover (para 4-11).
2. Remove driver and CPU boards (para 4-45, Remove steps 2-10).
3. Find resistor to be removed.
4. Tag wires to resistor. Pull back sleeves, unsolder or disconnect wires.
5. Carefully lift resistor clear of mounting bracket.

Replace

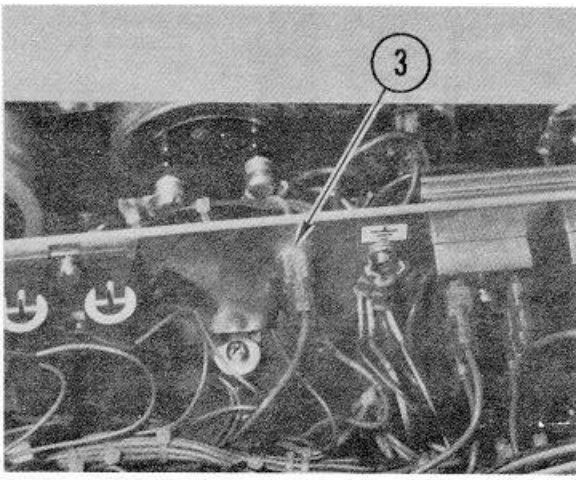
1. Carefully install resistor in mounting bracket.
2. Resolder or reconnect wires to resistor. Push sleeves over connections.
3. Replace driver and CPU boards (para 4-45, Replace steps 7-12, 14-16).

4-22. REMOVE/REPLACE TRANSISTOR

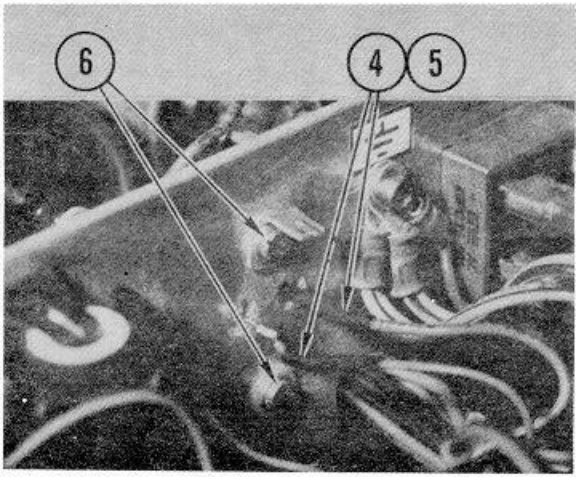
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for wires) • Pen or pencil

Remove

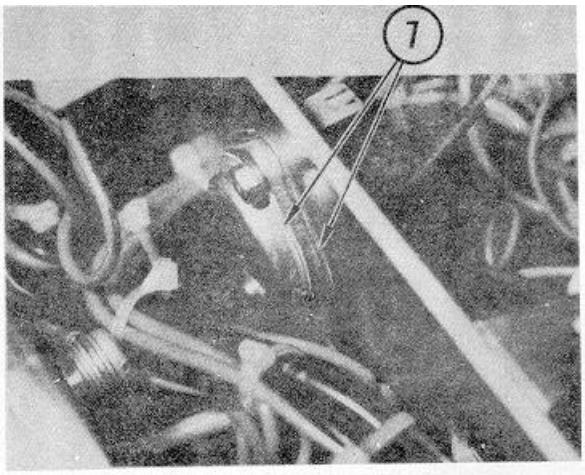


1. Remove top cover (para 4-11).
2. Remove driver and CPU boards (para 4-45, Remove, steps 2-10).
3. Using needle nose pliers, pull off wire.

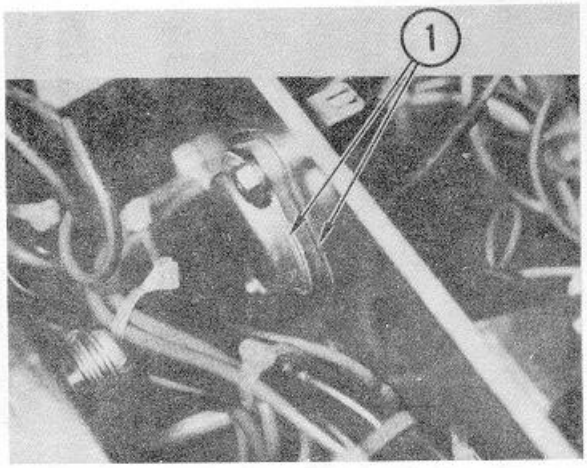


4. Tag wires.
5. Pull back sleeves. Unsolder wires.
6. Remove screws, nuts, and washers.

4-22. REMOVE/REPLACE TRANSISTOR (CONT)

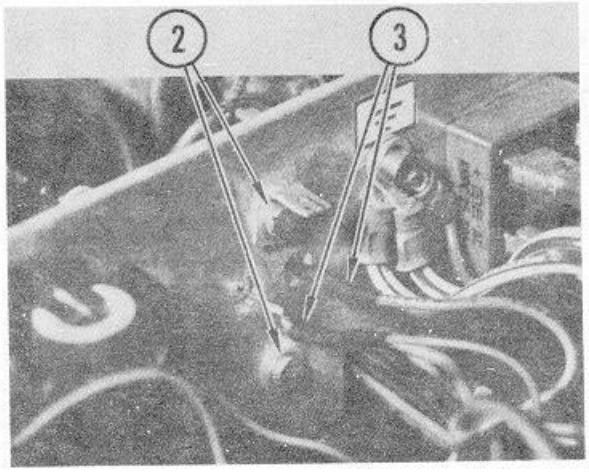


7. Pull out transistor and insulator.



Replace

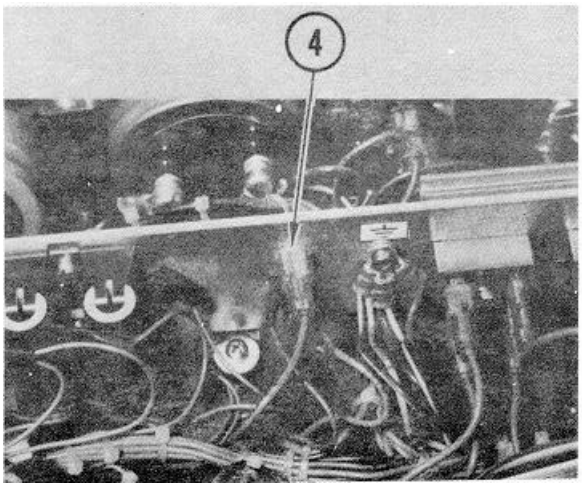
1. Push on insulator and new transistor.



2. Replace screws, bolts and washers.

3. Solder wires. Push sleeves over solder.

4-22. REMOVE/REPLACE TRANSISTOR (CONT)



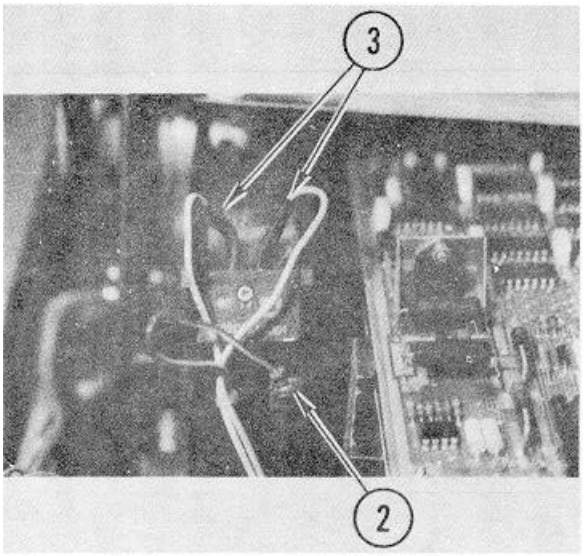
4. Push on wire.

5. Replace driver and CPU boards (para 4-45, Replace, steps 7-12, 14-16).

4-23. REMOVE/REPLACE FAN

INITIAL SETUP

Common Tools
- Tool kit
- Socket set - metric



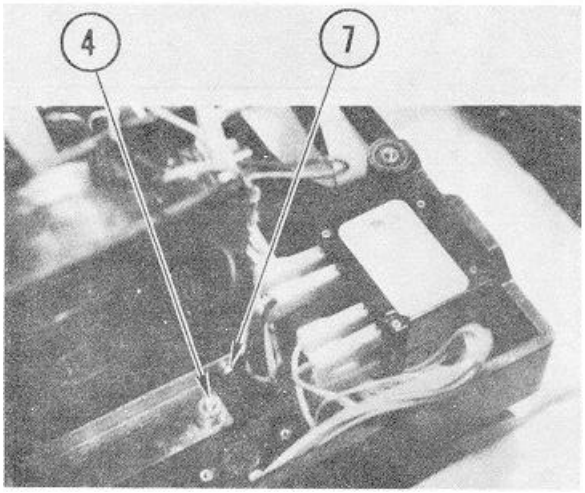
Remove

1. Remove top cover (para 4-11).
2. Remove screw and pull off ground wire.

NOTE

Some fan assemblies may have lugs instead of solder joints.

3. Pull back sleeves and unsolder power leads.

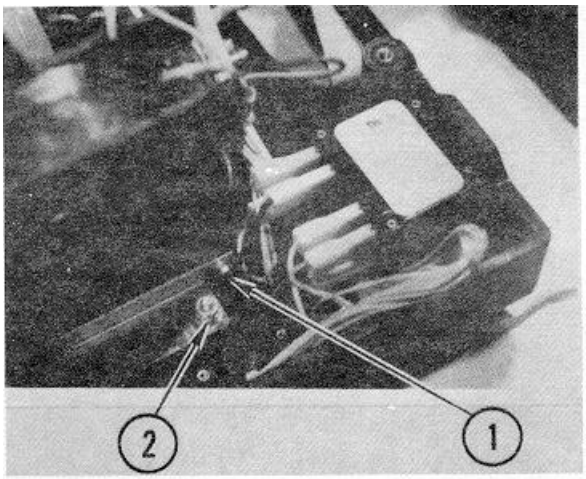


NOTE

In some installations, console printer must be removed to gain access to fan mounting hardware. (See your system manual.)

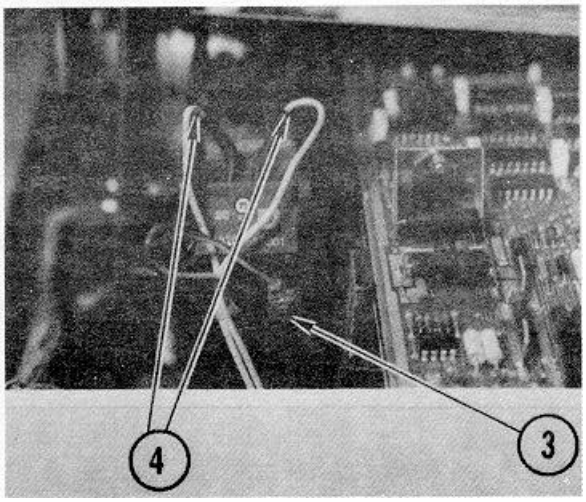
4. Remove nuts and washers holding fan mounting to printer.
5. Lift off fan and fan mounting.
6. Lift up console printer and retrieve screws.
7. Remove two screws holding fan to mounting. Save mounting for replacement fan.

4-23. REMOVE/REPLACE FAN (CONT)



Replace

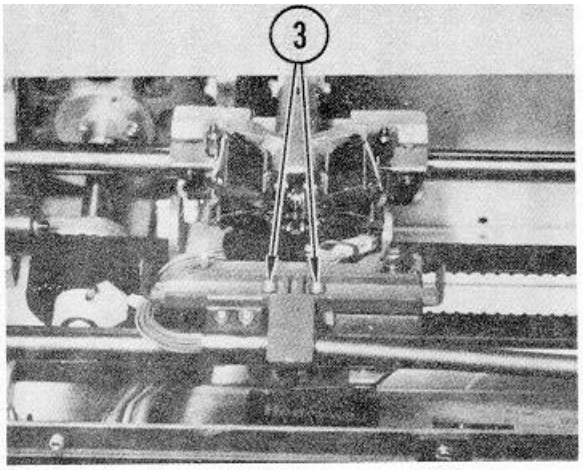
1. Attach mounting to fan.
2. Position fan in chassis. Lift up chassis and install screws. Put on washers and nuts and tighten.



3. Attach ground wire and tighten screw.
4. Solder on power leads. Push sleeves over connections.
5. Replace top cover (para 4-11).

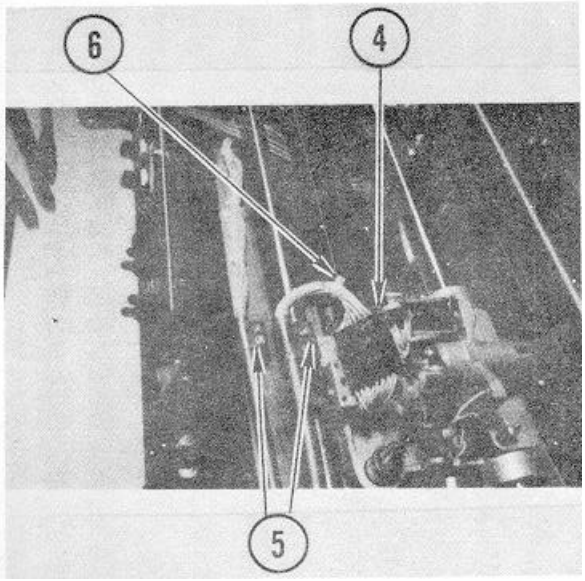
4-24. REMOVE/REPLACE PRINTHEAD CABLE

INITIAL SETUP	
Common Tools • Tool kit • Hex key allen set - metric	Materials/Spare Parts • Tie wraps



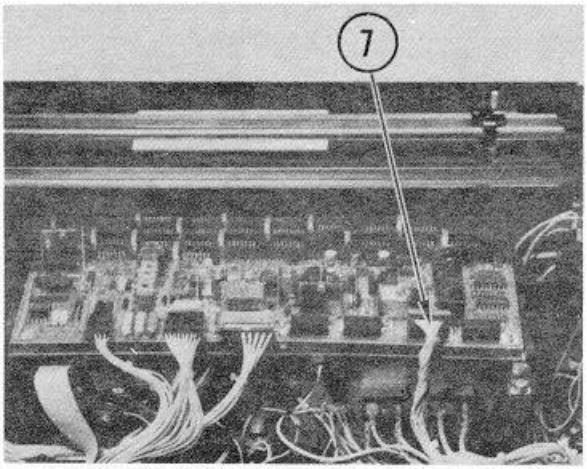
Remove

1. Remove top cover (para 4-11).
2. Remove ribbon cartridge.
3. Remove screws holding ribbon bracket. Lift off bracket.



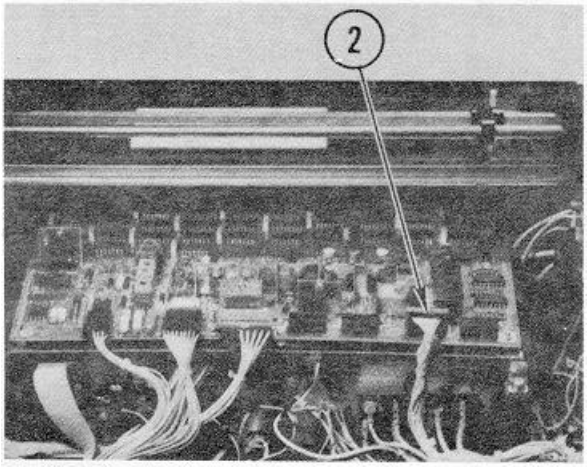
4. Pull apart printhead connectors.
5. Remove screws holding clamps on cable.
6. Cut tie wrap, lift out cable.

4-24. REMOVE/REPLACE PRINTHEAD CABLE (CONT)

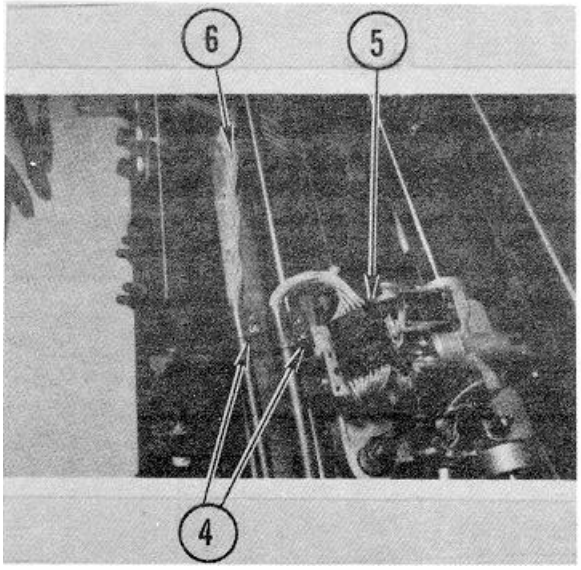


7. Remove holddown clip and disconnect cable connector P13 from driver board.
8. Cut remaining tie wraps to free cable.
9. At rear of printer, pull out cable.

Replace

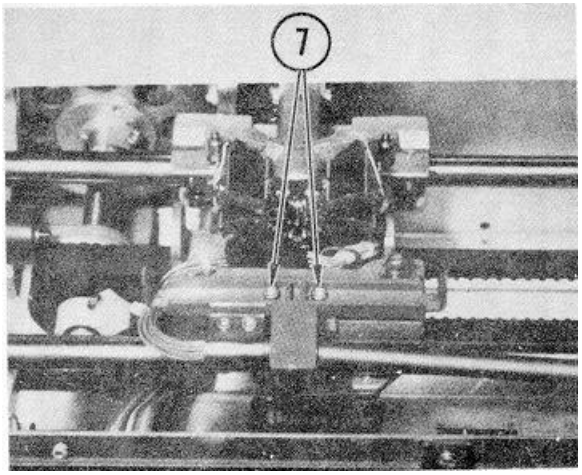


1. From rear of printer, dress cable underneath carriage stepper motor. Make sure wires cannot touch moving parts.
2. Reconnect cable connector P13 to J13 on driver board. Replace hold down clip.
3. Install tie wraps.



4. Replace screws holding clamps at both ends of metal sleeve.
5. Push together printhead connectors.
6. Install tie wrap.

4-24. REMOVE/REPLACE PRINTHEAD CABLE (CONT)



Replace

7. Replace ribbon bracket. Replace bracket screws. Make sure rear vertical tab holds connector wires away from the head.

8. Replace ribbon cartridge.

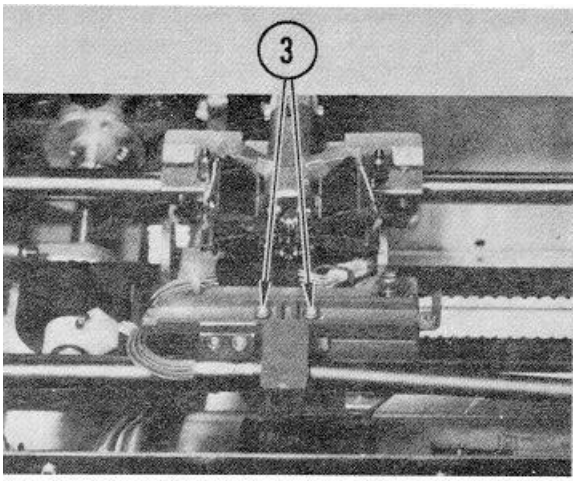
9. Replace top cover (para 4-11).

4-25. REMOVE/REPLACE PRINTHEAD ASSEMBLY

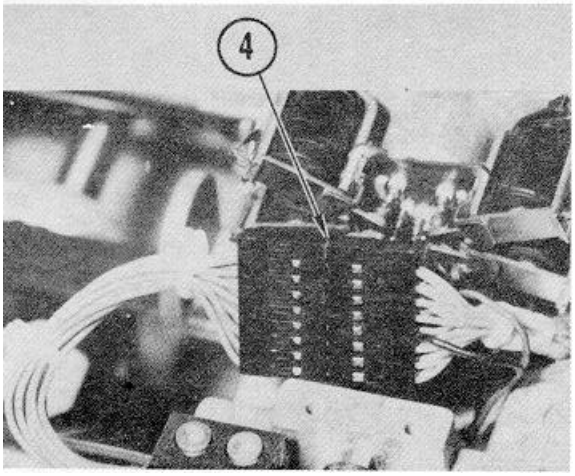
INITIAL SETUP

Common Tools .
- Tool kit
- Hex key allen set - metric

Remove

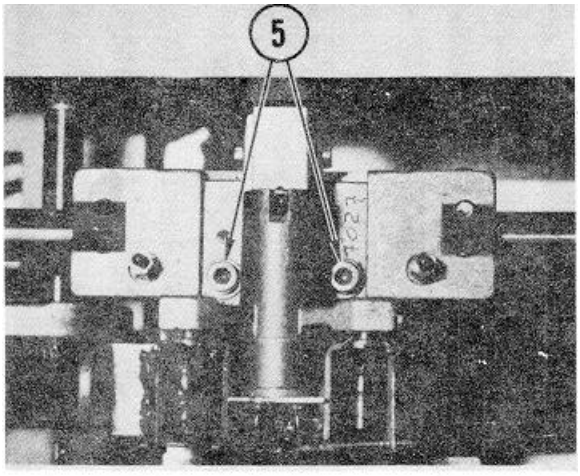


1. Remove top cover (para 4-11).
2. Remove ribbon cartridge.
3. Remove screws. Lift off ribbon bracket.

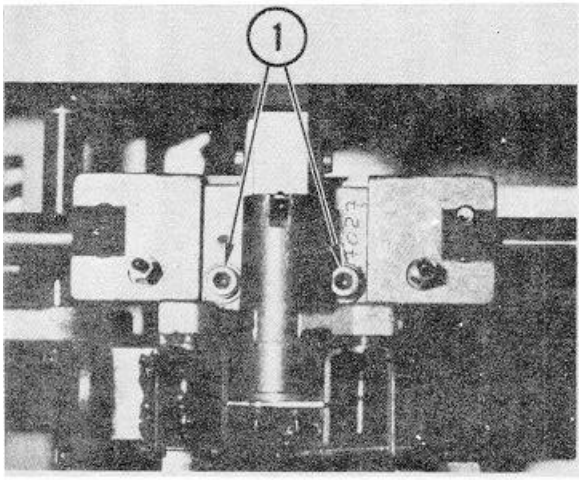


4. Pull apart printhead connectors.

4-25. REMOVE/REPLACE PRINTHEAD ASSEMBLY (CONT)

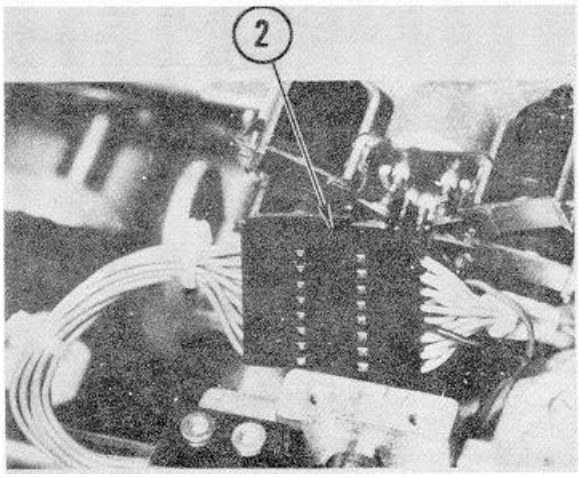


5. Remove screws.
6. Remove printhead.



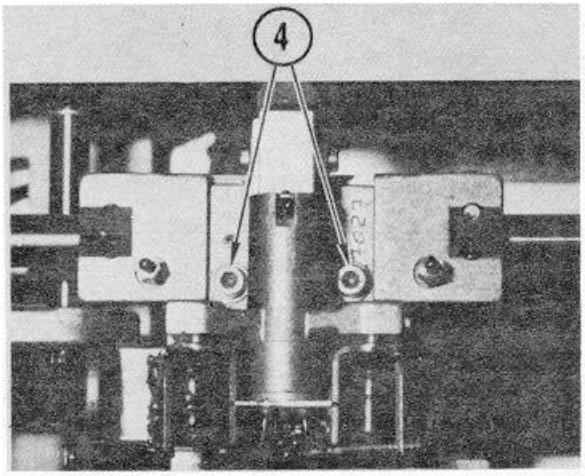
Replace

1. Replace printhead. Hand-tighten screws.

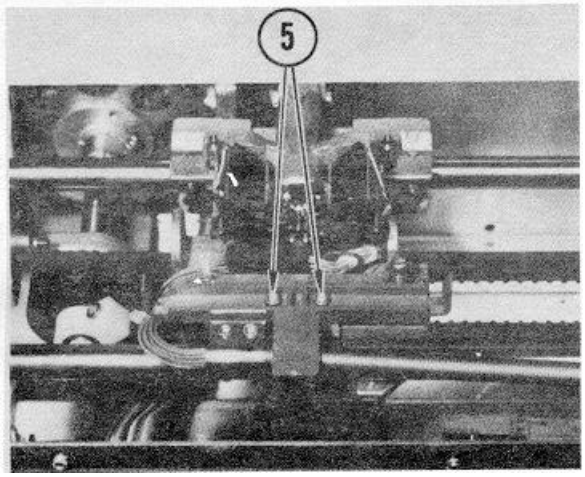


2. Push together connectors.
3. Adjust printhead to platen distance/parallelism (para 4-26).

4-25. REMOVE/REPLACE PRINTHEAD ASSEMBLY (CONT)



4. When adjustment is correct, tighten screws.



5. Replace ribbon bracket. Replace screws and tighten. Make sure rear vertical tab holds connector wires away from head.

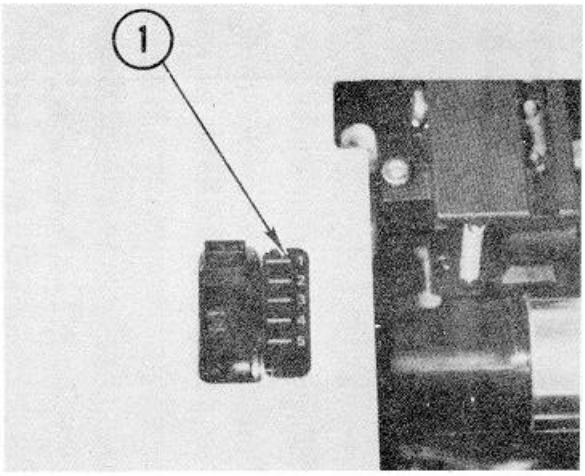
6. Replace ribbon cartridge.

7. Replace top cover (para 4-11).

4-26. ADJUST PRINTHEAD TO PLATEN DISTANCE/PARALLELISM

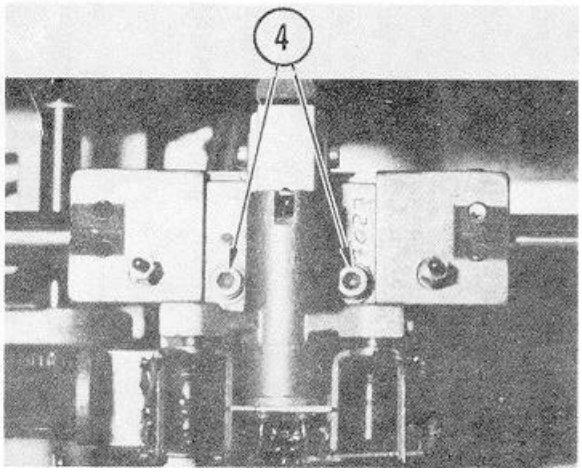
INITIAL SETUP

Common Tools
- Tool kit
- Hex key allen set - metric



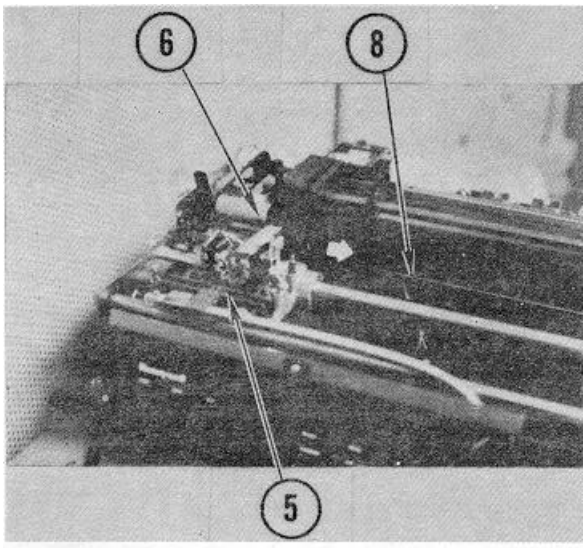
Adjust

1. Push paper thickness lever to one.
2. Remove top cover (para 4-11).
3. Remove ribbon cartridge.

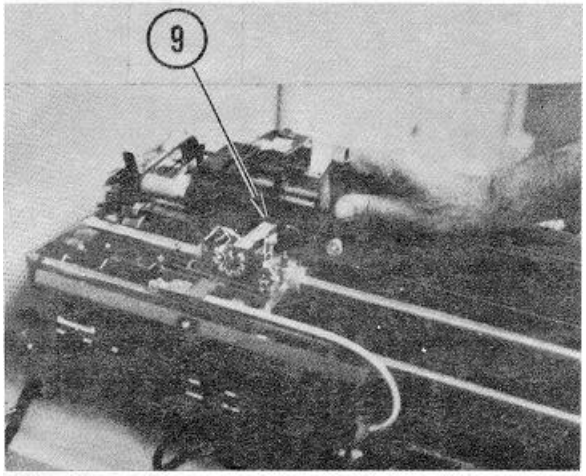


4. Loosen screws enough to move printhead.

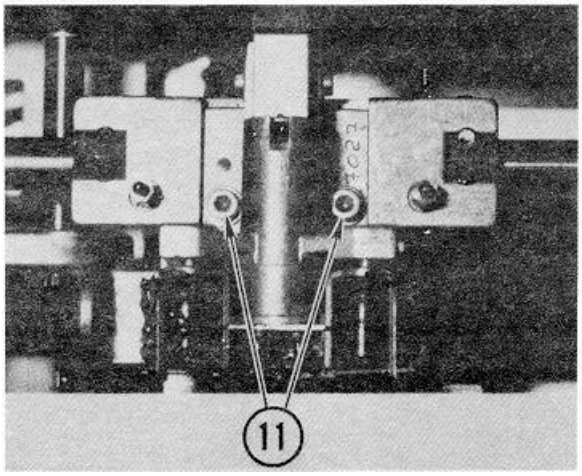
4-26. ADJUST PRINTHEAD TO PLATEN DISTANCE/PARALLELISM (CONT)



5. Move carriage transport to left side of printer.
6. Rotate platen until red or orange dot appears on metal part of platen.
7. Aline dot with printhead. Center dot on forward edge of platen.
8. Move carriage transport in direction shown to middle of red or orange stripe on base plate.

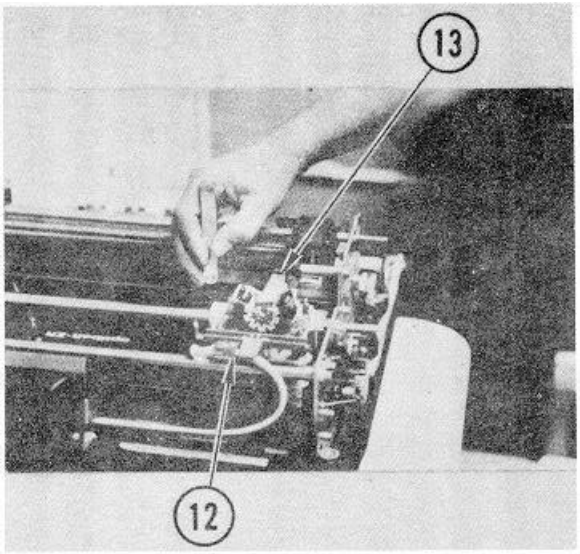


9. Insert feeler guage between printhead and platen under top printhead lip, as shown.
10. Set gap of 0.016 inch (0.04 mm) between printhead and platen.



11. Tighten screws on printhead.

4-26. ADJUST PRINTHEAD TO PLATEN DISTANCE/PARALLELISM (CONT)



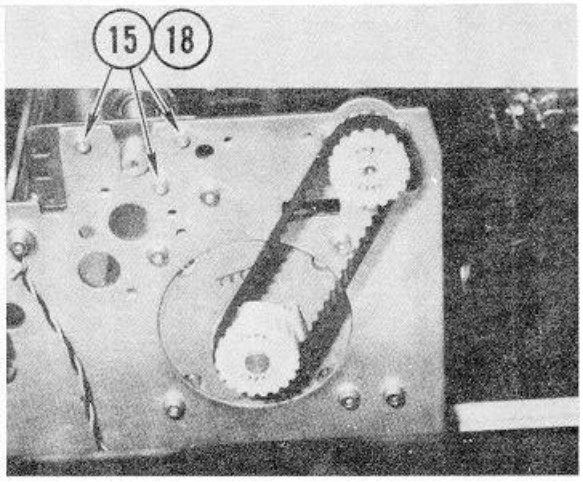
12. Move carriage transport to far right side of printer.

13. Insert feeler gauge between printhead and platen under top printhead lip, as shown.

14. Check that gap between printhead and platen is 0.012 - 0.014 inch.

    • If gap is correct go to step 19

    • If gap is not correct, go to step 15



15. Loosen screws on platen mounting bracket above paper stepper motor.

16. Insert feeler gauge as described in step 13.

17. Set gap between printhead and platen of 0.012 - 0.014 inch.

18. Tighten screws.

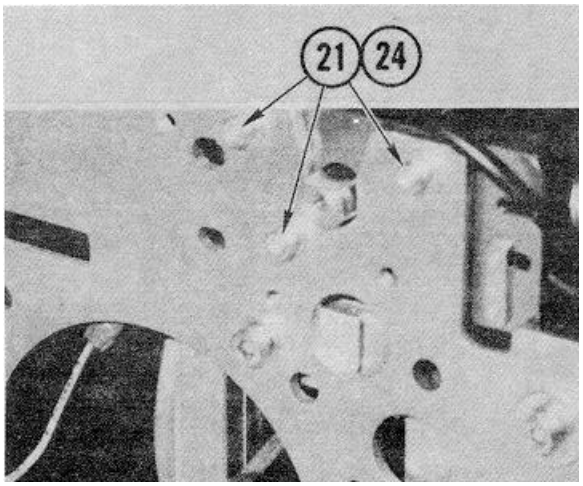
19. Move carriage transport to far left side of printer.

20. Check that gap between printhead and platen is 0.012 - 0.014 inch.

    • If gap is correct, go to step 26

    • If gap is not correct, go to step 21

4-26. ADJUST PRINTHEAD TO PLATEN DISTANCE/PARALLELISM (CONT)



21. Loosen screws on platen mounting bracket above carriage stepper motor.

22. Insert feeler gauge as described in step 13.

23. Set gap between printhead and platen of 0.012 - 0.014 inch.

24. Tighten screws.

25. Adjust print energy (para 4-39, Adjust, steps 1-7).

26. Check gapping between printhead and platen at several points. A feeler gauge of 0.016 inch should not pass between printhead and platen at any point except the point of greatest tolerance (see step 8).

    - If gapping is correct, do step 27
    - If gapping is not correct, repeat all necessary adjustment steps between steps 1 and 26

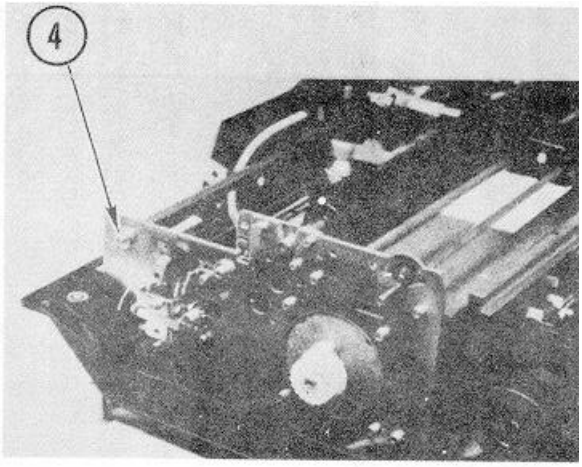
27. Replace top cover (para 4-11).

4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY

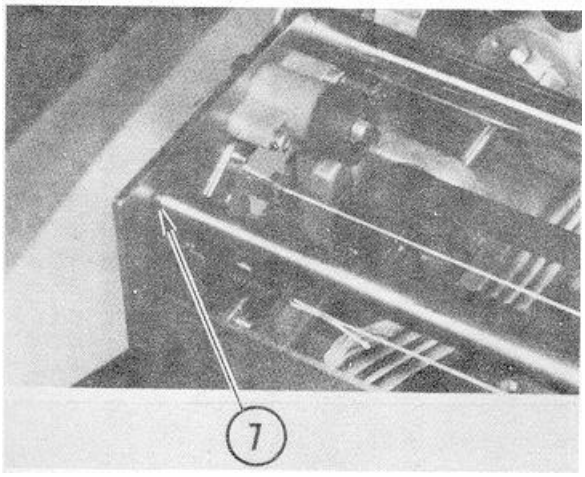
INITIAL SETUP

Common Tools
• Tool kit

Remove



1. Remove upper and lower ribbon drive cable assemblies (para 4-29).
2. Remove pulley assembly (para 4-32, Remove steps 2-5).
3. Remove printhead assembly (para 4-25, Remove steps 3-6).
4. Remove screw from each end of front bar.

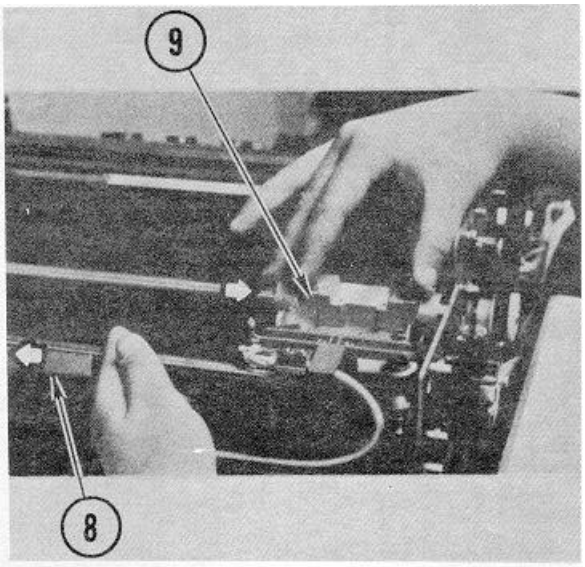


7. Remove retaining ring at each end of front bar.

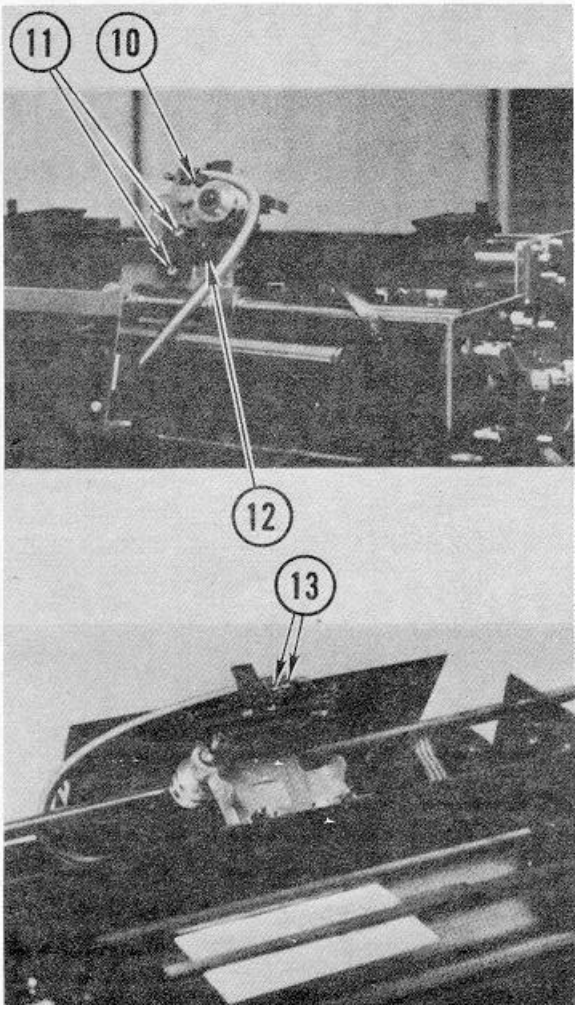
CAUTION

Hold frame firmly while pulling out front bar. Too much pressure will damage frame.

4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY (CONT)

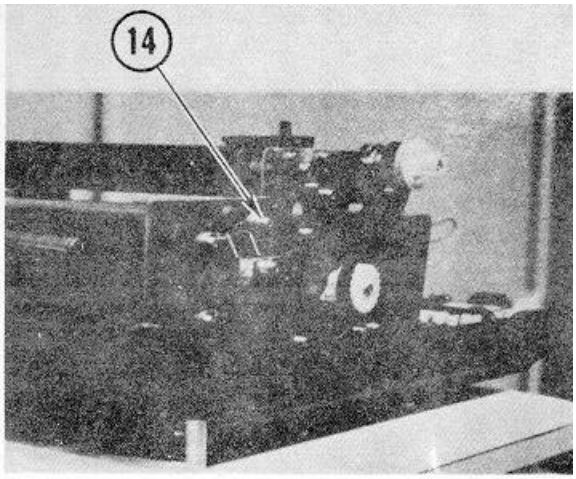


8. Pull front bar out of frame in direction shown.
9. Slide carriage transport off front bar in direction shown.



10. Pull carriage transport assembly upwards.
11. Remove screws. Pull off belt mounting plate.
12. Pull off belt.
13. Remove screws. Remove printhead cable.

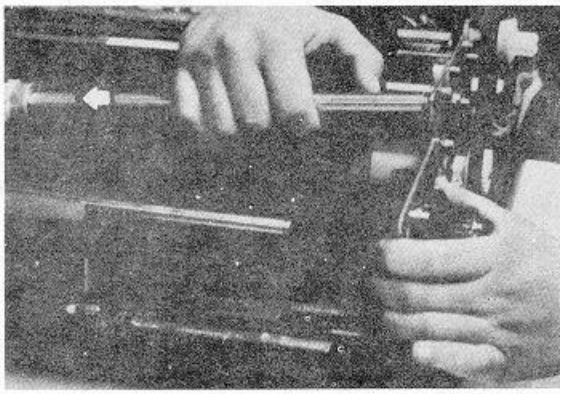
4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY (CONT)



14. Remove screws at each end of rear bar.

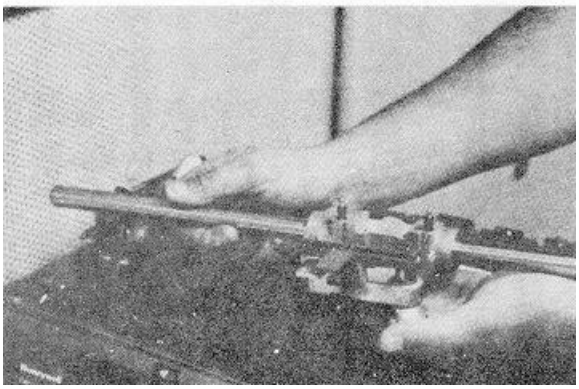
CAUTION

Hold frame firmly while pulling out rear bar. Too much pressure will damage frame.



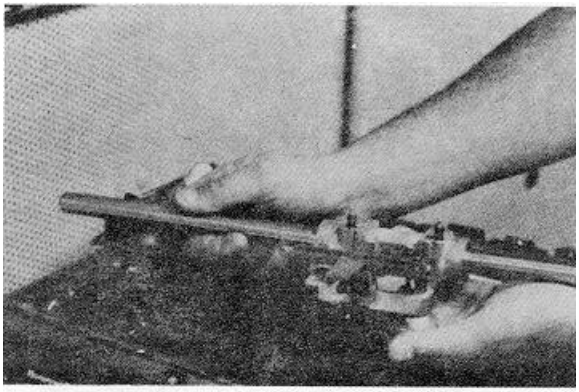
15. Carefully pull rear bar out of frame in direction shown.

16. Lift up on rear bar and pull it out other side of frame.



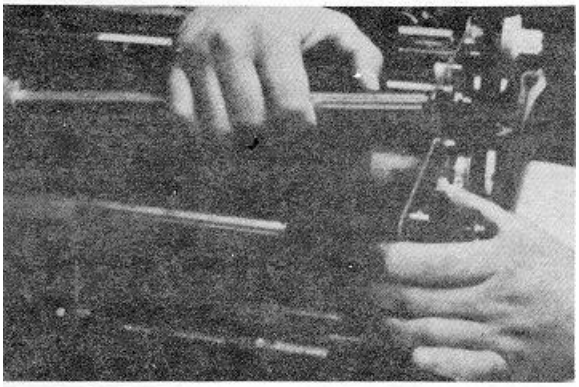
17. Lift bar up and slide off carriage transport assembly.

4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY (CONT)

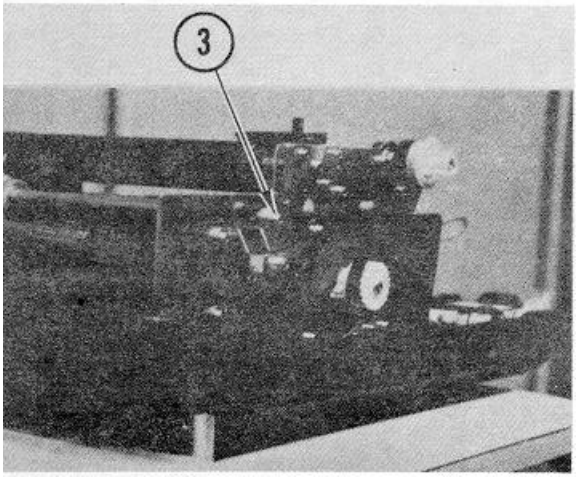


Replace

1. Slide carriage transport assembly on rear bar.

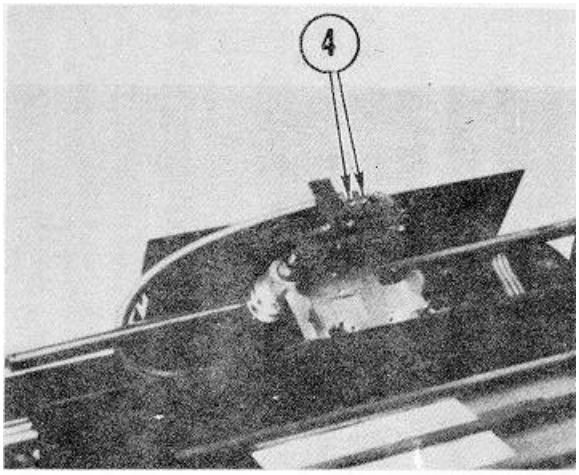


2. Insert bar into one end of frame. Then carefully snap other end into place.

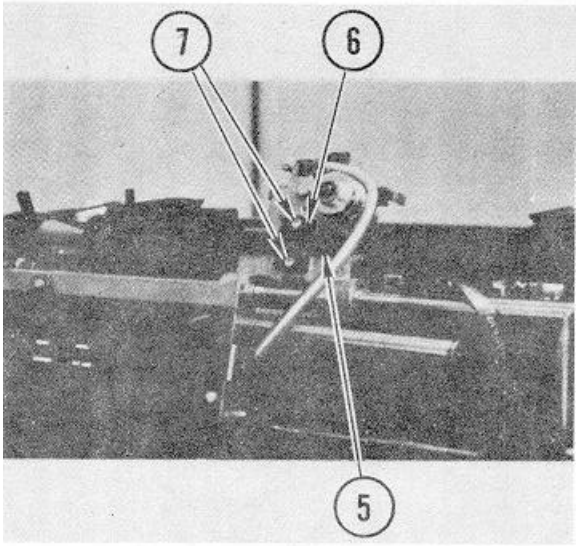


3. Replace and tighten screws at either end of rear bar.

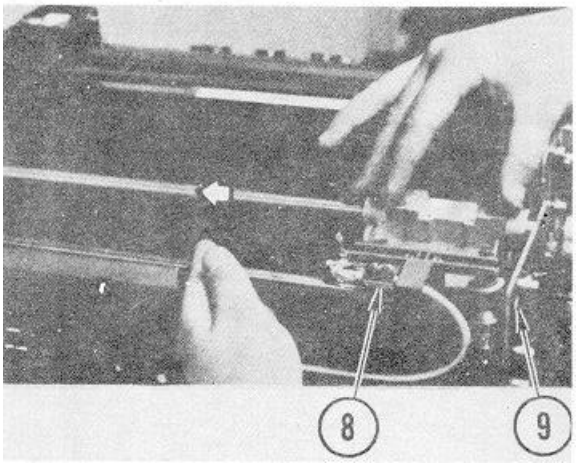
4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY (CONT)



4. Position printhead cable. Replace and tighten screws.

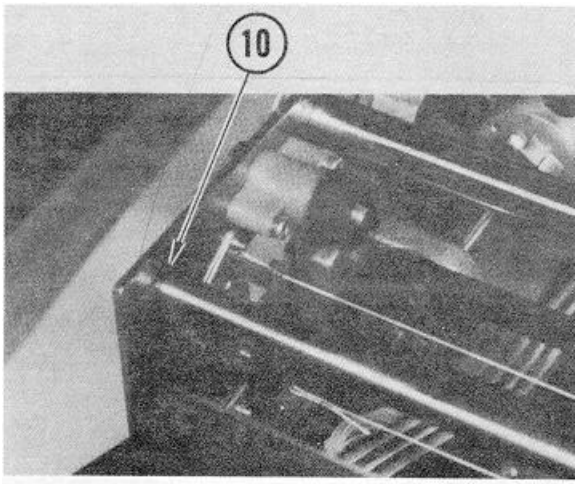


5. Position belt on underside of carriage transport assembly.
6. Replace mounting plate over belt.
7. Replace and tighten screws.

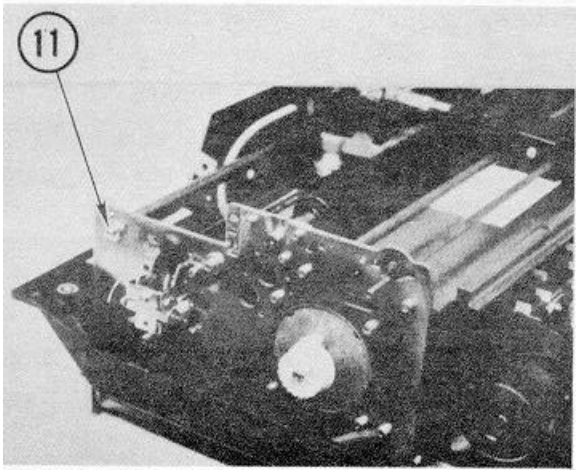


8. Slide carriage transport assembly in direction shown onto front bar.
9. Slide front bar through hole in frame.

4-27. REMOVE/REPLACE CARRIAGE TRANSPORT ASSEMBLY (CONT)



10. Replace retaining ring at each end of front bar.



11. Replace and tighten screw at each end of front bar.
12. Replace printhead assembly (para 4-25, Replace steps 1-5).
13. Replace pulley assembly (para 4-32, Replace steps 3-9).
14. Replace upper and lower ribbon drive cable assemblies (para 4-29).

4-28. ADJUST SYNCHRONOUS CARRIAGE SPEED

INITIAL SETUP

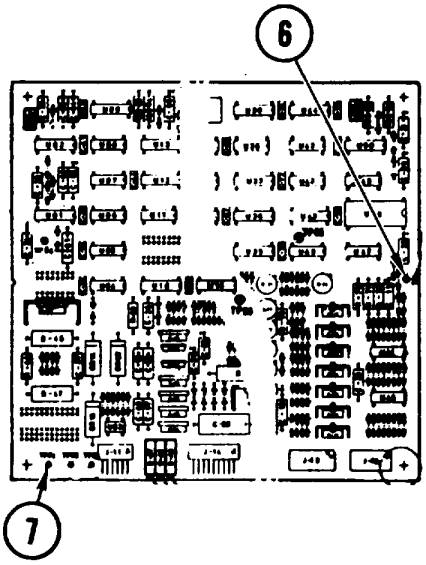
Common Tools	Test, Measurement and	Materials/Spare Parts
• Tool kit	• Diagnostic Equipment	• Paper
	• Oscilloscope	• Pen or pencil
	• Multimeter	

Adjust

1. Remove top cover (paragraph 4-11).
2. Set up multimeter to measure ac voltage (200 V scale). Push test leads into ac power outlet.
3. Check readout. Note voltage on paper.
4. Pull test leads from outlet.
5. Use your note and this chart to determine correct pulse time during carriage motion. Note pulse time on paper.

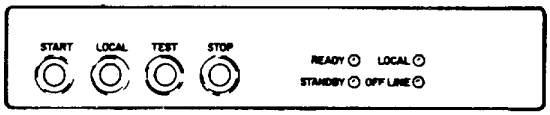
Vac	TIME BETWEEN FIRST AND THIRD PULSE DURING CARRIAGE MOTION
105-114V	2.2 ms
115-119V	2.1ms
120-129V	2.0ms

4-28. ADJUST SYNCHRONOUS CARRIAGE SPEED (CONT)



6. Set up scope. Connect channel 1 probe drive board at TP04.

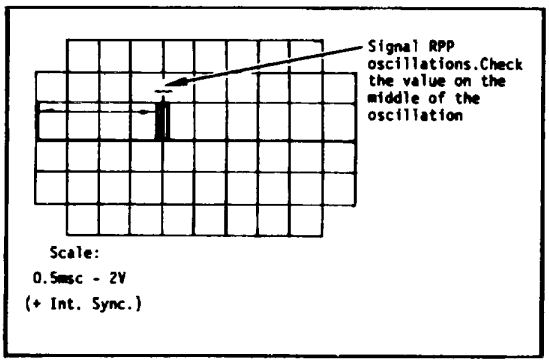
7. Connect channel 2 probe to TP01.



8. Push ac power plug into outlet. Power on.

9. Tape down paper out switch.

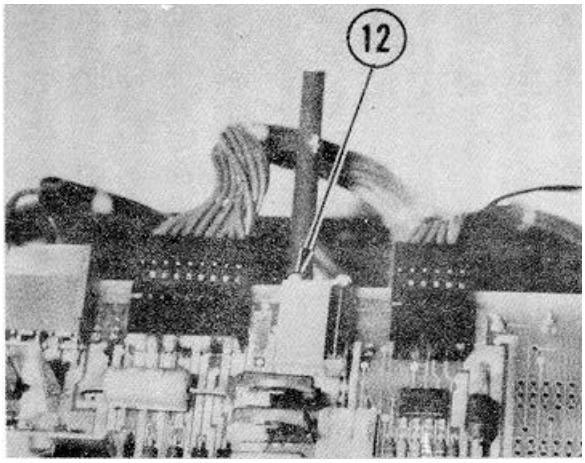
10. To run self-test without printing,
press STOP
LOCAL
TEST
LOCAL



11. Check scope.

- If pulse distance on scope equals pulse distance on scratch paper, go to step 13
- If pulse distance on scope does not equal pulse distance on scratch paper, go to step 12

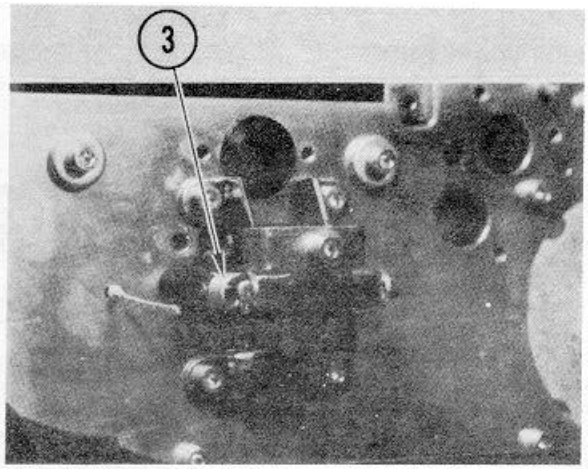
4-28. ADJUST SYNCHRONOUS CARRIAGE SPEED (CONT)

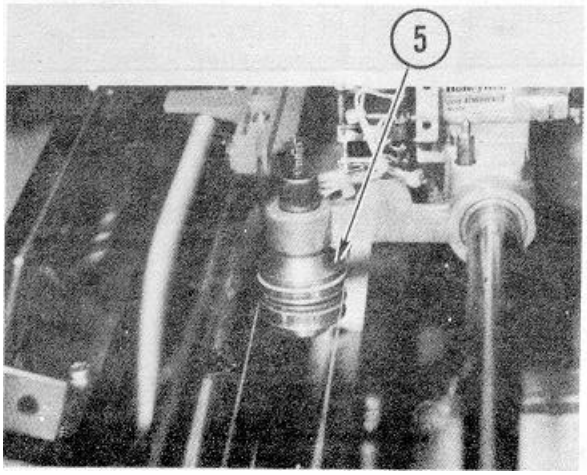


12. On driver board, turn R-A9 until pulse distance on scope equals pulse distance on scratch paper.
13. To stop self-test, press STOP.
14. Power off. Remove scope probes from board.
15. Replace top cover (para 4-11).

4-29. REMOVE/REPLACE RIBBON DRIVE CABLE ASSEMBLY

INITIAL SETUP	
Common Tools • Tool kit	Materials/Spare Parts • Paper • Pen or pencil





Remove

1. Remove top cover (para 4-11).
2. Remove ribbon cartridge.

NOTE

If you are removing only one component, do only the steps for the removal of that component:

- **Upper ribbon drive cable assembly (steps-7)**
- **Lower ribbon drive cable assembly (steps 8-11)**

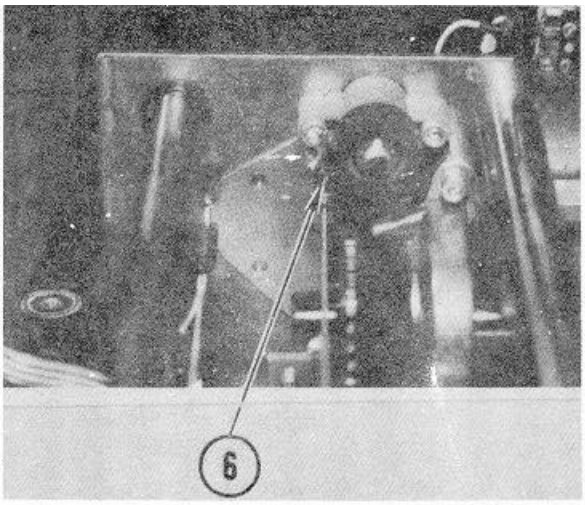
3. Unhook spring from retaining bracket.
4. Pull spring off cable.

NOTE

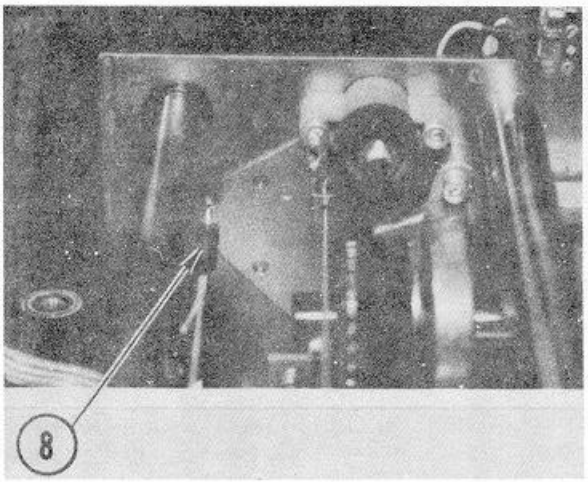
If possible, note position of cable on upper drive pulley for reference in replacing it.

5. Unwind cable from upper drive pulley.

4-29. REMOVE/REPLACE RIBBON DRIVE CABLE ASSEMBLY (CONT)



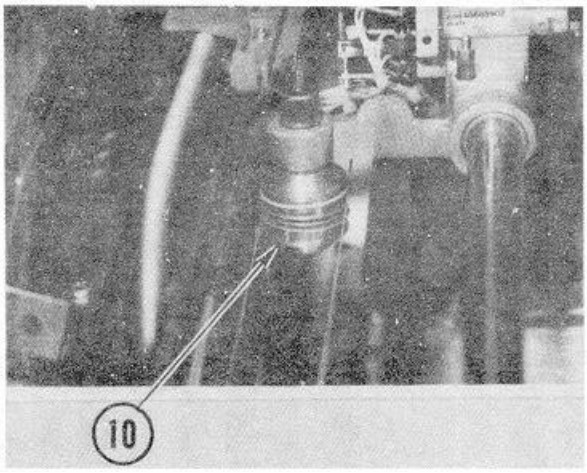
6. Pull cable off retaining bracket.
7. Lift out cable.



8. Unhook spring from retaining bracket.
9. Pull spring off cable.

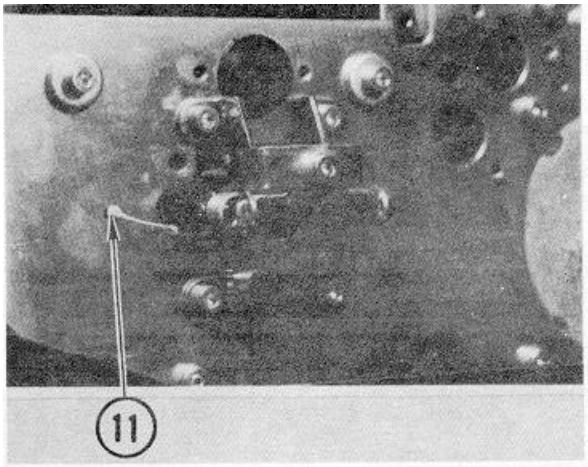
NOTE

Note position of cable on lower drive pulley for reference when you replace it.



10. Unwind cable from lower drive pulley.

4-29. REMOVE/REPLACE RIBBON DRIVE CABLE ASSEMBLY (CONT)



11. Pull cable out of hole.

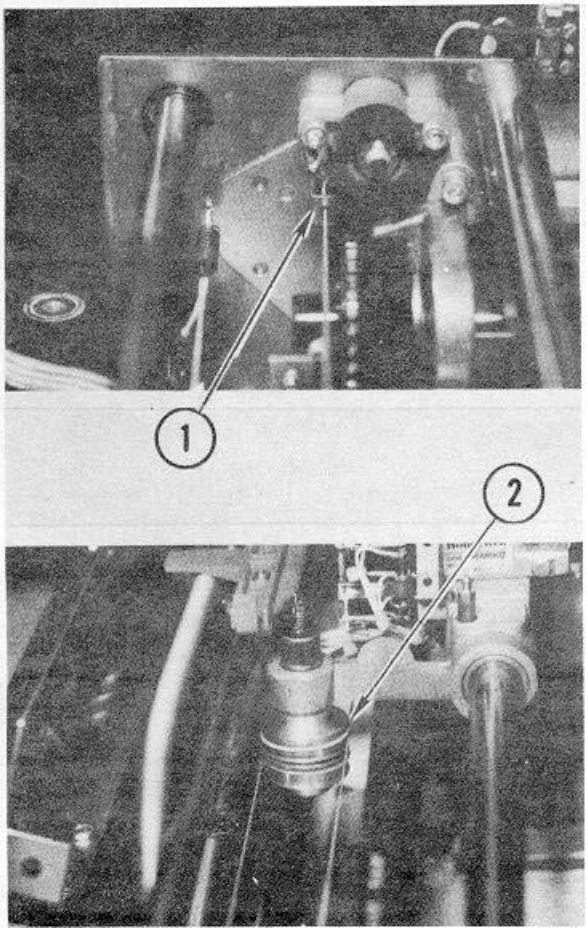
Replace

NOTE

If you are replacing only one component, do only the steps for replacement of that component:

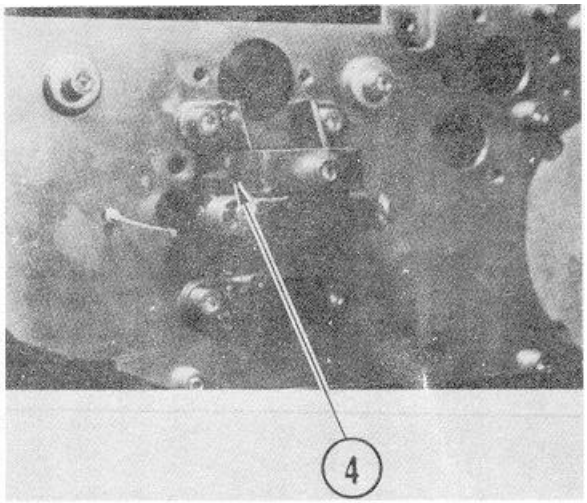
- **Upper ribbon drive cable assembly (steps-6)**
- **Lower ribbon drive cable assembly (steps 7-13)**

1. Attach the cable end with retaining clamp to retaining bracket.

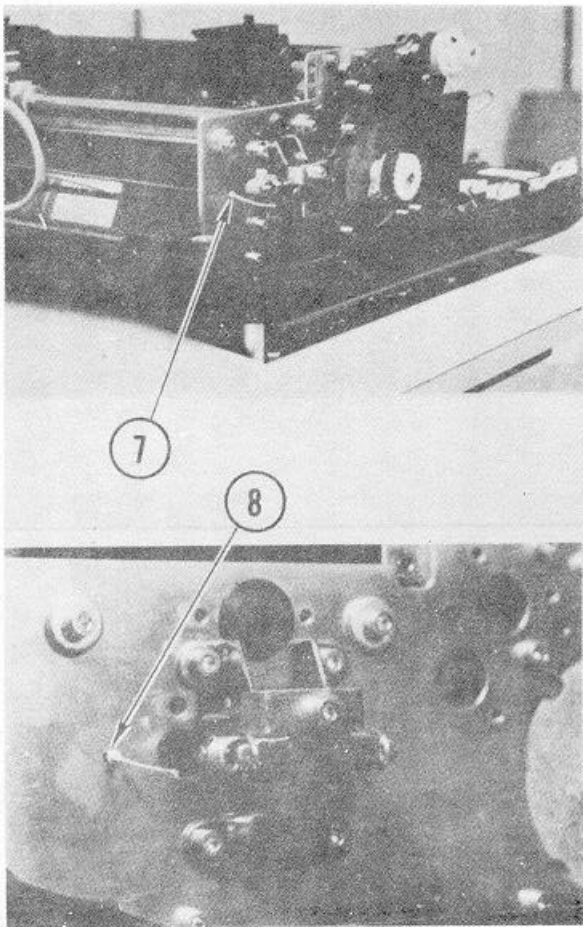


2. Starting on outside of upper drive pulley, wind cable around pulley once.

4-29. REMOVE/REPLACE RIBBON DRIVE CABLE ASSEMBLY (CONT)

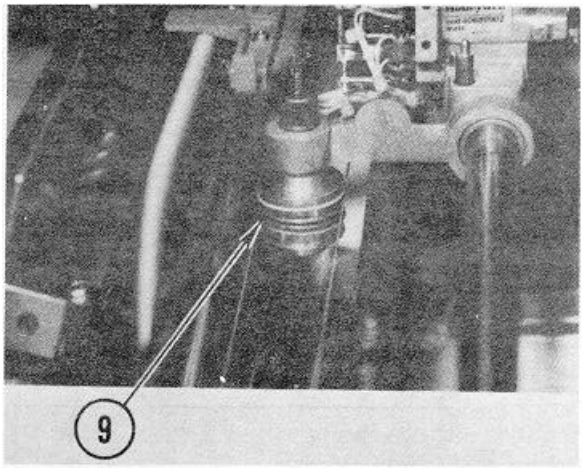


3. Hook spring into loop end of cable.
4. Attach spring to retaining bracket.
5. Replace ribbon cartridge.
6. Replace top cover (para 4-11).

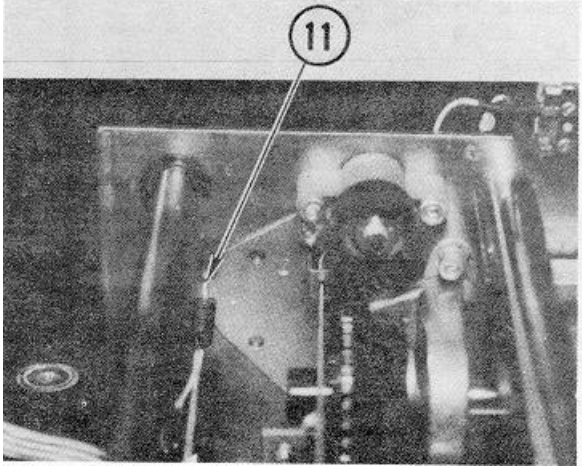


7. Insert loop end of cable through hole in frame.
8. Pull cable through hole until retaining clamp on end of cable fits tightly against frame.

4-29. REMOVE/REPLACE RIBBON DRIVE CABLE ASSEMBLY (CONT)



9. Starting on outside of lower drive pulley, wind cable around pulley once.

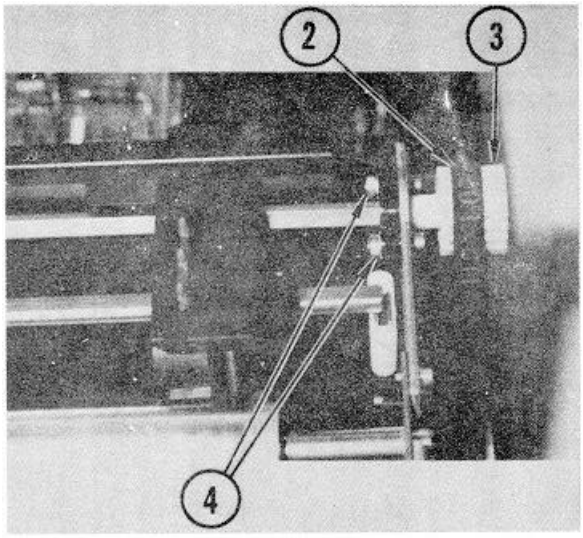


10. Hook spring into loop end of cable.
11. Attach spring to retaining bracket.
12. Replace ribbon cartridge.
13. Replace top cover (para 4-11).

4-30. REMOVE/REPLACE TRACTOR

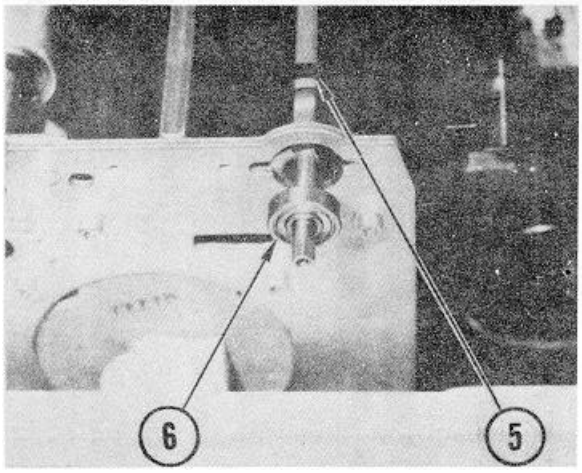
INITIAL SETUP

Common Tools
- Tool kit
- Hex key allen set - metric



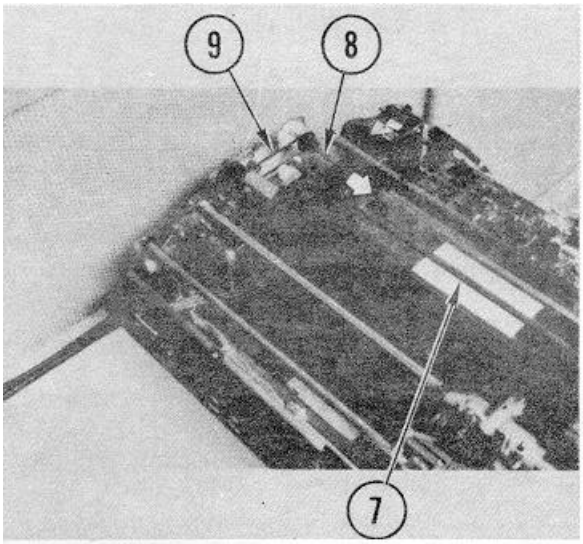
Remove

1. Remove top cover (para 4-11).
2. Pull off drive belt.
3. Push in drive pulley and turn shaft until setscrew is visible through hole in drive pulley. Loosen setscrew and remove pulley, spring, and bushing.
4. Remove screws, nuts and washers.

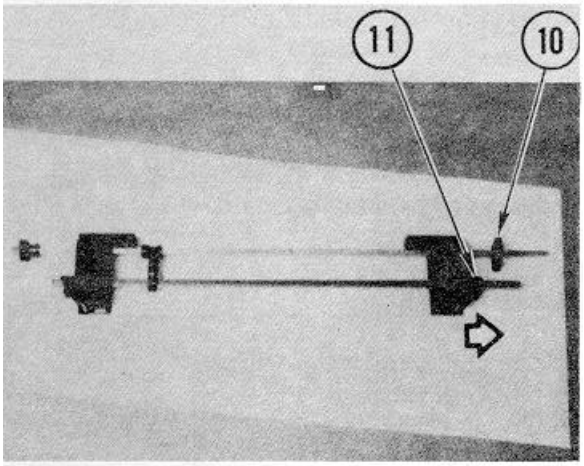


5. Push cap out of way.
6. Push out bearing.

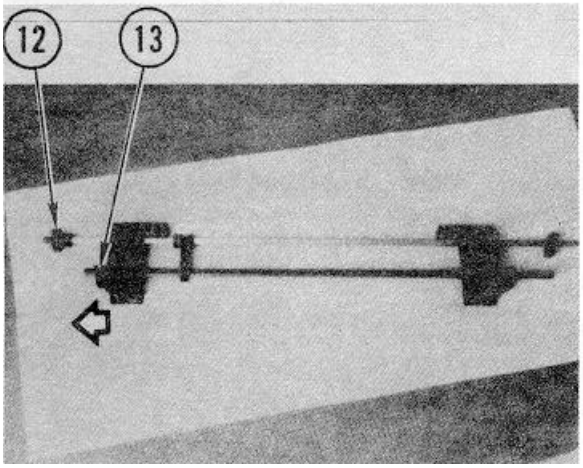
4-30. REMOVE/REPLACE TRACTOR (CONT)



7. Lift front shaft
8. Slide rear shaft as shown to free it.
9. Remove round belt, and lift tractor assembly out of printer.

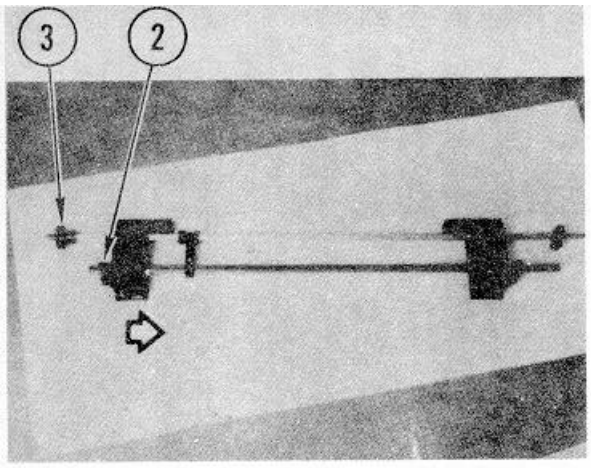


10. To remove right tractor, pull off cap.
11. Loosen knob, and slide tractor off shafts in direction shown.



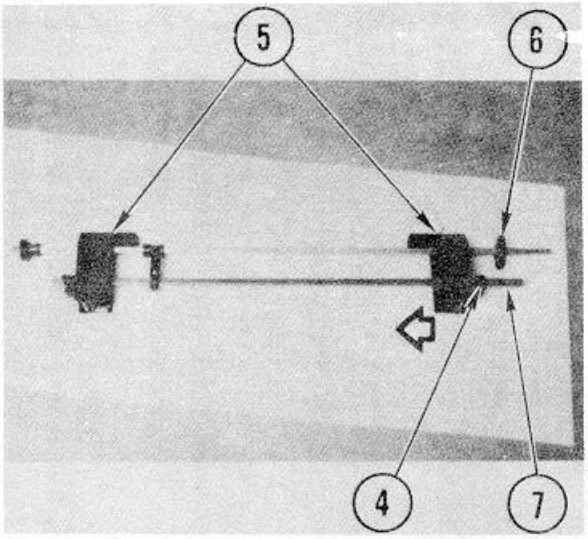
12. To remove left tractor, pull off pulley.
13. Loosen knob, and slide tractor off shafts in direction shown.

4-30. REMOVE/REPLACE TRACTOR (CONT)

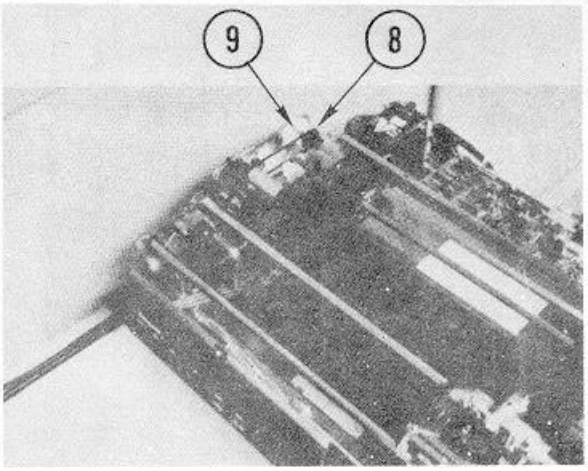


Replace

1. To replace left tractor, slide tractor on shafts in direction shown.
2. Tighten knob.
3. Push on pulley.

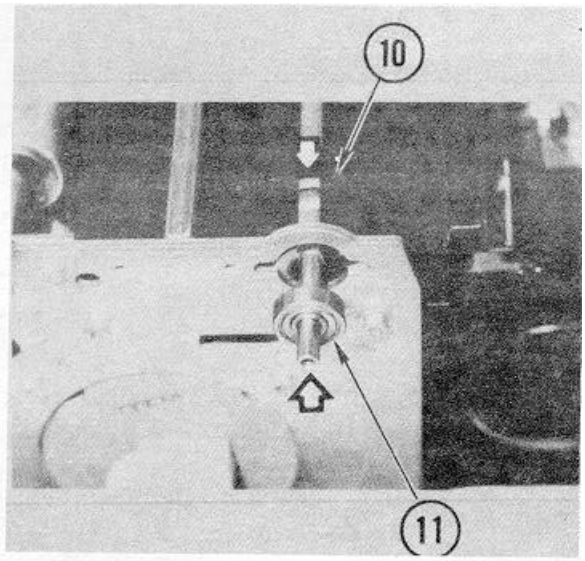


4. To replace right tractor, slide tractor on shafts in direction shown and tighten knob.
5. Make sure tractor pins line up on each tractor.
6. Push on cap.
7. Insert right rear shaft and through hole in frame.

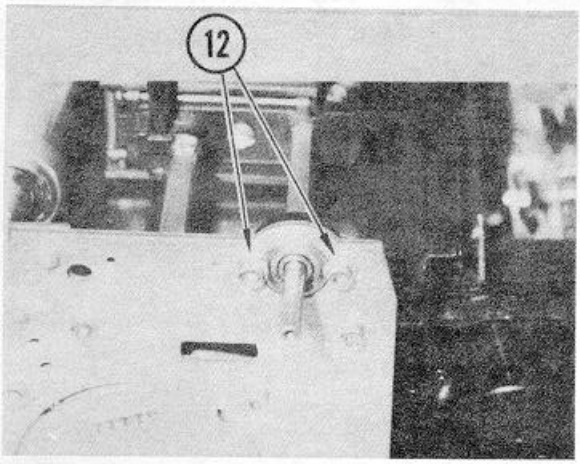


8. Install round belt over pulley. Aline so belt is straight.
9. Insert rear tractor shaft into bearing.

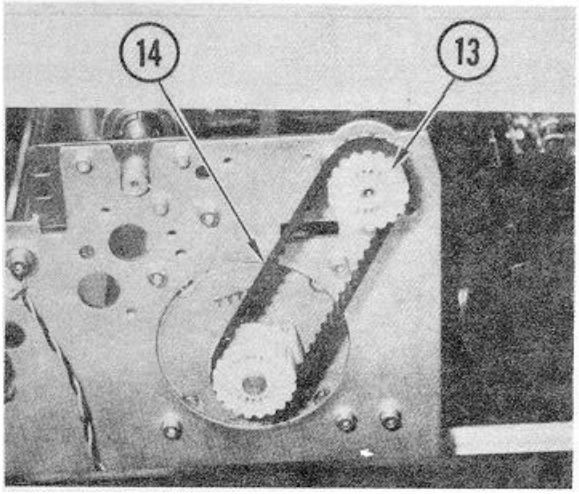
4-30. REMOVE/REPLACE TRACTOR (CONT)



10. Slide cap back into place.
11. Slide bearing onto shaft and seat into cap.



12. Replace screws, nuts and washers.



13. Push bushing, spring, and pulley on shaft. Tighten setscrew.
14. Slip on drive belt.
15. Replace top cover (para 4-11).

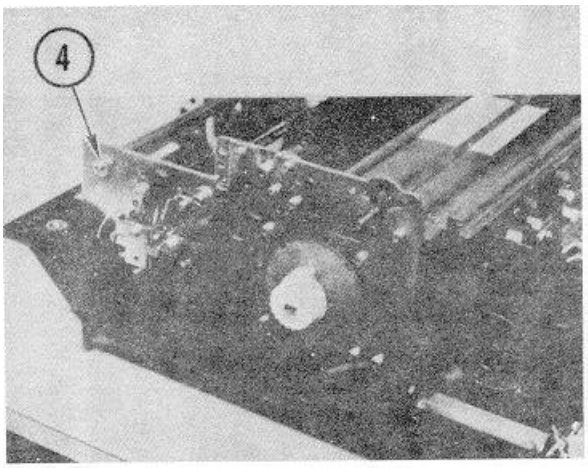
4-31. REMOVE/REPLACE CARRIAGE STEPPER MOTOR POSITIVE DRIVE BELT

INITIAL SETUP

Common Tools
• Tool kit

Remove

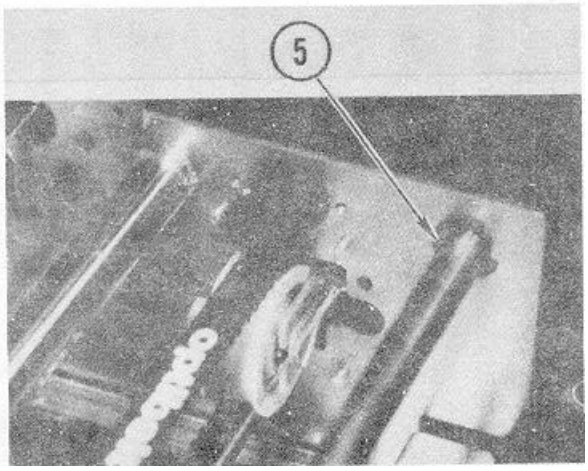
1. Remove upper and lower ribbon drive cable assemblies (para 4-29).
2. Remove pulley assembly (para 4-32, Remove steps 2-5).
3. Remove printhead assembly (para 4-25, Remove steps-6).
4. Remove screw from each end of front bar.



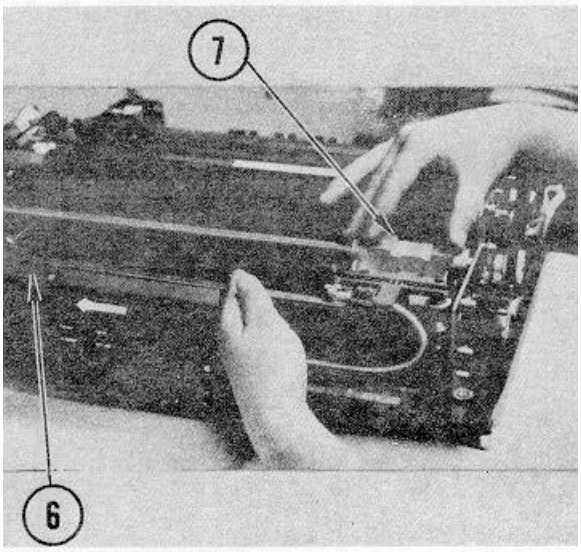
5. Remove retaining ring at each end of front bar.

CAUTION

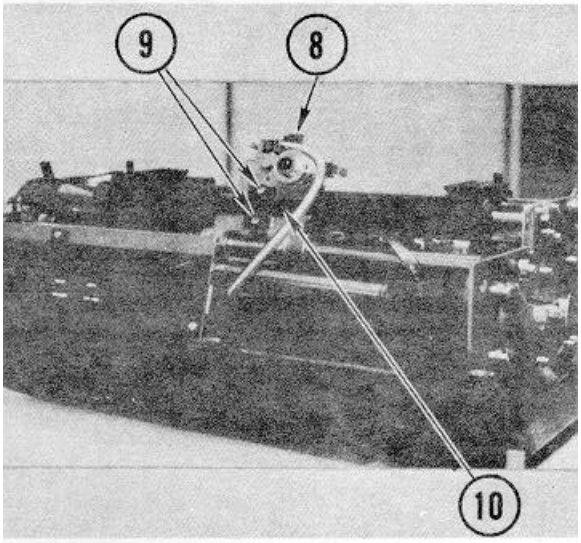
Hold frame firmly while pulling out front bar. Too much pressure will damage frame.



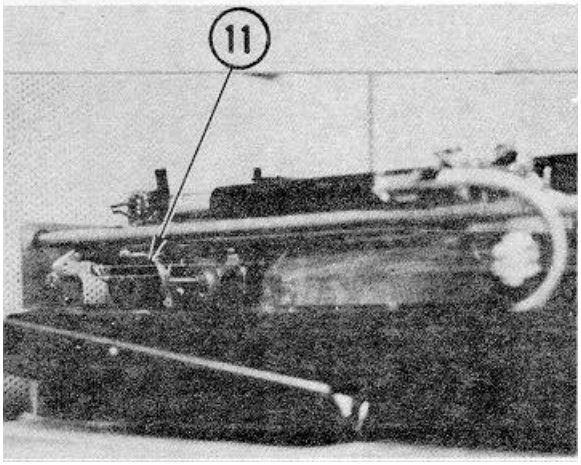
4-31. REMOVE/REPLACE CARRIAGE STEPPER MOTOR POSITIVE DRIVE BELT (CONT)



6. Pull front bar in direction shown out of frame.
7. Slide carriage transport off front bar in direction shown.

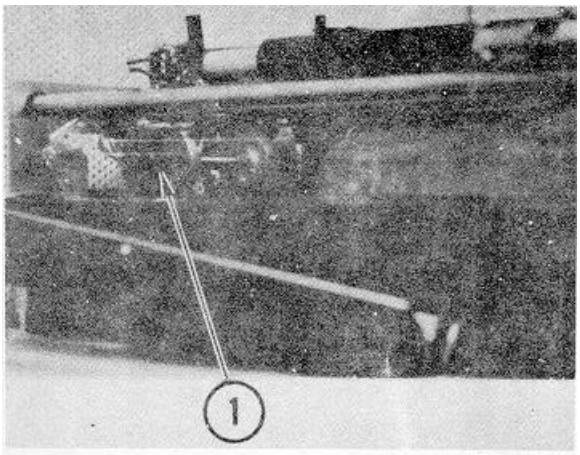


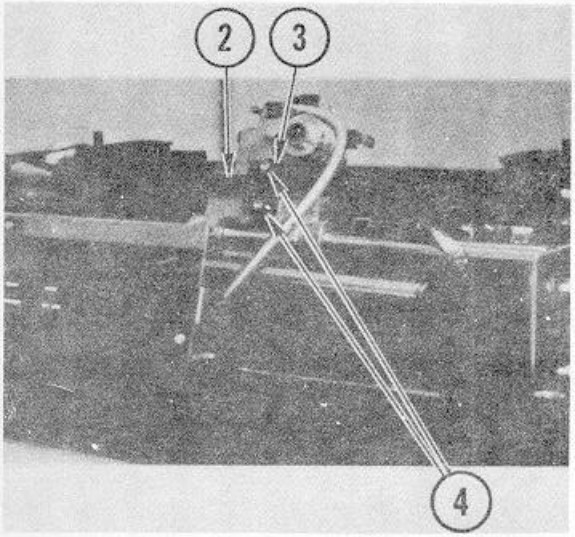
8. Pull carriage transport assembly upwards.
9. Remove screws. Pull off mounting plate.
10. Pull belt off carriage transport assembly.

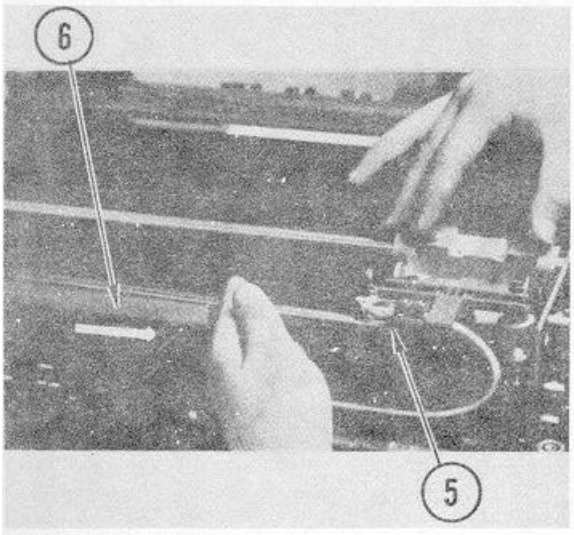


11. Pull belt off pulley.
12. Lift belt out of printer.

4-31. REMOVE/REPLACE CARRIAGE STEPPER MOTOR POSITIVE DRIVE BELT (CONT)







Replace

1. Place belt on pulley.

2. Position belt on underside of carriage transport assembly.

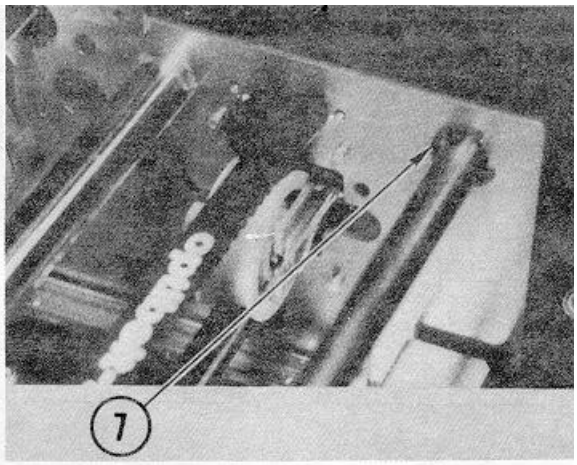
3. Replace mounting plate over belt.

4. Replace and tighten screws.

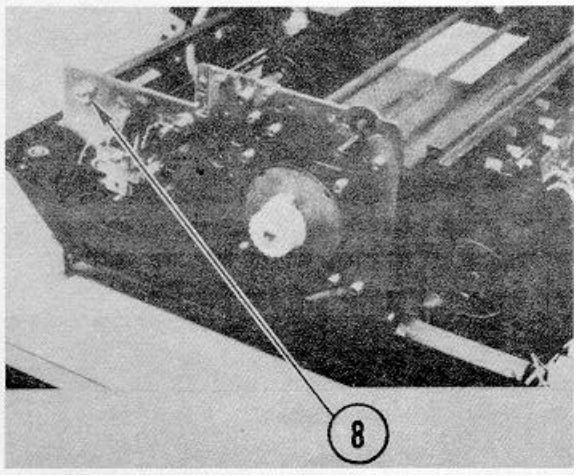
5. Slide carriage transport assembly onto front bar.

6. Slide front bar in direction shown through hole in frame.

4-31. REMOVE/REPLACE CARRIAGE STEPPER MOTOR POSITIVE DRIVE BELT (CONT)



7. Replace retaining ring or each end of front bar.



8. Replace screw at each end of front bar.
9. Replace printhead assembly (para 4-25, Replace steps 1-5).
10. Replace pulley assembly (para 4-32, Replace steps 3-9).
11. Replace upper and lower ribbon drive cable assemblies (para 4-29).

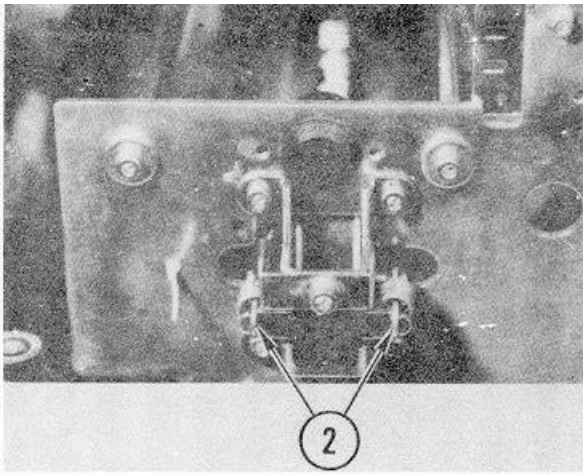
4-32. REMOVE/REPLACE PULLEY ASSEMBLY

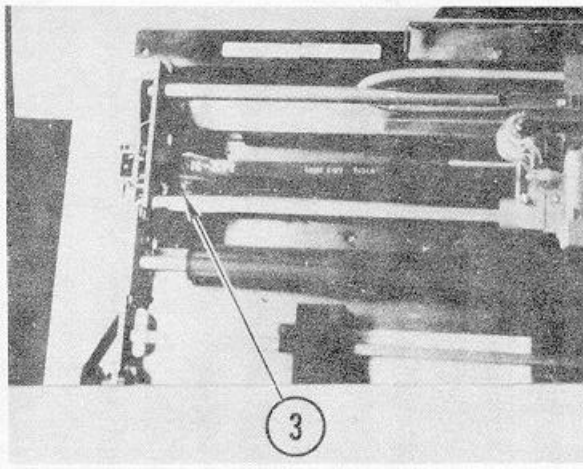
INITIAL SETUP

Common Tools
- Tool kit
- Hex key allen set - metric
- Socket set - metric

Remove

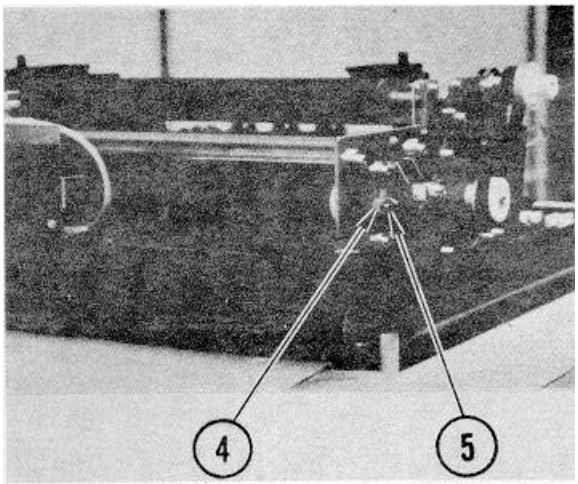
1. Remove upper ribbon drive cable assembly (para 4-29).
2. Remove two support springs.



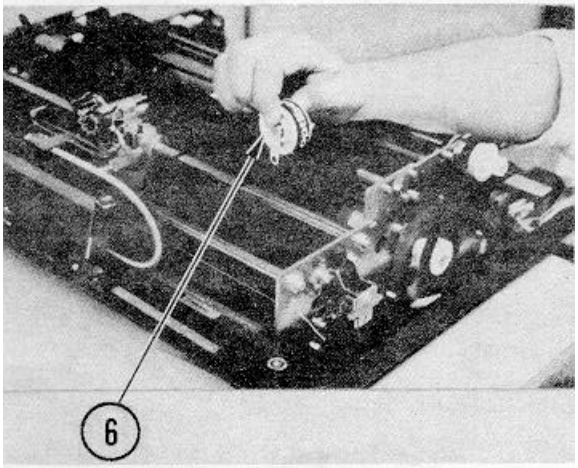


3. Loosen nut on pulley.

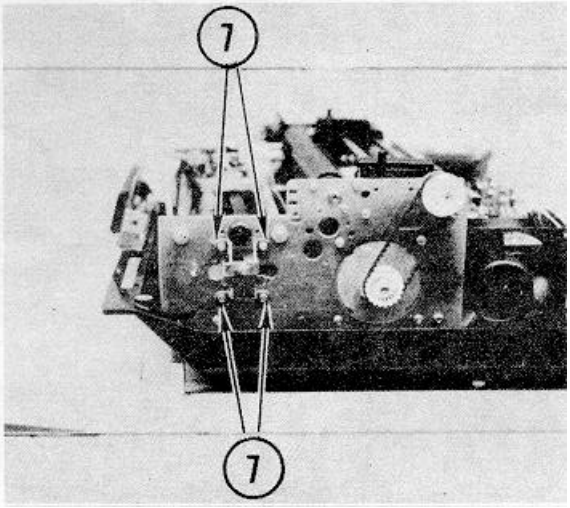
4-32. REMOVE/REPLACE PULLEY ASSEMBLY (CONT)



4. Remove retaining ring.
5. Pull out support bar.

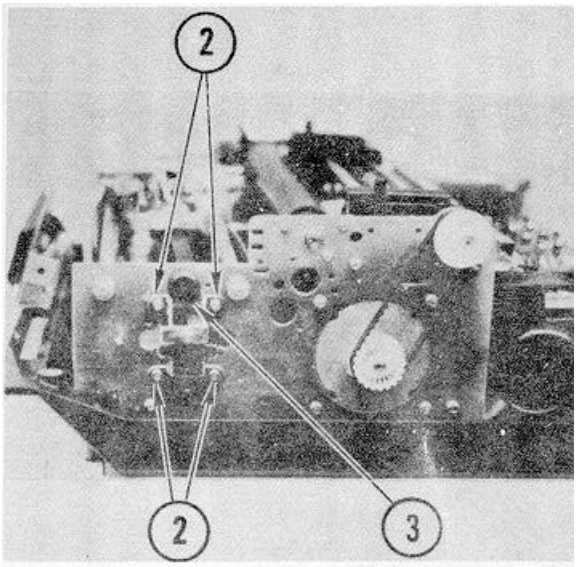


6. Lift out pulley and remove from positive drive belt.



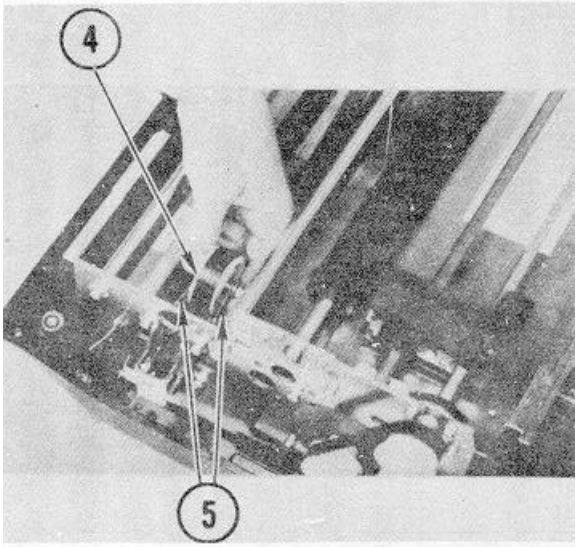
7. Remove screws from mounting bracket.
8. Remove bracket.

4-32. REMOVE/REPLACE PULLEY ASSEMBLY (CONT)

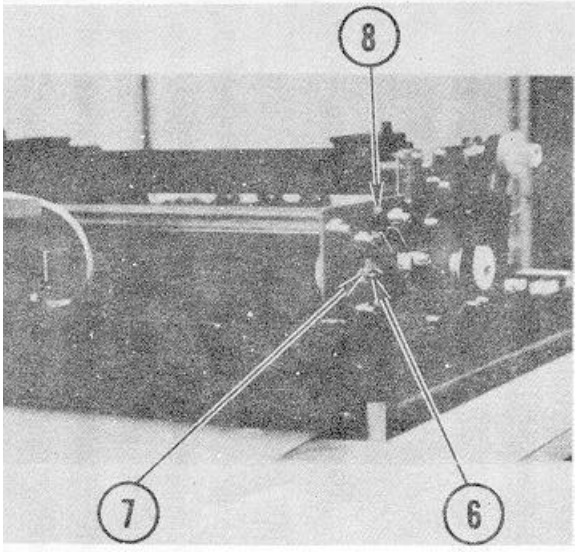


Remove

1. Replace mounting bracket on printer frame.
2. Replace and tighten screws.
3. Push out rubber bumper.

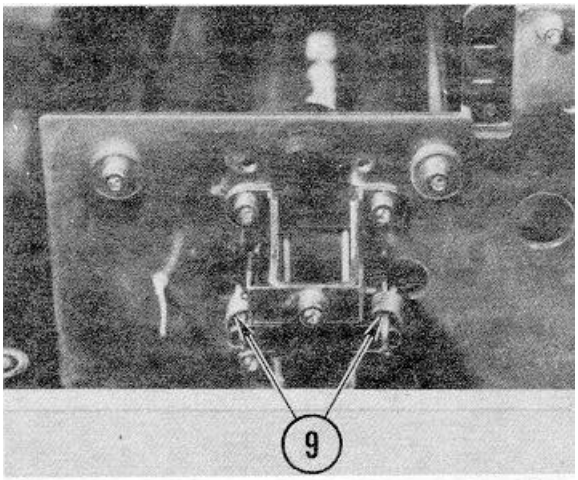


4. Replace pulley inside positive drive belt.
5. Position pulley tension plates on outside of mounting bracket cradle arms. Slide forward into position.

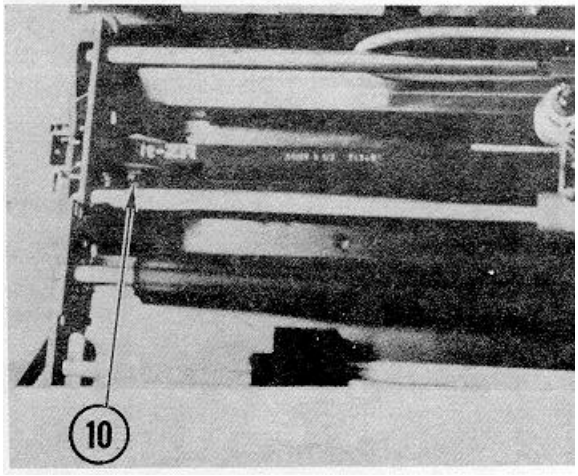


6. Insert support bar through holes in pulley tension plates.
7. Replace retaining ring.
8. Replace rubber bumper.

4-32. REMOVE/REPLACE PULLEY ASSEMBLY (CONT)



9. Replace support springs.



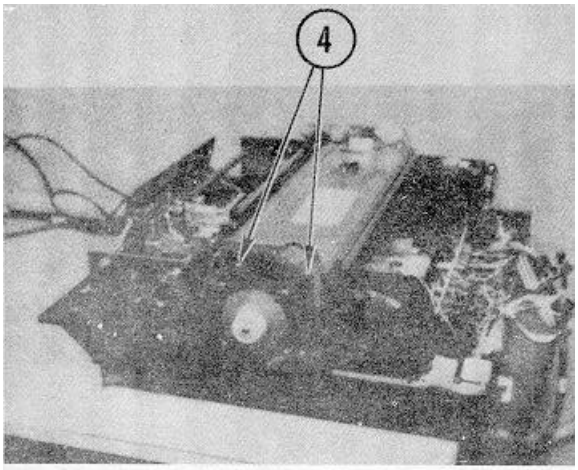
10. Tighten nut on pulley shaft.

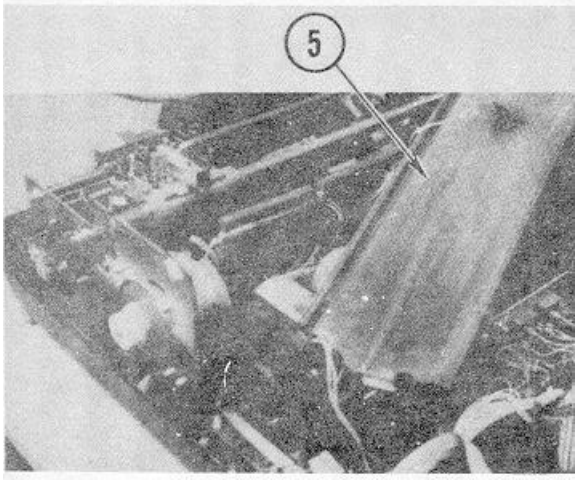
11. Replace upper ribbon drive cable assembly (para 4-29).

4-33. REMOVE/REPLACE PAPER STEPPER MOTOR

INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tie wraps
• Hex Key Allen Set - Metric	• Paper
	• Pen or pencil





Remove

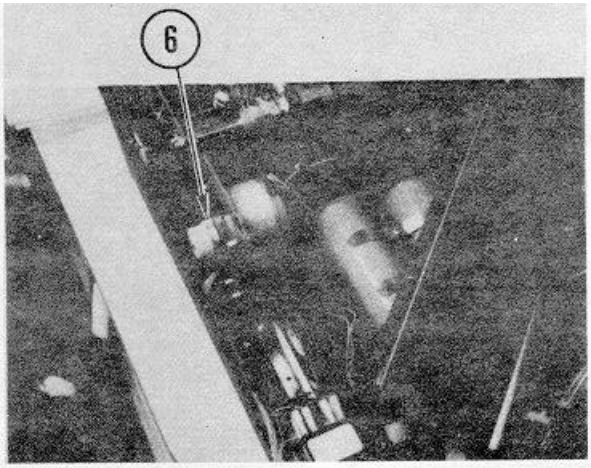
1. Remove driver and CPU boards (para 4-45, Remove, steps 1-10).
2. Remove platen (para 4-44, Remove, steps 2-8).
3. Remove tractors (para 4-30, Remove, steps 2-9).
4. Remove from both sides of frame, screws and washers holding base plate and, if necessary, ground wire.

CAUTION

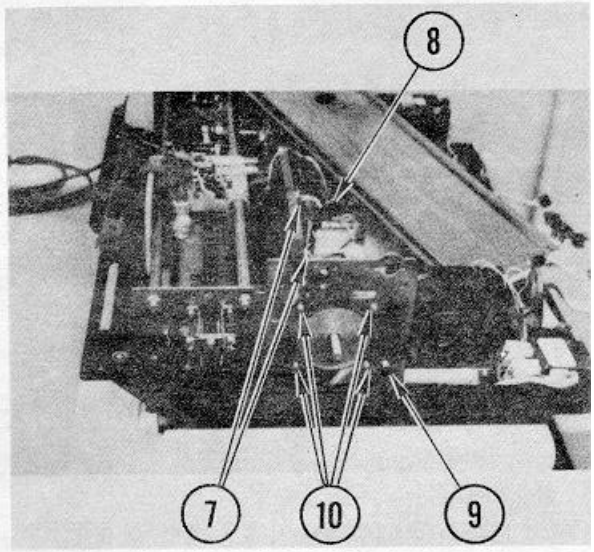
Wire to paper out switch is connected to bottom of base plate. Be careful not to damage wire when lifting and turning base plate.

5. Carefully lift up and turn base plate over. Let it lie on printer.

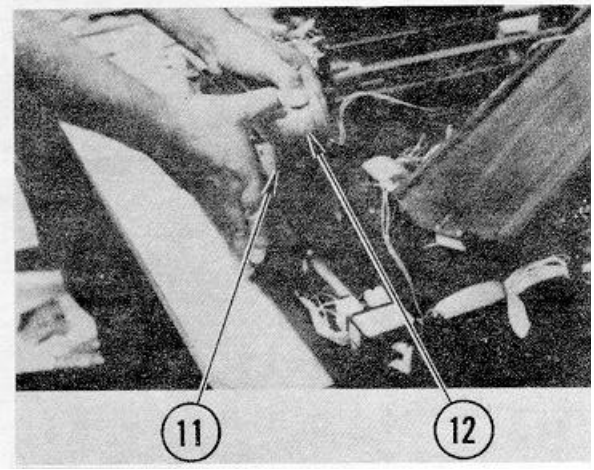
4-33. REMOVE/REPLACE PAPER STEPPER MOTOR (CONT)



6. Loosen set screw. Pull off pulley.



7. Cut tie wraps.
8. Pull apart connectors.
9. Remove screw holding side plate.
10. Remove screws, washers, and nuts holding motor.



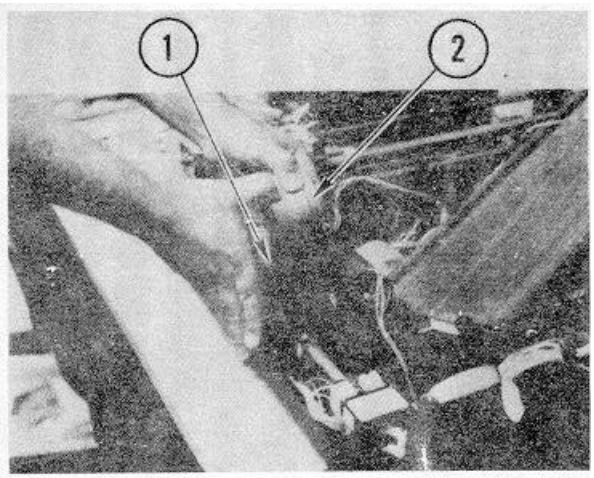
11. Pull back side plate.

NOTE

Note position of motor before removing it.

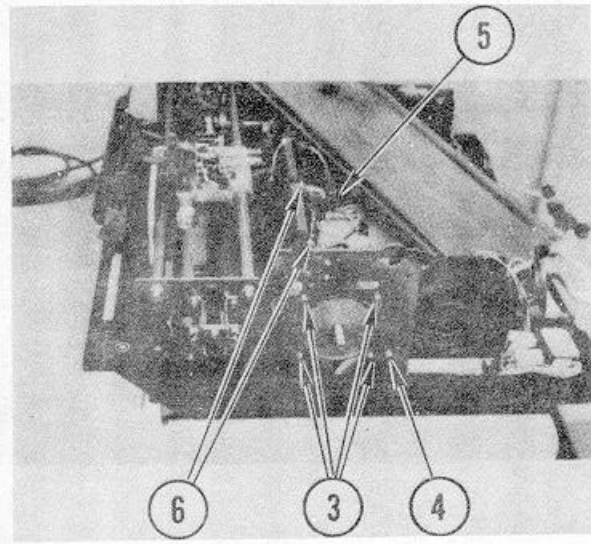
12. Lift out motor.

4-33. REMOVE/REPLACE PAPER STEPPER MOTOR (CONT)

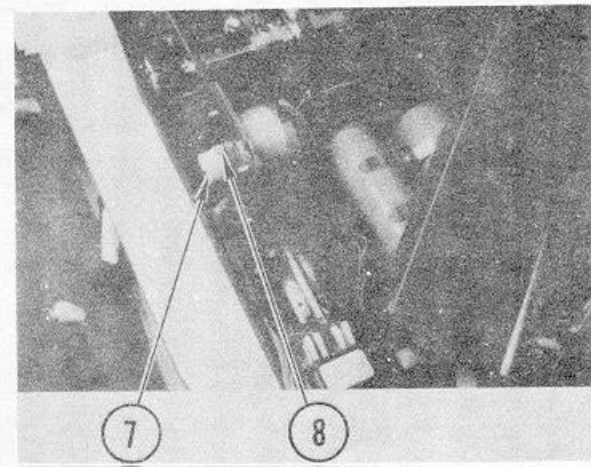


Replace

1. Pull back side plate.
2. Position motor in printer.



3. Replace and tighten screws, washers, and nuts holding motor.
4. Replace and tighten screw holding side plate.
5. Push together connectors.
6. Install tie wraps.

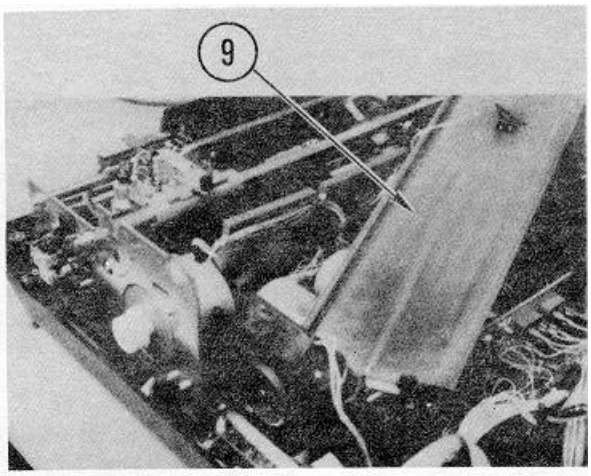


7. Push pulley on motor drive shaft.
8. Tighten set screw.

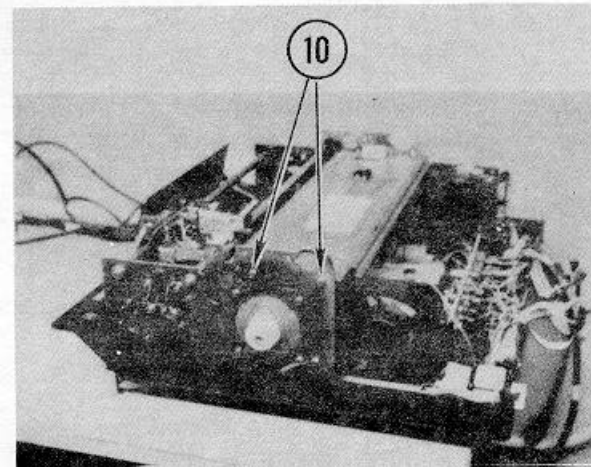
CAUTION

Be careful, not to damage wire to paper out switch when handling base plate.

4-33. REMOVE/REPLACE PAPER STEPPER MOTOR (CONT)



9. Carefully turn over base plate and position in printer.



10. On both sides of frame, replace and tighten screws and washers holding base plate and, if applicable, ground wire.

11. Replace tractors (para 4-30, Replace, steps 7-14).

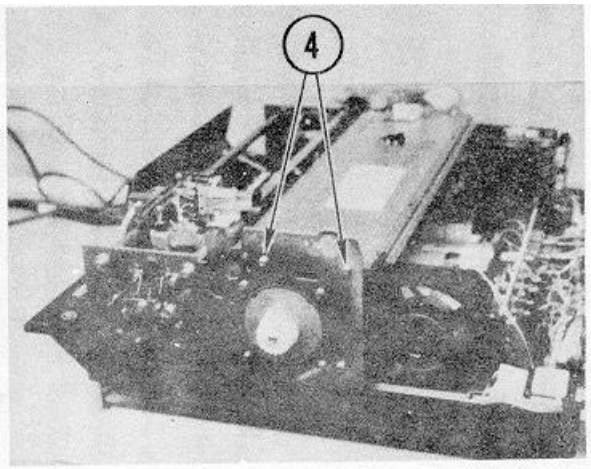
12. Replace platen (para 4-44, Replace, steps 1-9).

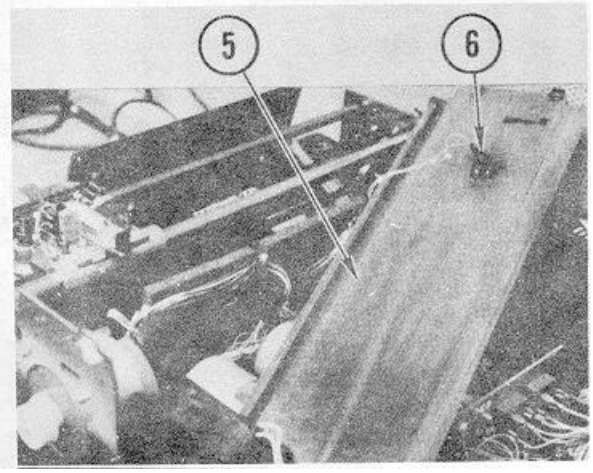
13. Replace driver and CPU boards (para 4-45, Replace, steps 7-12, 14-16).

4-34. REMOVE/REPLACE CARRIAGE STEPPER MOTOR

INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tie wraps
• Hex key alien set - metric	





Remove

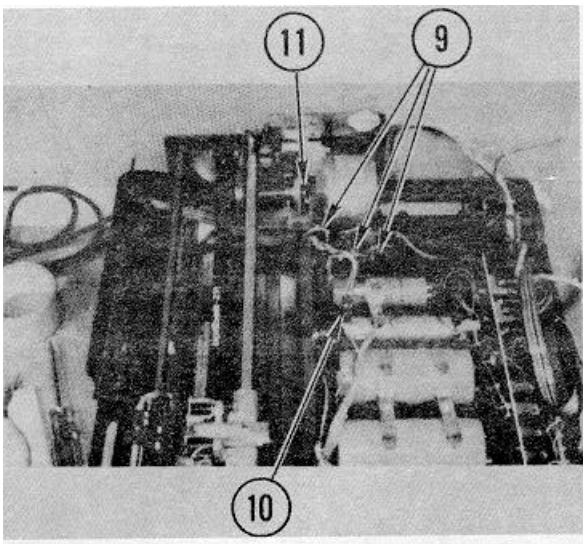
1. Remove driver and CPU boards (para 4-45, Remove, steps 1-10).
2. Remove platen (para 4-44, Remove, steps 2-8).
3. Remove tractors (para 4-30, Remove, steps 2-9).
4. Remove, from both sides of frame, screws and washers holding base plate and, if applicable, ground wire.

CAUTION

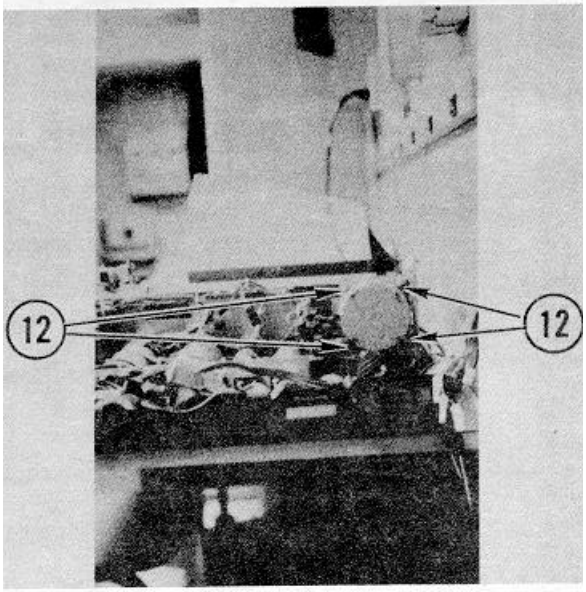
Wire to paper out switch is connected to bottom of base plate. Be careful not to damage wire when lifting up base plate.

5. Carefully lift up base plate. Turn over to expose paper out switch.
6. Remove screws. lift off paper outswitch.
7. Remove bass plate from printer.

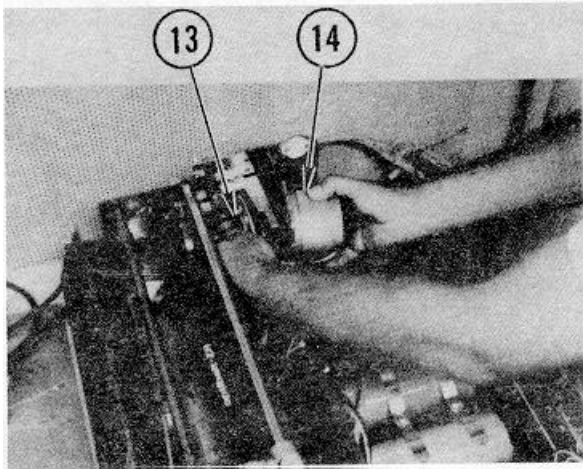
4-34. REMOVE/REPLACE CARRIAGE STEPPER MOTOR (CONT)



8. Remove transformer (para 4-16, Remove, steps 2-9).
9. Cut tie wraps.
10. Pull apart connectors.
11. Loosen screw on inner retaining hub next to motor.

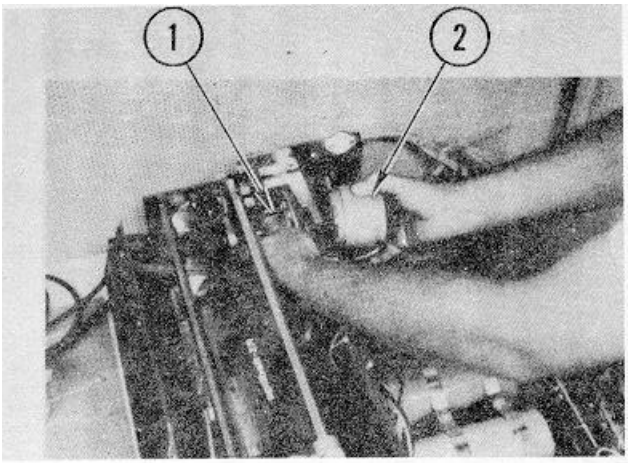


12. Remove screws and washers holding motor.



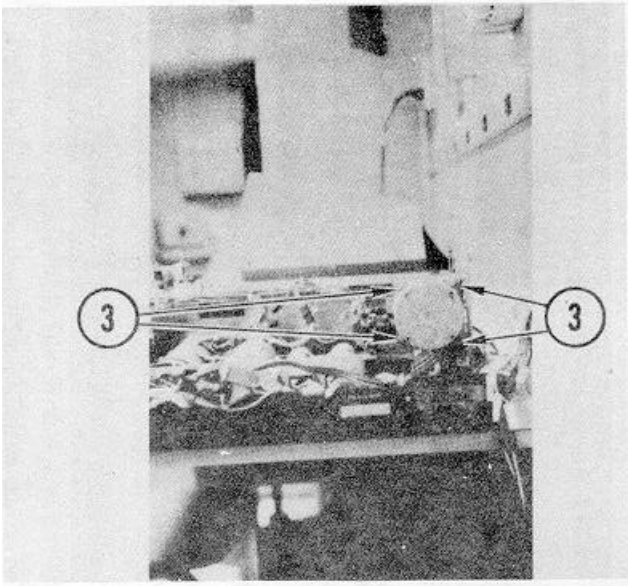
13. Hold timing wheel shaft.
14. Pull out motor.

4-34. REMOVE/REPLACE CARRIAGE STEPPER MOTOR (CONT)

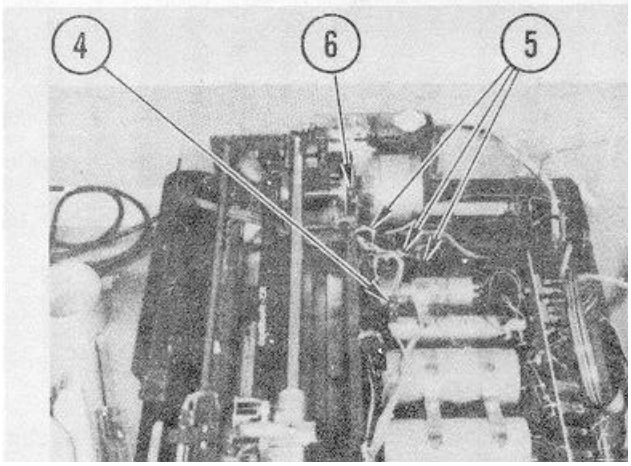


Replace

1. Hold timing wheel shaft.
2. Push motor into position.

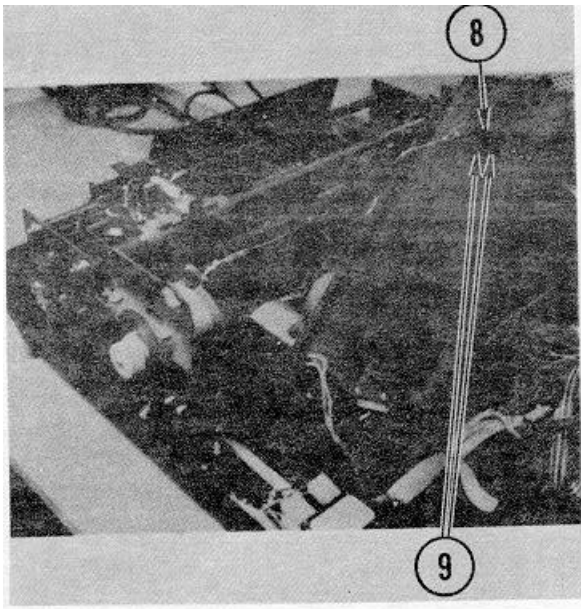


3. Replace and tighten screws and washers holding motor.



4. Push together connectors.
5. Install tie wraps.
6. Tighten screw on retaining hub next to motor.

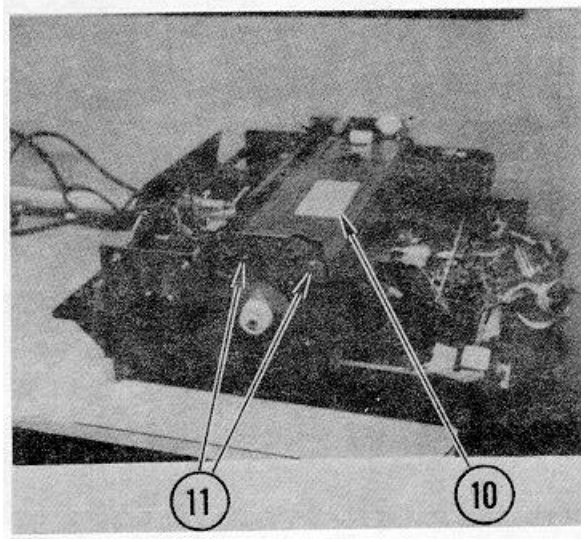
4-34. REMOVE/REPLACE CARRIAGE STEPPER MOTOR (CONT)



7. Replace transformer (para 4-16, Replace, steps 1-5).

8. Place paper out switch in position on bottom of base plate, as shown.

9. Replace and tighten screws.



10. Turn over base plate and set into position, as shown.

11. On both sides of frame, replace screws and washers holding base plate and, if applicable, ground wire.

12. Replace tractor (para 4-30, Replace, steps 7-14).

13. Replace platen (para 4-44, Replace, steps 1-9).

14. Replace driver and CPU boards (para 4-45, Replace, steps 7-12).

15. Adjust mistor pulse to row start pulse (para 4-38, Adjust, steps 4-31).

16. Adjust mistor pulse to carriage stepper motor (para 4-37, Adjust, steps 4-22).

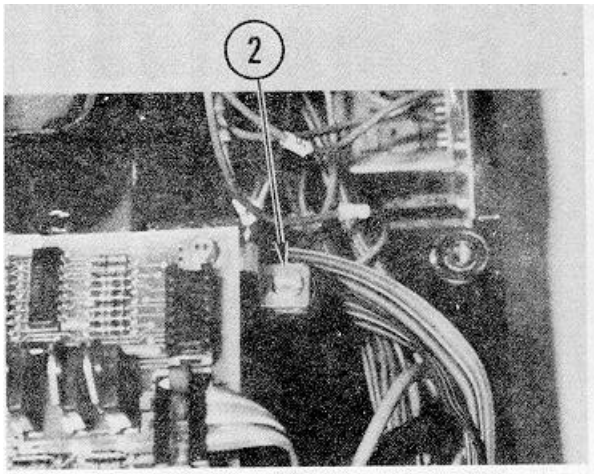
17. Replace driver and CPU boards (para 4-45, Replace, steps 14-16).

4-35. ADJUST MISTOR AMPLIFIER

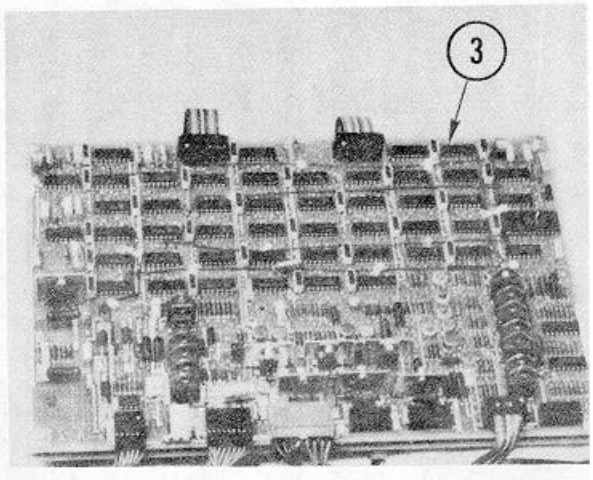
INITIAL SETUP

Common Tools	Test, Measurement and Diagnostic Equipment	Materials/Spare Parts
• Tool kit	• Oscilloscope	• Masking tape

Adjust

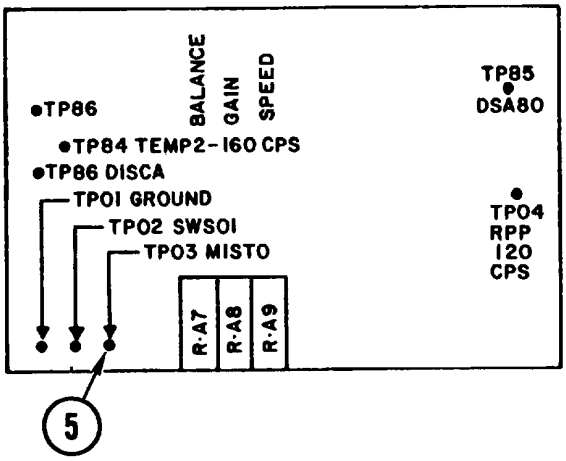


1. Remove top cover (para 4-11).
2. Remove screw holding clamp on circuit boards. Remove clamp.



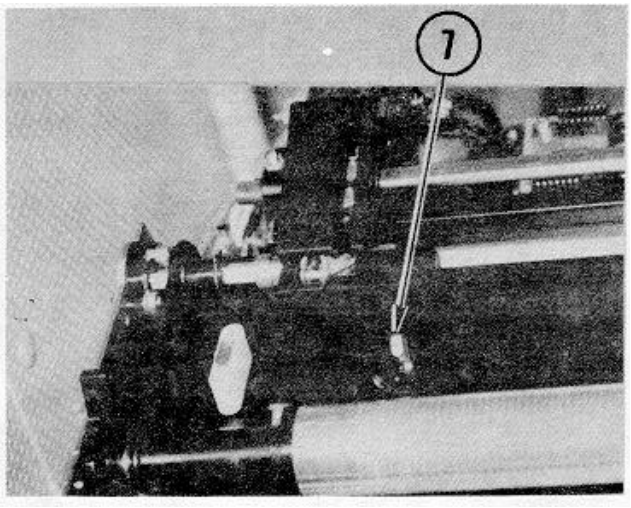
3. Slide out both boards all the way.
4. Set up oscilloscope as follows:
   - VOLTS/DIV
     Ch 1 - 5V/cm
     Ch 2 - Not Used
   - TIME/DIV
     A - 2 msec
     B - Not Used
   - A TRIGGER: Positive
   - TRIG MODE: AUTO
   - TRIG SOURCE: A-NORM

4-35. ADJUST MISTOR AMPLIFIER (CONT)



5. On driver board, connect channel 1 probe to TP03.

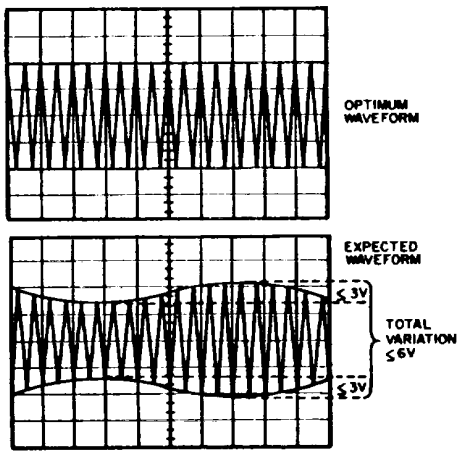
6. Check adjustment of mistor gap (para 4-36, Adjust, steps 2-7).



7. Tape down paper out switch.

8. Power on. On control panel, press LOCAL.

9. Wait for print head to move to left margin. Press START, then press LOCAL.



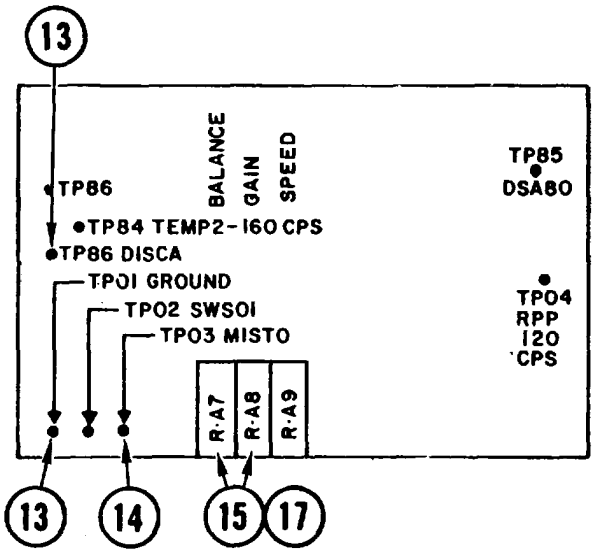
10. Check oscilloscope.

    - If peaks show optimum waveform or expected waveform greater than or equal to 6 V, go to step 18
    - If peaks show neither optimum nor expected waveform, go to step 11

11. On control panel, press STOP.

12. Power off printer.

4-35. ADJUST MISTOR AMPLIFIER (CONT)



13. Install jumper between TPO1 and TP86 on driver board.

14. Make sure oscilloscope channel 1 probe is attached to TP03 on driver board.

15. Remove protective covering from RA7 and RA8 on driver board.

16. Power on printer.

17. While manually moving carriage transport left and right, adjust RA7 and RA8 until waveform appears as illustrated in step 10.

18. Power off printer.

19. Remove jumper and oscilloscope probe from driver board.

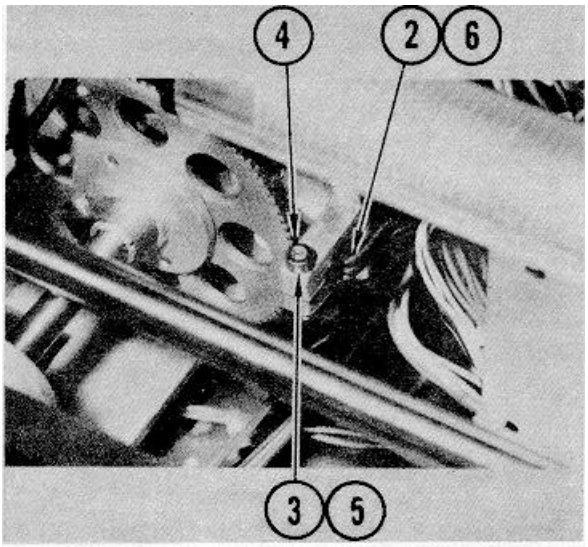
20. Remove tape from paper out switch.

21. Replace driver and CPU boards (para 4-45, Replace, steps 14-16).

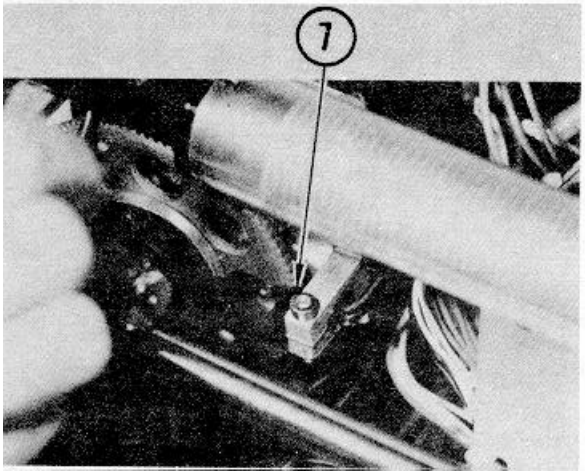
4-36. ADJUST MISTOR GAP

INITIAL SETUP

Common Tools
• Tool kit



1. Remove top cover (para 4-11).
2. Hold pickup wires in position during steps 4-6.
3. Loosen screw just enough to move mistor.
4. Using feeler gauge, set 0.005 in. gap between mistor and wheel.
5. Tighten screw.
6. Release pickup wires.



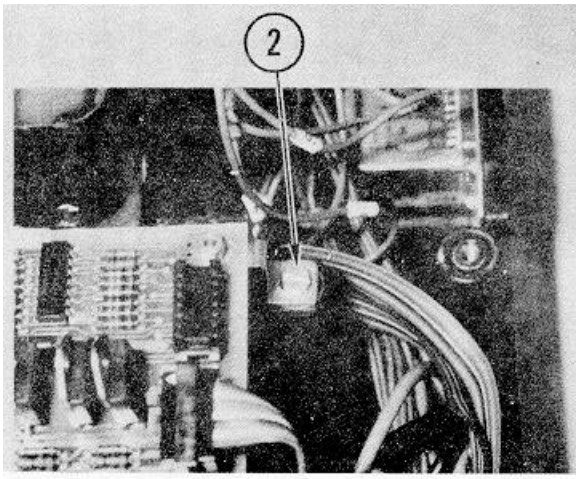
7. Turn wheel. Using feeler gauge, check gap at three different points on wheel.
   - If all gaps are 0.005 in. (+ 0.001 in.), go to step 8
   - If any gap is not 0.005 in. (+ 0.001 in.), Repeat steps 2-7
8. Replace top cover (para 4-11).

4-37. ADJUST MISTOR PULSE TO CARRIAGE STEPPER MOTOR

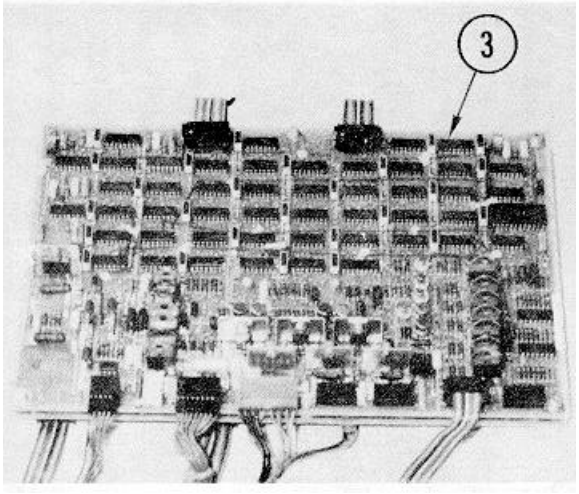
INITIAL SETUP

Common Tools	Test, Measurement and Diagnostic Equipment
• Tool kit	• Oscilloscope
• Hex key allen set - metric	

Adjust

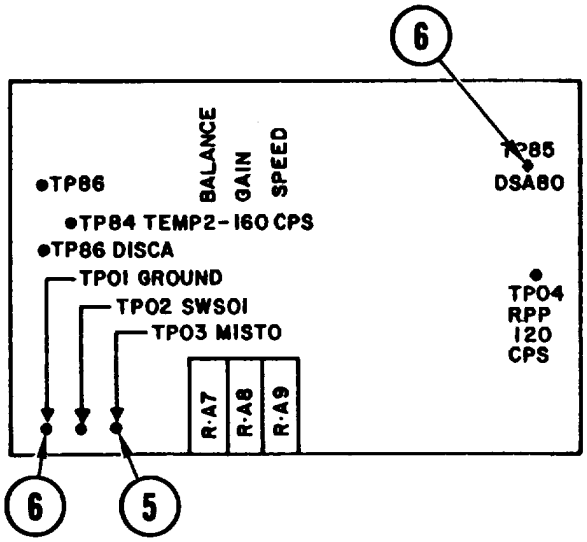


1. Remove top cover (para 4-11).
2. Remove screw holding clamp on circuit boards. Remove clamp.

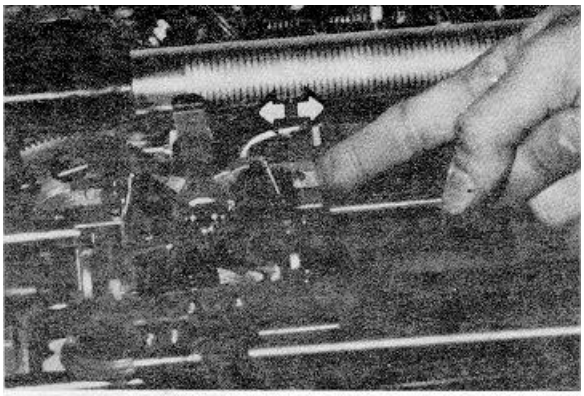


3. Slide out both boards all the way.
4. Set up oscilloscope as follows:
   - VOLTS/DIV
     Ch 1 - 5V/cm
     Ch 2 - Not Used
   - TIME/DIV
     A - 2 msec
     B - Not Used
   - A TRIGGER: Positive
   - TRIG MODE: AUTO
   - TRIG SOURCE: A-NORM

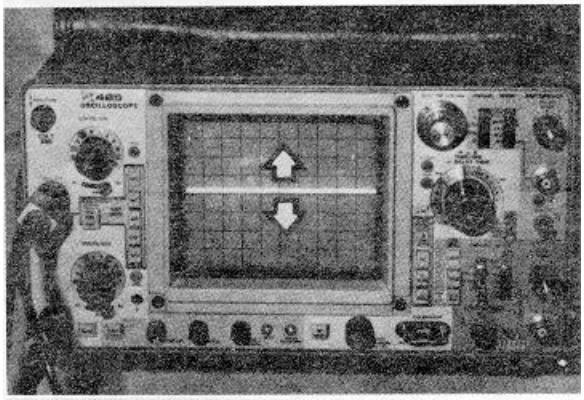
4-37. ADJUST MISTOR PULSE TO CARRIAGE STEPPER MOTOR (CONT)



5. Connect channel 1 probe to TP03 on driver board.
6. Install jumper between ground (TP01) and TP85 on driver board.
7. Power on.
8. Look at oscilloscope. Waveform level should be between -8 V to -10 V.

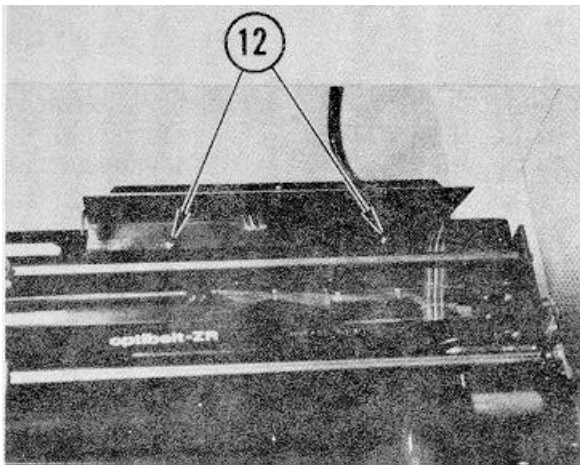


9. Move carriage transport firmly left and right.

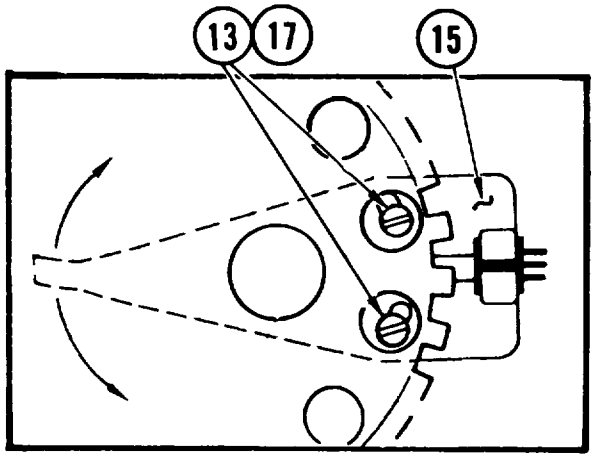


10. Look at oscilloscope.
    - If signal goes up (positive), go to step 21
    - If signal goes down (negative), go to step 11
11. Power off.

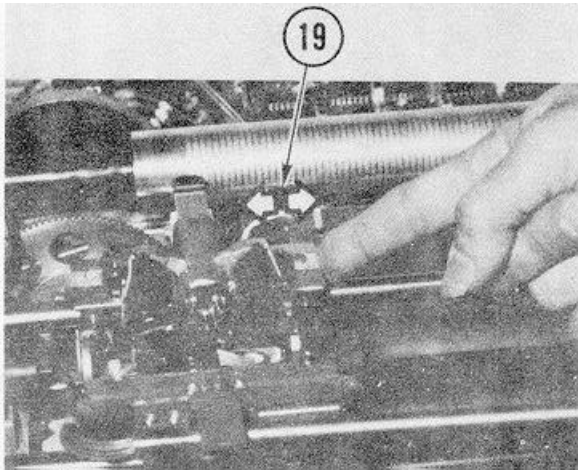
4-37. ADJUST MISTOR PULSE TO CARRIAGE STEPPER MOTOR (CONT)



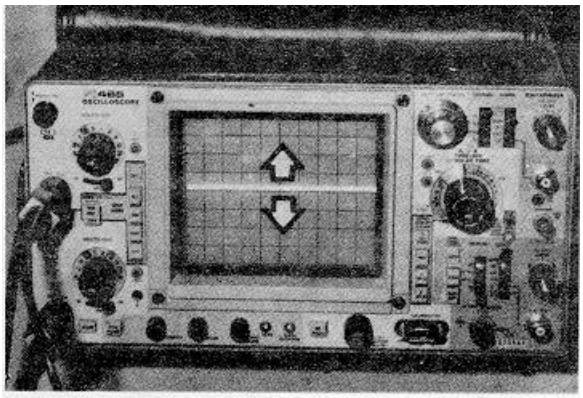
12. Remove screws. Lift off control panel. Leave cable connected.



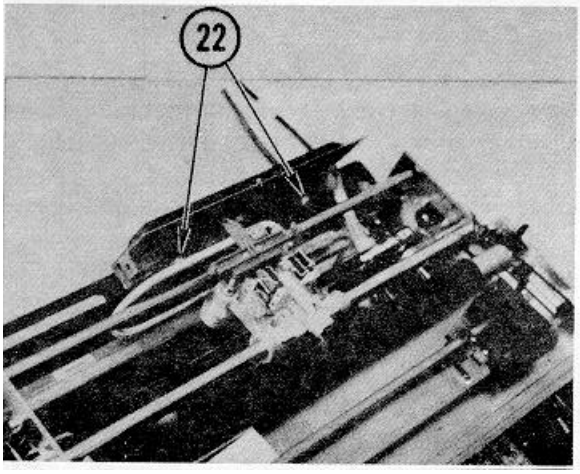
13. Reach through holes in timing wheel and loosen screws holding mistor support arm.
14. Power on.
15. Move mistor support arm slightly until waveform level of -8 V to -10 V appears on oscilloscope.
16. Power off.
17. Tighten screws.
18. Power on.
19. Move carriage transport firmly left and right.



4-37. ADJUST MISTOR PULSE TO CARRIAGE STEPPER MOTOR (CONT)



20. Look at oscilloscope.
    - If signal goes up, go to step 21
    - If signal goes down, repeat steps 11-20
21. Remove oscilloscope channel 1 probe from TP03 on driver board.

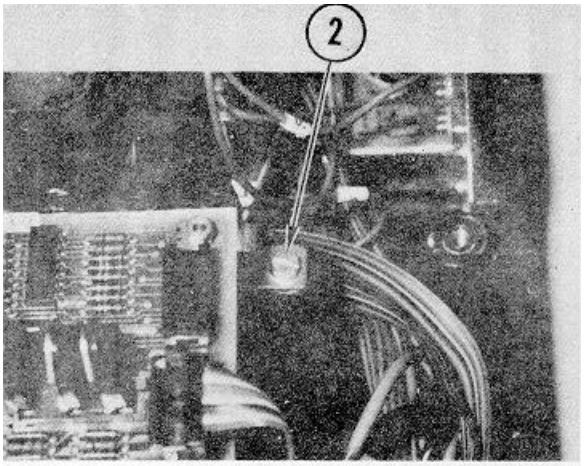


22. Replace control panel. Replace and tighten screws.
23. Adjust mistor pulse to row start pulse (para 4-38, Adjust, steps 4-33).

4-38. ADJUST MISTOR PULSE TO ROW START PULSE

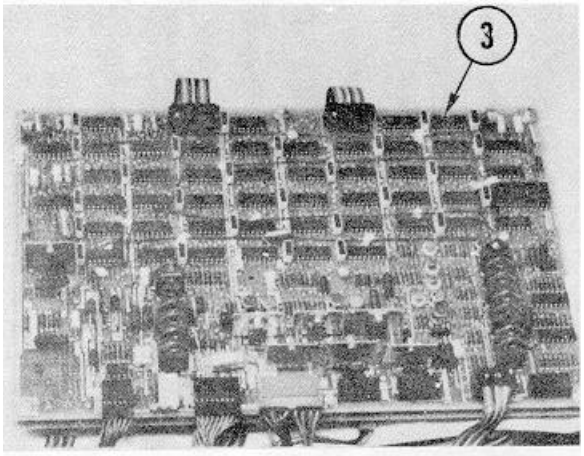
INITIAL SETUP

Common Tools	Test, Measurement and Diagnostic Equipment
• Tool kit	• Oscilloscope
• Hex key allen set - metric	



Adjust

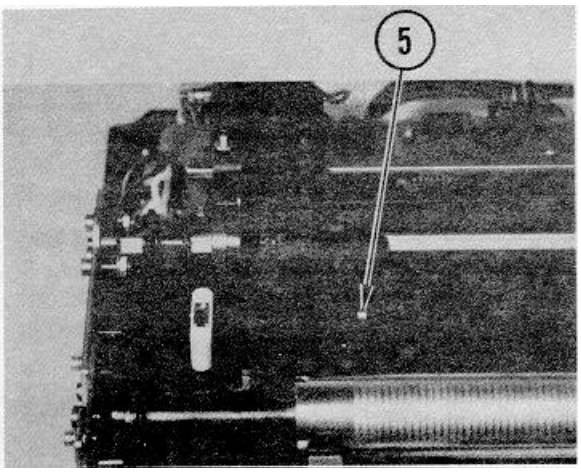
1. Remove top cover (para 4-11).
2. Remove screw holding clamp on circuit boards. Remove clamp.



3. Slide out both boards all the way.
4. Set up oscilloscope as follows:

   - VOLTS/DIV
     Ch 1 - 2 V/cm
     Ch 2 - 5 V/cm
   - TIME/DIV
     A - 5 msec
     B - Not used
   - A TRIGGER: NEGATIVE
   - TRIG MODE: NORMAL
   - TRIG SOURCE: A - Ch 1

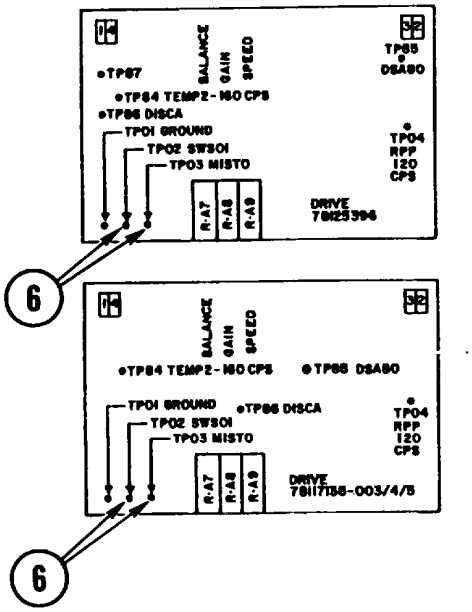
4-38. ADJUST MISTOR PULSE TO ROW START PULSE (CONT)



5. Tape down paper out switch.

NOTE

Some units have different driver boards. Compare the part number of the board in your unit with those shown in steps 6, 13, and 22.



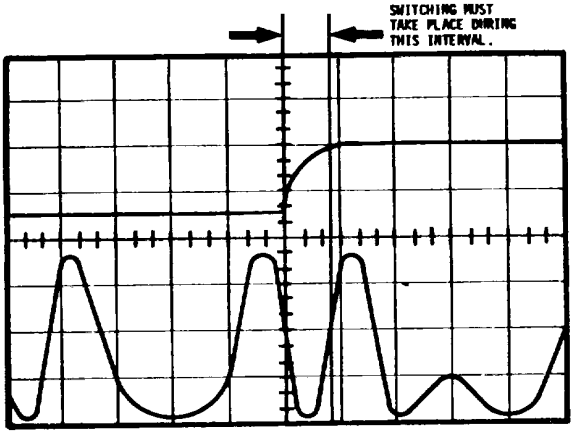
6. On driver board, connect channel 1 probe to TP02 and channel 2 probe to TP03.

7. Power on.

8. On control panel, press START button repeatedly.

NOTE

Leading edge of channel 1 will be rounded off and channel 2 pulses may not appear exactly as illustrated. It is only important that channel 1 goes positive between two of the channel 2 pulses.

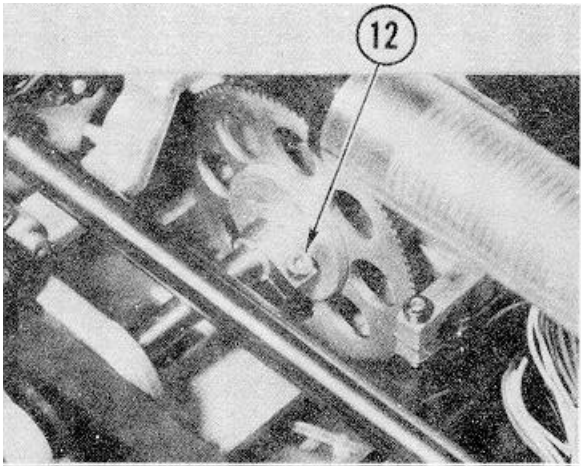


9. When carriage transport hits start-of-line switch, check scope.

   - If signal comes high in between carriage step, as shown, go to step 31
   - If signal does not come high in between carriage step, go to step 10

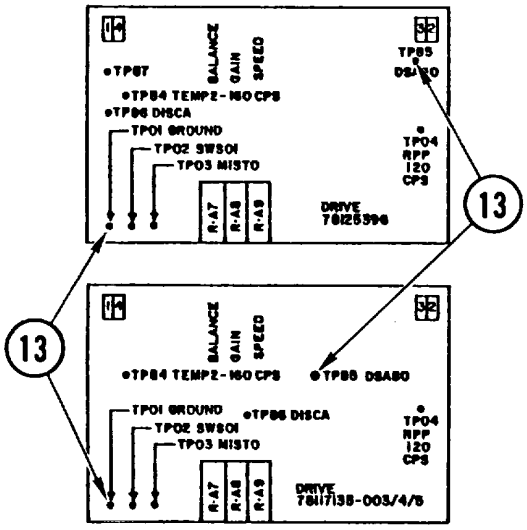
10. Press STOP.

4-38. ADJUST MISTOR PULSE TO ROW START PULSE (CONT)



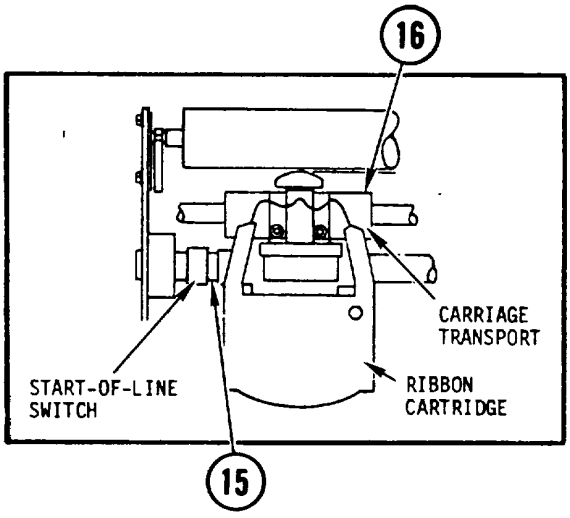
11. Power off.

12. Loosen set screw so carriage transport moves but motor does not move. Leave hex key wrench in screw.



13. On driver board, install jumper between ground (TPO1) and TP85.

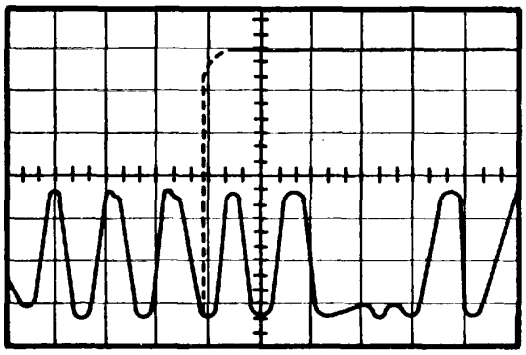
14. Power on.



15. Insert 0.050 inch feeler gauge between start-of-line switch and the contacting surface on the left side of the carriage transport.

16. Repeatedly push carriage transport against start-of-line switch to create waveform on oscilloscope.

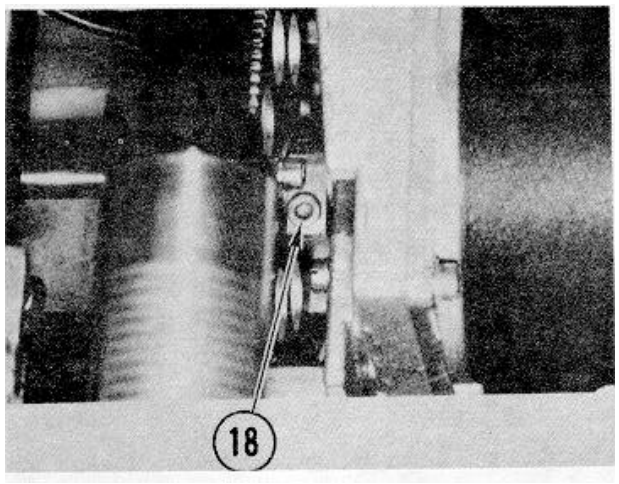
4-38. ADJUST MISTOR PULSE TO ROW START PULSE (CONT)



NOTE

Leading edge of channel 1 will be rounded off and channel 2 pulses may not appear exactly as illustrated. It is only important that channel 1 goes positive between two of the channel 2 pulses.

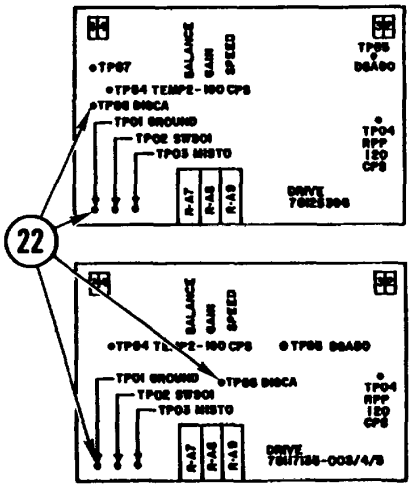
17. Watch oscilloscope until channel 1 signal comes high between channel 2 pulses, as shown.



18. Tighten set screw.

19. Remove feeler gauge.

20. Power off.



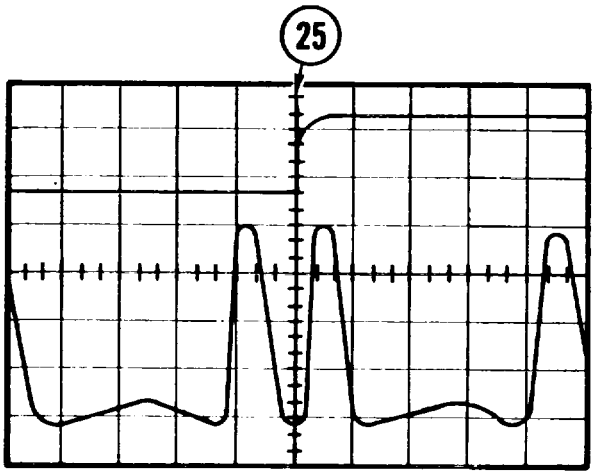
21. Remove jumper between TPO1 and TP85 on driver board.

22. Install jumper between TPO1 and TP86 on driver board.

23. Power on.

24 Repeat step 16.

4-38. ADJUST MISTOR PULSE TO ROW START PULSE (CONT)



25. Synchronize the oscilloscope so that the channel 2 signal comes high between channel 2 pulses in the center of the screen.

26. Power off.

27. Remove the jumper from TPO1 and TP86.

28. Power on.

29. On the control panel, press LOCAL button repeatedly.

30. Watch the oscilloscope for signals illustrated in step 25.

    - If the signals appear as illustrated, go to step 31
    - If the signals do not appear as illustrated, repeat steps 7-30

31. Remove probes from driver board.

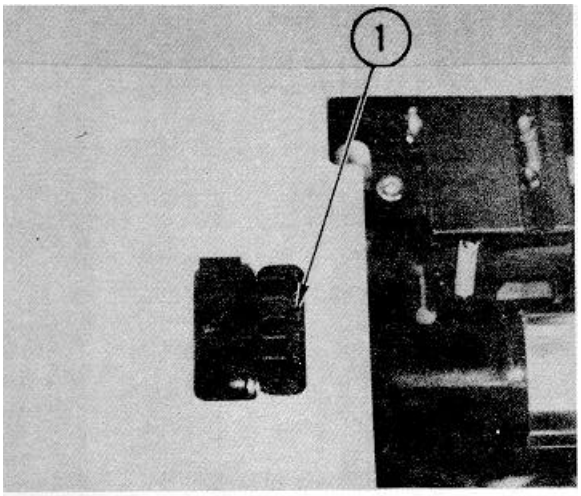
32. Remove tape from paper out switch.

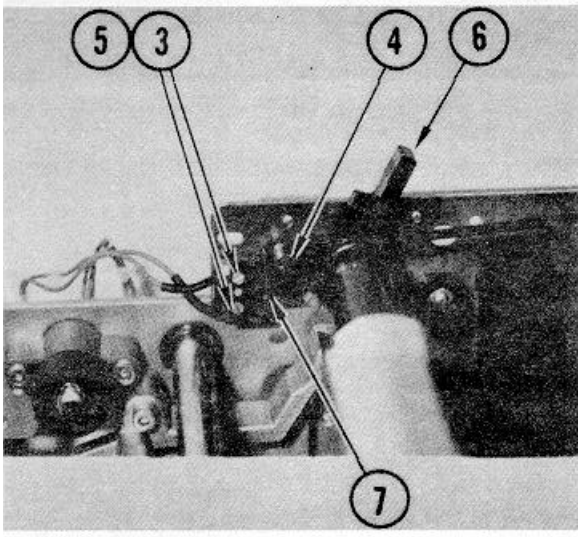
33. Replace driver and CPU boards (para 4-45, Replace, steps 14-16).

4-39. ADJUST PRINT ENERGY

INITIAL SETUP

Common Tools
• Tool kit





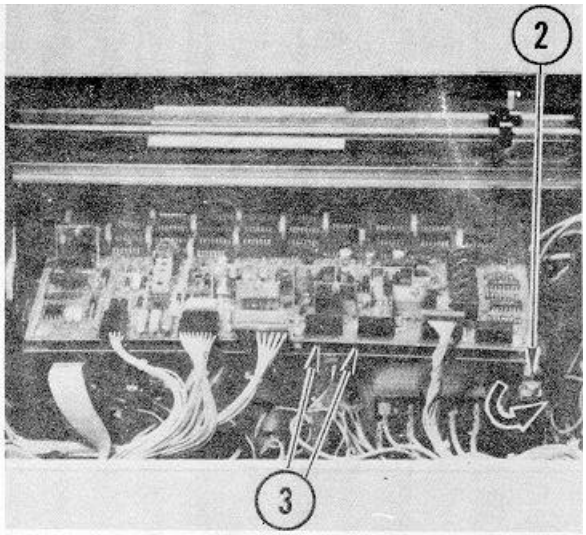
Adjust

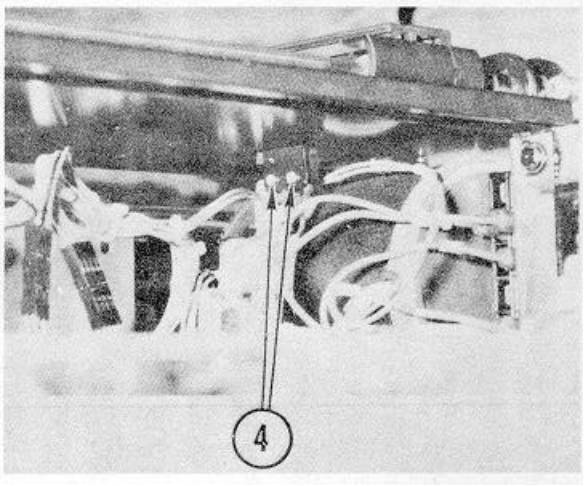
1. Set lever to 3.
2. Remove top cover (para 4-11).
3. Loosen screws enough to move switch.
4. Move switch so metal strip just touches knob and white button in switch.
5. Tighten screws.
6. Move lever to 2.
7. Check metal strip on switch.
   - If knob is pushing white button in and switch is actuated, go to step 8
   - If metal strip can be moved with finger, and you hear click, go to step 1
8. Replace top cover (para 4-11).

4-40. ADJUST PAPER OUT SWITCH

INITIAL SETUP

Common Tools
• Tool kit





NOTE

In some installations, this switch is not adjustable.

1. Remove top cover (para 4-11).
2. To release CPU and driver board, loosen screw. Twist clamp to side as shown.
3. Slide CPU and driver boards clear of switch.

NOTE

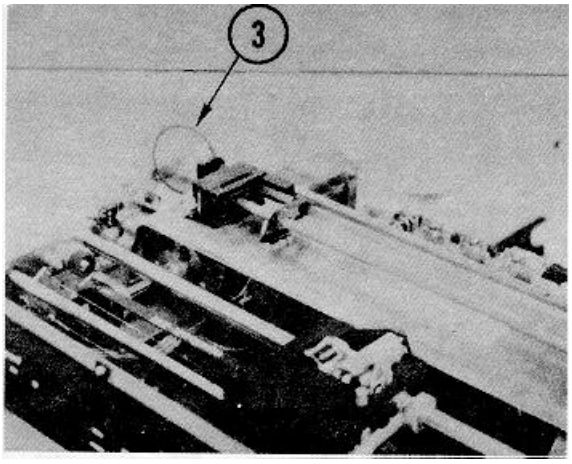
This is a trial and error procedure.

4. Loosen screws. Move switch slightly up or down. Tighten screws.
5. Slide CPU and driver boards in place. Twist clamp and tighten screw.
6. Slip on top cover. Do not tighten screws.
7. Install paper.
8. Push ac power plug in outlet. Power on. Press START.
   - If READY light is lit, go to step 9
   - If READY light is not lit, repeat steps 2-8
9. Remove paper.
   - If STAND-BY light is lit, go to step 10
   - If STAND-BY light is not lit, repeat steps 2-9
10. Tighten top cover screws

4-41. REMOVE/REPLACE ROUND BELT

INITIAL SETUP

Common Tools
• Tool kit



Remove

1. Remove platen (para 4-44, Remove steps 1-8).
2. Remove tractor (para 4-30, Remove steps 2-8).
3. Remove round belt from tractor shaft.

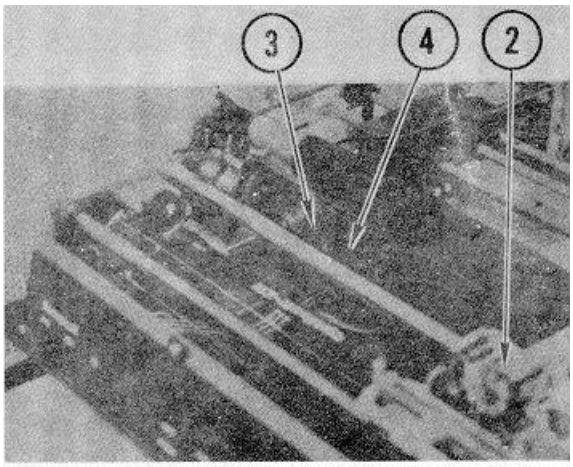
Replace

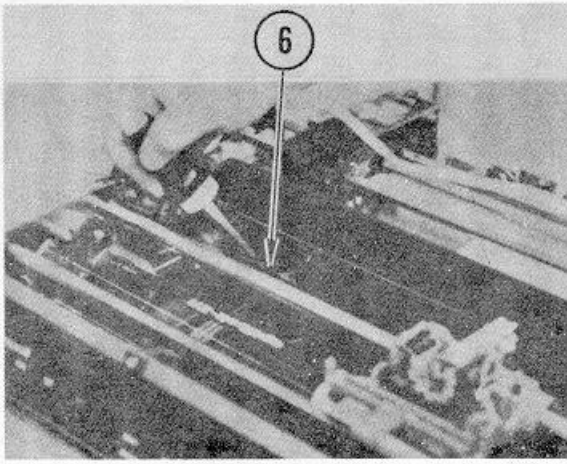
1. Replace round belt on tractor shaft. Aline so belt is straight.
2. Replace tractor (para 4-30, Replace steps 9-14).
3. Replace platen (para 4-44, Replace steps 1-10).

4-42. REMOVE/REPLACE MISTOR

INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags
• Hex key allen set - metric	

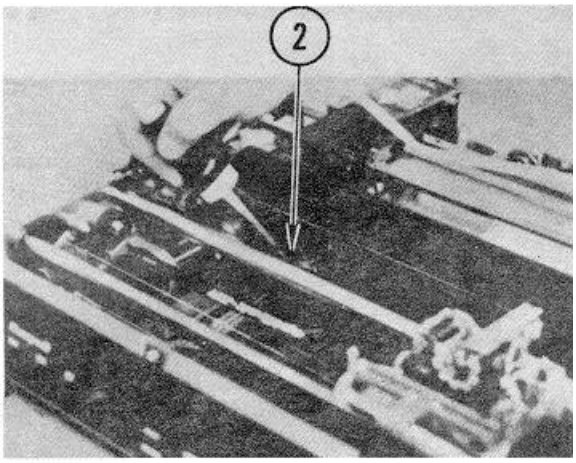


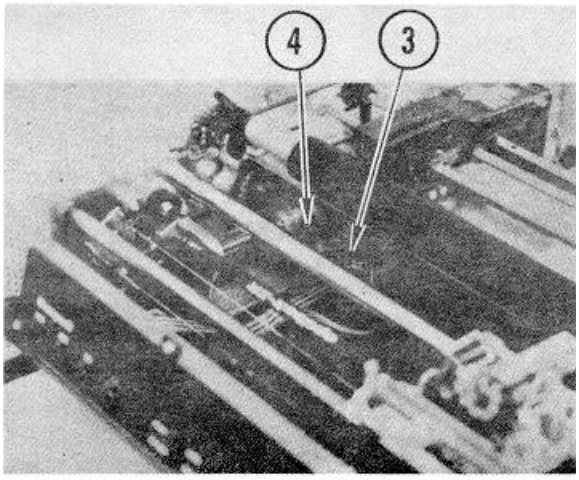


Remove

1. Remove top cover (para 4-11).
2. Move carriage transport assembly to right side of printer.
3. Loosen clamp screw.
4. Pull back insulating sleeves from wire leads. Leave sleeves on wires.
5. Tag wires.
6. Unsolder wires.
7. Pull out mistor.

4-42. REMOVE/REPLACE MISTOR (CONT)





Replace

1. Place mistor in position.
2. Solder wires on mistor.
3. Push insulating sleeves over wire leads.
4. Tighten clamp screw.
5. Adjust mistor gap (para 4-36. Adjust, steps 2-7).
6. Adjust mistor pulse to carriage stepper motor (para 4-37, Adjust, steps 2-23).

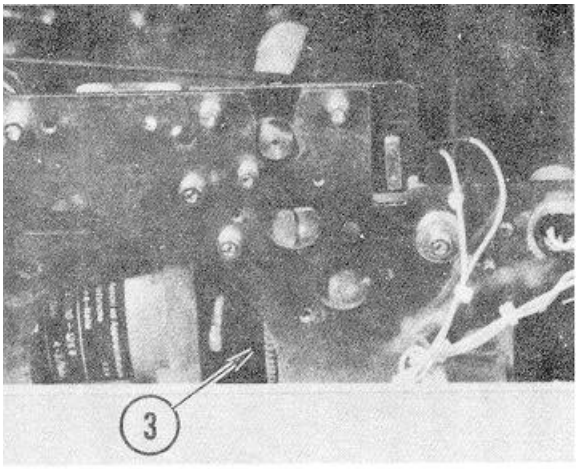
4-43. REMOVE/REPLACE TIMING WHEEL

INITIAL SETUP

Common Tools
- Tool kit
- Hex key allen set - metric

Remove

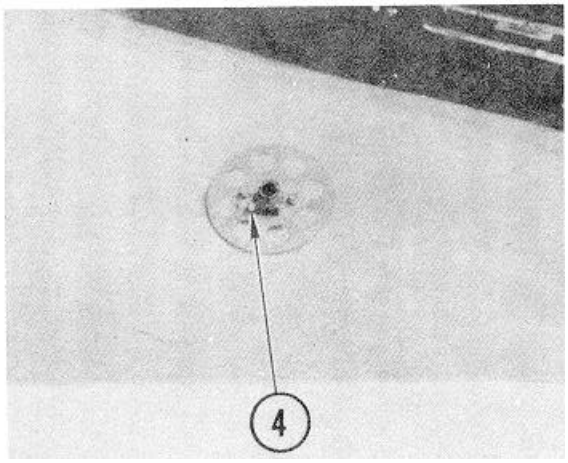
1. Remove both ribbon drive cable assemblies (para 4-29).
2. Remove pulley assembly (para 4-32, Remove steps 2-6).
3. Locate interior of timing wheel.



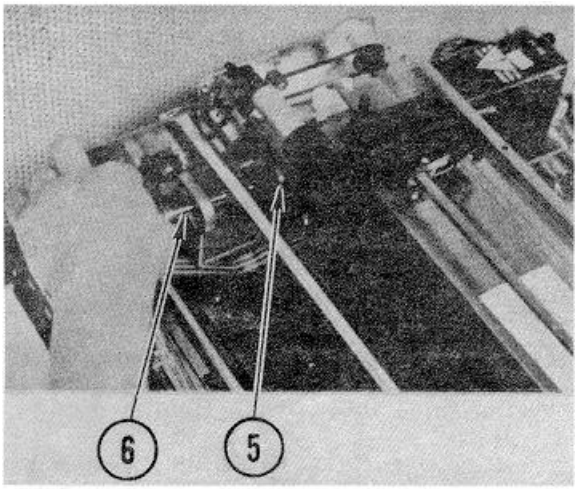
NOTE

Timing wheel is shown out of device for better view.

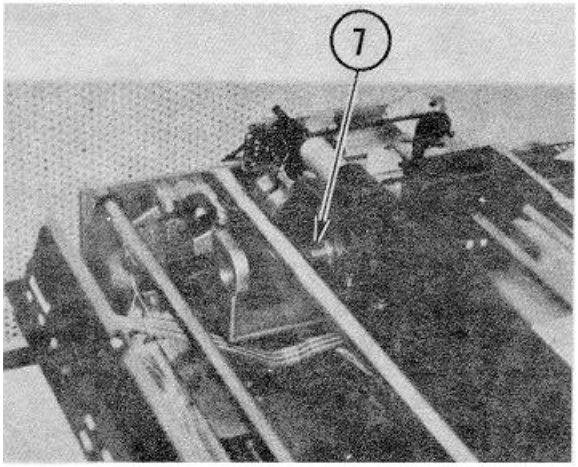
4. Locate and loosen inner retaining hub screw.



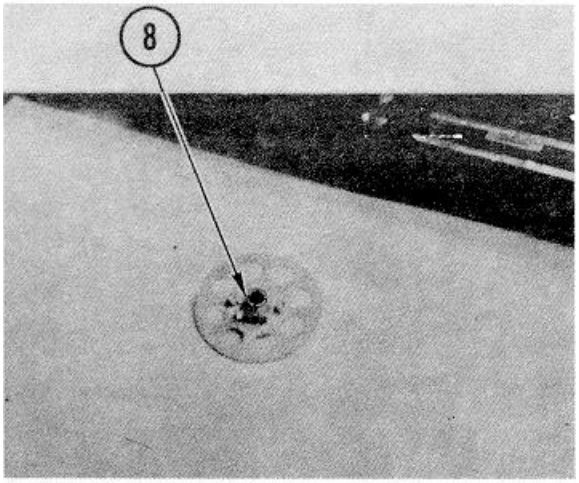
4-43. REMOVE/REPLACE TIMING WHEEL (CONT)



5. Loosen outer retaining hub screw.
6. Pull out pulley shaft.

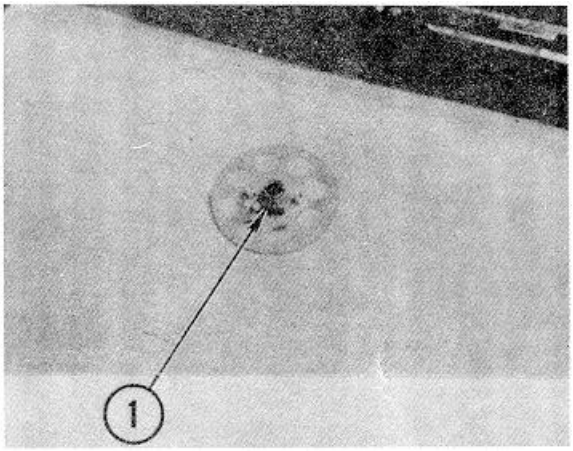


7. Pull out timing wheel.



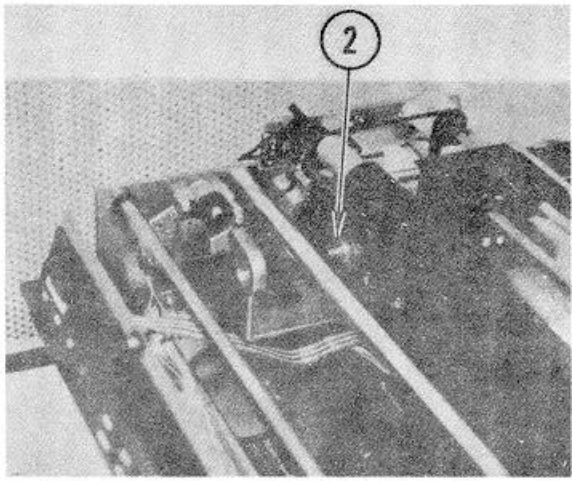
8. Pull off and retain inner and outer hubs.

4-43. REMOVE/REPLACE TIMING WHEEL (CONT)

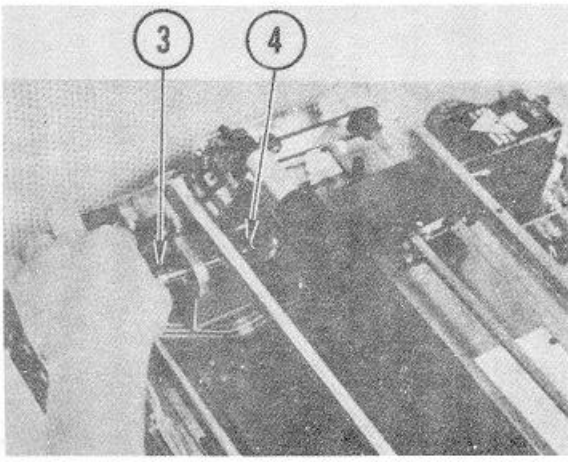


Replace

1. Push on inner and outer retaining hubs.

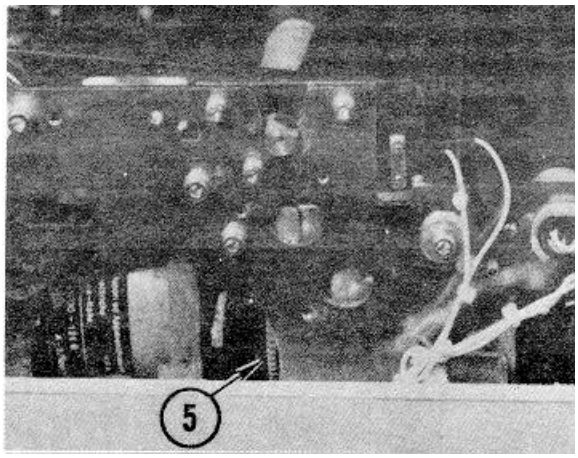


2. Push on timing wheel.



3. Push in pulley shaft.
4. Tighten outer retaining hub screw.

4-43. REMOVE/REPLACE TIMING WHEEL (CONT)



5. Locate interior of timing wheel.
6. Tighten inner retaining hub screw.
7. Replace pulley assembly (para 4-32, Replace steps 3-10).
8. Replace both ribbon cable assemblies (para 4-29).

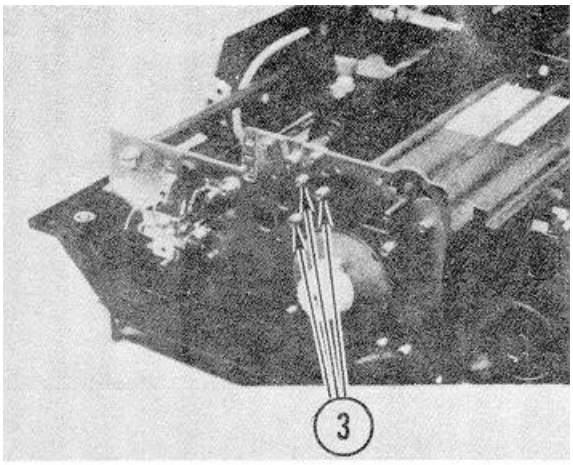
4-44. REMOVE/REPLACE PLATEN

INITIAL SETUP

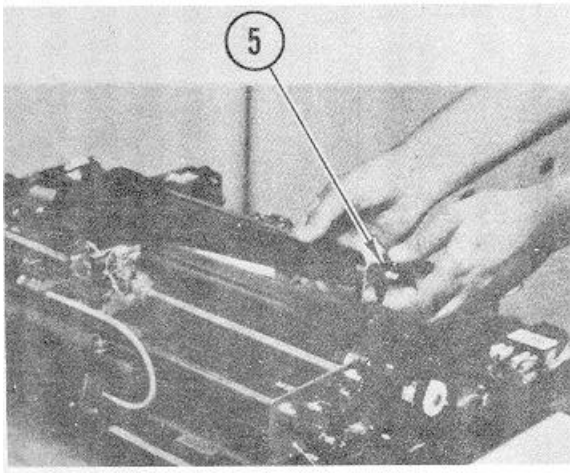
Common Tools
- Tool kit
- Hex Key allen set - metric

Remove

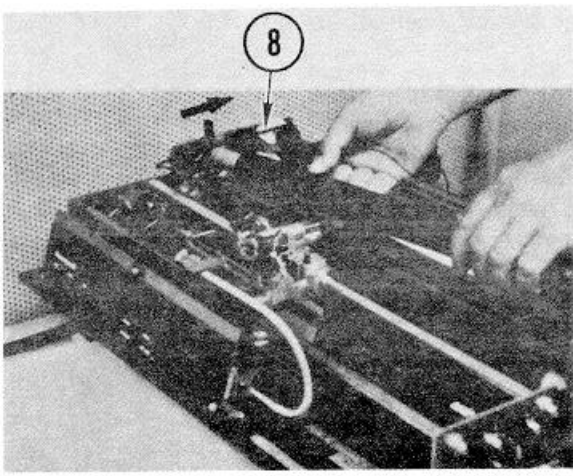
1. Remove top cover (para 4-11).
2. Remove ribbon cartridge
3. Remove three screws from platen mounting bracket above paper stepper motor.



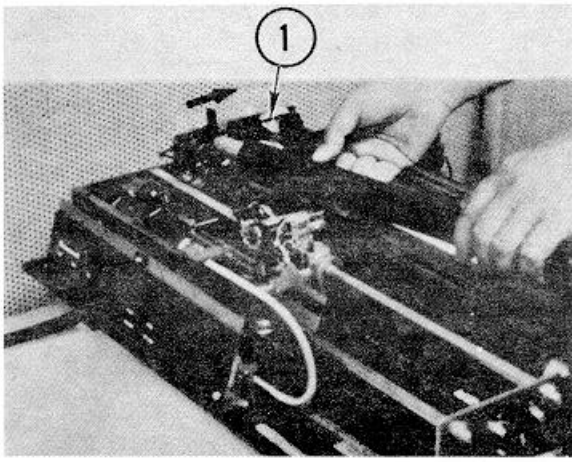
4. Lift up platen.
5. Remove mounting bracket



4-44. REMOVE/REPLACE PLATEN (CONT)

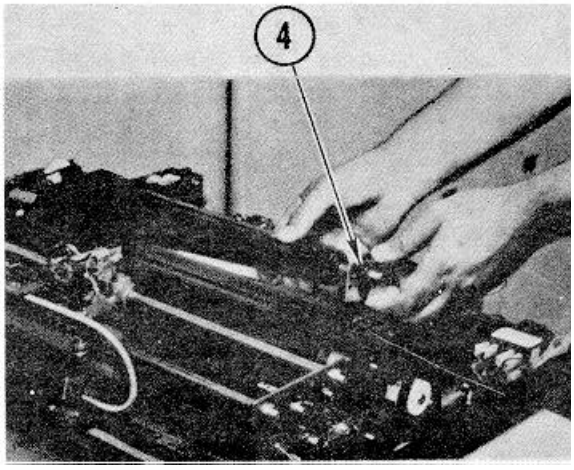


6. Pull lever all the way back in direction shown.
7. Carefully pull platen out of mounting bracket in direction shown.
8. Slip round belt off platen.



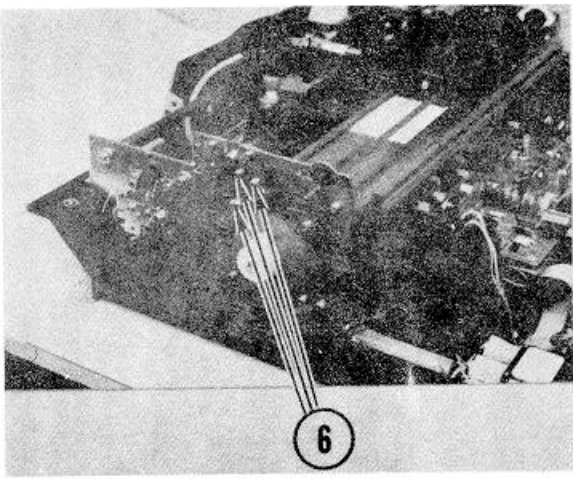
Replace

1. Slip round belt over platen.
2. Pull lever all the way back in direction shown.
3. Carefully insert platen in mounting bracket.



4. Replace mounting bracket.

4-44. REMOVE/REPLACE PLATEN (CONT)

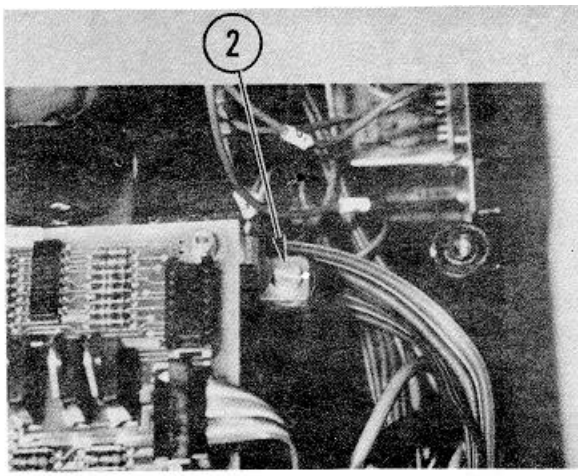


5. Lower platen into position.
6. Replace tighten screws in mounting bracket.
7. Replace ribbon cartridge.
8. Adjust printhead to platen distance/parallelism (para 4-26).
9. Adjust print energy (para 4-39).
10. Replace top cover (para 4-11).

4-45. REMOVE/REPLACE DRIVER BOARD

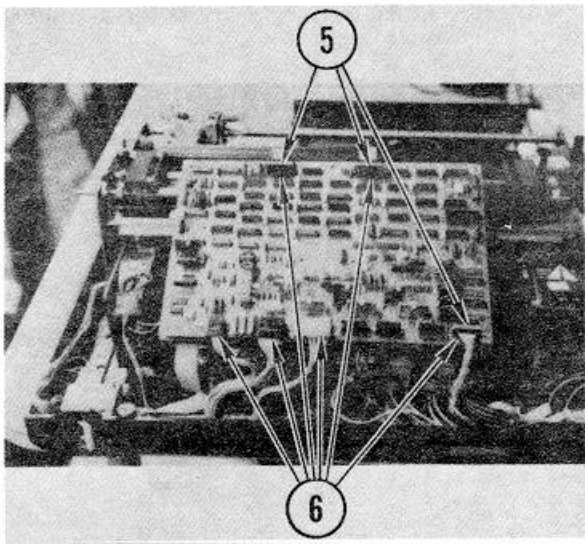
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for connectors) • Pen or pencil



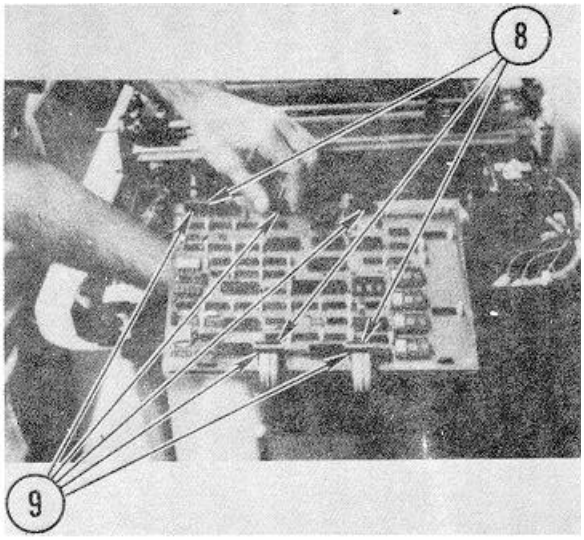
Remove

1. Remove top cover (para 4-13).
2. Loosen screw. Lift off clamp holding circuit boards.
3. Slide out boards far enough to expose connectors.

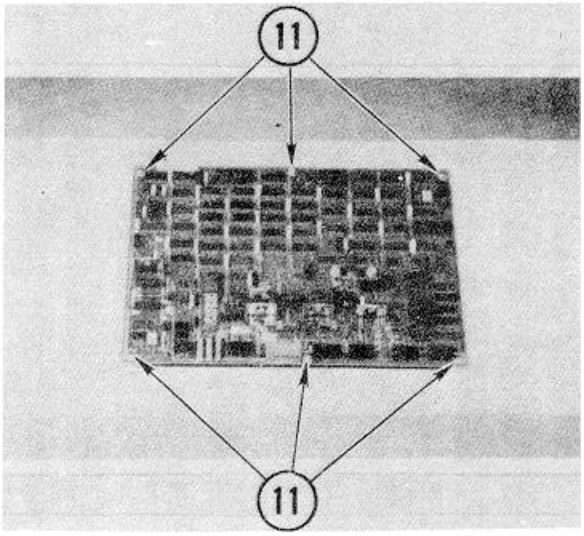


4. Lift out boards far enough to access connectors.
5. Remove plastic clips from connectors on driver board.
6. Tag, then remove all connectors from driver board.

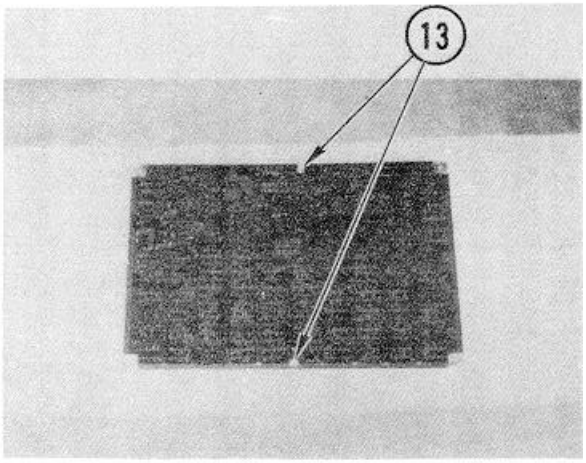
4-45. REMOVE/REPLACE DRIVER BOARD (CONT)



7. Turn boards over.
8. Remove plastic clips from connectors on CPU board.
9. Tag, then remove connectors from CPU board.
10. Remove boards from printer.

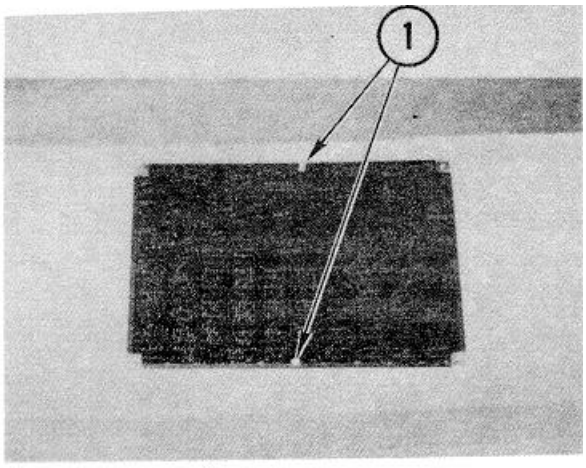


11. Remove nuts from driver board.



12. Lift up and turn over driver board.
13. Remove and save plastic standoffs.

4-45. REMOVE/REPLACE DRIVER BOARD (CONT)

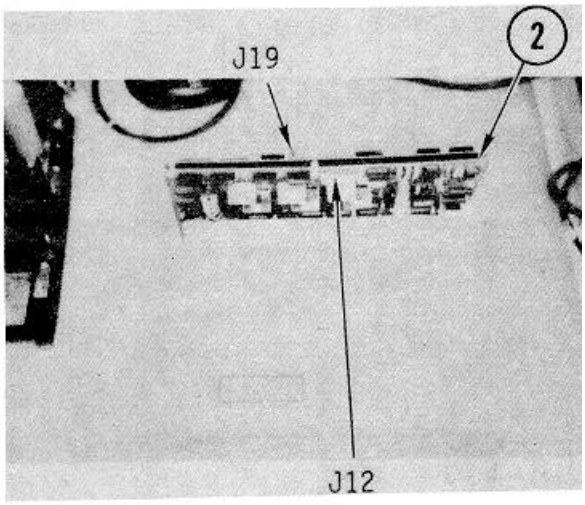


Replace

1. Replace plastic standoffs on bottom of driver board.

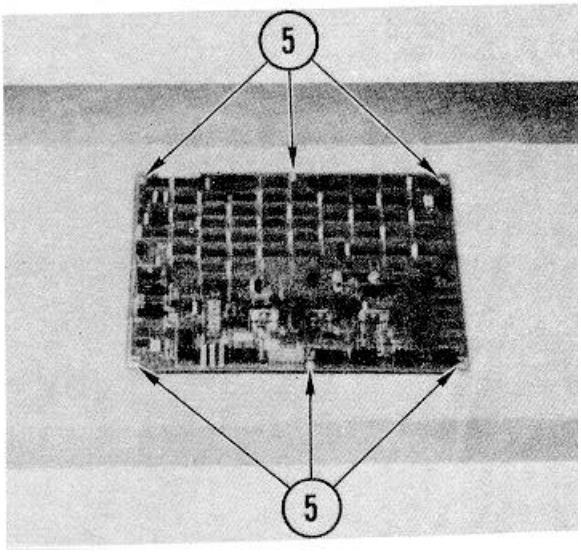
CAUTION

Make sure driver and CPU boards are mated properly. Otherwise connectors may be damaged.



2. Place CPU board top side up on bottom of driver board.

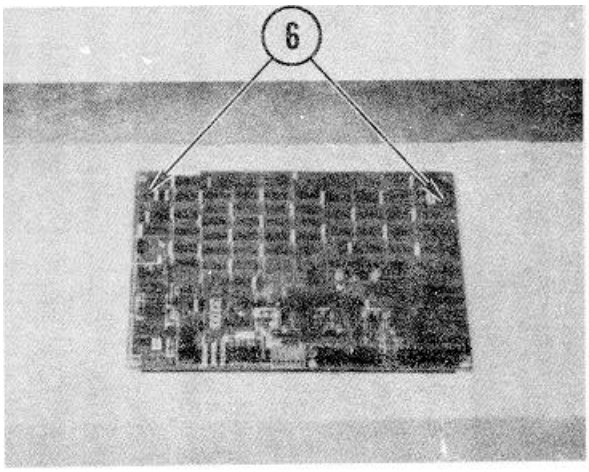
3. Make sure small connector (J19) on CPU board and large connector (J12) on driver board are on same leading edges.



4. Turn boards so top of driver board faces up.

5. Replace and tighten nuts on driver board.

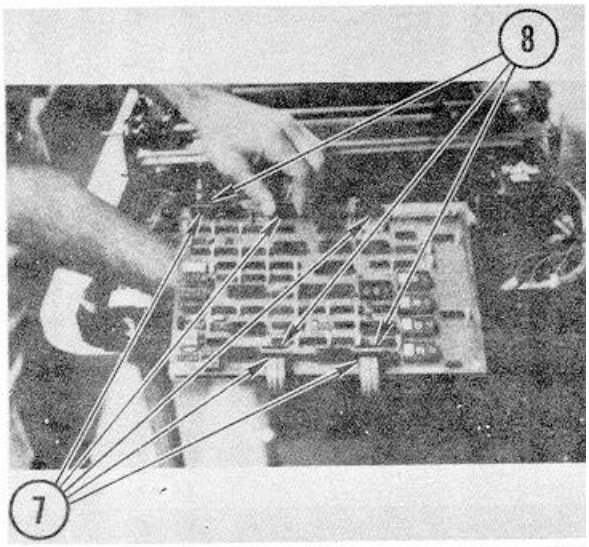
4-45. REMOVE/REPLACE DRIVER BOARD (CONT)



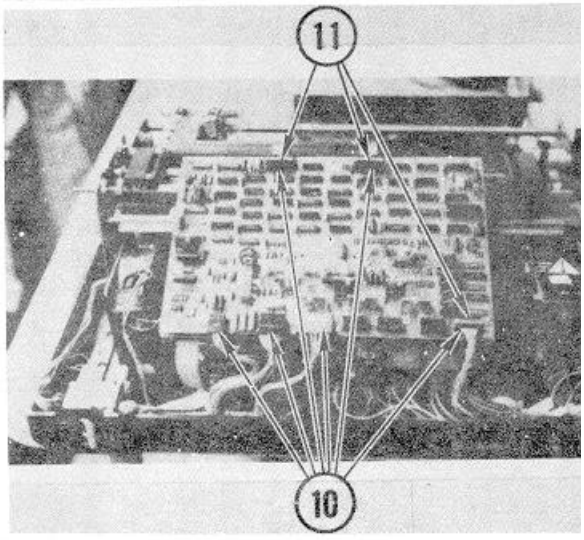
CAUTION

Switches on driver board must be set properly before installation. Otherwise, the printer may be damaged.

6. Check that slide switches on driver board are properly set. (See your system manual.)

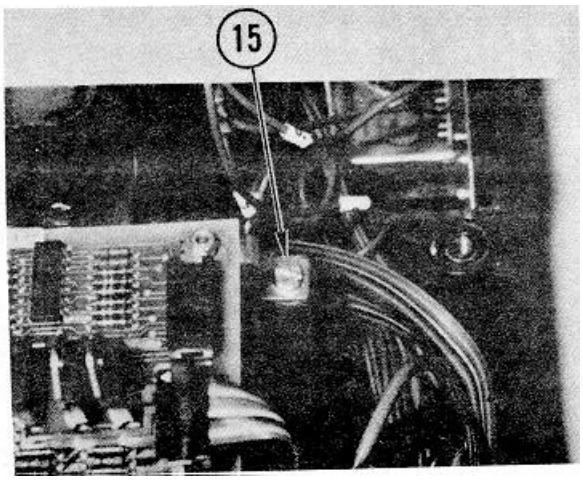


7. Replace connectors on CPU board.
8. Replace plastic clips on connectors.



9. Turn boards over.
10. Replace connectors on driver board.
11. Replace plastic clips on connectors.
12. Seat boards in printer.

4-45. REMOVE/REPLACE DRIVER BOARD (CONT)



13. If new driver board is being installed, adjust mistor amplifier (para 4-35, Adjust, steps 3-19) and synchronous carriage speed (para 4-28, Adjust, steps 2-14).

CAUTION

Slide switches on CPU board may be accidently tripped if struck against a hard object on the printer. This can result in damage to the printer.

14. Carefully slide boards into printer.

15. Replace clamp. Replace and tighten screw.

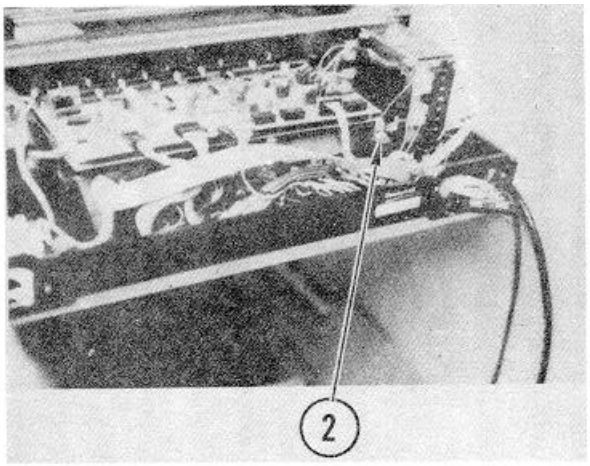
16. Replace top cover (para 4-13).

4-46. REMOVE/REPLACE CPU BOARD

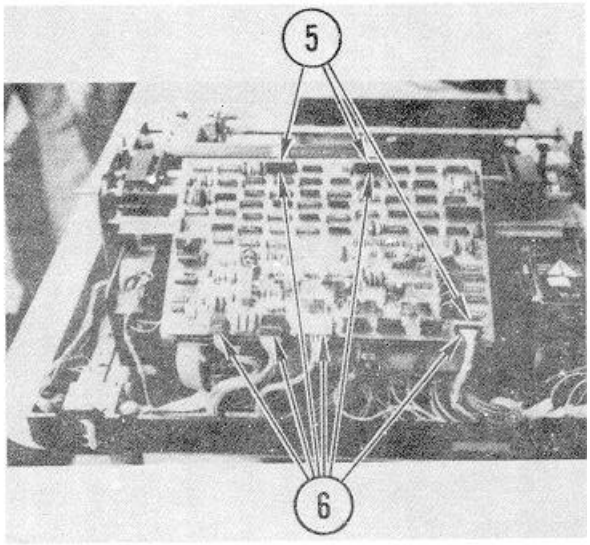
INITIAL SETUP

Common Tools	Materials/Spare Parts
• Tool kit	• Tags (for connectors)
• Pen or pencil	

Remove

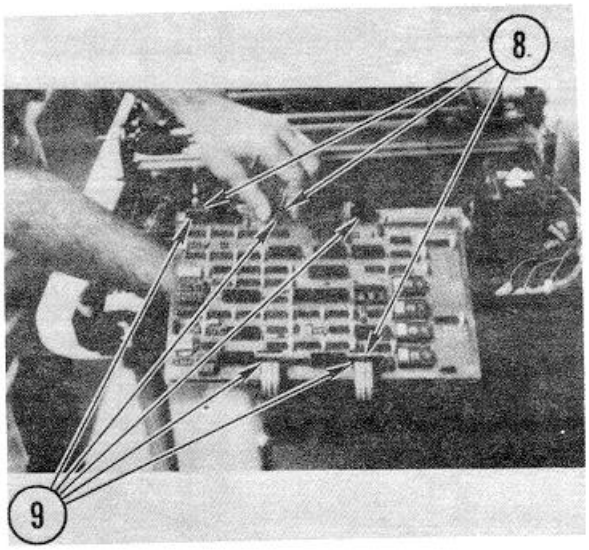


1. Remove top cover (para 4-11).
2. Remove screw. Lift off clamp holding circuit boards.
3. Slide out boards far enough to expose connectors.

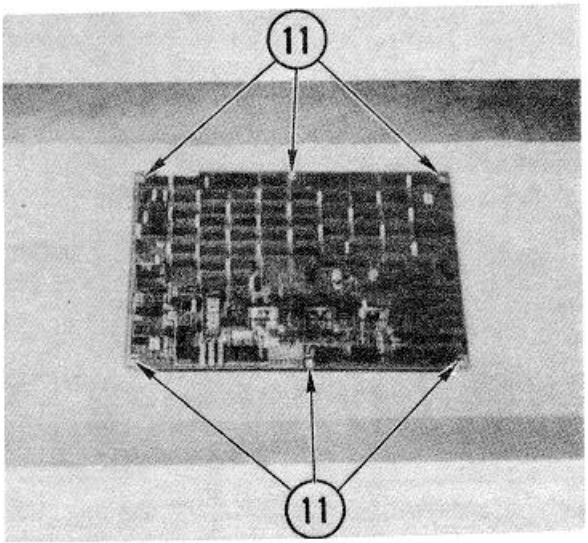


4. Lift out boards and place on top of printer.
5. Remove plastic clips from connectors on driver board.
6. Tag, then remove all connectors from driver board.

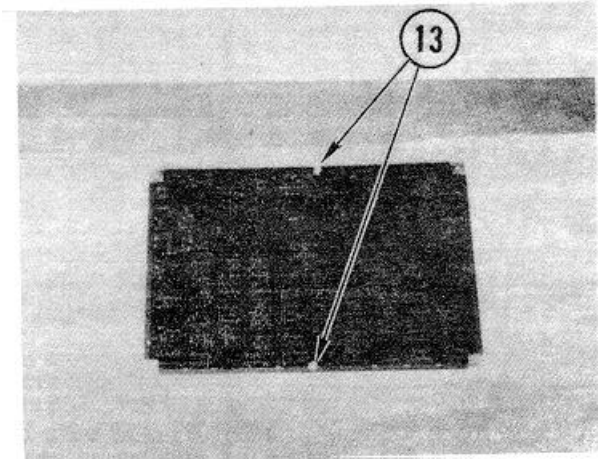
4-46. REMOVE/REPLACE CPU BOARD (CONT)



7. turn boards over.
8. Remove plastic clips from connectors on CPU board.
9. Tag, then remove connectors from CPU board.
10. Remove boards from printer.

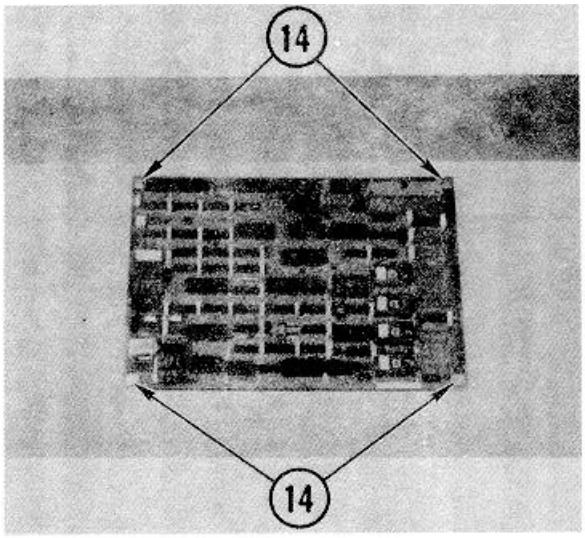


11. Remove nuts from driver board.

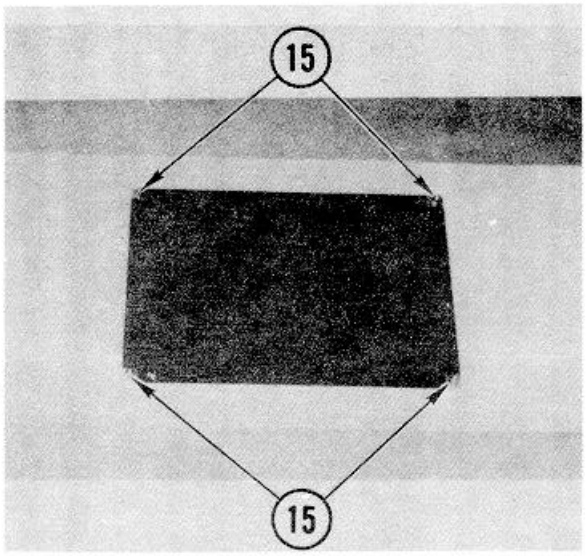


12. Lift up and turn over driver board.
13. Remove and save plastic standoffs.

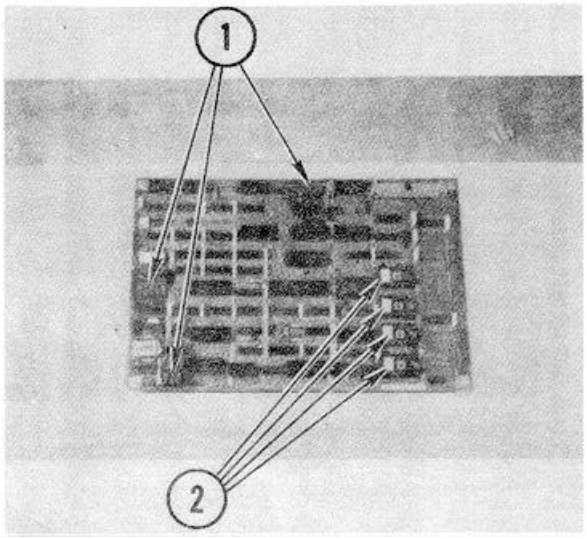
4-46. REMOVE/REPLACE CPU BOARD (CONT)



14. Remove screws from CPU boards.



15. Turn CPU board over. Remove and save standoffs.



Replace

CAUTION

Switches on new CPU board must be properly set before installation. Otherwise, printer may be damaged.

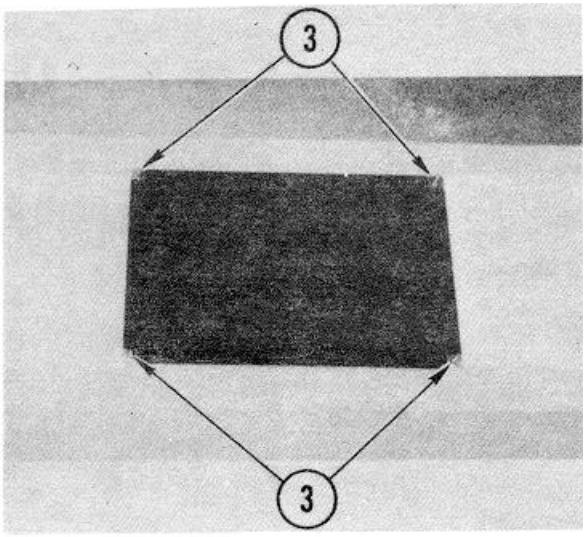
1. Check that slide switches on CPU board are properly set. (See your system manual.)

CAUTION

Erasable PROM chips may be damaged by overdue exposure to ultraviolet light.

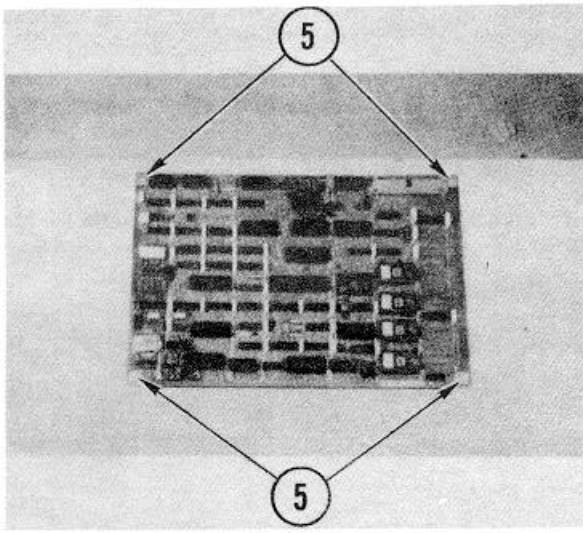
2. Make sure that erasable PROM chips on the CPU board are not exposed to fluorescent lighting more than a few minutes.

4-46. REMOVE/REPLACE CPU BOARD (CONT)

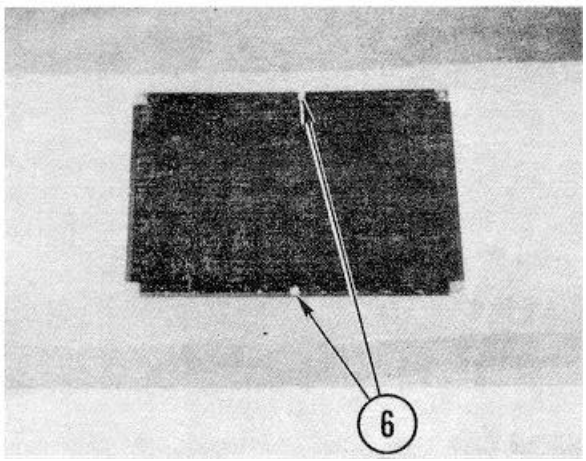


3. Insert standoffs into holes on bottom of CPU boards.

4. Turn CPU board over.



5. Replace and tighten screws.

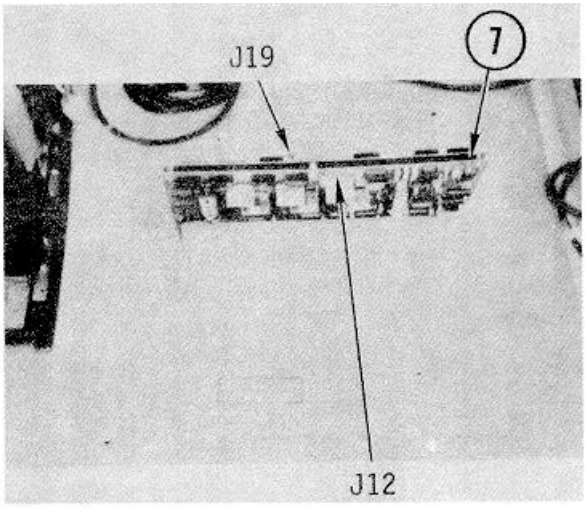


6. Replace plastic standoffs on bottom of driver board.

CAUTION

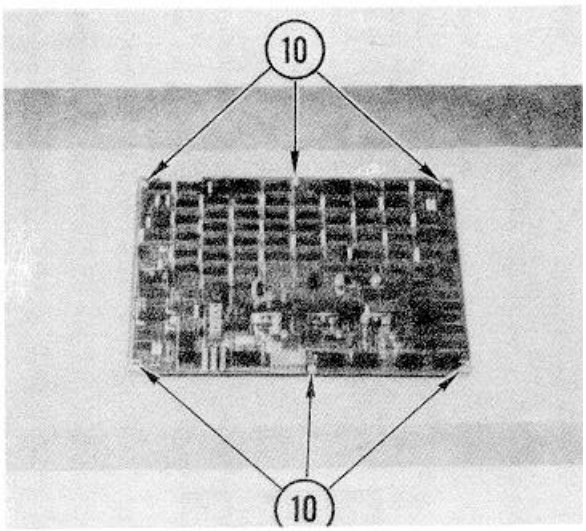
Make sure driver and CPU boards are mated properly. Otherwise, connectors may be damaged.

4-46. REMOVE/REPLACE CPU BOARD (CONT)



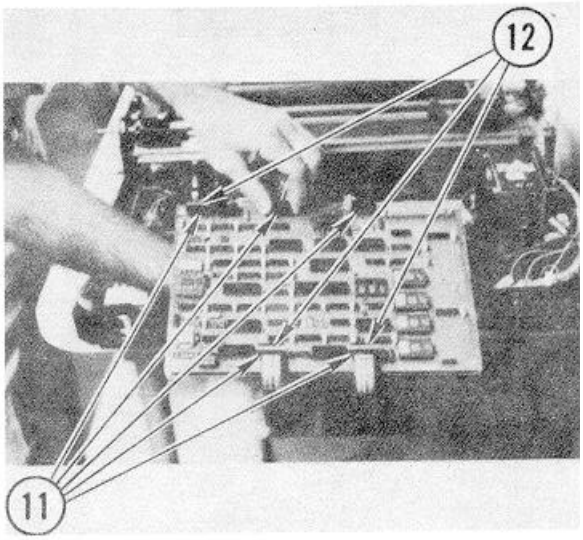
7. Place CPU board top side up on bottom of driver board.

8. Make sure small connector (J19) on CPU board and large connector (J12) on driver board are on same leading edges.



9. Turn boards so driver board is up.

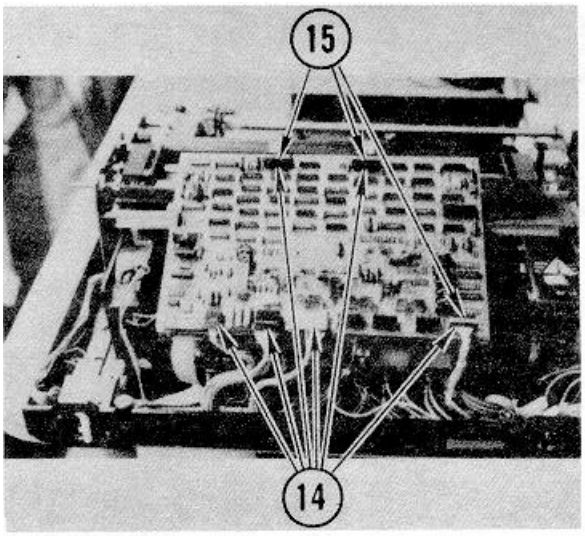
10. Replace and tighten nuts on driver board.

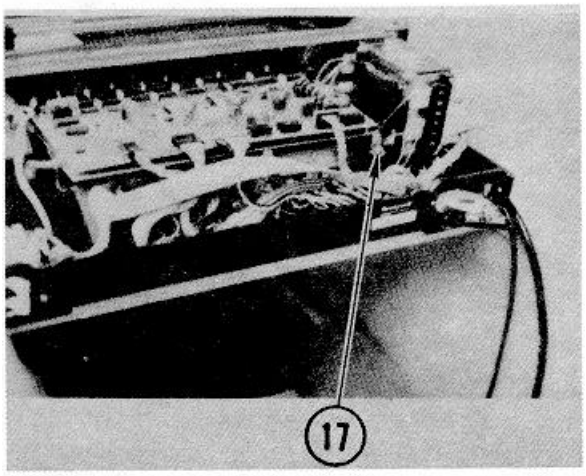


11. Replace connectors on CPU board.

12. Replace plastic clips on connectors.

4-46. REMOVE/REPLACE CPU BOARD (CONT)





13. Turn boards over.

14. Replace connectors on driver board.

15. Replace plastic clips on connectors.

CAUTION

Slide switches on CPU board may be accidentally tripped if struck against a hard object on the printer. This can result in damage to the printer.

16. Carefully slide boards into printer.

17. Replace clamp. Replace and tighten screw.

18. Replace top cover (para 4-11).

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals and technical manuals referenced in, or required for use with, this technical manual.

A-2. FORMS

Equipment Inspection and Maintenance Worksheet`	DA Form 2404
Quality Deficiency Report	Form SF 368
Discrepancy in Shipment Report .	Form SF 364
Recommended Changes to Equipment Technical Manuals	DA Form 2028-2
Recommended Changes to Publications and Blank Forms	DA Form 2028
Maintenance Request	DA Form 2407

A-3. TECHNICAL MANUALS

Operator's Manual: Teleprinter TT-756/MYQ-4	TM 11-7025-220-10
Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command)	TM 750-244-2
The Army Maintenance Management System (TAMMS)	TM 38-750
Administrative Storage of Equipment	TM 740-90-1

A-4. MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms	.DA PAM 310-1

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

This Maintenance Allocation Chart (MAC) provides a summary of maintenance operations for the console printer. This document assigns categories of maintenance for specific maintenance functions on repairable items and identifies tools and equipment required to perform each function. Each maintenance function is assigned to the lowest level of maintenance prepared to perform that function for the console printer. It should be understood that each maintenance function can also be performed at all higher levels of maintenance. The higher levels of maintenance will have tools and test equipment to perform the maintenance functions assigned to and normally performed by lower levels of maintenance.

The following paragraphs of Section I present maintenance function definitions, explanation of MAC column entries, and explanation of column entries of the tool and test equipment requirements section. Section II presents the MAC for the console printer and Section III presents the tool and test equipment requirements for the console printer.

B-2. MAINTENANCE FUNCTION DEFINITIONS.

Maintenance Functions are limited to and defined as follows:

a. Inspect. Determination of the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. Verification of serviceability and detection of beginning failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Performance of operations required periodically to keep an item in proper operating condition. Such operations would include cleaning, preservation, draining, painting, or replenishment of fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintenance within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Aline. Adjustment of specified variable elements of an item to the maximum or desired performance.

f. Calibrate. Determination and cause corrections to or adjustments to instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparing two instruments, one a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. Emplacement, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow proper functioning of the equipment/system.

h. Replace. Substitution of a serviceable like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. Application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remaching, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, and item or system. This function does not include trial and error replacement of consumable spare type items such as fuses, lamps, or electronic tubes.

j. Overhaul. Periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hour, miles etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF MAC COLUMN ENTRIES.

a. Group Number. This column lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next highest assembly.

b. Component/Assembly. This column contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Maintenance Function. This column lists the functions to be performed on the item listed in the Component/Assembly column.

d. Maintenance Category. This column specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in the Maintenance Function column. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of man-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC.

Subcolumns of the Maintenance category Column are:

C -- Operation/Crew
O -- Organizational
F -- Direct Support
H -- General Support
D -- Depot

e. Tools and Equipment. This column specifies by code those common tool sets (not individual tools) and special tools, test, and supporting equipment required to perform the designated function.

Explanation of Column Entries of Tool and Test Equipment Requirements Table.

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column presents the National/NATO Stock number of the specific tool or test equipment when these numbers are assigned.

e. Tool Number. This column lists the manufacturer's part number of the tool, followed by the Federal supply code for the manufacturer (5 digit) in parentheses, when these numbers are fully identified.

SECTION II. MAINTENANCE ALLOCATION CHART FOR TELEPRINTER TT-756/MYQ-4

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
04	Teleprinter (TT-756/MYQ-4)	Service		0.3				1, 6, 9	F
		Test			0.5			4, 5	
		Adjust			0.2			1, 2, 4, 5, 7	
		Replace			0.5			1, 3	
		Repair			0.5			1, 2, 4, 5, 6 7, 8	
		Overhaul					40.0		A
0401	Mech Chassis Assy.	Replace			0.2			1, 2, 7	
		Repair			0.3			1, 2, 6, 7	
040101	Carriage Transport	Test			0.2			4	
		Adjust			0.5			4, 5, 7	
		Repair			0.7			4, 5, 7	
		Replace			0.5			1, 2, 7	
040102	Head Assembly Print	Test			0.1			4, 5	
		Adjust			0.2			2, 7	
		Replace			0.3			2, 7	
		Repair					0.5		A
040103	Pulley Assy.	Replace			0.2			1	
040104	Motor Support Assy.	Test			0.1			5	
		Replace			0.3			1, 2, 6	
		Repair			0.3			1, 2, 5	
040105	Motor Assy.	Replace			0.2			1, 2	
0402	Circuit Card Assy. CPU	Test			0.3			4, 5	
		Replace			0.3			1, 2	
		Repair			0.5				A
0403	Circuit Board	Test			0.2			4, 5	
		Adjust			0.5			1, 2, 4, 5	
		Replace			0.3			1, 2	
		Repair			0.5				A
0404	Cable Assy.	Replace			0.1			1	
		Repair			0.5				A

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TELEPRINTER TT-756/MYQ-4

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F	Tool Kit Electronic Equipment TK17	5180-01-023-4982	
2	O,F	Metric Tools	TBD	CK-17MM (52346)
3	F	Decimal Socket Set	5120-00-247-0748	
4	F	Oscilloscope, OS-261/C	6625-00-127-0079	
5	F	Multimeter, Digital AN/USM-451	6625-01-060-6804	
6	F	Metric Socket Set	5120-01-115-1152	
7	F	Metric Open End Wrench Set	5120-00-906-0168	
8	F	Screwdriver, Stubby, Phillips	TBD	HIS97017133-001 (33322)
9	F	Vacuum Cleaner	TBD	S101503OW (29335)

SECTION IV. MAINTENANCE ALLOCATION CHART FOR TELEPRINTER TT-756/MYQ-4

REFERENCE CODE	REMARKS
A.	Repair by contractor.
B.	DS repair of 0107 Power Supply limited to replacement of fan and/or fuses.
C.	DS repair of 0125 Power Distribution Unit limited to replacement of fuses.
D.	DS repair of 070501 XPS/4 Board limited to replacement of fuses.
E.	DS repair of 0706 Universal Wire Harness limited to replacement of connectors and limit switch.
F.	See Technical System Manual for Complete Group Coding.

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists expendable supplies and materials you are authorized for the support of the console printer.

C-2. GENERAL

This list identifies items that do not have to accompany the console printer and that do not have to be turned in with it.

C-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. EXPENDABLE SUPPLIES AND MATERIALS

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NUMBER AND CAGE	(5) UNIT OF MEAS
		8135-00-292-2343	Tag, Blank	MX
		7510-00-281-5234	Pencil, General Writing SS-P-166	DZ
		7520-00-904-1265	Marker, Tube Type, Fine Tip	DZ
		7510-00-551-9823	Tape, Transparent 3" Core	RO
		7530-00-264-5460	Label, White	BK
		5975-00-451-5001	Strap, Tiedown, 12-inch 96906 MS3367-3-9	FT

APPENDIX D

SCHEMATIC DIAGRAMS

Index of Schematic Diagrams

D-1. GENERAL

Appendix D illustrates and lists the major wire connectors in the console printer as a help in troubleshooting.

D-2. DIAGRAMS

The following diagrams show overall printer schematics, **ird** location and description of major cable and pin connections between tie driver board, the CPU board, and mechanical/electrical assemblies.

a. Locator Diagram of Console Printer Bulk Power Supply**.** This diagram (D-1) illustrates the components of the bulk power supply and their cabling and wire connections.

b. Console Printer Ribbon Cable from I/O Connector (P-26) to CPU Board Connector (P-05). This diagram (D-2) provides interconnecting pin numbers, signals, and voltages between the I/O connector D-26 and the CPU connector P-05.

c. Console Printer Interconnection Diagram. This diagram (FO-1) provides information on wire connections between the driver and CPU boards. It also provides information on wire connections between the boards and the following switches and other components:

- Paper thickness switch
- Paper out switch
- Start of line switch
- Printhead
- Paper stepper motor
- Carriage stepper motor
- Strobe wheel
- Mistor
- Buzzer
- Power supply

- Fan
- Main circuit breaker
- Operator panel
- I/O connector

d. Console Printer Cabling and Connectors. This diagram (FO-2) illustrates the major cabling and wire connections of the schematic Console Printer Interconnections Diagram (FO-1).

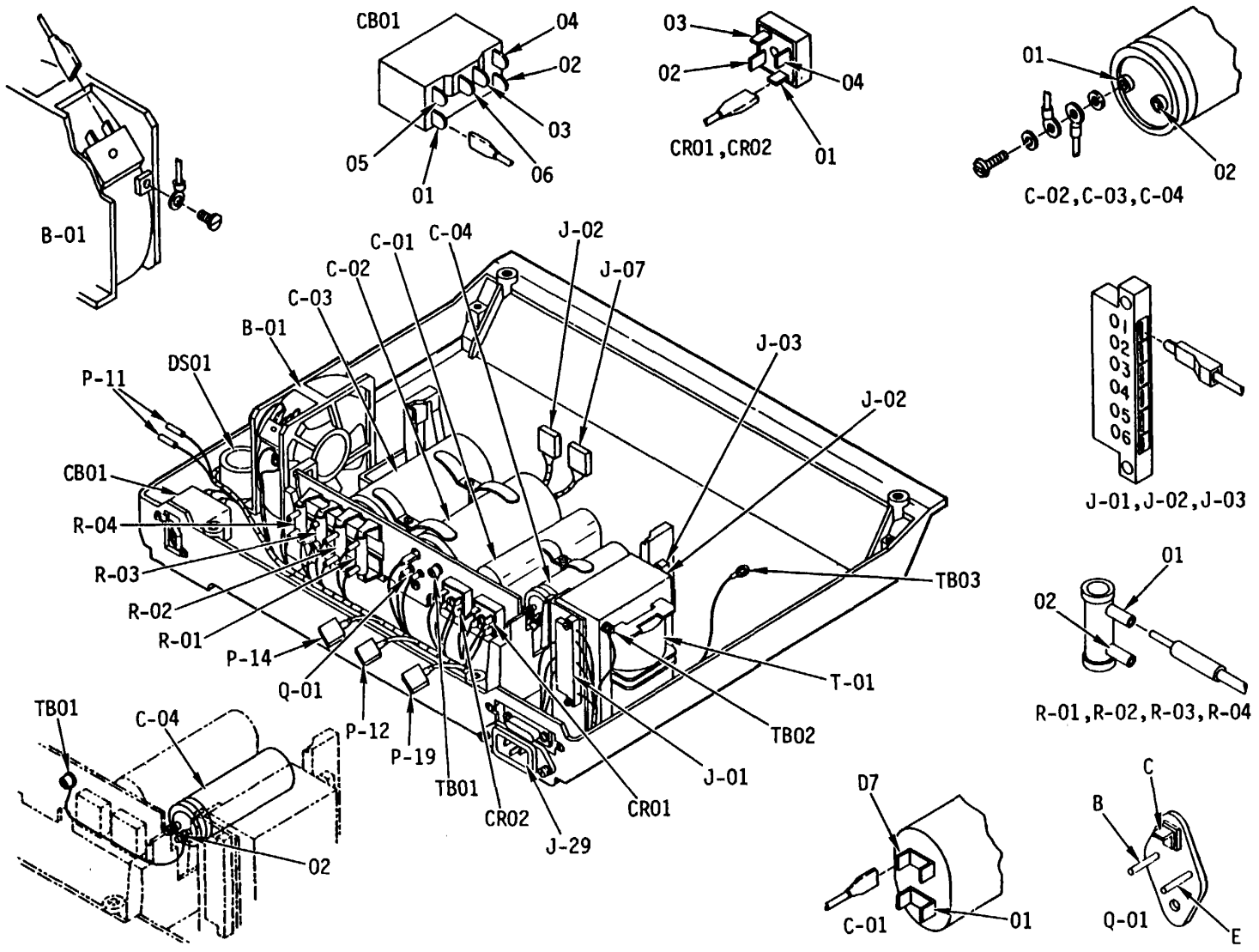
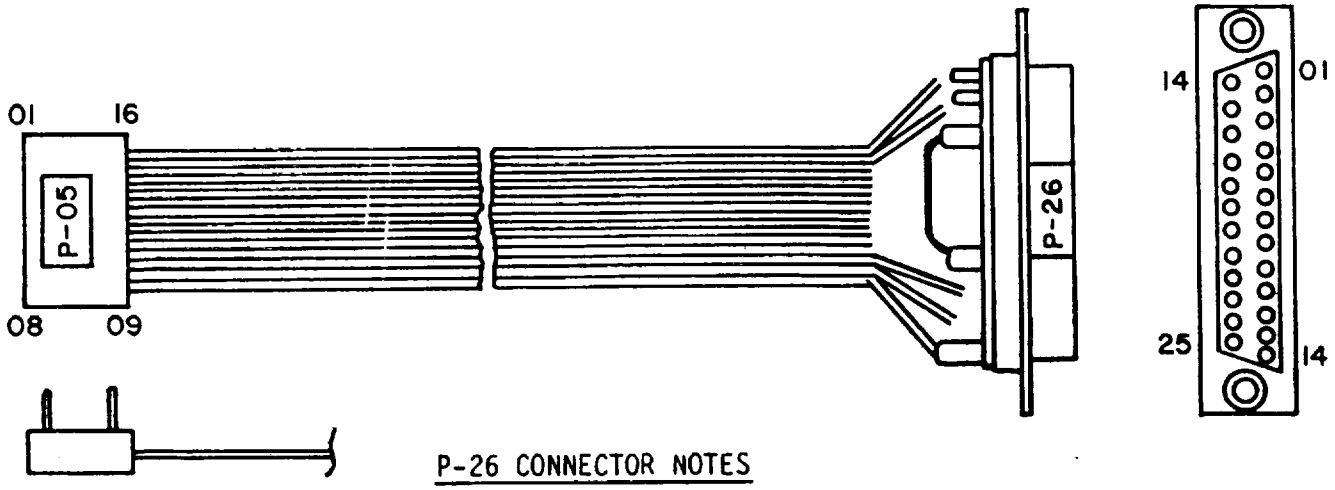


Figure D-1. Locator Diagram of Console Printer Bulk Power Supply



P-26 CONNECTOR NOTES

PIN	NOTE
4	FIXED LOGIC ONE LEVEL (EIA POSITIVE VOLTAGE)
6	IF LOGIC ZERO, PRINTER CANNOT GO READY
8	MUST BE AT LOGIC ONE LEVEL TO RECEIVE
19	WHEN A STOP BIT IS RECEIVED, PIN 19 GOES LOW FOR 100 msec MINIMUM, AND MAY STAY OFF IF: CARRIAGE RETURN OR LINE FEED HEAD MOVEMENT PRINT SPEED FALLS BEHIND INCOMING DATA. THIS SIGNAL IS CONNECTED TO CLEAR TO SEND SIGNAL IN SOME CABLES.
20	OFF IF POWER OFF, LOCAL MODE, OR STANDBY

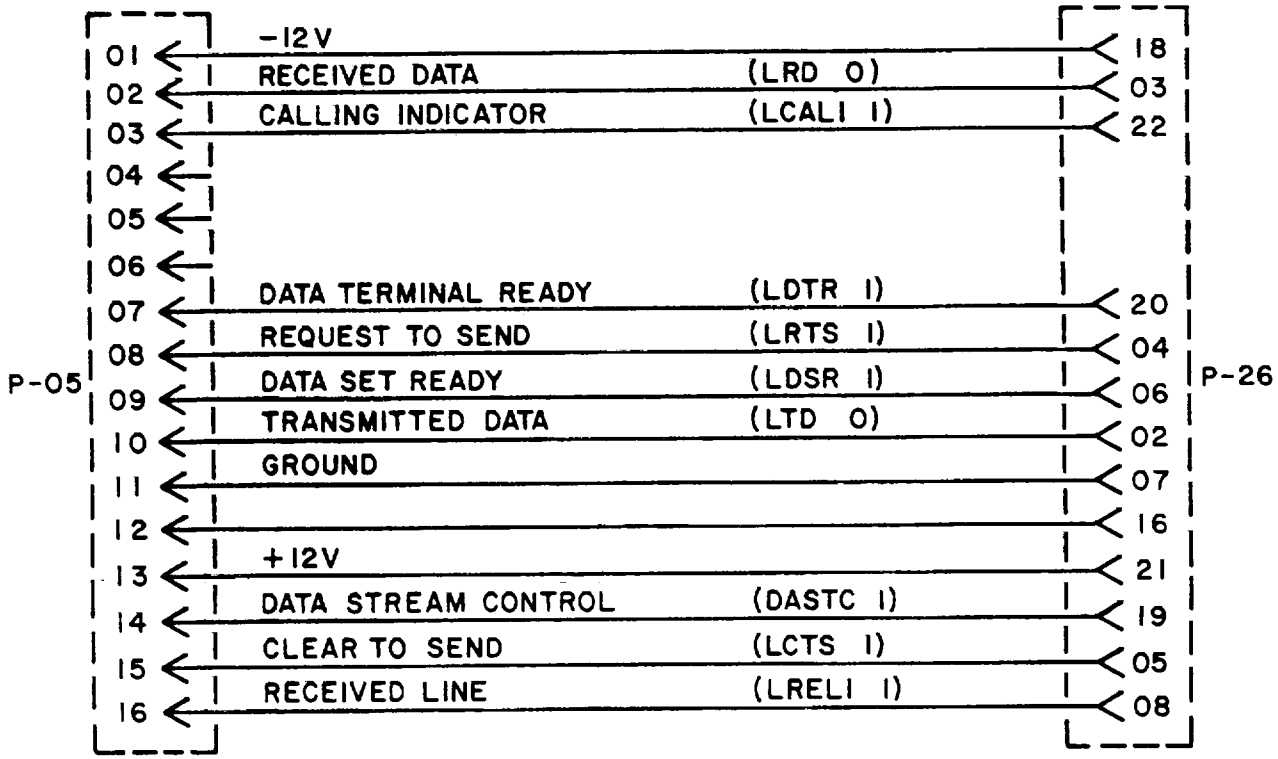


Figure D-2. Console Printer Ribbon Cable from I/O Connector (P-26) to CPU Board (P-05)

INDEX

SUBJECT F PARAGRAPH

SUBJECT S PARAGRAPH

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