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44677818

CONTROL DATA
CORPORATION

CDC® CT103A/B, CT105A/B AND CT106A
LINE PRINTER EQUIPMENT

PREVENTIVE MAINTENANCE
MAINTENANCE
LOGIC DIAGRAMS
UNIQUE CDC LOGIC

FIELD SERVICE MANUAL

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REVISION RECORD

REVISION	DESCRIPTION
RELEASE DEC., 78 A	Combined manual covering the PB and PBS band printer models.
B April, 79	Revised to incorporate corrections and Engineering Change Orders (ECO); PH15755, PH15789, PH15867, PH15912.
C April, 79	Revised to incorporate corrections.
D July, 79	Revised to incorporate corrections and Engineering Change Orders (ECO): PH15962, PH15966, PH15998, PH16003, PH16156.
E OCT., 79	Revised to incorporate corrections and Engineering change orders (ECO's): PH16127-Update logic, PH16201-Servo Amp Assy, PH16225- Hammer Dr. Assy, PH16273- Bearings.
F JAN., 80	Revised to incorporate corrections and Engineering Change Orders (ECO's): PH16129-Connector Keyway, PH16239-Flight time tool, PH16322- Tractor belt deflection, PH16460- Printhead Electronics PCB
G APR., 80	Revised to incorporate corrections and engineering change orders: PH16153-In line fuses, PH16224- Level 1 maintenance, PH16534- line filter resistor.
H APR. 29, 80	Revised to correct Rev G. pages in error.
I July, 80	Revised to incorporate C.E. corrections (Fault Isolation) & ECO PH16446-SW Detect Adj.
J OCT., 80	Revised to incorporate ECO's: PH16571-New ribbon system, PH16800-Update logic, EECO PH16894-Faston Adaptor, EECO PH16931-PHE BD (44680937), EECO PH16967-PHE BD (44680938), EECO PH17001-Prevent Crossfire, EECO PH17008- PHE BD (44684462).
K OCT 28, 80	Revised to correct error in "C.E. Fault Check" chart.
L JAN., 81	Revised to incorporate ECO: PH17168-To reduce sense to tach. performance variations (PHE 44685119).
M APR., 81	Revised to incorporate ECO's: PH17304-Revised Adj Spec., PH17333-Correct terminal No's of power supply.
N JULY, 81	Revised to incorporate ECO's; PH17276-Release hammer driver 44681993, PH17465-Logic correction, EECO PH17518-Rel. Tach. (for reliability)
O OCT., 81	Incorporate EECO PH17794-Rework 44681993 Board to 44681994. Incorporate ECO's: PH17587-Inactivate Skew Amp Bd. 44674251, replace with 44674252. PH17768-Replace Pot. Also, changed PHE Board set up adjustment procedures for 3, 7 and 11 pot boards.

PUBLICATION NO.

44677818

Revision Procedure:

The revision record page is revised for each revision package to reflect the revision sequence: Pre-Release, Release, Rev. A, Rev. B, Rev. C, etc. The revision record page also provides a brief description of each change. A manual update revision package will be available for manuals after the Release revision of the manual. Each page revised in an update revision package will have the month and year printed in the lower right hand corner. This same date would appear in the revision column above, just below the revision identification. An Instruction Sheet cover is with each revision package, explaining page removal and insertion and reason for the change. The instruction sheets for revision packages are then to be placed at the back of the manual as a record of the change.

IDENTIFICATION NO.

REVISION RECORD

REVISION	DESCRIPTION
P JAN., 82	Incorporate corrections and ECO PH17264-Release PHE Board (44685945)
Q APR., 82	Revised to incorporate C.E. corrections
R JULY., 82	Revised to incorporate ECO'S: EECO PH18068 - Release hammer driver board 44687338, PH18247 - Update signal names and off sheet referenced (Incorporated B/P8214 in advance of ECO).
S OCT., 82	Revised to incorporate ECO's: PH16867- to provide a more reliable servo power Amp PCB, PH17947- to update XMFR VDE Reqmt's.
T APR., 83	Revised to incorporate Engineering Change Orders: PH18305, PH18770
U OCT., 83	Revised to incorporate ECO's: PH17860, PH19142, PH19143, PH19511, PH19570
V JAN., 85	Revised to incorporate ECO: PH20585
W APR., 85	Revised to incorporate TAR 217204

PUBLICATION NO.

44677818

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IDENTIFICATION NO.

PREFACE

This publication contains field service information required for the Printer Band Sharing (PBS) and Printer Band (PB) Line Printers. This manual provides maintenance, corrective maintenance, parts replacement, with logic and timing diagrams This manual is intended to provide customer engineers, and diagnostic engineers with the information required to understand and function the Line Printer.

The publications listed below are related publications available through the nearest Control Data Corporation sales office.

Publication	Publication No.
Preparation and Instruction Manual	44677817
Parts Identification Manual (PBS)	95445067
Parts Identification Manual (PB)	95445050
Computer Peripherals, Key to Logic Symbology	95390100
Special Options Manual (EVFU)	95445077

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

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

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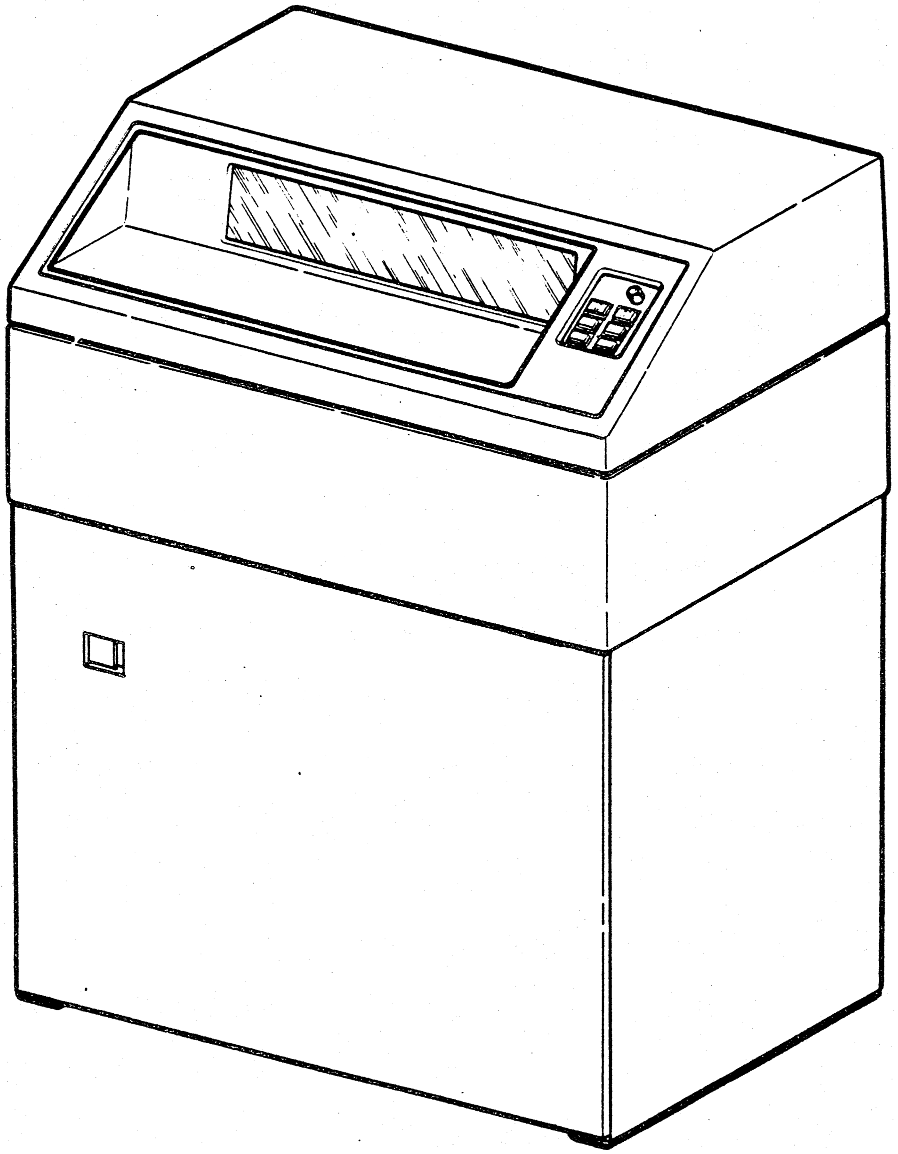


PRINTER BAND (PB) AND
PRINTER BAND SHARING (PBS)

PREVENTIVE MAINTENANCE

INTRODUCTION

This section contains the information and instructions needed for performing preventive maintenance in both the PBS 300/600 and the PB 900 line printers. Preventive Maintenance is divided into two levels. For the PBS printers, Level I P. M. is required every six months or 9 million printed lines (whichever occurs first) for the 300 Line Per Minute model and every six months or 18 million printed lines (whichever occurs first) for the 600 Line Per Minute model. For the PB 900 printers, Level I P. M. is required every six months or 27 million printed lines, whichever occurs first.

The Level I operations require approximately one hour to perform. Level II P. M. is required every 12 months or 18 million printed lines (whichever occurs first) for the 300 LPM model; every 13 months or 36 million printed lines (whichever occurs first) for the PB 900 printer. The Level II operations require one additional hour to perform. Preventive maintenance is not intended to cover such operations as ribbon changing, paper loading and ribbon shield replacement. These operations are considered to be operator functions. In addition, the operator is required to keep the paper path clean and to remove accumulated paper dust and lint during ribbon changes.

MAINTENANCE SCHEDULE

NOTE:

THE FOLLOWING PROCEDURES THAT ARE NOT APPLICABLE TO BOTH PBS 300/600 and PB 900 PRINTERS WILL BE SO INDICATED.

TOOLS AND MATERIALS

Tools and materials required for maintaining the printer are listed in three groups; maintenance tools, special maintenance tools and maintenance materials. Maintenance tools are items normally used by field engineers and are specially needed in maintaining this printer. Special maintenance tools are items of special design or items not considered a part of a standard set of field maintenance tools. Maintenance materials are basic supplies ordinarily used during maintenance. Refer to the Maintenance Section of this manual for a complete listing of tools and materials required for maintaining the printer.

TABLE 1-1. PREVENTIVE MAINTENANCE TOOLS AND MATERIALS

WARNING

NOISE LEVEL UNDER BONNET WHILE PRINTING MAY BE HAZARDOUS TO HEARING. KEEP EXPOSURE TO A MINIMUM.

		P. M. TOOLS AND MATERIALS											
LEVEL	DESCRIPTION	VACUUM	ALCOHOL	CLEANSER	OSCILLOSCOPE		ALLEN WRENCHES	SPRING SCALE	RULE	BEARING TAPE	DIGITAL VOLT METER	FLIGHT TIME TOOL	SILICON GREASE
1.1	PRINTER CLEANING	X	X	X									
1.2 PBS ONLY	PAPER CLAMPS							X					
1.3	RESIDUAL STRIP						X						
1.4	FLIGHT TIME						X					X	
1.5	PLATEN WEAR STRIP [1]									X			
2.1	DRIVE BELT							X	X				
2.2.1	POWER SUPPLY										X		
2.2.2. [2]	SUBSCAN COMPENSATION										X		
2.2.3	CHARACTER TO HOME				X								
2.2.4 PBS ONLY	HORIZONTAL SERVO				X						X		
2.2.5	VERTICAL SERVO				X						X		
2.3	PRINTER LUBRICATION												X

[1] Disregard platen wear strip for printers with plastic riveted to their platen.

[2] This check and adjustment is not required on 3 or 7 pot 7PC3 boards. Refer to Table 2-4.

LEVEL I MAINTENANCE

1.1 PRINTER CLEANING

CHECK/Conditions	Actions
1. Printer powered off and print gate open.	Vacuum hammer modules and horizontal reader to remove paper dust and chad.
2. Remove print gate cover and print band. (Perform cleaning actions to maintain proper band tracking.)	1. Clean lint from platen and top guide. 2. Wipe band pulley's surfaces. with alcohol. 3. Clean ribbon residue from ribbon posts and guides.
3. All printer skins in place.	Remove all surface dirt using a non-abrasive commercial cleaner.

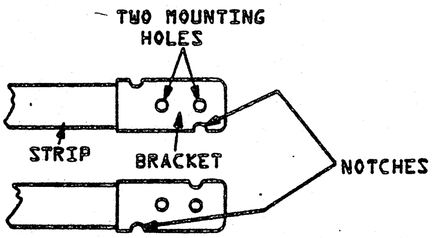
1.2 PAPER CLAMP ADJUSTMENT (PBS Printer Only)

CHECK / Conditions	Actions
Adjustment should be checked when printed lines across the form appear wavy. Cause could also be a band floating problem covered in Corrective Maintenance.	
1. Printer powered off.	
2. Install 15lb. single part forms and briefly operate the printer.	
3. Remove the paper from the tractors.	
CHECK: Use a spring scale to pull the forms up through the throat area. Does the paper drag go up and exceed four pounds (1.814 kg) ?	Perform the Paper Clamp Adjustment Procedure in the Corrective Maintenance Section.
4. Replace the forms in tractors, operate the printer and then power it down and remove the paper from the tractors.	
CHECK: Use a spring scale to pull the forms up through the throat area. Is the tension less than one pound (454g) ?	Perform the Paper Clamp Adjustment Procedure in the Corrective Maintenance Section.

1.3 RESIDUAL STRIP ADJUSTMENT OR REPLACEMENT

CHECK/Conditions	Actions
1. Printer powered off.	
2. Remove ground strap and lift off bonnet.	
3. Remove paper bail, on PB printers first remove the idler roller assembly.	
3a. PB printers only. Remove protective cover over the hammer driver wires.	

1.3 RESIDUAL STRIP ADJUSTMENT OR REPLACEMENT (con't)

CHECK/Conditions.	Action
3b. PB printers only. If the lower armature bar is being removed, the inner paper guide must be removed. The lower armature bar is removed from the front of the main frame. (Refer to Armature Replacement procedure in the Maintenance Section 2, Parts Replacement.) 4. Remove 3 allen screws securing armature bar. 5. Unplug hammer driver cables. 6. Lift out armature bar. CHECK: If residual strip has not been shifted before as evidenced by wear in only one position then perform action step 1. If strip has been shifted perform action step 2. 	The residual strip must be shifted to it's other mounting position before it is worn through at any of the striker positions. 1. Move residual strip mounting brackets on each side of armature bar to unused hole. Remove the one on the inside hole first to relieve tension. 2. Remove residual strip. Install new strip, placing mounting brackets on opposite holes. If left side is on inside hole, right side should be an opposite hole, or vice versa. Notches on brackets aid in installation. Install upper notch to upper notch or lower notch to lower notch.

1.4 HAMMER FLIGHT TIME ADJUSTMENT

CHECK/Conditions	Action
1. Printer printing all one character pattern of M's or H's. If compressed pitch bands are used on PBS printers, install one when performing this adjustment/check. CHECK: Are all characters printed equally on both sides? Remember each hammer prints more than one column on PBS printers, and errors appear in groups of two (600 LPM) or four (300 LPM). In compressed pitch the group pattern is three (600 LPM) and six (300 LPM).	Perform Flight Time Adjustment procedure in the Corrective Maintenance Section

1.5 △1 PLATEN WEAR STRIP REPLACEMENT (BEARING TAPE)

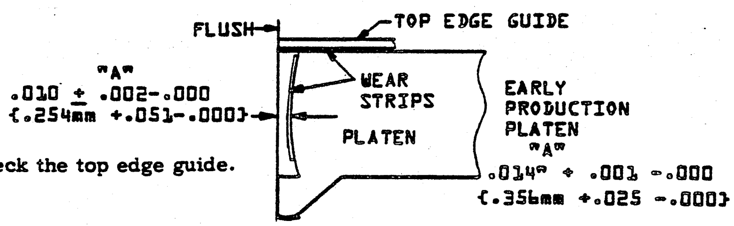
CHECK/Conditions △1

Action

1. Power the printer off.
2. Remove upper gate cover and open the gate.
3. Remove band.
4. Replace the wear strip on the platen and check the top edge guide.

CHECK: Surface of wear strip should not have bare spots. Wear strips are located in the printing area on the platen front surface and top edge.

LATER REVISION PLATEN



For replacement of wear strip refer to Parts Replacement.

Note: △1 Not required with new platen assembly which has plastic riveted to the front of the platen.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

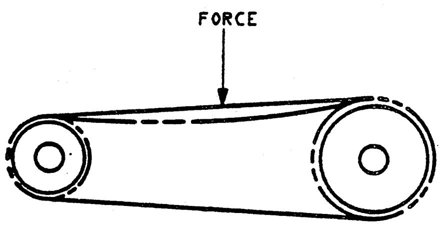
LEVEL II MAINTENANCE

2.1 DRIVE BELT INSPECTION

CHECK/Conditions

1. Printer powered off.

CHECK: Inspect the drive belts for signs of wear and check their tension.



Action

1. Replace worn belts
2. Perform the belt tension adjustments specified in the Corrective Maintenance section

*Band Printer (PB) paper exit belt tension is adjusted by loosening the motor and applying 7 to 9 pounds (3.115 - 4.005 kg) force on the front motor standoff (refer to the Corrective Maintenance Section).

BELTS	OUNCES (U.S.A.) FORCE MIN.	OUNCES (U.S.A.) FORCE MAX.	OUNCES (U.S.A.) DEFLECTION	KILOGRAMS (METRIC) FORCE MIN.	KILOGRAMS (METRIC) FORCE MAX.	KILOGRAMS (METRIC) DEFLECTION
* Exit Motor.(PB Only)						
Band Motor	16 oz	24 oz	.150 in.	.454 kg	.680 kg	3.8 mm
Forms Advance	32 oz	40 oz	.150 in.	.908 kg	1.135 kg	3.8 mm
Tractor	32 oz	Pull	.230 to .270 in.	.908 kg	Pull	5.84 to 6.86 mm

2.2 ELECTRICAL ADJUSTMENTS

2.2.1 POWER SUPPLY +5 VOLTS

IMPORTANT: FOR 3 POT 7PC3 BOARD, USE THE PROCEDURE ON PAGE 2-58A.

CHECK/Conditions

1. Printer powered on.
2. PBS printers. Bonnet, paper bail, and protective plate over card rack, removed.

2a. PB printers. Lower rear panel removed.

3. Digital Volt Meter connected to R162 on the 7PC3 board (refer to Figure 2-49) for +5 volt, and 5TB4 for GND

CHECK: +5 volt equals 4.95 to 5.05 volts.

Action

1. Allow printer warm-up for a half hour. Adjust pot R2 on 2PC1 to obtain correct voltage.

2.2.2 SUBSCAN COMPENSATION REFERENCE VOLTAGE (Required only on early 7PC3 boards as referenced in Table 2-4.)

CHECK/Conditions

1. Printer powered on.
2. PBS printers. Bonnet and paper bail removed.

2a. PB printers. Lower rear panel removed.

3. Plus DVM lead connected to 7PC3 (TP 11 new) (TP12 old) (see Table 2-4 for board numbers), return lead to TP30.

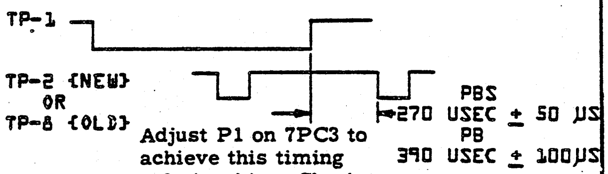
CHECK: +30 volt reference voltage equal 29.9 to 30.1 volts.

Action

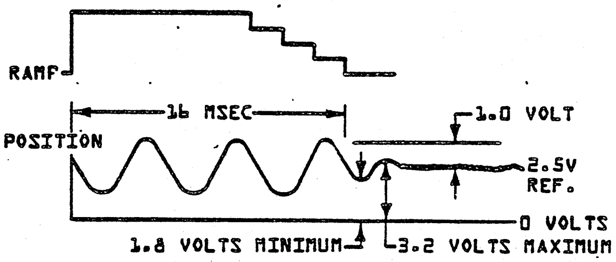
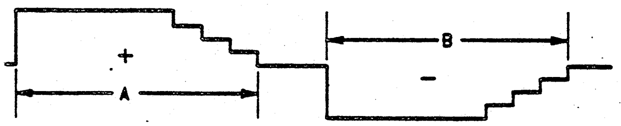
1. Adjust pot P2 on 7PC3 to obtain correct voltage. (This pot and adjustment is not for 7 pot 7PC3 boards.)

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

2.2.3 CHARACTER TO HOME PULSE SYNCHRONIZATION FOR 7 AND 11 POT 7PC3 BOARDS

CHECK/Conditions	Action
If misadjusted the wrong character will be printed. 1. Printer powered on. 2. PBS printers. Bonnet and paper bail removed. 2a. PB printers. Lower rear panel removed. 3. Open and close gate to keep band rotating.	
CHECK/Conditions	**Action**
4. Using a dual trace oscilloscope, sync neg. and monitor TP1 of 7PC3 with channel 1. 5. Monitor 7PC3 (TP2 new) (TP8 old) (see Table 2-4 for board numbers) with channel 2. CHECK: TP2 (TP8) should go negative between 220 and 320 µsec (PBS) following positive edge of TP1. PB printers should be adjusted between 290 and 490 µsec.	 Adjust P1 on 7PC3 to achieve this timing relationship. Check to see that correct characters are being printed.

2.2.4 HORIZONTAL SERVO ADJUSTMENT (PBS Printers Only)

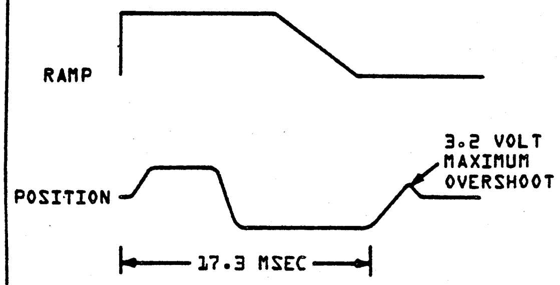
CHECK/Condition	Action
1. Remove ground strap and lift off bonnet. 2. Remove paper bail and protective plate from rear of card rack. 3. Using a dual trace oscilloscope sync (+) and monitor TP26 on 7 PC3 (Ramp). Ground oscilloscope at TP30. 4. With second channel monitor 7PC3 (TP17 new) (TP18 old) (see Table 2-4 for board numbers) position signal. 5. Initiate a print operation. CHECK: Position signal must damp out within one volt of the 2.5 volt reference level within 16ms. The overshoot must be greater than 1.8 volts during the negative swing and less than 3.2 volts during the positive swing. At 25 msec, the oscillations must be less than .3 volts peak to peak. 	Perform the Horizontal Servo System Set-up procedure in the Corrective Maintenance Section.  A=B WITHIN 2MS

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

2.2.4 HORIZONTAL SERVO ADJUSTMENT (con't)

6. Change the sync to (-) while monitoring the same points to check the minus ramp. Plus and minus ramps must be equal within 2ms. CHECK: The minus ramp position signal is the same as for (+) sync except positive portion of the Position signal will occur first.	Perform the Horizontal Servo System Set-up procedure in the Corrective Maintenance section.

2.2.5 VERTICAL SERVO ADJUSTMENT

CHECK/Condition	Action
1. Remove ground strap and lift off bonnet. 2. PBS printers. Remove the paper bail and protective panel from the rear of the card rack. 2a. PB printers. Remove the lower rear panel covering the card rack. 3. Using a dual trace oscillscope sync (+) and monitor 7PC3 (TP16 new) (TP17 old) (See Table 2-4 for board numbers) Ramp signal. 4. Connect the second channel to 7PC3 (TP12 new) (TP14 old) (see Table 2-4 for board numbers) position signal. 5. Initiate continuous single line advances in 6 LPI mode.	
CHECK: Position signal starts to swing positive a maximum 17.3 msec after leading edge of ramp. Maximum positive overshoot is 3.2 volts. At 25msec, the oscillations must be less than 0.3 volts peak to peak.	If signal is not correct, perform Vertical Servo System Set-up procedure in Corrective Maintenance section.
	

2.3 PRINTER LUBRICATION

CHECK/Conditions	Action
1. Printer powered off. 2. Print gate open.	Apply G.E. silicone grease to gate pivot pin and latch pin.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

2.3.1 PRINTER BLOWER (FAN)

Check/Conditions	Action
1. Disconnect power cord. 2. Remove hose (duct). 3. Clean blower (fan) blades 4. Replace hose (duct) 5. Connect power cord.	Compress hose (duct) and slide out. Wipe with rag and vacuum loose debris. Compress and slide into place onto blower & pedestal flange.

MAINTENANCE

INTRODUCTION

The following section contains information, instructions and procedures necessary for keeping the PBS 300/600 & PB900 line printers in an optimum operating condition. PBS printers incorporate a horizontal shifting hammer bar. PB printers are higher speed with a fixed hammer bar and a power forms exit system. The section is divided into the following four subsections:

Maintenance Aids
Corrective Maintenance
Parts Replacement
Fault Isolation

NOTE:

ANY OF THE FOLLOWING PROCEDURES THAT DO NOT APPLY TO BOTH THE PBS 300/600 AND PB900 LINE PRINTERS WILL BE SO INDICATED.

MAINTENANCE AIDS

TABLE 2-1. MAINTENANCE TOOLS

OSCILLOSCOPE: Dual trace, d.c. to 10mHz minimum, calibrated triggered sweep.

DIGITAL VOLTMETER: Three and a half digit

SCREWDRIVER ASSORTMENT: flat blade and phillips.

SOLDERING IRON: 6 or 15 watt recommended

VACUUM CLEANER OR SOFT BRUSH with hand held brush and nozzle.

WRENCH ASSORTMENT: open end American sizes through 9/16"

HEX KEY WRENCH SET: .050 through 3/16 inch

RULER: 6" or metric equivalent

SQUARE (small right angle)

TESTING WITHOUT NOISE

During repair of the printer the following may be performed to quietly cycle the printer.

1. Disconnect hammer driver board connectors on all hammer driver boards, P1, P3, P4, P5, P6.

TABLE 2-2. MAINTENANCE MATERIALS

ALCOHOL -for general cleaning
SILICON GREASE -for print gate
CHLOROTHENE-Nu-gate, adhesive removal

2. Disconnect paper clamp by using extraction tool and remove clamp wire from Servo Amp Board plug P2-3.
3. Remove forms and ribbon.
4. Tape down the Out Of Paper switch and insert paper between both fold switches to simulate ribbon.
5. Disable Paper Motion Verification (PMV) by making a paper loop from the edge of a form which will run through the right tractor or ground pin 1 on chip K5 on board 7PC2, counter reset pin.

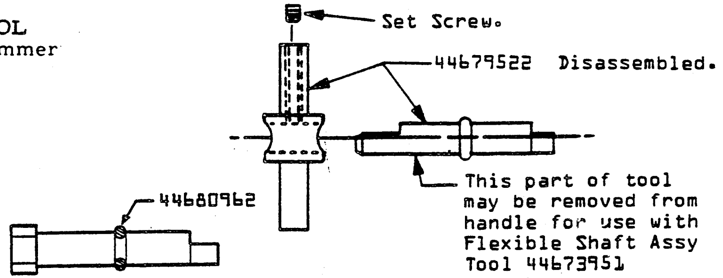
Test Print Method

1. Select blank code test print character (40_8).
2. Operate Test Print switch.

TABLE 2-3. SPECIAL MAINTENANCE TOOLS

44679522 BAND TRACKING/FLIGHT TIME TOOL
This tool is required to adjust the print hammer flight time.

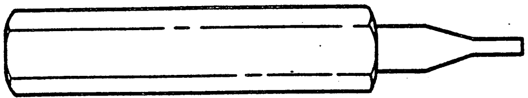
44680962 FLIGHT TIME TOOL
This tool is used with socket or box wrench



This part of tool may be removed from handle for use with Flexible Shaft Assy Tool 44673951

94806769 CONNECTOR PIN EXTRACTOR (AMP NO. 458994-1).
Used for removing connector pins from the connector block which plugs into the AC Select Board used in a special configuration, universal power supply. Optional, required only when AC select board is used.

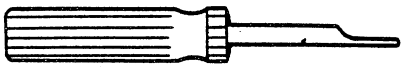
OPTIONAL TOOL



USED ONLY ON CONNECTOR PINS ON PLUGS OF OPTIONAL A.C. SELECT BOARD (6420 MODELS ONLY)

94806768 CONNECTOR PIN EXTRACTOR (AMP NO. 465644-1) - 95323900

Used for removing circular type pins from connector blocks attached to the Ribbon Motor cable connectors and the Paper Motion Verification sensor cable connector.



94806770 CONNECTOR PIN EXTRACTOR (AMP NO. 91065-1)

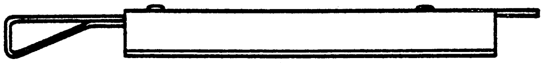
Used for removing square type pins from connector blocks attached to circuit board D.C. power cables, D.C. power and signal connector cables 2PC2-P1, 2PC2-P2 and 2PC2-P4 on the Servo Amplifier board and D.C. power connector 2PC1-P1 on the Power Supply board..

94806771 CONNECTOR PIN EXTRACTOR (AMP NO. 91052-1)

Used for removing pins from all miniature black plastic connector blocks attached to the Print Head board and special interface boards.

94806776 CONNECTOR PIN EXTRACTOR (AMP 457241-1)

Used for removing pins from the Hammer Striker harness connectors which plug into the Hammer Driver circuit board(s).

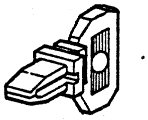


12210947 SPRING SCALE

For adjusting belt tensions, Band tension. Push/Pull gauge to 20 lbs or 9 kilograms.

44672886 LATCH QUARTER TURN

For setup on the band cover interlock switch without using the band cover.



84133800 TORQUE WRENCH 0-75 in. lbs. (10 N·m)

(alternate wrench 0-50 in. lbs. minimum may be used)

Used to torque the platen bolts and band collar clamps.

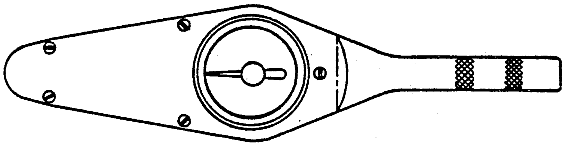
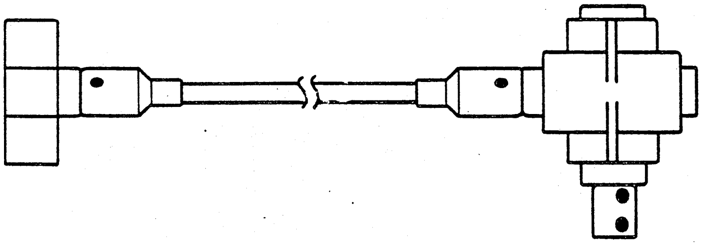


TABLE 2-3. SPECIAL MAINTENANCE TOOLS (CONTINUED)

44673951 FLEXIBLE SHAFT ASSEMBLY
(PB 900 ONLY)
This tool is used with the Band Tracking/ Flight Time tool (less handle) to adjust the lower print hammer actuators for proper print hammer flight time.



WARNING

HAZARDOUS VOLTAGE AND HAZARDOUS ENERGY LEVELS

During maintenance operations switch off the mains supply whenever possible. When power is applied care must be taken when servicing equipment to avoid contact with parts at Hazardous Voltages such as mains circuits and the high voltage section of high frequency switching power supplies which are common on most equipment.

On low voltage circuits an additional hazard exists due to the high short circuit current/energy (often hundreds of amps) which can flow into a fault. Great care must be taken to avoid short circuiting the opposite poles of low voltage supplies by tools or personal metallic adornments such as rings or watchstraps.

MOS COMPONENTS

MOS components appear on the Input Print board (7PC1), the EVFU board (7PC6), and certain interface boards (7PC4,7PC5). A warning label is attached to these boards.

MOS components may be damaged by static electricity which is commonly caused by human movement such as walking over carpeted floors or by friction between clothing and chair seats or desk tops. Those handling MOS components or assemblies should read: -Handling Procedures for MOS components. The following rules should be observed: -

1. Components should be stored in conductive trays (i.e. metal or foil lined containers) or have their pins joined by conducting foam.
2. High static materials should be excluded from the working vicinity.
3. Personnel handling MOS components should previously earth themselves via ground or earthed metalwork.

Metal oxide-silicon semi-conductors are being used in this printer. There is considerable risk of accidental damage being caused to such components by the discharge of static electricity through the elements.

PRINTED CIRCUIT BOARDS CARRYING METAL OXIDE SILICON SEMI-CONCUCTORS

It is, therefore, important that all personnel liable to handle PCBs carrying MOS semi-conductors are aware of the risk and of the correct method of handling. (There is no easy way of recognising a MOS semi-conductor so, if in doubt, assume that one is fitted to the PCB you are handling.)

Take the following precautions:

1. The PCBs must always be transported in the container provided.
2. When a replacement board is to be fitted into an equipment, the Engineer must first touch bare, earthed metal frame to discharge any static electric charge he is carrying. Having done so he should avoid taking any more steps on the floor prior to fitting the PCB into the equipment. He should then remove the PCB from its container, handling it in a way which avoids any contact with any conducting part of the PCB. He should then remove any protective clip, if fitted to the MOS device, and insert the PCB.
3. Prior to removing a PCB the Engineer must again touch a bare, earthed metal frame and, avoiding taking any further steps on the floor, remove the PCB from the equipment, handling it as described above, fit protective clips where appropriate, and place the PCB in the container provided for the purpose.
4. Technology advise that no PCBs fitted to an equipment containing MOS devices should be inserted or removed with the power to the equipment switched on.

Damage resulting from static discharge or other causes may not become evident until some time later.

CORRECTIVE MAINTENANCE

CONTENTS

***NOTE: Early 7PC3 boards have 11 potentiometers (pots) along the top of the board. Later boards have either 7 or 11 pots with different test points than the early boards. The latest boards have 3 pots. It is important to use the appropriate set up procedure for your board.

WHEN REPLACING THE BELOW BOARDS MAKE THE INDICATED CHECKS IN NUMERICAL SEQUENCE STARTING WITH ONE.

	CHECK + 5 VOLTS	CHECK+ 12 VOLTS	CHECK + 36 VOLTS	CHECK BOARD DIP SWITCH POSITIONS [1]	CHECK BOARD JUMPERS INSTALLED [1] [4]	CHECK FOR CORRECT JUMPER BLOCK - LOWER RIGHT [3]	CHECK G=6 AND H=6 PROM/DIL LOCATIONS [2]	CHECK PAPER RATE LIMITOR ADJUSTMENT	CHECK FLIGHT TIME ADJUSTMENT	CHECK+30V VOLTAGE COMPENSATION ADJUSTMENT [8]	CHECK CHARACTER AND HOME PULSE SET-UP	CHECK HORIZONTAL SERVO SYSTEM SET-UP [5]	CHECK VERTICAL SERVO SYSTEM SET-UP	CHECK FOR CORRECT ROM's INSTALLED	CHECK FOR HOR. INHIBIT PLUG INSTALLED IN P9 [9]
2PC1 POWER SUPPLY	1	2	3												
2PC2 SERVO AMP	1	2	3									4	5		
5PC1 -4 HAMMER DRIVER [6]	2		3			1			3						
*, ** 7PC1 INPUT PRINT	1			2	3		4							5	
** 7PC2 OSC. HORIZ. & VERT. MOT	1				2			3							
*** 7PC3 PRINT HEAD ELECTRONICS [7]	1	2								3	4	5	6		7
** 7PC4 INTERFACE BOARD	1			2	3										
** 7PC5 SPECIAL	1			2	3										
** 7PC6 EVFU	1	2		3	4									5	

*NOTE: Refer to Parts Identification Manual under Print Bands. Special bands may require PROM's to be installed on 7PC1.

**NOTE: Board part number also reflects a jumper configuration on the board. Refer to the Parts Identification Manual using the printer's TLA number (8 digit) on the identification tag to locate the Assembly Common Controller Complete for 7PC1/2, or the Interface Complete for 7PC4 or 7PC5, which will identify the board part numbers. All printers will not have boards in locations 7PC4, 7PC5, and 7PC6. The board assembly in the Parts Manual will identify the jumper configuration for a board part number. When replacing a board in location 7PC6, refer to the Special Option Manual for the board assembly. Some 7PC5 boards are documented in Interface Adapter Manuals.

1st- Locate TLA No. in parts manual.
2nd- Locate Assy Common Cont Compl on the TLA list.
3rd-Locate the printer board numbers on the Assy Common Cont Compl list.
4th- Locate board assy and verify jumpers installed.

[1] Check drawing or Table of board assembly in Parts Manual. All printers will not have all boards.

[2] Check print bands in Parts Manual.

[3] Check Fault Isolation Section.

[4] A special band may require a change of jumper J13 and J14. Always check the jumpers on the board being removed, boards may be set up for special bands.

[5] PBS printers only.

[6] PBS printer uses 5PC1 for 300 LPM model; 5PC1 and 5PC2 for 600 model. PB 900 printer uses 5PC1, 5PC2, 5PC3, and 5PC4.

[7] Procedures follow this page for PB Vertical Setup and PBS Horizontal and Vertical Setup with a table between the procedures to identify test points.

[8] This adjustment is not required on 7PC3 boards with part number 44674257 or later, see Table 2-4.

[9] PB printers only.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER BOARDS USE THE FOLLOWING PROCEDURES.

7PC3 CONDENSED REPLACEMENT PROCEDURES FOR 7 AND 11 POT BOARDS

NOTE: REFER TO TABLE 2-4 TO IDENTIFY REF. LETTERS TO TEST POINTS PER 7PC3 BOARD PART NUMBER. FOLLOWING PROCEDURE SETS UP THE POTS ON 7PC3.

	ACTION	DESCRIPTION
1.	Printer power off. Install the 7PC3 board.	Board Installation.
2.	Disconnect the black wire from pin 3 on board 2PC2-TB1. Secure the wire for safety. If the print gate is closed during power-up a hor. fault occurs and the stop lamp flashes but this is normal and okay.	Disconnects Vertical H-switch.
3.	Power printer on and check +5 volts is between 4.95 and 5.05 volts. Bottom lead of R162, top outer corner of 7PC3 board (1K resistor).	Set +5 volts, see Figure 2-49.
*4.	Monitor the +30 volts at Ref. K to TP30 and adjust P2 for 30.0 ± 0.1 volts.	Voltage Compensation +30 volts.
5.	Monitor Ref. M and adjust P5 between 2.48 and 2.52 volts.	Vertical Reference Voltage.
6.	Ground Ref. R, monitor Ref. Q and adjust P8 for 2.45 to 2.55 volts. Remove the ground at Ref. R.	Vertical Offset voltage.
7.	Check the vertical code disk doesn't rub the housing while turning.	Vertical Reader Setup.
8.	Monitor Ref. L in both 6 and 8 LPI modes. Slowly rotate the Vertical Reader Knob back and forth while observing a voltage varying between 1.0 volt minimum to 4.0 volts maximum.	Vertical Reader Check.
*9.	Monitor the voltage at Ref. 0 and adjust P4 for 0.00 ± 0.01 volts.	Vertical Ramp Offset Adjustment.
10.	Ground Ref. H for a maximum of 30 sec. to do this step to prevent over heating the tractors. Monitor Ref. P and adjust P6 for 7.0 ± 0.2 volts. Remove the ground at Ref. H.	Vertical Velocity Control. Adjustment.
11.	Ground Ref. J. Monitor Ref. G and adjust P3 for 0.00 ± 0.05 volts. Remove the ground at Ref. J.	Vertical Code Disk Bias.
12.	Power the printer down and connect the wire removed in Step 2. Power the printer on.	Enables Vert. H-switch.
13.	Remove forms and enable the out-of paper and band cover switches as required. Install a paper sprocket loop in the right tractor for PMV sensor. Use Test Print with blank character or send blanks from the processor. Adjust P1 on 7PC3 if a printable character is used and the correct character is not printed. Pot P1 shifts one full character at a time.	Simulate printing with line advances.
14.	Stop the printer and select 6 LPI. Operate the Form Feed or Top Of Form switch several times.	Stabilizing Vertical Reader Output.
15.	Monitor the voltage at Ref. L and adjust P3 to obtain 2.5 ± 0.05 volts.	Setting Vertical Reader Output.
16.	Ground Ref. H and start the printer cycling for a maximum of 30 sec. to do this step to prevent over heating the tractors. Sync and monitor a scope of Ref. L and adjust P6 for the 8.5 ± 0.1 ms slew rate. Stop the printer and remove the ground at Ref. H.	Vertical Slew Rate.
*17.	Start the printer cycling while printing blanks with single line advances in the 6 LPI mode. Sync a scope negative on Ref. H while monitoring Ref. L. Adjust P7 so that the vertical reader signal comes out of saturation in 16ms or less. Any overshoot must not exceed 3.2 volts with any oscillations at 25ms less than 0.3 volts peak to peak.	Vertical Reader Adjustments.
18.	Sync a scope positive on Ref. A with the band running. Monitor Ref. B and adjust P1 to position the leading edge of the first pulse for 390 ± 100 us (PB printers) from n the sync point.	Home Pulse Setup.

NOTES: * 7Pot 7PC3 boards do not have these adjustments.

IMPORTANT: DO NOT USE TABLE 2-4 FOR 3 POT 7PC3 BOARDS, REFER TO PROCEDURES ON PAGE 2-58A.

TABLE 2-4. TEST POINTS 7 POT AND 11 POT 7PC3 BOARDS

NOTE:
FOR PB-900 PRINTERS
IGNORE ALL HORIZONTAL
MOTION TEST POINTS

	REVISED LOGIC SET 44676073 FIRST BOARD 44674254 44674255 } 11 pot 44674256 * 44674257 } 7 pot * 44674258 44680936 44680937 44680938 } 3 pot 44684462 44685119 44685945 LATEST BOARD	FIRST RELEASED LOGIC SET 44674206 FIRST BOARD 95419502 95419503 95419504 95419505 } 11 pot 95419506 95419507 LATEST BOARD	LOGIC SHEET REFERENCE	DESCRIPTION
REF. A	TP-1	B6-12	302	Home Pulse Delay
B	2	TP-8	302	Character Trigger Pulse
C	3	TP-3	303	Subscan Pulse
D	4	TP-9	301	Paper Motion Verification Signal
E	5	E4-1	310	Horizontal Advance
F	6	TP-10	310	Home Enable-Horizontal
G	7	L4-8	307	Vertical Code Disc Bias
H	8	G2-6	307	Vertical Advance
I	9	TP-11	305	Motors On
J	10	L6-3	307	Vertical Motion Reader Signal
K	11	TP-12	302	30 volt Reference
L	12	TP-14	307	Vertical Reader Output
M	13	TP-15	309	Reference 2. 5 volts
N	14	M3-10	307	Vertical Strobe
O	15	L4-1	307	Vertical Ramp Offset Voltage
P	16	TP-17	308	Vertical Ramp
Q	17	TP-18	309	Horizontal Position Signal Output
R	18	L6-10	309	Horizontal Position Signal
S	19	TP-20	311	Horizontal Command
T	20	TP-21	308	Vertical Command
U	21	TP-22	309	Home Signal
V	22	R6/R7 Junct.	301	Home Pulse Signal
W	23	TP-24	308	Vertical Tach Output
X	24	L3-8	308	Oscillator 10 KC
Y	25	R4/R5 Junct.	301	Character Pulse Signal
Z	26	TP-26	311	Horizontal Ramp Generator
AA	27	TP-27	311	Horizontal Current Sense
AB	28	TP-28	308	Vertical Current Sense
AC	29	TP-25	311	Horizontal Command
AD	TP-30	TP-30	301	Reference Ground
AE	A3-2	TP-2	302	Home Pulse
AF	C5-2	TP-4	305	Band Up
AG	C5-6	TP-5	305	Band Motor Time Out F/F
AH	G4-5	TP-6	302	Voltage Compensation Delay F/F
AI	E4-11	TP-7	310	Horizontal Ramp Step
AJ	G5-2	TP-13	307	Vertical Position Feedback
AK	L3-14	TP-16	307	Position Feedback
AL	J4-10	TP-19	310	Compressed Pitch
AM	R2/R20 Junct.	TP-23	308	Vertical Tach
AN	RN7-J3-7/R50	TP-29	311	Horizontal Tach

← PB 900 PRINTER PROCEDURE

PBS 300/600 PRINTER PROCEDURE →

NOTES:
* These 7 pot 7PC3 boards have four less potentiometers for adjustment than the earlier boards with eleven potentiometers (pots). The pots removed are: P2 Voltage Compensation, P4 Vertical Ramp Offset, P7 Vertical current adjustment, and P10 Horizontal Current.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER BOARDS USE THE FOLLOWING PROCEDURES.

7PC3 CONDENSED REPLACEMENT PROCEDURE FOR 7 AND 11 POT BOARDS (PBS PRINTER)

NOTE: REFER TO TABLE 2-4 TO IDENTIFY REF. LETTERS TO TEST POINTS PER 7PC3 BOARD PART NUMBER FOLLOWING PROCEDURE SETS UP THE POTS ON 7PC3.

ACTION	DESCRIPTION
1. Printer power off. Install the 7PC3 board.	Board Installation.
2. Disconnect the black wires from pins 1 and 3 on board 2PC2-TB1. Identify wire positions and secure for safety. If the print gate is closed during power-up a hor. fault occurs and the Stop lamp flashes but this is normal and okay.	Disconnects Horizontal and Vertical H-switches.
3. Power printer on and check +5 volts is between 4.95 and 5.05 volts. Bottom lead of R162, top outer corner of 7PC3 board (1K resistor)	Set +5 volts, see Figure 2-49.
*4. Monitor the +30 volts at Ref. K to TP30 and adjust P2 for 30.0 ± 0.1 volts.	Voltage Compensation +30 volts.
5. Monitor Ref. M and adjust P5 between 2.48 and 2.52 volts	Horizontal and Vertical Reference voltage.
6. Ground Ref. R, monitor Ref. Q and adjust P8 for 2.45 to 2.55 volts.	Horizontal and Vertical Offset voltage.
7. Ground Ref. R, monitor chip location L4 pin 14 and adjust P9 for 0.00 ± 0.01 volts. Remove ground at Ref. R.	Horizontal Code Disk Bias.
8. Monitor Ref. Q and then Ref. U while slowly moving the hammer bar back and forth. Observe a voltage varing between less than 1.0 volt to greater than 4.0 volts.	Horizontal Reader Check.
9. Ground Ref. E. Monitor the voltage at Ref. Z and adjust P11 for -4.0 ± 0.1 volts. Remove the ground at Ref. E.	Horizontal Reader Setup.
10. Check the vertical code disk doesn't rub the housing while turning.	Vertical Reader Setup.
11. Monitor Ref. L in both 6 and 8 LPI modes. Slowly rotate the Vertical Reader Knob back and forth while observing a voltage varying between 1.0 volt minimum to 4.0 volts maximum.	Vertical Reader Check.
*12. Monitor the voltage at Ref. 0 and adjust P4 for 0.00 ± 0.01 volts.	Vertical Ramp Offset Adjustment.
13. Ground Ref. H for a maximum of 30 sec. to do this step to prevent over heating the tractors. Monitor Ref. P and adjust P6 for 7.0 ± 0.2 volts. Remove the ground at Ref. H.	Vertical Velocity Control Adjustment.
14. Ground Ref. J. Monitor Ref. G and adjust P3 for 0.00 ± 0.05 volts. Remove the ground at Ref. J.	Vertical Code Disk Bias.
15. Power the printer down and connect the wires removed in Step 2. Power the printer on.	Enables Hor. and Vert. H-switches.
16. Remove forms and enable the out-of-paper and band cover switches as required. Install a paper sprocket loop in the right tractor for PMV sensor. Use Test Print with blank character or send blanks from the processor. Adjust P1 on 7PC3 if a printable character is used and the correct character is not printed. Pot P1 shifts one full character at a time.	Simulate printing with single line advances.
17. Monitor and trigger a scope on Ref. Z. Switching trigger level from + to - check ramp signals terminate around 15ms within 2ms of each other by adjusting P11. P9 may be slightly adjusted if required with P11.	Horizontal Ramp Adjustment.
*18. Preset P10 clockwise until voice coil squeals then turn counter clockwise 3 turns.	Horizontal current Pot Preset.
*19. Trigger a scope on Ref. Z and monitor Ref. R. Switch trigger level from + to - and observe both position signals null to less than a volt within 16ms by adjusting P10 (Early boards only) and P11 alternately.	Horizontal Position Signal Adjustment.

NOTE:
* 7 pot 7PC3 boards do not have these adjustments.

20. Stop the printer and select 6 LPI. Operate the Form Feed or Top Of Form switch several times,	Stabilizing Vertical Reader Output.
21. Monitor the voltage at Ref. L and adjust P3 to obtain 2. 5 ± 0. 05 volts.	Setting Vertical Reader Output
22. Ground Ref. H and start the printer cycling for a maximum of 30 sec. to do this step to prevent over heating the tractors. Sync and monitor a scope on Ref. L and adjust P6 for the 8. 5 ± 0. 1 ms slew rate. Stop the printer and remove the ground at Ref. H.	Vertical Slew Rate.
*23. Start the printer cycling while printing blanks with single line advances in the 6 LPI mode. Sync a scope negative on Ref. H while monitoring Ref. L. Adjust P7 so the vertical reader signal comes out of saturation in 16ms or less. Any overshoot must not exceed 3. 2 volts with any oscillations at 25ms less than 0. 3 volts peak to peak.	Vertical Reader Adjustment.
24. Sync a scope positive on Ref. A with the band running. Monitor Ref. B and adjust P1 to position the leading edge of the first pulse for 270 ± 50 us (PBS printers) from the sync point.	Home Pulse Setup.

NOTE:

* 7 pot 7PC3 boards do not have these adjustments.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

QUICK SET ADJUSTMENT PROCEDURE FOR 11 POT PRINT HEAD ELECTRONIC BOARDS 95419502/03/04/05/06/07

$\boxed{2.}$ MONITOR TP12 ON 7PC3 AND ADJUST P2 FOR 30 VOLTS ± .1

$\boxed{3.}$ MONITOR TP15 ON 7PC3 AND ADJUST P5 FOR 2.5 VOLTS ± .02

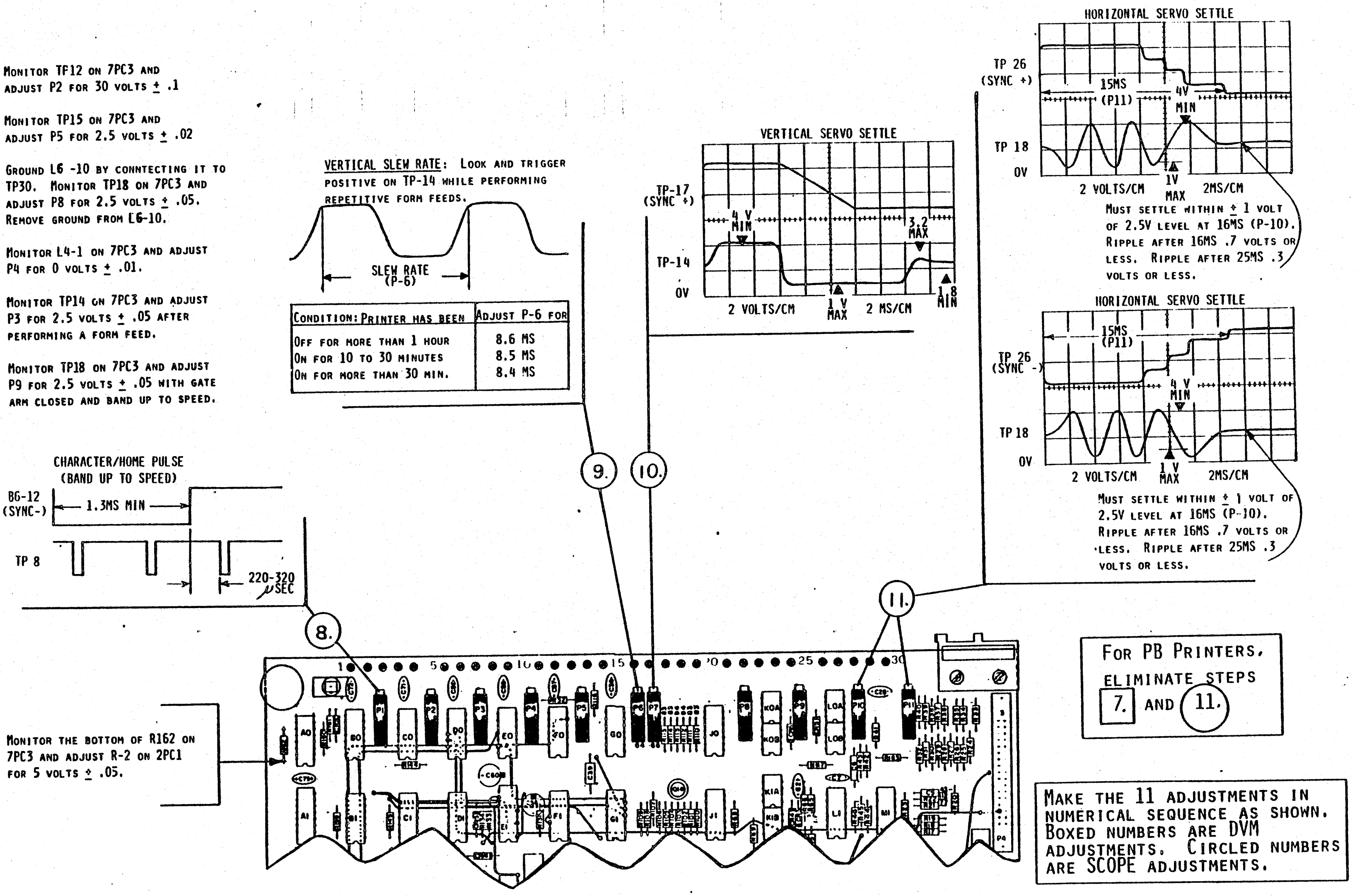
$\boxed{4.}$ GROUND L6 -10 BY CONNECTING IT TO TP30. MONITOR TP18 ON 7PC3 AND ADJUST P8 FOR 2.5 VOLTS ± .05. REMOVE GROUND FROM L6-10.

$\boxed{5.}$ MONITOR L4-1 ON 7PC3 AND ADJUST P4 FOR 0 VOLTS ± .01.

$\boxed{6.}$ MONITOR TP14 ON 7PC3 AND ADJUST P3 FOR 2.5 VOLTS ± .05 AFTER PERFORMING A FORM FEED.

$\boxed{7.}$ MONITOR TP18 ON 7PC3 AND ADJUST P9 FOR 2.5 VOLTS ± .05 WITH GATE ARM CLOSED AND BAND UP TO SPEED.

$\boxed{1.}$ MONITOR THE BOTTOM OF R162 ON 7PC3 AND ADJUST R-2 ON 2PC1 FOR 5 VOLTS ± .05.



VERTICAL SLEW RATE: LOOK AND TRIGGER POSITIVE ON TP-14 WHILE PERFORMING REPETITIVE FORM FEEDS.

CONDITION: PRINTER HAS BEEN	ADJUST P-6 FOR
OFF FOR MORE THAN 1 HOUR	8.6 MS
ON FOR 10 TO 30 MINUTES	8.5 MS
ON FOR MORE THAN 30 MIN.	8.4 MS

MUST SETTLE WITHIN ± 1 VOLT OF 2.5V LEVEL AT 16MS (P-10). RIPPLE AFTER 16MS .7 VOLTS OR LESS. RIPPLE AFTER 25MS .3 VOLTS OR LESS.

MUST SETTLE WITHIN ± 1 VOLT OF 2.5V LEVEL AT 16MS (P-10). RIPPLE AFTER 16MS .7 VOLTS OR LESS. RIPPLE AFTER 25MS .3 VOLTS OR LESS.

FOR PB PRINTERS, ELIMINATE STEPS $\boxed{7.}$ AND ⑪

MAKE THE 11 ADJUSTMENTS IN NUMERICAL SEQUENCE AS SHOWN. BOXED NUMBERS ARE DVM ADJUSTMENTS. CIRCLED NUMBERS ARE SCOPE ADJUSTMENTS.

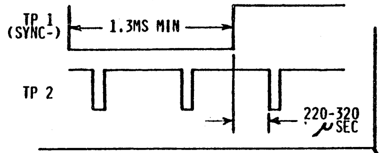
IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

QUICK SET ADJUSTMENT PROCEDURE FOR 7 AND 11 POT PRINT HEAD ELECTRONIC BOARDS 44674254/55/56/57/58 *

* 44674257 AND 44674258 DOES NOT CONTAIN POTENTIOMETERS P2, P4, P7, AND P10.

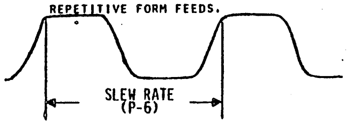
2. Monitor TP11 on 7PC3 and adjust P2 for 30 volts ± .1
3. Monitor TP13 on 7PC3 and adjust P5 for 2.5 volts ± .02
4. Ground TP18 by connecting it to TP30. Monitor TP17 on 7PC3 and adjust P8 for 2.5 volts ± .05. Remove ground from TP18.
5. Monitor TP15 on 7PC3 and adjust P4 for 0 volts ± .01.
6. Monitor TP12 on 7PC3 and adjust P3 for 2.5 volts ± .05 after performing a form feed.
7. Monitor TP17 on 7PC3 and adjust P9 for 2.5 volts ± .05 with gate arm closed and band up to speed.

CHARACTER/HOME PULSE (BAND UP TO SPEED)



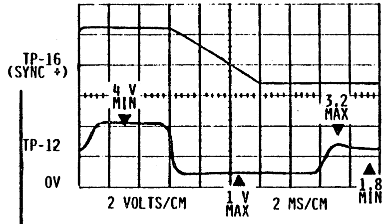
1. Monitor the bottom of R162 on 7PC3 and adjust R-2 on 2PC1 for 5 volts ± .05.

VERTICAL SLEW RATE: Look and trigger positive on TP-12 while performing repetitive form feeds.

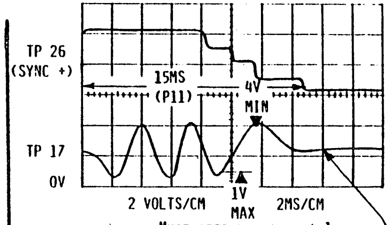


Condition: Printer has been	Adjust P-6 for
Off for more than 1 hour	8.6 MS
On for 10 to 30 minutes	8.5 MS
On for more than 30 min.	8.4 MS

VERTICAL SERVO SETTLE

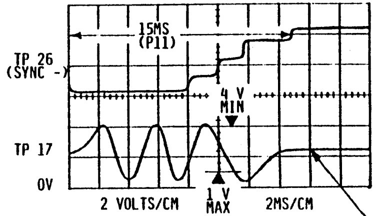


HORIZONTAL SERVO SETTLE

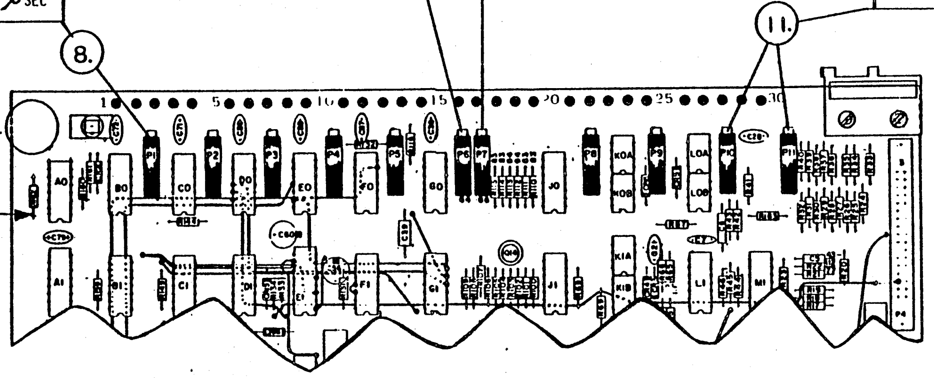


Must settle within ± 1 volt. of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.

HORIZONTAL SERVO SETTLE



Must settle within ± 1 volt of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.



For PB Printers, eliminate steps 7. and (11.)

Make the 11 adjustments in numerical sequence as shown. Boxed numbers are DVM adjustments. Circled numbers are SCOPE adjustments.

PRINT QUALITY ADJUSTMENT

The object of the following diagnosis is to lead a customer engineer up to the adjustment of the gate to hammer bar using print quality as the measuring device. This procedure covers the PBS 300/600 printers and the PB900 printers.

General Overview, Printer Setup

A customer engineer must understand the direction to approach a problem. The following sequence is not complete, but is intended to provide a relationship of adjustment procedures. Later on a complete in sequence list of procedures with cause and effect background can be used to set up a printer for a print quality gate adjustment.

A. First the platen is setup to the band drive pulleys.

B. The top edge guide (upper band guide) on the platen is setup to the crown surface of the platen.

C. On a PBS the outer paper guide is setup to the platen. On a PB the inner paper guide is setup to the hammer bank.

D. On a PBS the inner paper guide is setup to the outer paper guide. On a PB the outer paper guide is setup to the inner paper guide.

E. On a PBS Horizontal hammer bar home position is setup before any hammer flight time adjustment. On a PB flight time adjustment is checked.

F. Gate height is setup to the hammer face in the following gate to hammer face procedure.

G. The gate in/out adjustment is setup as a last step to achieve optimum print quality.

PRECAUTIONS

1. **MOUNTING AND ADJUSTMENT SCREWS AND NUTS THAT HAVE A COLORED SUBSTANCE APPLIED BY THE FACTORY SHOULD NOT BE DISTURBED UNLESS THE ADJUSTMENT IS OUT OF ITS SPECIFIED TOLERANCE.**
2. **HAMMER ACTUATOR FLIGHT TIME ADJUSTMENTS SHOULD NOT BE MADE UNTIL ALL OTHER ITEMS DESCRIBED HAVE BEEN CHECKED FOR PROPER ADJUSTMENT. ALSO CHECK THE ARMATURE STRIKER BANKS RESIDUAL STRIP FOR DAMAGE.**
3. **IF YOUR PRINTER HAS THE NEW BAND EDGE SHIELD WHICH HAS THE "L" SHAPED CUTOUTS ADJACENT TO THE MOUNTING SCREWS, LEAVE IT ON THE PRINTER. IF YOUR PRINTER HAS THE OLD BAND EDGE SHIELD WITHOUT THE "L" SHAPED CUTOUTS, THEN MODIFY AS FOLLOWS. THIS PART HAS BEEN KNOWN TO AFFECT MECHANICAL GATE ADJUSTMENTS. REPLACE THE BAND EDGE SHIELD WITH THE ADDITION OF .005 TO .010 INCH (.125 TO .250mm) SHIMS ON EACH OF THE THREE MOUNTING SCREWS BETWEEN THE SHIELD AND GATE. THIS WILL PREVENT DISTORTION OF THE GATE WHICH COULD AFFECT ADJUSTMENT.**
4. **INSPECT THE PLATEN WEAR STRIP ON PLATENS WITH WEAR STRIPS. DEFECTIVE TAPE IN EARLY UNITS MAY CAUSE BAND MOTOR CURRENT FAULTS, EARLY BAND FAILURE, AND DEGRADED PRINT QUALITY. REPLACE THE PLATEN WEAR STRIP AT THE FIRST SIGNS OF FRAYING, PEELING, OR WEARING. THE WEAR STRIP MUST ALSO BE REPLACED IF A BAND BREAKS DURING OPERATION. ALSO CHECK THE UPPER BAND GUIDE WEAR STRIP FOR DAMAGE. THE WEAR STRIP ON THE UPPER BAND GUIDE IS NOT REPLACEABLE AND REQUIRES A NEW UPPER BAND GUIDE.**
5. **INSPECT THE MYLAR RIBBON SHIELD. A WORN OUT OR MISALIGNED MYLAR RIBBON SHIELD MAY CAUSE FORMS SMUDGING, RIBBON BINDING, PAPER JAMS, AND DEGRADED PRINT QUALITY. CHECK THE MYALR RIBBON SHIELD FOR TEARS AND PROPER ALIGNMENT. THERE SHOULD BE NO BOWING OR CREASING ACROSS THE SURFACE OF THE SHIELD, THE HOLES ON EACH END OF THE SHIELD SHOULD BE ALIGNED WITH THE LOCATING PINS ON THE OUTER PAPER GUIDE. PAPER JAMS THAT OCCUR WHEN THE PERFORATION CATCHES ON THE LOWER EDGE OF THE SHIELD MAY BE ELIMINATED BY RUBBING THE EDGE SMOOTH WITH VERY FINE EMERY PAPER.**
6. **INSPECT THE POSITION OF THE RIBBON GUIDE BRACKETS. IF THESE ARE TOO FAR FOWARD, THEY WILL INTERFERE WITH THE MYLAR RIBBON SHIELD. IF THEY ARE TOO FAR BACK THE RIBBON WILL HAVE A SHORT LIFE AND BAND OVER CURRENT FAULTS MAY OCCUR. THIS CHECK AND ADJUSTMENT PROCEDURE CAN BE FOUND IN THE RIBBON TRACKING ADJUSTMENTS.**
7. **ALL CHECKS AND ADJUSTMENTS IN THE FOLLOWING ADJUSTMENT SEQUENCE MUST BE PERFORMED IN THE ORDER PRESENTED.**

Adjustment Sequence

The following procedures are found in this section of the manual and should be performed in sequence. These procedures should always be performed before proceeding to the Gate to Hammer Bar Adjustment.

1. Perform band pulley tracking adjustment. Generally this could affect vertical character registration due to a band tracking problem.
2. Perform platen to band pulley alignment procedure. The position of the platen in relationship to the pulleys must be properly maintained. If the platen is too far out, increased friction may cause band motor overcurrent faults. Print quality is affected when the platen is too far in due to the band moving further (to contact the platen) when struck by a hammer.
3. Perform the upper band guide alignment procedure. The upper band guide, mounted on top of the platen, provides an edge for the print band to maintain precise horizontal position. If the guide extends over the platen too far, poor multi-part print quality may occur. This is due to interference caused by the guide when print hammers are fired into the paper, ribbon, and characters. If the guide does not extend over the platen far enough, the print band may not track properly.
4. Perform band pulleys height adjustment. Generally this procedure would correct vertical character registration due to a band tracking problem.
5. Perform band tension adjustment. Generally this procedure would have an effect on horizontal and vertical character registration due to a band tracking or slipping problem.

6. Perform band locators adjustment. Generally this procedure would protect the band from minor damage which could affect band tracking.

For PBS printers proceed to steps 7 through 20. for PB printers do steps 7a through 15a.

PBS PRINTERS ONLY; STEPS 7 through 20.

7. Check the paper clamp stop adjustment. The stops provide a solid surface for effective paper clamping during printing. Misadjusted stops can cause paper tearing or poor vertical print alignment.
8. Check the outer paper guide. The outer paper guide can affect paper motion and print quality. If it is too far out from the platen, it can cause paper to tear as it passes through the print station. If the guide is too tight against the platen, it can cause binding in the ribbon system or ribbon smudging on the forms. If the outer guide is too high or too low, the mylar shield may interfere with the hammers striking the band. This will cause a reduction in mylar life and a degradation in print quality. If the vertical height is adjusted, recheck adjustment 7.
9. Perform the paper clamp pulley adjustment. Misadjustment can result in poor clamp action and print line registration problems.
10. Inspect the forms compressor alignment. To do this the inner paper guide must be removed. The forms compressors are adjustable in both the horizontal and vertical plane. If the compressors are too high, they may interfere with the print hammers. If they are too low, the compressors may hit below the platen causing forms to tear. If the compressors are too far back from the platen, they will not hold the paper close enough to the print font causing degradation of the print quality. If the compressors are too close to the platen, they may interfere with paper motion. Improved multi-part print quality may be achieved by positioning the segments to the maximum spec making them closer to the print band which compresses the forms tighter during printing.
11. Check the paper clamp adjustment. Improperly adjusted clamps can cause forms tear, form hole elongation, wavy print lines, and print quality can also be affected.
12. Perform the hammer bar home position alignment. This adjustment can cause horizontal character registration problems.
13. Check the inner paper guide alignment. If the paper guide is too far out, it will interfere with forms motion. If the paper guide is too far in, it will interfere with the paper clamp.
14. Check the gate latch. The gate latch plate is installed so the print gate is held securely against the gate stop. If the latch is not properly adjusted, print quality can be affected and it may also be difficult to open and close the gate. The print gate switch must be properly adjusted to prevent loss of ready mode or damage to the switch.
15. Check to make sure the armature bank is seated and tight. Check to see the push rods are aligned on the centers of the hammers. If the push rods are not aligned the hammer bank must be repositioned.
16. Perform the flight time adjustment for the actuator bank. This affects horizontal character registration and print density. If a compressed pitch band is used on the printer this adjustment should be performed with the compressed pitch band installed.
17. Check ribbon tracking after making any previous adjustments.
18. Check the power supply voltages (+5 and +30 volts)
19. Check the character and home pulse setup.
20. Check the horizontal and vertical servo system setup.

PB PRINTERS ONLY; STEPS 7a through 15a.

7a. Check the inner paper guide alignment. If the paper guide is not against its stops and is too far out, it will interfere with forms motion. If the paper guide is too far in at the bottom or deformed at the hammer bar by its latches, print quality will be affected.

8a. Check the outer paper guide. The outer paper guide can affect paper motion and print quality. If it is too close to the inner paper guide, it can cause paper to tear as it passes through the print station. If the guide is too far from the inner paper guide, it can cause binding in the ribbon system or ribbon smudging on the forms. If the outer guide is too high or too low, the mylar shield may interfere with the hammers striking the band. This will cause a reduction in mylar life and a degradation in print quality.

9a. Check the gate latch. The gate latch plate is installed so the print gate is held securely against the gate stop. If the latch is not properly adjusted, print quality can be affected and it may also be difficult to open and close the gate. The print gate switch must be properly adjusted to prevent loss of ready mode or damage to the switch.

10a. Check to make sure the armature banks are seated and tight. Check to see the pushrods are aligned on the centers of the hammers. If the pushrods are not aligned the hammer bank must be repositioned.

11a. Perform the flight time adjustment for the actuator banks. This affects horizontal character registration and print density.

12a. Check ribbon tracking after making any previous adjustments.

13a. Check the power supply voltages (+5 and +30 volts)

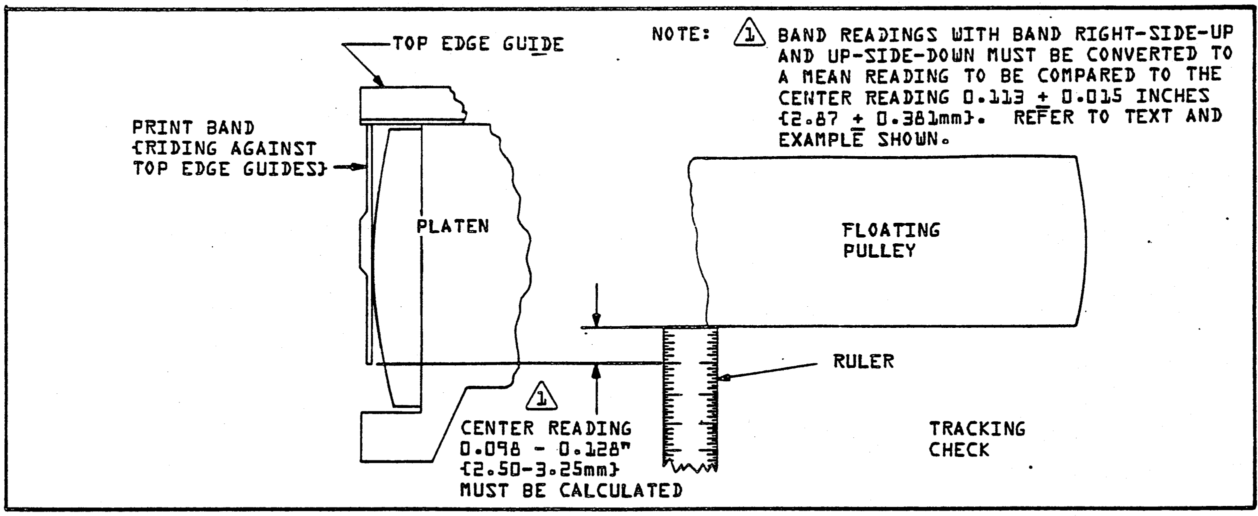
14a. Check the character and home pulse setup.

15a. Check the vertical servo system setup.

Gate to Hammer Face Adjustment

The gate to hammer face cannot be set-up in the field mechanically without special gauges, so an alternate method using print quality is proposed. Because print quality is to be used as the gauge for a very precise measurement, the preceding Adjustment Sequence should be followed before attempting to adjust the gate. A precaution before adjusting the gate vertically is to make sure the mylar ribbon shield is correctly positioned. Vertical gate adjustment is made by adding or removing shims at the lower side of the gate hinge. Gate in/out adjustment is made by rotating the gate hinge eccentric and moving the gate stop in or out at the gate latch side of the gate.

1. Momentarily print the character "E" without forms installed in the printer and the paper out switch taped down.
2. Observe the "E" image on the hammer faces. If the character is not vertically centered, the gate should be raised if the character is low, and lowered if the character is high for PBS printers and odd columns on PB printers. The even columns on PB printers should show the opposite indications. Horizontal misalignment would indicate the control panel phasing is incorrect, character pickups misadjusted or horizontal home incorrect (PBS only). Evaluate the character position observing all the hammer variance. Any left to right variance of a print line may indicate incorrect gate latch adjustment.
3. To raise the gate, washer type shim stock (91866818-.005") is notched out with a pair of side-cutters and added at the lower part of the hinge. The notch should be cut to leave the center opening smaller than the hinge shaft diameter. The gate can be raised by lifting near the hinge to allow the shim (s) to be inserted using pliers.
4. To lower the gate lift near the hinge and use pliers to remove one shim at a time. There will be 0.010" and 0.005" shims. Always remove a 0.005" shim at a time and recheck gate height.
5. The distance between the print band and hammers affects top and bottom character density. If the gate is too far from the hammers, the characters will be light on top for PBS printers and the odd columns on PB printers. Even columns will print light on the bottom for PB printers with the gate to far from the hammers. If the gate is too close, characters will be light on the bottom for PBS printers and the odd columns on PB printer. Paper jams may occur on printers with the gate to close to the hammers. If the print line does not have consistent character density at both the top and bottom, perform the following. The entire print line must be considered and the adjustment should not be made for a few isolated columns. Separate adjustments on each side of the printer are provided to position the gate. This is a trial and error adjustment which must be verified by viewing the print after adjusting. A good ribbon and single part paper should be used. Adjustment of the gate should be made in small increments and original positions should be marked or noted. Compare the right and left sides of the printout to keep the gate parallel to the hammer faces. If multiple part forms are ever used on the printer a print sample should be taken. Generally coarse adjustment can be performed using a heavy (20 lb.) or a two part multiple form for the best top to bottom density between light (15 lb.) forms and six part multiple copy. Multiple part forms over two parts can be used by manually removing the extra forms and carbons. Always check the last part copy for print quality on multiple part forms.
6. The right side of the gate is adjusted in and out by turning the eccentric on the upper part of the hinge. The eccentric has a locking bracket that must be loosened prior to adjustment.
7. The left side of the gate is adjusted by moving the stop screw on the left end of the gate assembly near the latch mechanism.
8. Adjust the gate in or out on both ends to achieve uniform top to bottom character density. At this point, the printer should be capable of printing "E"s with uniform density on a single character. If column to column variations exist, flight time adjustments may be necessary on the column with any horizontal clipping or ghosting, best seen on multiple part forms, last copy. As the gate is moved in or out recheck the inner paper guide adjustment on PBS printers. On PB printers recheck the outer paper guide adjustment.



NOTE: 1 BAND READINGS WITH BAND RIGHT-SIDE-UP AND UP-SIDE-DOWN MUST BE CONVERTED TO A MEAN READING TO BE COMPARED TO THE CENTER READING 0.113 ± 0.015 INCHES (2.87 ± 0.381mm). REFER TO TEXT AND EXAMPLE SHOWN.

FIGURE 2-1. BAND PULLEY BEARING ADJUSTMENTS

BAND PULLEY AND TRACKING ADJUSTMENT

This procedure should be performed anytime band tracking is in question or parts have been replaced, like a band pulley or pulley bearing. This procedure will maintain band interchangeability and determine a band with poor trackability due to damage or change in characteristics due to age.

When more than one band is available for use, all bands should be checked for tracking. The first requirement is that all bands track across the front of the platen, riding with their upper edge against the upper band edge guide which is bolted to the top of the platen. Bands are not required to touch the upper band edge guide across its full length across the platen, but must contact the upper guide within two inches at both ends. If certain bands fail to track they should be set aside for the purpose of this test as possible bad bands. If all or a great majority of the bands fail to track then its safe to say the printers tracking requires adjustment.

Tools Required

Ruler
Flight Time Tool
5/16" Open End Wrench or Socket

Tracking Check Procedure

1. Open the print gate, remove the ribbon and band covers. Clean the inside surface of the band drive belt with alcohol.

2. Install a band for a tracking check. If this is not the band on the printer, make a note of the band installed so it can be replaced after testing.

3. Perform the Band Pickups Positioning and Adjustment procedure in this section to ensure that the band does not hit the reluctance pick-ups.

4. Rotate the band motor pulley counter clockwise until the band is in contact with the bottom surface of the upper band edge guide. The band may not contact the upper band edge guide the full length of the platen. The band must, however, contact the bottom of the upper band edge guide within two inches of both ends of the upper band edge guide. Any clearance between the upper band edge guide and the top of the print band in other areas must not exceed 0.007 in. (0.173mm) across the platen.

   Refer to the side view of the platen shown in Figure 2-1, Tracking Check. If contact at both end of the upper band edge guide cannot be obtained by rotating the band, install another band. If more then 0.007 in. (0.173mm) is found between the top of the band and the upper band edge guide, install another band. If all bands exhibit the above problems then band tracking is misadjusted or the upper band edge guide may require replacement.

5. Power the printer on and run the band for 30 seconds to allow the floating band pulleys to position themselves within the print band. Power printer off. NOTE: Band can be made to operate with gate open and band cover removed by holding the gate latch switch down, and by placing a piece of cardboard in the band cover switch prior to powering the printer on.

6. Power printer off and wait for band to stop.

7. Without touching the band or pulleys, check to see if the upper edge of the band is touching the upper band edge guide within two inches of both ends. If the band does not track against the upper band edge guide the other trackable bands should be tested if possible. After a level of confidence is obtained that the bands are good, then determine if the printer is tracking the band low or high (jumps up off the pulleys or upper band edge guide). If the tracking is so bad the band jumps up off the upper band edge guide proceed to the following procedures: Platen to Band Pulley Alignment, Band Pulley Height Adjustment, and Upper Band Edge Guide Adjustment. After checking these procedures the band still jumps up off the pulleys, then proceed to the Pulley Tracking procedure and lower the band tracking.

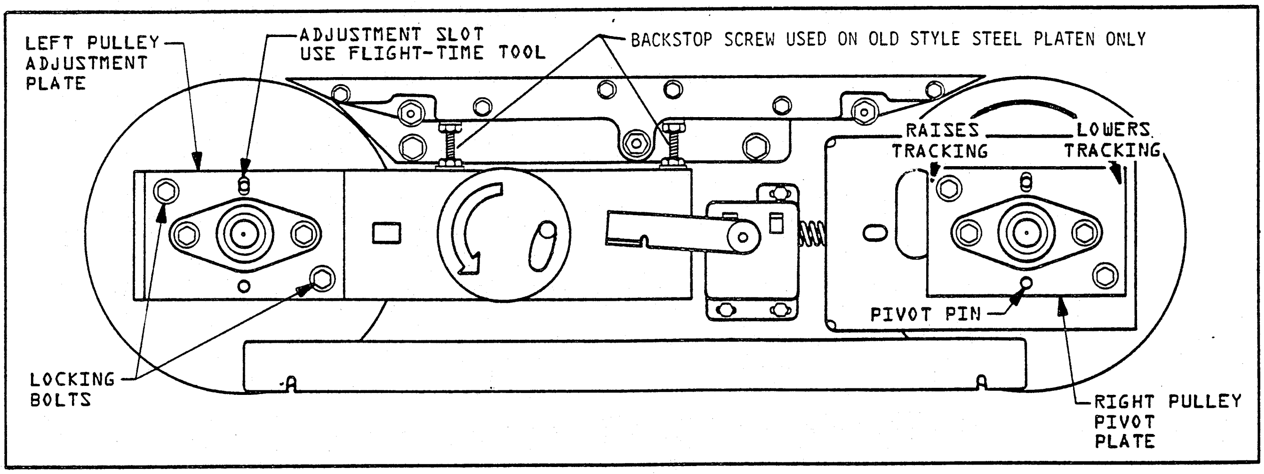


FIGURE 2-2. TRACKING ADJUSTMENT LOCATOR

Pulley Tracking Procedures

This procedure assumes the printer has band tracking problems or that bands cannot be interchanged without adjusting the tracking. Always remember that bands can be skewed so as not to track properly. Tracking should not normally be adjusted so one band will track perfectly. Band tracking is a mid-ranging adjustment so all bands within a tolerance range will track when bands are interchanged.

This adjustment is based on setting a mean band dimension within a tolerance range of a calculated center reading. The calculated center reading is provided in the steps below along with the tolerance. The mean reading is calculated from a band installed right side up and then upside down. The two measurements of the two band positions are then subtracted from each other, divided by two, and the number is then added to the smallest measurement to obtain a mean dimension. The mean dimension is then compared to the center reading. If the mean reading is within the tolerance given then band tracking is acceptable. If unacceptable the band tracking is adjusted to bring the mean reading within tolerance of the center reading.

The tracking is calculated at both pulleys using the best band available, which is the one with the closest two readings of right side up and upside down. Measurements taken are only valid if the band is tracking against the upper band edge guide at the time of measurement. If the band tracks one way and not when flipped over, then tracking must be adjusted until the band tracks in both positions.

1. Run the band for 30 seconds as performed in the Tracking Check Procedure before making the following measurements. When the band stops make sure its tracking against the upper band edge guide.

2. Gently place a ruler on the top flange of the band pulley, behind the band, and in an area where the band is in contact with the pulley surface. Refer to Figure 2-1. Note the distance from the top flange edge on the band pulley to the top edge of the band. Record the measurements as one of the numbers for calculating the mean dimension. Perform the same measurement on the other pulley labeling the readint left and right pulley.

3. Remove the band, turn it upside down and reinstall on the printer. Run the band for 30 seconds, check tracking, and make a second set of readings for the left and right pulleys.

4. Subtract the two left readings and then the two right readings. Divide both results by two. Refer to example. Add the results to the lowest band position readings (see note). The answers are the mean reading for the two pulleys. The mean reading with its tolerance, which is the band tracking range.

EXAMPLE

	LEFT PULLEY	RIGHT PULLEY
BAND RIGHT SIDE UP	0.155	0.160
BAND UPSIDE DOWN	0.180	0.175
SUBTRACTED DIFFERENCE	0.025	0.015
DIFFERENCE DIVIDE BY 2	0.0125	0.0075
LOWEST READING ADDED	0.155	0.160
MEAN READING RESULT	0.1675	0.1675

CENTER READING	0.113 Tolerance ± 0.015 inches
(METRIC)	2.870 mm ± 0.381 mm
TRACKING RANGE	0.098 to 0.128 inches
((METRIC)	2.489 to 3.251 mm

NOTE

If the lowest reading on one pulley is the high reading at the other pulley, then the high reading is subtracted with the "Difference Reading Divided by 2" in the example to get the mean reading.

5. The readings in the example show the tracking of the band is too high on the pulley. Use the band tracking adjusting plates shown in Figure 2-2 to adjust the mean reading within the band tracking range.

6. For adjustment, slightly loosen the two bolts mounting the bearing plate assembly to the print gate. See Figure 2-2.

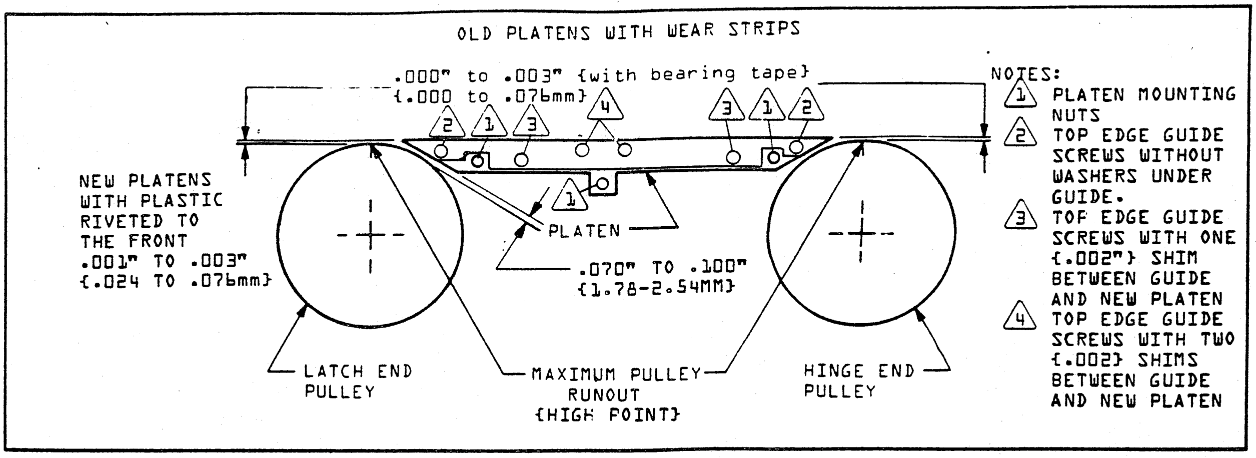


FIGURE 2-3. PLATEN TO DRIVE PULLEY ALIGNMENT

7. Place the flight time tool in the adjusting slot and rotate it slightly to change the angle of the bearing. Pivoting the adjustment plate toward the center of the gate will raise band tracking. Pivoting the plate outward from the center of the gate will lower tracking. Refer to Figure 2-2.

8. Rotate the band one full revolution and then recheck the distance per steps 5 throuth 7.

9. When the mean dimension is within the tolerance of the center reading in Figure 2-1, tighten the mounting bolts and perform this procedure on the other pulley if required.

10. After second pulley is adjusted recheck the first pulley.

11. Perform the Character and Home Pulse Set-Up procedure, checking the reluctance pick-up clearance.

12. Repeat steps 1-5 until both mean readings are within the tracking range.

13. Replace the original band, ribbon and covers.

PLATEN TO BAND PULLEY ALIGNMENT

This procedure should only need to be performed if the drive pulleys are replaced or if the platen is moved. This adjustment affects the tracking of the band across the platen surface which may affect print quality. Always check for bare spots on the wear strip and replace the wear strip if required before aligning old platens, refer to Parts Replacement for Platen Wear Strip procedure.

Tools Required

Straight Edge (Thicker than 0.070" or 1.6mm)
Feeler Gauges (.001" and .003") (.024, .076mm)
3/8" Open End Wrench or Socket
Torque Wrench

Procedure

1. **Printer powered off.**

2. **Remove the upper gate protective cover.**

3. **Remove the ribbon and the print band.**

4. Remove the gate stop on printers with the swing down outer paper guide and open the print gate, swing open the outer paper guide.

5. **Loosen the three platen mounting nuts. Early platen also had two backstop screws which must be loosened from the front of the printer.**

6. Place a straight edge along the crown of the platen so that it extends over both pulleys. This can be done to one end of the platen at a time if a long straight edge, 17 inches long and .070" thick (430 X 1.6mm) is not available. Rotate the pulleys until the high points are adjacent to the straight edge as shown in Figure 2-3. The high point of each pulley is marked with indelible ink.

7. Place a .001" (.024 mm) between the pulley and the straight edge.

8. Move the platen so that it is .001 (.024 mm) the entire length of the straight edge. Snug down the nut at the end where the feeler gauge was inserted.

9. Perform steps 6, 7 and 8 at the opposite end of the platen.

10. Tighten all three platen mounting nuts to 25/30 in. lbs. (2.82 - 3.39 N•m)

11. While again holding the straight edge along the crown of the platen, rotate each pulley 360° ensuring that the pulleys do not make contact at any point with the straight edge. If contact is made repeat steps 5 through 11.

12. Verify a clearance of .070" to .100 (1.78-2.54mm) from the platen to the latch end pulley.

13. With the straight edge again resting along the crown of the platen, attempt to insert the .003" (.076mm) feeler gauge between each pulley and the straight edge. The feeler gauge should fit very snugly or not at all. If it does fit easily repeat steps 5 through 13.

14. If backstop screws are mounted on the back of the platen they must be correctly tightened. Snug up the two stop screws at the back of the platen, do not move the platen. Hold the head of the screw while tightening the nuts.

UPPER BAND GUIDE ALIGNMENT (New platens with plastic riveted on the front)

It is necessary to perform this procedure if the band guide is replaced or inadvertantly moved. It must also be performed if the platen is replaced. Refer to the Upper Band Guide Replacement Procedure. The new platens have a slight concave top surface and shims are used under the top edge guide to keep it flat (see Figure 2-3).

Tools Required

Straight Edge
Feeler Gauges (0.009", 0.010", 0.011") (.229, .254, .279mm)
1/4" Open End Wrench or Socket

Procedures (See Figure 2-3 and 2-4)

1. Printer powered off.

2. Release the latches and remove the gate protective cover.

3. Remove the ribbon.

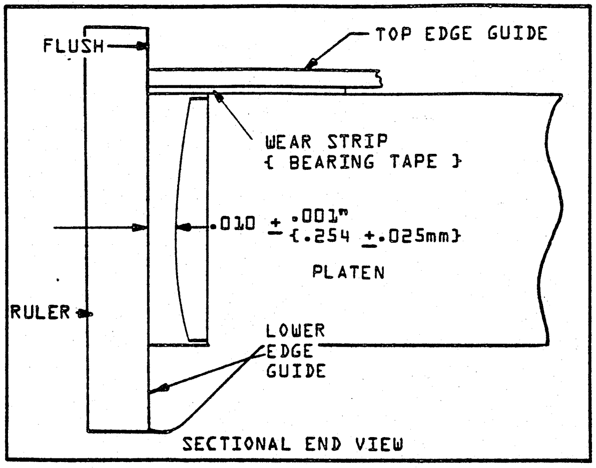


FIGURE 2-4. TOP EDGE GUIDE ALIGNMENT

4. Remove the gate stop on printers with the swing down outer paper guide and open the print gate, swing open the outer paper guide.

5. Remove the Print Band.

6. Place a straight edge pocket ruler vertically against the front of the platen. The bottom of the ruler should be against the bottom edge guide which is the lower part of the platen. The top of the ruler should rest against the front edge of the top edge guide. Make the following check at the ends and middle of the platen. See Figure 2-4.

7. Insert first a 0.009" feeler gauge (0.229mm) and then a 0.011" (0.279mm) feeler gauge between the ruler and the platen which the band rides against.

8. The .009" (.229mm) feeler gauge should fit between the ruler and the platen.

9. The .011" (.279mm) feeler gauge should not fit or fit very snugly between the ruler and the platen.

10. If either of the dimensions in steps 8 and 9 are not met, perform steps 11 through 12 until they do.

11. If the 0.009" (0.229mm) feeler gauge does not fit, then loosen the top edge guide and move it towards the ruler until the feeler gauge fits. Tighten the top edge guide in place.

12. If a 0.11" (0.279mm) feeler gauge fits easily, then loosen the top edge guide and insert a 0.010" (0.254mm) feeler gauge in place of the .011". Move the top edge guide back until the 0.010" (0.254mm) feeler gauge is snug and tighten the guide.

13. Check the top edge guide in three places, both ends and middle. All three positions should be equal.

14. Perform Band Pulley Tracking Procedure.

UPPER BAND GUIDE ALIGNMENT (Old platens with wear-strip)

It is necessary to perform this procedure if the band guide is replaced or inadvertantly moved. It must also be performed if the platen is replaced. Always check the condition of the wear strip before performing this adjustment and replace the upper band guide if necessary Refer to the Upper Band Guide Replacement Procedure.

Tools Required
Straight Edge
Feeler Gauges (0.010", 0.012") (0.254mm, 0.305)
1/4" Open End Wrench or Socket

Procedure (See Figure 2-4A)

1. Printer powered off.

2. Release the latches and remove the gate protective cover.

3. Remove the ribbon.

4. Remove the gate stop on printers with the swing down outer paper guide and open the print gate, swing open the outer paper guide.

5. Remove the Print Band.

6. Place a straight edge pocket ruler vertically against the front of the platen. The bottom of the ruler should be against the bottom edge guide which is the lower part of the platen. The top of the ruler should rest against the front edge of the top edge guide. Make the following check at the ends and middle of platen.

7. Insert first a 0.010" feeler gauge (0.254mm) and then a 0.012" (0.305mm) feeler gauge between the ruler and the platen wear strip which the band rides against.

8. The .010" (.254mm) feeler gauge should fit snugly between the ruler and the bearing wear tape.

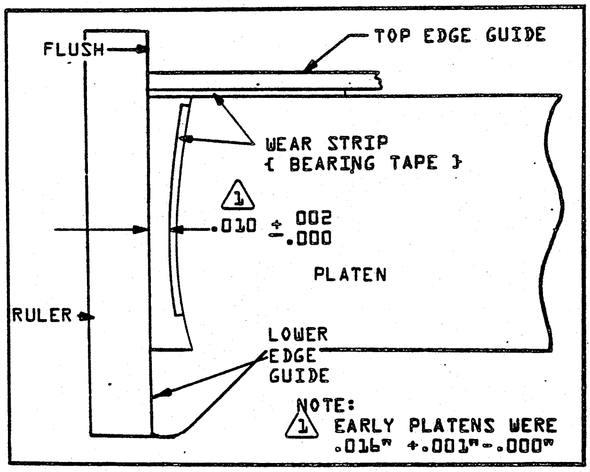


FIGURE 2-4A. TOP EDGE GUIDE ALIGNMENT

9. The .012 (.305mm) feeler gauge should not fit or fit very snugly between the ruler and the bearing wear tape.

10. If either of the dimensions in steps 8 and 9 are not met, reperform steps 11 through 12 until they do.

11. If the 0.010" (0.254mm) feeler gauge does not fit, then loosen the top edge guide and move it towards the ruler until the feeler gauge fits and is snug. Tighten the top edge guide in place.

12. If a 0.012" (0.305mm) feeler gauge fits easly, then loosen the top edge guide and insert a 0.010" (0.254mm) feeler gauge in place of the 0.012". Move the top edge guide back until the 0.010". (0.254mm) feeler gauge is snug and tighten the guide.

13. Check the top edge guide in three places, both ends and middle. All three positions should be equal.

14. Perform Band Pulley Tracking Procedure.

BAND PULLEYS HEIGHT ADJUSTMENT

This procedure needs to be performed anytime one of the pulleys is replaced. The adjustment may affect band vertical tracking which may affect the vertical registration of the print characters.

Tools Required

Allen Set
Ruler
Torque Wrench

Procedure Hinge End Pulley

1. Printer powered off.
2. Remove the upper gate protective cover.
3. Open the print gate.
4. Remove the ribbon and the print band.
5. Hold the lower, floating portion of the idler pulley up against the upper, fixed portion of the pulley.
6. Place the ruler against the lower edge of the top edge guide and measure the distance to the bottom edge of the floating pulley. (See Figure 2-5).
7. If this distance is not between .38 to .42 inch (9.7 to 10.7mm), loosen the collar clamp that holds the pulley to the shaft and reposition the pulley assembly up or down as required.
8. Tighten the collar clamp to 30-34 in. lbs. (3.39-4.41 N·m) and recheck the dimension in step 7.
9. Perform Band-Pulley Tracking procedure.

Procedure Latch End Pulley

1. Printer powered off.
2. Remove the upper gate protective cover.
3. Open the print gate.
4. Remove the ribbon and the print band.
5. Hold the lower, floating portion of the drive pulley up against the upper, fixed portion of the pulley.
6. Place the ruler against the bottom edge of the top edge guide and measure the distance to the bottom edge of the pulley surface.
7. If this distance is not between .38 to .42 inch (9.7 to 10.7 mm) loosen the collar clamp and reposition the pulley assembly up or down as required. (See Figure 2-5).
8. Tighten the collar clamp to 30-34 in. lbs. (3.39-4.41 N·m) and recheck the dimension in step 7. (See Figure 2-5).
9. Using the ruler, measure the compression of the spring beneath the latch end drive pulley. With the latch end pulley raised, measure from the top of the collar to the bottom of the hub.

NOTE

THIS SPRING MEASUREMENT AND ADJUSTMENT APPLIES ONLY TO THE LATCH END PULLEY.

10. If the distance is not between .71 to .75 inch (17 to 19 mm), loosen the spring retaining collar and move it up or down as required.
11. Tighten the spring retaining collar and recheck the dimension in step 10.
12. Perform Band Pulley Tracking procedures.

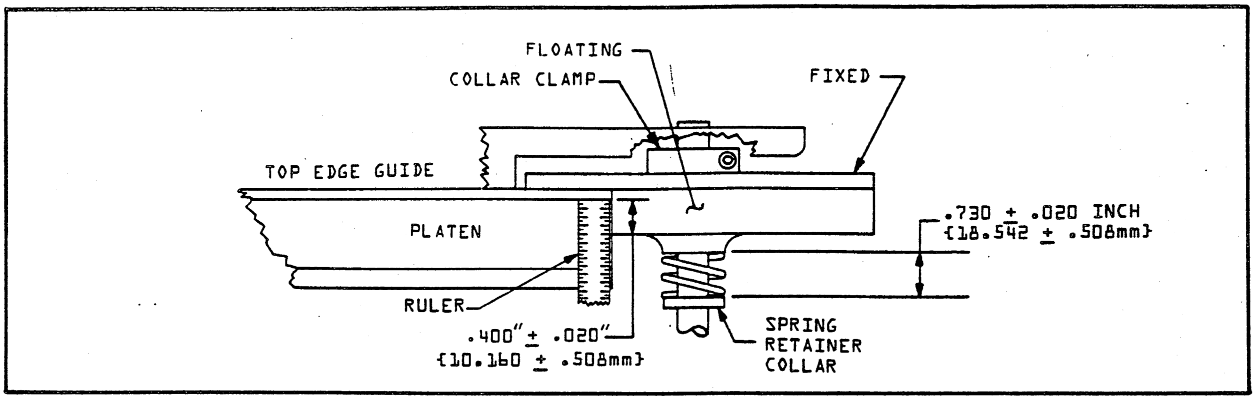


FIGURE 2-5. LATCH END PULLEY ADJUSTMENT

BAND TENSION ADJUSTMENT

This adjustment is necessary if any of the tension assembly components are replaced. This adjustment may also be necessary if there is evidence of the band slipping (horizontal misregistration, incorrect character print out) or the band is difficult to remove even with tension removed.

Tools Required

Spring scale
Ruler
1/2" Open End Wrench or Socket
1/4" Open End Wrench of Socket

Procedure

1. Power the printer off and remove the upper gate protective cover.
2. Remove the print band cover and print band.
3. Remove the 4 hex head screws that hold the tension assembly to the gate and remove the two hex head screws that hold the assembly to the pulley housing
4. Lift the tension assembly out of the printer.
5. Using a ruler measure the compression of the tension spring.
6. Turn the tension adjustment screw to obtain a spring compression of 1 inch.(25.4 mm). (See Figure 2-6)
7. Reinstall the tension assembly. Tighten the two screws that hold the plate to the pulley housing, but do not tighten the four screws that hold the assembly to the gate.
8. Install a print band.
9. Place the band tension level in a 90° position. (See Figure 2-6).

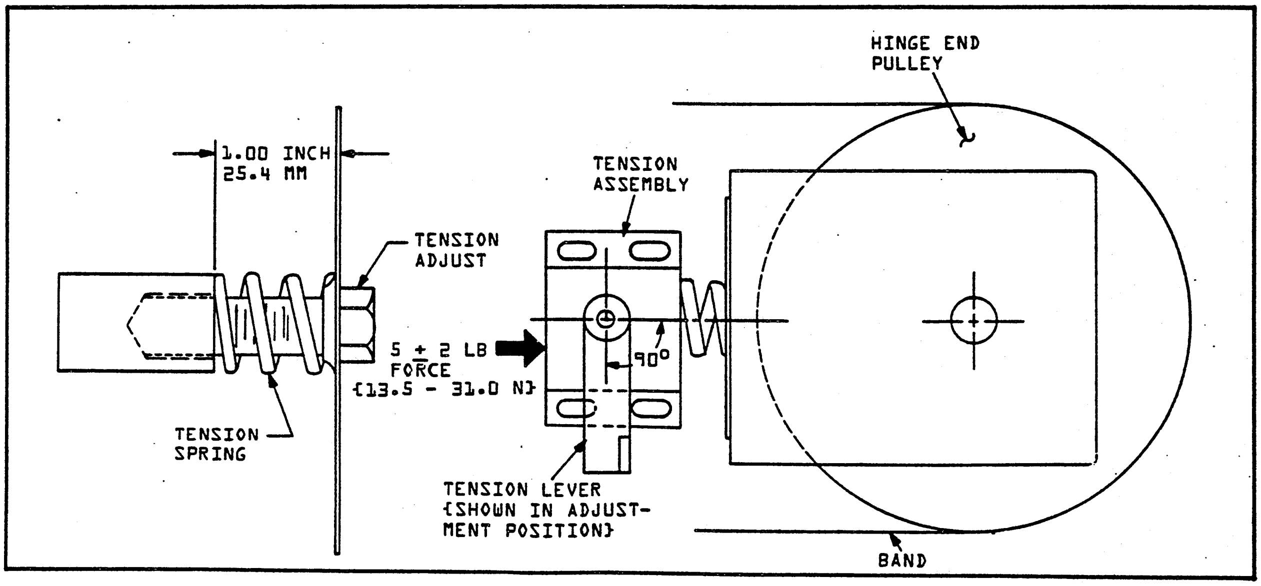


FIGURE 2-6. BAND TENSION ASSEMBLY ADJUSTMENTS

10. Using a spring scale place a force of 5 ± 2 pounds (13.3 - 31.1 N) on the inside of the tension assembly. (See Figure 2-6).

11. **While maintaining the force applied in step 10, tighten the four mounting screws. The adjustment is complete.**

BAND LOCATORS ADJUSTMENT (FIGURE 2-7)

The band locators are installed to facilitate band loading. If they are installed too low, the band may catch on the lower edge guide during installation possibly causing damage to the band. The band may also be damaged if the locators are installed too high, causing the band to catch on the top edge guide.

Tools Required

Straight Edge
.010" Feeler Gauge (.254mm)
Flat Blade Screwdriver

Procedure

1. Printer powered off.
2. Remove the upper gate protective cover.
3. Open the print gate and swing out the outer paper guide.
4. Remove the print band and the ribbon.
5. Place the straight edge on the lower edge guide.
6. Slide the straight edge out until the end is over the crest of the locator.
7. The straight edge should contact the locator. If it does not, the locator is too low. Loosen the two screws and raise the locator.
8. If the straight edge contacts the locator, allow the locator to rise to its normal position by holding the straight loosely against the platen.
9. Attempt to place the .010" (.254mm) feeler gauge into the gap between the straight edge and the lower edge guide created in step 8.
10. The feeler gauge should not fit. If it does, loosen the two screws and lower the locator.

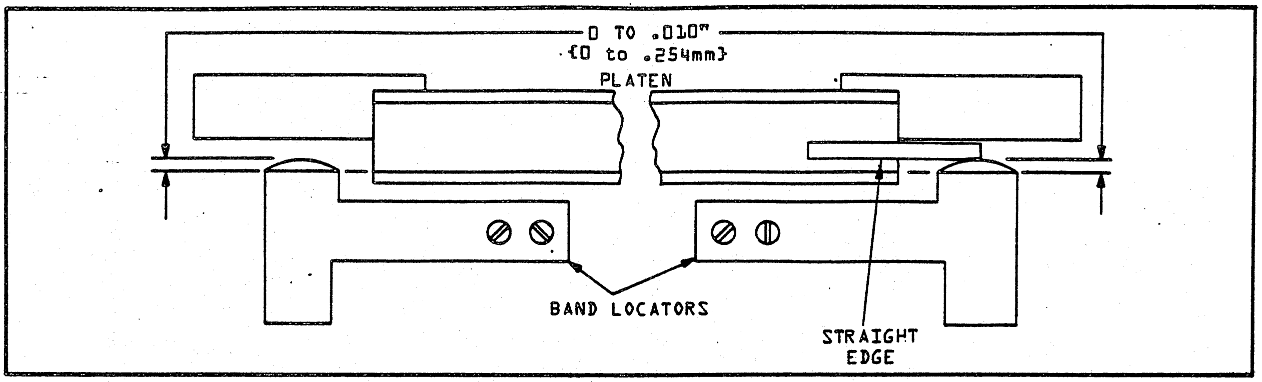


FIGURE 2-7. PRINT BAND LOCATORS ADJUSTMENT

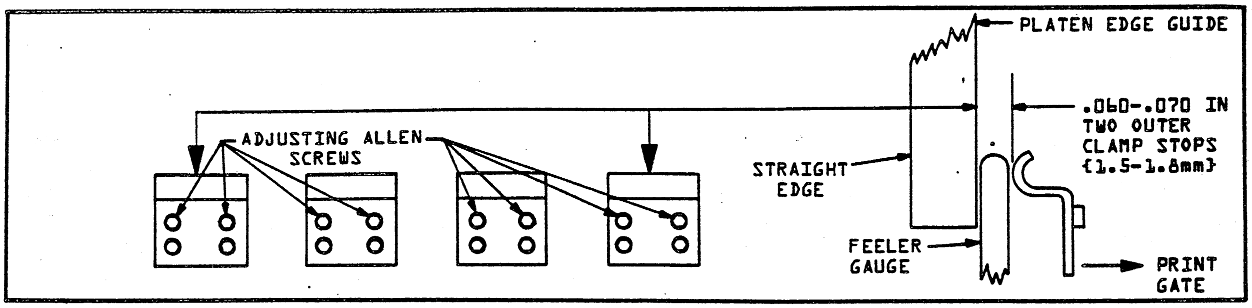


FIGURE 2-8. PAPER CLAMP STOP ADJUSTMENT (PBS PRINTER)

PAPER CLAMP STOP ADJUSTMENTS (PBS PRINTER)

The clamp stops set the position of the outer paper guide relative to the paper clamps. If they are not properly adjusted paper tearing or poor vertical registration will occur during printing. If they are misaligned to each other, a ringing sound will occur each time the clamp assembly is activated. This is caused by one of the paper clamps hitting an area of the outer paper guide that is not supported by one of the clamp stops.

Tools Required

Straight Edge
Allen Set
Feeler Gauges (0.090" and 0.100")(2.3 and 2/5mm) or (.060" & .070") (1.5 & 1.8mm)

Procedure

1. Printer powered off.
2. Remove the upper gate protective cover.
3. Remove the gate stop on printers with the swing down outer paper guide and open the print gate, swing open the outer paper guide.
4. Remove the ribbon and the print band.
5. Place the straight edge against the platen's lower edge guide, perpendicular to the guide, directly over the hinge end clamp stop.
6. With the swing down outer paper guide attempt to insert a .060" (1.5mm) feeler gauge between the straight edge and the surface of the clamp stop. With the revised horizontal swinging outer paper guide use a .090" feeler gauge.
7. The feeler gauge should fit easily. If it does not turn both upper clamp stop allen screws counterclockwise until the feeler gauge fits.
8. With the swing down outer paper guide attempt to insert an .070 (1.8mm) feeler gauge between the straight edge and the surface of the clamp stop. With the revised horizontal swinging outer paper guide use a .100" feeler gauge.
9. The feeler gauge should fit snugly or not at all. If it fits easily, turn both upper clamp stop allen screws clockwise until the feeler gauge does not fit.
10. If the clamp stop was moved, recheck step 6.
11. Perform steps 5 through 10 for the latch end clamp stop.
12. Adjust the two center clamp stops so that they are both behind the plane of the two outer clamps.
13. Close the outer paper guide.
14. Adjust the two center clamp stops by turning the allen screws clockwise until the clamp stops contact the outer paper guide. This can be determined by tapping the outer paper guide lightly in the area of the clamp stop surface. The metallic sound will deaden when the clamp stop makes contact.
15. Check that the center clamp stops were not moved too far forward lifting the outer paper guide off the outer clamps. Back off the center clamp stops if this occurs.

GATE LATCH PLATE ADJUSTMENTS

The gate latch plate is installed so that the print gate is held securely against the gate stop. If the latch is not properly adjusted, print quality can be affected and it may also be difficult to open and close the gate. The print gate switch must be properly adjusted to prevent loss of ready mode or damage to the switch.

Tools Required

Feeler Gauge (.015") (.375mm)
1/4" Open End Wrench or Socket
7/16" Open End Wrench or Socket
5/16" Open End Wrench or Socket
Flat Blade Screwdriver

Procedure

1. Printer powered off.
2. Print gate closed and latched.
3. The .015" (.375mm) feeler gauge must slide easily between the gate structure and the gate latch knob as shown in Figure 2-9. If the gauge does not fit easily, proceed to step 4.
4. Swing open the print gate.
5. Remove the inner paper guide plate.
6. Close the print gate.
7. Loosen the two hex. head mounting screws on the gate latch pin bracket. Adjust the bracket so that the (.015") (.375mm) feeler gauge fits easily between the gate latch knob and gate structure.
8. The print gate switch must be adjusted so that when the gate is in the closed position, the latch actuates the switch but does not bottom it out. Adjust the switch if necessary by loosening the two slotted head screws on the mounting bracket. See Figure 2-9.
9. Reinstall the inner paper guide. Perform the inner paper guide adjustment procedure. (Adjustment is not required for PB 900 printer.)

Gate Latch Stop

1. Loosen the bolt attaching the stop to the gate and retighten finger tight.
2. Pull on the gate latch knob to raise the latch and push the stop up against the latch.
3. Still holding the latch knob, partially close the gate until the latch is resting on the latch pin.
4. Release the knob and close the gate. The latch will move the latch stop to its operating position.
5. Open the gate and tighten the bolt attaching the latch stop to the gate while holding the latch up. Be careful not to move the stop from the position established in Step 4.
6. After the set-up is complete, the latch must hit the latch pin on the sloping portion of the latch when the gate is closed. See Figure 2-9.

OUTER PAPER GUIDE ADJUSTMENT (PBS PRINTER)

The outer paper guide can affect paper motion and print quality. If it is too far out from the platen, it can cause paper to tear as it passes through the print station. If the guide is too tight against the platen, it can cause binding in the ribbon system or ribbon smudging on the forms. If the outer guide is too high or too low, the ribbon shield may interfere with the hammers striking the band. This will cause a reduction in ribbon shield life expectancy and a degradation in print quality. Two procedures follow; one for the latest horizontal swing out outer paper guide followed by one for the swing down outer paper guide.

Tools Required

Feeler Gauges
Flat Blade Screwdriver
Ruler

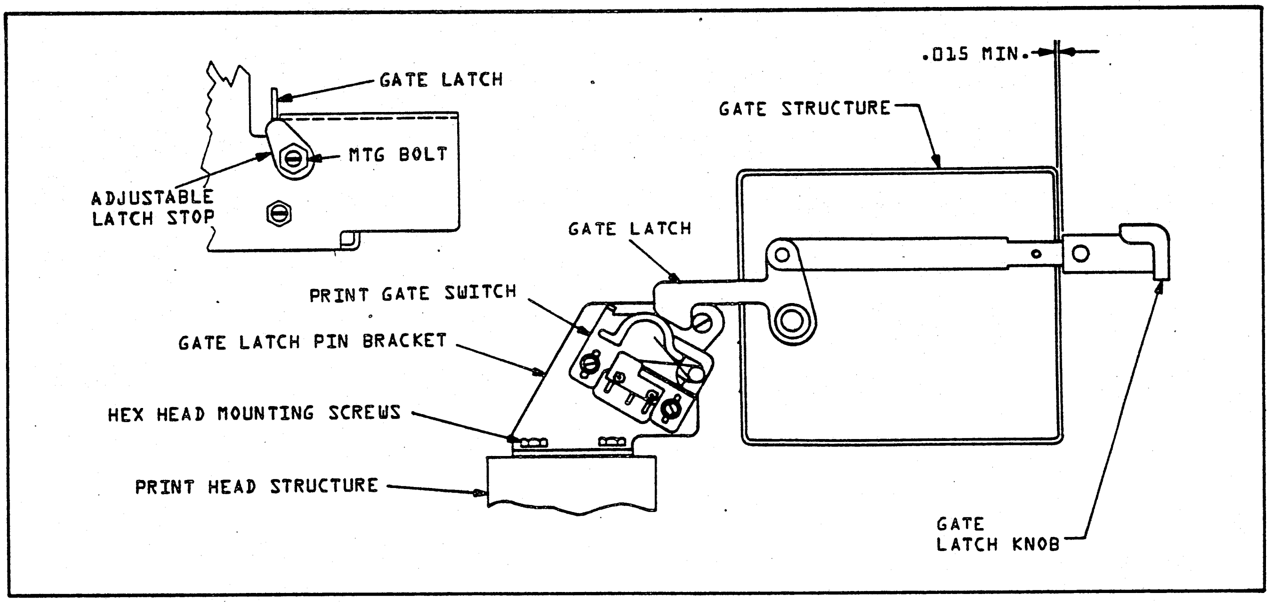


FIGURE 2-9. GATE LATCH PLATE ADJUSTMENT

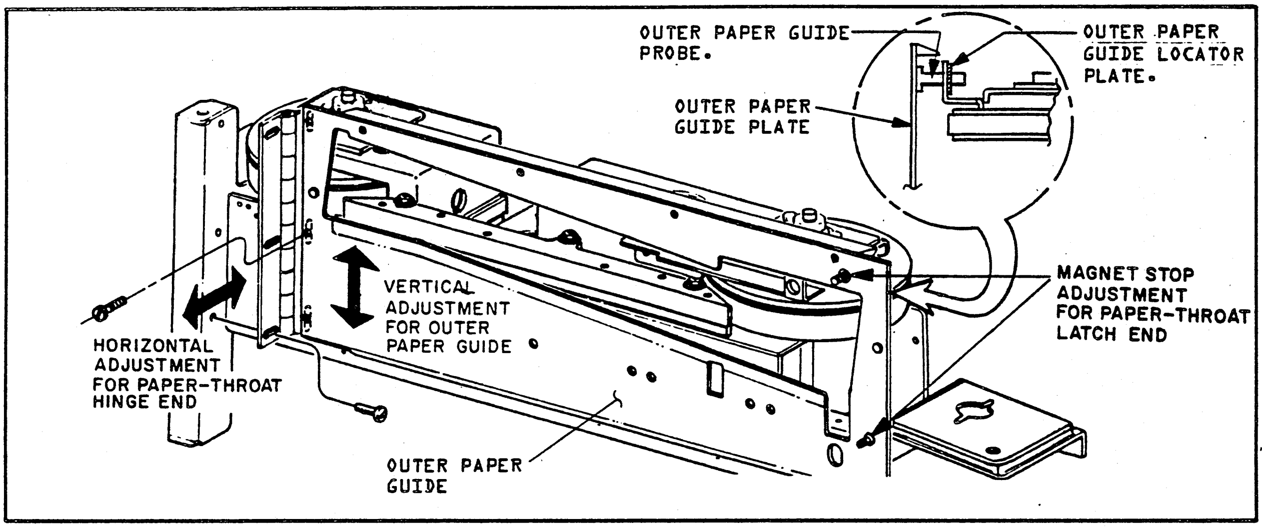


FIGURE 2-10. HORIZONTAL SWINGING OUTER PAPER GUIDE (PBS PRINTER)

Procedure (Horizontal Swinging Outer Paper Guide)

Before beginning, refer to the operation section of the Preparation and Instruction Manual and review the Ribbon Mylar Shield Replacement procedure and make sure the mylar shield is correctly installed. Also check that the paper clamp stops have been properly adjusted. Refer to the paper clamp stop adjustment in this section.

1. Printer powered off.
2. Open the print gate and remove the top gate protective cover.
3. Remove the ribbon.
4. Make sure the print band is riding against the top edge guide.
5. Hold the mylar shield against the band at one end of the slot.
6. Using a ruler, check that the distance between the slot's top edge and the top of the band characters is 0.090 to 0.110 in. (2.3mm to 2.8mm). Refer to Figure 2-11.
7. Repeat steps 5 & 6 for the other end of the slot in the mylar shield.
8. If this dimension is not correct; units with outer paper guide locator plate, loosen the two nuts on the outer paper guide locator plate so that the outer throat is free to move up and down when adjusted. On all units; slightly loosen the three mounting hinge screws holding the outer paper guide to the hinge, move the outer paper guide assembly up or down as needed. Tighten the three paper guide mounting screws (Figure 2-10).
9. On units with paper guide locator plate; move the outer paper guide locator plate up until the bottom surface of the slot in the locator plate is making contact with the bottom of the outer paper guide probe. Tighten the two locator mounting nuts (Figure 2-10).

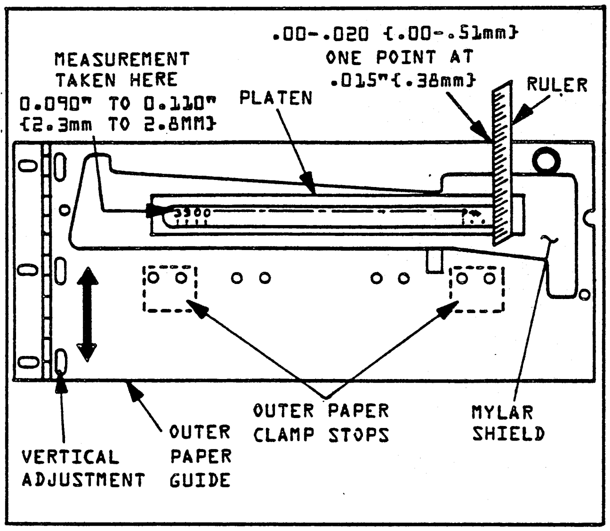


FIGURE 2-11. OUTER-PAPER GUIDE (PBS PRINTER)

10. Remove the print band. This check can be performed with or without the mylar installed. The bottom of the outer paper guide must be resting against the two opposite end paper clamp stops. Position a ruler vertically over the mylar (if installed in the area of one end of the platen) up to the top of the outer paper guide. Press the ruler against the platen and top edge guide (with mylar in between, if installed). Check the clearance at the top of the ruler to the top of the outer paper guide. The guide can be flush to 0.020 inch (0.51mm) maximum with at least one point only 0.015 inch back from the ruler. Insert feeler gauges to verify a clearance of 0.000 to 0.020 inch (0.00-0.51mm). (See Figure 2-11). Check several points along the platen.

11. **The lower surface of the outer paper guide must be touching the two outer paper clamp stops and still have the latch end magnets making contact with the stops on the outer paper guide. Contacting the magnets must not bend the outer paper guide. The two inner paper clamp stops must not be out as far as the outer paper clamp stops nor should they bend the outer paper guide when it is against the magnets.**

12. **Horizontal adjustment is required if the upper throat or outer paper clamp mating is not correct This adjustment is made by slightly loosening the three hinge screws holding the outer paper guide hinge to the gate, and, or adjusting the magnet stops at the latch end of the gate. See Figure 2-10.**

13. **Recheck the vertical adjustment if horizontal adjustment was performed.**

Procedure (Swing Down Outer Paper Guide)
(PBS Printer)

Before beginning, refer to the Operation section of the Preparation and Instruction Manual and review the Ribbon Mylar Shield Replacement procedure and make sure the mylar shield is correctly installed. Also check that the paper clamp stops have been properly adjusted. Refer to the paper clamp stop adjustment in this section.

1. Printer powered off.

2. Open the print gate and remove the top gate protective cover.

3. Remove the ribbon.

4. Make sure the print band is riding against the top edge guide.

5. Remove the outer paper guide opening bracket by removing the two mounting screws on the right side of the printhead. This bracket opens the outer paper guide as the gate is opened.

6. Hold the mylar shield against the band at one end of the slot.

7. Using a ruler, check that the distance between the slot's top edge and the top of the band character is 0.040 to 0.060 in. (1.0mm and 1.5mm). Refer to Figure 2-12.

8. **Repeat steps 6 & 7 for the other end of the slot in the mylar shield.**

9. **If this dimension is not correct, slightly loosen the four mounting bracket screws and move the outer paper guide assembly up or down as needed.**

10. **Tighten the mounting bracket screws.**

11. Remove the print band. The check can be performed with or without the mylar installed. The bottom of the outer paper guide must be resting against the two opposite end paper clamp stops. Position a ruler vertically over the mylar (if installed in the area of one end of the platen) up to the top of the outer paper guide. Press the ruler against the platen and top edge guide (with mylar in between, if installed). Check the clearance at the top of the ruler to the top of the outer paper guide. The guide can be flush to 0.020 inch back from the ruler with at least one point at 0.015 inch. Insert feeler gauges to verify a clearance of 0.000 to 0.020 inch (0.00-1.02mm). (See Figure 2-12). Check several points along the platen.

12. **If the distance is not correct, loosen the two hinge mounting screws on each end of the outer paper guide and move the plate in or out as needed. (The screws on the hinge end of the gate can be reached more easily by closing the gate).**

13. **Tighten the hinge mounting screws.**

14. **Install the outer paper guide opening bracket.**

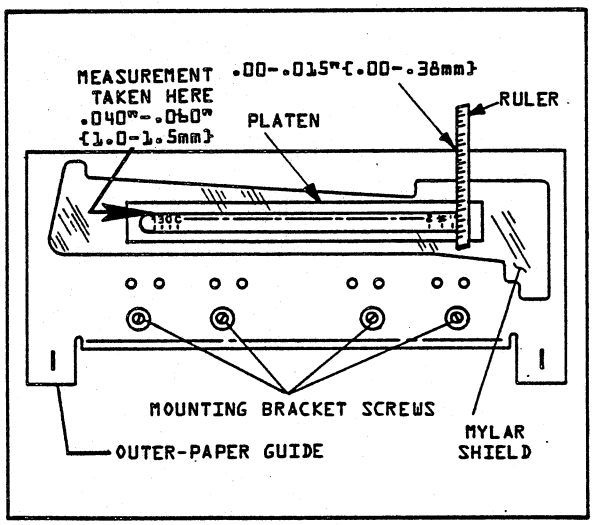


FIGURE 2-12. OUTER PAPER GUIDE (PBS PRINTER)

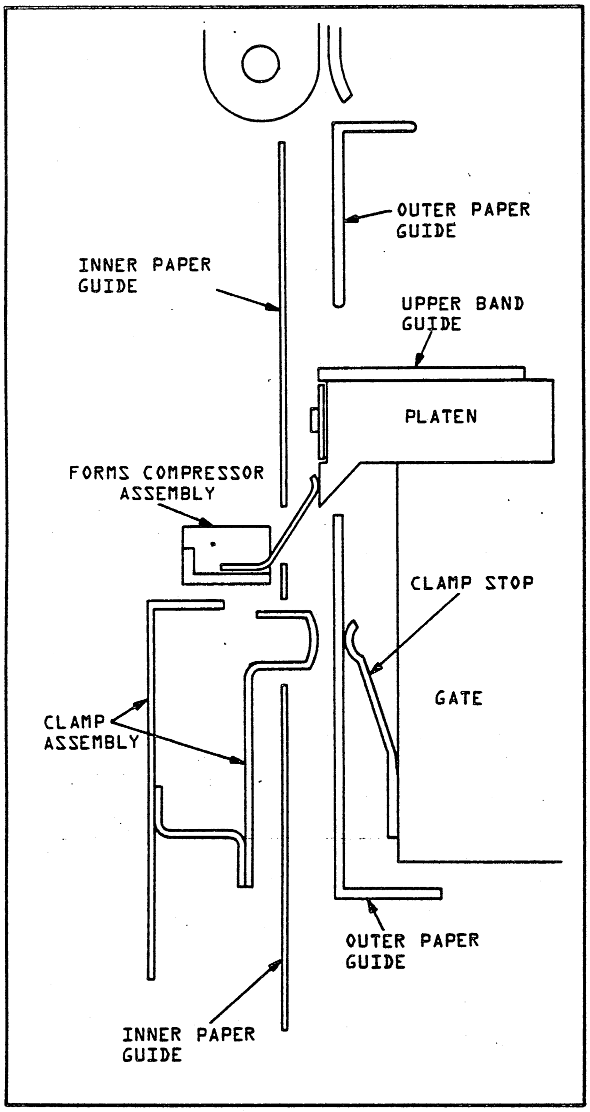


FIGURE 2-13. PAPER THROAT COMPONENT LOCATOR (PBS PRINTER)

PAPER CLAMP PULLEY ALIGNMENT (PBS PRINTER)

This adjustment must be performed anytime one of the clamp pulleys is replaced. The adjustment of clamps will affect the performance of the clamp system. Also, if the clamp pulleys are too far out, they may interfere with the inner paper guide.

Tools Required

Ruler
Straight Edge
Allen Set
11/32" Open End Wrench
1/4" Open End Wrench or Socket

Procedure

1. Power the printer off.
2. Open the print gate.
3. Remove the inner paper guide.
4. Remove the hammer modules directly above the clamp pulleys.
5. Remove the two screws that secure the forms compressor mounting brackets on both ends and remove the compressor bar assembly.
6. Place the straight edge against the surface of the module mounting bar so that one end of the straight edge contacts the top of the pulley to be adjusted.
7. Using the ruler, measure from the inside edge of the straight edge to the outside edge of the pulley. (See Figure 2-14).
8. If the distance measured is not .180 to .220 inch (4.6 to 5.6mm), loosen the two nuts beneath the pulley and move the pulley in or out until the proper dimension is achieved.
9. Reinstall the hammer modules and the forms compressor bar. Be sure to perform the Forms Compressor Adjustment procedure.
10. Reinstall the inner paper guide. Perform the Inner Paper Guide Adjustment procedure.

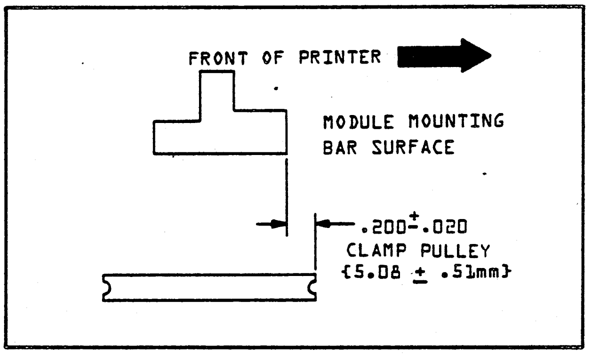


FIGURE 2-14. PAPER CLAMP PULLEY SET-UP (PBS PRINTER)

FORMS COMPRESSOR ADJUSTMENT (PBS PRINTER)

The forms compressors will require adjustment any time the assembly is removed from the printer. They are adjustable in both the horizontal and the vertical plane. If the compressors are too high, they may interfere with the print hammers. If they are too low, the compressors may hit below the platen causing forms to tear. If the compressors are too far back from the platen, they will not hold the paper close enough to the print font causing degradation of the print quality. If the compressors are too close to the platen, they may interfere with paper motion and hammer firing.

Tools Required

Ruler
Straight Edge
Allen Set
1/4" Open End wrench or socket

Procedure

1. Printer powered off.
2. Open the print gate and remove the inner paper guide.
3. Remove the hammer modules for columns 12, 56, and 114. (See Figure 2-15.)
4. Measure the distance from the top of the module mounting bar to top surface of the compressor mounting plate.
5. If this distance is not 2.40 to 2.44 inches (61 to 62 mm), loosen the two screws at each end that hold the mounting brackets and move the compressor mounting plate up or down as required.
6. Place a straight edge against the front surface of the module mounting bar so that the end of the straight edge just touches the tip of the compressor.

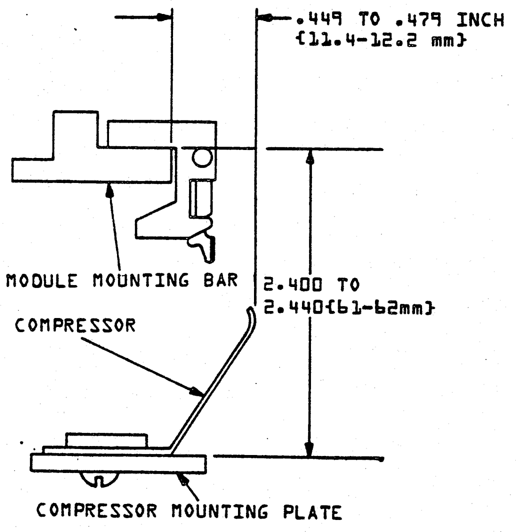


FIGURE 2-15. FORMS COMPRESSOR ALIGNMENT (PBS PRINTER)

7. Measure the distance from the inside edge of the straight edge to outside surface of the compressor. Perform steps 6 and 7 in column locations 12, 56, and 114.
8. If the distance measured in all three locations is not between .450 to .480 inch (11.3 to 12.2 mm), loosen the four screws holding the compressors to the mounting plate.
9. Move the compressors in or out until the proper dimensions are achieved.
10. Reinstall the inner paper guide and perform the Inner Paper Guide Adjustment procedure.

FORMS COMPRESSOR ADJUSTMENT (PB PRINTER)

This procedure must be performed whenever a hammer is replaced.

Tools Required

Ruler
Straight Edge
Allen Set
Socket 1/4 Inch

Procedure

1. Power printer off.
2. Remove the inner throat plate.
3. Locate the module containing the defective hammer. Hammer modules are spared with all four hammers. The hammer module can be disassembled for individual parts or installed as a whole module.

CAUTION

TO MINIMIZE POSSIBLE HORIZONTAL MISALIGNMENT OF THE PART HAMMERS, ONLY REMOVE ONE HAMMER MODULE AT A TIME.

4. Remove the two module mounting screws and slide the module off the hammer bar (See Figure 2-15A).

CAUTION

THE HAMMERS AND PLUNGERS ARE SPRING LOADED AND WILL SHOOT OUT UNLESS THEY ARE RELEASED SLOWLY.

5. Slide the pivot pin out of the module until the defective hammer can be reached.
6. Place the new hammer in the module and slide the pivot pin back into the module. Make sure the forms compressor is in place and measures .406 in. to 408 in. beyond the vertical locating face of the hammer module. If adjustment is necessary, adjust the set screw (located in the rear of the module) left or right which moves the forms compressor blade in or out until the proper measurement is achieved.
7. Mount the module back on the hammer bar.
8. Replace the inner throat plate.
9. Perform the Flight Time Adjustment procedure if necessary.

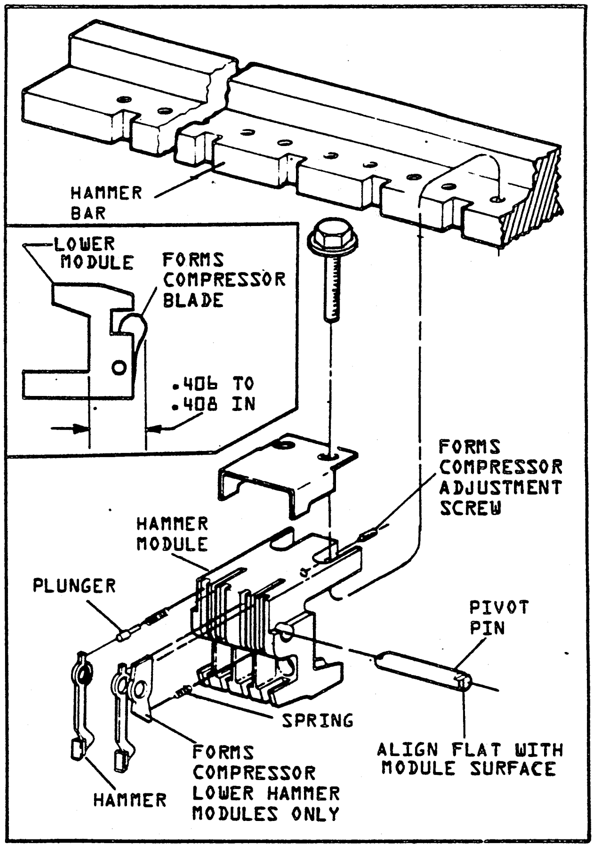


FIGURE 2-15A. FORMS COMPRESSOR ALIGNMENT (PB PRINTER)

PAPER CLAMP ADJUSTMENT (PBS PRINTER)

This procedure should be performed anytime the paper clamp components have been replaced. It should also be checked if forms tear or forms holes become elongated. Improperly adjusted clamps may also cause the printed lines to appear wavy across the form. This procedure applies only to PBS printers, and only those with paper clamp solenoids with a retainer spring on the back (See Figure 2-16).

Tools Required
Spring Scale
7/16" Open End Wrench or Socket
Feeler Gauges (.020 & .026 in.) (0.51 & 0.66mm)

1. Printer powered off.
2. Remove the bonnet.
3. Open the print gate.
4. Remove the inner paper guide.
5. Using feeler gauges check that the solenoid armature travel is .020 to .026 inch (.51 to .66mm) as shown in Figure 2-16.
6. Adjust the spring clamp set screws if necessary to achieve the correct travel.
7. Re-install the inner paper guide and perform the inner paper guide adjustment procedure.
8. Install 15 lb. single part paper and briefly operate the printer.
9. Remove the paper from the tractors keeping the power on and gate closed.
10. Using a spring scale, pull the forms up through the throat area and check that the paper drag goes above 4.0 lbs (1.814 kg).
11. Adjust the cable length nut to achieve the proper paper drag and while adjusting pull the paper upward until the clamps release (indicated by a sudden drop in the paper drag).
12. Check at the release point that the adjusting nut is properly seated and then loosen the nut 90° ± 15°
13. Reinstall the paper in the tractors and briefly operate the printer.
14. Power the printer off.
15. Remove the paper from the tractors.
16. Pull the paper up through the throat area and check that the tension is 1.0 lb. (454g) or less.
17. Re-perform steps 10 through 16 if necessary to achieve the proper tension.

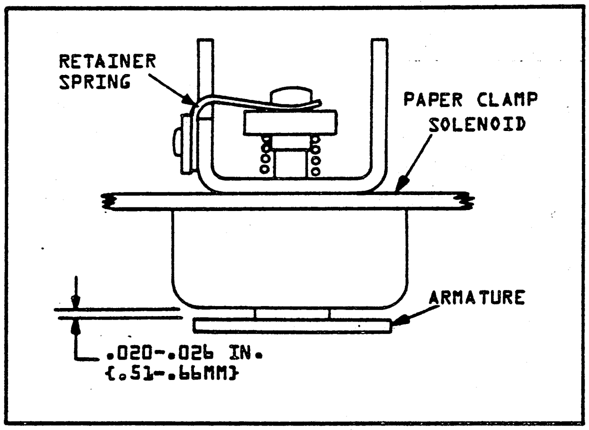


FIGURE 2-16. PAPER CLAMP ADJUSTMENT (PBS PRINTER)

HAMMER BAR HOME POSITION ALIGNMENT (PBS PRINTER)

This adjustment should be performed anytime the hammer bar is disconnected from the voice coil. Any misalignment of the home position will cause horizontal clipping in the print out. This procedure applies only to PBS printers.

Tools Required

Flat Blade Screwdriver
Feeler Gauges (.005,.010,.015) (.127,.245,.381mm)
5/16" Open End Wrench of Socket
1/4" Open End Wrench or Socket.
Ruler

Procedure

1. Printer powered off.
2. Remove the printer bonnet.
3. Remove the paper bail and the protective plate covering the logic cards.
4. Open the print gate.
5. Remove the inner paper guide.
6. Remove the left hammmer bar stop screw.
7. Loosen the screws coupling the hammer bar to the hammer bar locater so that the bar can be moved without moving the locater.
8. Refer to Table 2-4 and jumper Ref. F (Horizontal Home Enable) to TP30 (ground) on 7PC3 (Print Head Electronics board).
9. Power the printer on.
10. Gently depress the gate latch switch and hold. This will home the voice coil.
11. Check that the scribe mark on the horizontal reader and the alignment slot in the hammer bar locater are positioned as shown in Figure 2-17. Loosen the screw holding the encoder for adjustment.

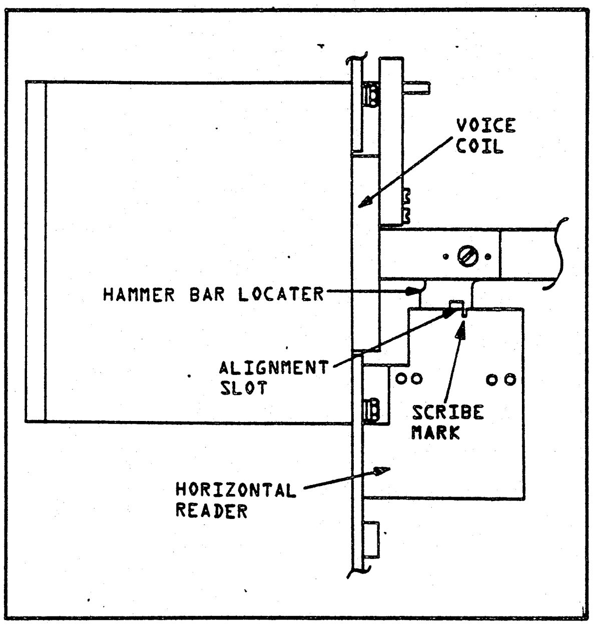


FIGURE 2-17. VOICE COIL HOME POSITION (PBS PRINTER)

12. Using a ruler, check that the distance between the hammer bar and the hammer bar stop screw on the right side is as shown in Figure 2-18.
13. Tighten the hammer bar in this position with the two screws and recheck that the distance between the hammer bar and the right hammer bar stop screw is as shown in Figure 2-18.

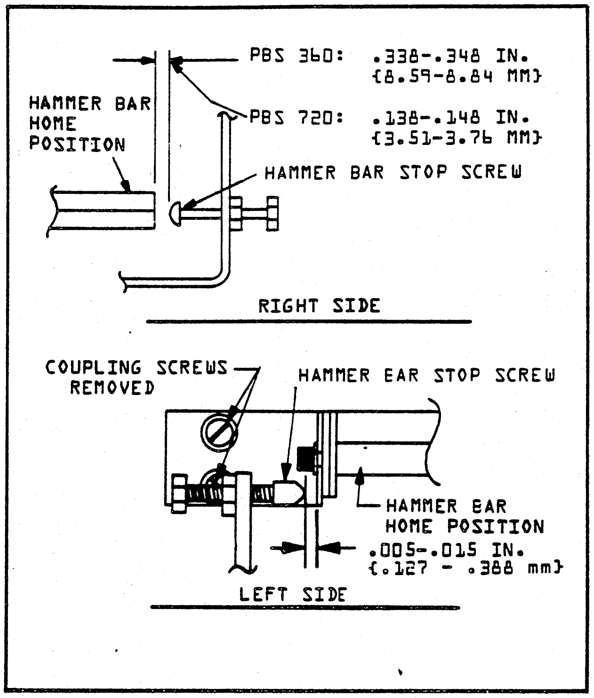


FIGURE 2-18. HAMMER BAR HOME POSITION

14. Replace the left hammer bar stop screw. Position a .010 inch (.254mm) feeler gauge between the hammer bar and the left hammer bar stop screw on the left side of the hammer bar. Tighten the stop screw.
15. Remove the jumper wire and reassemble the printer.
16. Perform the Inner Paper Guide Adjustment procedure.

INNER PAPER GUIDE ADJUSTMENT (PBS PRINTER)

This adjustment must be performed anytime the paper guide is removed. If the paper guide is too far out, it will interfere with forms motion. If the paper guide is too far in, it will interfere with the paper clamp assembly.

Tools Required

Feeler Gauges (.040", .060", & .090")
(1.0, 1.5, and 2.3mm)
5/16" Open End Wrench or Socket
1/4" Open End Wrench or Socket

Procedure

1. Printer powered off.
2. Print gate closed and latched.
3. Attempt to insert a .040" (1.0mm) feeler gauge between the top of the inner paper guide and the outer paper guide. Slide the gauge along the entire length of the guides.
4. If the feeler gauge does not fit easily into the gap, skip to step 7. If it fits, continue with step 5.

5. Attempt to insert a .090" (2.3mm) feeler gauge between the bottom of the inner paper guide and the bottom of the outer paper guide at approximately column locations 20 and 120.

6. If the feeler gauge does not fit, the alignment of the top portion of the inner paper guide is correct, skip to step 13. If it fits, continue with step 7.

7. Loosen the mounting bracket that holds the inner paper guide to the side plate on the latch end and the screw that holds the inner paper guide to the mounting bracket on the hinge end.

8. Place a .060" (1.5mm) feeler gauge between the outer paper guide and the inner paper guide at column location 120.

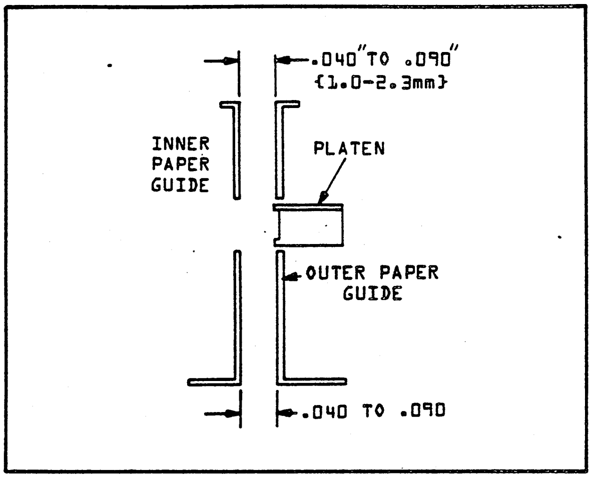


FIGURE 2-19. INNER PAPER GUIDE SET-UP (PBS PRINTER)

9. Hold the hinge end of the inner paper guide snugly against the feeler gauge and tighten the hinge end screw.

10. Move the feeler gauge to column location 20.

11. Hold the latch end of the inner paper guide snugly against the feeler gauge and tighten the latch end mounting bracket.

12. Recheck steps 3 and 5.

13. Attempt to insert a .040" (1.0mm) feeler gauge between the bottom of the inner paper guide and the bottom of the outer paper guide. Slide the gauge along the entire length of the guides.

14. If the feeler gauge does not fit easily into the gap, skip to step 17. If it fits continue with step 15.

15. Attempt to insert a .090" (2.3mm) feeler gauge between the bottom of the inner paper guide and the bottom of the outer paper guide at approximately column locations 20 & 120.

16. If the feeler gauge does not fit, the alignment of the bottom portion of the paper guide is correct. If it fits, continue with step 17.

17. Loosen the three mounting bolts that hold the inner paper guide to the base plate.

18. Place a .060" (2.1mm) feeler gauge between the inner and outer paper guide at column location 120.

19. Hold the hinge end of the inner paper guide snugly against the feeler gauge and tighten the hinge end bolt.

20. Move the feeler gauge to column location 20.

21. Hold the latch end of the inner paper guide snugly against the feeler gauge and tighten the latch end bolt.

22. Tighten the center bolt and then recheck steps 13 and 15.

INNER PAPER GUIDE ADJUSTMENT (PB1130 PRINTER)

The inner paper guide is held against four stops by quarter turn fasteners. (See Figure 2-20, view A.) These stops have been factory adjusted and have had glyptol varnish applied on their mounting hardware. A retaining guide locates and holds the lower part of the guide on the printhead structure.

Tools Required

Flat Blade Screwdriver
Straight Edge
Hex Wrench Set

Procedure

1. Printer powered off.

2. Open the print gate and remove the inner paper guide.

3. Lay a straight edge against the two stops at one end of the hammer module mounting bars. (See Figure 2-20 view B). Allow the straight edge to extend downward, to be adjacent to the retaining guide, as shown in view B. If the front surface of the retaining guide is not in alignment with the two stops (touching), loosen the retaining guide securing screws slightly and position the retaining guide so that it is flush with the two stops.

4. Repeat the procedure of step 3 for the other end of the retaining guide.

5. Recheck the alignment of the first end adjusted.

6. Reinstall the inner paper guide.

7. Perform the outer paper guide adjustment procedure.

OUTER PAPER GUIDE ADJUSTMENT (PB 1130 PRINTER)

The outer paper guide can affect paper motion and print quality. If it is too far out from the platen, it can cause paper to tear as it passes through the print station. If the guide is too tight against the platen, it can cause binding in the ribbon system or ribbon smudging on the forms. If the outer guide is too high or too low, the mylar shield may interfere with the hammers striking the band. This will cause a reduction in mylar life expectancy and a degradation in print quality. Two procedures follow: one for the latest horizontal swing out outer paper guide followed by one for the swing down outer paper guide.

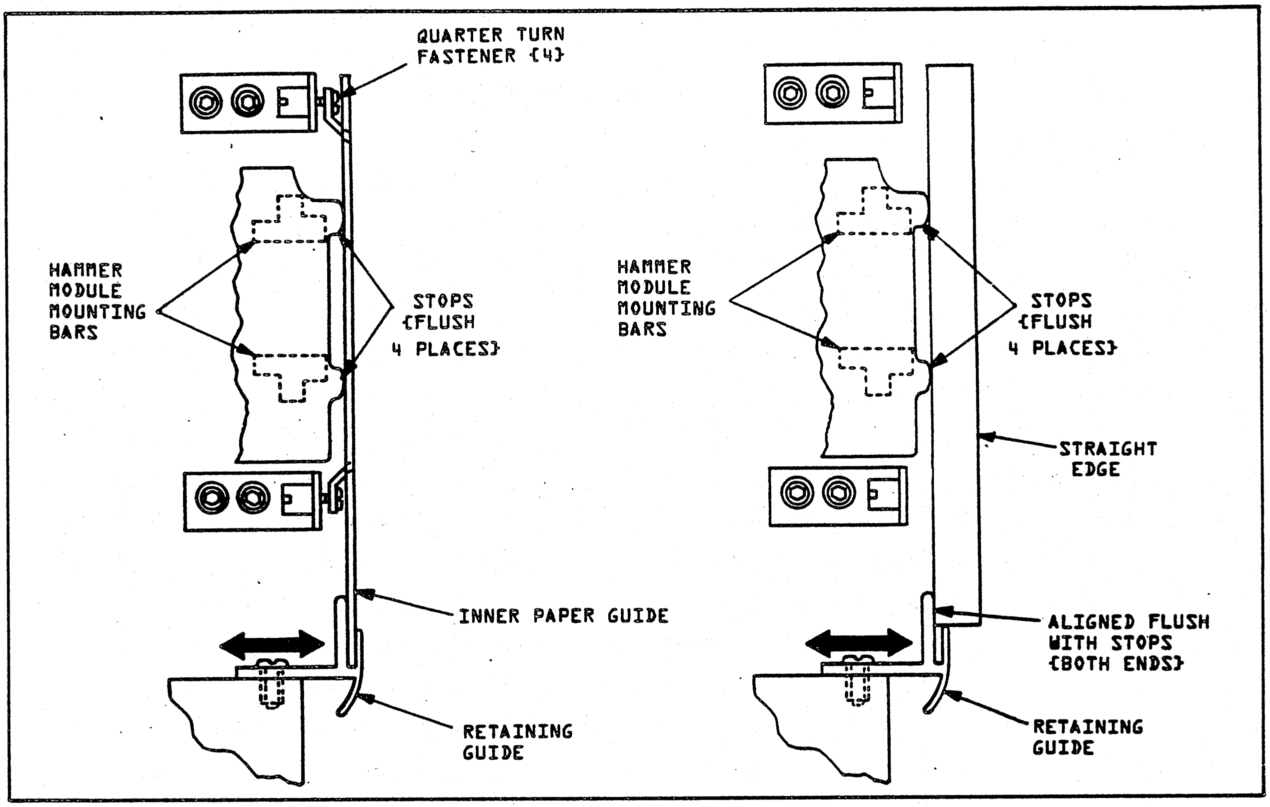


FIGURE 2-20. INNER PAPER GUIDE ADJUSTMENT (PB1130)

Tools Required

Feeler Gauges
Flat Blade Screwdriver
Ruler

Procedure (Horizontal Swinging Outer Paper Guide)

Before beginning, refer to Section 1 and review the Ribbon Mylar Shield Replacement procedure and make sure the mylar shield is correctly installed.

1. Printer powered off.
2. Open the print gate and remove the top gate protective cover.
3. Remove the ribbon.
4. Make sure the print band is riding against the top edge guide.
5. Hold the mylar shield against the band at one end of the slot.
6. Using a ruler, check that the distance between the slot's top edge and the top of the band character is 0.040 to 0.060 in. (1.0mm and 1.5mm). Refer to Figure 2-22.
7. Repeat steps 5 & 6 for the other end of the slot in the mylar shield.
8. If this dimension is not correct, slightly loosen the three mounting hinge screws holding the outer paper guide to the hinge then move the outer paper guide assembly up or down as needed.

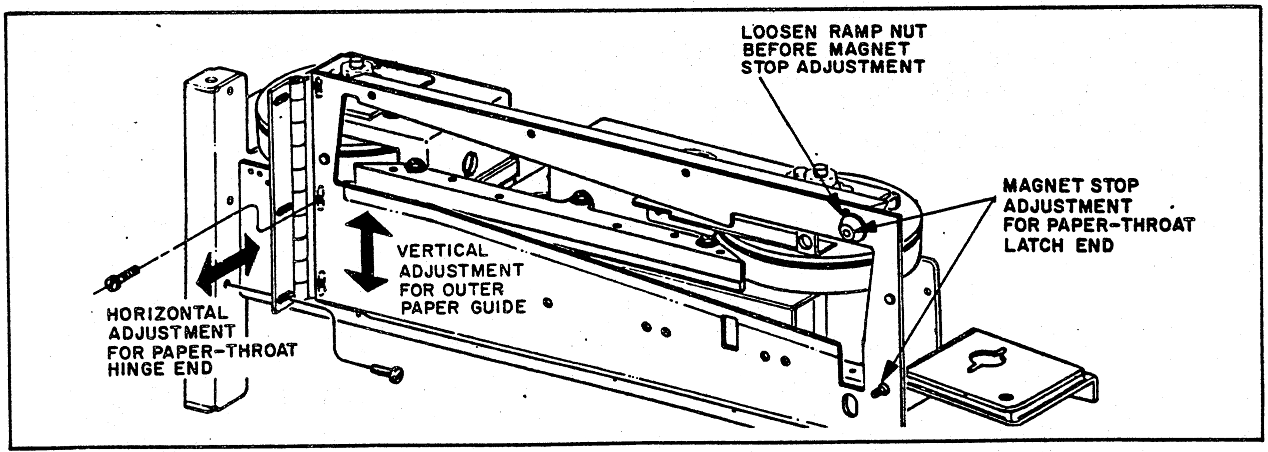


FIGURE 2-21. HORIZONTAL SWINGING OUT PAPER GUIDE (PB1130 PRINTER)

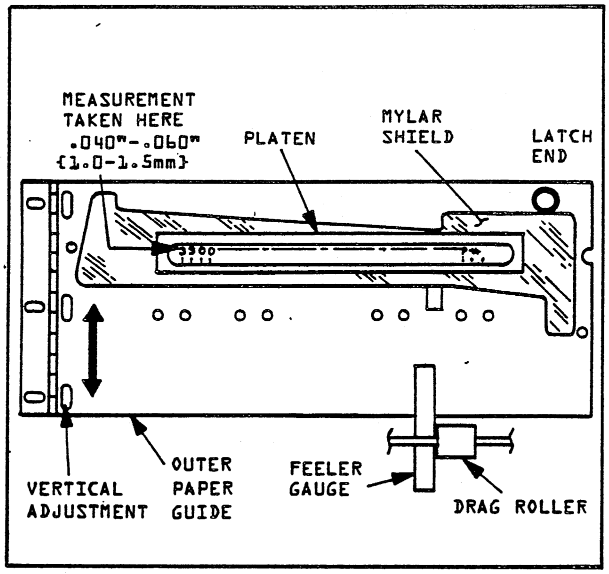


FIGURE 2-22. OUTER PAPER GUIDE (PB 900 PRINTER)

9. Tighten the mounting bracket screws.

10. Ensure that the inner paper guide is properly mounted in the bottom locating bracket and the four quarter turn fasteners are holding the guide against the stops.

11. Using feeler gauges, check that the paper throat gap between the outer paper guide and the inner paper guide is 0.040 in. (1.02mm) minimum at the top and bottom of the paper guides. This gap must extend across the length of the area above and below the hammer bank.

12. Check that the gap is not less than 0.040 in. (1.02 mm) in the area of hammers 20 and 120.

13. Horizontal adjustment is required if the throat is not correct . This adjustment is made by slightly loosening the three hinge screws holding the outer paper guide hinge to the gate, and, or adjusting the magnet stops at the latch end of the gate. See Figure 2-21.

14. Positioning the outer paper guide parallel to the inner paper guide is difficult without a reference during adjustment. The top and bottom edges of the platen make the best reference point, using a six inch scale and feeler gauges. Position the scale vertically on the front of the platen. Feeler gauges can now be placed between the outer paper guide and the scale, or between the scale and the platen to obtain a present relationship of the outer paper guide to platen. If the throat area between the inner and outer paper guides was to small the outer paper guide would be moved back in relation to the platen. Using the platen as a basis when moving the outer paper guide maintains a parallel positioning of the guide. After repositioning the outer paper guide, close the gate and recheck the throat clearance between the inner and outer paper guide.

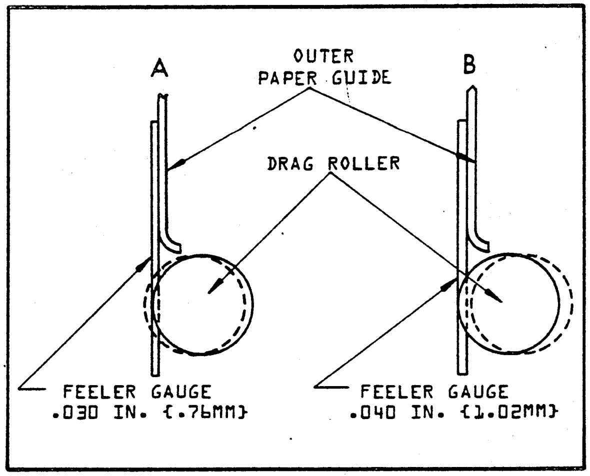


FIGURE 2-23. DRAG ROLLER POSITION

15. Recheck the vertical adjustment if horizontal adjustment was performed.

16. Open the print gate.

17. Place a .030 in (.76mm) feeler gauge against the outer paper guide and adjacent to the drag roller (see Figures 2-22 and 2-23). The rollers must be flush with the gauge or extend beyond it.

18. Repeat step 18 using a .040 in (1.02 mm) feeler gauge. The rollers must be flush with the gauge or behind it.

19. Loosen the hardware on the drag roller shaft bracket and move the shaft as required.

20. Install the outer paper guide opening bracket, ribbon and upper gate protective cover.

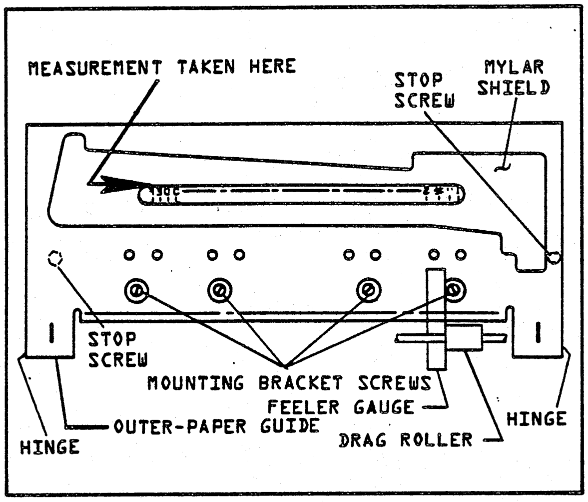


FIGURE 2-24. OUTER PAPER GUIDE ADJUSTMENT (PB 900 PRINTER)

Procedure (Swing Down Outer Paper Guide)

The Outer Paper Guide position can affect paper motion and ribbon tracking through the throat area. An improperly adjusted outer paper guide may cause paper tear, ribbon bind or smudging, reduction in mylar shield life expectancy, or print quality problems.

1. Printer powered off.
2. Remove the upper gate protective cover and open the print gate.
3. Remove the ribbon.
4. Check that the print band is riding against the top edge guide.
5. Remove the outer paper guide opening bracket by removing the two mounting screws on the right side of the printhead. This bracket opens the outer paper guide as the gate is opened.
6. Press the mylar against the print band at one end of the slot.
7. Using a ruler check that the distance between the slot's top edge and the top of the band character is .040 to .060 in. (1.0 to 1.5mm). See Figure 2-24.
8. Repeat steps 6 and 7 for the other end of the slot.
9. Slightly loosen the four mounting bracket screws and move the outer guide assembly up or down if adjustment is needed.
10. Tighten the mounting bracket screws.
11. Ensure that the inner paper guide is properly mounted in the bottom locating bracket and the four quarter turn fasteners are holding the guide against the stops.
12. Using feeler gauges, check that the paper throat gap between the outer paper guide and the inner paper guide is 0.040in. (1.02mm) minimum at the top and bottom of the paper guides. This gap must extend across the length of the area above and below the hammer bank.

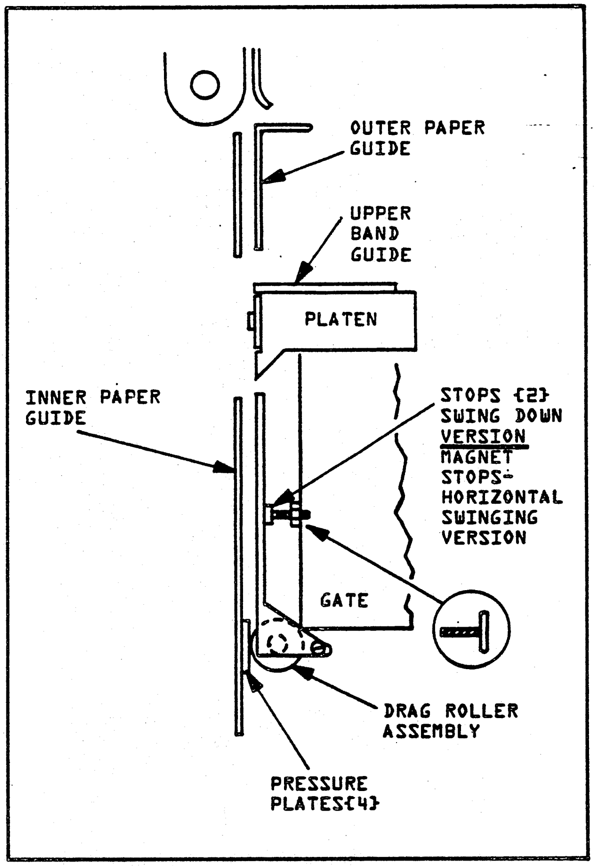


FIGURE 2-25. PAPER THROAT COMPONENT LOCATOR (PB900 PRINTER)

13. Check that the gap is no greater than .090 in. (2.3 mm) in the area of hammers 20 and 120.
14. If it is necessary to adjust the throat gap, slightly loosen the two outer guide hinge bracket mounting screws on each end of the guide, then alternately adjust the two stop screws (secured by locknuts) and move the hinge brackets in or out to achieve the correct throat gap.
15. Tighten the hinge mounting screws.
16. Open the print gate.
17. Place a .030 in. (.76mm) feeler gauge against the outer paper guide and adjacent to the drag roller (see Figures 2-23 and 2-24). The rollers must be flush with the gauge or extend beyond it. See Figure 2-23.
18. Repeat step 17 using a .040 in. (1.02mm) feeler gauge. The rollers must be flush with the gauge or behind it.
19. Loosen the hardware on the drag roller shaft brackets and move the shaft as required.
20. Install the outer paper guide opening bracket, ribbon and upper gate protective cover.

DRAG ROLLER TENSION ADJUSTMENT (PB900 PRINTER)

This adjustment should be performed anytime the drag rollers have been replaced or the outer guide plate has been adjusted. Improperly adjusted rollers may cause forms feed and print quality problems. This procedure applies to PB 900 printers only

Tools Required

Allen Wrench Set

Procedure

1. Printer powered off.
2. Open the print gate.
3. Install single part forms.
4. Remove the forms from the tractors.
5. Using a spring scale, pull the forms up through the throat area. Check that there is a .70 to 1.1 pound (.32 to .50 Kg.) tension on the paper.
6. Use the adjusting screw at the bottom of the brake shoe to adjust for proper tension after first loosening the lock nuts.

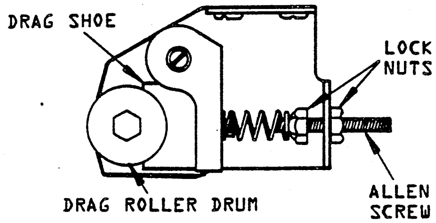


FIGURE 2-26. DRAG ROLLER TENSION (PB900 PRINTER)

FLIGHT TIME ADJUSTMENT (PBS PRINTER)

Read Print Quality Evaluation before adjusting flight time. This procedure should be performed any time there is evidence of horizontal clipping or horizontal mis-registration of print characters by individual hammers. If the wrong character is being printed, refer to Character and Home Pulse Set-Up procedure. In the 300 LPM printers individual hammer clipping appears as four consecutive columns, while in the 600 LPM printers, it appears as two consecutive columns. If the printer is used with a compressed pitch band, the final check should be made in compressed pitch. In compressed pitch, columns affected by one hammer are in groups of six on a 300 LPM printer and groups of three on a 600 LPM printer.

WARNING

NOISE LEVEL UNDER BONNET WHILE PRINTING MAY BE HAZARDOUS TO HEARING. KEEP EXPOSURE TO A MINIMUM.

NOTE

THE NEW HORIZONTAL SWING OUT PAPER GUIDE WILL NOT ACCURATELY INDICATE COLUMNS UNLESS THE GATE IS CLOSED.

Tools Required

Flight Time Tool
Allen Wrench Set

Procedure

1. Remove the bonnet ground strap and lift off the printer bonnet.
2. Remove the paper and pedestal rear cover.

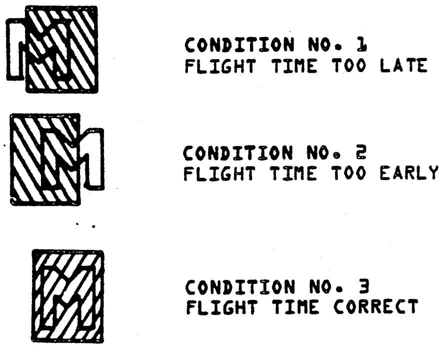


FIGURE 2-27. FLIGHT TIME CHECK

3. Check the horizontal position of the armature bank to be sure the pushrod tips are centered on the armature ends across the whole bank. Loosen the three bolts holding the armature bank if centering is required and then recheck printout.
4. For adjustment of a hammer column slightly loosen the two allen screws holding the armature striker in place.
5. Insert the flight time tool into the adjusting slot.
6. Initiate an all one character printout of all 'M's.

7. Move the armature striker with the flight time tool until there is no evidence of horizontal clipping. (See Figure 2-27 and 2-28).

8. Use the control panel phasing control to determine adjustment centering by rotating back and forth, centering character clipping.

9. While holding the armature striker in its new position, torque the two allen screws to 20 inch pounds (23 cm/kg).

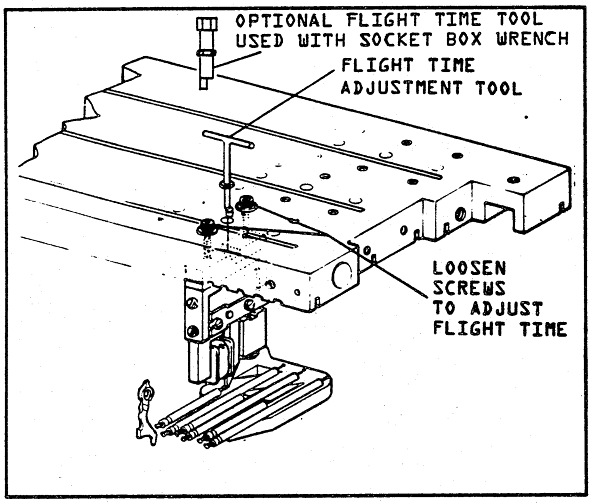


FIGURE 2-28. FLIGHT TIME ADJUSTMENT (PBS PRINTER)

FLIGHT TIME ADJUSTMENTS (PB900 PRINTER)

Read the Print Quality Evaluation before adjusting the flight time. These procedures should be performed any time there is evidence of horizontal clipping of print characters by individual hammers. Odd print columns are printed by the upper hammer actuators and even print columns are printed by the actuators on the lower armature bar. If the wrong character is being printed, refer to Character and Home Pulse Set-Up procedure.

Tools Required

Flight Time Adjusting Tool
Flexible Shaft Assembly
Hex Wrench Set

Procedure for Upper Actuators

1. Disconnect bonnet ground strap and lift bonnet off printer.

2. Remove the paper exit idler roller assembly.

3. Remove the paper exit ramp.

4. Check the horizontal position of the armature bank to be sure the push-rod tips are centered on the armature ends across the whole bank. Loosen the three bolts holding the armature bank if centering is required and then recheck printout.

5. For adjustment of a hammer column, slightly loosen the two hex head screws holding the armature striker.

6. **Insert the flight time adjusting tool into the actuator adjusting slot.**

WARNING

THE NOISE LEVEL WHILE PRINTING WITH THE BONNET RAISED CAN CAUSE HEARING IMPAIRMENT. KEEP EXPOSURE TIME TO A MINIMUM.

7. Initiate an all one character printout of all "M"s and adjust the phasing control for all columns.

8. Move the armature striker using the flight time adjusting tool until there is no evidence of horizontal clipping. (See Figure 2-27 and 2-29).

9. Use the control panel phasing control to determine adjustment centering by rotating back and forth, centering character clipping.

10. While holding the armature striker in it's new position, torque the two hex head screws to 20 inch pounds (23 cm/kg).

11. Replace the paper exit ramp and idler roller assembly.

12. Replace the bonnet, using care not to damage any printer component.

13. Connect the bonnet grounding strap.

Procedure for Lower Actuators

1. **Open the front access door of the printer and raise the bonnet.**

2. **Open the print gate and remove the inner paper guide.**

3. Tape the out of paper switch down against the outer paper guide.

4. Attach the flexible shaft assembly to the flight time adjusting tool.

5. Slightly loosen the two hex head screws holding the armature striker in place.

6. Insert the flight time adjusting tool into the actuator adjusting slot so that the tool is held in place by the grommet.

7. Close the print gate while holding the flexible shaft through the opening at the bottom of the gate.

WARNING

THE NOISE LEVEL WHILE PRINTING WITH THE BONNET RAISED CAN CAUSE HEARING IMPAIRMENT. KEEP EXPOSURE TIME TO A MINIMUM.

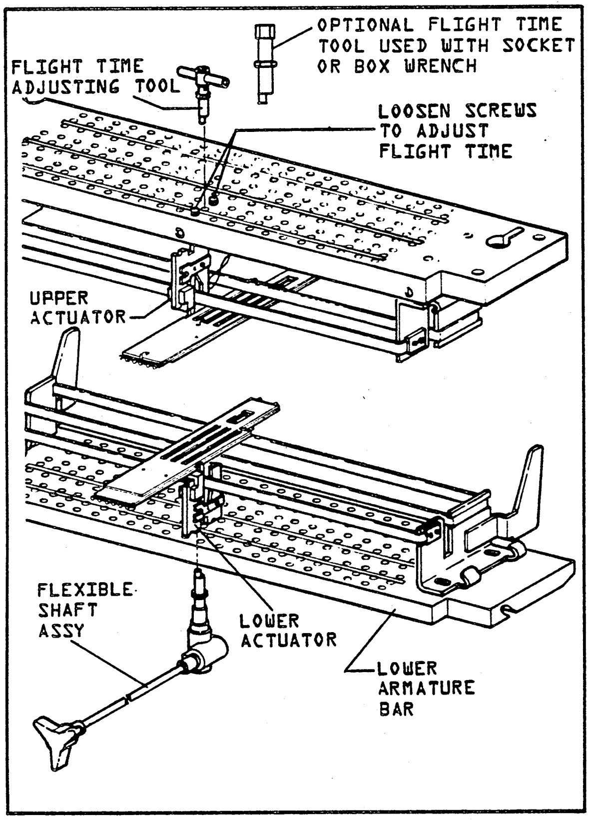


FIGURE 2-29. FLIGHT TIME ADJUSTMENTS (PB 900 PRINTER)

8. Initiate an all one character printout of all 'H's or 'M's and adjust the phasing control for all columns.
9. Move the armature striker by rotating the flexible shaft until there is no evidence of horizontal clipping. (See Figure 2-27 and 2-29).
10. Use the control panel phasing control to determine adjustment centering by rotating back and forth, centering character clipping.
11. While holding the armature striker in its new position, torque the two hex head screws to 20 inch pounds (23 cm/kg).
12. Remove tool and replace the inner paper guide.
13. Remove tape from out of paper switch.

BAND MOTOR BELT TENSION ADJUSTMENT

This adjustment must be performed anytime the belt is removed or the band drive motor plate is moved. It should also be checked anytime the band timing seems unstable or the belt shows excessive wear.

Tools Required

Spring Scale
Straight Edge
Ruler
1/4" Open End Wrench or Socket

Procedure

1. Printer powered off.
2. Remove the securing screws and remove the lower gate protective cover.
3. Make a mark on the spring scale shaft .150 inch (3.8 mm) from the tip of the shaft.
4. Place a straight edge on the outer edge of both pulleys.
5. At a point midway between the pulleys, depress the belt with the spring scale until the mark on the shaft is aligned with the inside edge of the straight edge (.150 inch belt deflection) (3.81mm). (See Figure 2-30).
6. From the spring scale read the force necessary to achieve this deflection.

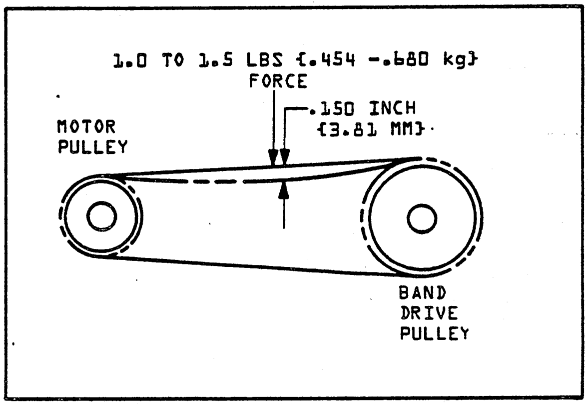


FIGURE 2-30. BAND MOTOR BELT TENSION

7. Check to see if the pulleys are vertically 1.38 ± 0.02 inches (35.05 ± 0.59mm) below the frame. The end of the shaft must be flush with bottom surface of the pulleys. Adjust, if necessary, by loosening the shaft bearing set screws and move the shaft up or down.
8. If the force is not between 1.00 and 1.5 pounds (.454 to .680 kg) loosen the four outer bolts on the motor mounting plate and move the motor assembly to obtain the proper tension.

PAPER ADVANCE MOTOR BELT TENSION

This procedure should be performed any time the belt is changed or the advance motor mounting plate is moved. It should also be performed when there is evidence of vertical line spacing problems or excessive belt wear.

Tools Required

Spring Scale
Straight Edge
Ruler
3/8" Open End Wrench or Socket
Flat Blade Screwdriver

Procedure

1. Printer powered off.
2. Make a mark on the spring scale shaft .150 inch (3.8 mm) from the tip of the shaft.
3. Place a straight edge on the upper edge of both pulleys. (See Figure 2-31.)
4. At a point midway between the pulleys, depress the belt with the spring scale until the mark on the shaft is aligned with the bottom of the straight edge (.150 inch belt deflection). (3.8mm).
5. From the spring scale read the force necessary to achieve this deflection.

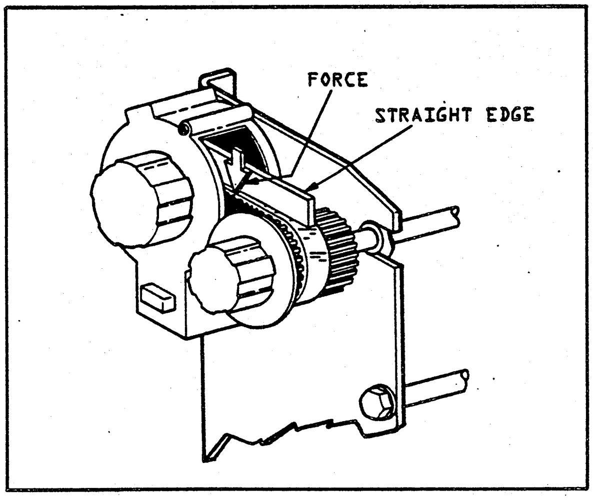


FIGURE 2-31. PAPER ADVANCE BELT TENSION

6. If the force required is not between 2.00 and 2.50 pounds (.908 to 1.135 kg), remove the paper bail (paper exit ramp).
7. Loosen the three nuts that hold the paper motion mounting plate to the side casting and move the paper motion assembly to obtain the proper tension.
8. Reinstall the paper bail (paper exit ramp).

TRACTOR ASSEMBLY ADJUSTMENTS

There are three adjustments associated with the tractor assembly; belt tension, tractor flap clearance and tractor body alignment. If the belt is too tight, it can cause the tractor assembly to bind. Too loose a belt can affect line spacing. If there is too little clearance between the tractor flap and the tractor body, the forms may tear as they pass through the tractor. If the flap clearance is too great or tractor body alignment is incorrect, the forms will have a tendency to jump off the tractor drive pins.

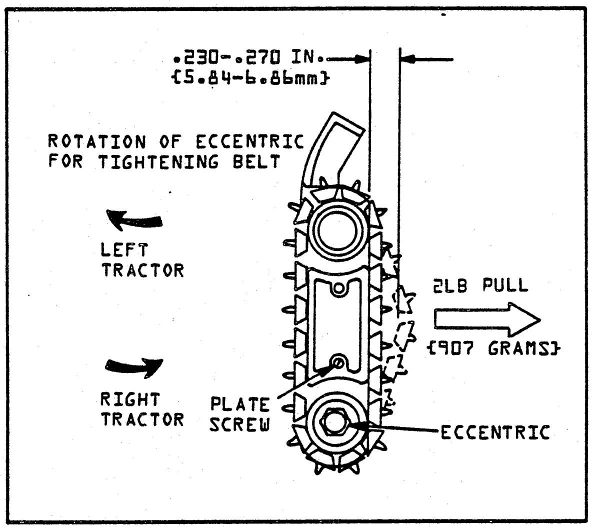


FIGURE 2-32. TRACTOR BELT TENSION

Tools Required

Spring Scale
Ruler
Feeler Gauges (.020" & .030")(.5, .8mm)
Allen Set
Phillips Screwdriver
Square (Right Angle-90°).

Tractor Belt Procedure

1. Power the printer off.
2. Open the print gate and remove the forms.
3. Remove the paper bail (paper exit ramp). Also remove the plastic (chad remover) strip over the belt teeth (cogs) by pulling it apart at it's junction. On PB 900 printers remove the paper exit roller assembly by sliding the assembly forward and out of it's mounting clips.

4. From the rear of the tractor hook the spring scale under the belt between the teeth, as close to the center of the tractor body as possible.

5. Exert a force of 2.0 pounds (908 grams) on the belt towards the rear of the printer.

6. Using the scale measure the gap between the tractor guide surface and the belt (between the links).

7. If the gap is not between .230 to .270 inch (5.84 to 6.86mm), loosen the screw above the eccentric that holds the metal plate to the tractor housing.

8. To tighten the belt, the left tractor eccentric should be rotated clockwise and the right tractor eccentric should be rotated counter-clockwise.

CAUTION

DO NOT TURN THE ECCENTRICS IN THE WRONG DIRECTION.

9. Recheck the gap before tightening the metal plate mounting screw.

10. When the tension is correct, tighten the metal plate mounting screw.

Tractor Flap Clearance Procedure

1. Power the printer off.
2. Open the print gate and remove the forms.
3. Insert a .020 inch (0.5mm) feeler gauge between the tractor flap and the tractor body. Pass the gauge through Zone A of the tractor flap. (See Figure 2-33).
4. If the feeler gauge does not fit easily in the gap throughout Zone A, turn the adjusting set-screw clockwise until it does.
5. Insert a .030 inch (0.8 mm) feeler gauge between the tractor flap and the tractor body. Pass the gauge through Zone A of the tractor flap.
6. The feeler gauge must make contact in at least one point of Zone A. If it does not, turn the adjusting set-screw counter-clockwise until the gauge makes contact.
7. Recheck steps 3 and 4.

Tractor Body Alignment (See Figure 2-33)

1. Check both tractor body assemblies for a perpendicular alignment with the upper tractor drive shaft using a square (right angle).
2. If a tractor is not within 0.010" (.254mm) of being perpendicular to the drive shaft, loosen the two screws on the support and adjust to within tolerance.

NOTE: IF THE SUPPORT IS GLUED TO THE TRACTOR BODY THE DRIVE PERPENDICULAR ALIGNMENT ADJUSTMENT CANNOT BE PERFORMED IN THE FIELD. THESE UNITS ARE FACTORY ADJUSTED. IF THESE UNITS EXCEED THE TOLERANCE THE TRACTOR MUST BE REPLACED.

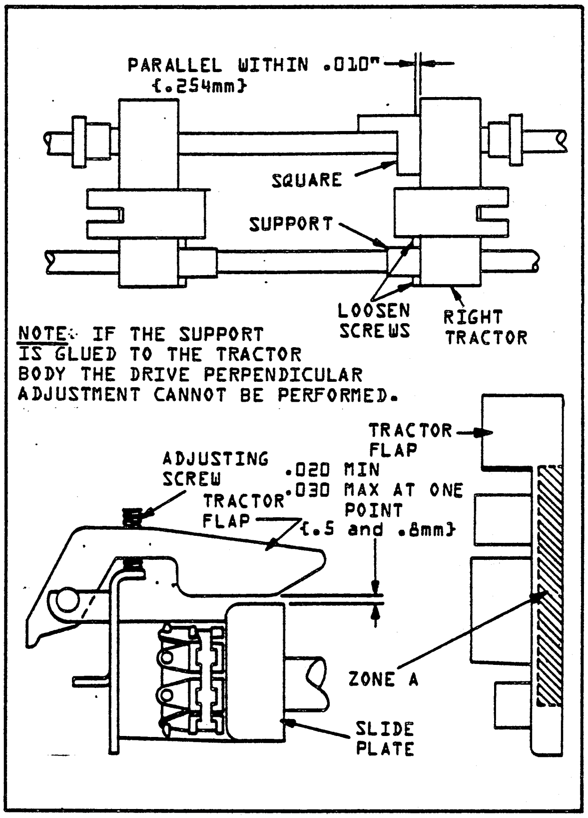


FIGURE 2-33. TRACTOR FLAP ADJUSTMENT

RIBBON TRACKING ADJUSTMENTS

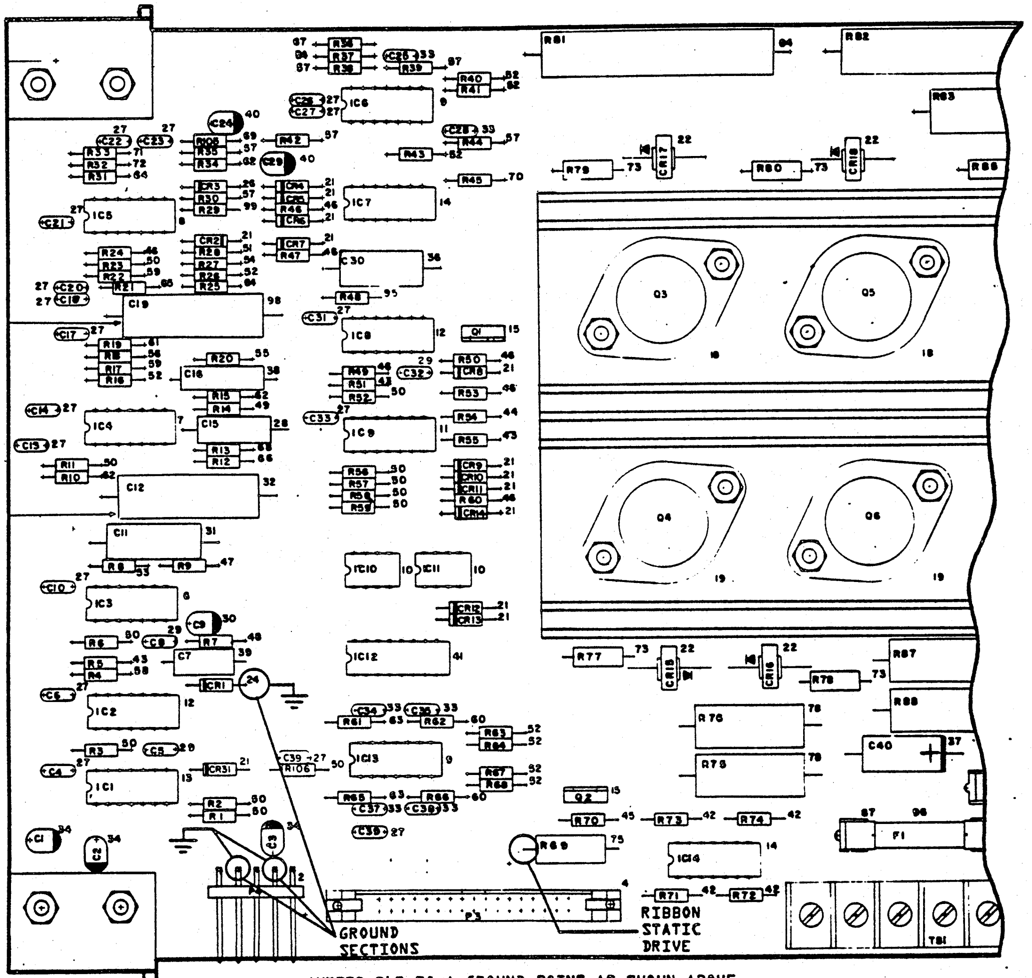
This procedure should be performed anytime one of the ribbon system components is replaced or if the ribbons are continually mistracking before their specified end of life. Two different methods of ribbon tracking have been developed. The latest design uses a guide roller which pivots within the ribbon spool flanges and requires the ribbon flanges to be made of plastic. This improved system is being incorporated by FCO PH15274. In the following text a procedure is provided for the latest system.

Procedures on the early system without guide rollers is available by writing the following address;

Computer Peripherals Inc.
Publications Department
1480 Norht Rochester Rd.
Rochester, Michigah 48063

Tools Required

Ruler
Straight Edge
Flat Blade Screwdriver
Allen Wrench Set
Open End Wrench
Feeler gauges .0020.020 inch (.050.6mm)
Empty Plastic Ribbon Spool



JUMPER R69 TO A GROUND POINT AS SHOWN ABOVE

FIGURE 2-34. STATIC RIBBON OPERATION

Static Ribbon Operation

For testing purposes and ribbon tracking observation it may be necessary to operate the ribbon system without printing and with the gate open. The following procedure provides a testing method required with the latest printer boards. Early testing methods were easier using test points, however, the latest design changes to prevent ribbon smearing on the forms now prevent the use of earlier methods. All tracking adjustments must be performed on one side (left or right) at a time with that motor taking on ribbon. During static testing the printer should not be left unattended by Customer Engineering. Final static testing should be performed with ribbon and forms installed and the gate closed.

1. **Power the printer off, raise the bonnet and disconnect its ground strap. Carefully raise and remove the bonnet.**
2. **Remove the plastic cover over the power supply and servo amplifier boards (2PC1 and 2PC2). Pivot the retaining clips at the top of the servo amplifier board (2PC2) and swing the board open from the top.**
3. Connect a jumper from the side of R69 (2.7k, 1w) which goes to QN1-07, and the other end to ground (P4-2 or CR-1 anode). Refer to Figure 2-34.
4. A ribbon with a plastic spool must be installed if the ribbon system incorporates the pivoting guide rollers at the ribbon spools.
5. **With the ribbon installed, power on the printer. Ribbon motion will start as the +36 volts comes up to potential.**

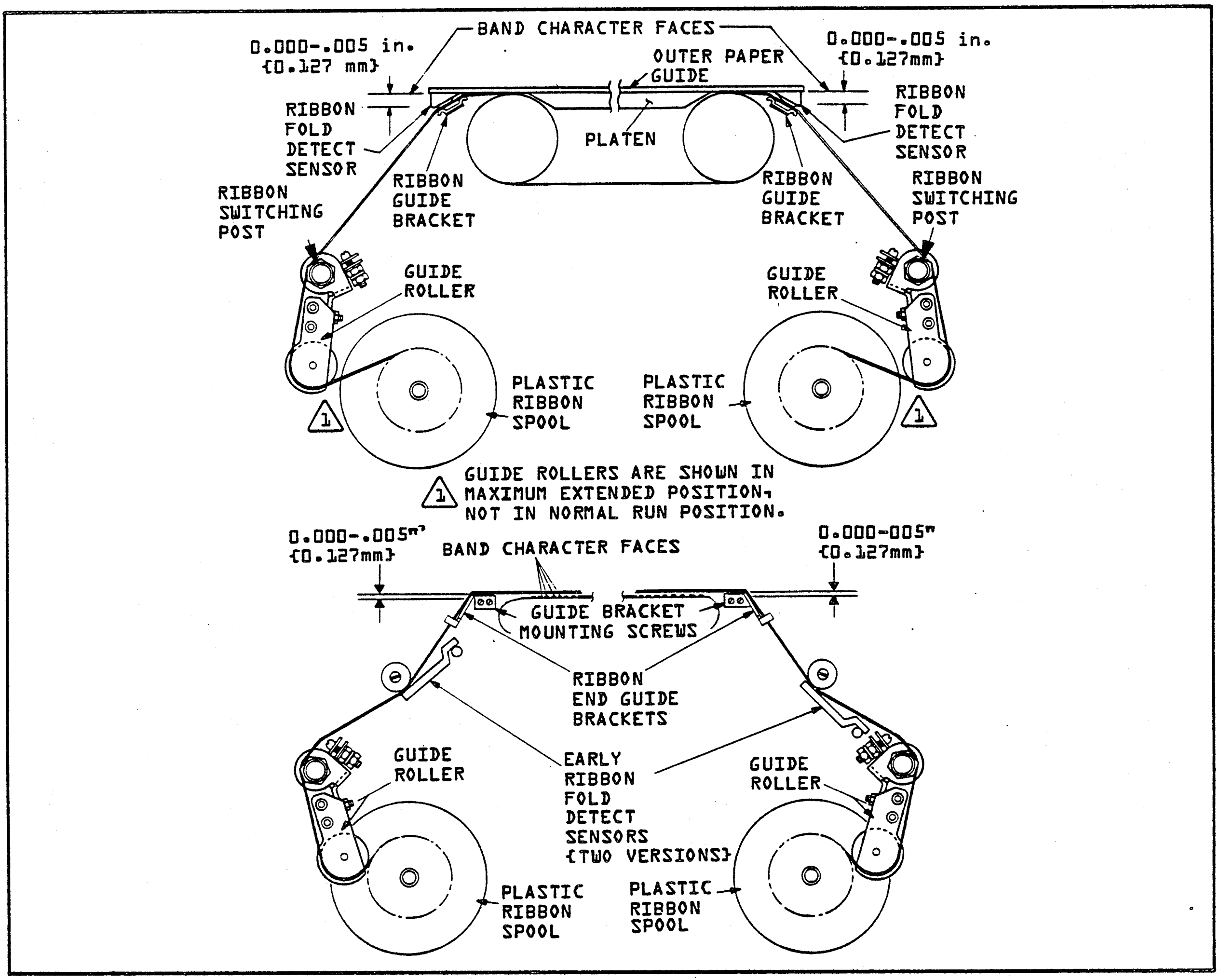


FIGURE 2-35. RIBBON SYSTEM WITH GUIDE ROLLERS

Ribbon System with Guide Rollers (Figure 2-35)

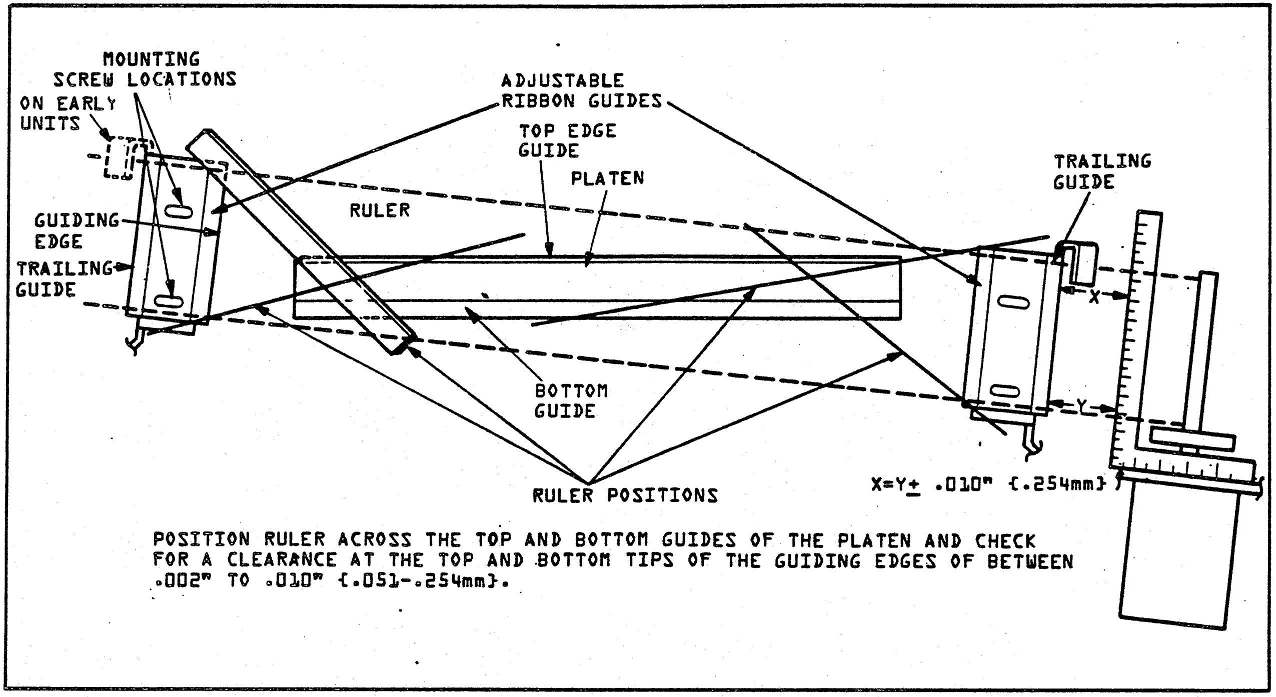
Ribbon tracking is adjusted one side at a time (left or right) with single part paper installed and a new ribbon installed. Adjustment may be performed while printing, or with just the ribbon in motion with the gate closed. This system requires flexible ribbon spool flanges which makes the use of plastic ribbon spools a must condition. Tracking adjustments should only be made on the motor side that is taking on ribbon.

The ribbon is adjusted to just barely ride against the top surface of the lower ribbon guide on the switching posts (see Figure 2-38). The guide roller must move freely between the ribbon spool flanges with only light contact. The ribbon spool may raise slightly off the drive sprocket. The ribbon when lightly contacting the lower ribbon guide on the switching post, may also contact the bottom roller ribbon guide (thin plate holding the roller). See Figure 2-38. Correct tracking against the guides occurs when light contact by the ribbon occurs without folding or buckling of the ribbon fabric.

Major Checks and Adjustments

Perform the following major checks for problems of short ribbon life, or folding ribbons. Proceed to Roller Tracking Adjustments for minor tracking adjustments.

1. Power the printer off and raise the printer bonnet.
2. Remove the print band plastic cover, and then remove the ribbon. Open the printer gate as required.
3. Refer to the preceding Static Ribbon Operation and operate the printer or ribbon spool post and observe for wobble. Stop the printer or disconnect the test jumper to stop the post at a point of center vertical alignment with minimum offset caused by wobble. (See Figure 2-37). Apply a slight pressure back and forth at the top of the ribbon spool post to identify any mechanical play which would require center positioning. Repeat the test as required until the post appears vertical without wobble.
4. Install a empty plastic ribbon spool on the left or right ribbon drive assembly being checked or adjusted.



POSITION RULER ACROSS THE TOP AND BOTTOM GUIDES OF THE PLATEN AND CHECK FOR A CLEARANCE AT THE TOP AND BOTTOM TIPS OF THE GUIDING EDGES OF BETWEEN .002" TO .010" {.051-.254mm}.

FIGURE 2-36. ADJUSTABLE RIBBON GUIDES

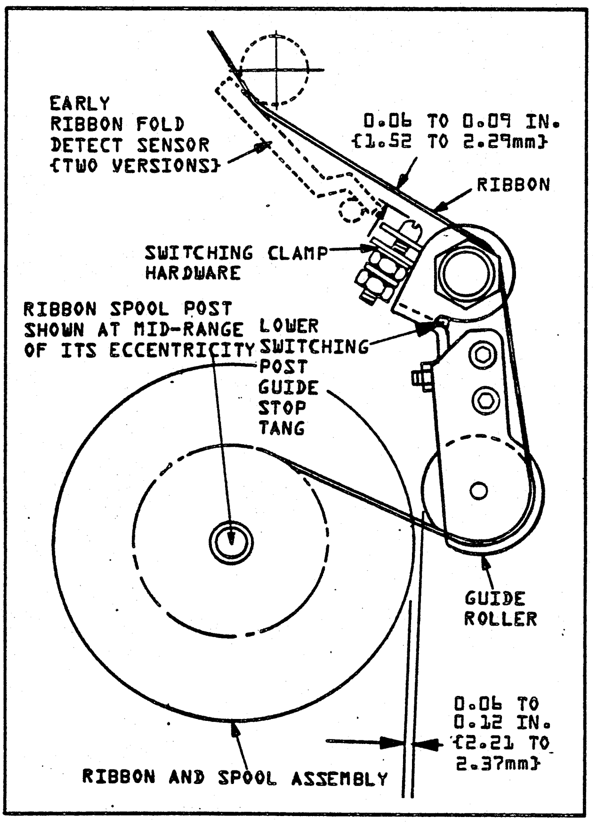


FIGURE 2-37. GUIDE ROLLER POSITIONING

5. Slightly loosen the nuts on both eccentric shoulder screws and the wiper screw located between the roller's top and bottom guides (see Figure 2-38). Adjust the top and bottom eccentric shoulder screws so the flats cut on the side of the bolts are located at the top. Snug down the three nuts.

6. Swing the guide roller into the spool flanges. If the guide roller fails to enter the spool flanges with only minimal light contact, then the spool drive sprocket must be adjusted to allow easy roller entrance. Check to see the top surface of the lower ribbon guide on the switching post is in line (flush) with or up to 0.005 inch (.127mm) above the top surface of the bottom roller guide. If the drive sprocket is just a little out of spec then go on, this check will be repeated later.

7. Swing the guide roller in against the center of the empty ribbon spool. Check to see the roller touches vertically against the center of the ribbon spool (see Figure 2-38). If either top or bottom fails to touch the spool, then barely loosen the four small allen head screws (loosen locknuts first) holding the roller guides. Gently move the roller against the ribbon spool and tighten the four screws and then lock nuts.

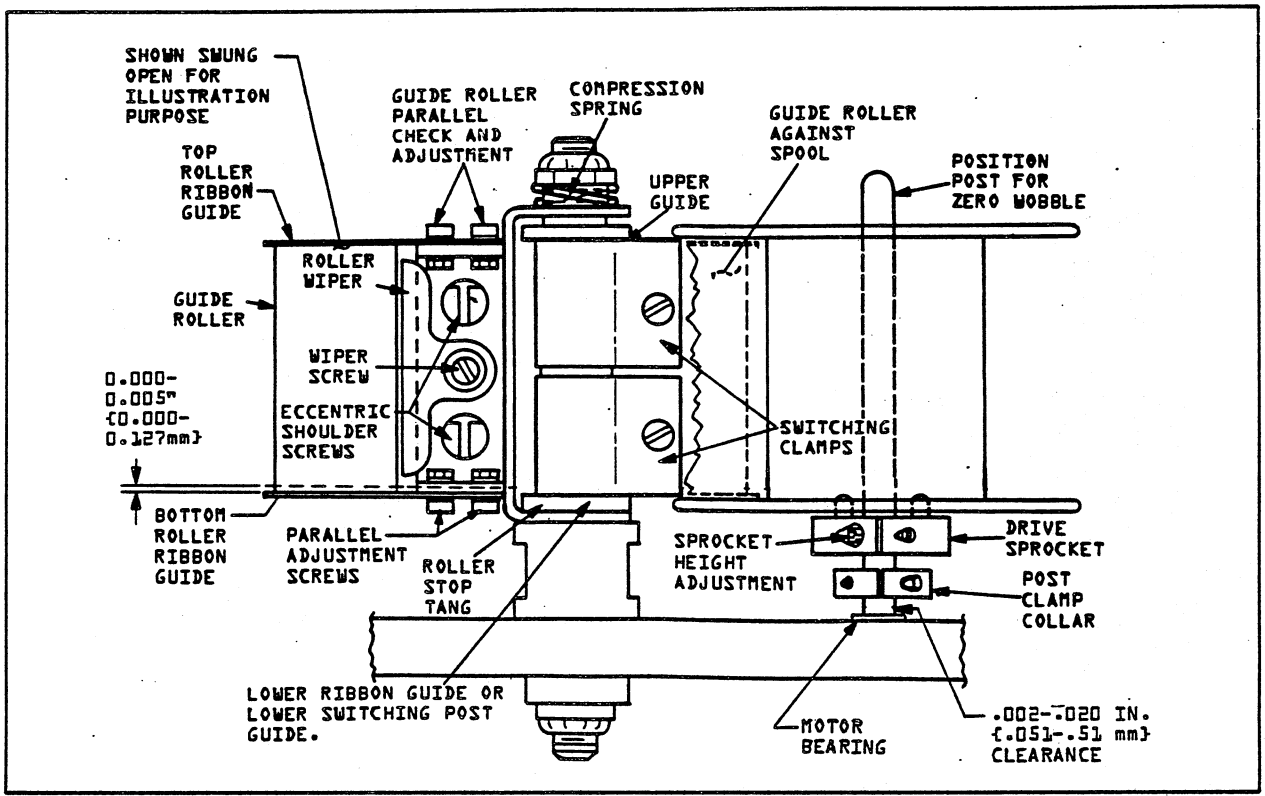


FIGURE 2-38. ROLLER SWITCHING POST ASSEMBLY

8. Place a straight edge horizontally across the band character surface and check that the center of both ribbon guides are from .000 to .005 inch (.000 to .127mm) behind the character surface (see Figure 2-35). The guiding edges (see Figure 2-36) of the ribbon guides must be perpendicular (± .010" or ± .254mm top to bottom) to the ribbon mounting plate surface below the ribbon spool. Also, position a ruler across the top and bottom guides of the platen and check for a clearance at the top and bottom tips of the guiding edges of between .002 to .010 (.051 -.254mm). The bracket type end guides can be adjusted by loosening the two mounting scres (see Figure 2-35). The latest end guides are adjustable both in, out and slant angle (see Figure 2-36). To adjust, stop the ribbon, pull the ribbon down which exposes two enlongated slots with screws. Slightly loosen the screws to reposition. Be sure to tighten the screws before going to the next step. In summary:

   1st Center of guides must be 0.000 to 0.005 inch (0.00 to 0.127mm) back from the band character faces.
   2nd Ribbon contact surfaces of the guide must be perpendicular to the mounting surface of the ribbon motor assembly within ± 0.010 inch or ± 0.254mm top to bottom.
   3rd The top and bottom edges of the guides must be 0.002 to 0.010 inch (0.051 to 0.254mm) back from the surfaces of the platen top and bottom guides.

9. Proceed to the following Ribbon Fold Detect Sensor Adjustments.

Ribbon Fold Detect Sensor Adjustments (Figure 2-39)

The ribbon fold detect sensors should always be checked and adjusted as necessary after making any ribbon tracking adjustments. The right sensor can only be adjusted horizontally. The left sensor can be adjusted horizontally and vertically. The final adjustment of the sensors should be made with a new ribbon installed, and only after is has been determined, that while printing the ribbon is tracking properly in both directions.

1. Power the printer OFF. Open the print gate all the way until it hits the gate stop.

2. Loosen the two screws that mount the right ribbon fold sensor (gate hinge side) to the outer paper guide. Move the sensor horizontally until the sensor contacts are depressed by the ribbon guide bracket. The sensor contacts should be depressed to a point where they are parallel to the front surface of the sensor (Figure 2-39). Tighten the sensor mounting screws.

3. Loosen the two nuts that mount the left ribbon fold sensor (gate latch side). Move the sensor vertically, so that the bottom of the upper sensor contact is 1.72 to 1.74 inches (43.76 to 44.27 mm) from the bottom edge of the ribbon (Figure 2-39). The ribbon must be guided by the lower guide surface on the switching post when this measurement is made. Move the sensor horizontally until the sensor contacts are depressed by the ribbon guide bracket. The sensor contacts should be depressed to a point where they are parallel to the front surface of the sensor (Figure 2-39). Tighten the sensor mounting hardware. Check vertical adjustment to bottom of ribbon and readjust if necessary.

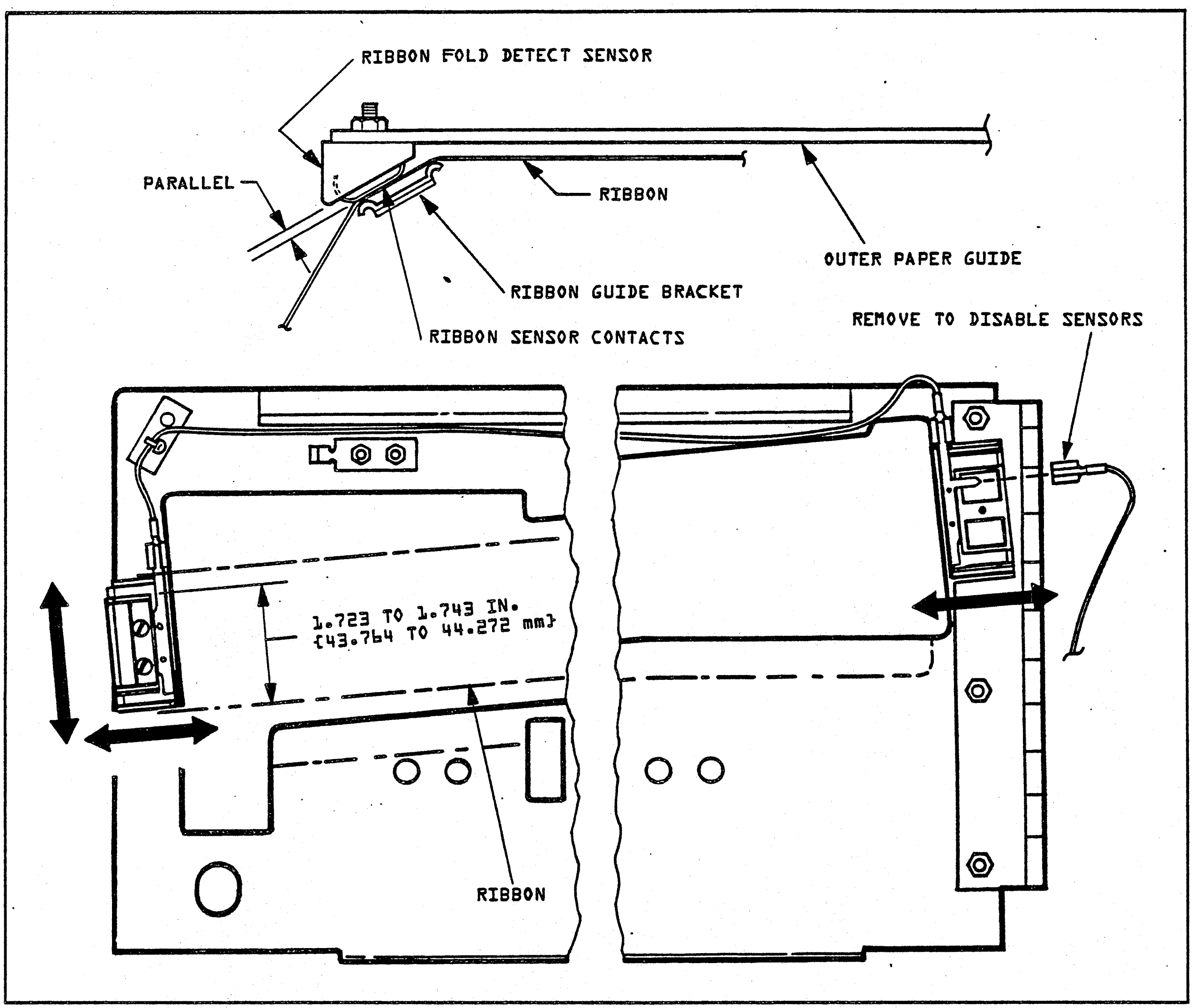


FIGURE 2-39. RIBBON FOLD DETECT SENSOR ADJUSTMENT

4. For early ribbon fold detect sensors proceed to step 5.

5. Using a ruler check that the bottom of the ribbon fold detect assembly flap is 1.28 to 1.30 in. (32.5 to 33.0 mm) above the top of the ribbon motor mounting plate. To adjust loosen the two mounting screws on the flap and move the flap up or down as required. See Figure 2-40.

6. Detetmine which ribbon rold detect flap is installed on the printer. The single contact narrow and wide flap (See Figure 2-40) is the early versions, proceed to step 7. The double contact version is also of the wide type (see Figure 2-42 Top View) and has a sticker on the top. The printer will not operate with this double contact flap open. To check or adjust the double contact flap, ship to step 9.

7. Early Flap Closure Adjustment. With the flap closed, use feeler gauges to check the gap between the ribbon detect assembly flap and the ribbon fold detect post is .050 to .070 in. (1.3 mm to 1.8 mm). To adjust, remove the assembly from the printer. Remove th moulded body from the mounting plate. Loosed ntte screw at the bottom of the knurled post. Insert .060 in. (1.52 mm) feeler gauge in between the plastic flap and the ribbon fold detect post, then tighten the screw at the bottom of the knurled post. Recheck and reassemble and mount on the printer (see Figure 2-40).

8. Revised Wide Flap Closure Adjustment. Refer to Figure 2-40. With the flap closed, use feeler gauges to check the gap between the ribbon detect assembly flap and the ribbon fold detect post is 0.050 to 0.070 inches (1.3 - 1.8mm). When the ribbon flap is opened both internal switch contacts must close. The proper clearances on the internal contacts may be adjusted by adding or subtracting small washers or shims between the flap and the knurled post to which the flap is mounted. Refer to Figure 2-42. If the flap external switch contacts touch the ribbon fold detect post unevenly, then a shim between the flap and post at the top or bottom may be used to correct the misalignment.

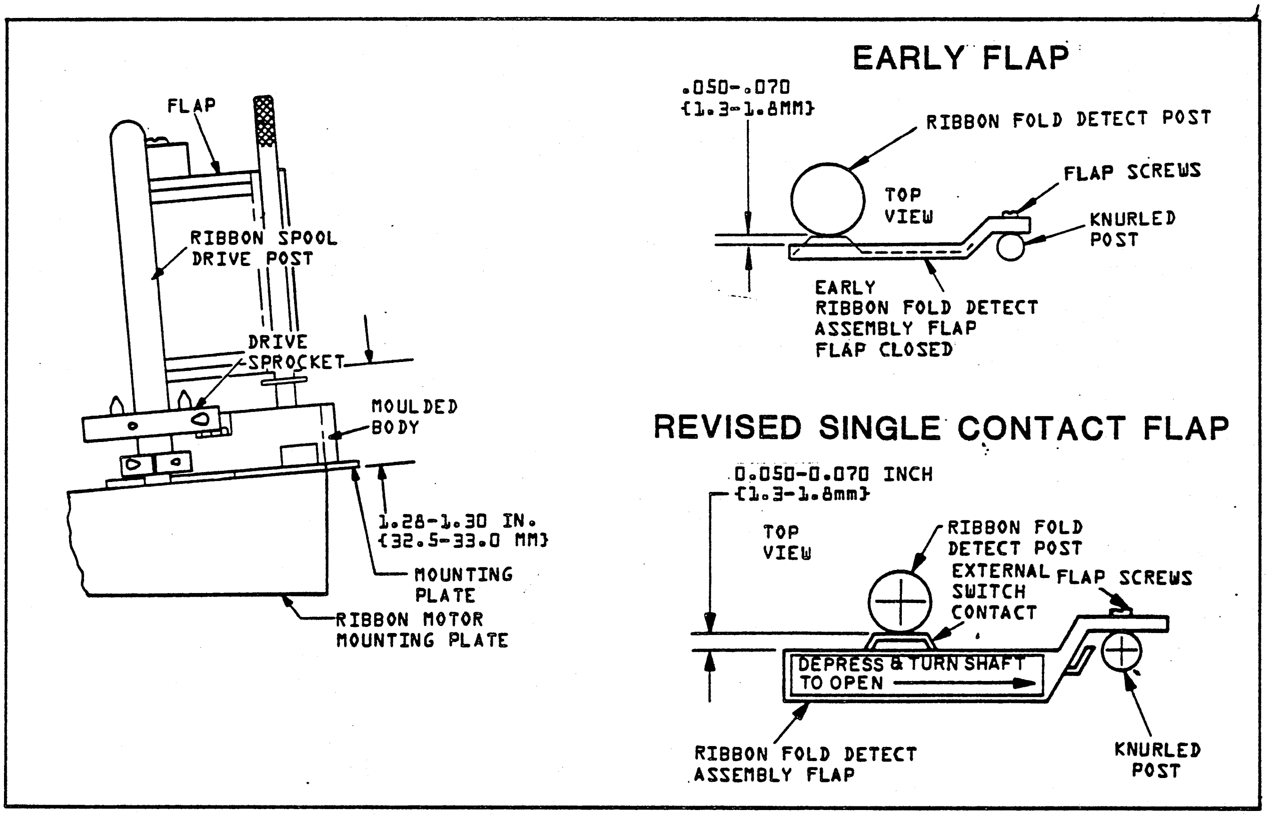


FIGURE 2-40. FLAP HEIGHT ADJUSTMENT

9. Double Contact Wide Flap Closure Adjustment. With the flap closed, use feeler gauges to check the gap between the ribbon detect assembly flap and the ribbon fold detect post is 0.020 inches (0.51 mm) minimum. Both upper and lower external switch contacts must be making contact with the ribbon fold detect post. This should open the internal upper and lower switch contacts a minimum of 0.020 inches (0.51 mm). (See Figure 2-41).

10. Perform the Outer Paper Guide adjustment procedure. Check for conditions which are pinching the ribbon.

11. Check for an remove any sharp edges on the ribbon fold detect assembly flaps at ribbon contact points. The fold detect assemblies should be positioned as far back towards the rear of the printer as possible to reduce ribbon bend at the ribbon guides.

12. Install a new ribbon on the drive spools. Ensure that the entire ribbon except for the start wrap is wound on to one spool with the foil between the spool and the switching post.

13. Followl the ribbon installation procedure for the guide roller system and install a new ribbon. Refer to the Operation section of the manual.

14. Pivot the roller away from the ribbon spool and check for a gap of 0.090 + .030 inch (2.29 + .076 mm) between roller and the spool flange (see Figure 2-37). Check for a clearance of 0.060 to 0.090 inch (1.52 - 2.29 mm) between the ribbon and the hardware holding the switching clamps.

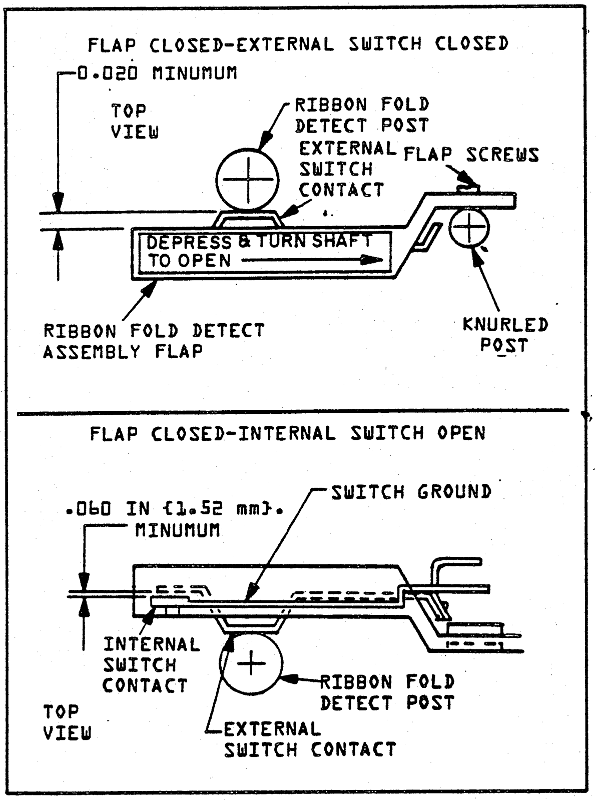


FIGURE 2-41. REVISED FOLD DETECT FLAP

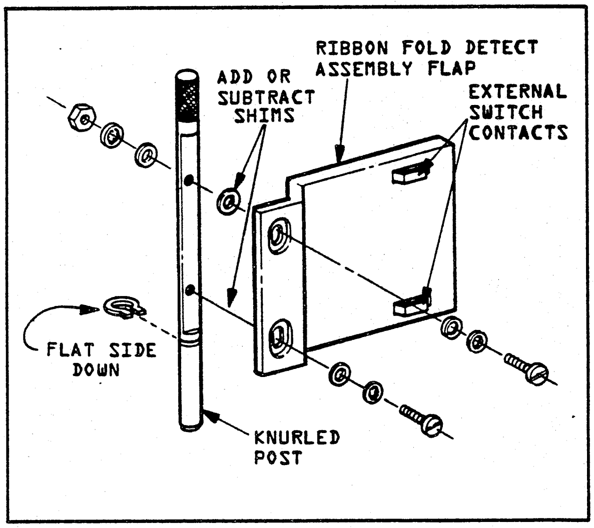


FIGURE 2-42. REVISED FLAP SHIMS

Adjustment of the guide roller to spool clearance is determined by a small tang on the lower switching post guide (see Figure 2-37/38). The clearance of the switching clamp hardware is adjusted by rotating the switching clamps (see Figure 2-37/38). Slightly loosen the hardware holding the switching clamps. Adjust the tang on the lower ribbon guide by rotating the guide to obtain the guide roller to spool flange clearance. Holding the lower ribbon guide in position, adjust the lower switching clamp to obtain hardware clearance with the ribbon, then press the switching clamp down on the lower ribbon guide and snug down the switching clamp hardware. Align the upper switching clamp with the lower switch clamp. The guide roller must swing easily. Tighten the hardware on the switching clamps.

14. Proceed to the following Roller Tracking Adjustments.

Roller Tracking Adjustments

Always check to see the guide rollers pivot freely and the roller rotates easily. If the wiper is hitting the roller, loosen the nut securing the wiper screw and move the wiper back a little for the present. A very good or new ribbon with plastic spools must be installed. The guide rollers must enter the ribbon spool flanges easily, although this may bind the ribbon spool slightly as the ribbon tracking is adjusted. Binding of the guide roller on the ribbon spool requires the drive sprocket below the ribbon spool be raised or lowered. The top surface of the lower ribbon guide on the switching post must be line (flush) with or up to 0. 005 inch (0. 127mm) above the top surface of the bottom roller ribbon guide. The ribbon spool is allowed to ride up off its drive sprocket by 0. 020 inch (. 5-8mm) as long as the rollers do not bind or hang up entering the ribbon spool during ribbon operation (see Figure 2-43).

1. During testing the band cover must be removed. Printers equipped with a band cover interlock must have the interlock engaged by placing an object in the cover latch to activate the switch. A special tool (part number 44672885) is available for this purpose, if required.

2. Operate the ribbon system while observing the position of the ribbon rounding the switching post on the side winding ribbon on the spool. Correct tracking occurs if the ribbon tracks downward just slightly touching the lower switching post guide. Reverse the ribbon direction by short circuiting the switching clamps momentarily. Observe tracking on the other side of the ribbon system.

3. Adjustment of ribbon tracking is performed by slightly loosening the nuts of the wiper for the guide roller and the eccentric shoulder screws above and below the wiper's screw (see Figure 2-38). The nuts should be snug enough to maintain the roller position with the ribbon pressure.

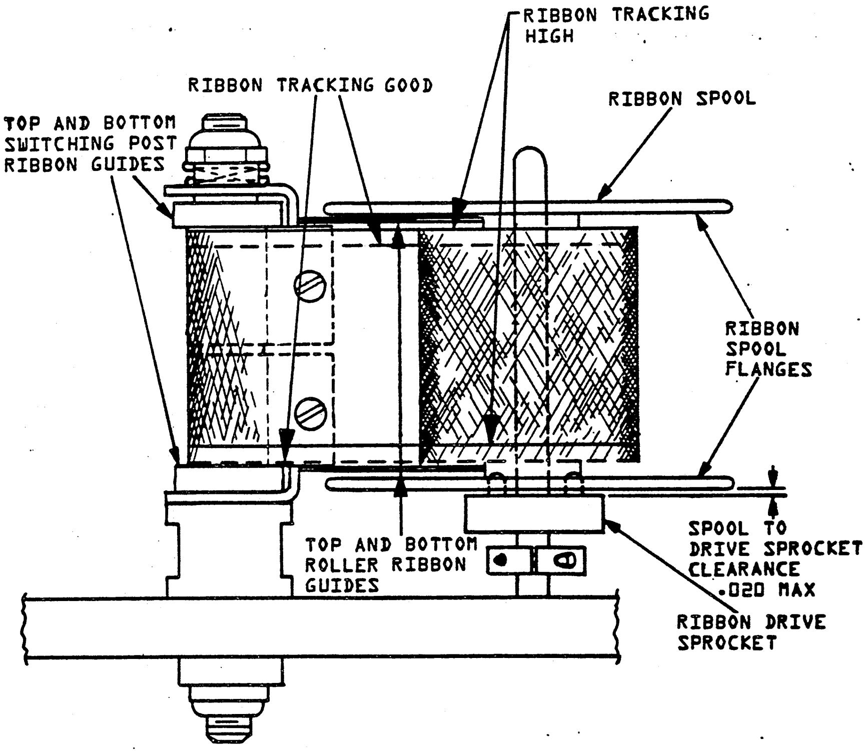


FIGURE 2-43. TRACKING ADJUSTMENT

4. Stop the ribbon system to make slight tracking adjustments and check to see the eccentric shoulder screw nuts are still snug before restarting the ribbon. Adjust either the upper or lower eccentric screw to vary ribbon tracking. Adjust the upper eccentric counter clockwise or the lower eccentric clockwise to track ribbon downward. Tighten the upper and lower eccentric shoulder screw nuts without moving the screws (see Figure 2-38).

5. Raise the ribbon spool and ribbon away from the guide roller. Use a feeler gauge and position the roller wiper between 0.000 and 0.005 inch (.000-.127 mm) from the roller and tighten the screw and nut holding the wiper (see Figure 2-38).

6. Install the spool and position the ribbon back in place. Operate the ribbon system and recheck tracking, roller access into the spool flanges, and ribbon spool height above drive sprocket if visible. The ribbon spool should not be raised more than 0.020 inch (.51 mm) above the drive sprocket (see Figure 2-43).

7. Repeat the tracking adjustment for the other side if required. Always complete a ribbon tracking check while printing and check tracking in both directions. When the ribbon is tracking against the switching post guide, it must touch the switching post guide first or simultaneously with any contact with the guides holding the roller.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 PHE BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER PHE BOARDS, USE THE PROCEDURES BELOW.

BAND PICKUPS-POSITION AND ADJUSTMENT (7 and 11 pot 7PC3 Boards)

This procedure can be used to position or adjust either or both band (character, or home) pickups. A pickup replacement procedure is not provided due to the ease of pickup replacement. The mounting bracket can be adjusted horizontally by loosening its two mounting screws. The mounting bracket slides horizontally on two guide pins, but tolerances are such that during horizontal adjustment the pickup can come into contact with the band characters. Always stop the band and check pickup clearance before restarting the band during pickup adjustment. The pickup to band clearance is adjusted by loosening the mounting bracket clamp and sliding the pickup in or out of the mounting bracket. The pickup itself can be replaced by loosening the clamp and unplugging its two wires. Horizontally adjusting the character pickup (lower pickup on the left) will affect character phasing (left or right character clipping during printing). Adjustment horizontally of the home pickup will advance printing to the next character on the band at some point during adjustment, normally the character printed is obtained by the adjustment of P1 on the 7PC3 board.

1. Set the Phasing Control on the control panel to its midrange position.

2. If the character pickup (lower pickup on the left) mounting bracket has been moved or replaced, a general starting position for adjustment is horizontally midrange. Any shims under the mounting bracket should remain until the pickup height is checked. Refer to Figures 2-46 and 2-47.

3. Pickup to band clearance is adjusted with the band installed and the high point of the pulley adjacent to the pickup. The pulley high point is usually marked by a blue mark which is the closest point on the pulley circumference to the pickup. Set the pickup clearance by loosening the single screw at the top of the mounting bracket which clamps the pickup in place. Position the pickup 0.005 inch (0.127 mm) minimum from the band timing mark.

4. If the home character pickup (upper pickup on the right) mounting bracket has been moved or replaced a general starting position for adjustment is all the way horizontally to the right. Any shims should remain in place and the pickup clearance should be set as the previous step instructs.

5. The pickup vertical height is aligned with shims under the pickup mounting bracket. A flashlight will make this check easier. The band must be properly seated and against the platen top edge guide. If shims are required refer to the Parts Identification manual. Align the pickup vertically using shims until it is vertically centered to the adjacent band timing mark (character or home). Recheck the pickup to band clearance.

6. Install multiple part forms in the printer to prevent damage to the band while adjusting the pickups. Six part forms are recommended but if not available then other multiple part or very heavy (even card stock) forms can be used.

7. Turn the printer's power on and select an all one character printout in all columns. The character "M" is generally used, however, any wide character like "H" or "W" can be used to check for side clipping called phasing. If the one character pattern is sent from a processor system and the interface codes are not ASCII, then translators are used to convert the codes to ASCII. This is not a problem unless the printer's Test Print is used and the interface code is used to select the print character. Test Print functions in the ASCII code sequence and a wrong character will probably occur. Refer to the Controller Hardware Reference/Maintenance Manual, Principles of Operation, Interface Electronics, Test Print Feature for the operation of Test Print.

8. Start printing momentarily and check the printout. The character "M" (or selected character) may be printing with either the left or right side missing or clipped. The wrong character to the left or right of the character "M" (or selected character) may be printed. Or a random pattern of one or the other of two characters may be printed. However, it is possible to be more than one character off from the selected character.

   If you're printing more than on character off, the pot 1 on board 7PC3 can be adjusted for "M" (or selected character) for pickup adjustment following. If the character sequence on the band is right to left, O first, the N, M, L, K, and the printout is "O" or "N", adjust P1 CCW for "M". If "K" or "L" is printing adjust P1 CW for "M".

   If the left side of the character "M" is being clipped, the character "L" (preceding character) is being printed, or an "L" "M" pattern is being printed, then move the pickups closer together by horizontally moving the character pickup to the right while the band is stopped.

   If the right side of the character "M" is being clipped, the character "N" (following character) is being printed, or an "M" "N" pattern is being printed, then move the pickups farther apart by horizontally moving the character pickup to the left while the band is stopped.

   CAUTION

   ALWAYS CHECK THE PICKUP TO BAND CLEARANCE BEFORE RESTARTING THE BAND.

9. The character pickup is properly adjusted when the character "M" is printed across the page without any clipping of the sides of the characters. However, individual hammers may have incorrect flight time which will appear as clipping on those columns printed by that hammer. Refer the flight time adjustments. Remember on PB 300 models hammers print four columns, PBS 600 model hammers print two columns. On PB 900 models each hammer prints one column.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 PHE BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER PHE BOARDS, USE THE PROCEDURES BELOW.

10. Check the polarity of the pickup wires and the pickup output amplitude by observing the waveform on a scope. Start the band running and connect the scope first to the character pickup and then the home pickup, reference 7PC3-TP30 ground. Character pickup is 7PC3-P3-23, home pickup is 7PC3-P3-22. The null or dwell crossing zero volts must be on the negative slope which means the lead polarity is correct. The negative excursion peak voltage must be as shown in Figure 2-47. If the waveform appears with rounder peaks check the vertical alignment of the tip of the pickup.
Alternate test points for making this polarity check are R5 (character) and R6 (Home) on 7PC3 (Printhead Electronics Board). Refer to the Parts Identification Manual assembly drawing for component location.

NOTE

WITH PICKUPS SET AT 0.005 INCH ALWAYS CHECK THE OUTPUT VOLTAGE. SOME PRINTERS MAY BECOME NOISE SENSITIVE AND PRINT ERRONEOUS DATA IF SIGNAL VOLTAGES OVERDRIVE THE AMPLIFIERS. MOVE THE PICKUPS AWAY FROM THE BAND UNTIL THE PICKUP SIGNALS ARE APPROXIMATELY -1.5 VOLTS.

11. **Proceed to the Printhead Electronics Board (7PC3) Set-Up procedure, Character and Home Pulse Set-Up for the fine adjustment of the Pot P1 on the 7PC3 board.**

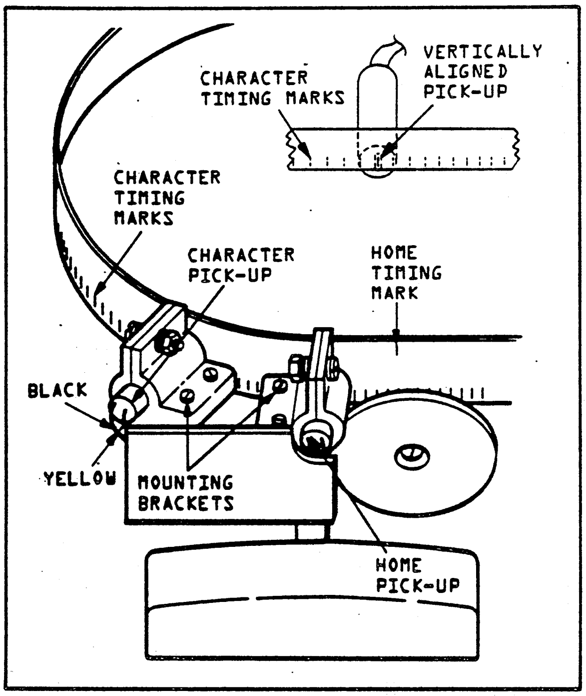


FIGURE 2-46. CHARACTER AND HOME PULSE ADJUSTMENTS

PRINT HEAD ELECTRONICS BOARD (7PC3) SET-UP AND ADJUSTMENTS FOR 7 AND 11 POT BOARDS.

+5V POWER SUPPLY ADJUSTMENT

1. Printer powered on half an hour minimum.
2. Connect a DVM to the Printhead Electronics Board (7PC3) at the +5V side of R162 and 5TB4 (ground). See Figure 2-49.
3. **Adjust pot R2 on Power Supply Board (2PC1) to obtain a voltage of 4.95 to 5.05 volts. See Figure 2-49.**

+30V VOLTAGE COMPENSATION ADJUSTMENT
(Early 7PC3 Boards Only, See Table 2-4.)

1. **Printer powered on, half an hour minimum.**
2. Connect a DVM to Ref. K, Table 2-4, on 7PC3 and reference TP30 (gnd).
3. Adjust pot P2 on 7PC3 to obtain a voltage of +29.9 to 30.1 volts. (Skip this step for 7 pot boards.)

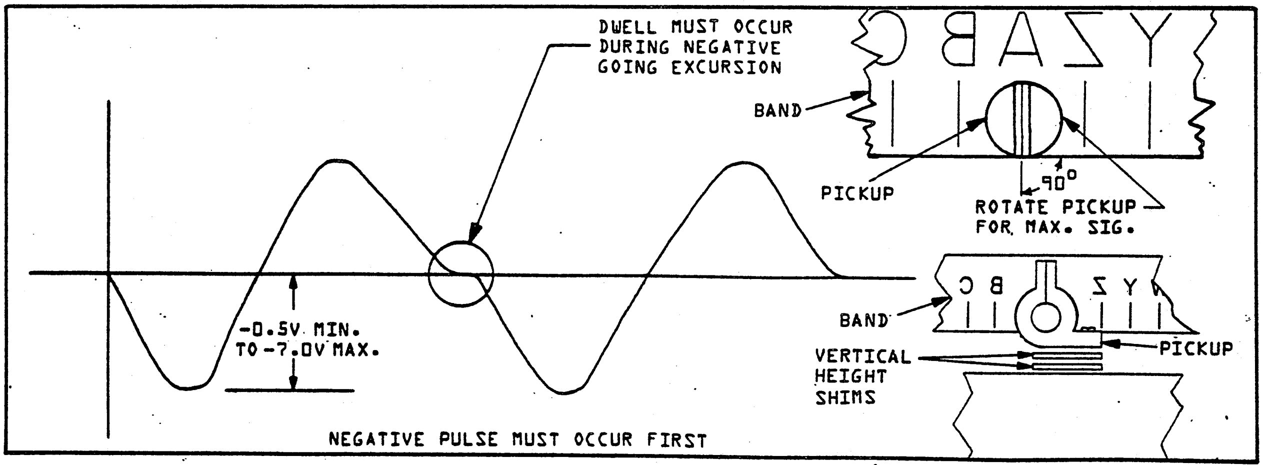


FIGURE 2-47. CHARACTER AND HOME PULSE WAVESHAPES

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 PHE BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER PHE BOARDS, USE THE PROCEDURES BELOW.

CHARACTER AND HOME PULSE SET-UP

1. Install multi-part forms in the printer.

CAUTION

DO NOT USE SINGLE PART FORMS. DAMAGE MAY OCCUR TO THE BAND WHILE THE PICKUPS ARE BEING ADJUSTED.

2. Initiate a print operation of all one character.
3. If either of the sides of the character are being clipped, the character pickup must be moved laterally. If clipping on the left, move the pickup to the left. If clipping to the right, move the pickup to the right. Always stop the band when making adjustments and rotate band manually to check band to pickup clearance.
4. Initiate a print operation of all "M"s.
5. If the character "M" is not printed, adjust pot P1 on 7PC3 until the "M" character appears. Adjustment of P1 shifts the printout by character.
6. Sync (-) and monitor chip B6 pin 12 (TP1) on 7PC3.
7. Refer to Table 2-4 and monitor Ref. B on 7PC3 and adjust P1 so that Ref. B goes negative 220 to 320 usec after B6-12 (TP1) trailing edge switches on PBS printers. Adjust PB printers between 290 and 490 usec. See Figure 2-48.
8. Ensure that all "M"s are still being printed. If they are not, readjust P1 until all "M"s are printed, then set step 7 timing again.
9. Check that the negative going pulse on B6-12 (TP1) is greater than 1.3 msec. If it is not, loosen the mounting brackets and move the pickups closer together and repeat steps 3 through 9.

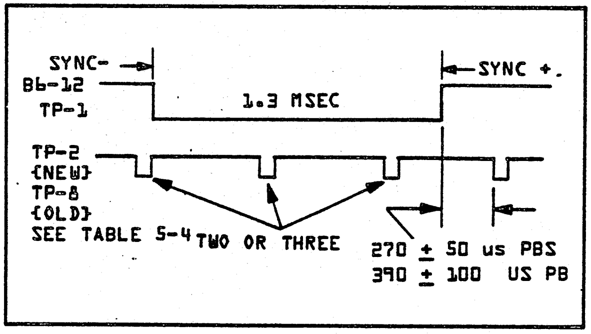


FIGURE 2-48. CHARACTER ADJUSTMENT

HORIZONTAL SERVO SYSTEM SET-UP (PBS PRINTER)

The Horizontal Set-Up procedure following, sets up the reference voltage (P5), and the horizontal and vertical reader offset voltage (P8) that is also used in the vertical servo set-up. Due to these common adjustments the vertical system may be effected. Table 2-4 will provide Test Points for different 7PC3 boards.

Following this procedure both horizontal and vertical servo systems can be adjusted.

1. Power the printer down and remove the 15 amp 'H' Switch fuse F1 on 2PC2 (36 volts). See Figure 2-49.
2. Power the printer on. Stop lamp will flash.
3. After a five minute warmup check power supply's +5 volts (5.0 ± 0.05 volts). See Figure 2-49.
4. Connect a DVM to Ref. M (see Table 2-4) on 7PC3 and reference TP30 ground (2.5 volt reference).
5. Adjust pot P5 on 7PC3 to obtain a voltage of 2.48 to 2.52 volts (2.5 volt reference adjustment). If P5 requires adjustment the Vertical System should also be checked.
6. Check or adjust the horizontal and vertical reader offset voltage. Ground Ref. R (see Table 2-4). Monitor Ref. Q (see Table 2-4) to ground (TP30) and adjust P8 on 7PC3 for 2.5 ± 0.05 volts (2.45 - 2.55V). If P8 required adjustment the Vertical System should also be checked.
7. Check or adjust the horizontal code disk bias. Ground Ref. R (see Table 2-4). Adjust P9 on 7PC3 for a voltage at chip location L4 pin 14 to ground (TP30) for 0.00 ± 0.01 volts (+0.01 to -0.01V). This is an initial adjustment.
8. Remove ground at Ref. R. (see Table 2-4).
9. Check the horizontal code disk alignment. Move the hammer bar back and forth slowly and check both Ref. Q and Ref. U (see Table 2-4). vary from less than 1.0 volt to greater than 4.0 volts. Refer to the Hammer Bar Home Position Alignment procedure for mechanical adjustment.
10. Check or adjust the horizontal velocity. Ground Ref. E. (see Table 2-4). Adjust P11 on 7PC3 for a voltage at Ref. Z (see Table 2-4) of -4.0 ± 0.1 volts (-3.9 to -4.1V). This is an initial adjustment.
11. Remove the ground at Ref. E. (see Table 2-4).
12. If the Vertical system is also to be adjusted do steps 3 to 15 of the vertical procedure (PBS).
13. Power the printer down and replace the 15 amp fuse F1 on the 2PC2 board (H- switch fuse).
14. Power the printer on.
15. Momentarily close the gate interlock switch with the band cover in place to check the hammer bar stops at home position and does not bottom on its stop.
16. Close the gate and enable the printer to begin printing by test print or on-line to the processor, select blanks to reduce noise. When printing blanks, forms may be removed following the instructions in Step 17 of the Vertical Servo System Setup (PBS).

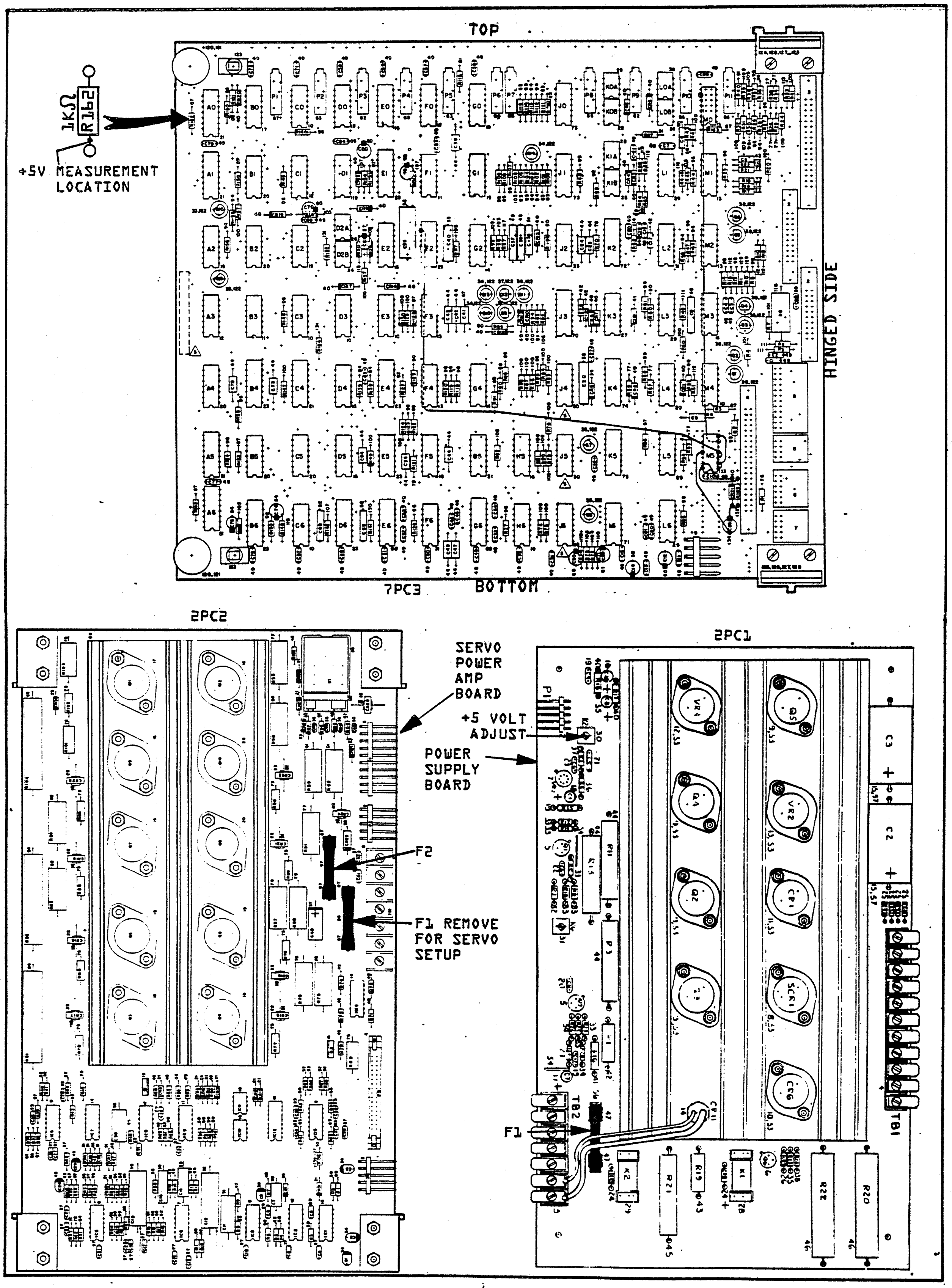


FIGURE 2-49. TEST LOCATIONS

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 PHE BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER PHE BOARDS, USE THE PROCEDURES BELOW.

17. Refer to Figure 2-50, "A" box at the top. Monitor and trigger a scope on Ref. Z (see Table 2-4). Switch the trigger level from + to - to observe that positive and negative ramp signals both end or terminate (to ground) around 15 ms. Adjust P11 on 7PC3 to bring both positive and negative ramp signal terminations within 2 ms of each other near 15 ms. Note: It may be necessary to slightly adjust P9 on 7PC3 to get the ramp signals to terminate within 2 ms of each other. Current pot adjustment (P10) is installed only on early boards, refer to the note at the bottom of Table 2-4. Preset P10 on 7PC3 clockwise until the horizontal voice coil just starts to squeal and then turn P10 counter clockwise 3 turns. (P10 not on 7pot boards.)

    Check the positive and negative position signals Ref. R (see Table 2-4), switching the trigger level from + to - for the ramp trigger signal. Both position signals should null to less than 1 volt of the last cycles 70 percent maximum point (see Figure 2-50). On early 7PC3 boards pots P10 and P11 may have to be adjusted simultaneously to get the position signals to settle to out to less than a volt (null) within 16 ms. (P10 not on 7 pot boards.)

    NOTE

    IF OSCILLATIONS LARGER THAN 0.3 VPP OCCUR AFTER 25 MS, OBSERVING THE POSITION SIGNAL, ADJUST P11 TO MINIMUZE OSCILLATIONS.

18. Stop the printer from cycling or printing and open the gate. Close the gate switch and check to see the hammer bar is not bottomed out against the stop screw. If the hammer bar is against the stop repeat the horizontal procedure before checking or replacing the 7PC3 board or reader.

19. If the Vertical System is also being adjusted proceed to the Vertical Servo System Setup (PBS), Step 17 througn 28.

VERTICAL SERVO SYSTEM SET-UP (PBS PRINTER)

The following procedure is dependent on the reference voltage set-up in the proceeding Horizontal Servo System Setup procedure. The Reference Voltage and Horizontal and Vertical Reader Offset Voltage (P5 and P8) must be set-up during the Horizontal set-up because it is the most critical. The following procedure will reference the Horizontal procedure if required. Table 2-4 (see Table of Contents in front of manual) will provide Test Points for Ref. letters for different 7PC3 boards. This procedure can be performed to setup only the vertical system by following all the following steps, however most of the time both Horizontal and Vertical systems will be setup together. The horizontal procedure is used to setup both horizontal and vertical by reference to vertical steps as required.

1. Power the printer down and remove the 15 amp "H" Switch fuse F1 on 2PC2 (36 volts). Refer to the fuse locator in Figure 2-49.

2. Power the printer on. Stop lamp will flash.

3. Remove the outer vertical reader housing and check or adjust the code disk so that it is not rubbing on the reader.

4. Check the vertical code disk reader setup. Connect the DVM to Ref. L (see Table 2-4) on 7PC3 and reference TP30 ground (Position Signal).

5. With the Vertical Advance Knob, rotate the tractor shaft slowly through one full revolution while making the following electrical check.

6. Check the maximum voltage generated at Ref. L (see Table 2-4) is 4 volts maximum and the minimum voltage is 1 volt. Repeat Steps 5 and 6 with the 6/8 LPI switch in the alternate position. If the parameters are not met the reader may be bad or P8 is not setup correctly in the horizontal procedure.

7. On early 7PC3 boards check the Vertical Ramp Offset Adjustment. Connect the DVM to Ref. 0 (See Table 2-4) on 7PC3 and reference TP30 ground.

8. On early boards adjust pot P4 on 7PC3 to obtain a voltage of 0.00 ± 0.01 volts (-0.01 to +0.01 volts). See Table 2-4. (Skip this step for 7 pot boards.)

9. Replace 15 amp "H" switch fuse F1 on 2PC2 (36 volts) Set the Vertical Velocity control adjustment. Ground the Vertical advance signal at Ref. H (See Table 2-4) on 7PC3. Do Not run the printer longer than 30 seconds to do the next two steps or the tractors may overheat.

10. Connect the DVM to Ref. P (see Table 2-4) on 7PC3 and reference TP30 ground (Ramp Signal).

11. Adjust pot P6 on 7PC3 to obtain a voltage of 7.0 ± 0.2 volts (6.8 to 7.2 volts). This is an initial setting.

12. Remove the ground from Ref. H (see Table 2-4).

13. Check or adjust the Vertical Code Disk Bias adjustment. Ground Ref. J (see Table 2-4) on the 7PC3 board.

14. Monitor the voltage at Ref. G (see Table 2-4) and adjust P3 on 7PC3 for 0.0 ± 0.05 volts (+0.05 to -0.05 volts). This is an initial adjustment.

15. Remove the ground at Ref. J (see Table 2-4) on 7PC3 board.

16. Power the printer down and replace the 15 amp "H" Switch fuse F1 on 2PC2.

17. Remove forms only from the tractors. If forms are removed from the printer the Out Of Paper switch must be taped down. Disable the PMV sensor on the right tractor by making a paper loop from the edge of a form which can run in circles through the right tractor simulating forms motion. Or ground pin 1 of chip K5 on controller board 7PC2 to hold the PMV counter reset.

18. Power the printer on an select the 6 LPI mode with the 6/8 LPI switch.

19. Press the Form Feed or Top of Form switch several times when the printer is Ready (5-10 seconds after power-on).

20. Monitor Ref. L (see Table 2-4) on the 7PC3, Vertical Reader Output, and adjust P3 on 7PC3 to obtain 2.5 ± 0.05 volts (2.45 to 2.55 volts).

21. Check the Vertical Slew Rate. Ground Ref. H (see Table 2-4) on 7PC3. Do Not run the printer longer than 30 seconds to do the next two steps or the tractors may overheat.

22. Sync and monitor Ref. L (see Table 2-4) to adjust the vertical slew rate.

-A-
POSITIVE RAMP

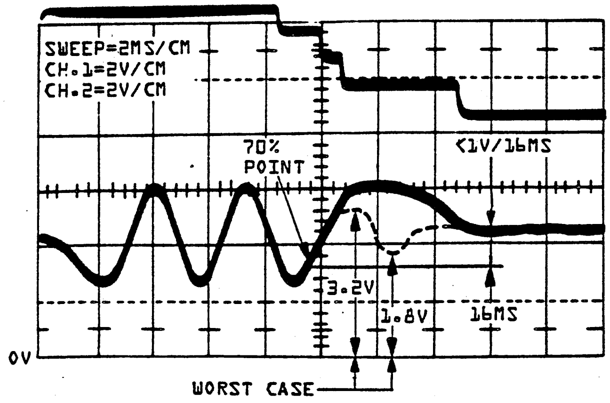
7PC3
TP-26

THIS SIGNAL OCCURS WHEN THE HORIZONTAL VOICE COIL IS MOVING TO THE LEFT FOR EACH HORIZONTAL POSITION. A NEGATIVE RAMP SIGNAL IS GENERATED WHEN MOVING TO THE LEFT.

POSITION SIGNAL (SEE TABLE 2-4)

TP-17 (NEW)
TP-18 (OLD)

STARTS NEGATIVE FOR THE POSITIVE RAMP AND STARTS POSITIVE FOR THE NEGATIVE RAMP.



-B-
POSITIVE RAMP

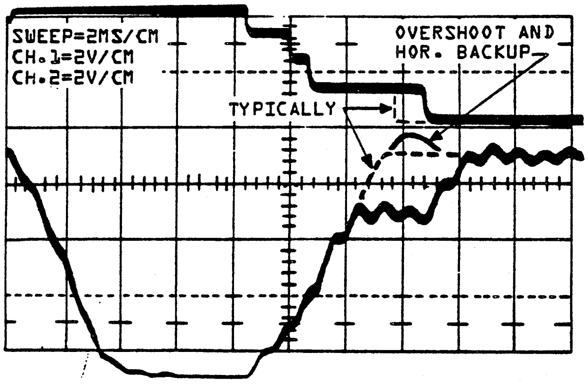
7PC3
TP-26

THIS SIGNAL AS SHOWN HAS A LONGER THAN NORMAL LAST STEP WHICH IN THIS CASE WAS AN IMBALANCE BETWEEN THE POSITIVE AND NEGATIVE RAMPS. NEGATIVE RAMP POSITION SIGNAL WAS NOT <1 VOLT AT 16MS, POSITIVE RAMP WAS WELL WITHIN THE 16MS.

TACHOMETER VELOCITY (SEE TABLE 2-4)

TP-29 (NEW)
TP-25 (OLD)

INDICATES A CONSTANT SPEED BEING HELD DURING THE LONGER THAN NORMAL LAST RAMP STEP. WITH BOTH POS. AND NEG. RAMPS BALANCED THE RAMP STEPS ARE EQUAL AND THE TACH. SIG. SLOPES TO ZERO WITHOUT A STEP. HOWEVER A TACH. SIG. THAT SLOPES TO ZERO AND GOES POSITIVE INDICATES OVERSHOOT AND RETURN (BACK MOTION).



-C-
POSITIVE RAMP

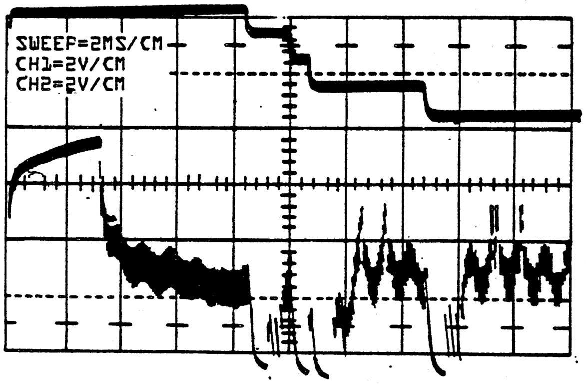
7PC3
TP-26

FINAL ADJUSTMENT REQUIRES THE POS. AND NEG. RAMP DURATIONS BE EQUAL WITHIN 1 MS.

CURRENT WAVEFORM

TP-27

AMPLIFIER VOLTAGE OUTPUT WHICH REPRESENTS THE CURRENT WAVEFORM ACROSS THE VOICE COIL.



-D-
POSITIVE RAMP

7PC3
TP-26

THE STAIRSTEPS OF THE RAMP REPRESENT THE PRECISE CLOCKED STOPPING OF THE VOICE COIL. IN THIS CASE THE LAST STEP IS HELD HIGH WHEN THE READER POSITION SIGNAL IS SWITCHED IN BECAUSE THE HOME POSITION IS NOT DETECTED UNTIL THE POSITION SIG. IS LESS THAN 1 VOLT. IF THE LAST STEP DOES NOT DROP WITHIN 25MS A HOR. MOTION ERROR IS GENERATED.

SUMMING POINT (SEE TABLE 2-4)

TP-19 (NEW)
TP-20 (OLD)

FOR INFORMATION ONLY. SHOWS TOTAL SUM VOLTAGE FOR A RIGHT DRIVE.

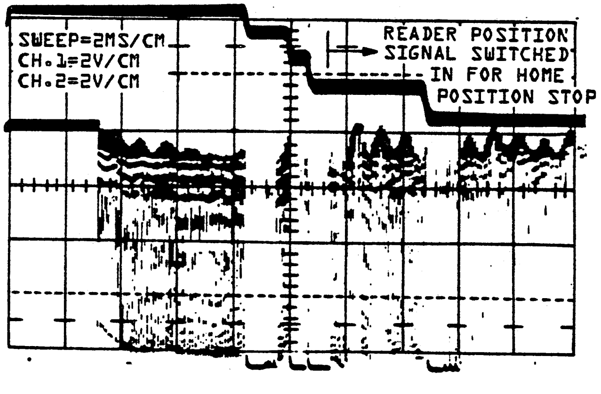


FIGURE 2-50. TYPICAL HORIZONTAL WAVEFORMS (PBS PRINTER)

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 PHE BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A. FOR ALL OTHER PHE BOARDS, USE THE PROCEDURES BELOW.

23. Adjust P6 on 7PC3 for 8.6 ms if the printer has been turned off for more than an hour (see Figure 2-51). If power has been on between 10 and 30 minutes, adjust P6 for 8.5 ms. If power has been on over 30 minutes adjust P6 for 8.4 ms. The tolerance on the above slew times is ± 0.1 ms.

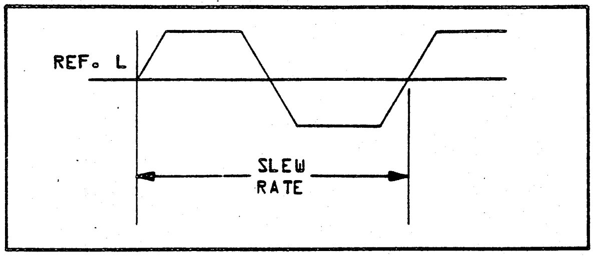


FIGURE 2-51. SLEW RATE

24. Remove the ground at Ref. H (see Table 2-4) on 7PC3.

25. Initiate continuous single line advances in the 6 LPI mode. This can be done by using Test Print and selecting a blank code or by using the processor.

26. Sync a scope negative on the Vertical Advance signal, Ref. H (see Table 2-4) on 7PC3.

27. Monitor Ref. L (see Table 2-4) on 7PC3, the Vertical Reader Output. See Figure 2-52, box "B".

28. On early 7PC3 boards adjust pot P7 so the Vertical Reader Signal comes out of saturation in 16 ms or less. The signal should not have any overshoot after coming out of saturation if possible. If overshoot exists it must not exceed 3.2 volts measured from ground (TP30) in both 6 and 8 LPI modes. There should be no oscillations exceeding 0.3 volts peak to peak after 25 ms. If oscillations exist adjust P7 to minimize while maintaining the other parameters. (Does not apply to 7 pot boards.)

VERTICAL SERVO SYSTEM SET-UP(PB 900 PRINTER)

Table 2-4 will provide Test Points from Ref. letters for different 7PC3 boards.

1. Power the printer down and remove the 15 amp 'H' Switch fuse F1 on 2PC2 (36 volts). Refer to the fuse locator in Figure 2-49.

2. Power the printer on. Stop lamp will flash.

3. After a five minute warmup check the power supply's +5 volts (+4.95 to +5.05 volts). See Figure 2-49.

4. Connect a DVM to Ref. M (see Table 2-4) on 7PC3 and reference ground (TP30). This is 2.5 volt reference.

5. Adjust P5 on 7PC3 to obtain a voltage of 2.48 to 2.52 volts (2.5 volt reference adjustment).

6. Check or adjust the horizontal and vertical reader offset voltage. Ground Ref. R (see Table 2-4). Monitor Ref. Q (see Table 2-4) to ground (TP30) and adjust P8 on 7PC3 for 2.5 ± 0.05 volts (2.45-2.55 volts).

7. Remove the jumper to ground at Ref. R (see Table 2-4).

8. Remove the outer vertical reader housing and check or adjust the code disk so that it is not rubbing on the reader.

9. Check the vertical code disk reader setup. Connect the DVM to Ref. L (see Table 2-4) on 7PC3 and reference TP30 ground (Position Signal).

10. With the Vertical Advance Knob rotate the tractor shaft slowly through one full revolution while making the following electrical check.

11. Check that the maximum voltage generated at Ref. L (see Table 2-4) is at least 4 volts maximum and the minimum voltage is 1 volt. Repeat Steps 5 and 6 with the 6/8 LPI switch in the alternate position. If the parameters are not met the reader may be bad or P8 on 7PC3 is not setup correctly.

12. On early 7PC3 boards check the Vertical Ramp Offset Adjustment. Connect the DVM to Ref. 0 (see Table 2-4) on 7PC3 and reference TP30 ground.

13. On early boards adjust pot P4 on 7PC3 to obtain a voltage of 0.00 ± 0.01 volts (-0.01 to +0.01 volts). See Table 2-4. (Skip this step for 7 pot boards.)

14. Set the Vertical Velocity control adjustment. Ground the Vertical advance signal at Ref. H (see Table 2-4) on 7PC3. Do Not run the printer longer than 30 seconds to do the next two steps or the tractors may overheat.

15. Connect the DVM to Ref. P (see Table 2-4) on 7PC3 and reference TP30 ground (Ramp Signal).

16. Adjust pot P6 on 7PC3 to obtain a voltage of 7.0 ± 0.2 volts (6.8 to 7.2 volts). This is an initial setting.

17. Remove the ground from Ref. H (see Table 2-4).

18. Check or adjust the Vertical Code Disk Bias adjustment. Ground Ref. J (see Table 2-4) on the 7PC3 board.

19. Monitor the voltage at Ref. G (see Table 2-4) and adjust P3 on 7PC3 for 0.0 ± 0.05 volts (+0.05 to -0.05 volts). This is an initial adjustment.

20. Remove the ground at Ref. J (see Table 2-4) on the 7PC3 board.

21. Power the printer down and replace the 15 amps 'H' Switch fuse F1 on 2PC2.

22. Remove forms only from the tractors. If forms are removed from the printer the Out Of Paper switch must be taped down. Disable the PMV sensor on the right tractor by making a paper loop from the edge of a form which can run in circles through the right tractor simulating forms motion. Or ground pin 1 of chip K5 on controller board 7PC2 to hold the PMV counter reset.

23. Power the printer on and select the 6 LPI mode with the 6/8 LPI switch.

24. Press the Form Feed or Top of Form switch several times when the printer is Ready (5-10 seconds after power on).

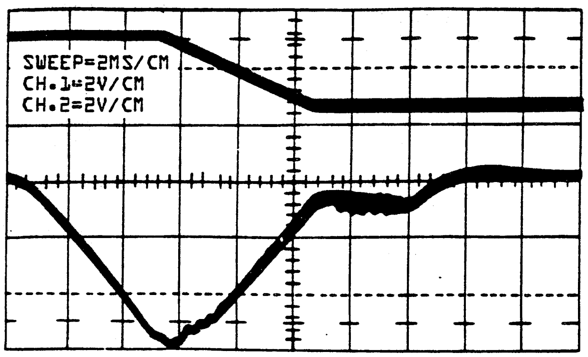
-A-

VERTICAL RAMP {SEE TABLE 2-4} — 7PC3 TP-16 {NEW} TP-17 {OLD}

THIS IS THE DRIVING SIGNAL WHICH ADVANCES THE FORMS VERTICALLY THROUGH THE TRACTORS.

TACHOMETER {SEE TABLE 2-4} — TP-23 {NEW} TP-24 {OLD}

THIS SIGNAL MONITORS THE VELOCITY OF FORMS MOTION AND LIMITS SPEED ON MULTIPLE LINE ADVANCES AND BRINGS THE SYSTEM TO A STOP.



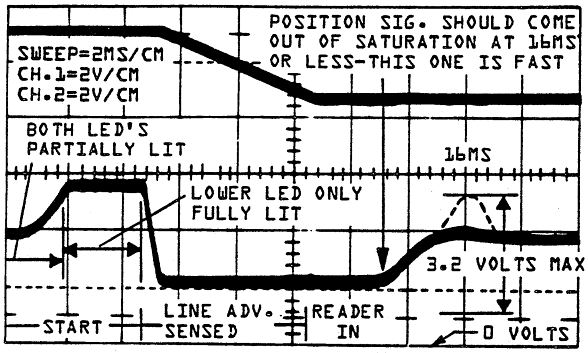
-B-

VERTICAL RAMP {SEE TABLF 2-4} — 7PC3 TP-16 {NEW} TP-17 {OLD}

RAMP SIGNAL STARTS AND MAINTAINS FULL VERTICAL DRIVE AS LONG AS THE ADVANCE SIGNAL IS PRESENT.

POSITION SIGNAL {SEE TABLE 2-4} — TP-12 {NEW} TP-14 {OLD}

THIS SIGNAL COMES FROM THE CODE DISK AND READER. DURING ADVANCE THIS SIGNAL IS USED BY THE CONTROLLER TO COUNT THE LINES ADVANCED. WHEN ADVANCE IS REMOVED AND THE RAMP SLOWS THE SYSTEM DOWN, THE READER IS SWITCHED IN FOR FINAL STOP POSITIONING.



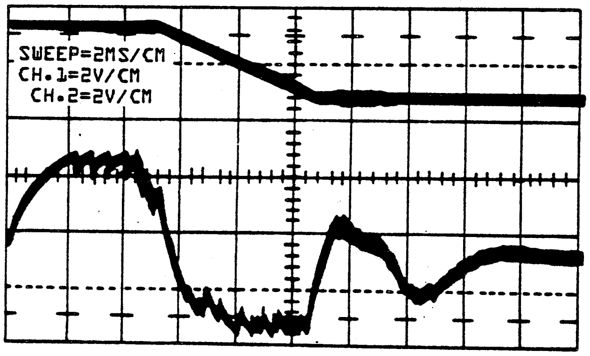
-C-

VERTICAL RAMP {SEE TABLE 2-4} — 7PC3 TP-16 {NEW} TP-17 {OLD}

DURING THE RAMP STOP THIS SIGNAL IS MONITORED TO DETERMINE WHEN TO SWITCH IN THE READER POSIITON SIGNAL FOR FINAL STOP POSITION {0.1 VOLT}.

CURRENT SIGNAL {SEE TABLE 2-4} — TP-28

THIS IS AN AMPLIFIER VOLTAGE OUTPUT REPRESENTING THE CURRENT WAVEFORM.



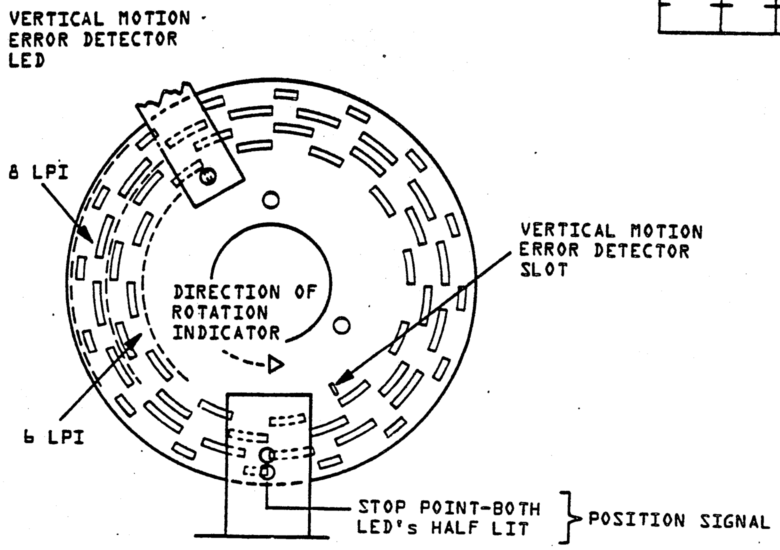


FIGURE 2-52. TYPICAL VERTICAL WAVEFORMS

25. Monitor Ref. L (see Table 2-4) on the 7PC3, Vertical Reader Output, and adjust P3 on 7PC3 to obtain 2.5 ± 0.05 volts (2.45 to 2.55 volts).

26. Check the Vertical Slew Rate. Ground Ref. H (see Table 2-4) on 7PC3. Do Not run the printer longer than 30 seconds to do the next two steps or the tractors may overheat.

27. Sync and monitor Ref. L (see Table 2-4) to adjust the vertical slew rate.

28. Adjust P6 on 7PC3 for 8.6 ms if the printer has been turned off for more than an hour (see Figure 2-51). If power has been on between 10 and 30 minutes, adjust P6 for 8.5ms. If power has been on over 30 minutes adjust P6 for 8.4ms. The tolerance on the above slew times is ±0.1 ms.

29. Remove the ground at Ref. H (see Table 2-4) on 7PC3.

30. Initiate continuous single line advances in the 6 LPI mode. This can be done by using Test Print and selecting a blank code or by using the processor.

31. Sync a scope negative on the Vertical Advance signal, Ref. H (see Table 2-4 on 7PC3.

32. Monitor Ref. L (see Table 2-4) on 7PC3, the Vertical Reader Output. See Figure 2-52, box "B".

33. On early 7PC3 boards adjust pot P7 so the Vertical Reader Signal comes out of saturation in 16 ms or less. The signal should not have any overshoot after coming out of saturation if possible. If overshoot exists it must not exceed 3.2 volts measured from ground (TP30) in both 6 and 8 LPI modes. There should be no oscillations exceeding 0.3 volts peak to peak after 25 ms. If oscillations exist adjust P7 to minimize while maintaining the other parameters. (Does not apply to 7 pot boards.)

PAPER RATE LIMITER ADJUSTMENT

1. Power the printer on.

2. Initiate single line advances.

3. Sync (-) and monitor REF. H. (-Vert. Adv) on 7PC3. (Use TP12 on latest 7PC3 board P/N 44680936)

4. Monitor chip F3 pin 8 on 7PC2 (Rate Limiter).

5. Adjust pot R55 on 7PC2 so that pin 8 goes to low level for 54.6-60.0 msec for the PBS printer and 35.4-39.1 msec for the PB printer. See Figures 2-53 and 2-54.

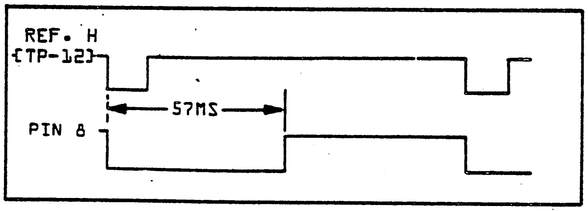


FIGURE 2-53. RATE LIMITER ADJUSTMENT (PBS)

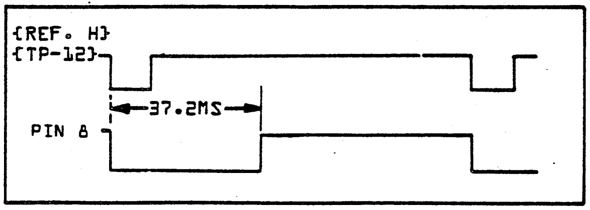


FIGURE 2-54. RATE LIMITER ADJUSTMENT (PB)

COMPRESSED PITCH PROCEDURE (PBS PRINTER)

This procedure is intended to cover the installation and maintenance of the compressed pitch feature. Before a compressed pitch band will function, the printer's compressed pitch feature must be enabled. Maintenance on a printer using compressed pitch will be increased due to the increased sensitivity of the print hammer flight time adjustment. This procedure applies only to PBS printers.

Requirements:

1. Compressed pitch jumper.
2. Compressed pitch linefinder.
3. Compressed pitch print band.
   (Refer to the parts manual)

Printer Compressed Pitch Feature

The printer can detect a compressed pitch band if the compressed pitch jumper is installed. The jumper's installation can be verified by removing the bonnet's ground strap and then the bonnet. The jumper is located in the harness connector P3 at the 7PC3 board. The jumper is connected at the back of P3 between pins 8 and 21.

Jumper Installation Procedure

1. Remove bonnet ground strap and bonnet. Remove pedestal rear cover and paper bail.
2. Open logic boards to 7PC3.
3. Disconnect P3 on 7PC3.
4. Connect jumper's pins into pins 8 and 21 on the harness side of P3.
5. Complete the following band installation procedure before replacing the bonnet, rear cover, and paper bail.

Column Indicator Installation

1. With a standard band installed, obtain a printout of all one full width character like an "M". Adjust the Phasing Control on the control panel for best print quality with minimum character side clipping. Do not remove the form with the printout from the printer, but compare the character columns to the linefinder label. The characters must appear consistent across the line to the marks on the linefinder or hammer flight time adjustment is required. Do not try to adjust the flight time of all the hammers if the linefinder sticker is just mis-positioned. As long as the printed characters appear equally spaced as compared to the linefinder marks, then flight time adjustment is not required at this time.

WARNING

NOISE LEVEL UNDER BONNET
WHILE PRINTING MAY BE
HAZARDOUS TO HEARING. KEEP
EXPOSURE TO A MINIMUM.

2. Perform the hammer flight time adjustment on the hammer columns that appear horizontally shifted from the average or on those columns where the printed character is clipped or missing on one side. Remember a hammer column prints more than one column in a print line. Flight time errors will appear in groups of four on a 300 LPM printer and in groups of two on a 600 LPM printer.

3. Make sure the compressed pitch jumper is installed in the printer. Refer to the previous procedure on jumper installation.

4. Refer to the following procedure and install a compressed pitch band.

5. With the compressed pitch band on and operating, carefully peel off the old linefinder if it is not a combination label covering both 136 and 204 print locations. The linefinder sticks to the top edge of the throat plate.

6. Clean the mounting surface on the top of the throat plate with alcohol.

7. Without removing the backing on the combination linefinder lay the linefinder in position in front of the printout. Compare a line of characters to the marks on the linefinder. The end hammers may not always align so use the middle and ends to determine the correct location. Mark the linefinder position with a pencil. Any end or group of characters slightly misaligned may be corrected by flight time adjustment.

8. Remove the linefinder backing and carefully position the linefinder in the marked location.

9. Check the printout to the new linefinder for character groups horizontally misaligned or clipping on one side. Remember in compressed pitch one hammer prints more locations than in standard pitch. On a 300 LPM printer look for groups of six adjacent characters misaligned and or a 600 LPM printer look for groups of three.

10. Refer to the Flight Time Adjustment procedure in this section of the manual to make print hammer corrections.

Band Installation

1. Power the printer off.

2. Open the bonnet, remove the upper gate protective cover and open the gate.

3. Pivot the outer paper guide away from the band. Release the band tension lever. Carefully lift up and remove any band already installed.

4. If the compressed pitch jumper has not been installed, refer to the Jumper Installation Procedure.

5. Check the contents and character set of the compressed pitch band kit. Bands with 64 or 96 characters without Programmed Read Only Memories (PROM's) supplied with the kit, may be installed on the printer. Bands with 48 or 128 characters or any band supplied with PROM's in the kit, require a check be made on component locations B3 and C3 of the 7PC1 board. Remove the bonnet and its ground strap, rear cover, and paper bail to check the 7PC1 board. If PROM's are in locations B3 and C3, they should be the same as those supplied with the band. If no PROM's are installed, then those supplied with the band must be installed in the proper location, as indicated by the parts manual under the band kit number. The DIP switches (SWN3-1 through SWN3-7) on 7PC1 must be set for the type of band being used.

6. Install the compressed pitch band with character right side up as normally read. Position the band carefully around the pulleys and down between the character magnetic pickups. The band should rest on the band edge guide rollers. Make sure the correct band is installed. A compressed pitch band has two Home Timing marks close together. Home timing marks are above the characters on the band and Character timing marks are below.

7. Turn the manual band advance counter-clockwise while slowly turning the band tension lever counter-clockwise. This should position the band up against the upper band guide. Refer to the Figures in the Operation section of the manual.

8. Install the outer paper guide, close the gate and install the upper gate protective cover.

9. Power on the printer

10. Print an all one character (M) pattern and adjust the control panel Phasing Control for best print quality with no character side clipping.

11. If a compressed pitch (PBS only) linefinder is already installed on the printer, check and adjust the hammer flight time for best print quality. If the linefinder is to be installed, refer back to the column indicator procedure. Refer to the Flight Time Adjustment procedur in this section if flight time adjustments are necessary.

BAND COVER INTERLOCK SWITCH ADJUSTMENT

This interlock switch prevents power from being applied to the printer's gate with band cover removed or not fastened properly. Check this switch adjustment if the printer fails to operate or is intermittent.

Tools Required

Latch 1/4 turn (optional-Setup)

Setup Procedure

1. Power the printer off and open the bonnet.

2. Remove the band cover.

3. Check the switch by inserting a non-metal object like a plastic writing pen into the center band cover fastener hole on the top of the gate.

4. Power the printer on with forms and ribbon installed, and the gate closed.

5. If the band operates for 30 seconds before the time out on the 7PC3 board times out and stops, then the switch is functional.

6. If the switch works as in the previous step, then the band cover interlock switch must be raised. If not the switch must be replaced.

7. Power the printer off and remove the print band.

8. Remove the shield band edge from the front of the gate to gain access to the screws holding the interlock switch.

9. If a new switch is being installed, loosen the two screws holding the interlock switch assembly and lower the switch assembly to its lowest position.

10. Raise the switch assembly in small increments each time, tightening the two screws and checking the printer's operation. Using the latch quarter turn tool, with washers added below latch to simulate the band cover thickness, will save the time required removing and installing the band cover. Keep the switch position as low as possible to ensure the band cover is correctly installed and latched. With band cover installed but not latched the band must not operate. The center band cover quarter turn latch controls the interlock operation and must be turned ninety degrees to enable the band. Early band cover latches were push pull type but adjustment is the same.

CAUTION

AFTER SWITCH ADJUSTMENT, INSTALL THE SHIELD BAND EDGE BEFORE OPERATING THE BAND.

PAPER EXIT RAMP ADJUSTMENT (PB PRINTER)

This adjustment should be performed anytime the paper exit ramp is moved or replaced. If the paper exit ramp is not properly adjusted, paper exit problems may occur.

Tools Required

3/8 in. Open End Wrench
5/16 in. Open End Wrench
Feeler Gauges (.020, .030, .050, .060 in.)
(0.5, 0.8, 1.3, 2.1mm)
Flat Blade Screwdriver
Phillips Head Screwdriver

Procedure

1. Printer powered off.

2. Remove the bonnet.

3. The gap between the paper exit ramp and the tractor body must be .030 to .050 in. (0.8 to 1.3mm). Use feeler gauges to check this gap.

4. If the gap is not correct, loosen the two thumb screws and the two front support pins.

5. Adjust the pins so that the correct gap is obtained when the ramp brackets are completely seated on the pins.

6. Using feeler gauges check that the exit rollers at the rear of the ramp extend above the ramp .020 to .060 in. (0.5 to 2.1mm).

7. If the ramp is not properly adjusted, loosen the brackets on the idler roller shaft and move the ramp assembly up or down as required.

8. Tighten the thumb screws.

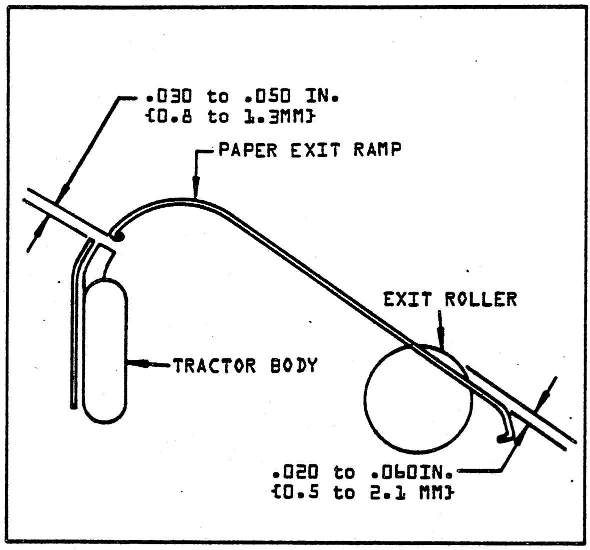


FIGURE 2-55. PAPER EXIT RAMP ADJUSTMENTS (PB 900 PRINTER)

PAPER EXIT MOTOR BELT TENSION AND TRACKING ADJUSTMENTS (PB PRINTER)

These adjustments must be performed anytime the belt has been removed or replaced.

Tools Required

Spring Scale
Allen Wrench Set

Procedure

1. Printer powered off.

2. Raise the bonnet and disconnect its ground strap. Carefully lift the bonnet off the printer.

3. Remove the paper exit idler roller assembly by sliding the assembly forward and out of its mounting clips.

4. Remove the paper exit ramp by first loosening the two thumbscrews then lifting it off the printer.

5. Adjust the belt tension by loosening three nuts which secure the exit motor mounting plate to the print head structure. (See Figure 2-56.)

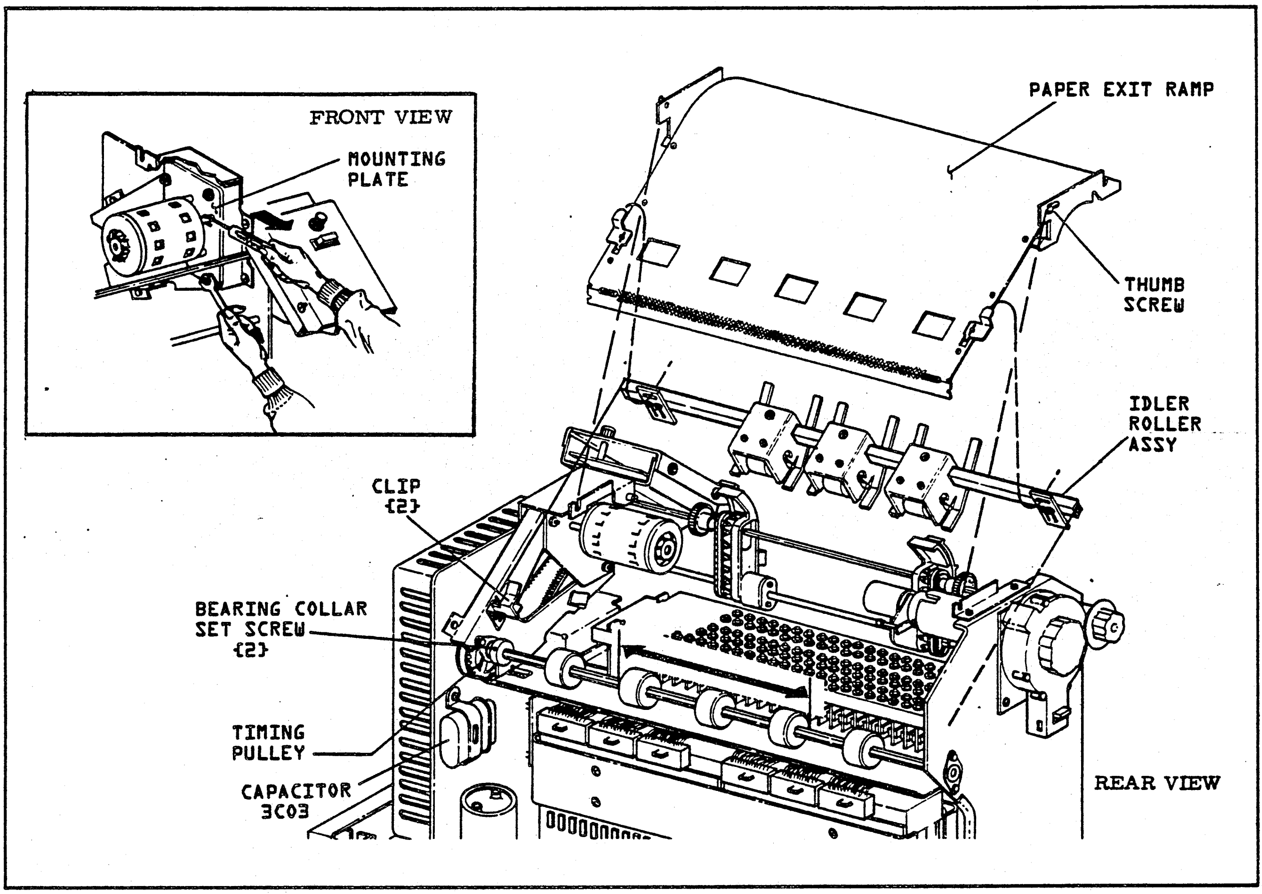


FIGURE 2-56. EXIT MOTOR BELT ADJUSTMENTS

6. Attach a spring scale to the upper front motor standoff and apply 7 to 9 pounds (3.178 to 4.086 kg) pull on the motor while retightening the three motor mounting plate securing nuts.
7. Power the printer On and check that the belt is tracking in the center of the timing pulley.
8. Power the printer Off. If the belt needs centering loosen the bearing collars on both ends of the drive roller shaft. Now, move the shaft in the same direction the belt is displaced to compensate for the amount of displacement.
9. Power the printer On and check again for proper belt tracking. Repeat steps 7 and 8 if necessary.
10. Power the printer off, replace the paper exit ramp and secure with the two thumbscrews, replace the idler roller assembly by snapping it down into the retaining clips, and replace the bonnet and ground strap.

OUT OF PAPER SWITCH ADJUSTMENT

1. Printer powered off.
2. Raise the bonnet and open the print gate.
3. Open the outer paper guide on the print gate.
4. Remove two screws and four washers to remove the O. O. P. switch and bracket assembly. (See Figure 2-56 view A).

NOTE

OMIT STEPS 5 AND 6 UNLESS A NEW SWITCH IS BEING INSTALLED.

5. Unplug wires and remove switch from bracket.
6. Install a new switch on the bracket (view B)
7. Position switch on bracket . 100 inch (2. 54 mm) from legs of bracket as shown in Figure 2-56 view C.
8. Reinstall switch and bracket assembly. Make sure the wires are connected.

NOTE

THE SWITCH ASSEMBLY MUST BE INSTALLED SO THAT ITS ACTUATOR CLEARS THE HOLES IN BOTH INNER AND OUTER THROAT PLATES WITHOUT RUBBING.

9. Close the print gate and verify that the O. O. P. switch is properly aligned with the hole in the inner paper guide.

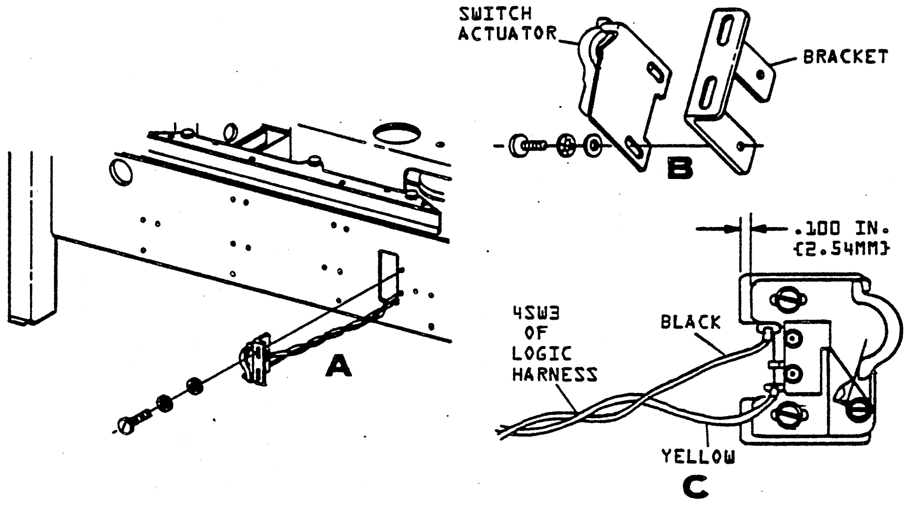


FIGURE 2-57. OUT OF PAPER SWITCH INSTALLATION AND ADJUSTMENT

TEST POINT NUMBER	TEST POINT DEFINITION/NAME	TEST POINT NUMBER	TEST POINT DEFINITION/NAME
1	GND {GROUND}	20	CHARACTER PULSE SIGNAL
2	HOME PULSE DELAY	21	10 KHZ OSCILLATOR
3	-SSP {SUBSCAN PULSE}	22	H COMMAND {HORIZONTAL COMMAND}
4	NOT USED	23	VERTICAL TACHOMETER
5	NOT USED	24	HOME PULSE
6	-H ADV {-HORIZONTAL ADVANCE}	25	HOME READER
7	-HOME ENABLE	26	VERTICAL MOTION READER
8	NOT USED	27	-MOTORS ON
9	NOT USED	28	-V STB {-VERTICAL STROBE}
10	CHAR TRIG PULSE {CHARACTER TRIGGER PULSE}	29	VERT TACH OUTPUT {VERTICAL TACHOMETER OUTPUT}
11	PMV {PAPER MOTION VERIFICATION}	30	POS H TACH {POSITIVE-HORIZONTAL TACHOMETER}
12	-V ADV {-VERTICAL ADVANCE}	31	H RAMP GEN {HORIZONTAL RAMP GENERATOR}
13	VERTICAL VELOCITY	32	HOR. CUR. SENSE {HORIZONTAL CIRCUIT SENSE}
14	RAMP GEN {VERTICAL RAMP GENERATOR}	33	NEG-H TACH {NEGATIVE HORIZONTAL TACHOMETER}
15	-PMV CLEAR {-PAPER MOTION VERIFICATION CLEAR}	34	VERT CUR SENSE {VERTICAL CURRENT SENSE}
16	HOR MOT RDR {HORIZONTAL MOTION READER}	35	GND {GROUND}
17	V COMMAND {VERTICAL COMMAND}	36	-VCK STB {-VERTICAL CHECK STROBE}
18	NOT USED		
19	NOT USED		

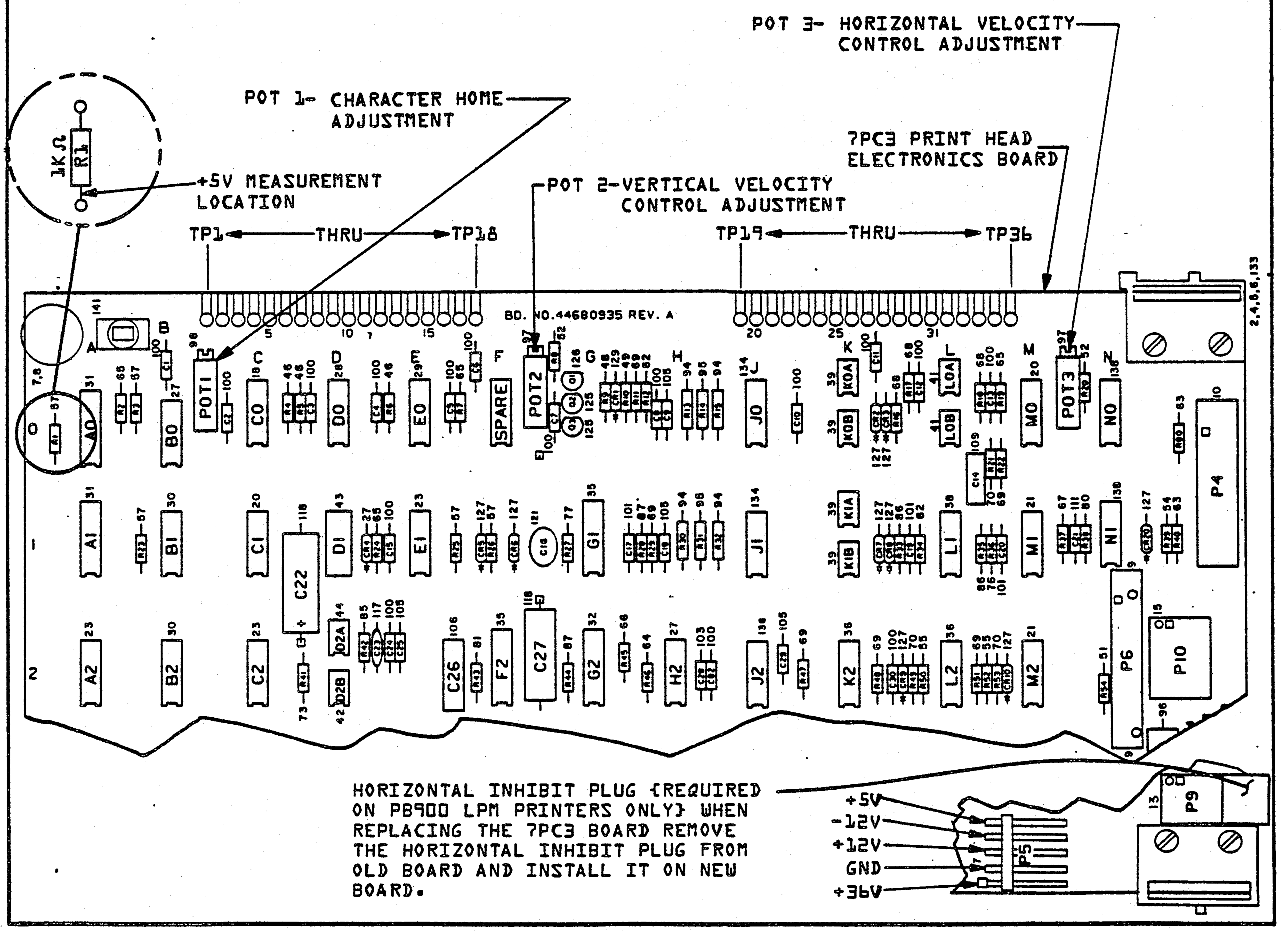


FIGURE 2-57A. 7PC3 TEST POINT AND POTENTIOMETER LOCATIONS FOR 3 POT BOARD

IMPORTANT: USE THE FOLLOWING PROCEDURES FOR MAKING ADJUSTMENTS ON THE 3 POT PRINT HEAD ELECTRONICS BOARD . LOCATION 7PC3.

BAND PICKUPS-POSITION AND ADJUSTMENT (3 POT 7PC3 BOARD)

This procedure can be used to position or adjust either or both band (character, or home) pickups. A pickup replacement procedure is not provided due to the ease of pickup replacement. The mounting bracket can be adjusted horizontally by loosening its two mounting screws. The mounting bracket slides horizontally on two guide pins, but tolerances are such that during horizontal adjustment the pickup can come into contact with the band characters. Always stop the band and check pickup clearance before restarting the band during pickup adjustment. The pickup to band clearance is adjusted by loosening the mounting bracket clamp and sliding the pickup in or out of the mounting bracket. The pickup itself can be replaced by loosening the clamp and unplugging its two wires. Horizontally adjusting the character pickup (lower pickup on the left) will affect character phasing (left or right character clipping during printing). Adjustment horizontally of the home pickup will advance printing to the next character on the band at some point during adjustment, normally the character printed is obtained by the adjustment of P1 on the 7PC3 board.

1. Set the Phasing Control on the control panel to its midrange position.

2. If the character pickup (lower pickup on the left) mounting bracket has been moved or replaced, a general starting position for adjustment is horizontally midrange. Any shims under the mounting bracket should remain until the pickup height is checked. Refer to Figures 2-57B and 2-57C.

3. Pickup to band clearance is adjusted with the band installed and the high point of the pulley adjacent to the pickup. The pulley high point is usually marked by a blue mark which is the closest point on the pulley circumference to the pickup. Set the pickup clearance by loosening the single screw at the top of the mounting bracket which clamps the pickup in place. Position the pickup 0.005 inch (0.127 mm) minimum from the band timing mark.

4. If the home character pickup (upper pickup on the right) mounting bracket has been moved or replaced a general starting position for adjustment is all the way horizontally to the right. Any shims should remain in place and the pickup clearance should be set as the previous step instructs.

5. The pickup vertical height is aligned with shims under the pickup mounting bracket. A flashlight will make this check easier. The band must be properly seated and against the platen top edge guide. If shims are required refer to the Parts Identification manual. Align the pickup vertically using shims until it is vertically centered to the adjacent band timing mark (character or home). Recheck the pickup to band clearance.

6. Install multiple part forms in the printer to prevent damage to the band while adjusting the pickups. Six part forms are recommended but if not available then other multiple part or very heavy (even card stock) forms can be used.

7. Turn the printer's power on and select an all one character printout in all columns. The character "M" is generally used, however, any wide character like "H" or "W" can be used to check for side clipping called phasing. If the one character pattern is sent from a processor system and the interface codes are not ASCII, then translators are used to convert the codes to ASCII. This is not a problem unless the printer's Test Print is used and the interface code is used to select the print character. Test Print functions in the ASCII code sequence and a wrong character will probably occur. Refer to the Controller Hardware Reference/Maintenance Manual, Principles of Operation, Interface Electronics, Test Print Feature for the operation of Test Print.

8. Start printing momentarily and check the printout. The character "M" (or selected character) may be printing with either the left or right side missing or clipped. The wrong character to the left or right of the character "M" (or selected character) may be printed. Or a random pattern of one or the other of two characters may be printed. However, it is possible to be more than one character off from the selected character.

   If you're printing more than one character off, the pot 1 on board 7PC3 can be adjusted for "M" (or selected character) for pickup adjustment following. If the character sequence on the band is right to left, O first, the N, M, L, K, and the printout is "O" or "N", adjust P1 CCW for "M". If "K" or "L" is printing adjust P1 CW for "M".

   If the left side of the character "M" is being clipped, the character "L" (preceding character) is being printed, or an "L" "M" pattern is being printed, then move the pickups closer together by horizontally moving the character pickup to the right while the band is stopped.

   If the right side of the character "M" is being clipped, the character "N" (following character) is being printed, or an "M" "N" pattern is being printed, then move the pickups farther apart by horizontally moving the character pickup to the left while the band is stopped.

CAUTION

ALWAYS CHECK THE PICKUP TO BAND CLEARANCE BEFORE RESTARTING THE BAND.

9. The character pickup is properly adjusted when the character "M" is printed across the page without any clipping of the sides of the characters. However, individual hammers may have incorrect flight time which will appear as clipping on those columns printed by that hammer. Refer the flight time adjustments. Remember on PB 300 models hammers print four columns, PBS 600 model hammers print two columns. On PB 900 models each hammer prints one column.

IMPORTANT: USE THE FOLLOWING PROCEDURES FOR MAKING ADJUSTMENTS ON THE 3 POT PRINT HEAD ELECTRONICS BOARD . LOCATION 7PC3.

10. Check the polarity of the pickup wires and the pickup output amplitude by observing the waveform on a scope. Start the band running and connect the scope first to the character pickup and then the home pickup, reference 7PC3-TP1 ground. Character pickup is 7PC3-TP20, home pickup is 7PC3-TP24. The null or dwell crossing zero volts must be on the negative slope which means the lead polarity is correct. The negative excursion peak voltage must be as shown in Figure 2-57C. If the waveform appears with rounder peaks check the vertical alignment of the tip of the pickup.
    Alternate test points for making this polarity check are R5 (character) and R6 (home) on 7PC3 (Printhead Electronics Board). Refer to the Parts Identification Manual assembly drawing for component location.

    NOTE

    WITH PICKUPS SET AT 0.005 INCH, SOME PRINTERS MAY BECOME NOISE SENSITIVE AND PRINT ERRONEOUS DATA. ON THESE UNITS, MOVE THE PICKUPS AWAY FROM THE BAND UNTIL THE PICKUP SIGNALS ARE APPROXIMATELY -1.5 VOLTS.

11. Proceed to the Printhead Electronics Board (7PC3) Set-Up procedure, Character and Home Pulse Set-Up for the fine adjustment of the Pot P1 on the 7PC3 board.

SET UP ADJUSTMENTS FOR PRINT HEAD ELECTRONICS 3 POT BOARD (7PC3)

+5V POWER SUPPLY ADJUSTMENT

1. Printer powered on for a half hour minimum.
2. Connect a DVM to the Print Head Electronics Board (7PC3) at the +5V side of resistor R1 and 5TB4 (ground). (See Figure 2-57A.)
3. Adjust Pot R2 on Power Supply Board (2PC1) to obtain 4.95 to 5.05 volts. (See Figure 2-57D.)

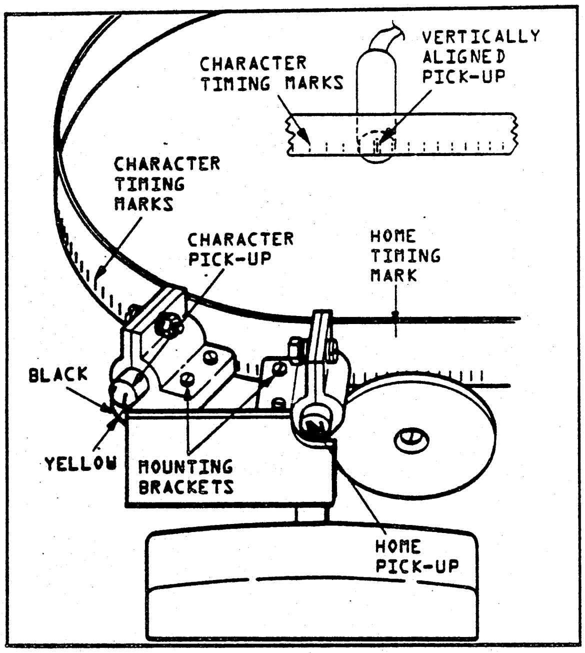


FIGURE 2-57B. CHARACTER AND HOME PULSE ADJUSTMENTS

CHARACTER AND HOME PULSE SETUP

1. Install six-part forms in the printer.

    CAUTION

    DO NOT USE SINGLE PART FORMS. DAMAGE MAY OCCUR TO THE BAND WHILE THE PICKUPS ARE BEING ADJUSTED.

2. Initiate a print operation of all one character.
3. If either of the sides of the character are being clipped, the character pickup must be moved laterally. If clipping on the left, move the pickup to the left.
    If clipping to the right; move the pickup to the right. Always stop the band when making adjustments and rotate band manually to check band to pickup clearance.

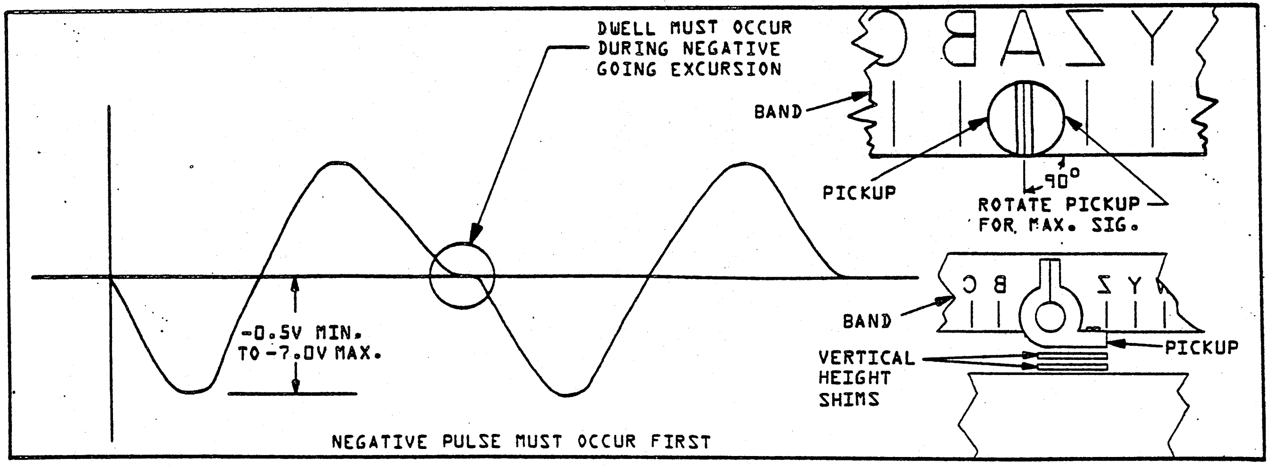


FIGURE 2-57C. CHARACTER AND HOME PULSE WAVESHAPES

IMPORTANT: USE THE FOLLOWING PROCEDURES FOR MAKING ADJUSTMENTS ON THE 3 POT PRINT HEAD ELECTRONICS BOARD . LOCATION 7PC3.

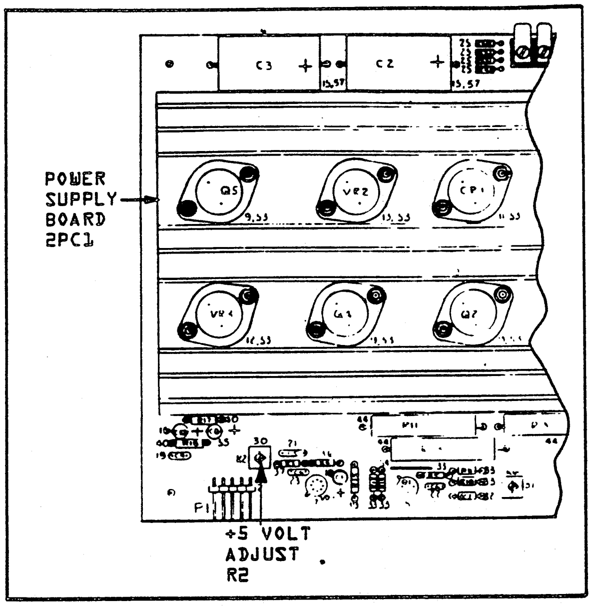


FIGURE 2-57D. 2PC1 + 5 VOLT POWER SUPPLY ADJUST

4. Initiate a print operation of all "M's".

5. Adjust POT 1 (Figure 2-57A) until all "M's" are printing. Note the direction you turn POT 1 to achieve this.

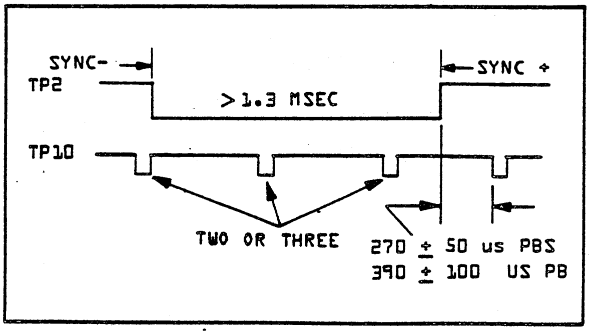


FIGURE 2-57E. CHARACTER ADJUSTMENT

6. To allow for a greater margin in the setting of POT 1, trigger an oscilloscope on the positive going edge of TP2 and display TP10. Set this negative going pulse between 220 and 320 usec for PBS printers and between 290 and 490 usec for PB printers from the trigger point by turning POT 1 in the same direction as noted in step 5. (Refer to Figure 2-57E).

7. Make sure all "M's" are still printing. If not, re-adjust POT 1 until all "M's" are printing, then set step 6 timing again.

8. Check the negative going pulse at TP2 and insure it is greater than 1.3 msec. If it is not, loosen the mounting brackets and move the pickups closer together and repeat this procedure starting with step 3.

HORIZONTAL SERVO SYSTEM SET-UP (PBS PRINTER ONLY)

1. Open the print gate.

2. Power the printer on. (Vertical forms advance motor will not be running).

3. Check the output voltage of the horizontal motion reader at both channels, Home Signal (TP25 and Horizontal Position signal (TP16). Move the hammer bank slowly in both directions and observe that the maximum output voltage is 5 volts or greater and the minimum output voltage is -5 volts or less at both TP16 and TP25. If the minimum and maximum voltages are not obtained, the encoder to reader alignment is incorrect or the reader is defective. (Refer to Horizontal Reader Replacement in Parts Replacement section and Hammer Bar Home Position Alignment procedure.)

NOTE

Make sure that the horizontal encoder is not rubbing the reader block and that it is parallel in the reader slot.

Also, make sure the voice coil is not rubbing on its housing. (Refer to Voice Coil Removal and Replacement).

4. Momentarily close the gate interlock switch and check that the hammer bar stops at home position and does not bottom against the stop.

5. Close the print gate and enable the printer to print by test card or CPU.

IMPORTANT: USE THE FOLLOWING PROCEDURES FOR MAKING ADJUSTMENTS ON THE 3 POT PRINT HEAD ELECTRONICS BOARD . LOCATION 7PC3.

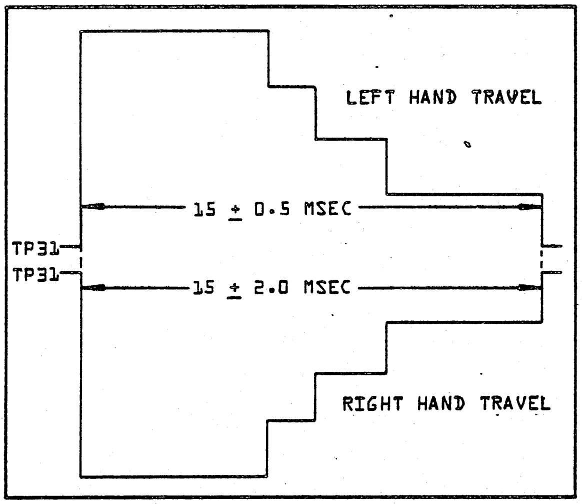


FIGURE 2-57F. HORIZONTAL RAMP GENERATED SIGNALS

6. Trigger the oscilloscope on the negative edge of the -Horizontal Advance signal (TP 6) and display Horizontal Ramp Generated signal (TP31).

7. Adjust POT 3 on 7PC3 board for the right hand travel waveform shown in Figure 2-57F. Left hand travel terminates in 15 ±0. 5 msec (TP31). Then check to see that the right hand travel terminates in 15 ± 2. 0 msec.

8. Trigger the oscilloscope on the -Horizontal Advance signal (TP 6) and display Horizontal Position signal (TP16).

9. Check to see that overshoot is less than 2. 0 volts.

10. Check to make sure that the point where the Hor. Pos. signal (TP16) is within 4. 0 volts of settle time is 16. 0 msec (max) from the negative going edge of -Hor. Adv. signal (TP 6). (See Figure 2-57G.)

NOTE

There should be no oscillation exceeding 1. 0 volt peak to peak allowed beyond 25 msec.

VERTICAL SERVO SYSTEM SET-UP

1. Open the print gate.

2. Power the printer on. (Vertical forms advance motor will not be running.)

3. Press the FORM RELEASE switch, on the control panel, and hold to the left.

4. Check the output voltage of the vertical motion reader at TP26. Rotate forms tractors slowly by turning the coarse position control and observe that the maximum output voltage is 5 volts or greater and the minimum output voltage is -5 volts or less. If the minimum and maximum voltages are not obtained, the code disc to reader alignment is incorrect or the reader is defective. (Refer to Forms Motion Component Replacement in Parts Replacement section.)

NOTE

Make sure that the code disc is not rubbing the reader block throughout a complete revolution.

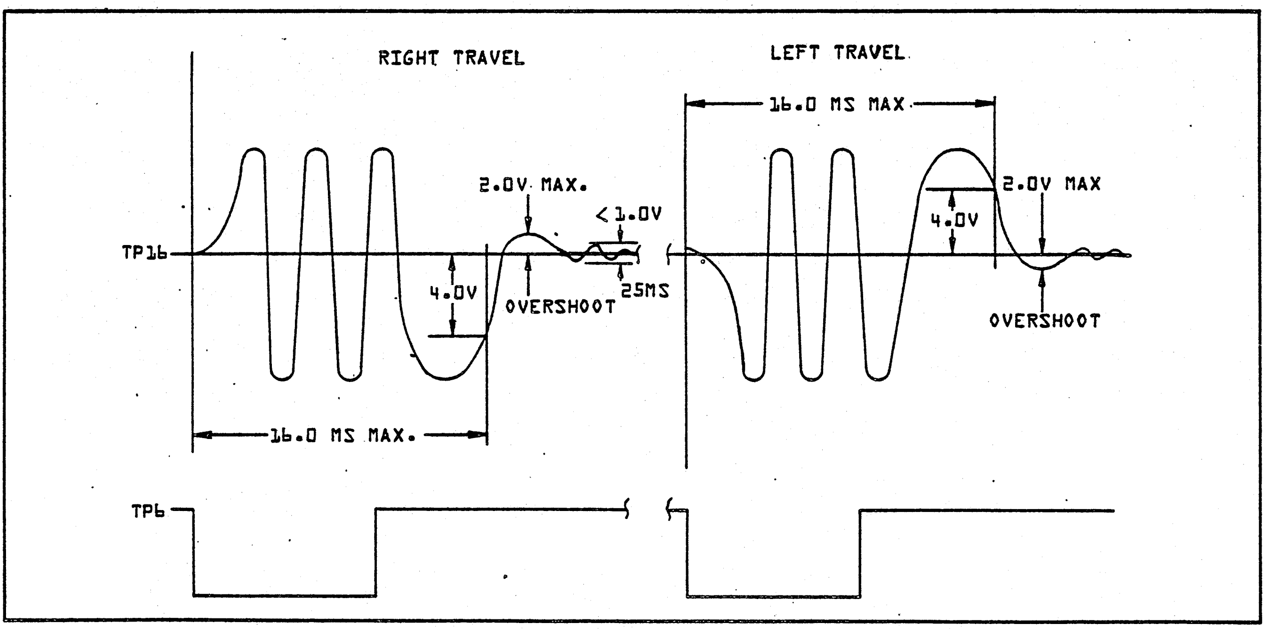


FIGURE 2-57G. HORIZONTAL POSITION SIGNAL

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IMPORTANT: USE THE FOLLOWING PROCEDURES FOR MAKING ADJUSTMENTS ON THE 3 POT PRINT HEAD ELECTRONICS BOARD . LOCATION 7PC3.

5. Remove forms only from the tractors. If forms are removed from the printer the Out of Paper switch must be taped down. Disable the PMV sensor on the right tractor by making a paper loop from the edge of a form which can run in circles through the right tractor simulating forms motion.

6. Close the print gate.

7. Set vertical servo in motion in 6 LPI single step mode by test card or on line with C.P.U. Synchronize on velocity command (TP12) and monitor vertical reader signal (position) TP26 (Figure 2-57A). Adjust pot P2 to meet the following: Settle time is defined as the time from the fall of Adv to the time when the vertical reader just comes out of saturation and rises .2V (Figure 2-37H waveform A). For wave forms that are not flat at -5V, use the intersection of the asymptotes, lines a and b (Figure 2-57H waveform B).

8. Set vertical reader to 6 LPI. To set up paper slew speed, depress form feed button on control panel, sync and monitor vertical reader signal (position), TP26, and look at the average time between leading edges (Figure 2-57I). The time from leading edge to leading edge must be 8.4 ± 0.1 msec for 44680936-40 boards, 8.4 ± 0.4 msec for 44684462 and 44685119-24 boards, and 8.6 ± 0.1 msec for 446859xx boards.

9. Final adjustment of pot P2 must be as follows: For boards 44680936-40, adjust P2 for 8.4 ± 0.1 msec slew rate; For boards 44684462 and 44685119-24, adjust P2 for settle time as shown in Figure 2-57H; For boards 446859XX, adjust P2 for slew rate of 8.6 ± 0.1 msec.

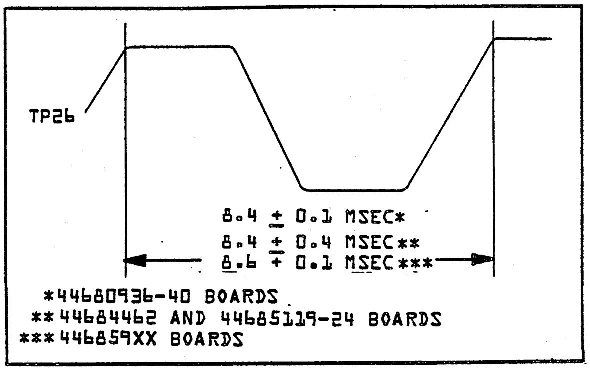
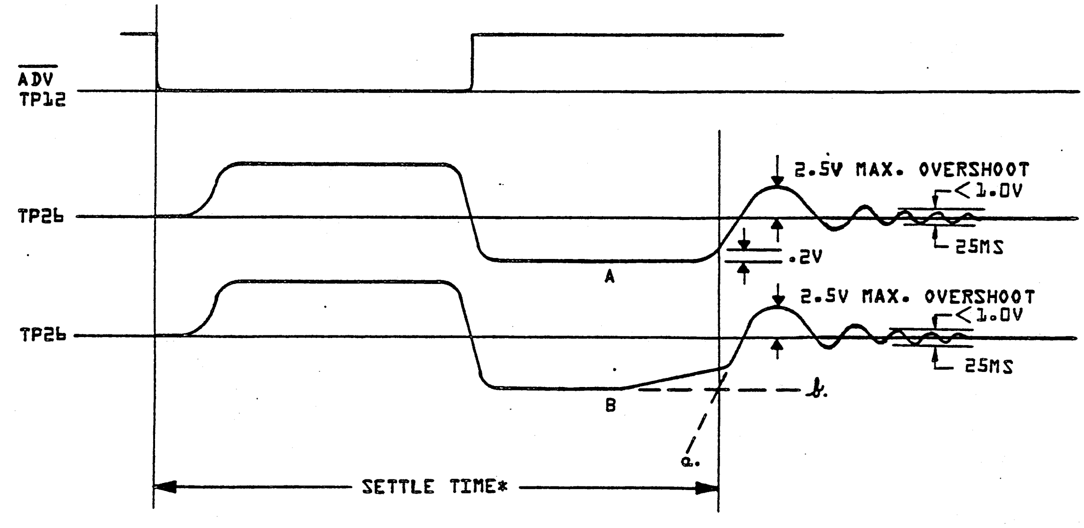


FIGURE 2-57I. VERTICAL SLEW RATE



MACHINE RUN TIME	SETTLE TIME
OFF MORE THAN 1 HOUR, TO 5 MINUTES ON	15.8 MILLISECONDS*
ON FOR 5 TO 25 MINUTES	15.4 MILLISECONDS*
ON FOR MORE THAN 25 MINUTES	15.0 MILLISECONDS*
FOR 446859XX BOARDS-ANY RUN TIME	16.0 MILLISECONDS MAX*

*SETTLE TIME IS THE AVERAGE OF AT LEAST 16 CONSECUTIVE READINGS. SOME TIMING JITTER IS NORMAL FOR THIS WAVEFORM.

VERTICAL READER SIGNAL OVERSHOOT CANNOT EXCEED 2.5V MEASURED FROM GROUND IN BOTH 6 AND 8 LPI MODES.

FIGURE 2-57H. VETTICAL MOTION SETTLE

PARTS REPLACEMENT

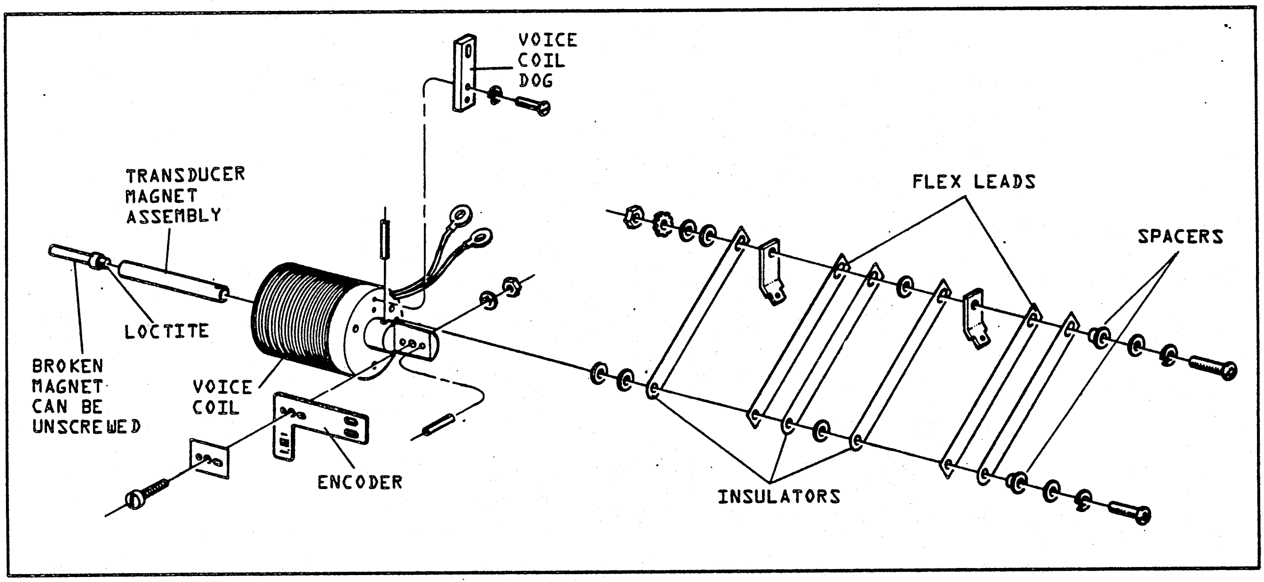


FIGURE 2-58. VOICE COIL ASSEMBLY (PBS PRINTER)

VOICE COIL REMOVAL AND REPLACEMENT (PBS PRINTER) This procedure applies only to PBS printers.

1. Power printer off.
2. Remove inner paper guide.
3. Remove the left hammer bar stop screw which covers the two screws holding the encoder to the voice coil.
4. Remove the two (2) screws securing the encoder plate to the hammer bar (see Figures 2-58 and 2-59).
5. Remove the nut from the outside of the side plate that secures the flex leads.
6. Unplug the two leads from the flex lead assembly.
7. Remove the two screws that secure the voice coil dog and slide it off its mounting pin.
8. Unplug the two leads connected to the tachometer.
9. While holding onto the outer housing remove the three screws holding the housing to the side plate.
10. Slide the housing out to the left while holding onto the voice coil.
11. Remove the voice coil carefully so as not to bend or otherwise damage the encoder. Pull the coil to the left until the encoder clears the reader, then twist counter clockwise to clear the encoder from the reader.
12. Remove the bolt holding the encoder to the voice coil and slide the encoder off the locating pins.
13. Remove the screw holding the flex leads to the voice coil. Do not lose any of the spacers.

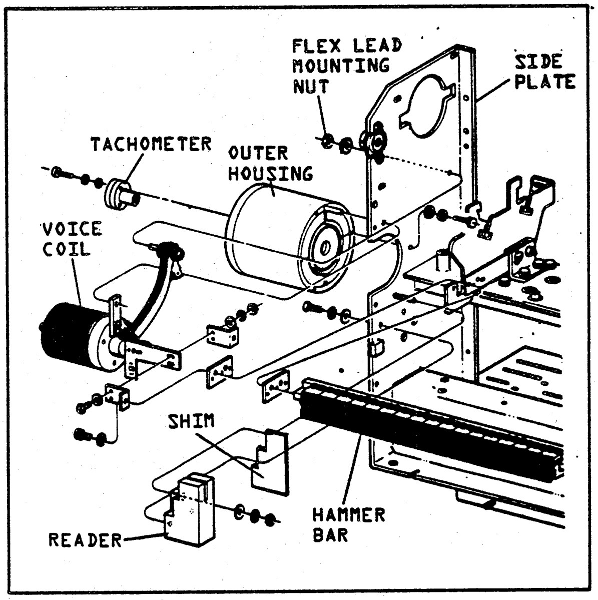


FIGURE 2-59. VOICE COIL REPLACEMENT (PBS PRINTER)

14. Support the voice coil post and drive out the roll pin securing the transducer magnet assembly with a small punch and slide out this assembly.

15. Install the transducer magnet assembly in the new voice coil and secure with the roll pin. Make sure the voice coil post is supported to prevent bending while driving in the roll pin.

16. Reconnect the flex leads to the voice coil as shown in the Figure 2-58.

17. Slide the encoder on the locating pins of the new encoder and secure with the bolt taken from the old voice coil.

18. Install the voice coil dog and install the screws holding it to the voice coil.

19. Position the voice coil with the encoder in the reader slot.

20. Slide the outer housing over the voice coil so that the voice coil dog mounting pin protrudes through the side casting.

21. Fasten the outer housing in place using the three mounting screws.

22. Connect the tachometer leads, red lead to the terminal with the red dot.

23. Re-connect the flex lead assembly to the side plate.

24. Re-connect the two fast-on leads to the flex lead assembly, red lead corresponds to the red lead from the voice coil.

25. Attach the encoder to the hammer bar with the two screws removed in step 3 but do not tighten the screws completely.

26. Perform the Hammer Bar Home Position Alignment procedure.

HORIZONTAL READER REPLACEMENT (PBS PRINTER)

1. Printer powered off. If the printer incorporates an EVFU assembly refer to the Special Option manual and remove the reader assembly.

2. Remove the gate stop on printers with the swing down outer paper guide. Open the gate and remove the inner paper guide.

3. Remove the seven bolts holding the paper clamp assembly. Disconnect the wire to the clamp solenoid and remove the paper clamp assembly.

4. Use a 1/4 inch socket set or spin tight to remove the nut and washers holding the reader on the inside of the frame to the mounting stud.

5. Remove the two screws holding the reader in place from the outside of the frame.. Retain the shim if installed between the reader and frame. Move the reader to the right and off the mounting stud, clearing the encoder.

6. Disconnect the connector from P9 on the 7PC3 board. Cut the tie raps required to free the cable.

7. Check the shim removed if a new one is not on hand. If the shim has an inprint of the old reader, it should not be reused.

8. Check the mounting surface of the new reader and if it is flat then a mounting shim is required. If base material has been machined away around the mounting screw holes, then a shim is not required. However, a shim can be used with the new reader and decrease any horizontal encoder adjustment required.

9. Mount the reader and shim as determined above.

10. Tie rap the cable in place and connect to P9 of the 7PC3 board.

11. Connect the paper clamp solenoid wire and mount the paper clamp assembly with seven bolts.

12. Perform the Horizontal Servo System Setup procedure.

13. Perform the Hammer Bar Home Position Alignment procedure.

14. Install the inner paper guide and gate stop (swing down outer paper guide only).

15. Perform the Inner Paper Guide Adjustment procedure.

16. Reinstall the EVFU assembly on those printers incorporating an EVFU .

BAND MOTOR REPLACEMENT

1. Printer powered off and open the bonnet.

2. Remove the upper gate protective cover and open the print gate.

3. Remove the band cover and the print band.

4. Remove the shield band edge.

5. Loosen the set screw through the hole in the gate frame, behind the shield band edge, that holds the band positioning knob to the motor and remove the knob.

6. Loosen the four screws holding the motor mounting plate and slide the drive belt off the pulley.

7. Remove the mounting plate screws and slowly lower the motor assembly.

8. Unplug the connector going to the motor mounting plate feed-through capacitors.

9. Disconnect the wires from the mounting plate going to the motor brushes.

10. Loosen the set-screw that secures the drive pulley to the motor shaft and slide the pulley off.

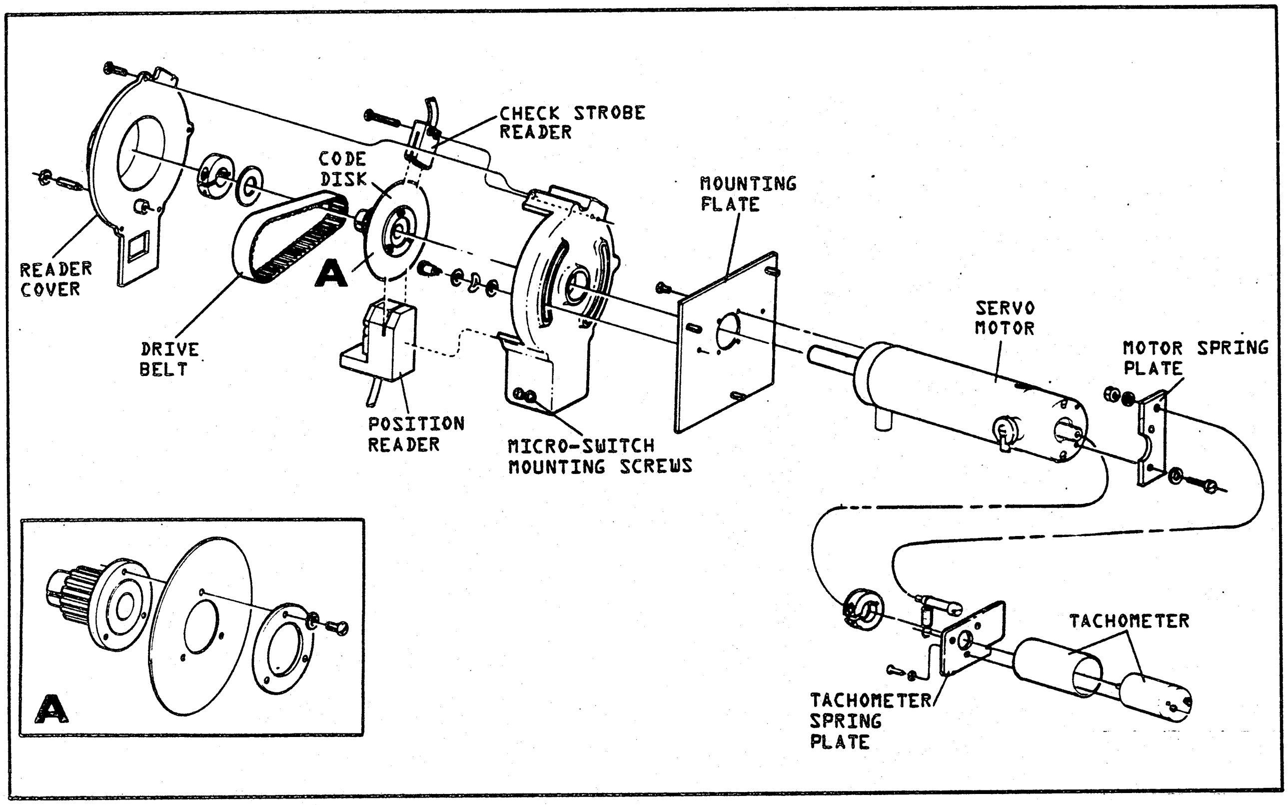


FIGURE 2-60. FORMS MOTION COMPONENT REPLACEMENT

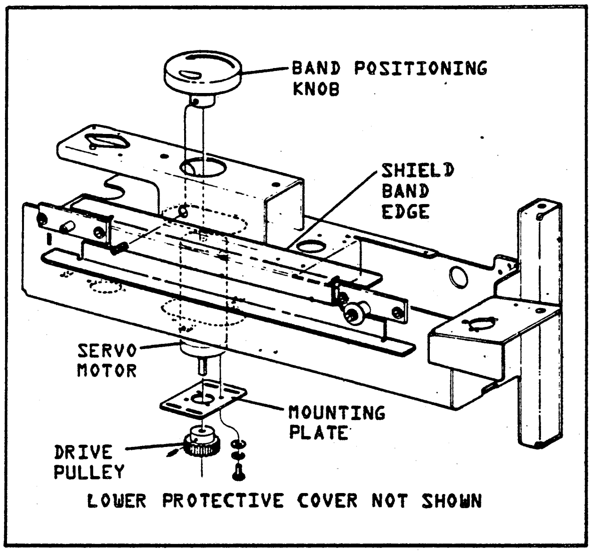


FIGURE 2-61. BAND MOTOR REPLACEMENT

11. Remove the four screws that hold the motor to the mounting plate.

12. Use the same four screws to secure the new motor to the mounting plate.

13. Position the drive pulley on the motor shaft and tighten the set screw.

14. Plug the two leads onto the motor, red lead goes to the terminal with the red dot.

15. Slide the motor assembly up into the gate assembly and attach the mounting plate to the gate with the four screws removed in step 5.

16. Reconnect the band motor plug to the gate harness.

17. Slide the band position knob onto the top of the motor and tighten the set-screw. Tighten to 110 to 130 in. (776 to 918 N mm) torque.

18. Install the shield band edge.

19. Install the print band and band cover.

20. Reinstall the band drive belt.

21. Perform the Belt Tension Adjustment procedures and then replace the lower gate protective cover.

FORMS MOTION COMPONENT REPLACEMENT

Tachometer Replacement

1. Printer powered off.

2. Remove the ground strap and lift off printer bonnet.

3. Remove the paper bail (paper exit ramp) and for PB 900 printers, the exit roller assembly.

4. Disconnect the return spring from the tachometer assembly.

5. Noting polarity, unscrew the tachometer leads.

6. Loosen the locking collar holding the tachometer to the servo motor and slide the tachometer out of the motor shaft.

7. Remove the spring plate from the old tachometer and mount it on the new tachometer.

8. Slide the new tachometer into the motor shaft and secure it with the locking collar.

9. Reconnect the two leads to the tachometer; black to pin 1 and red to pin 2.

10. Connect the return spring to the tab on the tachometer spring plate.

11. Perform the Vertical Servo System Setup procedure for your 7PC3 board.

12. Reinstall the paper bail (paper exit ramp) and for PB 900 printers, the exit roller assembly.

13. Replace the printer bonnet.

6/8 Line Micro-switch Replacement

1. Power the printer off.

2. Remove the ground strap and lift off the printer bonnet.

3. Remove the five screws that hold the position reader cover in place and remove the cover.

4. Remove the two screws that hold the micro-switch in place and remove the switch.

5. Note the lead connections and unsnap the leads from the old switch and connect them to the new switch.

6. Position the new switch in the reader and secure with the same mounting screws.

7. Replace the reader cover and check continuuity at the switch terminals. Check to see the N. O. and N. C. contacts function when the switch is moved between 6/8 LPI. The switch is actuated in the 8 LPI (down) position.

8. Replace the printer bonnet.

Position Reader Replacement

1. Perform steps 1 through 4 of the 6/8 Line Micro-switch Replacement procedure.

2. Cut all the ty-raps between the reader and plug P8 on 7PC3 that secure the reader cable.

3. Slide the position reader down and out of the assembly.

4. Using the pin extraction tool remove the four reader leads from plug P8 (see Special Tools).

5. Insert the new reader leads in plug P8.
6. Insert the new reader in the reader assembly.
7. Position the micro-switch beneath the reader and secure with the two mounting screws.
8. Replace the ty-raps that were cut off in step 3.
9. Replace the reader cover.
10. Replace the printer bonnet.

Check Strobe Reader Replacement

1. Perform steps 1 through 3 of the Position Reader Replacement procedure.
2. Remove the paper bail (paper exit ramp) and for PB 900 printers, the exit roller assembly.
3. Remove the protective belt cover if one covers the belt.
4. Loosen the locking collar that holds the forms positioning knob to the tractor shaft and slide the knob off the tractor shaft.
5. Remove the forms drive belt.
6. Loosen the locking collar that holds the code disk assembly to the drive shaft.
7. Remove the two screws securing the check strobe reader and slide the reader and the code disk assembly out of the reader assembly.
8. Using the pin extraction tool, remove the four reader leads from plug P8 on 7PC3.
9. Insert the new reader leads in plug P8.
10. Place the code disk assembly in the reader slot and slide the code disk assembly back onto the the drive shaft.
11. Position the code disk in the center of the reader. Secure the reader in place using the same two mounting screws and tighten the code disk locking collar.
12. Slide the position reader into the assembly.
13. Position the micro-switch beneath the reader and secure with the mounting bolts.
14. Place the drive belt on the drive pulley.
15. **Loop the drive belt around the forms positioning knob and reposition the knob on the tractor shaft. Tighten the locking collar.**
16. **Perform the Paper Advance Motor Belt Tension Procedure.**
17. **Reinstall the paper bail (exit ramp), belt cover, and the printer bonnet.**

Servo Motor Replacement

1. Printer powered off.
2. Remove the ground strap and lift off the bonnet.
3. Remove the paper bail (exit ramp) and for PB 900 printers, the exit roller assembly.
4. Disconnect the return spring from the tachometer assembly.
5. Loosen the locking collar holding the tachometer to the motor and slide the tachometer out of the motor shaft.
6. Remove the two screws that hold the spring plate to the servo motor and remove the plate.
7. Cut the ty-raps around the motor.
8. Unplug the leads from the motor.
9. Remove the five screws that hold the position reader cover in place and remove the cover.
10. Remove the two screws that hold the micro-switch in place and remove the switch.
11. Slide the position reader down and out of the assembly.
12. Remove the protective belt cover, if one covers the belt.
13. Loosen the locking collar that holds the forms positioning knob to the tractor shaft and slide the knob off the tractor shaft.
14. Remove the forms drive belt.
15. Loosen the locking collar that holds the code disk assembly to the motor shaft.
16. Remove the two screws securing the check strobe reader and slide the reader and code disk assembly out of the reader assembly.
17. Remove the two shoulder screws that secure the reader housing to the motor mounting plate and remove the housing.
18. Unplug the air plenum hose from the servo motor.
19. Remove the four screws that hold the motor to the mounting plate and remove the motor.
20. Position the new motor against the mounting plate and secure with the same four screws.
21. Reconnect the air plenum hose to the motor.
22. Mount the reader housing on the mounting plate with the two shoulder screws and their spacers.
23. Slide the check strobe reader and the code disk assembly back into the reader assembly.
24. Secure the reader with the two mounting screws.
25. Position the code disk in the center of the reader. Tighten the code disk assembly locking collar.
26. Slide the position reader into the assembly.
27. Position the micro-switch beneath the reader and secure with the two mounting bolts.
28. Place the drive belt on the drive pulley.
29. Loop the drive belt around the forms positioning knob and reposition the knob on the tractor shaft. Tighten the locking collar.

30. Plug the two leads into the new motor. Red lead to the terminal with the red dot.
31. Secure the spring plate to the motor using the two mounting screws.
32. Slide the tachometer into the motor shaft and secure it with the locking collar.
33. Connect the return spring to the tab on the tachometer spring plate.
34. Ty-rap the motor and tachometer leads to the body of the motor.
35. Perform the Belt Tension Adjustment procedure.
36. Reinstall the paper bail (paper exit ramp), the printer bonnet, and for the PB 900 printer, the exit roller assembly.

ARMATURE REPLACEMENT (PBS PRINTER)

1. Printer powered off.
2. Remove the ground strap and lift off the printer bonnet.
3. Remove the paper bail and ground strap going to the armature bar.
4. Remove the three hex head screws that hold the armature bar in position.
5. Unplug the hammer drive cables.
6. Lift the armature bar out of the printer.
7. Unclip the residual strip and remove it.
8. Remove the two mounting screws of the defective armature and remove the armature.
9. Using the pin extractor tool, remove the armature leads from the plug.
10. Plug in the two leads of the new armature.
11. Position the new armature in the armature bank and secure it with the mounting screws.
12. Reinstall the residual strip.
13. Place the armature bar back in the printer and start the three mounting screws. Be careful not to crossthread the special nuts retained by clips to the frame.
14. Align the armature bank horizontally to center the push-rod tips on the armature ends and then tighten the armature bank mounting bolts.
15. Plug in the hammer driver cables and connect the ground strap back to the armature bar.
16. Perform the Flight Time Adjustment procedure.
17. Reinstall the paper bail and the printer bonnet.

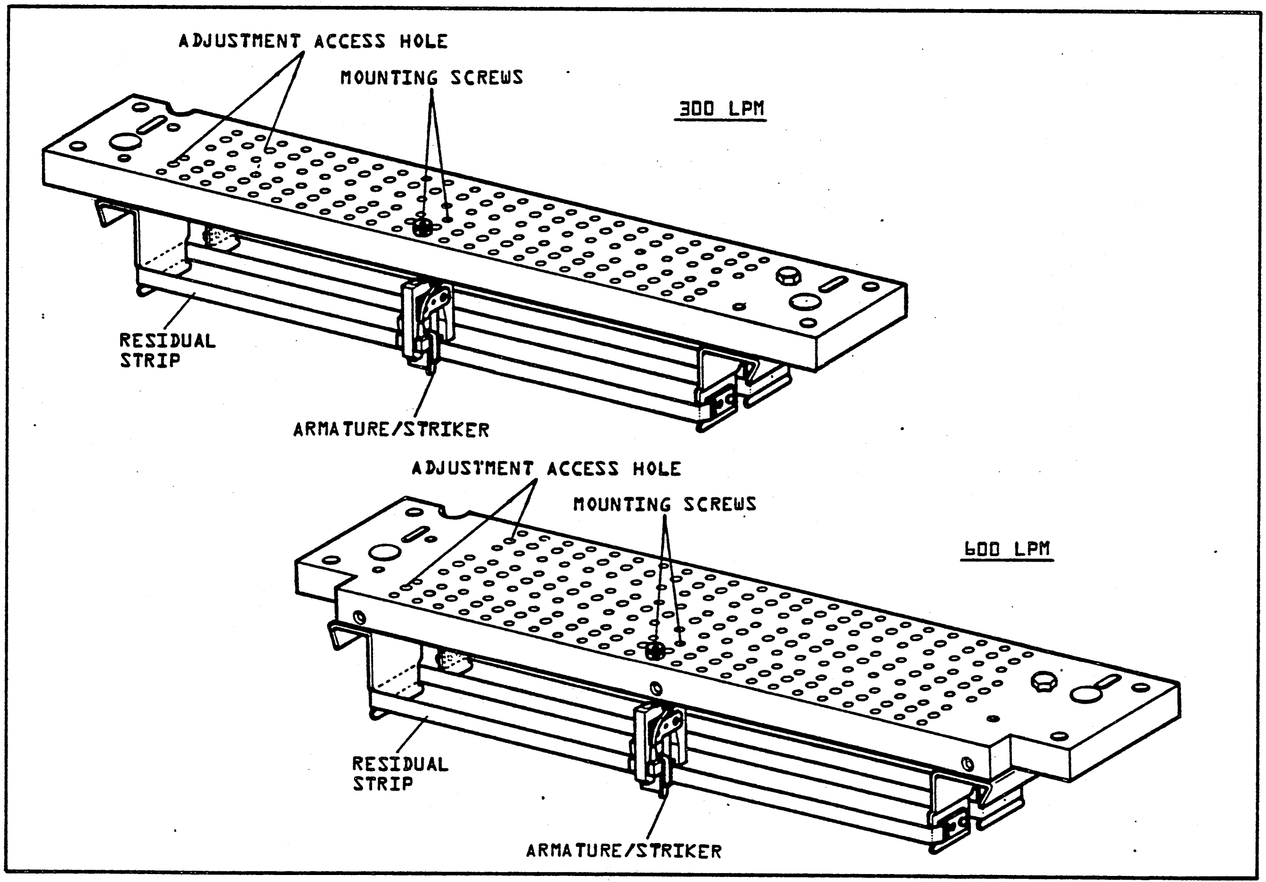


FIGURE 2-62. ARMATURE REPLACEMENT (PBS PRINTER)

ARMATURE REPLACEMENT (PB 900 PRINTER)

1. Printer powered off.
2. Remove the printer bonnet.
3. Remove the paper exit idler roller assembly.
4. Remove the paper exit ramp and plate covering the hammer driver printed circuit boards.
5. If an even column armature/striker is to be replaced slide the hammer driver board assembly slightly toward the rear of the printer to allow easier access to the connectors of the inner hammer driver boards.
6. Tag all connectors before removal to identify their location.

NOTE

IF AN ODD COLUMN ARMATURE NEEDS REPLACEMENT, REMOVE THE UPPER ARMATURE BAR. IF AN EVEN COLUMN ARMATURE IS TO BE REPLACED, REMOVE THE LOWER ARMATURE BAR.

7. For lower armature bar replacement, remove the inner paper guide.
8. Remove the three hex-head screws holding the armature bar in position.

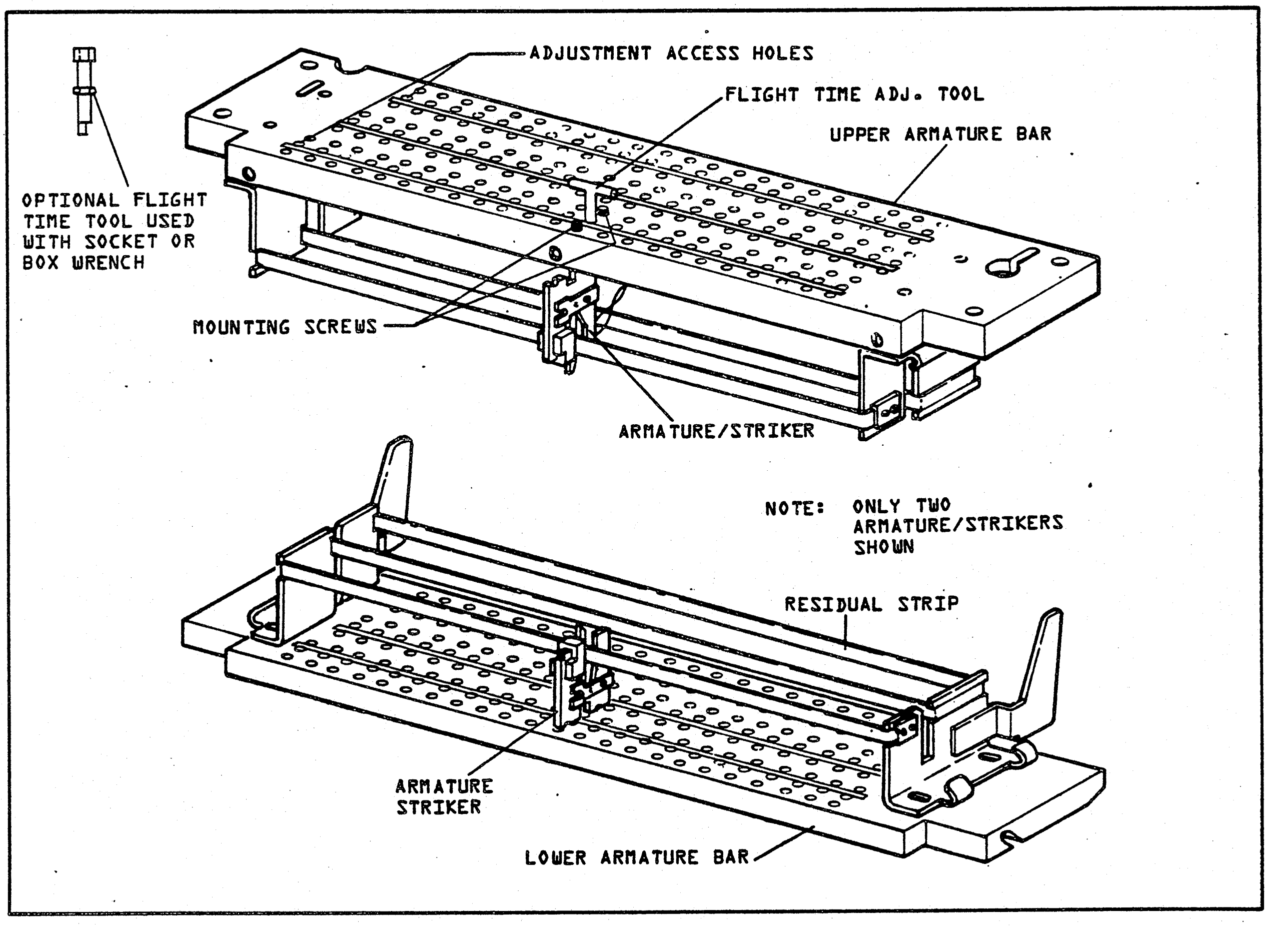


FIGURE 2-63. ARMATURE REPLACEMENT (PB 900 PRINTER)

9. Unplug the connectors of the outer hammer driver boards for upper armature bar removal. Or, unplug the connectors of the inner hammer driver boards for lower armature bar removal.

10. Mentally note the cable routing pattern. Feed wires and connectors for the even column armatures through holes in the frame and out the front of the printer.

11. Lift the armature bank out of the printer.

12. Unclip the residual strip and remove it.

13. Remove the two mounting screws of the defective armature and remove the armature.

14. Using the pin extractor tool, remove the armature leads from the plug.

15. Plug in the two leads of the new armature.

16. Position the new armature in the armature bank and secure it with the mounting screws.

17. Reinstall the residual strip.

18. Place the armature bar back in the printer and start the three mounting screws. Be careful not to cross thread the special nuts retained by clips to the frame.

19. Align the armature bank horizontally to center the push-rod tips on the armature ends and then tighten the armature bank mounting bolts.

20. Plug in the hammer driver cables, following the original routing.

21. Perform the Flight Time Adjustment procedure.

22. Reinstall the inner paper guide, exit idler roller assembly and paper exit ramp.

23. Reinstall the bonnet and ground strap.

PRINTER HAMMER REPLACEMENT

1. Printer power off and remove the gate stop on printers with the swing down outer paper guide.

2. Remove the inner paper guide.

3. Locate the module containing the defective hammer.

CAUTION

TO MINIMIZE POSSIBLE HORIZONTAL MISALIGNMENT OF THE PRINT HAMMERS, ONLY REMOVE ONE HAMMER MODULE AT A TIME.

4. Remove the two module mounting screws and slide the module off the hammer bar. (See Figure 2-64).

CAUTION

THE HAMMERS AND PLUNGERS ARE SPRING LOADED AND WILL SHOOT OUT UNLESS THEY ARE RELEASED SLOWLY.

5. Slide the pivot pin out of the module until the defective hammer can be reached.

6. Place the new hammer in the module and slide the pivot pin back into the module. For PB 900 printers, make sure the forms compressor is in place.

7. Mount the module back on the hammer bar.

8. Reposition the inner paper guide and gate stop if removed.

PLATEN WEAR STRIP REPLACEMENT (Early Platens)

Replace the platen wear strip at the first signs of fraying, peeling or wearing. The wear strip must also be replaced if a band breaks during operation. Also check the Upper Band Guide wear strip for damage. The wear strip on the Upper Band Guide is not replaceable and requires a new Upper Band Guide. Platens with plastic riveted to the front do not have wear strips.

1. Open the printer cabinet and remove the band cover.

2. Open the gate and remove the band.

3. Peel off the old wear strip (bearing tape). (See Figure 2-65).

4. Make sure the platen is clean. Any sticky residue may be removed by rubbing with finger tip. Wipe the platen off to remove oil left from fingers, ribbon ink, and paper dust (alcohol may be used).

5. Place a vertical pencil mark one inch from each end of the new wear strip (front side). The wear strip should be 15 inches (380mm) in length.

6. The new wear strip will be positioned 0.060" (1.52 mm) down from the top of the platen. In the space above where the wear strip will be positioned, place a vertical mark a half inch (12.7 mm) from each end of the platen.

7. Measure down with a scale from the top edge of the platen at or near the vertical marks. Place a horizontal mark 0.060" (1.52mm) down from the top of the platen, ± 0.020" (0.51mm).

8. Remove the sticky back protection on the new wear strip very carefully. If the tape and wear strip are separate parts, the tape must be installed first, removing one protective strip to mount the tape. With the tape mounted on the platen remove its outer protective strip. Mount the smooth or shinney side of the wear strip to the tape. A drop of water will stand on the shinny side and will be absorbed on the dull or rough side of the wear strip.

9. Hold the new wear strip near the ends and hold it up in front of the platen. Visually align the vertical and horizontal marks and stick the wear strip in place.

10. Smooth the wear strip in place across the platen and carefully fold the ends around the ends of the platen.

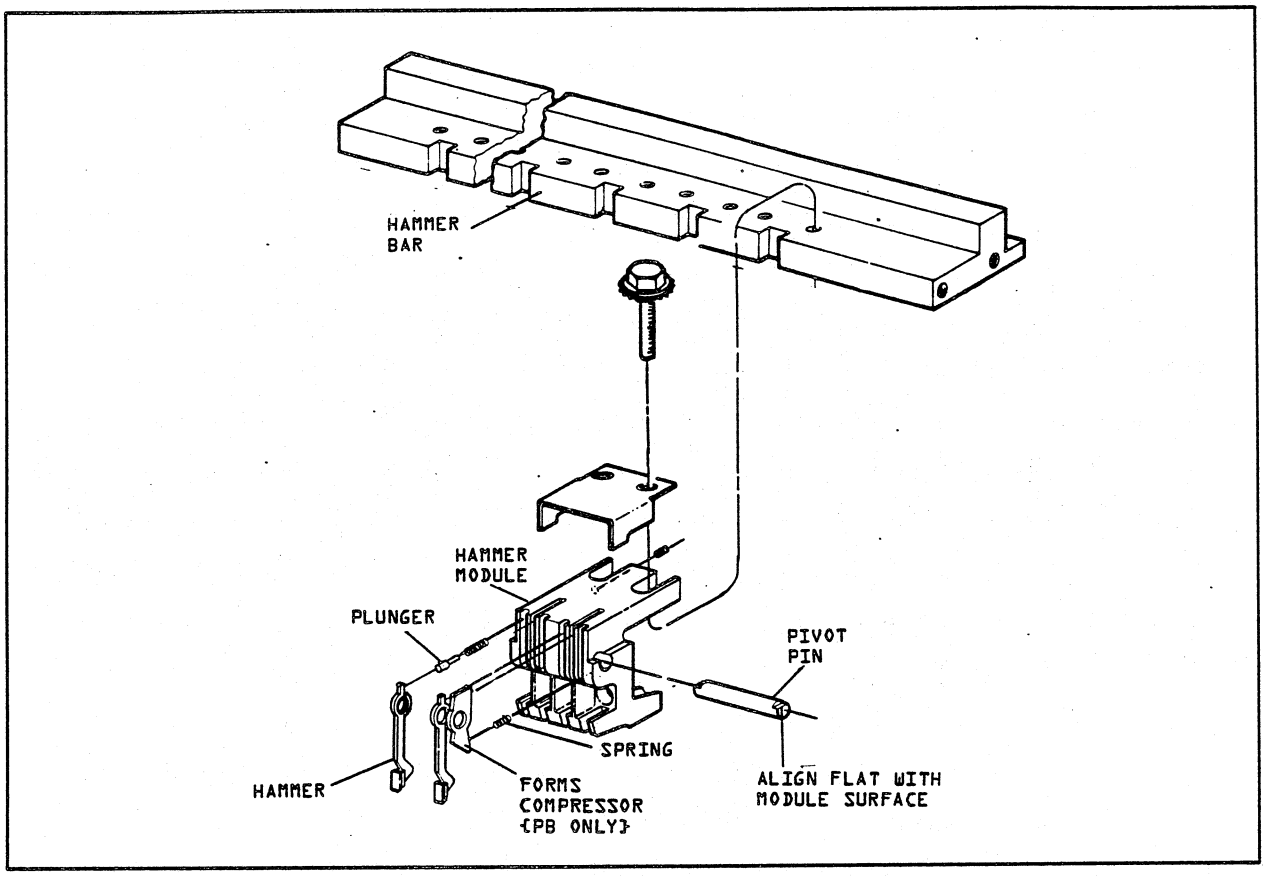


FIGURE 2-64. PRINT HAMMER REPLACEMENT

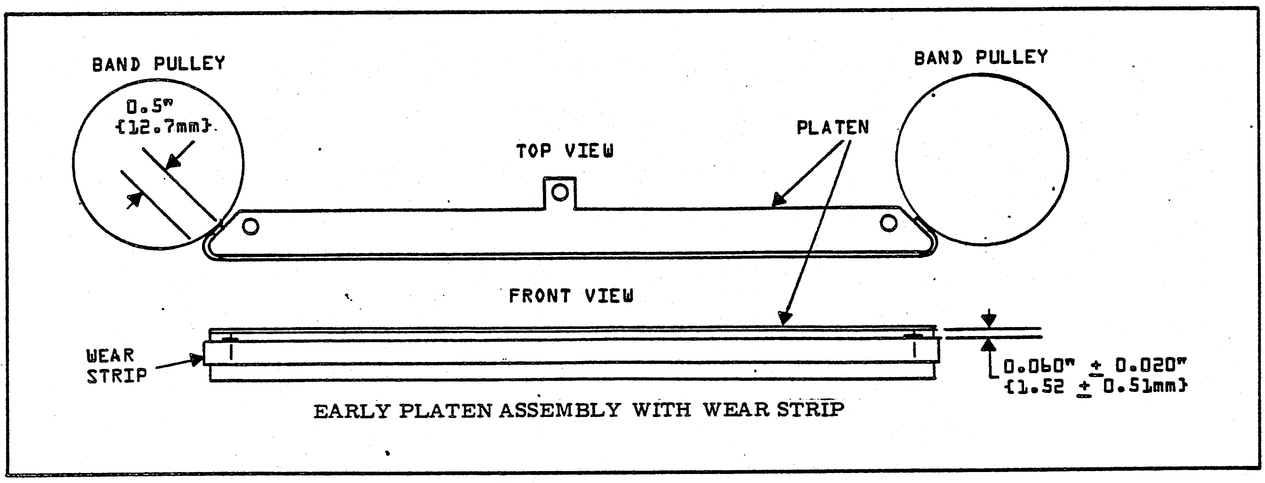


FIGURE 2-65. PLATEN WEAR STRIP

CONTROL PANEL LENS AND LAMP REPLACEMENT

1. Printer powered off.
2. Remove the lens by placing a screwdriver in the groove on the side of the lens and prying up. See Figure 2-63.
3. Place a screwdriver under the tab on the lamp puller and pull it out until the lamp is disengaged from its socket.
4. Remove the lamp.
5. Push down on the lamp puller tab until it is seated.
6. Place a new lamp in the switch and lamp housing socket so that the lamp contacts are in line with the right and left socket contacts.
7. Push down on the top of the lamp until it is seated in the socket.
8. Place the lens on top of the switch and lamp housing socket and push down on the lens until it snaps in place.

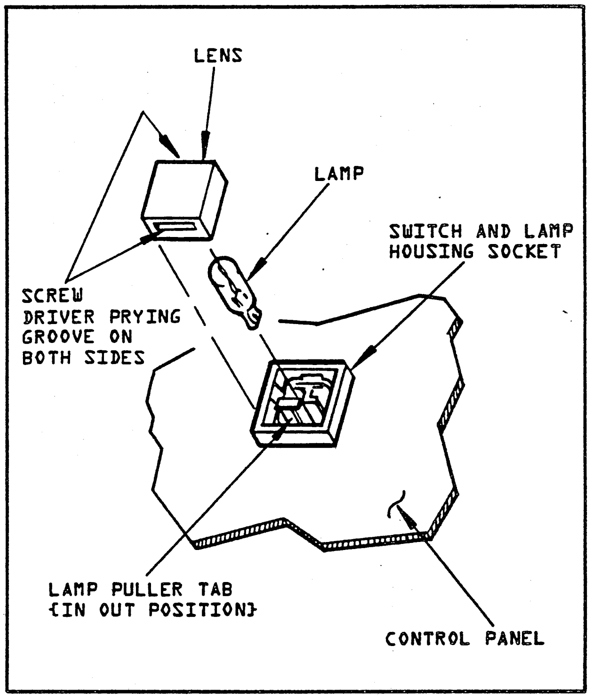


FIGURE 2-66. CONTROL PANEL LENS AND LAMP REPLACEMENT

TRACTOR REMOVAL AND REPLACEMENT

1. Printer powered off.
2. Remove the bonnet.
3. Remove the exit idler roller assembly (PB900), paper bail (paper exit ramp) and top gate protective cover. Also remove the protective cover over the belt for tractor drive if one is installed.
4. Remove the paper motion verification sensor from the right tractor.
5. Loosen the lower tractor shaft mounting hardware and remove the outer hex. head nuts.
6. Loosen the collar clamp and remove the forms adjusting knob and belt from the upper shaft. See Figure 2-67.
7. Loosen the set screws which hold the shaft bearings on the upper shaft.
8. Slide both shafts to the left until the right ends clear the right side of the printhead structure.
9. Swing the two shafts toward the front of the printhead and slide the tractors off the right end of the shaft.
10. Replace or repair the tractors as required.
11. Slide the shafts to the right as far as possible. The shoulders on the shafts will locate the shafts on the right side. Reinstall the outer retaining nut on the right side only.
12. The inner nut on the lower shaft must first be positioned so that it just touches the print head. The outer retaining nut should then be tightened.

CAUTION

DAMAGE TO THE PRINTHEAD STRUCTURE MAY OCCUR IF EITHER THE INNER OR OUTER RETAINING NUTS ARE IMPROPERLY TIGHTENED.

13. Tighten the upper shaft-bearing set screws.
14. Reinstall the forms adjusting knob and drive belt.
15. Perform the belt tension adjustment in Preventive Maintenance and install the belt cover.
16. Perform the tractor alignment procedure.

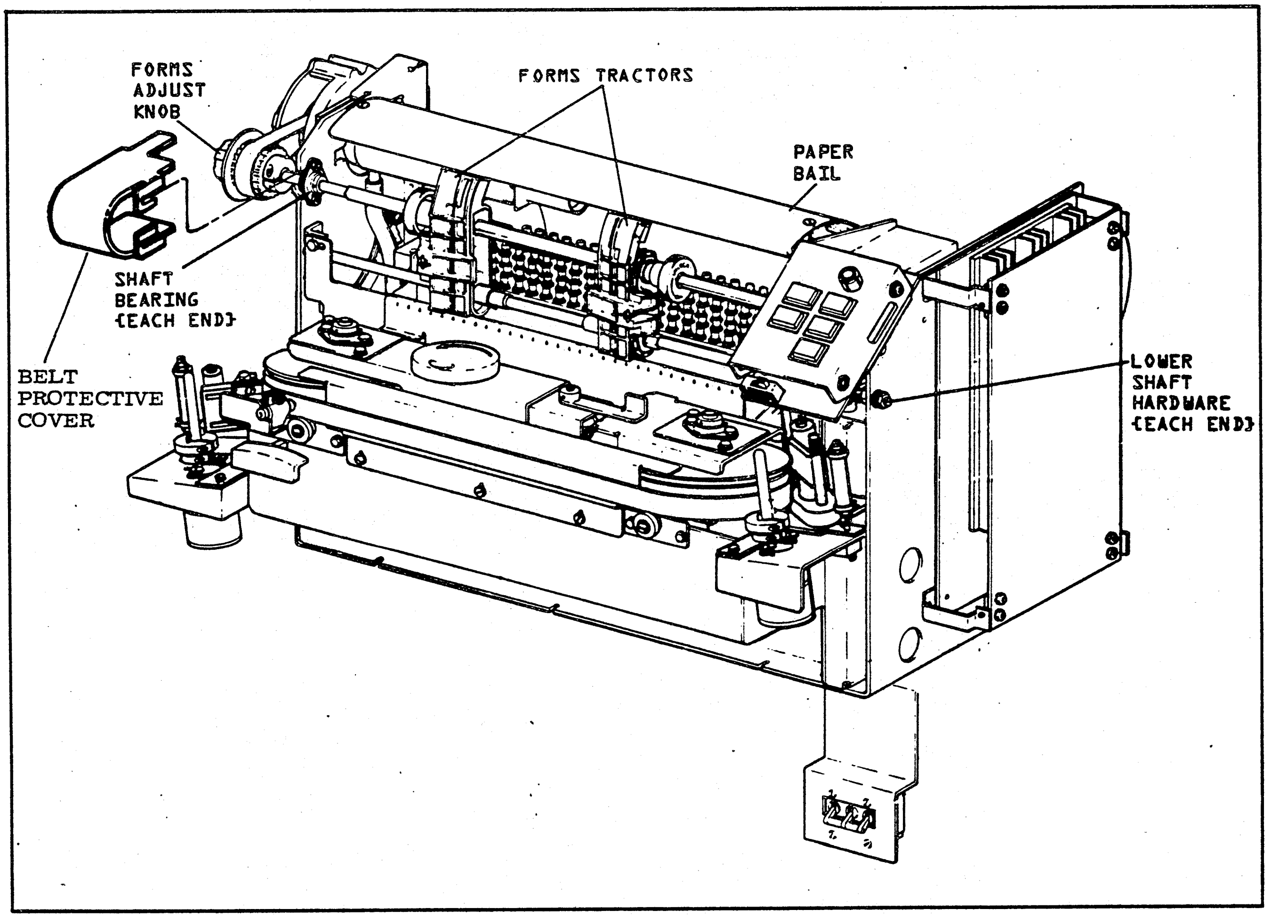


FIGURE 2-67. TRACTOR REMOVAL AND REPLACEMENT

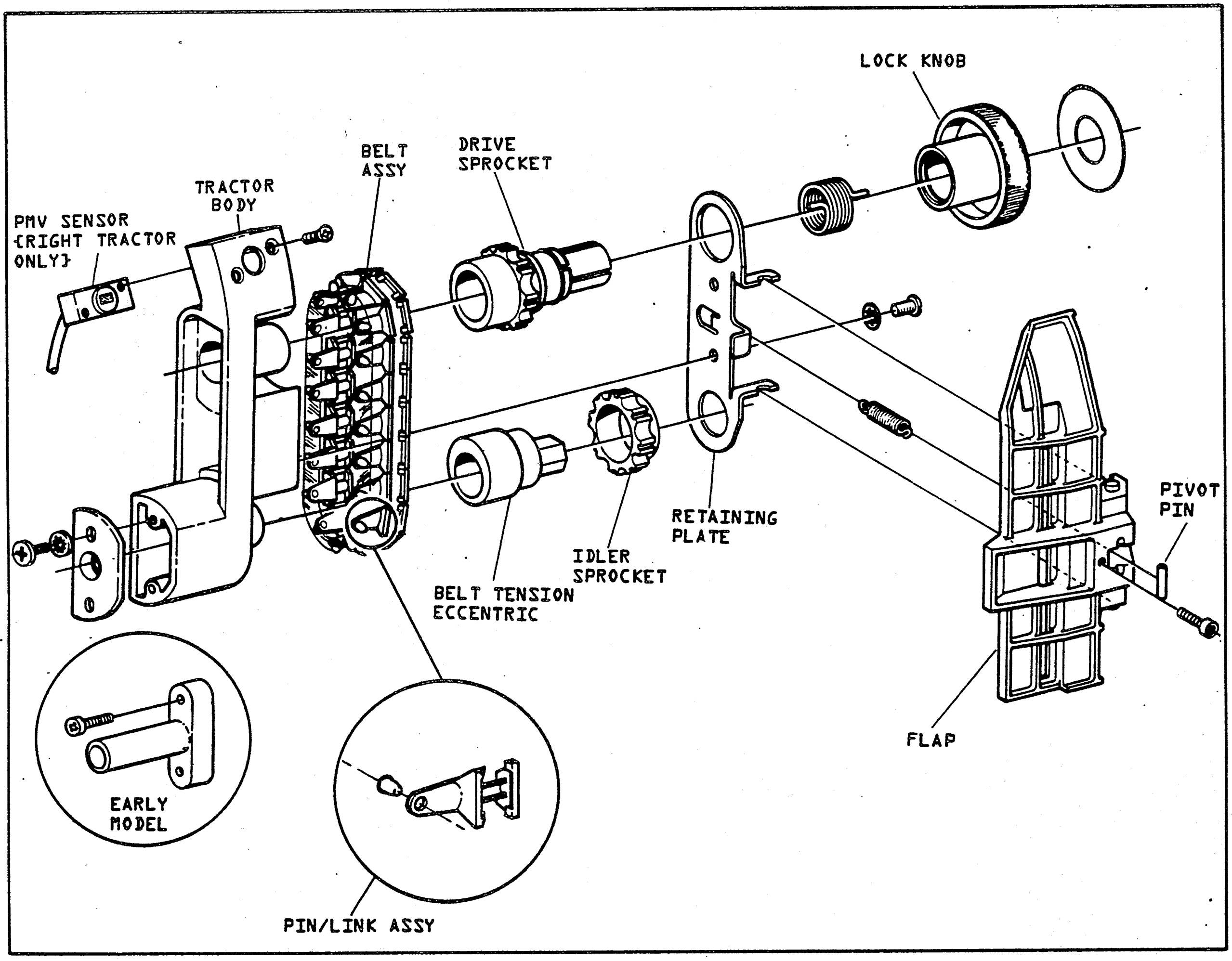


FIGURE 2-68. TRACTOR COMPONENTS LOCATER

TRACTOR COMPONENTS REPLACEMENT

NOTE

> THE TRACTOR FLAP AND PIN/LINK ASSEMBLY COMPONENTS MAY BE REPLACED WITHOUT TAKING THE TRACTOR ASSEMBLY OFF THE PRINTER.

Flap Replacement

1. Printer powered off.
2. Open the print gate.
3. Remove the flap spring from around the pin making sure that the pivot pin does not fall into the other printer components.
4. Remove the flap.
5. Replace the flap and re-install the pivot pin and spring.
6. Perform the Tractor Flap Clearance procedure.

Pin/Link Assembly Replacement

1. Printer powered off.
2. Remove the bonnet and paper bail (paper exit ramp).
3. Remove the lock knob by pulling it off the tractor body. If necessary pry at the base of the knob using a large flat blade screwdriver.
4. Remove the screws holding the retaining plate on the tractor body and slide the plate away from the tractor body.
5. Slide the belt and sprockets off the tractor body.
6. Remove the chad remover plastic strip.
7. The pin/link assembly can now be removed by twisting it off the belt.
8. Replace the pin/link assembly.
9. Reinstall chad remover plastic strip.
10. Reinstall the belt and sprockets.

11. Reinstall the retaining plate making sure that the serrations in the plate properly mate with the belt tension eccentric serrations.
12. Press the locking knob back in place.
13. Perform the Belt Tension Adjustment procedure.

Body, Sprockets, Belt or Knob Replacement

1. Perform the tractor removal procedure.
2. Remove the locking knob. If necessary pry at the base of the knob using a large flat blade screwdriver.
3. Remove the metal retaining plate from the tractor body.
4. Slide the sprockets and belt off the body.
5. Replace defective parts.
6. Reassemble the tractor making sure the retaining plate serrations properly mate with the serrations on the belt tension eccentric.
7. Reinstall the tractor on the printer referring to the Tractor Removal and Replacement procedure.
8. Perform the Tractor Belt Tension and the Tractor Body Alignment procedures.

RESIDUAL STRIP REPLACEMENT

1. Printer powered off.
2. Remove the bonnet and the paper bail (paper exit ramp) and for PB900 printers, exit idler roller assembly.
3. Unplug the hammer driver cables, and remove the ground strap on the armature bar.
4. Remove the three allen screws holding the armature bar assembly to the printhead.
5. Slide the armature bar back and lift it out of the mounting brackets.
6. The residual strip has two possible mounting positions to permit maximum use of the strip. If the strip indicates wear in only one position, move the mounting tabs to the other (unused) holes and proceed to step 9. A strip that has been used in both positions must be replaced as per steps 7 and 8.
7. Position the strip's mounting tabs so that on one side of the armature bar the inner hole (closest to the strip) is positioned over the locating pin. On the opposite side of the armature bar, the mounting tab must be positioned over the pin using the outer hole. See Figure 2-69.
8. Check that the strip is not twisted or folded over in its routing.
9. Reassemble printer and connect the ground strap to the armature bar.

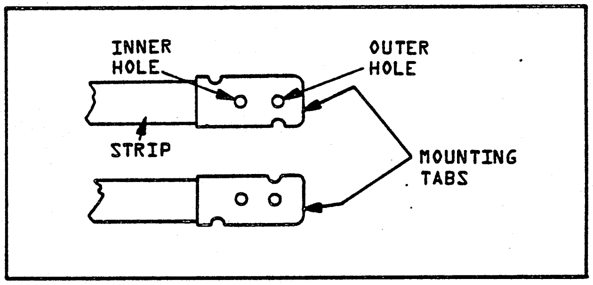


FIGURE 2-69. RESIDUAL STRIP REPLACEMENT

BAND PULLEY FLYWHEEL ASSEMBLY REPLACEMENT

Latch End Components

The standard assembly uses $\frac{1}{2}$ inch shaft, however due to parts availability some units have shafts with 3/8 inch diameter ends using smaller bearings.

1. Printer powered off.
2. Open the bonnet.
3. Remove the upper and lower gate protection covers.
4. Open the print gate and remove the ribbon and print band.
5. Remove the ribbon fold detect sensor mounting screws so the assembly may be removed. Early models had mounting plates which would remove the detect sensor.
6. On early models with the swing down outer paper guide, remove the outer paper guide assembly. Disconnect the lower springs and remove the pivot screws.
7. Remove the band drive belt and the drive pulley at the bottom of the pulley shaft.
8. Scribe a line around, and then remove the ribbon guide bracket (latch end) from its mounting bracket. Early models, the guide and mounting bracket are one unit.
9. Loosen the upper and lower bearing collar screws.
10. Loosen the screws on the collar clamps located on the top and bottom (below spring) of the pulley-flywheel assembly.
11. Hold the flywheel while sliding the shaft down and out of the upper and lower bearings. If the ends of the shaft are 3/8 inch diameter the bottom bearing must be removed (refer to step 13 for instructions). Watch the spring during removal to prevent its loss.

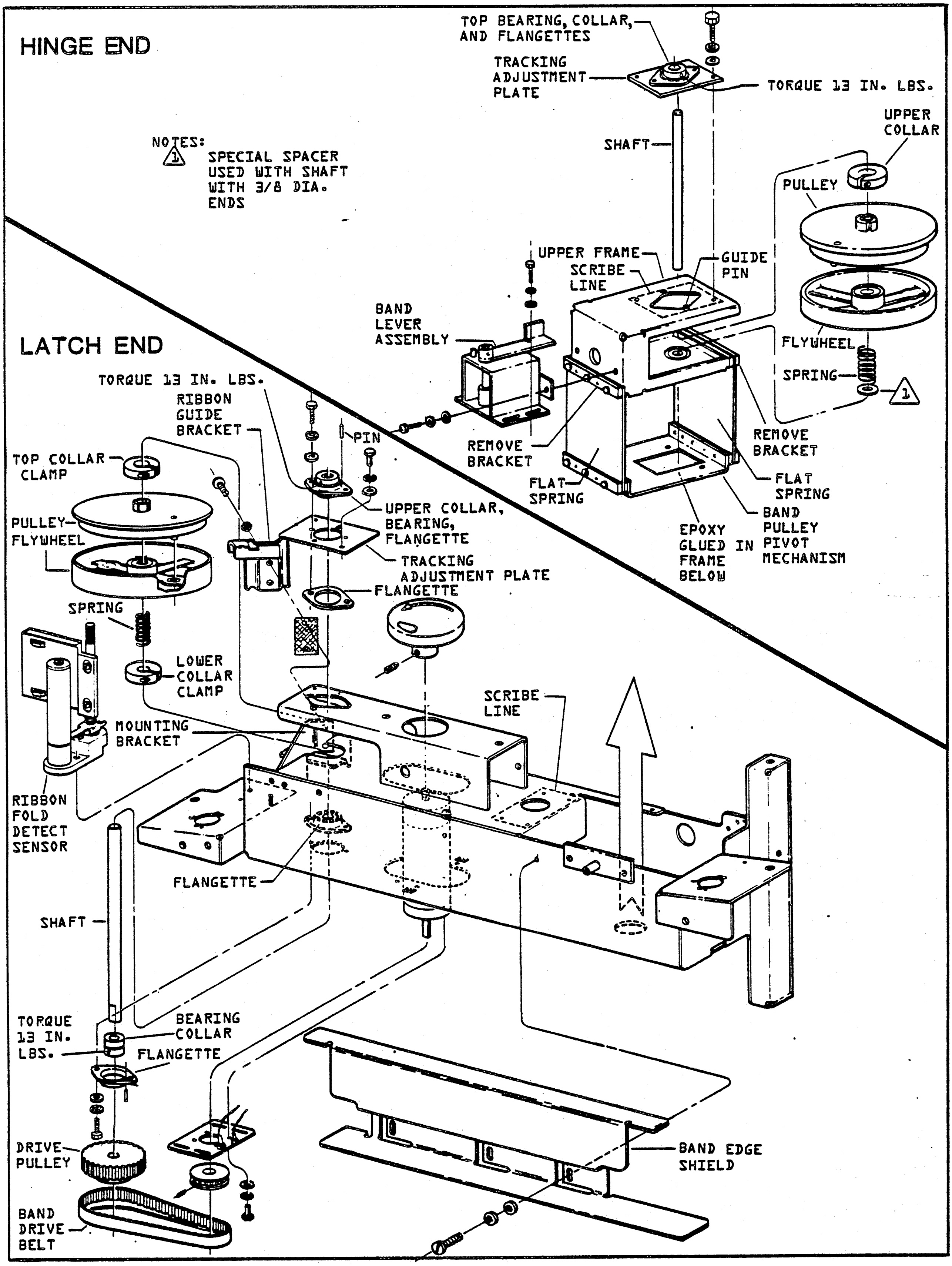
NOTE

THE PULLEY ASSEMBLY IS VERY FRAGILE, CARE MUST BE TAKEN WHEN HANDLING THE ASSEMBLY TO AVOID DAMAGING IT.

12. Remove the pulley flywheel assembly, collar clamps and spring from the gate assembly.
13. Replace components as required. If a bearing requires replacement, the bearing flangette bolts must be removed and the flangette pried carefully off the roll pins. After replacing the bearing, tap the roll pins down to allow the flangette to be installed. Install and tighten the bolts just enough to allow the roll pins to be tapped in for alignment. Tighten the flangette bolts. Always use the old flangettes unless damaged. If new flangettes are being installed, scribe a mark around the old part while bolted and pinned in place. On new flangettes, drill new holes for pins while aligned within scribed area. If a bearing is being replaced on the bottom and the shaft has 3/8 inch diameter ends, do not install the bearing until the flywheel and shaft are back in position.
14. Align the pin on the flywheel to the bushing on the pulley and slide the assemblies together.
15. Place the collar clamp on top of the flywheel.
16. Insert the shaft through the bottom bearing and up until the lower collar and then the spring can be installed. On shafts with 3/8 inch ends the bottom bearing is not yet installed.
17. Position the pulley, flywheel and collar between the bearing locations on the gate.
18. Slide the shaft up into the top bearing until approximately 0.12 in. (3.0 mm) of the shaft protrudes above the top bearing. On shafts with 3/8 inch ends, the shaft must be high enough to clear the lower bearing while it is installed and tightened in place as its pins are aligned.
19. Tighten the hardware to secure the shaft. Torque the screws to 13 inch lbs on the bearing collars holding the shaft.
20. Reassemble the printer.
21. Perform the Band Pulleys Height Adjustment Procedure for the Latch End Pulley.
22. Perform the Outer Paper Guide Adjustment Procedure on models with the swing down outer paper guide.
23. Perform the Band Pulley Tracking Adjustment procedure.

Hinge End Components

1. Printer powered off.
2. Open the bonnet.
3. Remove the upper and lower gate protective covers.
4. Open the print gate and remove the ribbon and print band.
5. Remove the band edge shield on the front of the gate so the flywheel can be removed later.
6. Loosen the collar clamp on the top of the pulley-flywheel assembly .
7. Loosen the collars on the shaft's upper and lower bearings. An access hole for the lower collar is provided inside the gate near the hinge.
8. Scribe a line around the Tracking Adjustment Plate, remove the two bolts securing the plate. Raise and remove the plate and bearing from the pivot pin and shaft.
9. Slide the shaft up until it slowly clears the spring and pulley flywheel assembly.
10. Remove the top collar on the flywheel pulley for clearance.
11. Remove the ribbon drive sprocket by loosening the screw at the base.



NOTES:
1 SPECIAL SPACER USED WITH SHAFT WITH 3/8 DIA. ENDS

12. It may be necessary to remove the ribbon fold detect sensor. However, only a little clearance is needed on some machines and the wire faston can carefully be bend to allow flywheel removal.

13. Remove the pulley-flywheel and spring from the gate structure. Watch the spring during removal to prevent its loss.

NOTE

THE PULLEY ASSEMBLY IS VERY FRAGILE. CARE MUST BE TAKEN WHEN HANDLING THE ASSEMBLY TO AVOID DAMAGING IT.

14. Replace components as required. If the lower bearing requires replacement proceed to the next procedure and then return for flywheel reassembly. If the upper bearing is to be replaced proceed to step 15. If bearings are not being replaced, preceed to step 16 (after other components have been replaced) for reassembly.

15. Replace the upper bearing by removing the bearing flangette bolts and carefully pry off the flangette. Change the bearing and try to assemble the flangette on the roll pins. Always use the old flangettes unless damaged. Refer to step 13 of the latch end procedure for instructions on installing new flangettes with a new bearing.

16. If the shaft has 3/8 inch diameter ends a special spacer must be positioned on the top of the lower bearing to keep the spring from riding on the bearing.

17. Install a flywheel assembly on the pulley.

18. Slide the pulley-flywheel assembly back into the gate from the front of the printer.

19. Start the shaft down through the top of the frame assembly. Position the shaft height through the pulley-flywheel assembly and slightly protruding past the bottom surface.

20. Compress the spring and insert it under the pulley-flywheel assembly, dropping the shaft through the spring.

21. Slide the shaft down through the pulley-flywheel assembly and the lower bearing. Tighten the lower bearing collar enough to hold the shaft in place while installing the upper bearing and plate.

22. With the upper bearing installed, mount the bearing and tracking adjustment plate assembly in place over the shaft. Align the plate with the scribe marks and pivot pin. Bolt the plate in position.

23. Adjust the shaft height until it protrudes approximately 0.12 in. (3.0 mm) above the upper bearing. If the shaft has 3/8 inch diameter ends make sure the $\frac{1}{2}$ ridge does not ride against the bearing.

24. Tighten the hardware to secure the shaft. Torque the screws to 13 inch lbs on the bearing collars holding the shaft.

25. Reassemble the printer.

26. Perform the Band Pulleys Height Adjustment Procedure for the Hinge-End Pulley.

27. Refer to the ribbon tracking procedure to set up the ribbon drive sprocket and ribbon fold detect sensor, if removed.

28. Perform the Band Pulley Tracking Adjustment procedure.

Lower Bearing, Hinge End Replacement

This procedure is referenced in the preceding procedure for Hinge End Components. Both procedures are used together to replace a lower pulley bearing on the hinge side of the gate.

1. Perform the Hinge End Components procedure to remove the pulley-flywheel assembly.

2. Scribe a line around the band lever assembly where it mounts to the gate.

3. Remove the four small bolts holding the band lever assembly to the gate. Remove the two bolts holding the band level assembly to the hinge end band pulley pivot mechanism. Remove the band lever assembly.

4. Remove the upper frame of the pivot mechanism as follows. Remove the upper three 1/4" screws on the flat springs on both sides of the upper frame. Mark the brackets left and right and outside end for replacement purposes. Pry the brackets off the roll pins. Remove the springs from the roll pins and remove the upper frame assembly.

5. Remove the bolts holding the bearing assembly. Mark one side of the flangette to frame for location. Pry the outer bearing flangette off the roll pins.

6. Position a new bearing between the old flangettes and install the bolts. Snug up the bolts just enough to allow the roll pins to align the flangettes as the roll pins are tapped into position. If necessary, tap the roll pins down flush with the other flangette surface to get the flangette started. Tighten up the bolts on the flangettes with the shaft and upper tracking adjustment plate installed to align bearings. Remove the shaft and upper plate.

7. Install the upper frame back on the printer. It will be very difficult to assemble on the roll pins but the pins are very important.

8. Align the band tension mechanism with the scribe lines and install the bolts.

9. Return to the previous procedure, step 14, and continue.

PAPER CLAMP SOLENOID ASSEMBL (PBS PRINTERS)

1. Printer powered off.
2. Open the bonnet and remove the upper gate protective cover.
3. Remove the ribbon and band. Also remove the gate stop on printers with the swing down outer paper guide.
4. Open the print gate.
5. Remove the inner paper guide.
6. Remove the paper clamp assembly by removing the screws attaching the mounting plate to the print head. Unplug the solenoid wires.
7. Remove the two hex nuts attaching the solenoid assembly to the mounting plate and slide the assembly off the plate.
8. Replace the solenoid assembly.
9. Using feeler gauges check that the travel of the solenoid armature is .020 to .026 in. (0.51 to 0.66 mm). See Figure 2-16.
10. If the travel is incorrect loosen the two screws mounting the spring clamp and move the clamp as required.
11. Reassemble the printer except for the gate stop.
12. Perform the Inner Paper Guide Adjustment procedure.
13. Perform the Paper Clamp Adjustment Procedure.
14. Install the gate stop if one was removed.

UPPER BAND GUIDE REPLACEMENT (Top Edge Guide)

Any signs of wear or damage on the upper band guide's wear strip requires a replacement of the guide. The wear strip can not be replaced independently. New platens with plastic riveted to the front will have shims between the top edge guide and the platen (see Figure 2-1).

1. Power the printer off
2. Open the bonnet and remove the upper gate protective cover.
3. Open the print gate.
4. Remove the ribbon and the band.
5. Remove the six screws mounting the upper band guide to the platen.
6. Replace the upper band guide. Shims will be under the guide with new platen assemblies (see Figure 2-1).
7. Perform the upper band guide adjustment procedure found in the Corrective Maintenance Section.

PUSH ROD REPLACEMENT (PBS PRINTER)

This procedure may be performed as a repair procedure for a pivot module assembly. Indication of failure appears as adjacent columns dropping out on the printout. Flight time adjustment may sometimes appear to correct this problem, but is usually only temporary. Check both ends of push rods on the affected columns for missing tips (glass like, clear shiny tips) or bent rods at the rod ends.

1. Printer power off.
2. Remove the ground strap and lift off the printer bonnet.
3. Remove the paper bail.
4. Remove the Armature Bar by removing the three hex head screws that hold the armature bar in position. Remove the ground strap to the armature bar.
5. Unplug the hammer driver cables from the armature bar plugging into the hammer driver boards.
6. Lift the armature bar out of the printer.
7. Remove the two screws holding the pivot module in position (module containing the push rod in question). Check the hole sequence in which the push rods are positioned at the back of the hammer bar. Back the pivot module away from the hammer bar and remove the pivot module.
8. Examine the push rods for missing or bent tips.
9. Use small pliers to raise and disconnect the small spring holding the push rod assembly to the base on any faulty push rod. Use care not to lose the small springs.
10. Note the direction (or side) of the opening on the side of copper colored sleeve. The opening on the side of the sleeve is keyed for only one direction. Slide the sleeve off the guide, moving away from the pivot mount.
11. Separate the upper and lower push rod guides and remove the push rod.
12. Install a new push rod and reassemble the module in the reverse sequence. All push rods must be inserted into the hammer bar behind the correct hammer. When installing the armature bar make sure the push rod ends are aligned with all armature assemblies. Also connect the armature bar ground strap.
13. Adjust the flight time screw on any hammer protruding out or back from the average hammer position for only those push rods changed.
14. Perform the Flight Time Adjustment procedure.

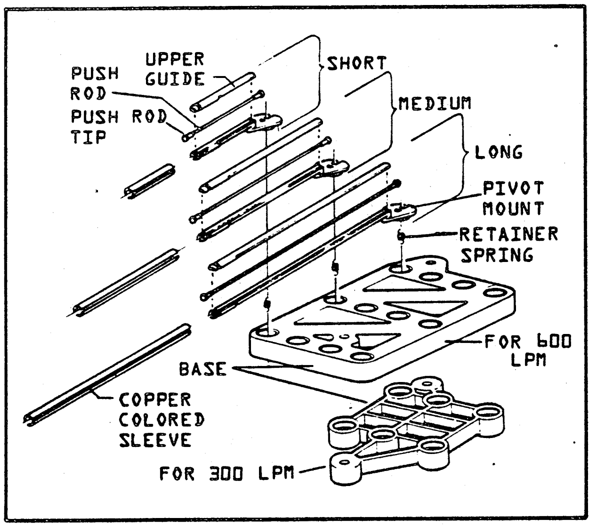


FIGURE 2-70. PIVOT MODULE

PUSH ROD REPLACEMENT (PB900 PRINTER)

This procedure may be performed as a repair procedure for a push rod retainer assembly. Indication of failure appears as columns dropping out on the printout. Flight time adjustment may sometimes appear to correct this problem, but is usually only temporary. Check both ends of push rods on the affected columns for missing tips (glass like, clear shiny tips) or bent rods at the rod ends.

1. Printer power off.
2. Remove the ground strap and lift off the printer bonnet.
3. Remove the paper exit idler roller assembly.
4. Remove the paper exit ramp and plate covering the hammer driver printed circuit boards.
5. If an even column push rod retainer is to be replaced or repaired, slide the hammer driver board assembly slightly toward the rear of the printer to allow easier access to the connectors of the inner hammer driver boards.
6. Tag all connectors before removal to identify their location.

NOTE

IF AN ODD COLUMN PUSH ROD RETAINER NEEDS REPLACEMENT, REMOVE THE UPPER ARMATURE BAR. IF AN EVEN COLUMN PUSH ROD RETAINER IS TO BE REPLACED, REMOVE THE LOWER ARMATURE BAR.

7. For lower armature bar replacement, remove the inner paper guide.
8. Remove the three hex-head screws holding the armature bar in position.
9. Unplug the connectors of the outer hammer driver boards for upper armature bar removal. Or, unplug the connectors of the inner hammer driver boards for lower armature bar removal.
10. Mentally note the cable routing pattern. Feed wires and connectors for the even column armatures through holes in the frame and out the front of the printer.
11. Lift the armature bank out of the printer.
12. The push rod retainer assemblies are held in place by two screws for each assembly. These mounting screws are on the top back sloping surface of the module mounting bar. If more than one assembly is removed, note each assembly's position because push rod lengths vary. Remove the two mounting screws holding the push rod retainer assembly and remove the assembly.
13. Remove the four screws and two brackets holding the push rod assembly together.
14. Separate the bottom metal support.
15. Holding the guide, slide the guide cover forward until the locking tab in front releases the guide cover. Raise and remove cover.
16. Remove push rods in sequence. Push rods of the same length do vary within a tolerance range.
17. Substitute new push rods for bent, or missing tip rods.
18. Reposition the push rods in the removed sequence. A hammer will require flight time adjustment if its push rod has been changed.
19. Position guide cover over the locking tab on the guide. Push the guide cover back until locked.
20. Replace support and position brackets on the top of the assembly. Insert and tighten the four screws in the two brackets.

Push Rod Retainer Assembly Installation

The push rod retainer assembly can be installed with the hammer module installed, but installation is more difficult. With the hammer module installed, the push rod retainer must be held in place against the spring tension of the hammers while the two mounting screws are tightened.

21. Install the push rod retainer assembly by inserting from the back of the module mounting bar. Aligh the front locking tab of the retainer into the slot on the bottom of the mounting bar. Slide the push rod retainer forward until the position stop tab contacts the mounting bar.
22. Insert and tighten the two mounting screws.
23. Place the armature bar back in the printer and secure it with the three mounting screws.
24. Plug in the hammer driver cables following the original routing.
25. Perform the Flight Time Adjustment procedure.
26. Reinstall the inner paper guide, exit idler roller assembly and paper exit ramp.
27. Reinstall the bonnet and ground strap.

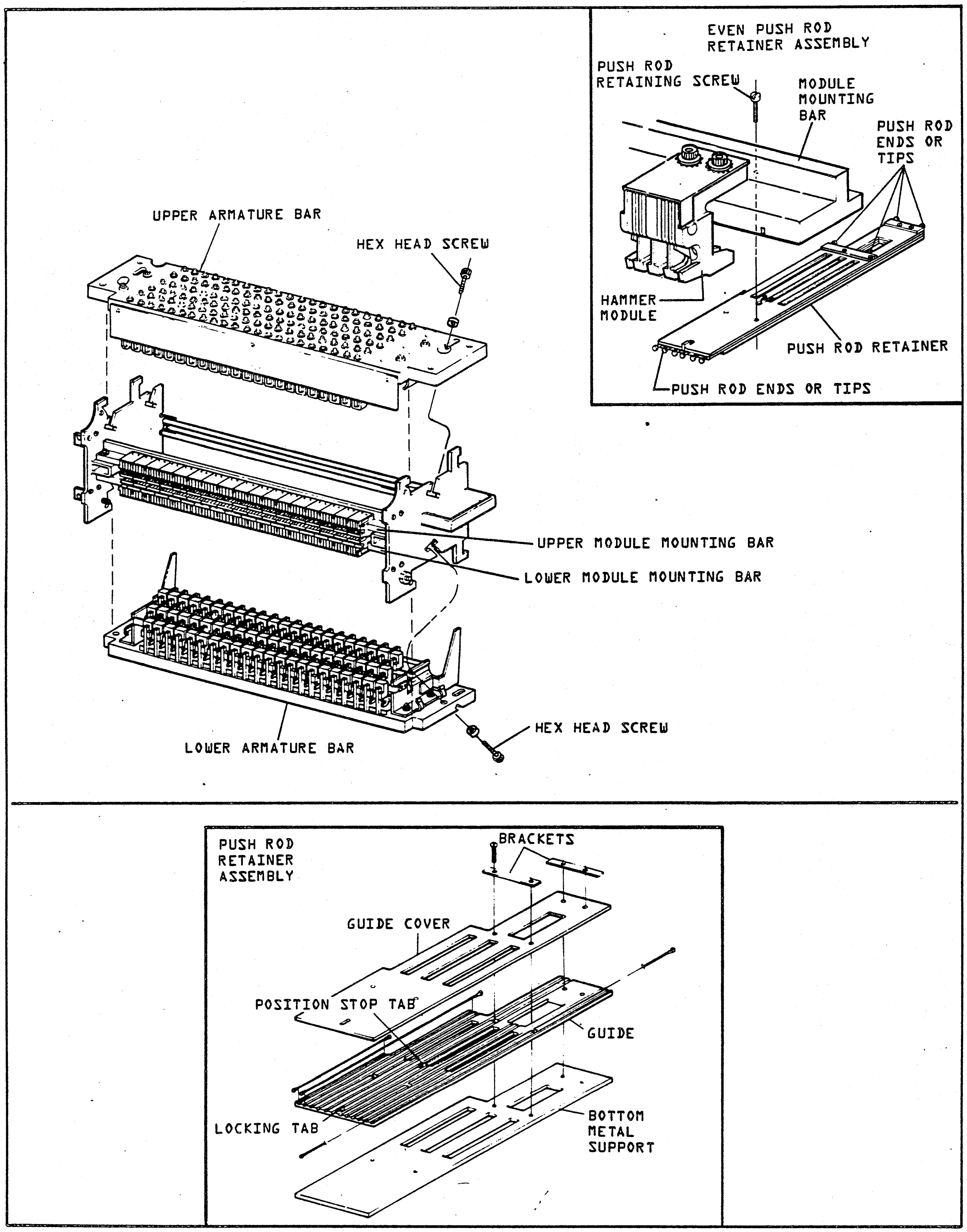


FIGURE 2-71. PUSH ROD REPLACEMENT (PB900 PRINTER)

BLOWER FAULT DETECTOR REPLACEMENT

WARNING

REMOVE POWER BY DISCONNECTING THE A-C POWER CORD FROM THE VOLTAGE SOURCE.

1. Remove two cross-head screws at top of the circuit breaker mounting bracket and lower the circuit breaker assembly to the extent allowed by the length of the wires attached.
2. Locate blower fault detector terminal block mounted on the panel behind the circuit breaker assembly.
3. Make note of the wire colors and position on the terminal block, then remove the wires.
4. Remove the blower fault detector by removing two socket-head screws securing the terminal block to panel. Observe the wiring arrangement of the 8-watt resistor and thermal cutoff (within the resistor) for correct orientation of new part.
5. Install new blower fault detector assembly with screws removed in step 4.
6. Connect wires to terminal block in the order noted in step 3.
7. Mount the circuit breaker assembly with the two screws removed in step 1.

PAPER MOTION VERIFICATION SENSOR REPLACEMENT

1. Printer power off.
2. Disconnect bonnet ground strap and lift bonnet off printer.
3. Remove exit idler roller assembly (PB900) and paper bail (paper exit ramp).
4. Remove PMV sensor by removing two screws securing sensor to right-hand tractor.
5. Withdraw sensor cable from wire retaining clip and disconnect in-line sensor cable connector.
6. Install new PMV sensor with the photocell (a bright spot as seen through the sensor window) to the left. Use screws removed in step 4.
7. Connect in-line cable connector and push sensor cable into wire retaining clip.
8. Reinstall paper bail (paper exit ramp) and exit idler roller assembly (PB900).
9. Reinstall bonnet and ground strap.

PAPER EXIT MOTOR REPLACEMENT (PB900 PRINTER)

1. Printer powered off.
2. Raise the bonnet and disconnect its ground strap. Carefully lift the bonnet off the printer.
3. Remove the paper exit idler roller assembly by sliding the assembly forward and out of its mounting clips (Figure 2-56).
4. Remove the paper exit ramp by first loosening the two thumbscrews then lifting it off the printer.
5. Remove the plate covering the hammer driver boards and slide the hammer driver board assembly toward the rear of the printer.
6. Remove the green ground wire attached to the paper exit motor mounting plate.
7. Cut the ty-wraps which bundle the green wire together with the three exit motor leads. Remove ty-wraps as far down as the faston terminal on the yellow motor lead.
8. Disconnect the yellow motor lead at the in-line splicing terminal.
9. Remove two screws and lockwashers which secure the mounting bracket of capacitor 3C03. (Figure 2-56). This frees the capacitor.
10. Pull back the capacitor boot and remove the blue and red paper exit motor leads.
11. Remove the three nuts and washers which secure the paper exit motor mounting plate to the structure (Figure 2-56).
12. Remove the timing pulley from the motor shaft and remove four screws and washers to separate the motor from its mounting plate.
13. Install motor mounting plate to new paper exit motor with four screws and the washers removed previously.
14. Install timing pulley on new motor shaft.
15. Hold exit motor, with mounting plate attached, in place on mounting studs while engaging the drive belt with the timing pulley. Install washers and three mounting nuts leaving nuts slightly loose.
16. Connect red and blue motor leads through the boot on capacitor then reinstall capacitor.
17. Connect yellow motor wire to in-line splicing terminal.
18. Connect green wire to the exit motor mounting plate with screw and lockwasher removed previously.
19. Bundle these four wires together and route them as they were originally routed using ty-wraps.
20. Slide the hammer driver board assembly back into position, then install the plate over the assembly.
21. Perform the paper exit motor belt tension and tracking adjustments procedures contained in this section.
22. Replace the paper exit ramp and secure with the two thumbscrews.
23. Replace the paper exit idler roller assembly by snapping it down into the retaining clips.
24. Replace the bonnet and ground strap.

PAPER EXIT ROLLER REPLACEMENT (PB900 PRINTER)

1. Printer powered off.
2. Raise the bonnet and disconnect its ground strap. Carefully lift the bonnet off the printer.
3. Remove the exit idler roller assembly by sliding the assembly forward and out of its mounting clips (Figure 2-56).
4. Remove the paper exit ramp by first loosening the two thumbscrews then lifting it off the printer.
5. Loosen the three nuts which secure the paper exit motor mounting plate to the print head structure. (See Figure 2-56).
6. Slide the paper exit motor toward the rear to allow enough slack in the drive belt to remove it from the timing pulley.
7. Loosen the set screw in the timing pulley and remove the pulley.
8. Loosen the set screw in the bearing collars at both ends of the exit roller shaft.
9. From the rear of the printer, slide the exit roller assembly to the left until the shaft comes out of the bearing collar at the right side.
10. Pull back on the right end of the shaft slightly to cause the left bearing to pivot and allow the shaft to be withdrawn from it. The rollers can now be replaced by loosening a set screw in each roller.
12. Replace the exit roller assembly by first inserting the left end of the shaft in the left hand bearing then aligning the shaft with the right hand bearing and sliding the shaft into the bearing.
13. Reinstall the timing pulley flush with the end of the roller shaft. Tighten the set screw.
14. Reinstall the drive belt on the timing pulley. Make sure the belt is engaged in the teeth of both the motor pulley and the timing pulley.
15. Position the exit roller shaft so that the drive belt lines up with the motor pulley and the timing pulley. (The shaft may have to be repositioned in the steps that follow.) Tighten the set screws in both bearing collars.
16. Perform the paper exit motor belt tension and tracking adjustments procedures in this section.
17. Replace the paper exit ramp and secure with two thumbscrews. Replace the exit idler roller assembly by snapping it down into the retaining clips and replace the bonnet and ground strap.

HAMMER DRIVER BOARD REPLACEMENT

1. Printer powered off.
2. Raise the bonnet and disconnect its ground strap. Carefully lift the bonnet off the printer.
3. Remove the paper exit idler roller assembly by sliding the assembly forward and out of its mounting clips (Figure 2-56). (PB900 Only)
4. Remove the paper bail (exit ramp) by first loosening the two thumbscrews then lifting it off the printer.
5. Remove the back panel behind the boards.
6. PB printers only. Remove the plate covering the hammer driver board assembly. Then slide the assembly toward the rear of the printer.
7. PBS printers only. Unlatch and swing out logic boards in front of hammer driver board.
8. Unplug power cable connector P1 and ribbon cable connector P3 from the board to be replaced. Also remove the three top edge connectors P4, P5 and P6.
9. PB printers only. Remove the protective cover which extends across two boards by first removing four plastic retaining screws.
10. PB printers only. Using a 1/4 in. nut driver, remove six threaded hexagon standoffs which hold the board against the buss bars. Remove the board and remove the terminator plug from the board.
11. PBS printer only. Remove the six large wing nuts holding the hammer driver board to the buss bar. Remove the board and remove the terminator plug from the board.
12. Plug the terminator into the jumper socket on a new board. Figure 2-74 and 2-75 identifies the terminators for the four hammer driver boards.
13. Place a new board in position against the buss bars and secure with the six hexagon standoffs or wing nuts.
14. Replace the three top edge connectors, power connector and ribbon connector on the hammer driver board.
15. PB printers only. Install the protective cover across two boards with four plastic screws.
16. PB printers only. Slide the hammer dirver board assembly back into position with the rod all the way into the slot at the bottom of the assembly.
17. PB printers only. Reinstall the plate covering the hammer driver P. C. boards.
18. PBS printers only. Swing the outer logic boards back into position and latch.
19. Install the back panel behind the boards.
20. Replace the paper bail (exit ramp) and for PB900 printer, the exit idler roller assembly.
21. Install the bonnet and ground strap.

HAMMER BANK CAPACITOR REPLACEMENT (PB900 PRINTER)

1. Printer powered off.
2. Disconnect bonnet ground strap and remove printer bonnet.
3. Remove the exit roller assembly.
4. Remove the paper exit ramp and plate covering the hammer driver printed circuit boards.
5. Remove the ribbon cable connector (P3) and power cable connector (P1) from both rear hammer driver boards, board locations 5PC1 and 5PC3.
6. Remove three top edge connectors from both rear hammer driver boards (P4, P5, and P6).
7. Remove the protective cover which extends across both rear hammer driver boards by first removing four retaining screws.
8. Using a $\frac{1}{4}$ in. nut driver, remove six threaded standoffs from each rear hammer driver boards. and remove the boards.
9. Remove the barrier insulator sheet extending the length of both boards next to the capacitors.
10. Loosen the two clamps which hold the two end capacitors to the capacitor rack.
11. Remove both screws from the top of the capacitors to be replaced.
12. The capacitor is now free from the buss bar assembly and can be removed by sliding it out toward the rear of the printer while lifting up on the buss bar.
13. Install a new capacitor, observing the polarity signs on the capacitor and buss bar.
14. Secure the capacitor to the buss bar assembly with the two screws removed in step 11.
15. Seat the two end capacitors in the clamps and tighten the clamps.
16. Place the barrier insulator sheet next to the capacitors.
17. Reinstall the two hammer driver boards and secure in place with six threaded standoffs for each board.
18. Reinstall the protective cover over the boards using the four retaining screws.
19. Replace the six top edge connectors on the hammer driver boards in the following left to right order, as viewed from the rear of the printer: 5PC3-P6, P5,P4 and 5PC1-P6, P5,P4.
20. Replace the two ribbon cable and two power cable connectors on the hammer driver boards.
21. Replace the plate covering the hammer driver PC boards.
22. Replace the paper exit ramp and exit idler roller assembly.
23. Install bonnet and ground strap.

HAMMER BANK CAPACITOR REPLACEMENT (PBS PRINTER)

1. Printer powered off.
2. Disconnect bonnet ground strap and remove printer bonnet.
3. Remove the paper bail covering the printed circuit boards.
4. Remove the printed circuit boards 7PC1 thru 7PC6. Make sure all connectors are marked for location.
5. Remove the ribbon cable connector (P3) and power cable connector (P1) from hammer driver boards, board locations 5PC1 and 5PC2. Board 5PC2 is only used on the 600 LPM series printers.
6. Remove three top edge connectors from the hammer driver boards (P4, P5, and P6).
7. Remove six threaded standoffs from each hammer driver board and remove the boards.
8. Use a large screwdriver to ground the buss bars on the top of the capacitors, making sure the capacitors are discharged.
9. Remove the clamps which hold the capacitors to the frame.
10. Carefully move the buss bar and capacitor assembly out the back of the printer until the top of the buss bar clears the frame.
11. Peel back the mylar on top of the buss bar over the capacitor being replaced and remove both screws from the top of the capacitors to be replaced.
12. The capacitor is now free from the buss bar assembly and can be removed by sliding it out toward the rear of the printer while lifting up on the buss bar.
13. Install a new capacitor observing the polarity signs on the capacitor and buss bar.
14. Secure the capacitor to the buss bar assembly with the two screws removed in step 11. Cover the screws with mylar that was peeled back earlier.
15. Carefully push the buss bar and capacitor assembly back under the frame and fasten the capacitor clamps to the frame.
16. Reinstall the two hammer driver boards and secure in place with six threaded standoffs for each board.
17. Replace the six top edge connectors on the hammer driver boards in the following left to right order, as viewed from the rear of the printer: 5PC1-P6, P5, P4 and 5PC2-P6, P5, P4.
18. Replace the two ribbon cable and two power cable connectors on the hammer driver boards.
19. Install the printed circuit boards 7PC1 thru 7PC6 and their ribbon cables.
20. Replace the paper bail assembly.
21. Install bonnet and ground strap.

PLATEN AND UPPER GUIDE REPLACEMENT

Normally a platen will require only adjustment and the replacement of the upper band guide (top edge guide) when wear occurs on its bottom surface wear strip (bearing tape). Some production printers may not have platen backstop screws and their adjustment may be ignored. Early platen assemblies were all metal with a wear strip (bearing tape) adhered to the band riding surface with double-back tape. The platen wear strip required replacement every three months and was supplied as an assembly with the double-back tape on the bearing tape or as separate parts which presented problems with air bubbles during installation. Upper band guides (top edge guide) on early platens were bolted directly to the platen, however on the new platens with plastic on the front, the overhang of the upper guide caused the outer ends of the upper band guide to flex upward slightly. The flexing of the upper band guide was corrected by placing shims between the platen and upper band guide. Due to the cost of replacing the wear strip every three months a new platen was developed with plastic bonded and rivited to the front surface of the platen. A new platen is now being developed reducing the area of the plastic surface. Early platens would normally be replaced with plastic models to reduce the cost of wear strip replacement. The plastic front platen however can fail as recognized by areas of fuzzy printing. A simple mechanical tap between the rivits can detect areas of the plastic where the bonding has failed, these areas have a dead sound.

On early platens with wear strips refer to the Platen Wear Strip Replacement procedure for wear strip installation.

The following procedure will cover the installation of the upper band guide (top edge guide) but its positining and alignment are covered in Corrective Maintenance. Two procedures are provided, one for new platens with plastic on the front, and one for old platens with wear strips.

The upper band guide (top edge guide) can be replaced without removing the platen, or the whole platen and upper guide can be removed from the printer without disturbing the adjustment of the upper band guide.

Tools Required

Straight Edge
Feeler Gauges
Torque Wrench (50 or 100 in. lbs.) (10 N•m)
Socket 1/4 inch
Socket 3/8 inch
Wrench 5/16 inch open end
Screwdriver, Flat Blade (3/8 diameter shaft)

Platen Procedure (See Figure 2-71A)

1. Remove the plastic band cover.

2. Open the printer gate and swing open the outer paper guide.

3. If the upper band guide (top edge guide) is to be removed, the six bolts securing it to the top of the platen should be loosened while the platen is still on the printer.

4. **This step should be performed if the platen has two backstop screws. Loosen and remove backstop screws. Insert a narrow screwdriver through the gate frame to the head of the backstop screw. Hold the screw while loosening the two visible nuts. Back the screw out of the platen. Be careful not to lose the washers at the platen surface. Remove the other backstop screw from the platen in the same manor. If a new platen is being installed the backstop screws will be be used.**

5. Remove the three platen nuts and washers holding the platen to the stud bracket. Do not loosen or remove the bolts holding the stud bracket.

6. Raise the platen slowly off the stud bracket while checking for any shims that might be sticking to the bottom of the platen.. Any shims under the platen must remain on the same stud. Shims may or may not be present and their thickness can be 0.002 inch, 0.003 inch, or 0.005 inch.

7. **Install the new platen or a platen kit, with three additional washers between the shims and platen as shown in Figure 2-71A on the printer with the washers and three nuts previously removed. Do not tighten the nuts.**

8. Refer to the Corrective Maintenance, Platen to Band Pulley Alignment procedure to align the front surface of the platen to the high point (maximum runout) on the band pulleys. Torque the platen nuts maintaining the pulley alignment. Torque required is 25 to 30 in/lbs. or 2.82 to 3.39 Newton-meter (N• m).

9. **Old steel platens will still require the installation of the backstop screws. Install the two backstop screws into the back of the platen being careful not to bottom out the screw in the platen. Adjust the stop nut near the screw head to prevent bottoming out the screw. When positioning the two screws and stop nuts do not apply any push or pull pressure on the platen. Adjust the two visible lock nuts on each screw to lock the screw in position. Tighten the nuts only enough to lock the lock washers. No pressure should be exerted on the platen when tightening the lock nuts. Repeat the alignment check referenced in Step 8. If alignment has shifted, loosen the backstop screws before adjusting the platen position.**

Upper Band Guide Procedure

1. Remove the six screws and their washers holding the upper band guide (top edge guide) to the platen, being careful not to lose any shims positioned between the guide and platen.

2. Carefully raise the upper band guide to maintain the position of any shims while removing the guide.

3. If shims are present, the platen should be the type with plastic bonded and rivited to the front. The shims are 0.002 inch and positioned as shown at the bottom of Figure 2-71A.

4. Install the new upper band guide with the six screws and their washers. Refer to Corrective Maintenance, Upper Band Guide Alignment procedure to adjust the guide. Their are two procedures depending which type platen is installed.

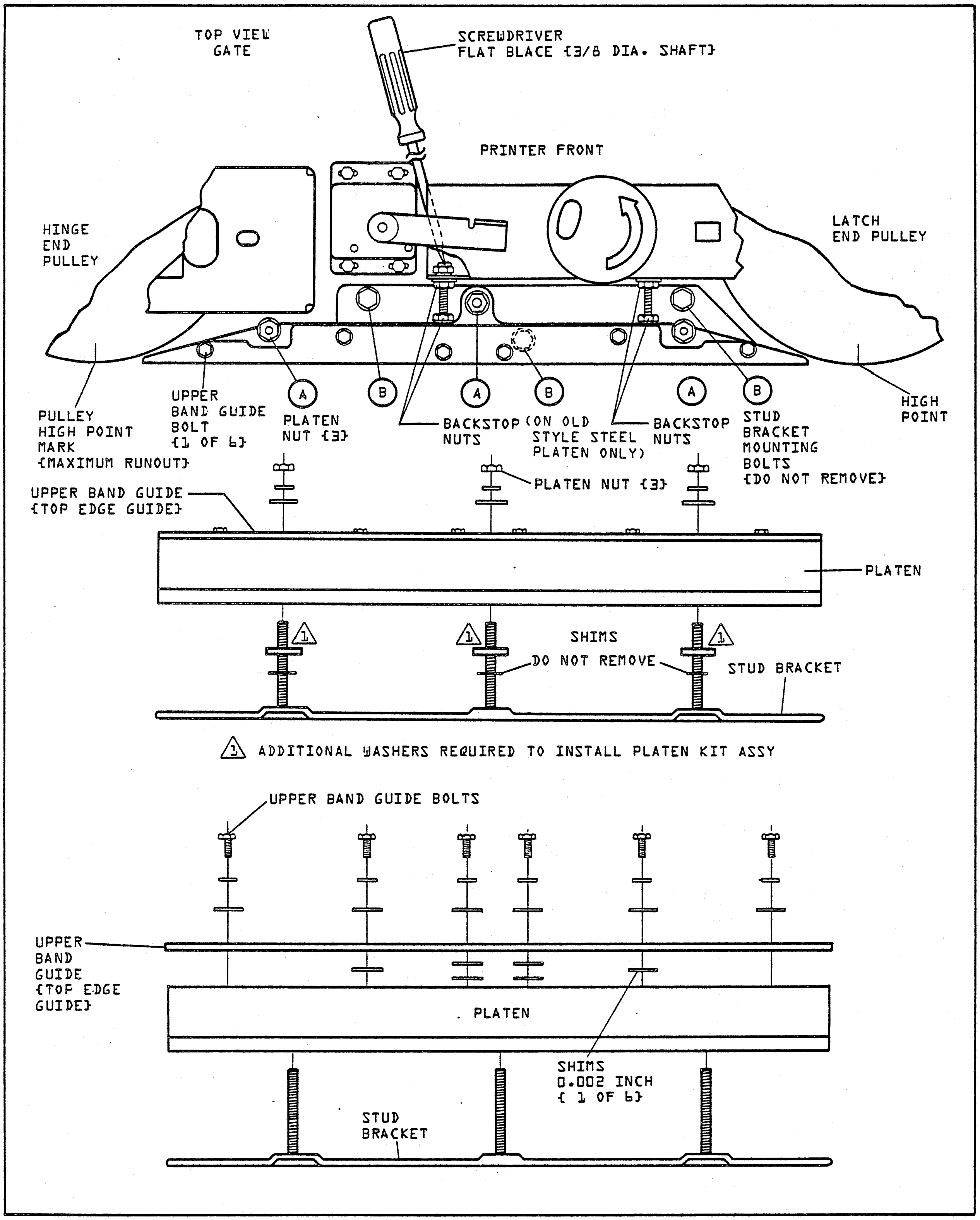


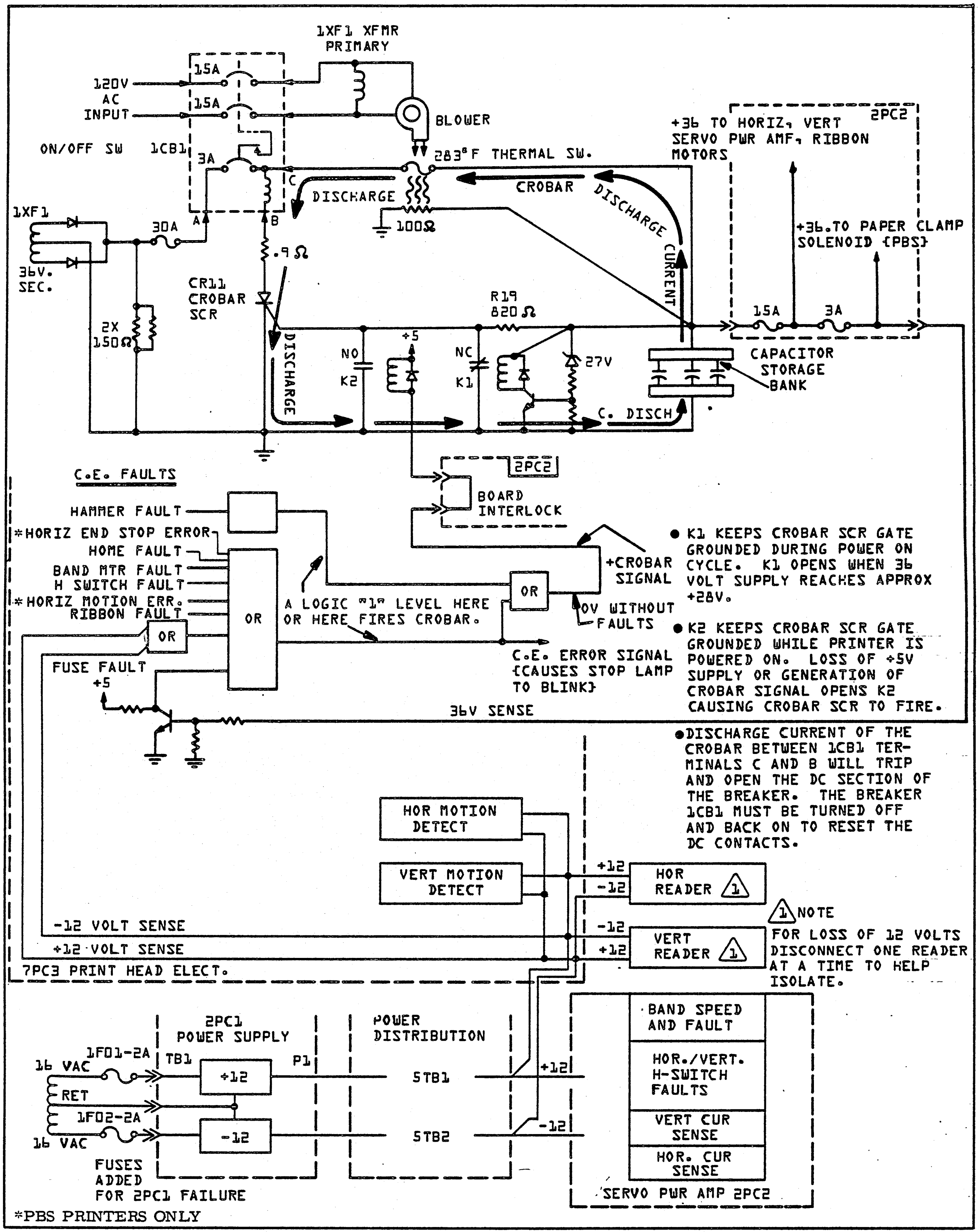
FIGURE 2-71A. PLATEN AND UPPER BAND GUIDE REPLACEMENT

FAULT ISOLATION

INTRODUCTION

This section on fault isolation is intended to be used with the Corrective Maintenance section and the Diagrams section. The following information is intended to aid in the diagnosis of the printer and interface problems. The following information makes use of the C.E. Fault check points. Printers which do not have the optional customer engineer fault panel have the check points which may be monitored on the 7PC3 Print Head Electronics board.

CONTENTS



- K1 KEEPS CROBAR SCR GATE GROUNDED DURING POWER ON CYCLE. K1 OPENS WHEN 36 VOLT SUPPLY REACHES APPROX +28V.
- K2 KEEPS CROBAR SCR GATE GROUNDED WHILE PRINTER IS POWERED ON. LOSS OF +5V SUPPLY OR GENERATION OF CROBAR SIGNAL OPENS K2 CAUSING CROBAR SCR TO FIRE.
- DISCHARGE CURRENT OF THE CROBAR BETWEEN 1CB1 TERMINALS C AND B WILL TRIP AND OPEN THE DC SECTION OF THE BREAKER. THE BREAKER 1CB1 MUST BE TURNED OFF AND BACK ON TO RESET THE DC CONTACTS.

⚠1 NOTE
FOR LOSS OF 12 VOLTS DISCONNECT ONE READER AT A TIME TO HELP ISOLATE.

*PBS PRINTERS ONLY

FIGURE 2-72. POWER SUPPLY 12 VOLT AND +36 VOLTS AND CROWBAR

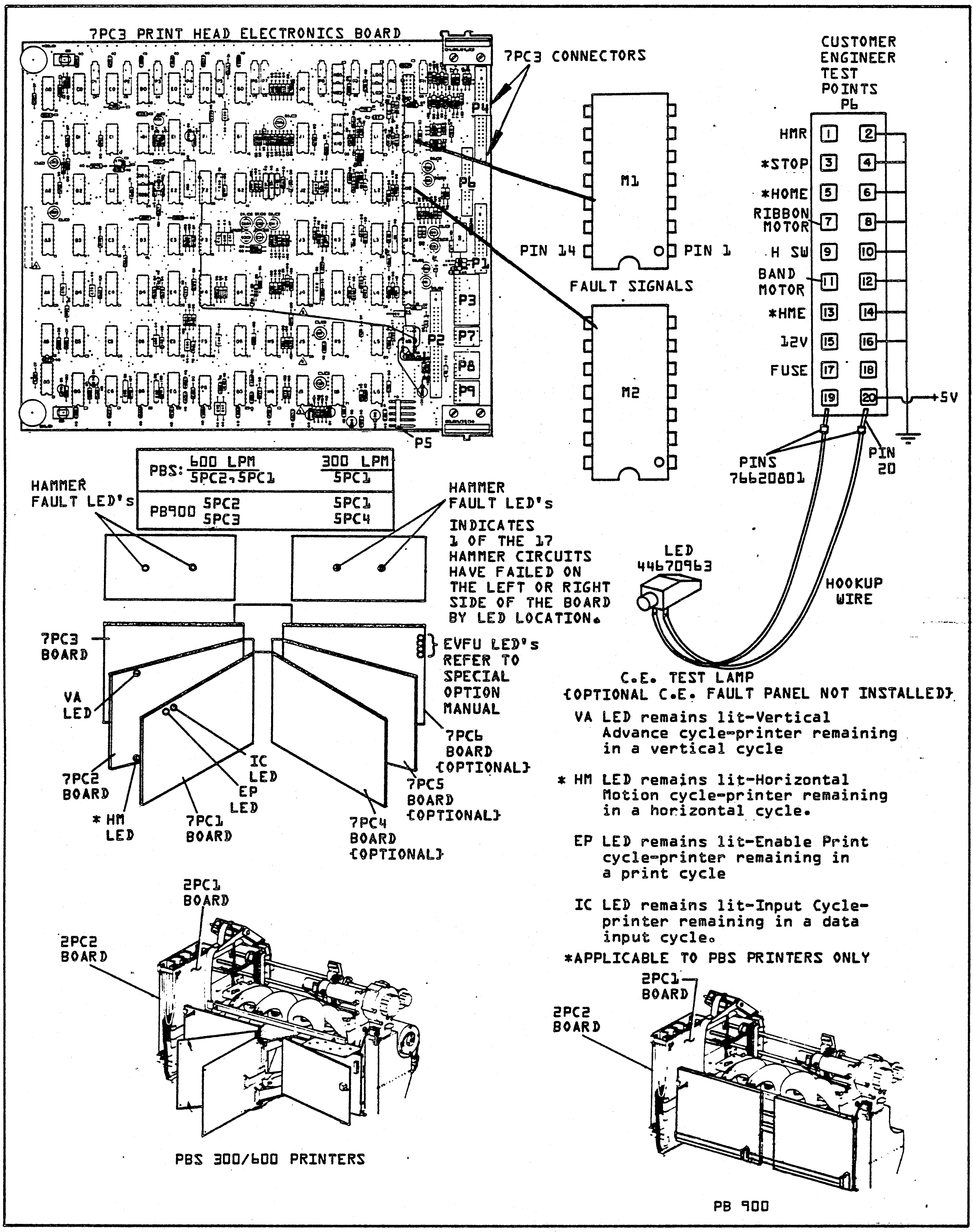
TEST/FAULT: PRINTER WON'T POWER UP

PREREQUISITES: 1. LINE CORD CONNECTED TO A.C. POWER.
2. A.C. POWER SOURCE IS WITHIN 10% OF RATING.

CONDITIONS:	1	2	3	4	5	6	7	8	9	10	11	12	
1. STOP LIGHT IS FLASHING	Y	N	N	N	N								
2. CIRCUIT BREAKER IS ON	Y	N	N	N	N								
3. CIRCUIT BREAKER TRIPS WHEN RESET	N	N	Y	N	N								
4. BLOWER IS RUNNING	-	N	N	N	-								
5. STOP LIGHT IS ON SOLID	N	N	N	Y	N								
ACTIONS:													
1. GO TO C.E. FAULT CHECK	1												
2. SWITCH CIRCUIT BREAKER ON		1											
3. GO TO SP-1 (A.C. POWER CHECK)			1										
4. GO TO SP-2 (A.C. INPUT CHECK)				1									
5. GO TO SP-3 (5V D.C. CHECK)					1								

ATTENTION:

1. AFTER EXCHANGING BOARDS, RETURN THEM TO THEIR ORIGINAL POSITIONS IF PROBLEM IS NOT LOCALIZED OR FIXED.
2. AFTER COMPLETING ANY REPAIRS AND PERFORMING ANY MAINTENANCE, VERIFY THAT THE SUBSYSTEM IS FULLY OPERATIONAL BY RERUNNING THE TEST.



VA LED remains lit-Vertical Advance cycle-printer remaining in a vertical cycle

* HM LED remains lit-Horizontal Motion cycle-printer remaining in a horizontal cycle.

EP LED remains lit-Enable Print cycle-printer remaining in a print cycle

IC LED remains lit-Input Cycle-printer remaining in a data input cycle.

*APPLICABLE TO PBS PRINTERS ONLY

FIGURE 2-73. FAULT ISOLATION POINTS

CUSTOMER ENGINEER FAULT CHECKS

ASSUMPTIONS:
1. PRINTER IS POWERED ON.
2. STOP LIGHT IS FLASHING (OR ENGINEER INDICATOR LIT).
3. A.C.E. FAULT HAS OCCURRED AND THE +36 VOLTS HAS BEEN SHUT DOWN. AFTER MAKING FAULT CHECKS THE POWER ON/OFF CIRCUIT BREAKER MUST BE TURNED OFF AND THEN BACK ON TO POWER THE PRINTER BACK ON, PAUSE IN THE OFF POSITION AT LEAST THREE SECONDS TO COOL THE CROWBAR CIRCUIT, CYCLING THE PRINTER OFF AND ON MORE THAN THREE TIMES CONSECUTIVELY REQUIRES A FIVE MINUTE OFF COOLING PERIOD.

NOTE: SP–XX REFERENCES ARE SUPPLEMENTAL PROCEDURES INCLUDED IN THIS SECTION.

Y=YES, TRUE CONDITION
X=POSSIBLY TRUE
*=ALSO TRUE WITH
ANOTHER FAULT
READS DOWN
FOR ACTION MOST
LIKELY -1,2,3, ETC.

	C.E. FAULTS	SINGLE DIGIT LED									
1.	12 VOLT FAULT	9	Y		X		X		X	X	
2.	+36V FUSE FAULT	1	*	Y	*	*	*	*	*	*	*
3.	HORIZ. MOTION FAULT	2			Y				X	X	
4.	BAND MOTOR FAULT	6				Y	X				
5.	H–SWITCH FAULT	7					Y				
6.	RIBBON MOTOR FAULT	5						Y			
7.	HORIZ. HOME FAULT	4				X	X	X	Y	X	X
8.	HORIZ. END STOP FAULT	3				X	X	X	X	Y	X
9.	HAMMER FAULT	8									Y
	CHECK 7PC3 PRINT HEAD ELECTRONICS PCB ADJUSTMENTS SP-5				1				2	2	
	REPLACE 7PC3 PRINT HEAD ELECTRONICS PCB AND PERFORM "QUICK SET" ADJUSTMENTS SP-5		2	6	2	4	2	4	4	4	
	REPLACE 2PC1 POWER SUPPLY PCB		1								
	CHECK F-1 AND F-2 ON 2PC2 SERVO POWER AMP PCB, IF BLOWN, REPLACE 2PC2, (IF F-2 BLOWS AGAIN, JUMP TO STEP 7)			1							
	CHECK F-1 ON 2PC1 POWER SUPPLY PCB, REPLACE BLOWN FUSE AND RE-TRY, IF FUSE BLOWS, GO TO 3			2							
	CHECK FOR +36V SHORT IN HAMMER DRIVER SP-4			3							
	CHECK 9F01 THERMAL FUSE SP-6			4							
	POWER DOWN AND REMOVE P5 FROM 7PC3 PRINT HEAD ELECTRONICS PCB AND RE-TRY, IF FUSE DOES NOT BLOW, GO TO 6. IF FUSE BLOWS, GO TO 7			5							
	CHECK PAPER CLAMP SOLENOID SP-7			7							
	REPLACE 2PC2 SERVO PCB AND PERFORM "QUICK SET." SP-5				3	3	1	3	3	3	
	REPLACE 7PC2 HORIZ. OSC/VERT. MOTION AND PERFORM "QUICK SET" ADJUSTMENT SP-5				4			5			
	CHECK PLATEN BEARING TAPE IF NOT HARD PLATEN					1					
	CLEAR RIBBON JAM AND CHECK FOLD SENSORS							1			
	CHECK RIBBON MOTORS SP-9							2			
	CHECK VOICE COIL SP-10								1	1	
	CHECK HAMMER DRIVER PCB SP-11										1
	CHECK FOR SHORTED OR OPEN ARMATURE SP-12										2
	CHECK BAND MOTOR SP-8					2					
	CALL NEXT LEVEL OF SUPPORT		3	8	5	5	3	6	5	5	3

Procedure SP-1 A. C. Power Check

I. CONDITION: Circuit breaker trips when reset

HISTORICAL FAILURE PROBABILITIES

1.	Circuit Breaker	ICB1	(72%)
2.	Resonant Capacitor 1	1C01	(18%)
3.	Transformer	1XF1	(10%)

ACTIONS:

1. Unplug printer from A. C. power.
2. Replace circuit breaker (1CB1).
3. Reconnect A. C. power.
4. If circuit breaker still trips, unplug printer from A. C. power source and replace resonant capacitor (1C01).
5. Reconnect A. C. power.
6. If circuit breaker still trips, unplug printer from A. C. power source and check that the transformer (1XF1) is wired for the proper supply voltage. If wiring was correct, replace the transformer.
7. If problem persists, other items to check are: blower (1B01), power supply PC board (2PC1), and 73,000 MFD capacitor (5C01) in the 5 volt supply.

Procedure SP-2 A. C. Input Check

I. CONDITION:

1. Stop light not flashing (but is lit).
2. Circuit Breaker (1CB1) is on.
3. Blower is not running.

ACTION:

1. Immediately power the printer down to protect the thermal link.
2. Replace the defective blower.

NOTE: In the event that the blower is not operating and none of the control panel lamps are lit, the A. C. input may be missing. A continuity check of the primary A. C. circuit should then be performed.

SP-3 D. C. 5 Volt Check

I CONDITION: The Stop lamp is not lit and not flashing. (No control panel lights lit).

ACTIONS

1. Check for +5 volts at 5TB5 (power distribution card). If present, check for +5 volt lamp supply on control panel (P2-9).
2. If +5 volts was not present at 5TB5, check A. C. input to power supply PCB (2PC1). 9.5 volts A. C. should be present from TB1-5 to TB1-8 and TB1-8 to TB1-4. If A. C. input is normal, replace the power supply PCB (2PC1).

SP-4 Check For +36V Short In Hammer Driver

I. CONDITION: A short in the hammer driver circuitry is suspected.

ACTION:

1. Turn printer off and remove the hammer drivers one at a time and power up. The last PC board removed before fuse does not blow is defective. Replace defective PC board.
2. If fuse still blows with all hammer driver PC boards removed, power printer down, reinstall hammer driver PC boards and proceed to Step 4 of +36 V fuse fault in C. E. fault checks.

Procedure SP-5 Print Head Electronics Quick Set Procedure

I. CONDITION: A requirement exists to tune the PHE PCB to the printer. In the instance where a replacement PHE PCB is installed it is assumed that the PCB is known to be good. (Replacement PCBs from warehouse stock have been operationally tested in printers). If problems are encountered using this quick set procedure, it should be abandoned in favor of other procedures available in the corrective maintenance section.

ACTION:

1. Select the quick set procedure which conforms to the PHE PC board part number.
2. Perform the adjustments in numerical sequence.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

QUICK SET ADJUSTMENT PROCEDURE FOR 11 POT PRINT HEAD ELECTRONICS BOARDS 95419502/03/04/05/06/07

2. Monitor TP12 on 7PC3 and adjust P2 for 30 volts ± .1

3. Monitor TP15 on 7PC3 and adjust P5 for 2.5 volts ± .02

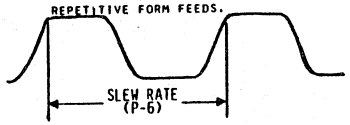
4. Ground L6 -10 by connecting it to TP30. Monitor TP18 on 7PC3 and adjust P8 for 2.5 volts ± .05. Remove ground from L6-10.

5. Monitor L4-1 on 7PC3 and adjust P4 for 0 volts ± .01.

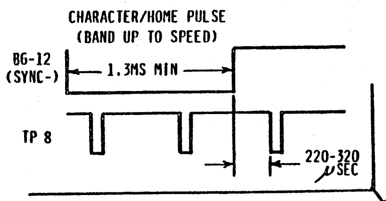
6. Monitor TP14 on 7PC3 and adjust P3 for 2.5 volts ± .05 after performing a form feed.

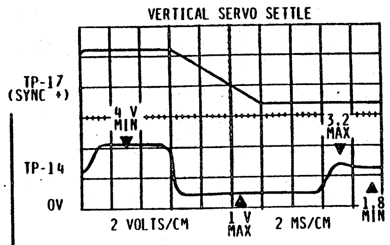
7. Monitor TP18 on 7PC3 and adjust P9 for 2.5 volts ± .05 with gate arm closed and band up to speed.

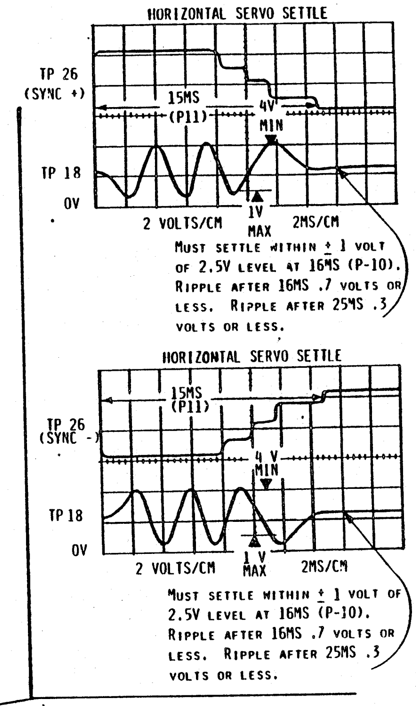
VERTICAL SLEW RATE: Look and trigger positive on TP-14 while performing repetitive form feeds.



CONDITION: PRINTER HAS BEEN	ADJUST P-6 FOR
Off for more than 1 hour	8.6 MS
On for 10 to 30 minutes	8.5 MS
On for more than 30 min.	8.4 MS

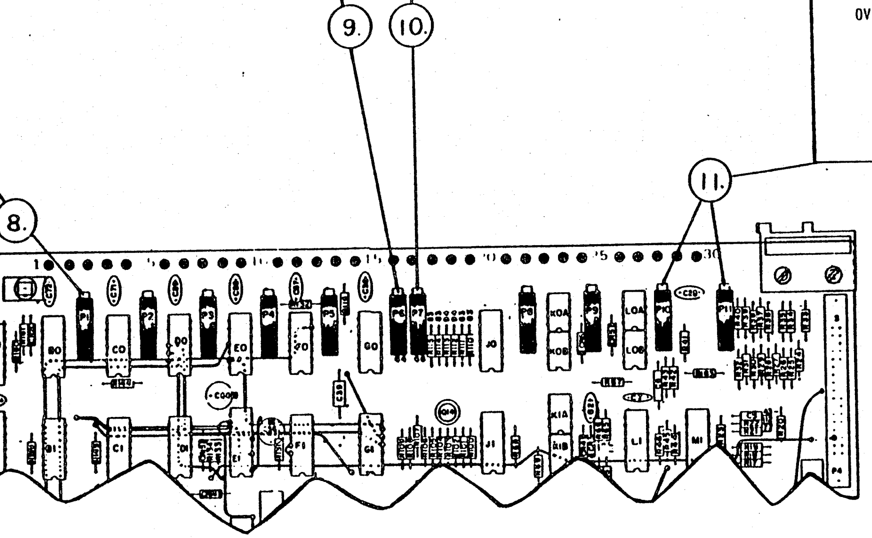






Must settle within ± 1 volt of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.

Must settle within ± 1 volt of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.



1. Monitor the bottom of R162 on 7PC3 and adjust R-2 on 2PC1 for 5 volts ± .05.

For PB Printers, eliminate steps 7. and 11.

Make the 11 adjustments in numerical sequence as shown. Boxed numbers are DVM adjustments. Circled numbers are SCOPE adjustments.

IMPORTANT: FOR SET UP ADJUSTMENTS OF THE 3 POT 7PC3 BOARDS, REFER TO PROCEDURES STARTING ON PAGE 2-58A.

QUICK SET ADJUSTMENT PROCEDURE FOR 7 AND 11 POT PRINT HEAD ELECTRONIC BOARDS 44674254/55/56/57/58*

$\boxed{2.}$ Monitor TP11 on 7PC3 and adjust P2 for 30 volts ± .1

$\boxed{3.}$ Monitor TP13 on 7PC3 and adjust P5 for 2.5 volts ± .02

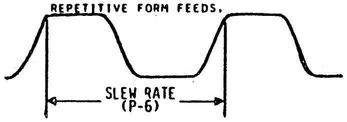
$\boxed{4.}$ Ground TP18 by connecting it to TP30. Monitor TP17 on 7PC3 and adjust P8 for 2.5 volts ± .05. Remove ground from TP18.

$\boxed{5.}$ Monitor TP15 on 7PC3 and adjust P4 for 0 volts ± .01.

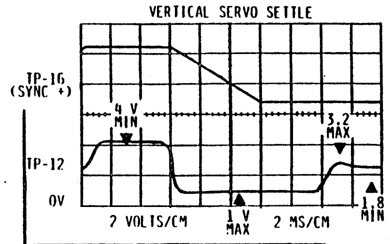
$\boxed{6.}$ Monitor TP12 on 7PC3 and adjust P3 for 2.5 volts ± .05 after performing a form feed.

$\boxed{7.}$ Monitor TP17 on 7PC3 and adjust P9 for 2.5 volts ± .05 with gate arm closed and band up to speed.

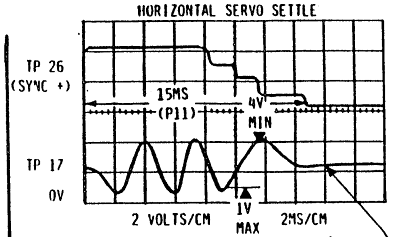
VERTICAL SLEW RATE: Look and trigger positive on TP-12 while performing repetitive form feeds.



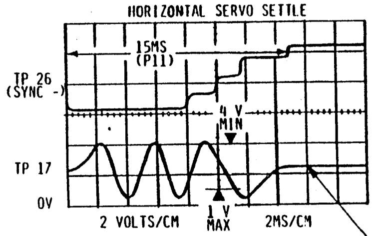
Condition: Printer has been	Adjust P-6 for
Off for more than 1 hour	8.6 MS
On for 10 to 30 minutes	8.5 MS
On for more than 30 min.	8.4 MS



*44674257 AND 44674258 DOES NOT CONTAIN POTENTIOMETERS P2, P4, P7, AND P10.

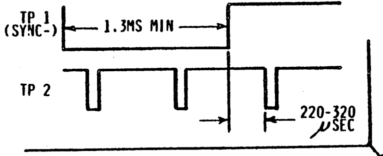


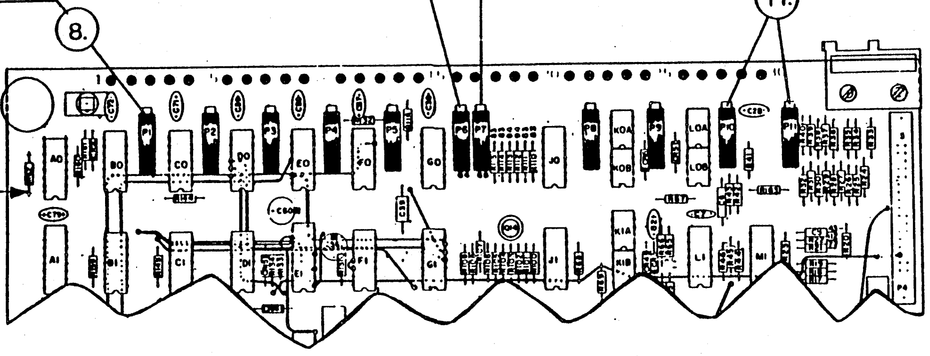
Must settle within ± 1 volt of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.



Must settle within ± 1 volt of 2.5V level at 16MS (P-10). Ripple after 16MS .7 volts or less. Ripple after 25MS .3 volts or less.

CHARACTER/HOME PULSE
(BAND UP TO SPEED)





$\boxed{1.}$ Monitor the bottom of R162 on 7PC3 and adjust R-2 on 2PC1 for 5 volts ± .05.

For PB Printers, eliminate steps $\boxed{7.}$ and ⑪.

Make the 11 adjustments in numerical sequence as shown. Boxed numbers are DVM adjustments. Circled numbers are SCOPE adjustments.

SP-6 Thermal Fuse/Circuit Breaker

REFERENCES:
1. Field Service Manual (44677818) WD02
2. Field Service Manual (44677818) Blower Fault Detector Replacement Procedure
3. Field Service Manual (44677818) Machine Area Designator and Parts Locator Diagram
4. Field Service Manual (44677818) Fig. 2-72 Power Supply +36 Volts and Crowbar.

I. CONDITION: Printer crowbars with +36 volt fuse fault. Procedure entered from Customer Engineering Fault Checks Procedure, Step 4.

ACTION:

1. Remove power to printer by placing circuit breaker (1CB1) in OFF position and unplug power cord at the source.

2. Place circuit breaker (1CB1) in the ON position.

3. Remove red wire from power supply PCB (2PC1) TB2-5.

4. Remove red wire from Servo Power Amp PCB (2PC2) TB1-6.

5. With an OHM meter on X1 scale, check continuity between the two removed red wires.

   A. A short, or low resistance reading, indicates the circuit breaker (1CB1) and thermal fuse (9F01) are good. If the components checked good in this step, continue with Step 6. An open indicates (1CB1) and/or (9F01) is bad and further testing must be done. Continue with Step 7.

6. With the OHM meter set on the highest resistance scale, meter either red lead to the frame. An open circuit condition should exist. If an open exists, reconnect the red wires removed in Steps 3 and 4 and return to (5) in the fault check sequence. If an open does not exist, check wiring from 2PC1 through (1CB1) and (9F01) to 2PC2.

7. Check continuity between red wire removed from 2PC1 TB2-5 in Step 3 and red wire on 9TB3-1 (on frame behind 1CB1). If continuity exists go to Step 8. If open, replace circuit breaker (1CB1). Reconnect red wires removed in Steps 2 and 3, apply power and test.

8. Check continuity between 9TB3-1 and red wire removed in Step 4. If continuity exists, reconnect red wires removed in Steps 3 and 4, return to (5) in fault checks procedure. If open, replace (9F01) thermal fuse using blower fault detector replacement procedure in manual. Reconnect red wires removed in Steps 3 and 4.

CAUTION If thermal fuse is blown, blower motor is probably bad and must be tested.

SP-7 Paper Clamp Solenoid Check

REFERENCES:
1. Field Service Manual (44677818) Paper Clamp
2. Solenoid Assembly replacement procedure
2. Field Service Manual (44677818) WD02
3. Field Service Manual (44677818) Servo Power Amp Schemetic, Cross Ref. 00401

I. CONDITION: Printer crowbars with +36 V fuse fault. Procedure entered from Customer Engineering Fault checks procedure Step 7.

ACTION:

1. Hold forms release switch (SW3) on control panel activated while powering printer on. If printer crowbars, return to C.E. fault check Step 8. If printer doesn't crowbar, the paper clamp solenoid is probably defective. Continue to Step 2 of this procedure.

2. Remove power to printer by placing circuit breaker (1CB1) in the OFF position.

3. Remove plug P2 from the Servo power Amp PCB at (2PC2).

4. With an OHM meter calibrated on RX1, check the paper clamp solenoid by connecting the meter across pin 2 (black) and pin 3 (red) of the removed P2. A reading of 3 OHMS indicates a good solenoid. Also, with the OHM meter on the highest resistance scale, check P2-2 or P2-3 to frame ground. An open circuit condition should exist. If the solenoid reads less than 3 OHMS and/or an open does not exist between the selected lead and frame ground, replace the solenoid. Reconnect P2, apply power and test.

5. If the solenoid reads 3 ohms and an open circuit condition exists between the selected lead and frame ground, reconnect P2 and return to CE fault checks Step 8.

SP-8 BAND MOTOR CHECK

I. CONDITION: CE fault LED's displayed band motor and +36V fuse fault.

ACTION: System Drag Check

- A. Rotate band slowly in a CCW direction. The band should rotate freely without binding or excessive drag.
- B. If binding or drag condition exists, remove print band and rotate each band pulley separately to determine the problem. Possible items that could cause the above condition are listed below, Check the following:
  1. Band Motor
  2. Band Pulleys or Bearings
  3. Defective Print Band
  4. Band tracking

II CONDITION: System drag checks have been performed in Condition I.

ACTION: Checks on the band motor

- A. Power down equipment by placing the circuit breaker (1CB1) in the OFF position.
- B. Open printer gate and remove gate and band motor covers.
- C. Locate connector (4B03) by pulling the wires down through the large access hole in the lower gate frame.
- D. Disconnect connector (4B03).
- E. Power equipment back on. If equipment displays the same band motor and +36V fuse fault, replace the servo amplifier board 2PC2.

ACTION: Check Band Motor Resistance

- A. Place VOM on the RX1 scale. Check resistance across 4B03 connector motor side (female pins). If shorted, replace Band Motor.
- B. Rotate Band in CCW direction and check resistance several times, Band Motor resistance should be approximately between 2 to 10 ohms.

III CONDITION: If both condition I and II check satisfactory, perform the following band motor current checks:

ACTION: Perform band motor current tests to check for a faulty band motor as the cause of band motor overcurrent fault.

- A. Power printer OFF and remove connector 2PC2-1 from the Servo P. C. board (2PC2).
- B. Remove the red wire from 2PC2 P1-1 and replace the connector.
- C. Connect an ammeter capable of at least 2.5 amps in series with the red wire and connector 2PC2 P1-1 and check the following conditions:

CONDITION	APPROXIMATE CURRENT
BAND INSTALLED, NOT PRINTING	.8A
PRINT BAND REMOVED (NOTE A)	.5A
TEST PRINT (NORMAL)	1.6A - 2.0A
TEST PRINT (OVERCURRENT)	3.2

NOTE A: A band motor run-away condition will exist with the band removed, but this condition should not cause a crowbar.

SP-9 Check Ribbon Motors

I. CONDITION: C.E. light is flashing, printer has gone not ready and a ribbon motor overcurrent has been detected.

HISTORICAL FAILURE PROBABILITY

Ribbon Jam	43%
Ribbon Motor	21%
Servo PCB	18%
Print Head Electronics PCB	14%
Horizontal Oscillator PCB	4%

ACTIONS:

1. Check for a ribbon motor gear box jam. Power printer down, remove ribbon and check each ribbon drive assembly for binding. Grasp the ribbon spool drive flange and rotate slowly in both directions. Modest friction will be encountered to start motion but no catching or binding should be felt from the gear train as it is turning. Replace motor assembly if binding is evident.

2. Check for defective Servo PC board (2PC2). Disconnect ribbon motor power plugs from both motors. Power printer on and attempt to print. If stop light flashes replace the servo PC board (2PC2) and perform quick set procedure SP-5. If stop light is not flashing, go to step 3 below.

3. Power printer off, remove ribbon, block ribbon sensors with paper or tape and install printer forms. Power printer on and initiate test print.

   Reconnect ribbon motors one at a time and momentarily short the left ribbon reversing post when the left motor is connected and the right reversing post when the right motor is connected. Printer will crowbar down with stop light flashing when the defective ribbon motor is re-connected replace bad motor.

SP-10 Voice Coil Check

I. CONDITION: Horizontal End Stop Fault, Home Fault, Horizontal Motion Fault, or a combination of any of these C.E. faults.

II. CONDITION: Squealing, noisy horizontal motor.

ACTIONS:

1. Move hammer bar back and forth to insure that there is no binding of voice coil in the housing. If there is binding, dis-assemble and repair or replace.

2. Meter out voice coil (3B02) for approximately 2.5 ohms. Replace if defective.

3. Meter out horizontal tach (3L05) for approximately 590 ohms. Replace if defective.
   Also check for loose or defective transducer magnet in the voice coil.

SP-11 Hammer Driver

CONDITION: Printer desequences, stop lamp is flashing on console, and fuse and HMR CE fault lamps are lit.

ACTION

1. Power printer down. While closely watching the LED's on the hammer driver board or boards, power printer back up. An LED on the bad hammer board will have flashed. Replace this board. Remember to remove plug-in terminator and install it on new board.

   NOTE: If no LED flashed, one may be bad. To test LED's, power down printer and remove the center actuator plug from each hammer driver. All the LED's should light when the printer is powered on.

2. See SP-12.

SP-12 Hammer Actuator Assembly

CONDITION: Printer desequences, stop lamp on console is flashing and fuse and HMR CE fault lamps are lit.

ACTIONS:

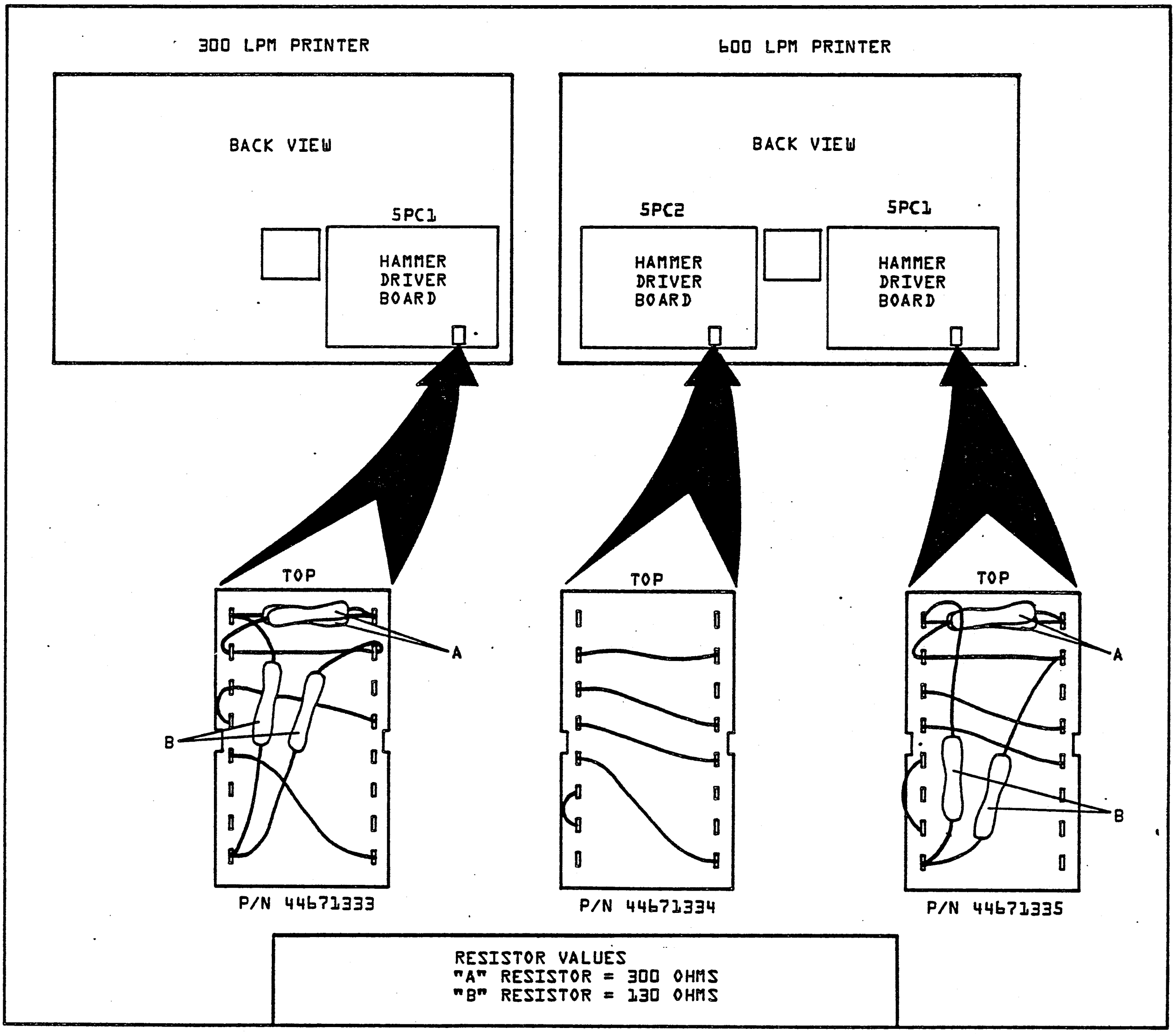
1. Power printer down. While closely watching the LED's on the hammer driver board or boards, power printer back up. An LED on one of the driver boards will have flashed on momentarily. With a VOM check each of the armatures (that correspond to the lit LED) for a short to frame ground and for about 6 ohms coil resistance and replace any bad ones. Install a new residual strip.

NOTE: If no flash was detected in any of the LED's one may be bad. To test LED's, power down printer and remove the center actuator plug from each hammer driver. All the LED's should light when the printer is powered on.

2. If condition still exists, remove the armature connectors and check for pushed-in fingers that may not be making continuity to the board.
3. See SP-11

APPROXIMATE RESISTANCE CHART (PBS PRINTER)

Power Transformer	Check connection in the Installation and Check-out section and use preceding A. C. Power Check.
Blower 60Hz	Green to Blue/Green to Brown infinite, Blue to Brown 10 ohms
Blower 50/60Hz	Green to Blue/Green to Brown infinite, Blue to Brown 9 ohms.
Vertical Motor	Stopped 5 ohms, rotate slowly-10ohms (increases with speed)
Vertical Tachometer	Rotate slowly 150-180 ohms
Horizontal Motion Coil	2. 5 Ohms
Horizontal Monitor Coil	500 Ohms
Armature Striker Coil	6 Ohms



RESISTOR VALUES
"A" RESISTOR = 300 OHMS
"B" RESISTOR = 130 OHMS

FIGURE 2-74. HAMMER DRIVER BOARD TERMINATOR POSITIONS (PBS PRINTER)

APPROXIMATE RESISTANCE CHART (PB 900 PRINTER)

Power Transformer	Check connection in the Installation and Check-out section and use preceding A. C. Power Check.
Blower 50/60Hz	Green to Blue/Green to Brown infinite, Blue to Brown 9 ohms
Vertical Motor	Stopped 5 ohms, rotate slowly-10 ohms (increases with speed)
Vertical Tachometer	Rotate slowly 150-180 ohms
Armature Striker Coil	6 Ohms

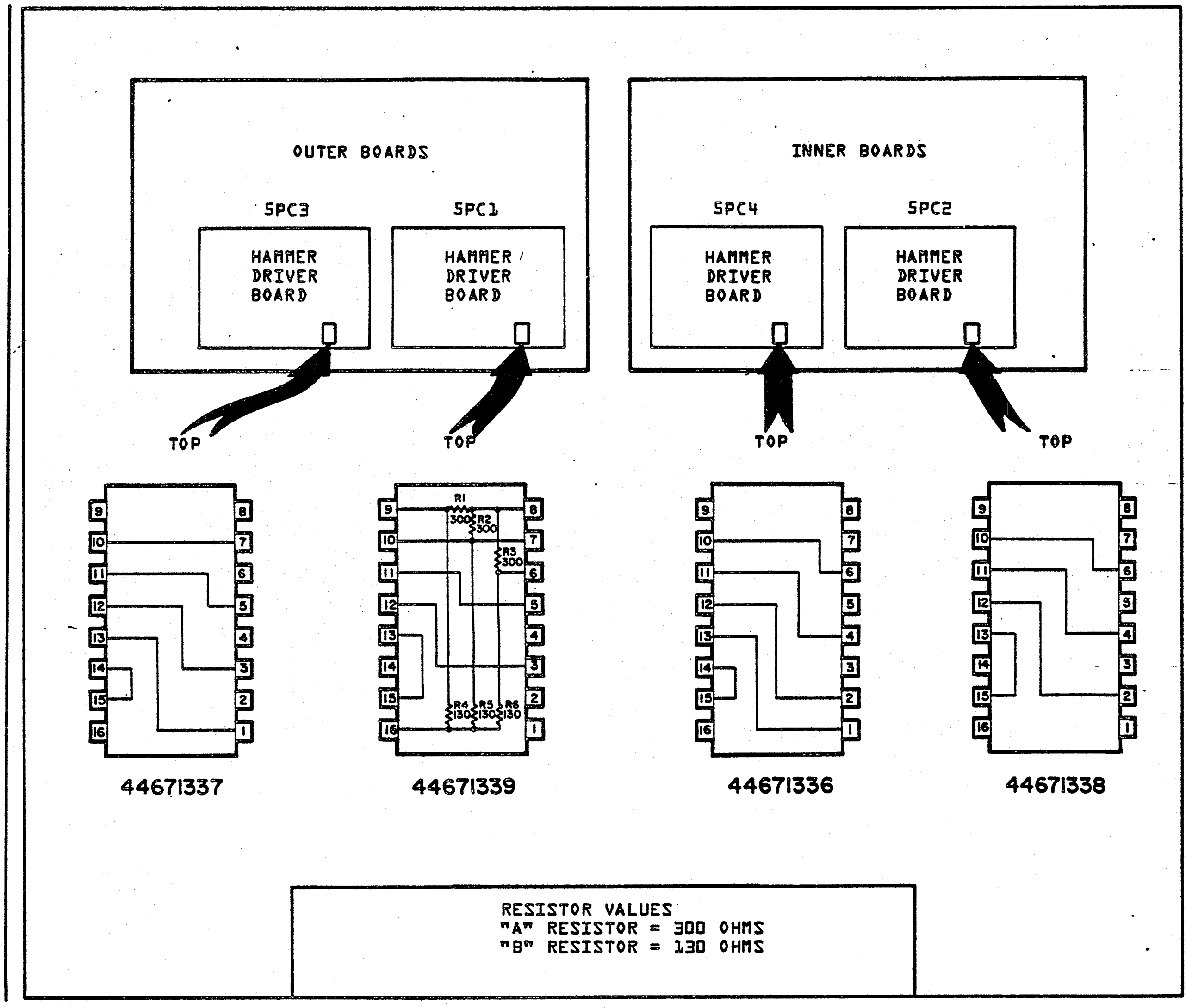
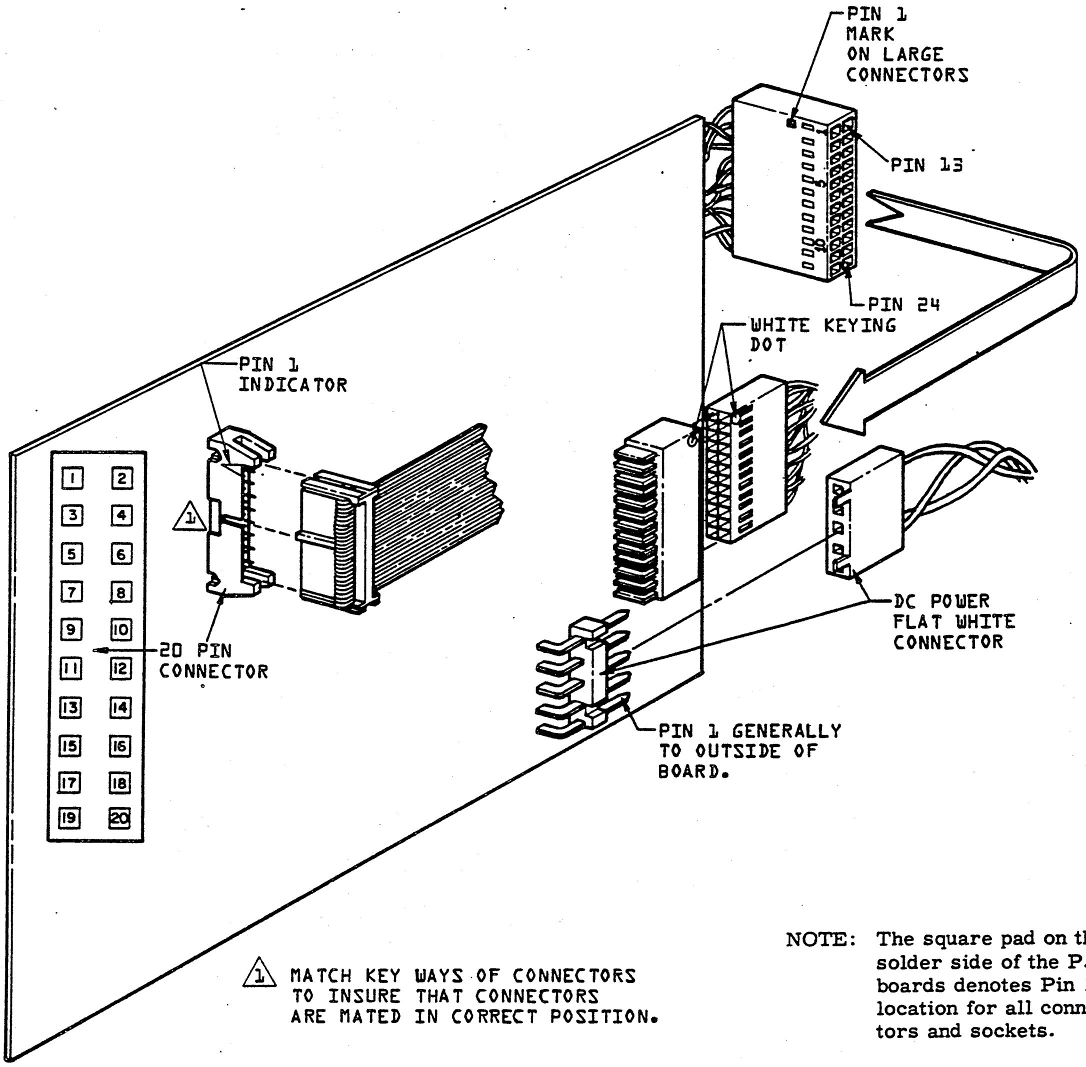


FIGURE 2-75. HAMMER DRIVER BOARD TERMINATOR POSITIONS (PB PRINTER)



1 MATCH KEY WAYS OF CONNECTORS TO INSURE THAT CONNECTORS ARE MATED IN CORRECT POSITION.

NOTE: The square pad on the solder side of the P. C. boards denotes Pin 1 location for all connectors and sockets.

FIGURE 2-76. CONNECTOR PIN IDENTIFICATION

PART A

BAND PRINTER LOGIC DIAGRAMS

CONTENTS

WARNING

NOISE LEVEL UNDER BONNET WHILE PRINTING MAY BE HAZARDOUS TO HEARING. KEEP EXPOSURE TO A MINIMUM. REFER TO MAINTENANCE AIDS TO QUIETLY TEST.

BOARD IDENTIFICATION FOR LOGIC SET 95400401

CROSS REF NO.	LOCATION	PART NUMBER	EARLIER NUMBER
501	2PC1	44681551	95385902/03/04
401-404	2PC2	44683676	44684252
600-605	5PC1	44687338	44671576, 44681863/0944,1933, 1994
701	6PC1	OPTIONAL	---------
100-114	* 7PC1	44674833	---------
		44674834	44674835
		44674837	44674836
		44674838	--------
		44674840	44674839
	7PC1	44674843	--------
200-212	* 7PC2	44674844	--------
		44674845	--------
		44674847	--------
		44674848	--------
		44674849	--------
		44674851	44674846
	7PC2	44674852	--------
301-311	7PC3	44674257	44674256
		44674258	44674257
		44680936	44674258
		44684462	44680936/37/38
		44685119	44684462
		44685945	44685119

*SEE PARTS MANUAL FOR BOARD IDENTIFICATION

PART B

(page 3-99)

Part B documents earlier boards still being used from logic set 95400400

⚠1 Applies to CT107A & CT108A Models Only

TESTING WITHOUT NOISE

During repair of the printer the following may be performed to quietly cycle the printer.

1. Printer power off.
2. Disconnect hammer driver board connectors on all hammer driver boards, P1, P3, P4, P5, P6.
3. Disconnect paper clamp on PBS models by using extraction tool and remove clamp wire from Servo Amp Board plug P2-3.
4. Remove forms and ribbon.
5. Tape down the Out Of Paper switch and insert paper between both ribbon fold switches to simulate the ribbon.
6. Disable Paper Motion Verification (PMV) by making a paper loop from the edge of a form which will run through the right tractor or ground pin 1 on chip K5 on board 7PC2, counter reset pin.
7. Power the printer on.
8. Press the Start switch.
9. Initiate a data transfer from the processor.

Test Print Method

1. Select blank code test print character (40).
2. Operate Test Print switch (Optional Switch).

WARNING

HAZARDOUS VOLTAGE AND HAZARDOUS ENERGY LEVELS

During maintenance operations switch off the mains supply whenever possible. When power is applied care must be taken when servicing equipment to avoid contact with parts at Hazardous Voltages such as mains circuits and the high voltage section of high frequency switching power supplies which are common on most equipment.

On low voltage circuits an additional hazard exists due to the high short circuit current/energy (often hundreds of amps) which can flow into a fault. Great care must be taken to avoid short circuiting the opposite poles of low voltage supplies by tools or personal metallic adornments such as rings or watchstraps.

MOS COMPONENTS

MOS components appear on the Input Print board (7PC1), the EVFU board (7PC6), and certain interface boards (7PC4,7PC5). A warning label is attached to these boards when received.

MOS components may be damaged by static electricity which is commonly caused by human movement such as walking over carpeted floors or by friction between clothing and chair seats or desk tops. Those handling MOS components or assemblies should read: Handling Procedures for MOS components.

The following rules should be observed:

1. Components should be stored in conductive trays (i.e. metal or foil lined containers) or have their pins joined by conducting foam.
2. High static materials should be excluded from the working vicinity.
3. Personnel handling MOS components should previously earth themselves via ground or earthed metalwork.

Metal oxide-silicon semi-conductors are being used in this printer. There is considerable risk of accidental damage being caused to such components by the discharge of static electricity through the elements.

PRINTED CIRCUIT BOARDS CARRYING METAL OXIDE SILICON SEMI-CONCUCTORS

It is, therefore, important that all personnel liable to handle PCBs carrying MOS semi-conductors are aware of the risk and of the correct method of handling. (There is no easy way of recognising a MOS semi-conductor so, if in doubt, assume that one is fitted to the PCB you are handling.)

Take the following precautions:

1. The PCBs must always be transported in the container provided.
2. When a replacement board is to be fitted into an equipment, the Engineer must first touch bare, earthed metal frame to discharge any static electric charge he is carrying. Having done so he should avoid taking any more steps on the floor prior to fitting the PCB into the equipment. He should then remove the PCB from its container, handling it in a way which avoids any contact with any conducting part of the PCB. He should then remove any protective clip, if fitted to the MOS device, and insert the PCB.
3. Prior to removing a PCB the Engineer must again touch a bare, earthed metal frame and, avoiding taking any further steps on the floor, remove the PCB from the equipment, handling it as described above, fit protective clips where appropriate, and place the PCB in the container provided for the purpose.
4. Technology advise that no PCBs fitted to an equipment containing MOS devices should be inserted or removed with the power to the equipment switched on.

Damage resulting from static discharge or other causes may not become evident until some time later.

SHEET NO.	CROSS REF NO.	MODULE LOCATION	LOGIC DIAGRAM TITLE
1			COVER SHEET & REVISION LEVELS
2			LOGIC DIAGRAM SET CONTENTS SHEET
3			MACHINE AREA DESIGNATOR AND PARTS LOCATOR
4			MACHINE AREA DESIGNATOR AND PARTS LOCATOR
5			PCB COMPONENT LOCATIONS
6			PCB COMPONENT LOCATIONS
7			SPECIAL NOMENCLATURE PAGE 1
8			SPECIAL NOMENCLATURE PAGE 2
9			GENERAL NOTES & IDENTIFIER LIST
10	WD01		WIRING DIAGRAM-A.C. POWER
10A	WD01-A		WIRING DIAGRAM-A.C. Power
11	WD02		WIRING DIAGRAM-D.C. DISTRIBUTION
12	BD01		BLOCK DIAGRAM-POWER SUPPLY BOARD
13	BD02		BLOCK DIAGRAM-SERVO POWER AMP BOARD
14	BD03		BLOCK DIAGRAM-HAMMER DRIVER BOARD
15	BD04		BLOCK DIAGRAM-PRINT HEAD ELECTRONICS BD
16	BD05		BLOCK DIAGRAM-PRINT HEAD ELECTRONICS BD
17	BD06		BLOCK DIAGRAM-CONTROLLER BD INPUT/PRINT (CB1)
18	BD07		BLOCK DIAGRAM-CONT. BD OSC. HOR. & VERT. MOTION
19	TD01		TIMING DIAGRAM-NORMAL POW. SEQ & FAULT MODES
20	TD02		TIMING DIAGRAM-SUBSCAN GENERATORS
21	TD03		TIMING DIAGRAM-HORIZONIAL SHIFT
22	TD04		TIMING DIAGRAM-VERTICAL ADVANCE & BAND DRIVE
23	TD05		TIMING DIAGRAM-MAJOR CONTROLLER CYCLES
24	TD06		TIMING DIAGRAM-INPUT CYCLE-CONTROL CODE 1ST CHAR
25	TD07		TIMING DIAGRAM-INPUT CYCLE-SHORT DATA LINE
26	TD08		TIMING DIAGRAM-INPUT CYCLE DATA LENGTH > COL. CAP.
27	TD09		TIMING DIAGRAM-OPTION CYCLE TIMING
28	TD10		TIMING DIAGRAM-PRINT CYCLE
29	TD11		TIMING DIAGRAM-PRINT CYCLE
30	TD12		TIMING DIAGRAM-HORIZONTAL MOTION CYCLE
31	TD13		TIMING DIAGRAM-VERTICAL ADVANCE
32	TD14		TIMING DIAGRAM-HOME PUL/SUBSCAN PUL/ TSSP TIMING
33	TD15		TIMING DIAGRAM-SYSTEM CLOCKS
34	00100	7PC1	INPUT/PRINT (D-P) JUMPER CHART
35	00101	7PC1	INPUT/PRINT (D-P)
36	00102	7PC1	INPUT/PRINT (D-P)
37	00103	7PC1	INPUT/PRINT (D-P)
38	00104	7PC1	INPUT/PRINT (D-P)
39	00105	7PC1	INPUT/PRINT (D-P)
40	00106	7PC1	INPUT/PRINT (D-P)
41	00107	7PC1	INPUT/PRINT (D-P)
42	00108	7PC1	INPUT/PRINT (D-P)
43	00109	7PC1	INPUT/PRINT (D-P)
44	00110	7PC1	INPUT/PRINT (D-P)
45	00111	7PC1	INPUT/PRINT (D-P)
46	00112	7PC1	INPUT/PRINT (D-P)
47	00113	7PC1	INPUT/PRINT (D-P)
48	00114	7PC1	INPUT/PRINT (D-P)
49	00200	7PC2	OSC. HORZ. & VERT. MOT JUMPER CHART
50	00201	7PC2	OSC. HORZ. & VERT. MOT
51	00202	7PC2	OSC. HORZ. & VERT. MOT
52	00203	7PC2	OSC. HORZ. & VERT. MOT
53	00204	7PC2	OSC. HORZ. & VERT. MOT
54	00205	7PC2	OSC. HORZ. & VERT. MOT
55	00206	7PC2	OSC. HORZ. & VERT. MOT
56	00207	7PC2	OSC. HORZ. & VERT. MOT
57	00208	7PC2	OSC. HORZ. & VERT. MOT
58	00209	7PC2	OSC. HORZ. & VERT. MOT
59	00210	7PC2	OSC. HORZ. & VERT. MOT
60	00211	7PC2	OSC. HORZ. & VERT. MOT
61	00212	7PC2	OSC. HORZ. & VERT. MOT
62	00301	7PC3	PRINT HEAD ELECTRONICS BOARD
63	00302	7PC3	PRINT HEAD ELECTRONICS BOARD
64	00303	7PC3	PRINT HEAD ELECTRONICS BOARD
65	00304	7PC3	PRINT HEAD ELECTRONICS BOARD
66	00305	7PC3	PRINT HEAD ELECTRONICS BOARD
67	00306	7PC3	PRINT HEAD ELECTRONICS BOARD
68	00307	7PC3	PRINT HEAD ELECTRONICS BOARD
69	00308	7PC3	PRINT HEAD ELECTRONICS BOARD
70	00309	7PC3	PRINT HEAD ELECTRONICS BOARD
71	00310	7PC3	PRINT HEAD ELECTRONICS BOARD
72	00311	7PC3	PRINT HEAD ELECTRONICS BOARD
73	00401	2PC2	SERVO POWER AMP BOARD
74	00402	2PC2	SERVO POWER AMP BOARD
75	00403	2PC2	SERVO POWER AMP BOARD
76	00404	2PC2	SERVO POWER AMP BOARD
77	00501	2PC1	POWER SUPPLY
78	00600	5PCX	HAMMER DRIVER BOARD
79	00601	5PCX	HAMMER DRIVER BOARD
80	00602	5PCX	HAMMER DRIVER BOARD
81	00603	5PCX	HAMMER DRIVER BOARD
82	00604	5PCX	HAMMER DRIVER BOARD
83	00605	5PCX	HAMMER DRIVER BOARD
84	00701	6PC1	CONTROL PANEL BOARD
85	00702	6PC1	CONTROL PANEL BOARD (OPTIONAL C.E. DISPLAY)
86	00703	6PC1	CONTROL PANEL BOARD (OPTIONAL C.E. DISPLAY)
87	00301	7PC3	PRINT HEAD ELECTRONICS
88	00302	7PC3	PRINT HEAD ELECTRONICS
89	00303	7PC3	PRINT HEAD ELECTRONICS
90	00304	7PC3	PRINT HEAD ELECTRONICS
91	00305	7PC3	PRINT HEAD ELECTRONICS
92	00306	7PC3	PRINT HEAD ELECTRONICS
93	00307	7PC3	PRINT HEAD ELECTRONICS
94	00308	7PC3	PRINT HEAD ELECTRONICS
95	00309	7PC3	PRINT HEAD ELECTRONICS
96	00310	7PC3	PRINT HEAD ELECTRONICS
97	00311	7PC3	PRINT HEAD ELECTRONICS
98	00601	5PCX	HAMMER DRIVER BOARD
99	00602	5PCX	HAMMER DRIVER BOARD
100	00603	5PCX	HAMMER DRIVER BOARD
101	00604	5PCX	HAMMER DRIVER BOARD
102	00605	5PCX	HAMMER DRIVER BOARD

Sheets 62–72: USE THESE SHEETS FOR ASSYS. 85418502-06
44674255-58

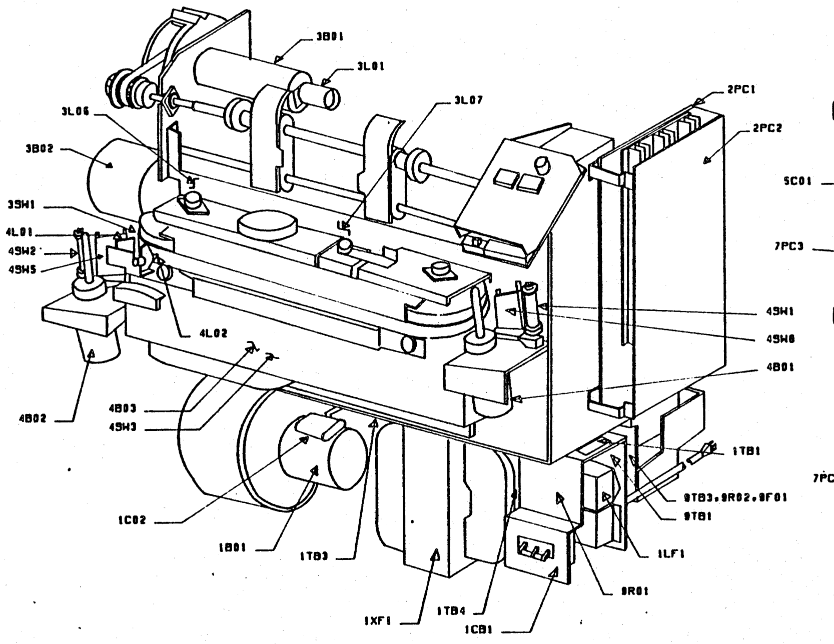
Sheets 87–97: USE THESE SHEETS FOR ASSY 44680836
44680940
44685119-25
44684462
44685945

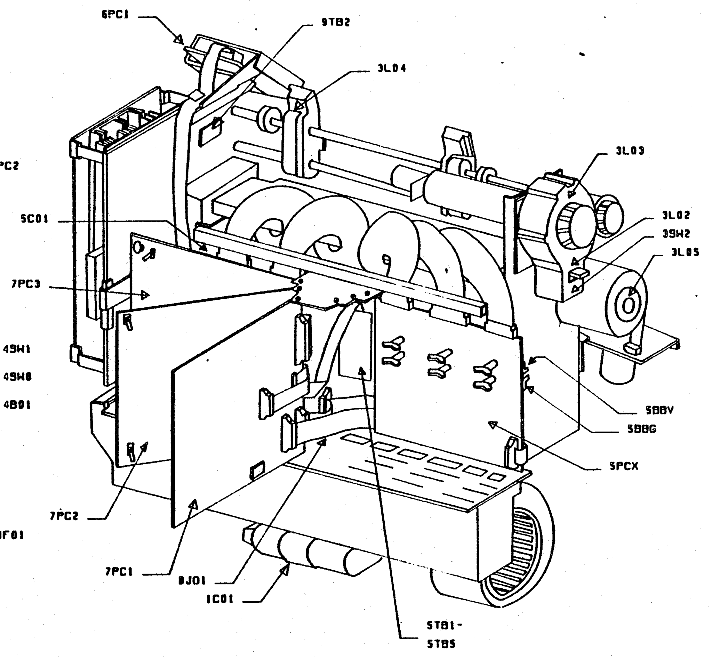
Sheets 98–102: USE THESE SHEETS FOR ASSY 44687338 & LATER

CROSS REFERENCE NUMBER CODES

WD-- = WIRING DIAGRAM
BD-- = BLOCK DIAGRAM
TD-- = TIMING DIAGRAM
001-- = INPUT/PRINT BOARD
002-- = OSC. HORZ. & VERT. MOT BOARD
003-- = PRINT HEAD ELECTRONICS BOARD
004-- = SERVO POWER AMP. BOARD
005-- = POWER SUPPLY BOARD
006-- = HAMMER DRIVER BOARD
007-- = CONTROL PANEL BOARD

LOGIC DIAGRAM SET CONTENTS SHEET	CODE IDENT C	DWG NO	REV AW
	PB/PBS	SHEET 2	





AREA	MACHINE LOCATION
1	A.C. POWER
2	D.C. POWER
3	MOTION CONTROL
4	BAND GATE
5	HAMMER POWER
6	CONTROL PANEL
7	LOGIC BOARDS
8	INPUT/OUTPUT
9	FRAME

PARTS ABBREVIATION CODE
LO- COIL OR INDUCTOR
BO- MOTOR
SH- SWITCH
RO- RESISTOR
TB- TERMINAL BLOCK
XF- TRANSFORMER
CB- CIRCUIT BREAKER
LF- LINE FILTER
PC- PRINTED CIRCUIT BOARD
CO- CAPACITOR
BB- BUS BAR
JO- CONNECTOR
KO- RELAY
CR- DIODE

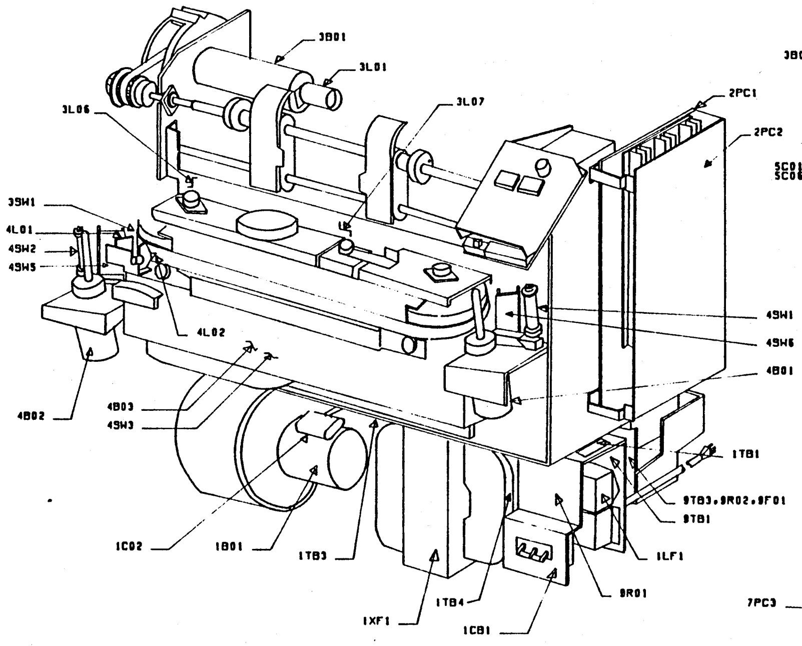
PARTS IDENTIFER CODE

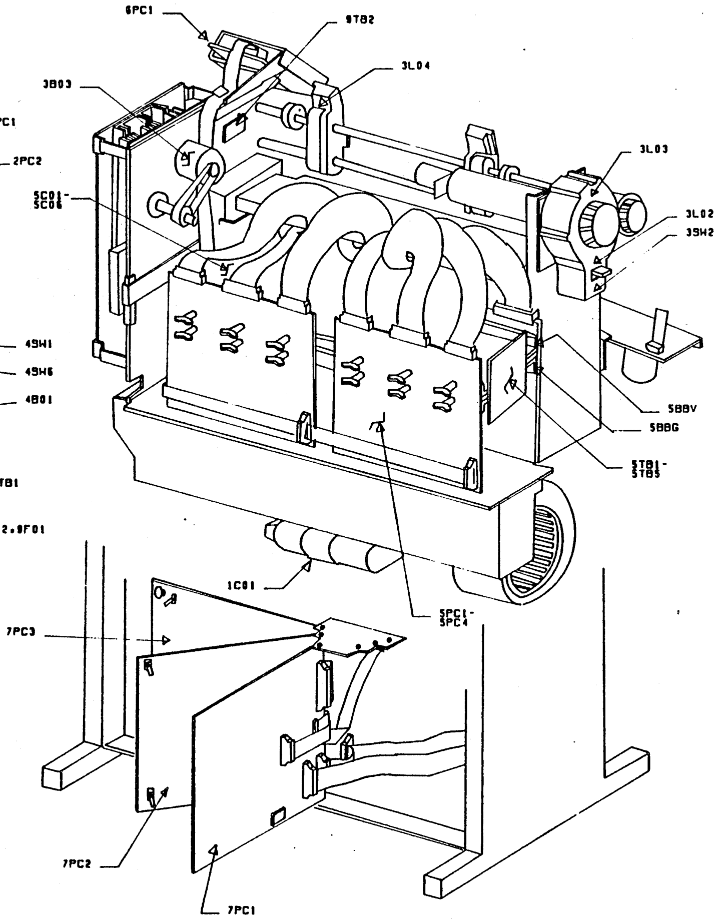
PARTS ARE IDENTIFIED BY A FOUR DIGIT ALPHA-NUMERIC CODE AS FOLLOWS:

1 T B 1

- THIS DIGIT INDICATES THE NUMBER OF PARTS IN THE AREA
- THESE TWO DIGITS ARE AN ABBREVIATION FOR THE PART (SEE ABBREVIATION CODE)
- THIS DIGIT REFERS TO THE AREA THE PART IS LOCATED IN (SEE CHART FOR AREA NUMBERS)

	CODE IDENT	DWG NO	REV
MACHINE AREA DESIGNATOR AND PARTS LOCATOR	C		AW
	PBS	SHEET 3	





AREA	MACHINE LOCATION
1	A.C. POWER
2	D.C. POWER
3	MOTION CONTROL
4	BAND GATE
5	HAMMER POWER
6	CONTROL PANEL
7	LOGIC BOARDS
8	INPUT/OUTPUT
9	FRAME

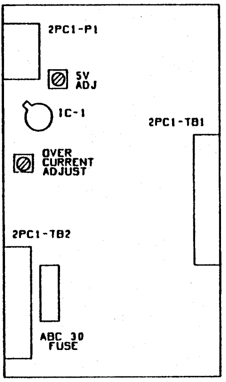
PARTS ABBREVIATION CODE
LO= COIL OR INDUCTOR
BO= MOTOR
SW= SWITCH
RO= RESISTOR
TB= TERMINAL BLOCK
XF= TRANSFORMER
CB= CIRCUIT BREAKER
LF= LINE FILTER
PC= PRINTED CIRCUIT BOARD
CO= CAPACITOR
BB= BUS BAR
JO= CONNECTOR
KO= RELAY
CR= DIODE

MACHINE AREA DESIGNATOR AND PARTS LOCATOR

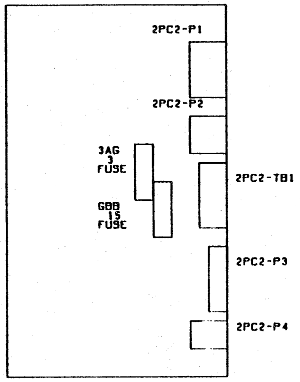
CODE IDENT	DWG NO	REV
C		A
PB	SHEET 4	

CP-0091 REV 7/73

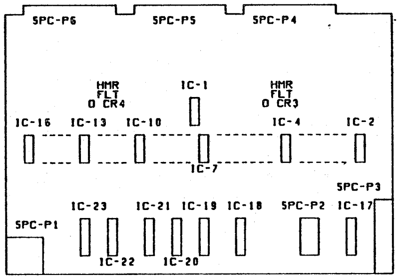
POWER SUPPLY BOARD
00501 2PC1



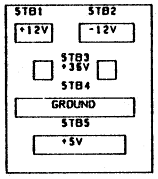
SERVO POWER AMP BOARD
00401 THRU 00404
2CP2



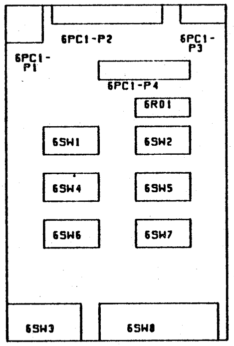
HAMMER DRIVER BOARD
00600 THRU 00605
5PCX



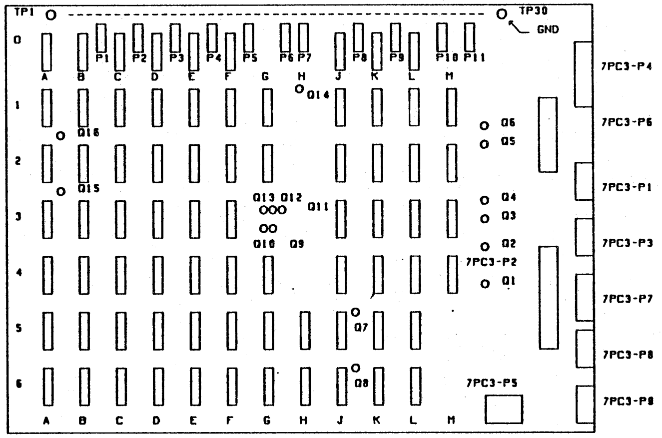
POWER DISTRIBUTION BOARD
5TB1 THRU 5TB5



CONTROL PANEL BOARD
00701
6PC1



PRINT HEAD ELECTRONICS BOARD
00301 THRU 00311
7PC3



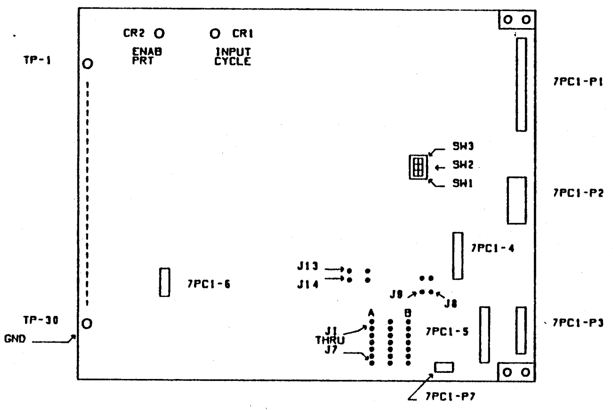
PHYSICAL LOCATION CODES

THE DRAWING ON THIS AND THE NEXT SHEET DEPICT THE P.C. BOARDS USED IN THIS EQUIPMENT. SEE INDIVIDUAL ASSEMBLY DRAWINGS FOR COMPLETE COMPONENT LOCATION INFORMATION.

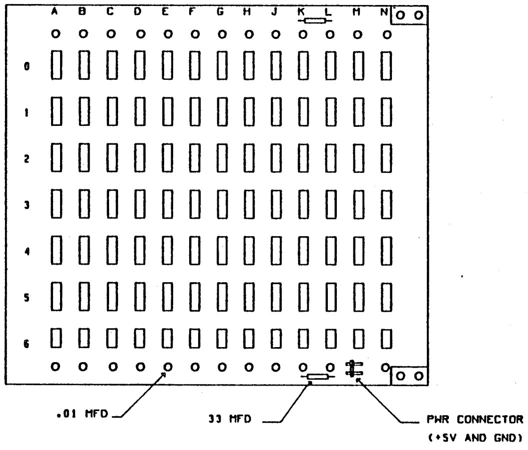
TEST POINTS ARE LOCATED ON BOARDS 7PC1, 7PC2, AND 7PC3 AS SHOWN BY THE DRAWINGS ON THIS SHEET AND THE FOLLOWING SHEET. ALL TEST POINTS ARE SHOWN ON THE LOGIC SHEETS AS AN OPEN CIRCLE CONNECTED TO A SIGNAL LINE.

PCB COMPONENT LOCATIONS	CODE IDENT	C	DWG NO	REV A
	PB/PBS		SHEET 5	

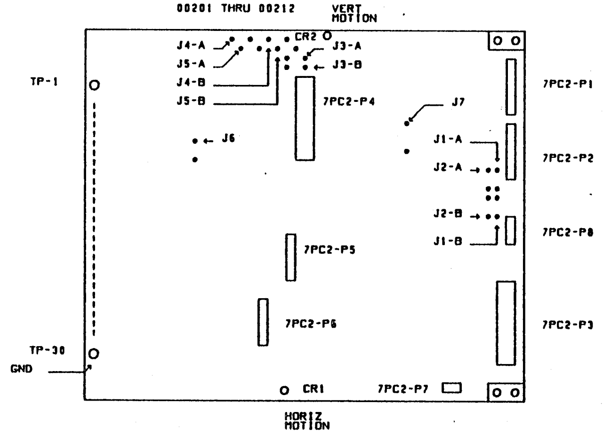
CONTROLLER BD. 7PC1
00101 THRU 00114



CONTROLLER BOARD
COMPONENT LOCATIONS



CONTROLLER BD. 7PC2
00201 THRU 00212



THE DRAWING ABOVE DEPICTS A TYPICAL CONTROLLER P.C. BOARD USED IN THIS EQUIPMENT.

TYPICAL PWR. REQUIRMENTS FOR THIS BOARD ARE +5V AND GND

A TEST POINT FOR GND IS PROVIDED AS SHOWN TO THE LEFT BUT DOES NOT APPEAR IN THE LOGIC SHEETS.

PCB COMPONENT LOCATIONS	CODE IDENT	C	DWG NO	REV A
	PB/PBS		SHEET 6	

SPECIAL NOMENCLATURE

ABBREVIATION	DEFINITION	CROSS REF. NUMBER
ACK FF	ACKNOWLEDGE FLIP FLOP	00105
ADV	ADVANCE	00206
APS ACTIVE	AUTO-PERF-SKIP ACTIVE	00209
BAND CHAR CNTR	BAND CHARACTER COUNTER	00110
BAND DET REG	BAND DETECT REGISTER	00110
BAND DET RESET	BAND DETECT RESET	00202
BAND MTR FLT	BAND MOTOR FAULT	00306
BAND SYNC FLT	BAND SYNC FAULT	00306
BCC BX	BAND CHARACTER COUNTER BIT X WHERE X= NUMBER	00110
BCG CLK	BAND CODE GENERATOR CLOCK	00107
BCG	BAND CODE GENERATOR	00104
BMC	BAND MOTOR CONTROL	00202
BMC CLOCK	BAND MOTOR CONTROL CLOCK	00304
BMC FDBK	BAND MOTOR CONTROL FEEDBACK	00302
BM·FLT	BAND MOTOR FAULT	00305
BM CUR FLT	BAND MOTOR CURRENT FAULT	00305
BMTO	BAND MOTOR TIME OUT	00305
BSY FF	BUSY FLIP FLOP	00105
CC 1ST CHAR	CONTROL CODE FIRST CHARACTER	00105
CE ERROR	CUSTOMER ENGINEER ERROR	00306
CE FAULT	CUSTOMER ENGINEER FAULT	00306
CHNL X	CHANNEL X WHERE X= NUMBER	00209
CLK 2	CLOCK 2	00212
CLR SR	CLEAR SHIFT REGISTER	00109
CLR	CLEAR	00201
CLR PM	CLEAR PAPER MOTION	00207
CLK 1MHZ	CLOCK 1 MEGHERTZ	00303
CMP	COMPARE	00113
CMP FF	COMPARE FLIP FLOP	00104
CNT DN	COUNT DOWN	00211
COMP PITCH	COMPRESSED PITCH	00301
CP EN	COMPRESSED PITCH ENABLE	00301
CONT CODE	CONTROL CODE	00101
DATA REG	DATA REGISTER	00101
DBX	DATA BIT X WHERE X= NUMBER	00101
ENAB ADV P	ENABLE ADVANCE PULSE	00105
ENAB FLC LD FF	ENABLE FORMS LENGTH COUNTER LOAD FLIP FLOP	00209
ENAB PRT FF	ENABLE PRINT FLIP FLOP	00108
ENAB PRT	ENABLE PRINT	00108
ENAB RDY FF	ENABLE READY FLIP FLOP	00201
END PRT 1	END PRINT 1	00108
END PRT REG	END PRINT REGISTER	00108
END PRT DET	END PRINT DETECTOR	00108
EVFU LD'ED	ELECTRONIC VERTICAL FORMAT UNIT LOADED	00201
FE	FORMS ERROR	00210
FF SW	FORM FEED SWITCH	00207
FF SW ACTIVE	FORM FEED ACTIVE	00207
FLC	FORMS LENGTH COUNTER	00209
FLC LD FF	FORMS LENGTH COUNTER LOAD FLIP FLOP	00208
FLT RESET	FAULT RESET	00306
FR B X	FORMAT REGISTER BIT X WHERE X= NUMBER	00207
FUSE FLT	FUSE FAULT	00306
FWD	FORWARD	00308

ABBREVIATION	DEFINITION	CROSS REF. NUMBER
H ADV	HORZONTAL ADVANCE	00203
H ADV RESET ENAB	HORIZONTAL ADVANCE RESET ENABLE	00203
H DIR RT	HORIZONTAL DIRECTION RIGHT	00204
H END STOP FLT	HORIZONTAL END STOP FAULT	00306
H INH	HORIZONTAL INHIBIT	00304
H POS FDBK ACT	HORIZONTAL POSITION FEEDBACK ACTIVE	00308
H STB LT	HORIZONTAL STROBE LEFT	00309
H STB RT	HORIZONTAL STROBE RIGHT	00309
H SW FLT	HORIZONTAL SWITCH FAULT	00306
HD CLK	HAMMER DRIVER CLOCK	00212
HD CLK GEN	HAMMER DRIVER CLOCK GENERATOR	00212
HE	HORIZONTAL ERROR	00305
HEP X	HAMMER ENABLE PULSE X WHERE X=NUMBER	00111
HME	HORIZONTAL MOTION ERROR	00203
HME FLT	HORIZONTAL MOTION ERROR FAULT	00306
HMR FLT	HAMMER FAULT	00306
HMR ON	HAMMER ON	00112
HMR SETTLE CNTR	HAMMER SETTLE COUNTER	00112
H POS HOME ENAB PUL	HORIZONTAL POSITION HOME ENABLE PULSE	00310
HOME FLT	HOME FAULT	00306
HOME TRIG PULSE	HOME TRIGGER PULSE	00301
HP FF	HOME PULSE FLIP FLOP	00112
HPC 2^X	HORIZONTAL POSITION COUNTER 2^X WHERE X= NUMBER	00204
HOR END STOP FLT	HORIZONTAL END STOP FAULT	00306
HOR MOT ENABLE	HORIZONTAL MOTION ENABLE	00108
IC FF	INPUT CYCLE FLIP FLOP	00105
IDB X	INTERNAL DATA BIT X WHERE X= NUMBER	00101
INH	INHIBIT	00306
INH DEL O/S	INHIBIT DELAY ONE SHOT	00205
INP LD OPT CNTR	INPUT LOAD OPTION COUNTER	00105
INP OPT CNTR MAX	INPUT OPTION COUNTER MAXIMUM	00106
INT V STB FF	INTERNAL VERTICAL STROBE FLIP FLOP	00208
LF O/S	LINE FEED ONE SHOT	00208
LF O/S CNTR	LINE FEED ONE SHOT COUNTER	00211
LD FMT REG	LOAD FORMAT REGISTER	00105
LSE	LINE SPACE ERROR	00211
M B^X	MEMORY BIT X WHERE X= NUMBER	00103
MC	MASTER CLEAR	00113
MEM WRITE	MEMORY WRITE	00105
M PRT CODE	MEMORY PRINTABLE	00103
NEG CLK O/S	NEGATIVE CLOCK ONE SHOT	00310
OC 2^X	OPTION COUNTER BIT 2^X WHERE X= NUMBER	00106
OOP	OUT OF PAPER	00205
OPT ADV	OPTION ADVANCE	00206
OPT CNTR	OPTION COUNTER	00106
OPT FF	OPTION FLIP FLOP	00107
OUT OPT CNTR MAX	OUTPUT OPTION COUNTER MAXIMUM	00106

SPECIAL NOMENCLATURE PAGE 1	CODE IDENT	C	DWG NO	REV A
	PB/PBS		SHEET 7	

SPECIAL NOMENCLATURE

ABBREVIATION	DEFINITION	CROSS REF. NUMBERS
PAP MOT COMP	PAPER MOTION COMPLETE	00208
PAPER MOT RATE DEL	PAPER MOTION RATE DELAY	00206
PB X	PRINTER BIT X WHERE X=NUMBER	00102
PHASE ADJ X	PHASE ADJUST X WHERE X=NUMBER	00202
PMV CLR	PAPER MOTION VERIFICATION CLEAR	00301
POS CLK O/S	POSITIVE CLOCK ONE SHOT	00310
POS FDBK	POSITIONAL FEEDBACK	00311
PRT CODE	PRINTABLE CODE	00102
PRT IN/OUT	PRINT IN/OUT	00108
PRT LD OPT CNTR	PRINT LOAD OPTION COUNTER	00107
PRT X	PRINT X WHERE X=NUMBER	00108
PU	PULL UP	00104
RAMP GEN	RAMP GENERATOR	00310
RCVRS	RECEIVERS	00101
RDY FF	READY FLIP FLOP	00201
REV	REVERSE	00308
RIB ON	RIBBON ON	00305
RIB MOT CUR FLT	RIBBON MOTOR CURRENT FAULT	00401
RIB MOT FLT	RIBBON MOTOR FLT	00306
SC=255	SCAN COUNTER = 255	00108
SCAN CNTR	SCAN COUNTER	00108
SET/RESET ENAB PRT	SET/RESET ENABLE PRINT	00105
SP	STANDARD PITCH	00111
SR → HD	SHIFT REGISTER COUNTENTS TRANSFER TO HAMMER DRIVER	00109
SR STEP X	SHIFT REGISTER STEP X WHERE X=NUMBER	00107
SS PROG	SUBSCAN PROGRAMING	00303
SSP	SUBSCAN PULSE	00303
SSP FF	SUBSCAN PULSE FLIP FLOP	00112
SSR=X	SUBSCAN REGISTER= X WHERE X= NUMBER	00109
STD PITCH	STANDARD PITCH	00111
START CLR	START CLEAR	00201
STB FF X	STROBE FLIP FLOP X WHERE X= NUMBER	00208
STP ENABLE	STOP TIMING PULSE ENABLE	00207
SYNC_XCK	SYNC CHECK	00402
TM 2^X	TYPE MACHINE 2^X WHERE X= NUMBER	00111
TOF	TOP OF FORM	00209
TOF BUSY	TOP OF FORM BUSY	00201
TSSP X	TIMING SUBSCAN PULSE X WHERE X= NUMBER	00109
V ADV	VERTICAL ADVANCE	00206
V ALIGN	VERTICAL ALIGNMENT	00205
V ADV	VERTICAL ADVANCE	00206
VERT ADV ENAB	VERTICAL ADVANCE ENABLE	00206
V CK STB	VERTICAL CKECK STROBE	00307
V CK STB FF	VERTICAL CHECK STROBE FLIP FLOP	00211
VFU VER.	VERTICAL FORMAT UNIT VERIFIER	00307
V STB	VERTICAL STROBE	00307
V STB CK CLR	VERTICAL STROBE CHECK CLEAR	00211
V STB CNTR X	VERTICAL STROBE COUNTER X WHERE X= NUMBER	00208
VERT MOTION	VERTICAL MOTION	00208
V M O/S	VERTICAL MOTION ONE SHOT	00206
V REF	VOLTAGE REFERENCE	00309
48	48 CHARACTER BAND	00104
64	64 CHARACTER BAND	00104
96	96 CHARACTER BAND	00108
128	128 CHARACTER BAND	00108
1 POS	1 POSITION MACHINE - PB1130	00111
2 POS	2 POSITION MACHINE - PBS720 STANDARD PITCH	00111
4 POS	4 POSITION MACHINE - PBS360 STANDARD PITCH	00111
12V FLT	±12V FAULT	00306
6/8 LPI RDR	6/8 LINES PER INCH READER	00307

LOGIC LEVELS

HIGH OUTPUT VOLTAGE = 5.5V MAX / 2.4 MIN.
LOW OUTPUT VOLTAGE = 0.4V MAX / 0V MIN.

HIGH INPUT VOLTAGE = 5.5V MAX / 2.0V MIN.
LOW INPUT VOLTAGE = 0.8V MAX / 0V MIN.

POWER SUPPLY CONNECTIONS

ALL STANDARD I.C. PACKAGES HAVE THE FOLLOWING POWER SUPPLY CONNECTIONS WHICH ARE NOT SHOWN ON THE LOGIC ELEMENT SYMBOL.

14 PIN DEVICE - GROUND ON PIN 7 AND +5V ON PIN 14
16 PIN DEVICE - GROUND ON PIN 8 AND +5V ON PIN 16

ALL NON STANDARD I.C. PACKAGES WILL HAVE THEIR NON-STANDARD GROUND AND SUPPLY CONNECTIONS SHOWN AS PART OF THE LOGIC ELEMENT SYMBOL.

REPETITIVE DETAILS

ALL LOGIC PRINTED CIRCUT CARDS WILL HAVE FILTER CAPACITORS GENERALLY LOCATED CLOSE TO THE INPUT POWER CONNECTOR. DECOUPLING CAPACITORS FROM 33MFD TO 120 MFD ARE USED, DEPENDING ON THE BOARD.

HIGH FREQUENCY CAPACITORS (.01MFD) ARE LOCATED BETWEEN USED I.C. LOCATIONS (1 CAPACITOR/3 I.C.'S).

THESE CAPACITORS ARE NOT SHOWN ON LOGIC DRAWINGS.

ALL DIODES ARE PN 11803000UNLESS OTHERWISE INDICATED

SQUARE PADS ON ARTWORK INDICATE:

1. PIN 1 OF ICS AND CONNECTORS.
2. CATHODE OF DIODES.
3. POSITIVE SIDE OF ELECTROLITIC CAPACITORS.

ABBREVIATION	DEFINITION	CROSS REF NO.
TOFPLS	TOP OF FORM PULSE	00101

SPECIAL NOMENCLATURE PAGE 2	CODE IDENT DATA BASE REV B	C	DWG NO
	PB/PBS	SHEET 8	REV E

Revised
7-7-77 MJD

ELEMENT IDENTIFIER LIST

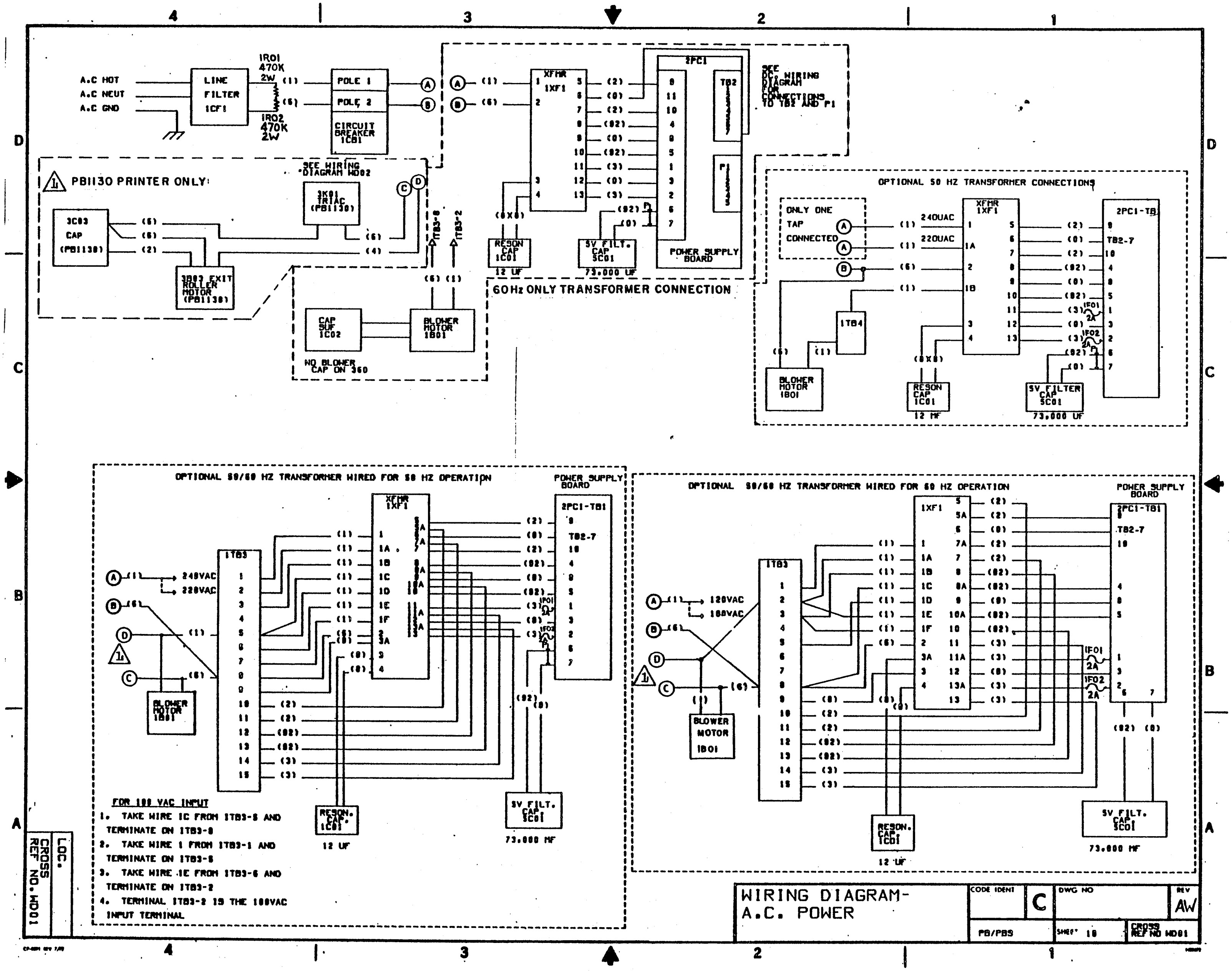
ELEMENT IDENTIFIER	GENERIC EQUIVALENT	DESCRIPTION
140	7400	QUAD 2 INPUT NAND
141	7410	TRIPLE 3 INPUT NAND
146	7404	HEX INVERTER
148	7402	QUAD 2 INPUT NOR
156	74107	DUAL J-K MASTER/SLAVE FF W/RESET
158	74161	COUNTER, SYNCHRONOUS 4-BIT BINARY
175	7474	DUAL D-TYPE FF
194	74121	MULTIVIBRATOR
195	9602	MULTIVIBRATOR, DUAL, RETRIGGERABLE, MONOSTABLE
200	7406	DRIVER, HEX INVERTER-OPEN COLLECTOR
201	7408	QUAD 2 INPUT AND
206	7430	EIGHT INPUT POSITIVE NAND
207	7425	DUAL 4 INPUT NOR W/STROBE
208	7420	DUAL 4 INPUT NAND
210	7437	QUAD 2 INPUT NAND BUFFER
213	7411	TRIPLE 3 INPUT AND
310	7432	QUAD 2 INPUT OR
227	7407	DRIVER, HEX, OPEN COLLECTOR, HIGH VOLTAGE
241	7476	DUAL J-K MASTER/SLAVE FF W/SET & CLEAR
305	LM311	VOLTAGE COMPARATOR
306	747	OPERATIONAL AMPLIFIER, DUAL
332	LM305	VOLTAGE REGULATOR
334	723	VOLTAGE REGULATOR
340A	7415	OPERATIONAL AMPLIFIER, HIGH SLEW RATE
341	LM339	VOLTAGE COMPARATOR, QUAD, LOW OFFSET
354G	LM320	VOLTAGE REGULATOR, NEG 12V
355D	LM340	VOLTAGE REGULATOR, POS 12V
500	74193	COUNTER, SYNCHRONOUS 4-BIT BINARY UP/DOWN
505	74151	8 LINE TO 1 LINE DATA SELECTOR/MULTPXER W/STROBE
508	74153	MULTIPLEXER, DUAL 4 INPUT
510	74174	MONOLITHIC D TYPE FF
520	74175	MONOLITHIC D TYPE FF W/COMPLEMENTARY OUTPUT FROM EACH FF
523	74192	COUNTER, SYNCHRONOUS 4-BIT BCD UP/DOWN
527	74164	SHIFT REGISTER, 8-BIT SERIAL-IN, PARALLEL OUT
528	74194	SHIFT REGISTER, 4 BIT BIDIRECTIONAL, UNIVERSAL
582	4024	OSCILLATOR, DUAL VOLTAGE CONTROLLED
700	2111-1	256X4 STATIC RAM
916	555	TIMER
927	75453	DRIVER, DUAL OR, OPEN COLLECTOR
943	7414	HEX SCHMITT TRIGGER
3094	3094	POWER SWITCH/AMPLIFIER, PROGRAMMABLE
4741	4741	OPERATIONAL AMPLIFIER, QUAD
4044	4044	PHASE-FREQUENCY DETECTOR
4066	4066	ANALOG SWITCH, QUAD
14415	14415	TIMER DRIVER, QUAD PRECISION
74136	74136	QUAD 2 INPUT EXCLUSIVE OR
74221	74221	DUAL MONOSTABLE MULTIVIBRATOR
74LS257	74LS257	QUAD 2 INPUT MULTIPLEXER
161	9601	RETRIGGERABLE MULTIVIBRATOR ONE SHOT

GENERAL NOTES

DUE TO THE LARGE NUMBER OF CIRCUITS ON EACH BOARD, MORE THEN ONE LOGIC SHEET IS USUALLY REQUIRED FOR EACH BOARD. THE BOARD NAME,CIRCUIT MODULE LOCATION AND CROSS REFERENCE NUMBERS APPEAR ON EACH SHEET. EACH SYMBOL IN THE DIAGRAMS REFLECTS THE LOGIC FUNCTION PERFORMED, COMPONENT TYPE OR ELEMENT IDENTIFIER AND LOCATION OF ALL OR PART OF AN I/C PACKAGE OR DISCREET COMPONENT(S). FOR DETAILED INFORMATION ON SYMBOLS AND PACKAGE TYPE REFER TO CIRCUIT DESCRIPTIONS AT LEFT OF THIS SHEET, OR KEY TO LOGIC SYMBOLS # 95387500

(MANUAL # 95390100)

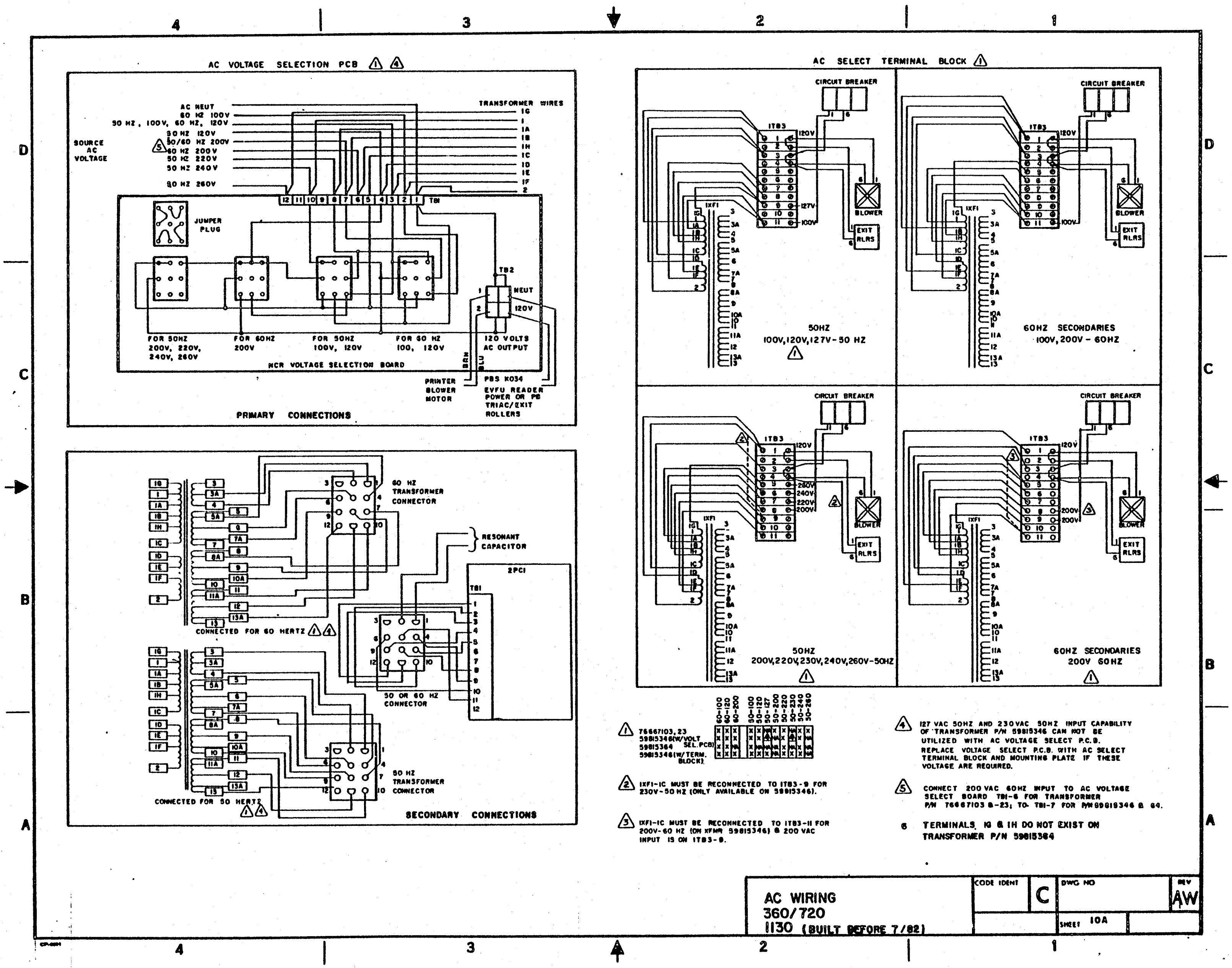
GENERAL NOTES & IDENTIFIER LIST	CODE IDENT	DWG NO	REV
	C		C
	PB/PBS	SHEET 0	



WIRING DIAGRAM-
A.C. POWER

FOR 100 VAC INPUT

1. TAKE WIRE 1C FROM 1TB3-5 AND TERMINATE ON 1TB3-8
2. TAKE WIRE 1 FROM 1TB3-1 AND TERMINATE ON 1TB3-5
3. TAKE WIRE 1E FROM 1TB3-6 AND TERMINATE ON 1TB3-2
4. TERMINAL 1TB3-2 IS THE 100VAC INPUT TERMINAL



1 76667103,23 / 59815346(W/VOLT SEL.PCB) / 59815364 / 59815346(W/TERM. BLOCK).

	60-100	60-120	60-200	50-100	50-120	50-127	50-200	50-220	50-230	50-240	50-260
76667103,23	X	X	X	X	X	NA	X	X	NA	X	X
59815346(W/VOLT SEL.PCB)	X	X	X	X	X	4	NA	X	4	X	NA
59815364	X	X	NA	X	NA	NA	NA	X	NA	X	NA
59815346(W/TERM. BLOCK).	X	X	X	X	X	X	NA	X	X	X	NA

2 1XF1-1C MUST BE RECONNECTED TO 1TB3-9 FOR 230V-50 HZ (ONLY AVAILABLE ON 59815346).

3 1XF1-1C MUST BE RECONNECTED TO 1TB3-11 FOR 200V-60 HZ (ON XFMR 59815346) & 200 VAC INPUT IS ON 1TB3-9.

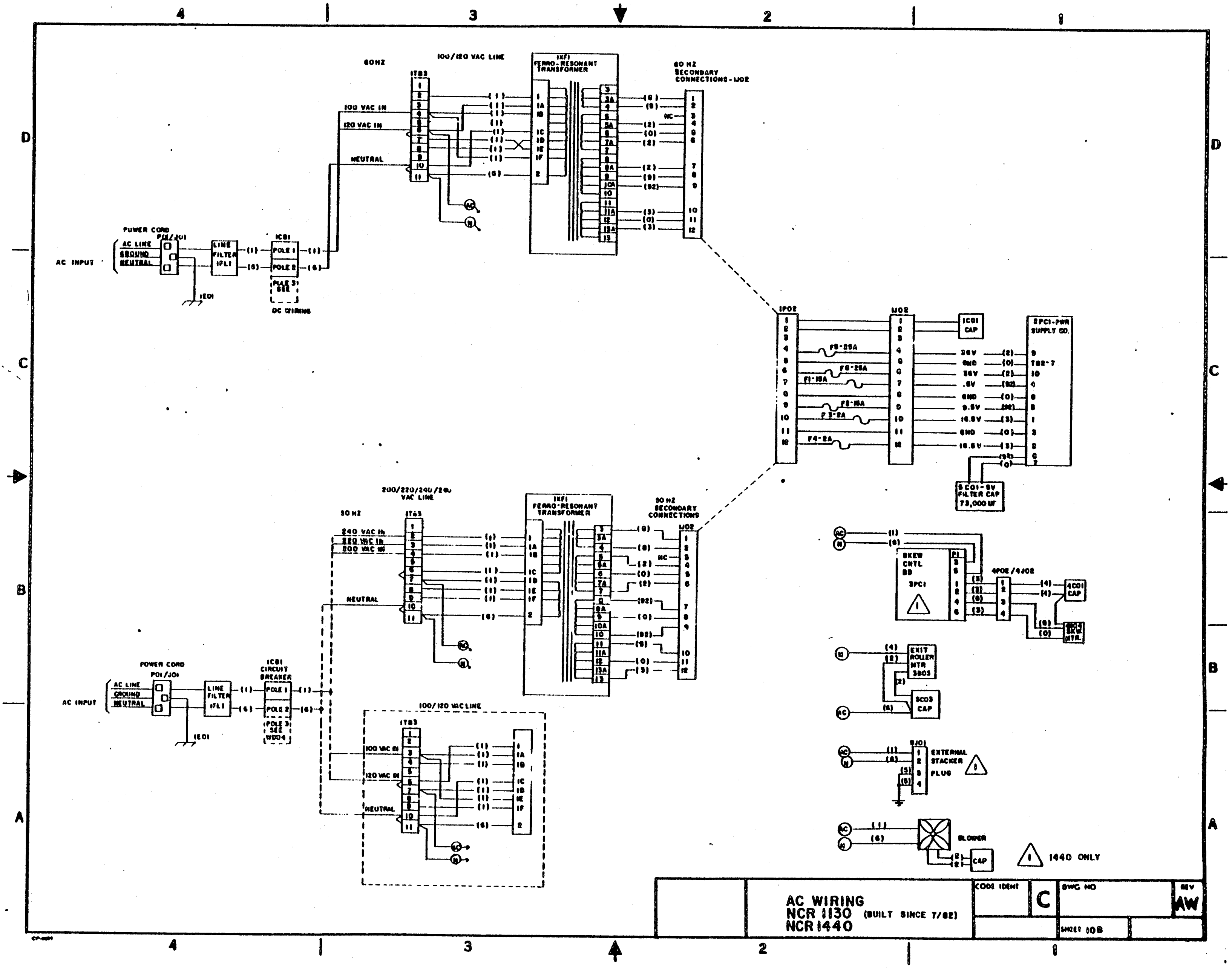
4 127 VAC 50HZ AND 230VAC 50HZ INPUT CAPABILITY OF TRANSFORMER P/N 59815346 CAN NOT BE UTILIZED WITH AC VOLTAGE SELECT P.C.B. REPLACE VOLTAGE SELECT P.C.B. WITH AC SELECT TERMINAL BLOCK AND MOUNTING PLATE IF THESE VOLTAGE ARE REQUIRED.

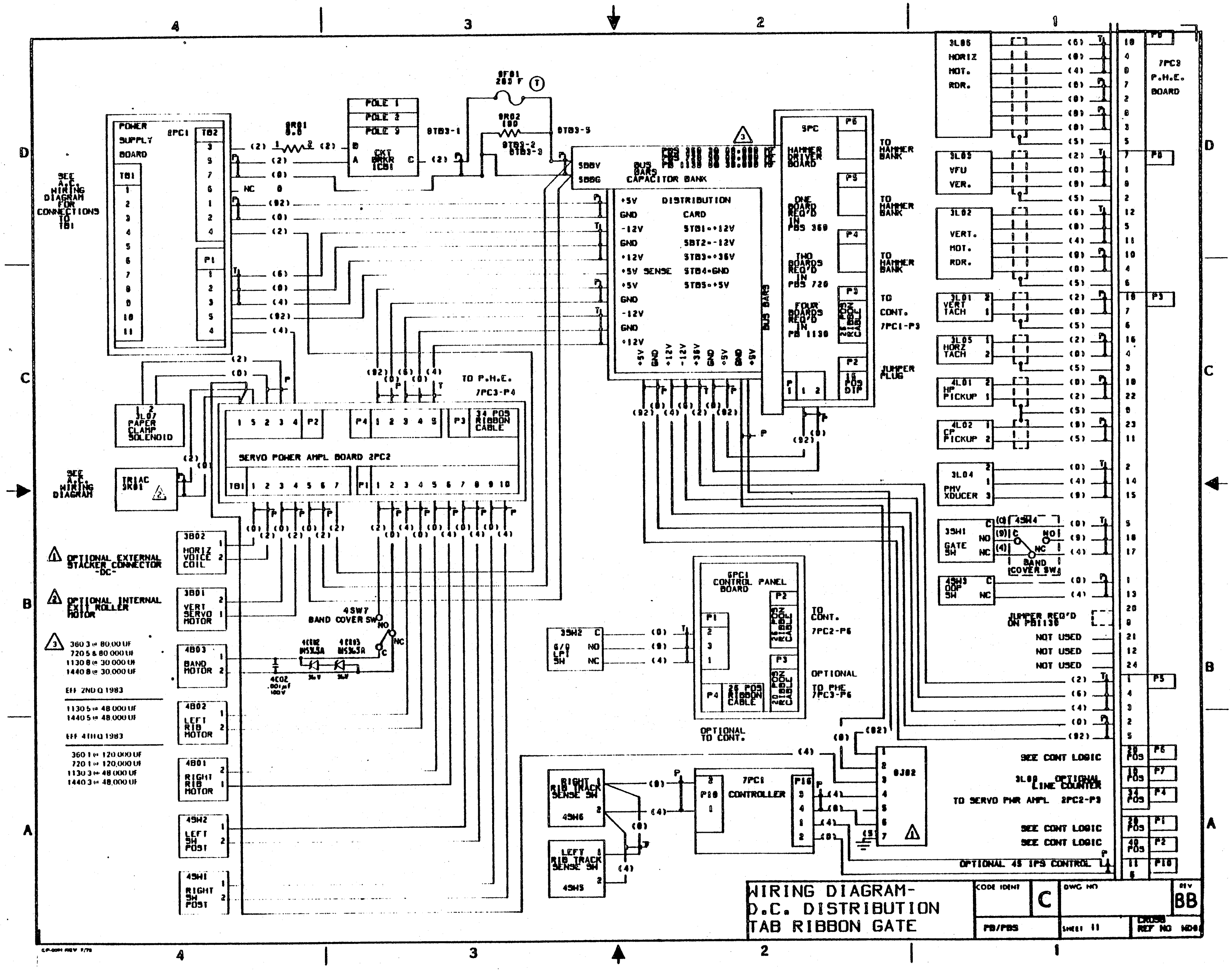
5 CONNECT 200 VAC 60HZ INPUT TO AC VOLTAGE SELECT BOARD TB1-6 FOR TRANSFORMER P/N 76667103 & -23; TO TB1-7 FOR P/N 59815346 & 64.

6 TERMINALS 1G & 1H DO NOT EXIST ON TRANSFORMER P/N 59815364

AC WIRING
360/720
1130 (BUILT BEFORE 7/82)

CODE IDENT		DWG NO	REV
	C		AW
		SHEET 10A	


AC WIRING
NCR 1130 (BUILT SINCE 7/82)
NCR 1440
CODE IDENT
C
DWG NO
REV
AW
SHEET 10B
1440 ONLY
60 HZ
100/120 VAC LINE
1TB3
100 VAC IN
120 VAC IN
NEUTRAL
1XF1
FERRO-RESONANT TRANSFORMER
60 HZ SECONDARY CONNECTIONS-1J02
NC
POWER CORD P01/J01
AC LINE
GROUND
NEUTRAL
AC INPUT
LINE FILTER 1FL1
1CB1
POLE 1
POLE 2
POLE 3 SEE DC WIRING
1E01
1P02
1J02
1C01 CAP
2PC1-PWR SUPPLY CO.
TB2-7
F5-25A
F6-25A
F1-15A
F2-15A
F3-2A
F4-2A
36V
GND
36V
.8V
GND
9.5V
16.5V
GND
16.5V
5C01-5V FILTER CAP 73,000 UF
50 HZ
200/220/240/260 VAC LINE
240 VAC IN
220 VAC IN
200 VAC IN
50 HZ SECONDARY CONNECTIONS
1CB1 CIRCUIT BREAKER
POLE 3 SEE WD04
SKEW CNTL BD
SPC1
P1
4P0E/4J02
4C01 CAP
SKEW MTR.
EXIT ROLLER MTR 3B03
3C03 CAP
9J01
EXTERNAL STACKER PLUG
BLOWER
CAP
AC
N



1 OPTIONAL EXTERNAL STACKER CONNECTOR -DC-

2 OPTIONAL INTERNAL EXIT ROLLER MOTOR

3 360 3 @ 80,00 UF
720 5 & 80 000 UF
1130 8 @ 30 000 UF
1440 8 @ 30,000 UF

EFF 2ND Q 1983

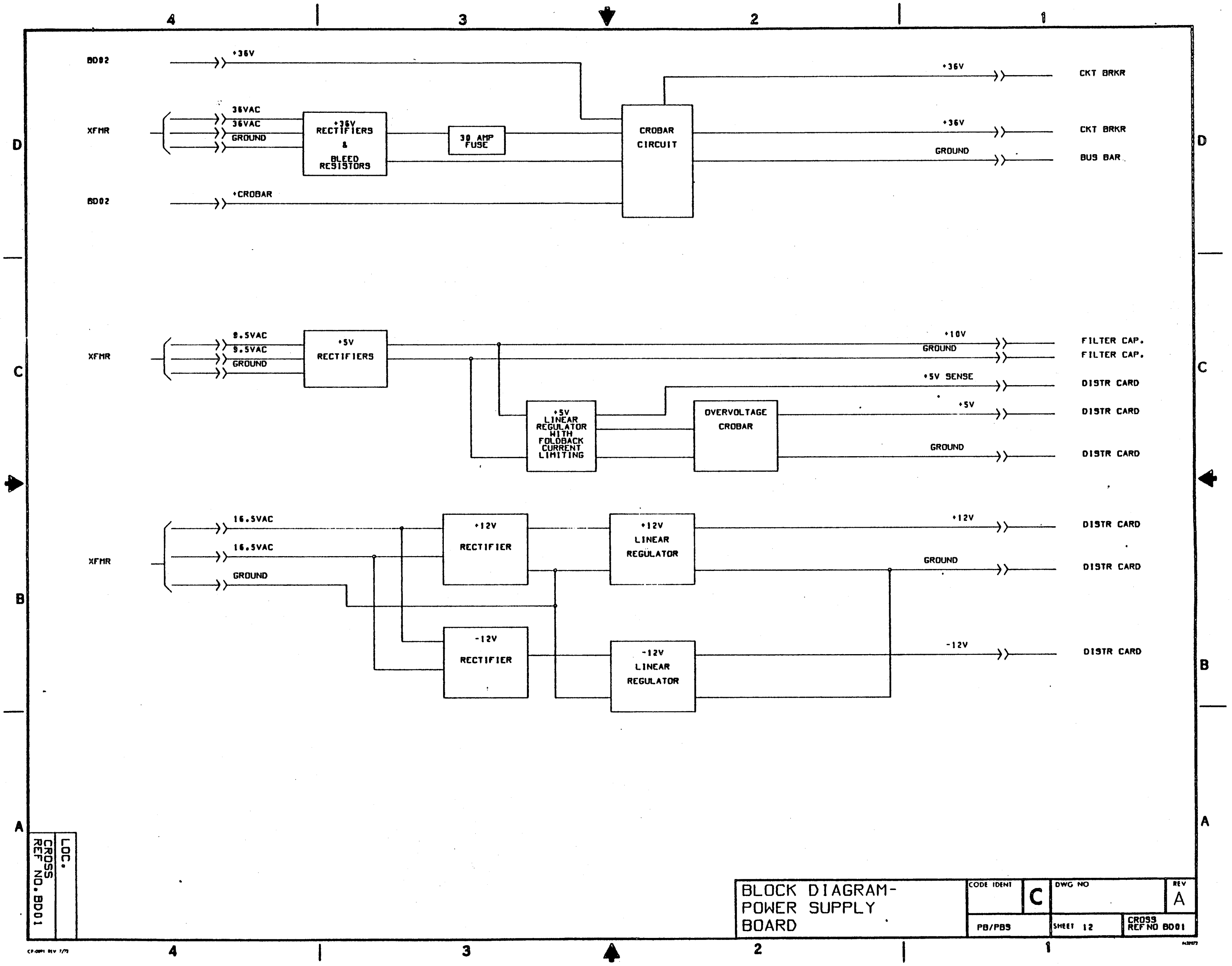
1130 5 @ 48 000 UF
1440 5 @ 48,000 UF

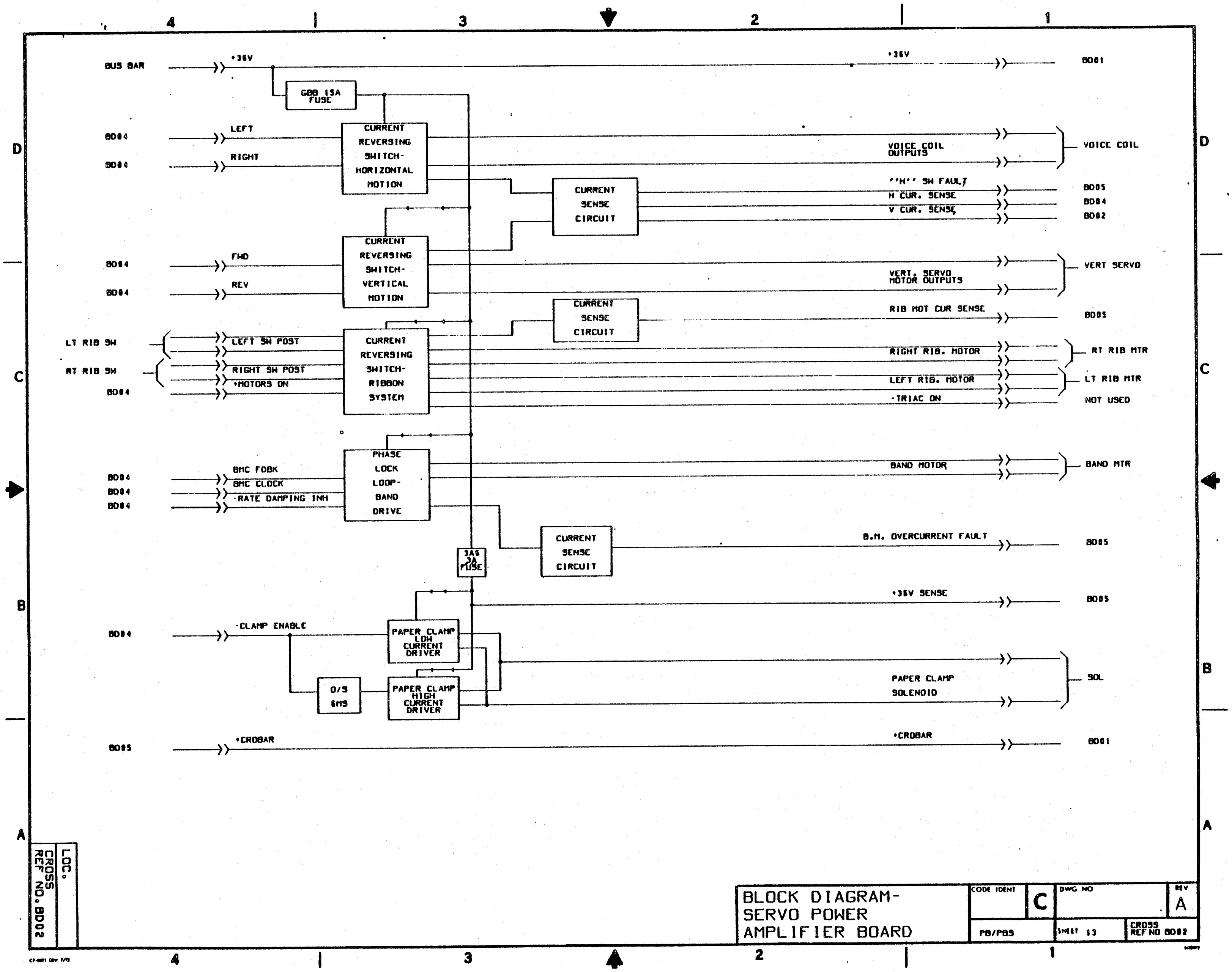
EFF 4TH Q 1983

360 1 @ 120,000 UF
720 1 @ 120,000 UF
1130 3 @ 48 000 UF
1440 3 @ 48,000 UF

WIRING DIAGRAM-
D.C. DISTRIBUTION
TAB RIBBON GATE

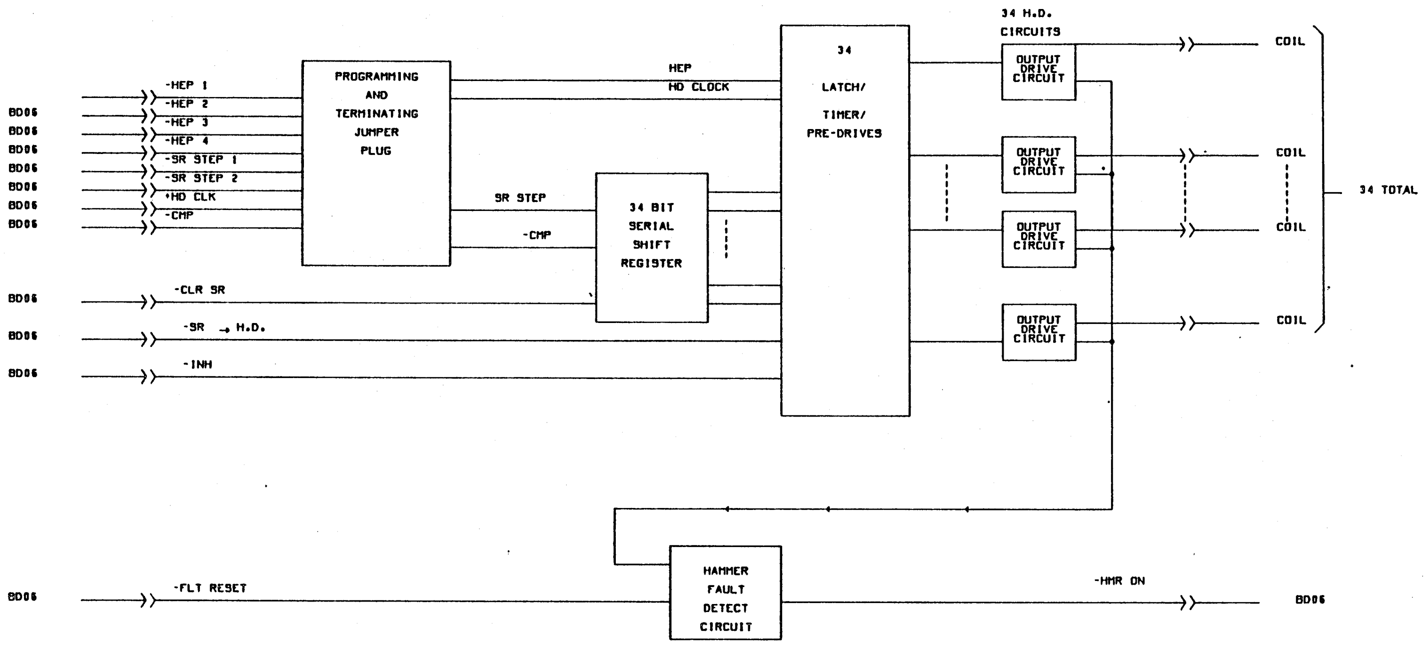
CODE IDENT	C	DWG NO	REV BB
PB/PBS		SHEET 11	CROSS REF NO


BD02
+36V
XFMR
36VAC
36VAC
GROUND
+36V RECTIFIERS & BLEED RESISTORS
30 AMP FUSE
BD02
+CROBAR
CROBAR CIRCUIT
+36V
CKT BRKR
+36V
CKT BRKR
GROUND
BUS BAR
XFMR
9.5VAC
9.5VAC
GROUND
+5V RECTIFIERS
+5V LINEAR REGULATOR WITH FOLDBACK CURRENT LIMITING
OVERVOLTAGE CROBAR
+10V
FILTER CAP.
GROUND
FILTER CAP.
+5V SENSE
DISTR CARD
+5V
DISTR CARD
GROUND
DISTR CARD
XFMR
16.5VAC
16.5VAC
GROUND
+12V RECTIFIER
-12V RECTIFIER
+12V LINEAR REGULATOR
-12V LINEAR REGULATOR
+12V
DISTR CARD
GROUND
DISTR CARD
-12V
DISTR CARD
LOC.
CROSS REF NO. BD01
BLOCK DIAGRAM- POWER SUPPLY BOARD
CODE IDENT
C
DWG NO
REV
A
PB/PBS
SHEET 12
CROSS REF NO BD01
4
3
2
1
D
C
B
A



BLOCK DIAGRAM-
SERVO POWER
AMPLIFIER BOARD

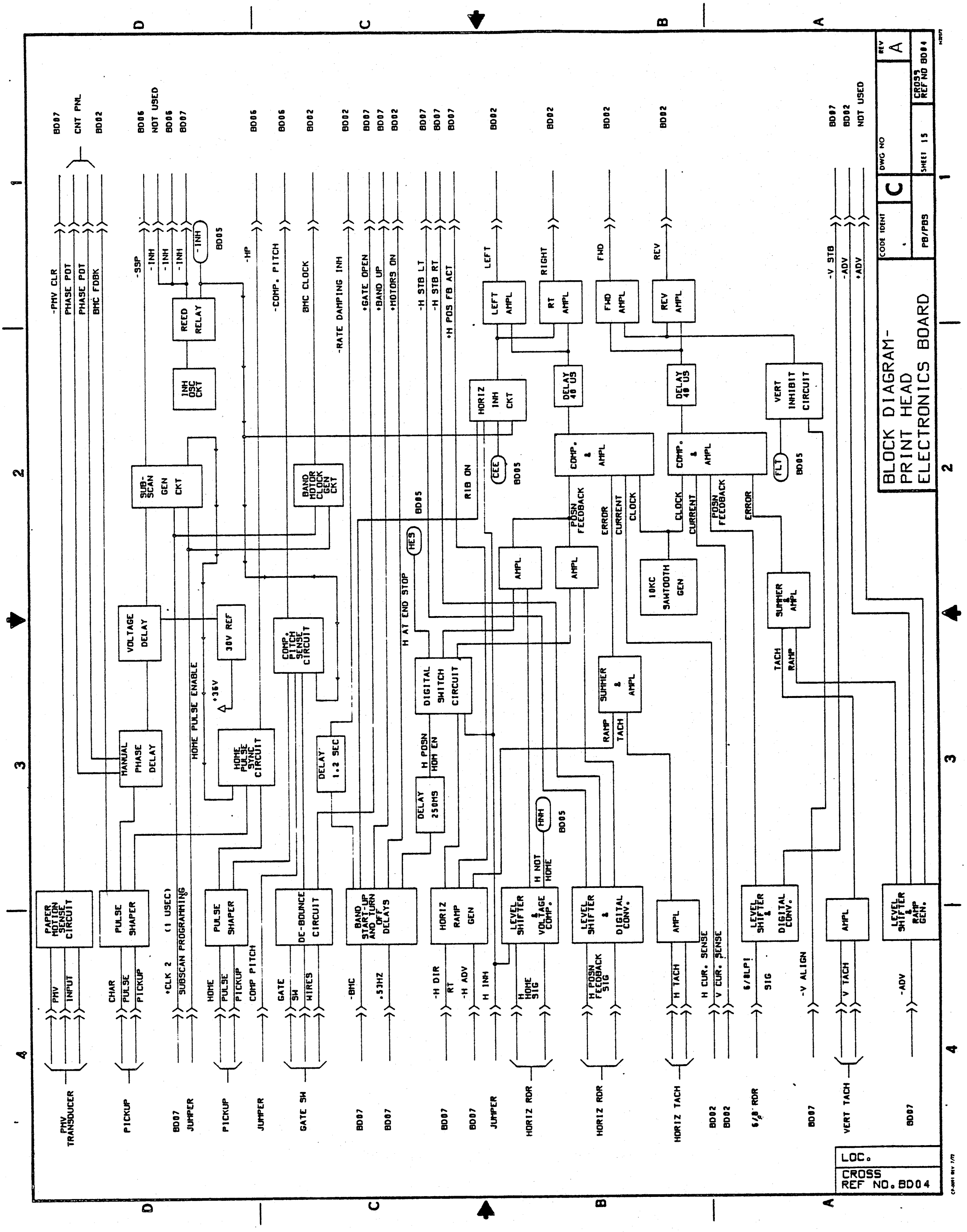
CODE IDENT	DWG NO	REV
C		A
PB/PBS	SHEET 13	CROSS REF NO BD02

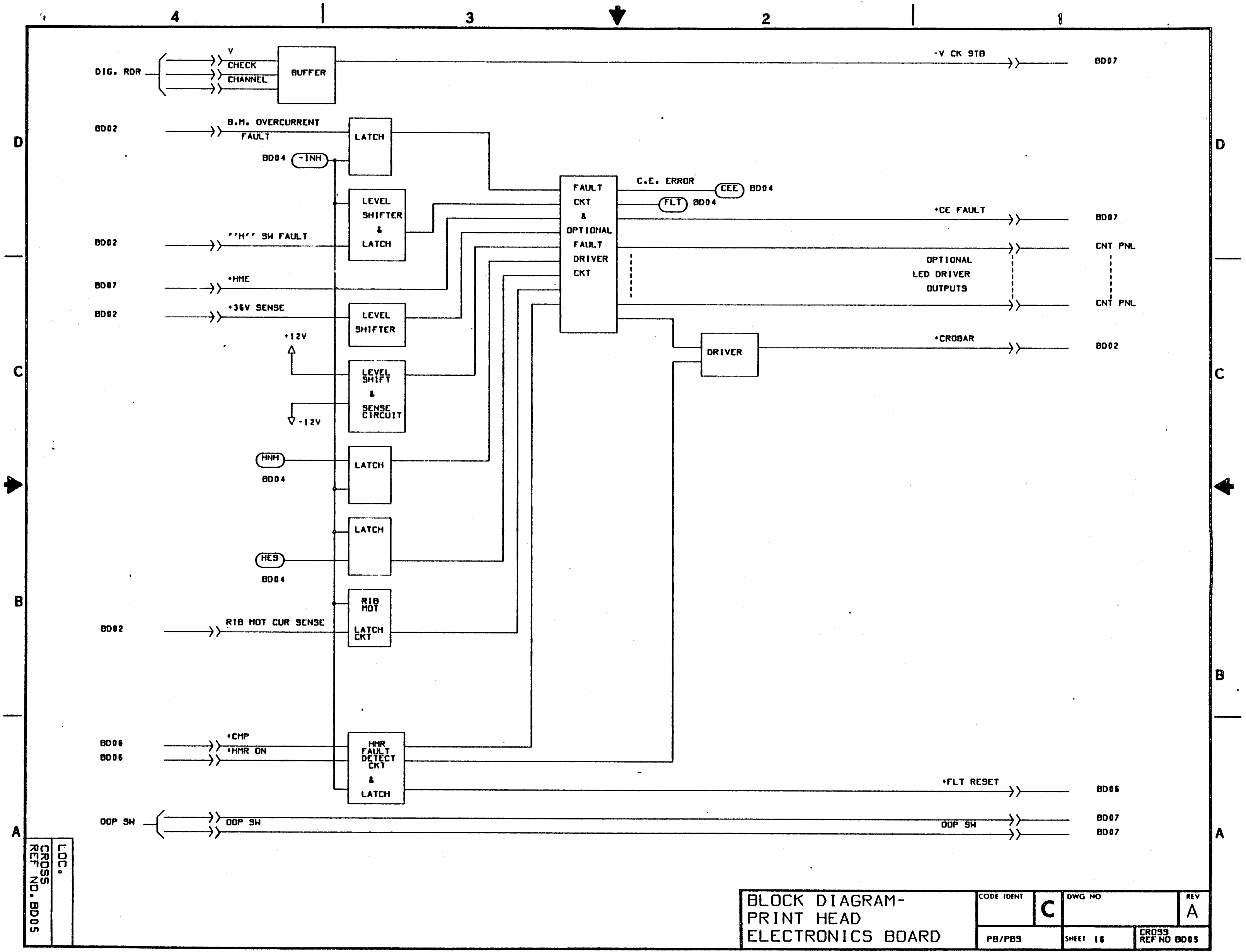


LOC.
CROSS
REF NO. BD03

BLOCK DIAGRAM-
HAMMER DRIVER
BOARD

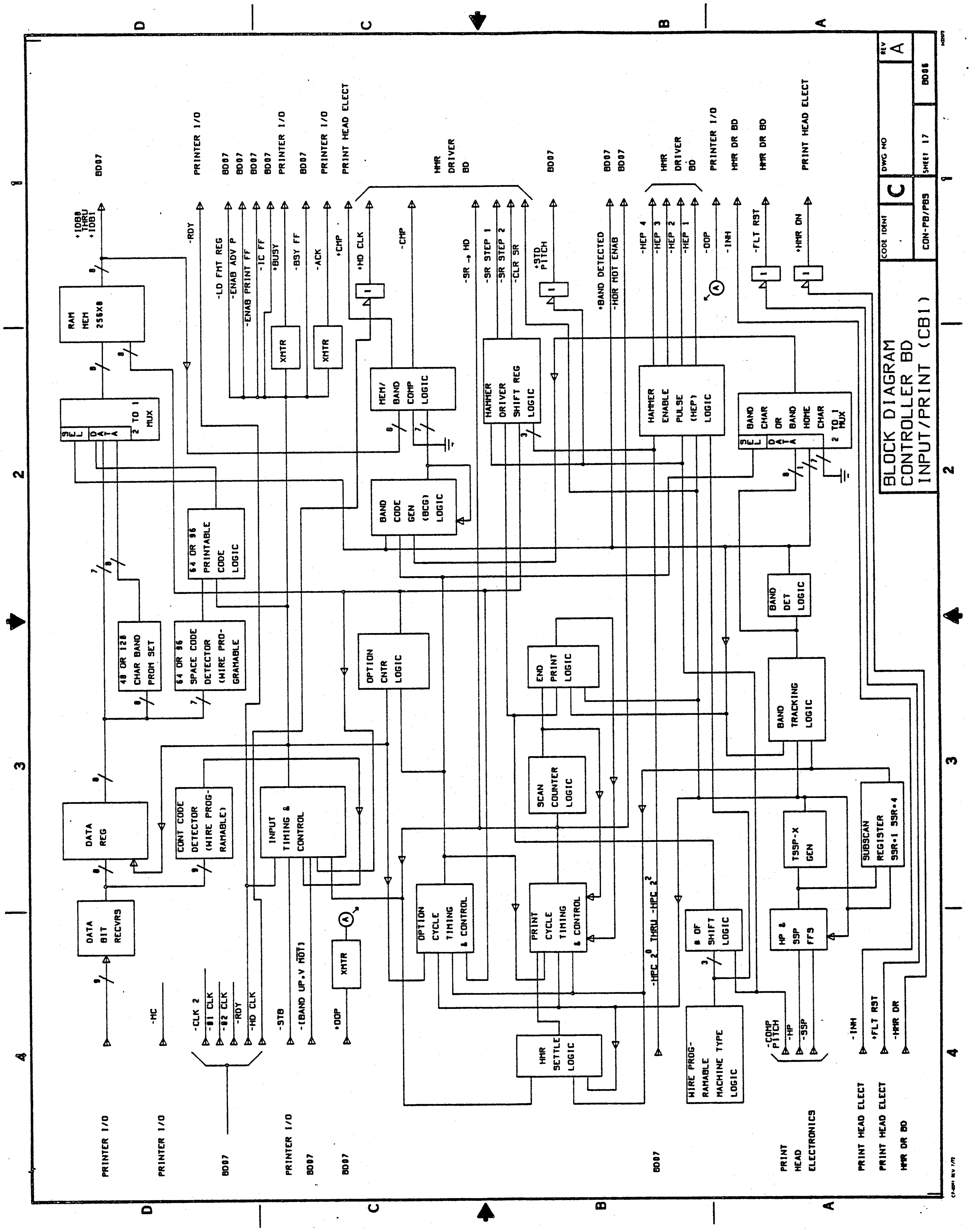
CODE IDENT		DWG NO	REV
	C		A
PB/PBS		SHEET 14	CROSS REF NO BD03


BLOCK DIAGRAM-
PRINT HEAD
ELECTRONICS BOARD
CODE IDENT
DWG NO
C
PB/PBS
SHEET 15
CROSS REF NO BD04
REV
A
LOC.
CROSS
REF NO. BD04
PMV TRANSDUCER
PMV
INPUT
PAPER MOTION SENSE CIRCUIT
PICKUP
CHAR
PULSE
PICKUP
PULSE SHAPER
+CLK 2
(1 USEC)
SUBSCAN PROGRAMMING
BD07
JUMPER
HOME
PULSE
PICKUP
COMP PITCH
GATE SW
GATE
SW
WIRES
DE-BOUNCE CIRCUIT
-BMC
+53HZ
BAND START-UP AND TURN OFF DELAYS
-H DIR
RT
-H ADV
H INH
HORIZ RAMP GEN
HORIZ RDR
H HOME SIG
LEVEL SHIFTER & VOLTAGE COMP.
H NOT HOME
HNH
H POSN FEEDBACK SIG
LEVEL SHIFTER & DIGITAL CONV.
HORIZ TACH
H TACH
AMPL
H CUR. SENSE
V CUR. SENSE
BD02
6/8 RDR
6/8LPI SIG
-V ALIGN
VERT TACH
V TACH
-ADV
LEVEL SHIFTER & RAMP GEN.
MANUAL PHASE DELAY
HOME PULSE ENABLE
HOME PULSE SYNC CIRCUIT
+36V
30V REF
VOLTAGE DELAY
DELAY 1.2 SEC
DELAY 250MS
H POSN HOM EN
COMP. PITCH SENSE CIRCUIT
DIGITAL SWITCH CIRCUIT
H AT END STOP
HES
BD05
SUB-SCAN GEN CKT
BAND MOTOR CLOCK GEN CKT
INH OSC CKT
REED RELAY
-PMV CLR
PHASE POT
BMC FDBK
CNT PNL
-SSP
-INH
NOT USED
BD06
-HP
-COMP. PITCH
BMC CLOCK
-RATE DAMPING INH
+GATE OPEN
+BAND UP
+MOTORS ON
-H STB LT
-H STB RT
+H POS FB ACT
RIB ON
HORIZ INH CKT
CEE
LEFT
LEFT AMPL
RIGHT
RT AMPL
DELAY 40 US
COMP. & AMPL
POSN FEEDBACK
ERROR
CURRENT
CLOCK
10KC SAWTOOTH GEN
SUMMER & AMPL
RAMP
TACH
FWD
FWD AMPL
REV
REV AMPL
VERT INHIBIT CIRCUIT
FLT
-V STB
+ADV
-ADV
BD07
A
B
C
D
1
2
3
4

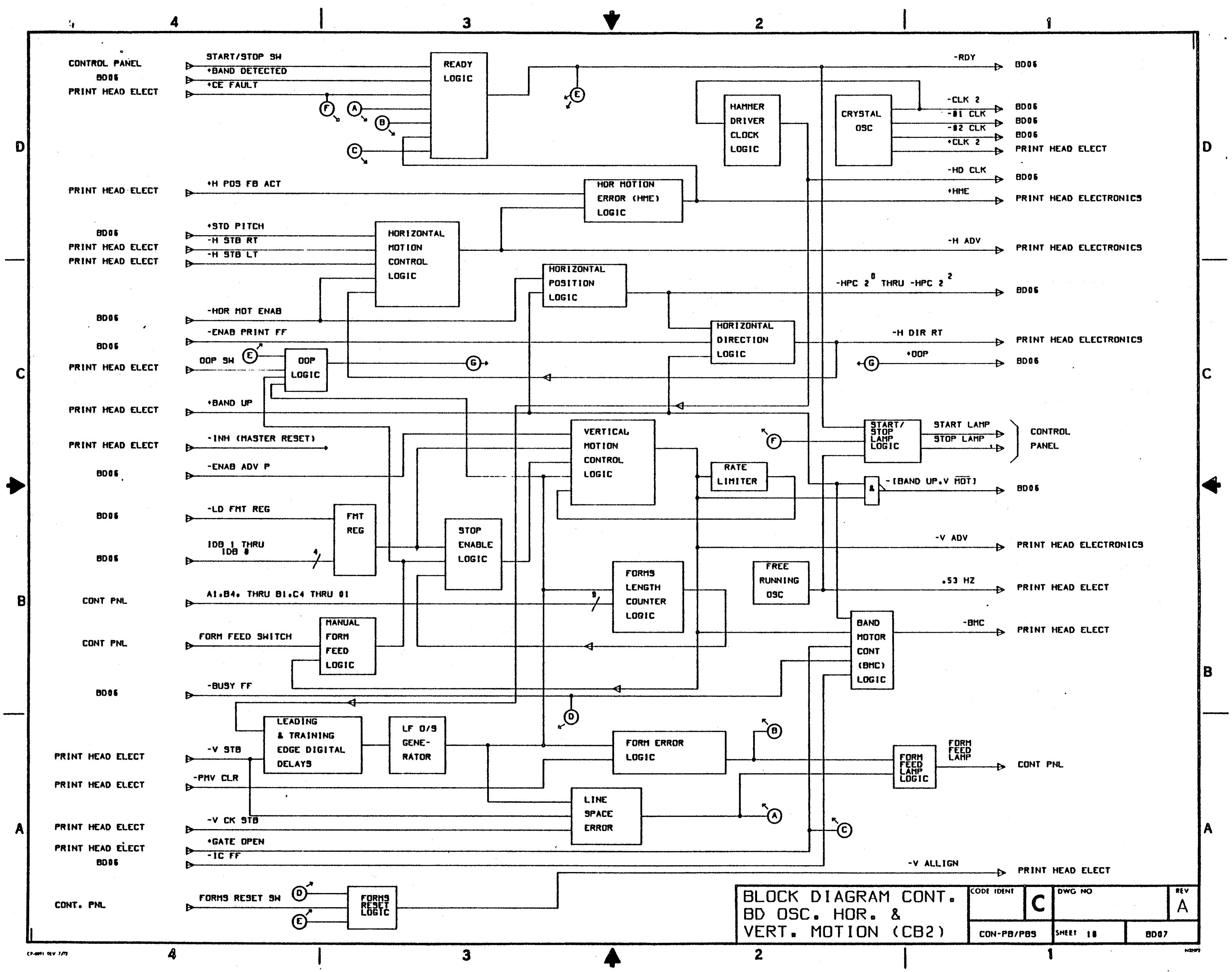


BLOCK DIAGRAM-
PRINT HEAD
ELECTRONICS BOARD

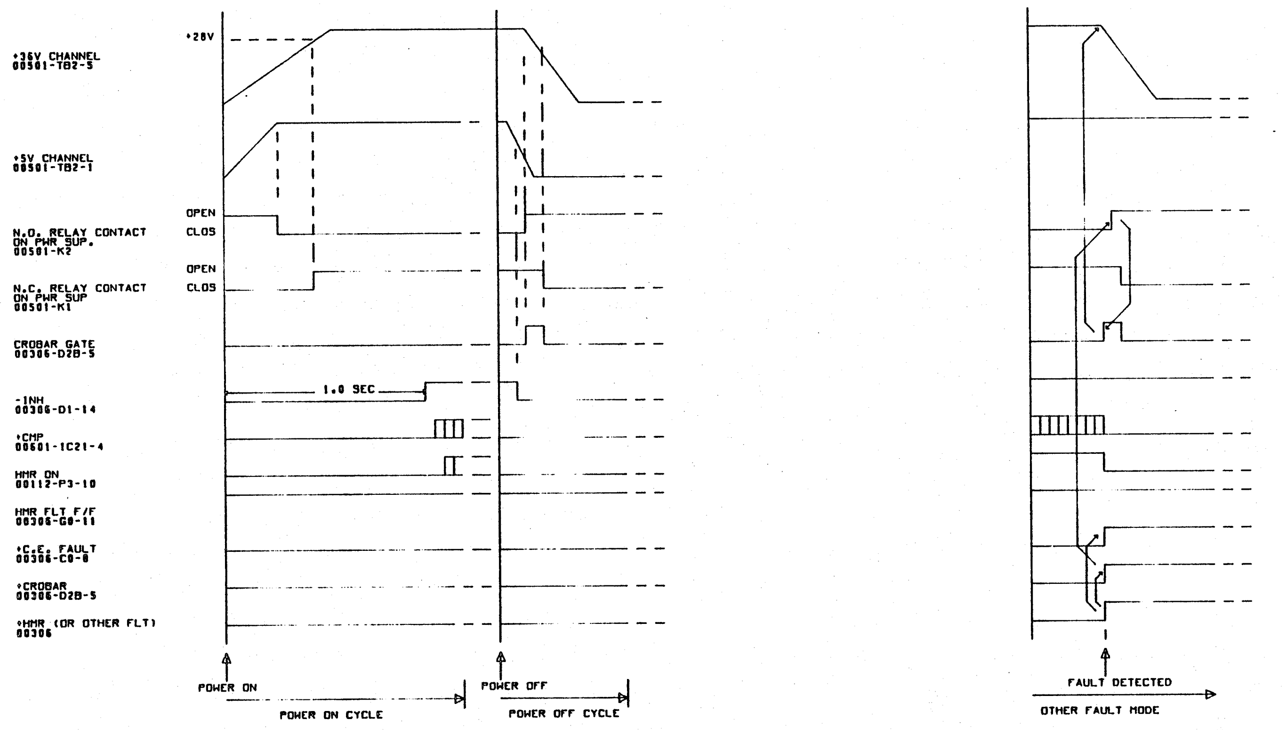
CODE IDENT		DWG NO	REV
PB/PBS	C	SHEET 16	A CROSS REF NO BD05



BLOCK DIAGRAM CONTROLLER BD INPUT/PRINT (CB1)



BLOCK DIAGRAM CONT.
BD OSC. HOR. &
VERT. MOTION (CB2)

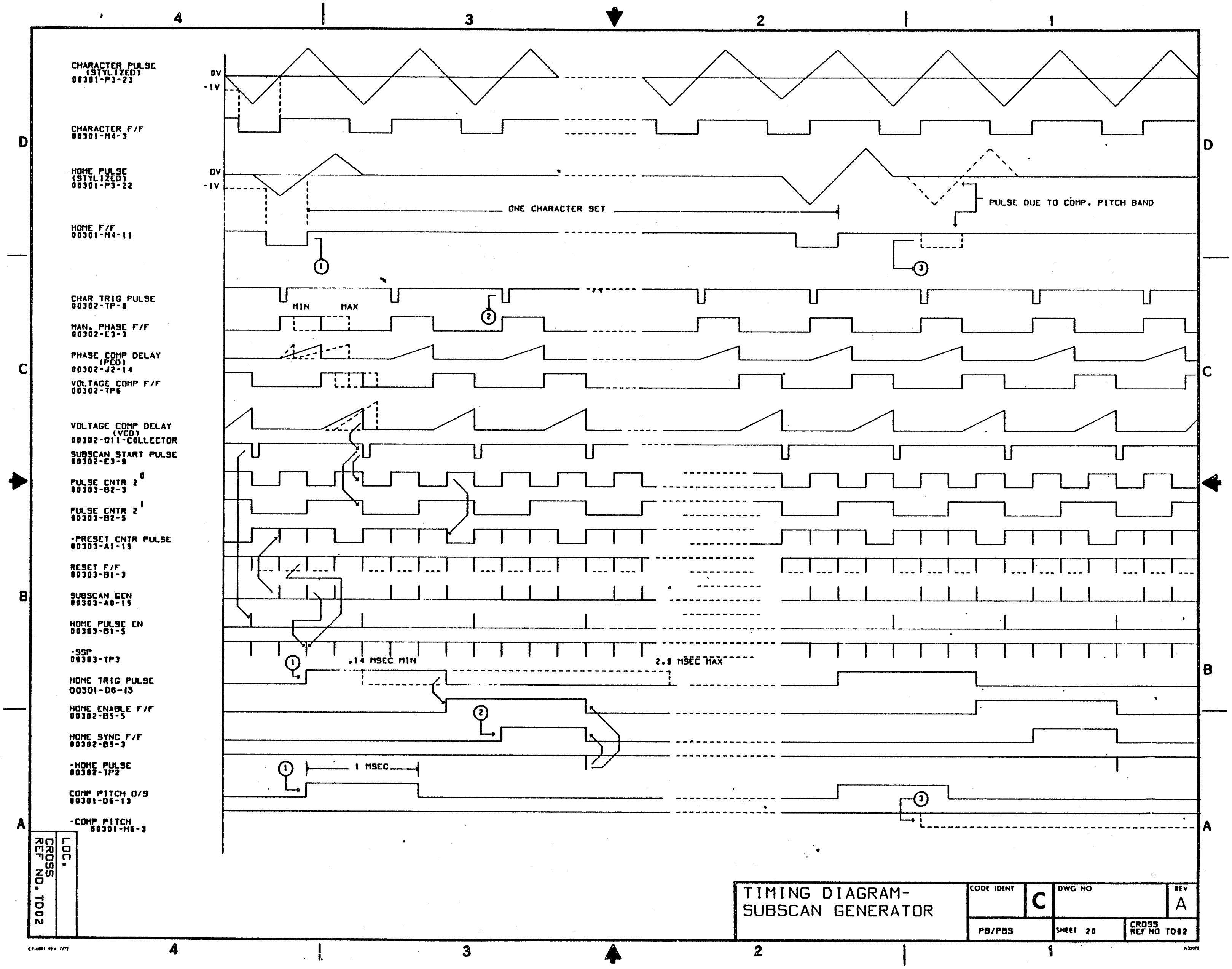


DETECTABLE FAULTS

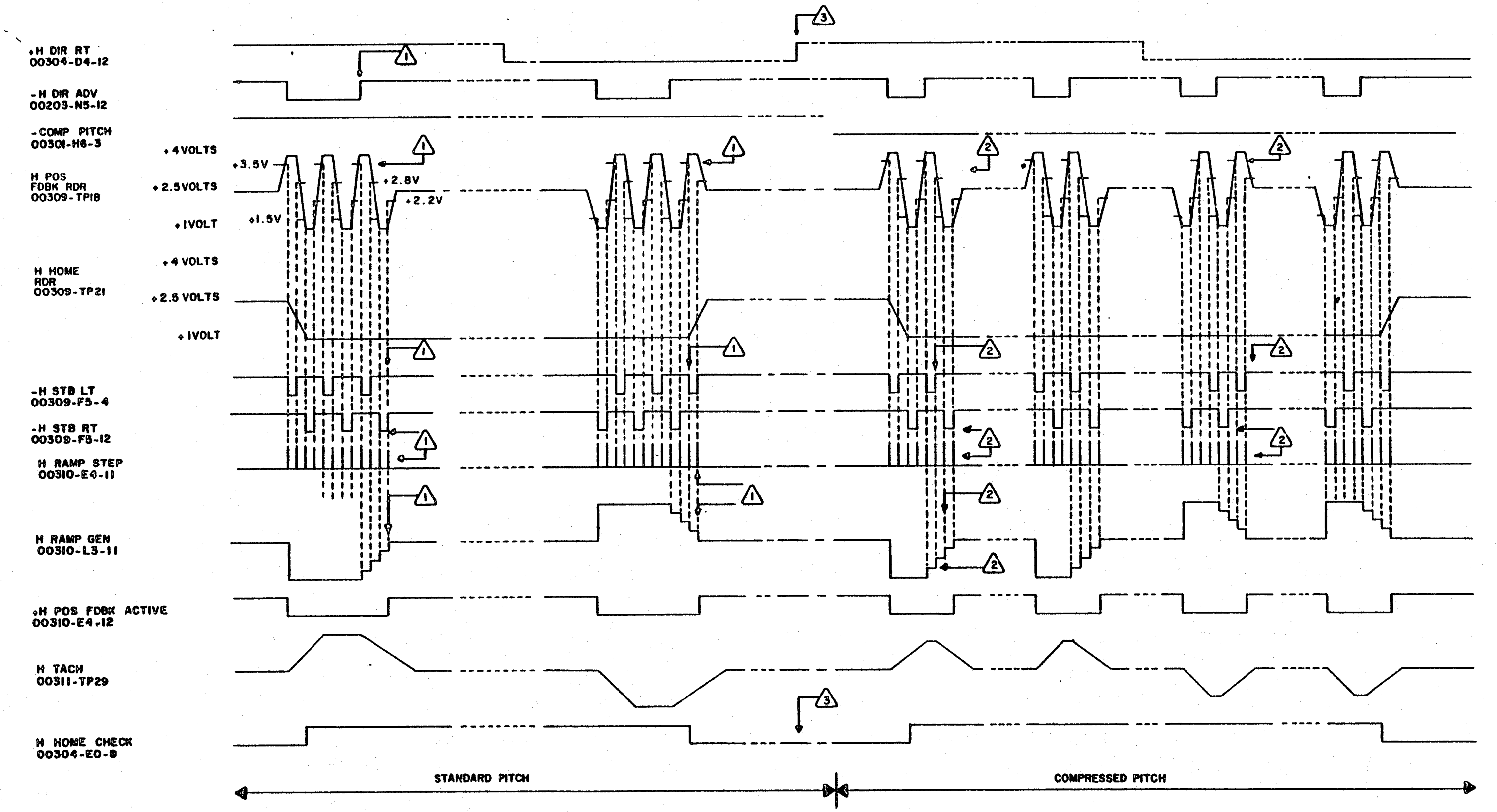
HORIZONTAL MOTION ERROR
FUSE FAULT (LOSS OF +36V)
HAMMER FAULT
+12V FAULT
''H'' SWITCH FAULT
BAND MOTOR FAULT
HORIZONTAL NOT HOME FAULT
HORIZONTAL AT END STOPS FAULT
RIBBON MOTOR FAULT

LOC.
CROSS
REF NO. TD01

TIMING DIAG. NORMAL POWER SEQUENCING & FAULT MODES	CODE IDENT C	DWG NO	REV A
	PB/PBS	SHEET 19	CROSS REF NO TD01



TIMING DIAGRAM-
SUBSCAN GENERATOR

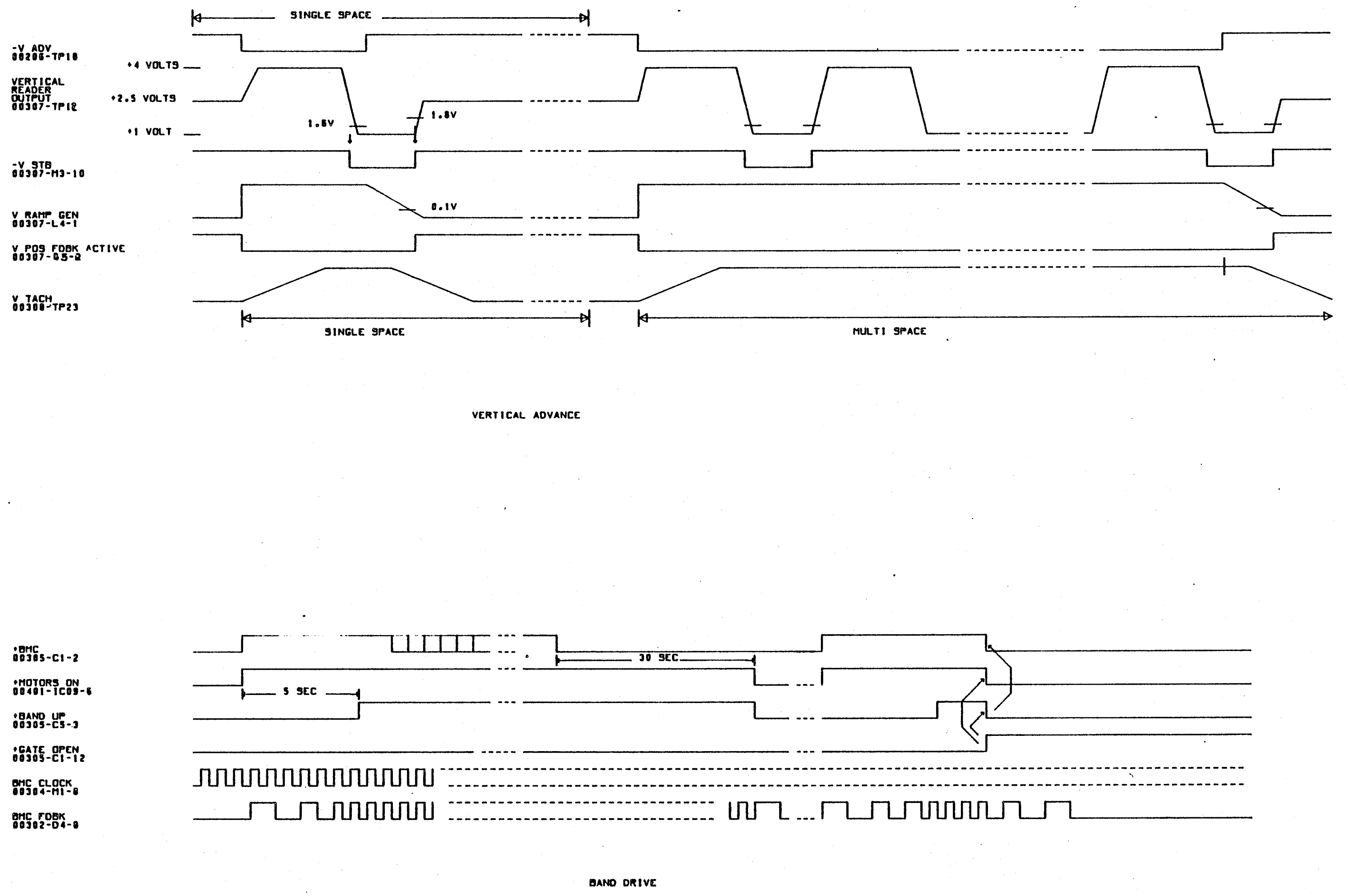


720 LPM PRINTER
WAVEFORMS SHOWN FOR PBS 720

1. 3 GROUPS OF 3 PULSES FOR THE PBS 360
2. 5 GROUPS OF 2 PULSES FOR COMPRESSED PITCH PBS 360
3. TIME WHERE HOME CHECK IS MONITORED

LOC.
CROSS
REF NO. TD03

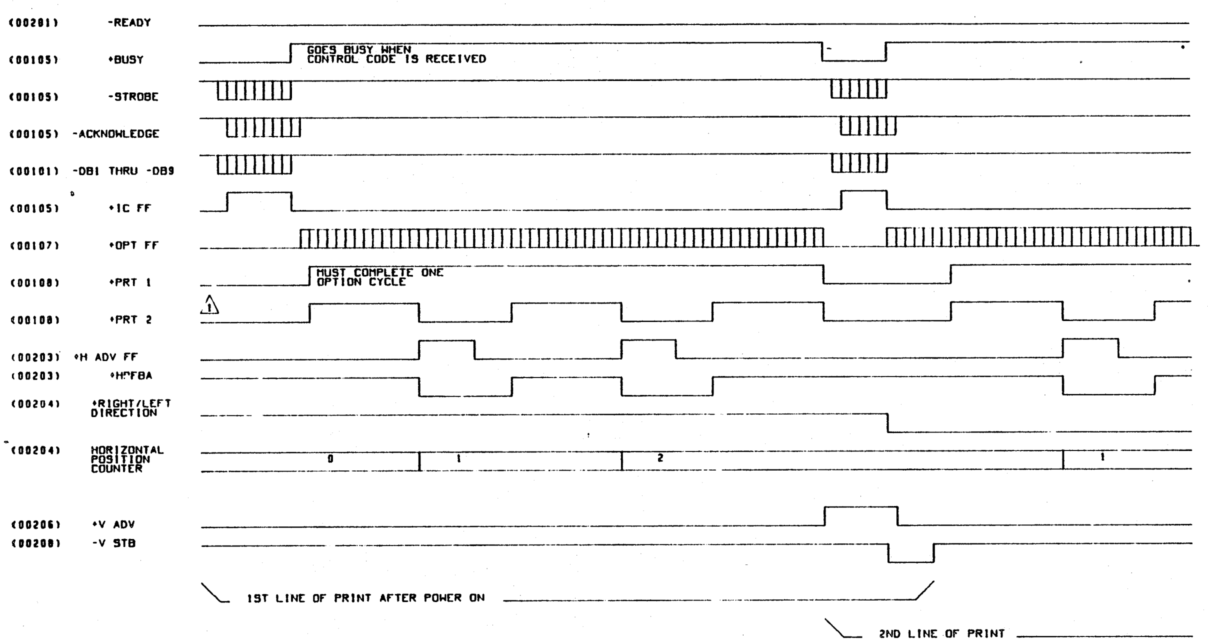
TIMING DIAGRAM- HORIZONTAL SHIFT	CODE IDENT	C	DWG NO	REV B
	PB/PBS		SHEET 21	CROSS REF NO TD03



LOC.
CROSS
REF NO. TD04

TIMING DIAGRAM-
VERTICAL ADVANCE &
BAND DRIVE

CODE IDENT	C	DWG NO	REV A
PB/PBS		SHEET 22	CROSS REF NO TD04

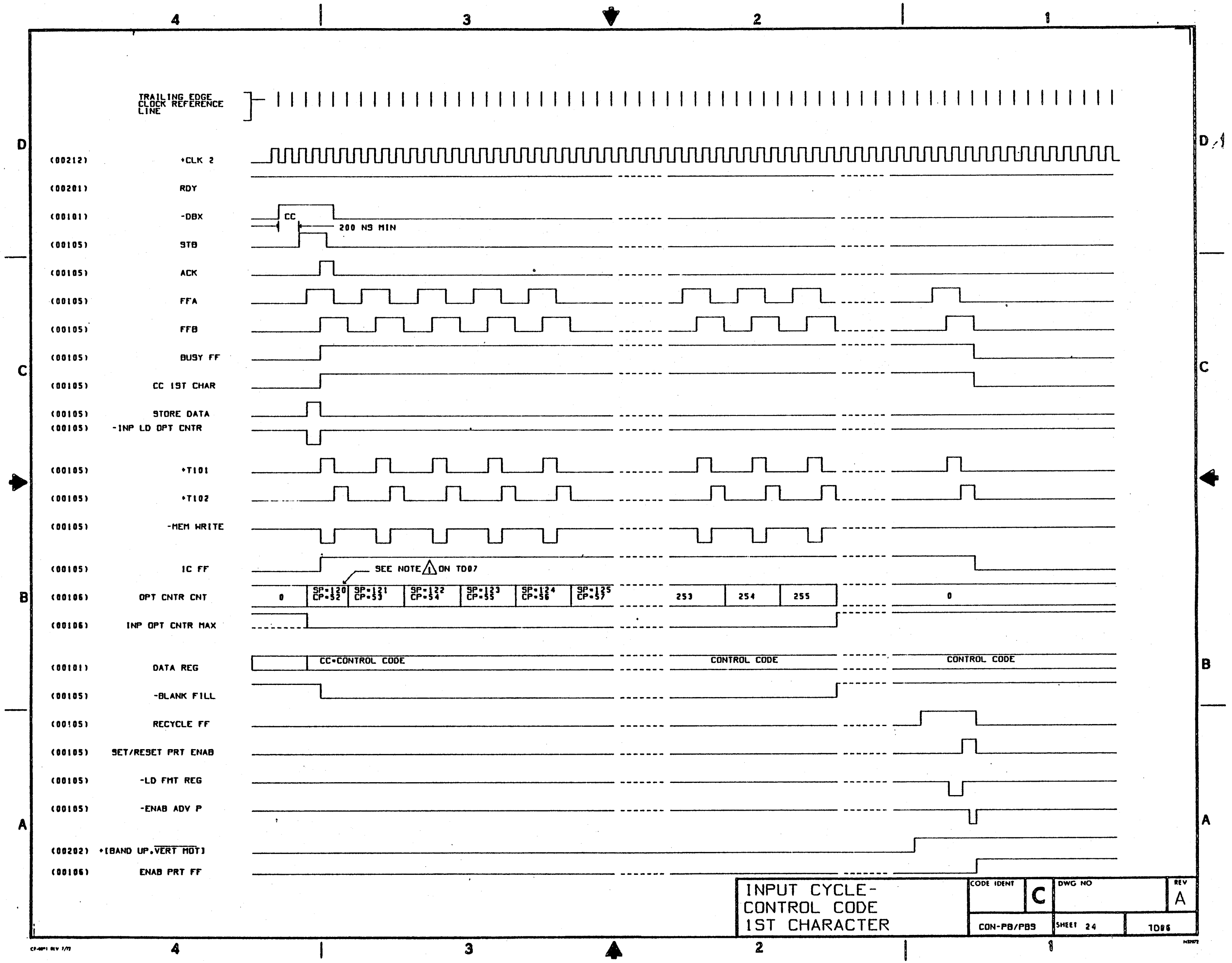


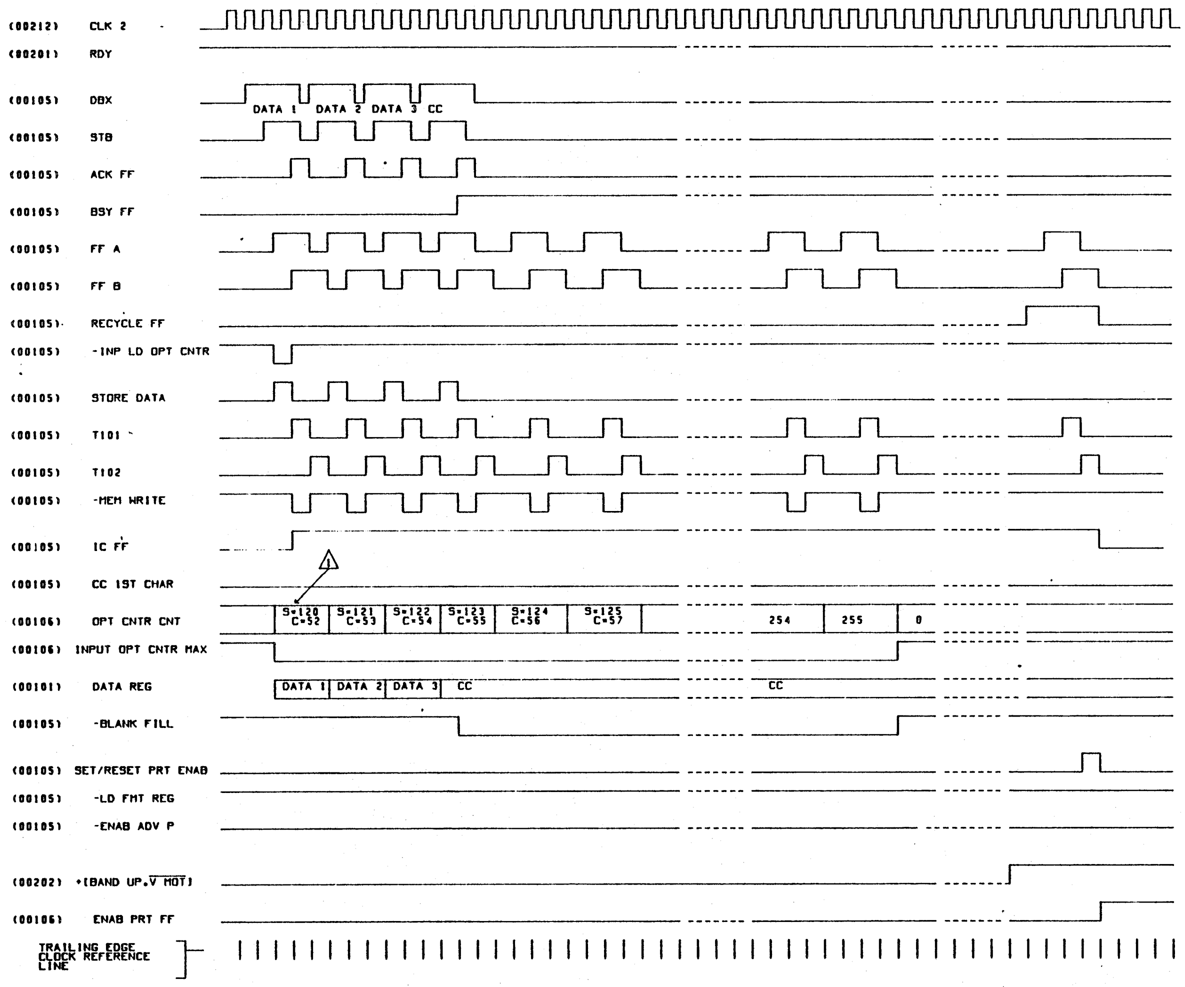
⚠1 THE NUMBER OF PRT 2 IN A LINE OF PRINT IS DETERMINED BY TYPE OF PRINTER

PRINTER TYPE	PITCH		# OF PRT 2S
	STD	COMP	
PB1130	X		1
PB9720	X		2
PB9720		X	3
PB9360	X		4
PB9360		X	6

MAJOR CONTROLLER CYCLES

CODE IDENT	DWG NO	REV
C		A
CON-PB/PB9	SHEET 23	TD05


4
3
2
1
D
C
B
A
TRAILING EDGE CLOCK REFERENCE LINE
(00212) +CLK 2
(00201) RDY
(00101) -DBX
(00105) STB
(00105) ACK
(00105) FFA
(00105) FFB
(00105) BUSY FF
(00105) CC 1ST CHAR
(00105) STORE DATA
(00105) -INP LD OPT CNTR
(00105) +T101
(00105) +T102
(00105) -MEM WRITE
(00105) IC FF
(00106) OPT CNTR CNT
(00106) INP OPT CNTR MAX
(00101) DATA REG
(00105) -BLANK FILL
(00105) RECYCLE FF
(00105) SET/RESET PRT ENAB
(00105) -LD FMT REG
(00105) -ENAB ADV P
(00202) +(BAND UP.VERT MOT)
(00106) ENAB PRT FF
CC
200 NS MIN
SEE NOTE 1 ON TD07
0
SP=120 CP=52
SP=121 CP=53
SP=122 CP=54
SP=123 CP=55
SP=124 CP=56
SP=125 CP=57
253
254
255
0
CC=CONTROL CODE
CONTROL CODE
CONTROL CODE
INPUT CYCLE-
CONTROL CODE
1ST CHARACTER
CODE IDENT
C
DWG NO
REV
A
CON-PB/PBS
SHEET 24
TD86

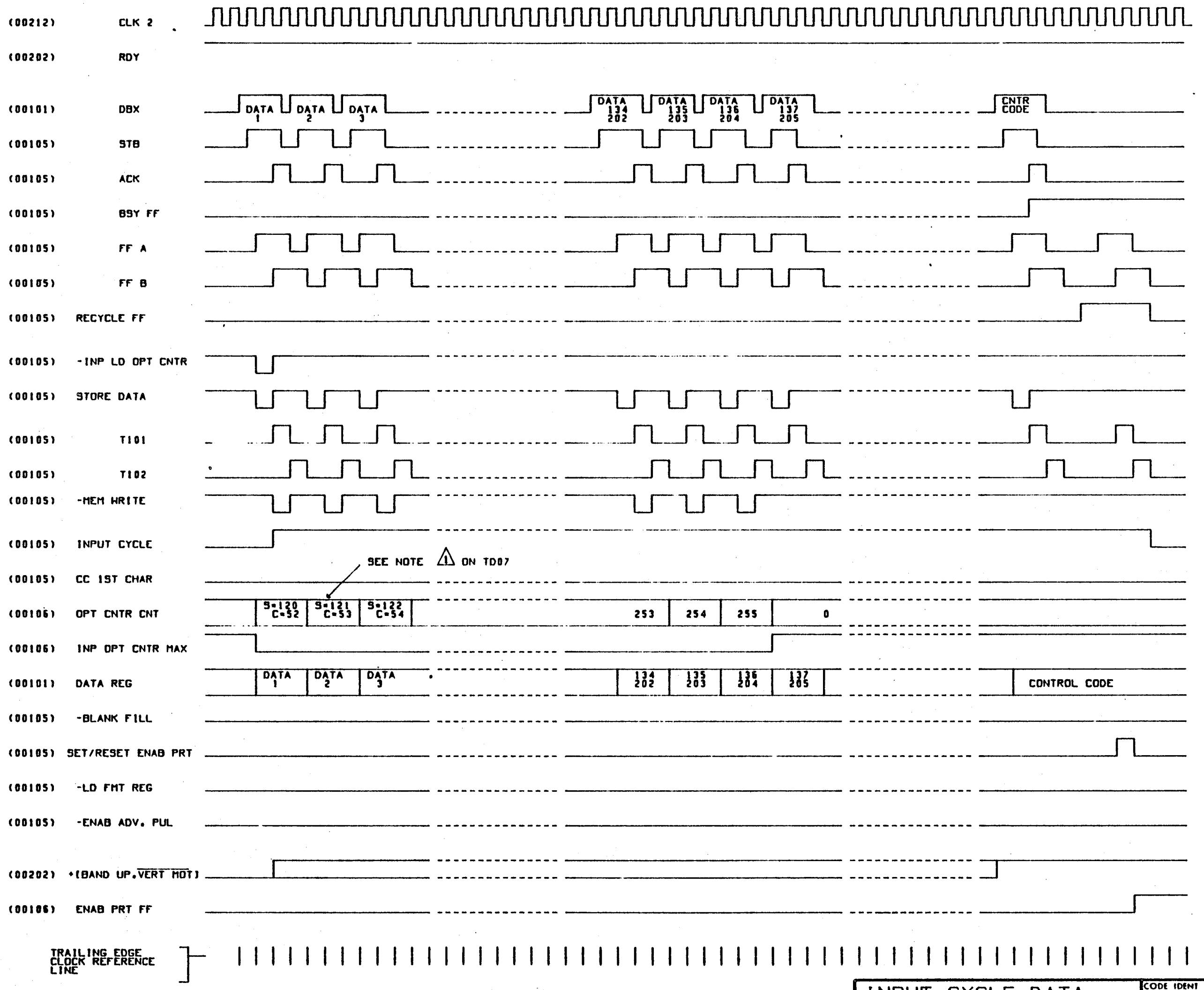


⚠ S IS DEFINED AS STANDARD PITCH
C IS DEFINED AS COMPRESSED PITCH

INPUT CYCLE-SHORT DATA LINE

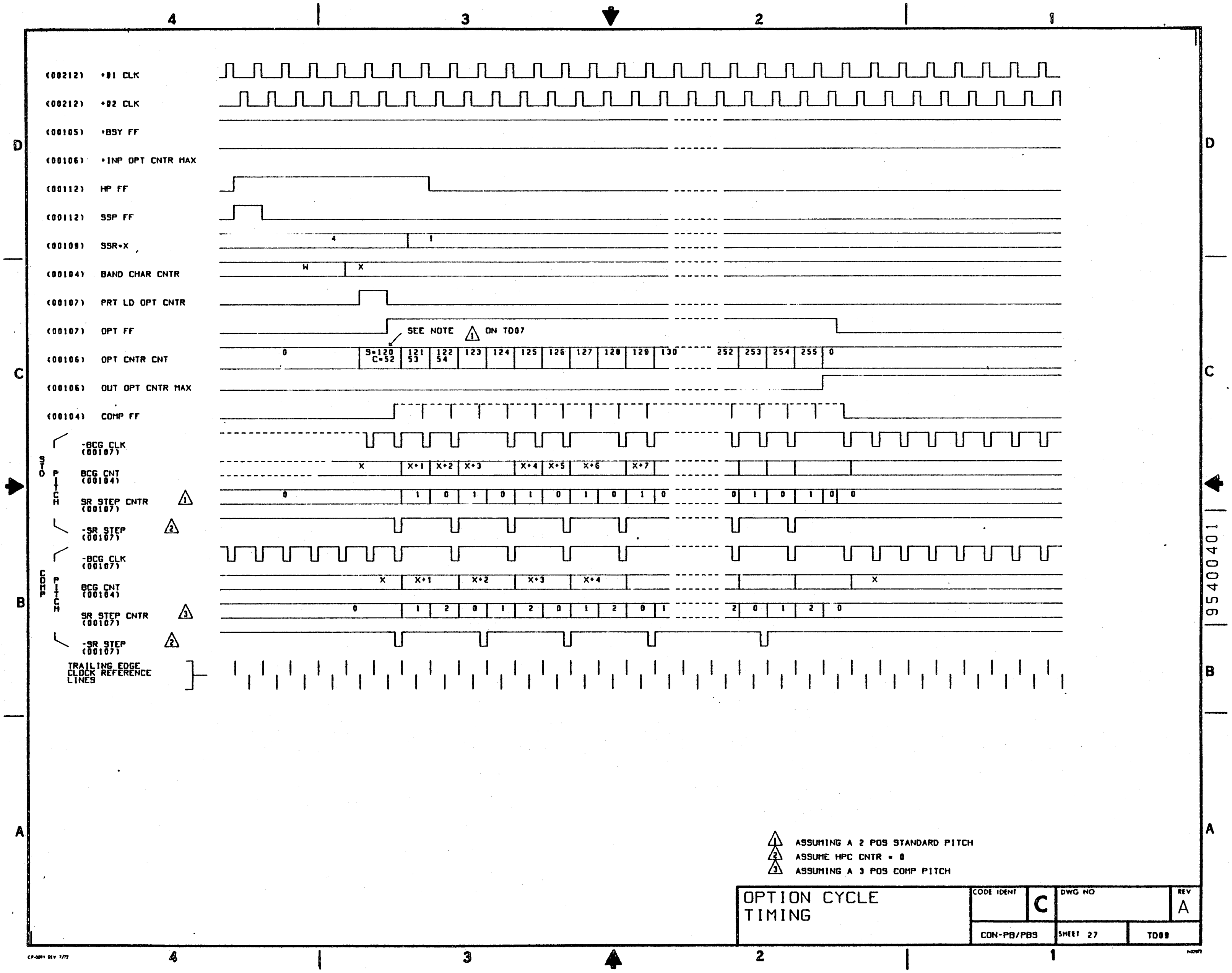
CODE IDENT	DWG NO	REV
C		A
CON-PB/PBS	SHEET 25	TD07

95400401

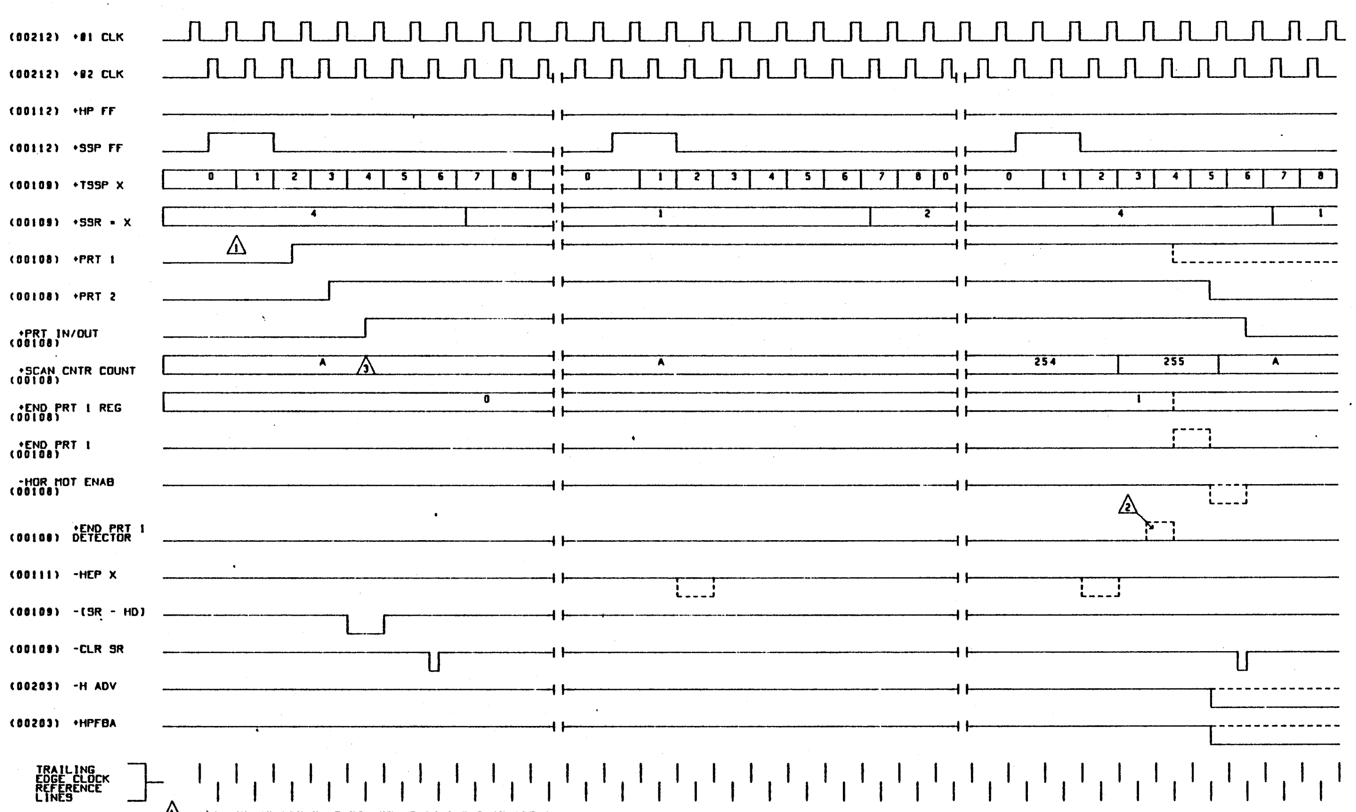


95400401

INPUT CYCLE DATA LENGTH GREATER THAN COLUMN CAPACITY	CODE IDENT	DWG NO	REV
	C		A
	CON-PB/PBS	SHEET 26	TD08



OPTION CYCLE TIMING



SEE NEXT SHEET

1 ASSUMES PROPER ENABLES ARE AT GJ INPUT OF PRT 1.

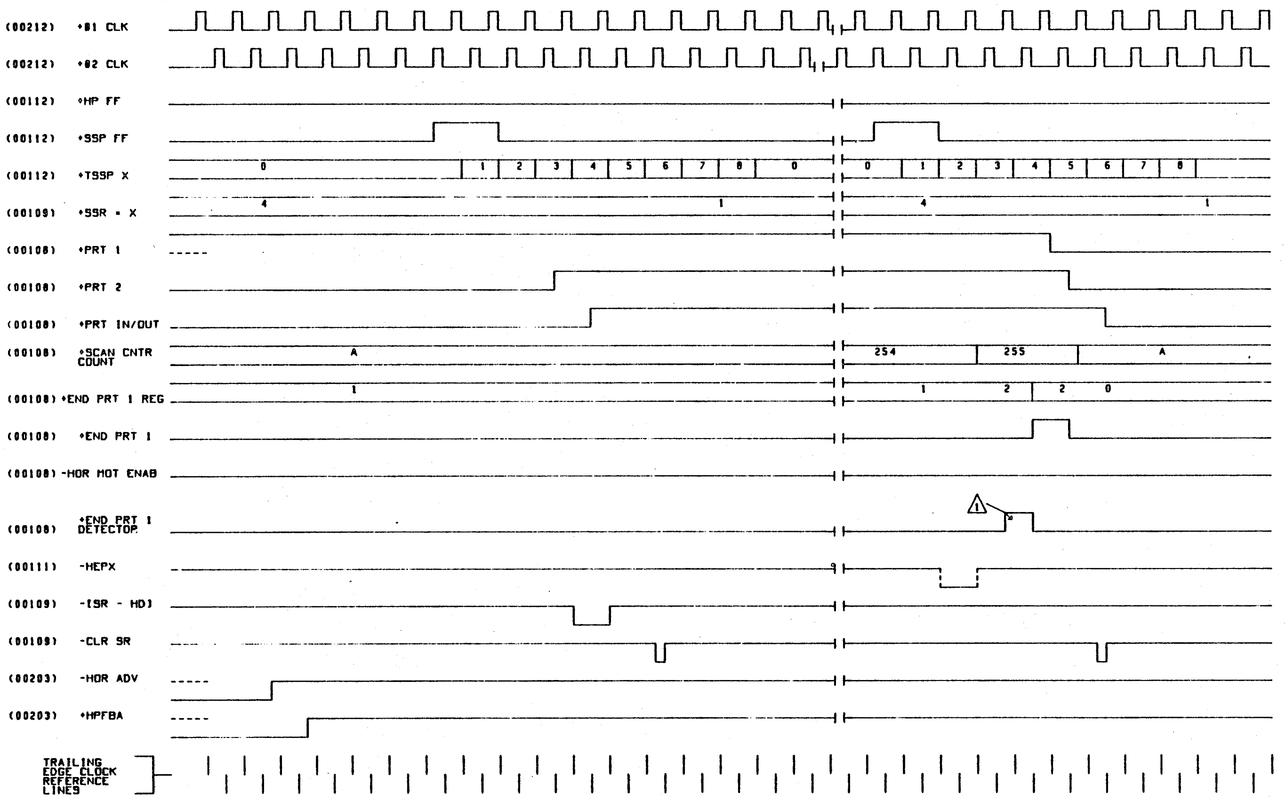
2 IF A 1 POS PRINTER (PB1130) END PRINT 1 DET
WILL OCCUR AS SHOWN. PRINT 1 AND
END PRT 1 WILL OCCUR AS SHOWN IN DASHED LINES.
NO HORIZONTAL MOTION WILL OCCUR.

3

TYPE CHARACTER BAND	A
48	207
64	191
96	159
128	127

PRINT CYCLE	CODE IDENT C	DWG NO 95400401	REV A
	CON-PB/PBS	SHEET 28	TD10

CP-8071 REV 7/77

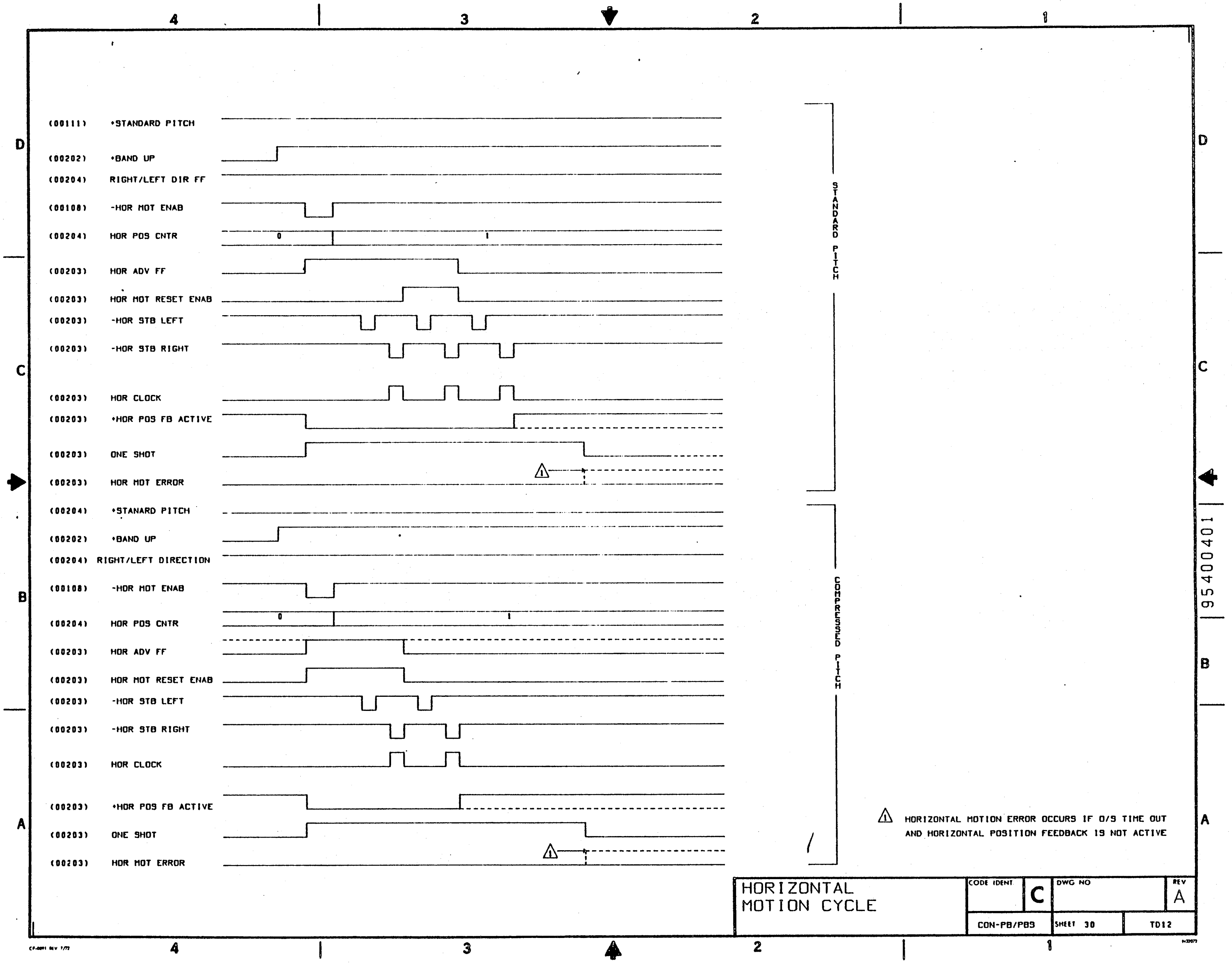


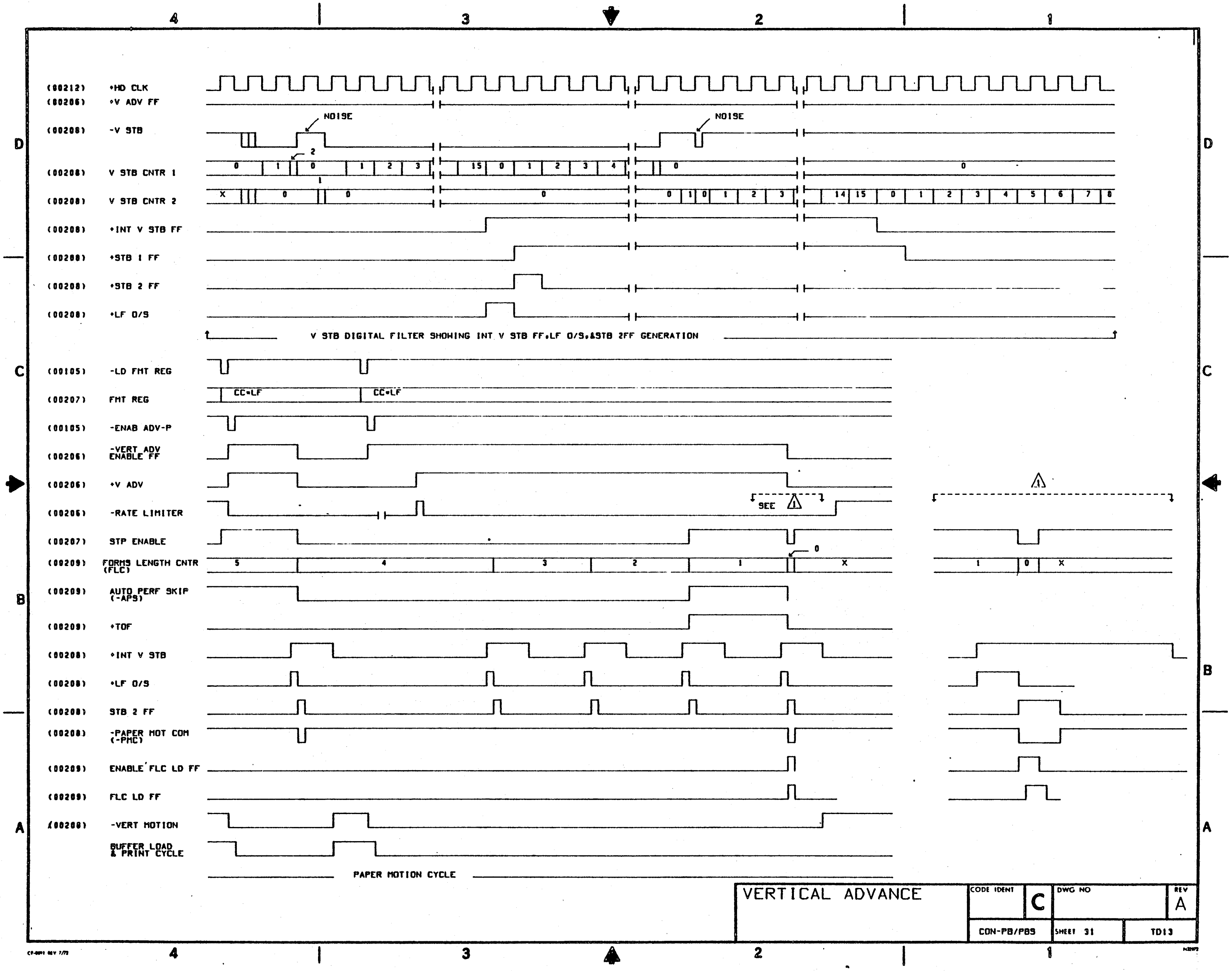
⚠1 ASSUMES A 2 POSITION MACHINE
SINCE PRT 1 IS TERMINATED WHEN
THE SECOND FF OF END PRT 1 REG
IS SET.

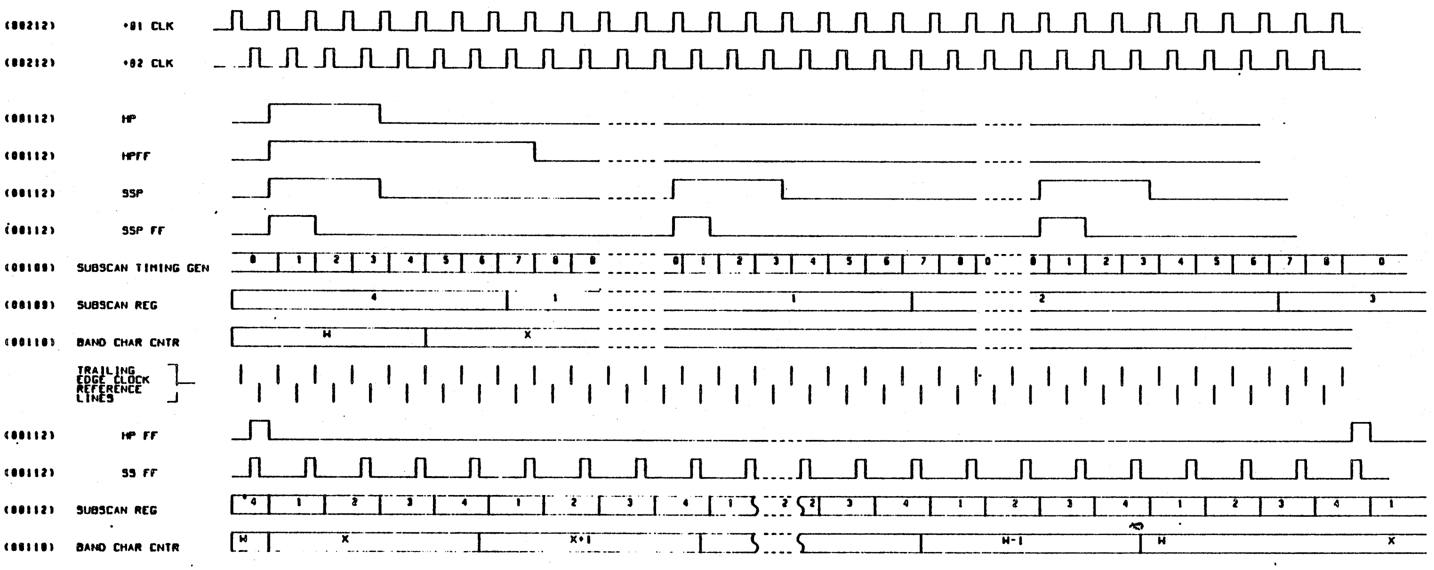
PRINT CYCLE
(CONTINUED) SEE
PREVIOUS SHEET

CODE IDENT	DWG NO	REV
C		A
CON-PB/PBS	SHEET 29	TD11

95400401


(00111) +STANDARD PITCH
(00202) +BAND UP
(00204) RIGHT/LEFT DIR FF
(00108) -HOR MOT ENAB
(00204) HOR POS CNTR
0
1
(00203) HOR ADV FF
(00203) HOR MOT RESET ENAB
(00203) -HOR STB LEFT
(00203) -HOR STB RIGHT
(00203) HOR CLOCK
(00203) +HOR POS FB ACTIVE
(00203) ONE SHOT
(00203) HOR MOT ERROR
(00204) +STANARD PITCH
(00202) +BAND UP
(00204) RIGHT/LEFT DIRECTION
(00108) -HOR MOT ENAB
(00204) HOR POS CNTR
0
1
(00203) HOR ADV FF
(00203) HOR MOT RESET ENAB
(00203) -HOR STB LEFT
(00203) -HOR STB RIGHT
(00203) HOR CLOCK
(00203) +HOR POS FB ACTIVE
(00203) ONE SHOT
(00203) HOR MOT ERROR
STANDARD PITCH
COMPRESSED PITCH
1
1
⚠ HORIZONTAL MOTION ERROR OCCURS IF O/S TIME OUT AND HORIZONTAL POSITION FEEDBACK IS NOT ACTIVE
HORIZONTAL MOTION CYCLE
CODE IDENT
C
DWG NO
REV
A
CON-PB/PBS
SHEET 30
TD12
95400401
4
3
2
1
D
C
B
A

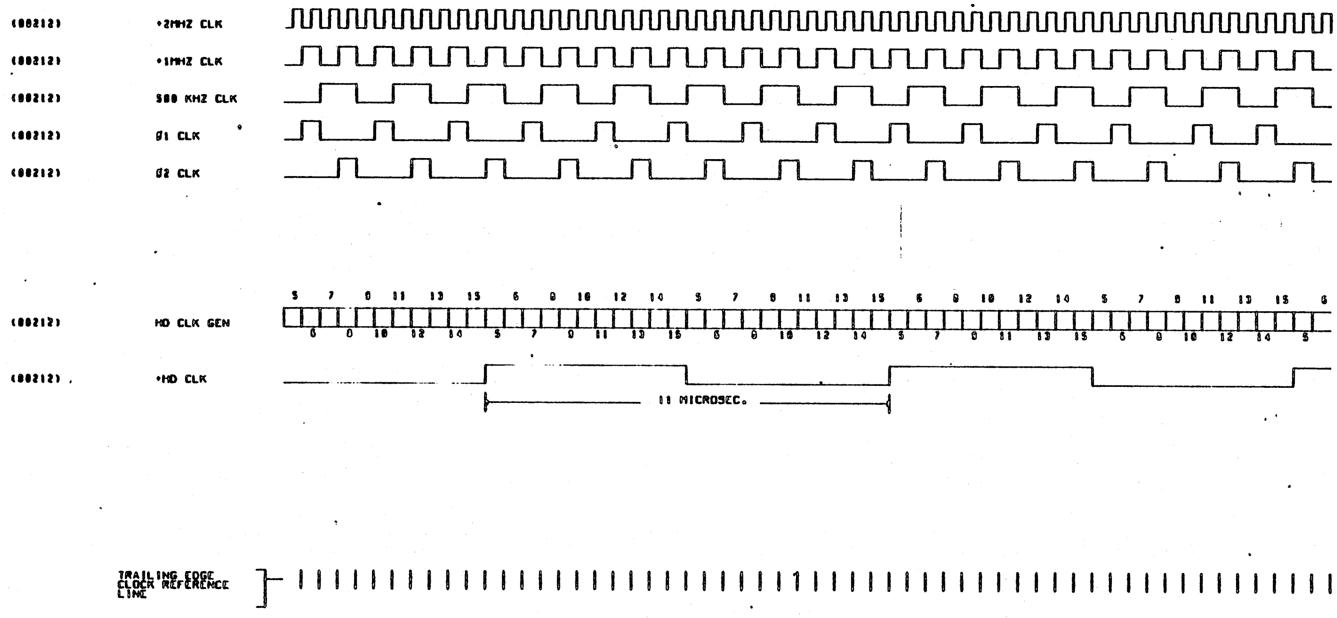

(00212) +HD CLK
(00206) +V ADV FF
(00208) -V STB
NOISE
NOISE
2
(00208) V STB CNTR 1
(00208) V STB CNTR 2
(00208) +INT V STB FF
(00208) +STB 1 FF
(00208) +STB 2 FF
(00208) +LF O/S
V STB DIGITAL FILTER SHOWING INT V STB FF,LF O/S,&STB 2FF GENERATION
(00105) -LD FMT REG
(00207) FMT REG
CC=LF
CC=LF
(00105) -ENAB ADV-P
(00206) -VERT ADV ENABLE FF
(00206) +V ADV
(00206) -RATE LIMITER
SEE 1
1
(00207) STP ENABLE
(00209) FORMS LENGTH CNTR (FLC)
5
4
3
2
1
0
X
(00209) AUTO PERF SKIP (-APS)
(00209) +TOF
(00208) +INT V STB
(00208) +LF O/S
(00208) STB 2 FF
(00208) -PAPER MOT COM (-PMC)
(00209) ENABLE FLC LD FF
(00209) FLC LD FF
(00208) -VERT MOTION
BUFFER LOAD & PRINT CYCLE
PAPER MOTION CYCLE
VERTICAL ADVANCE
CODE IDENT
C
DWG NO
REV
A
CDN-PB/PB5
SHEET 31
TD13
A
B
C
D
1
2
3
4



TYPE BAND	PRIOR TO BAND DETECTION		AFTER BAND DETECTION	
	X	W	X	W
40	128	128+(40-1)=175	32	32+(40-1)=70
64	128	128+(64-1)=191	32	32+(64-1)=95
96	128	128+(96-1)=223	32	32+(96-1)=127
128	128	128+(128-1)=255	0	0+(128-1)=127

HOME PUL/
SUBSCAN PUL/
TSSP TIMING CHAIN

CODE IDENT C
DWG NO
REV A
CON-PB/PBS
SHEET 32
TD14



SYSTEM CLOCKS	CODE IDENT C	DWG NO	REV A
	CDN-PB/PBS	SHEET 33	TD1S

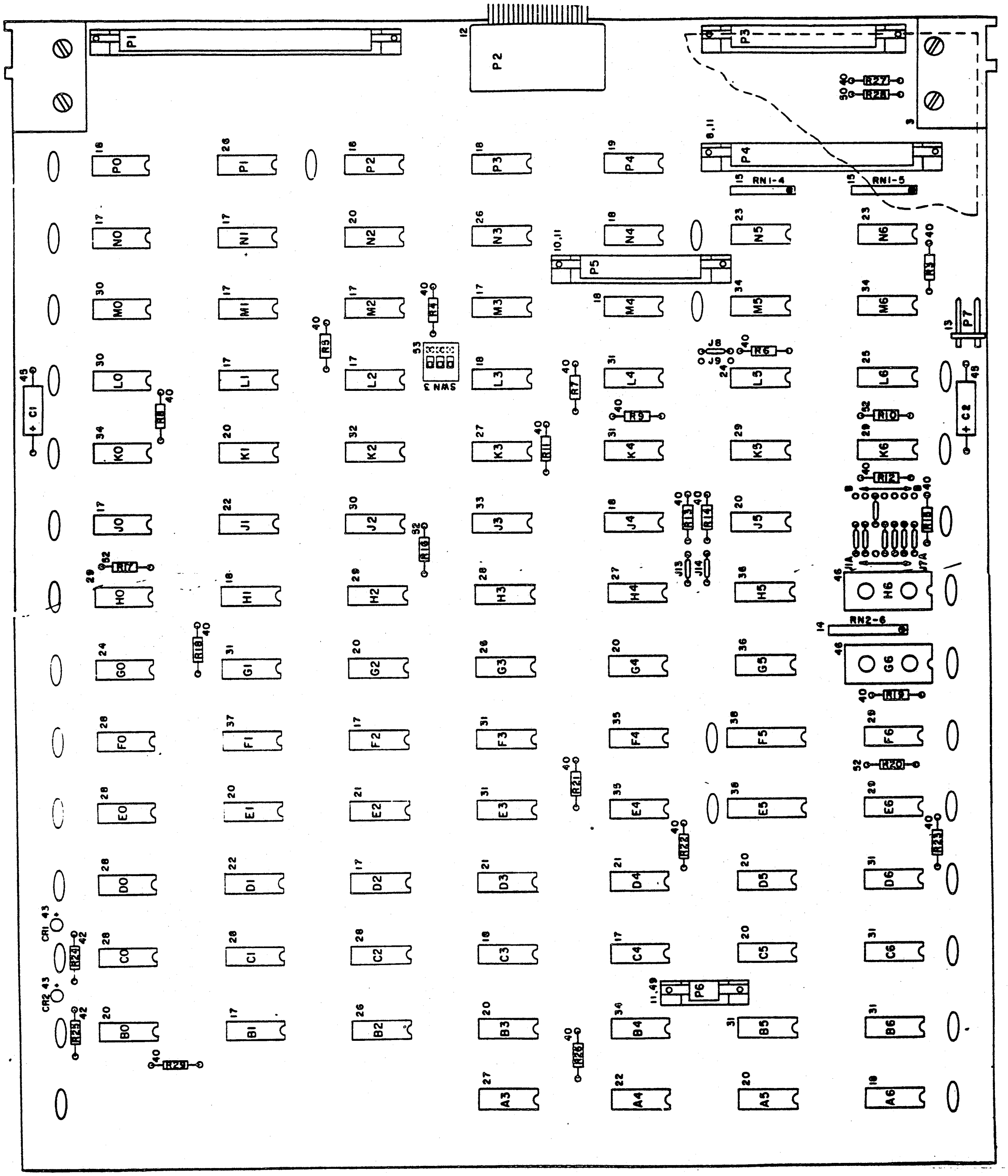
JUMPER NUMBER			FUNCTION
J1A-J7A, J1B-J7B			BLANK/SPACE CODE SELECTION-- ASSEMBLED TO SELECT SPACE CODE FOR CHARACTER BANDS WHICH DO NOT USE PROMS. ALL ''A'' JUMPER WIRES REPRESENT LOGICAL ''1''S. THEREFORE ASSUME THAT THE BLANK/SPACE CODE ≡0 100 000 =040_8. THE FOLLOWING JUMPER WIRES WOULD BE ASSEMBLED- J3B, J1A, J2A, J4A THRU J7A.
J8	J9		CONTROL CODE DETECTION--
IN	OUT		ACCEPTS STANDARD ASCII CONTROL CODES OF LF, CR AND FF.
OUT	OUT		ACCEPTS STANDARD ASCII CONTROL CODES OF LF, CR, VT AND FF. ※
OUT	IN		ACCEPTS DB9≡0 AS A CONTROL CODE FOR 12 CHNL EVFU OPTION.
			DOES NOT ACCEPT ASCII CONTROL CODES OF LF, CR, VT, &FF
			NOTE-WHENEVER $\overline{DB9}$ IS LOW THE DATA ON THE LINES WILL BE INTERPRETED AS A CONTROL CODE. ONLY CAUSE DB9 TO GO LOW WHEN AN EVFU OPTION IS INSTALLED.
SWN3 -1	-2	-3	MACHINE TYPE DEFINITION--
CLOSED	OPEN	CLOSED	PB1130
OPEN	OPEN	OPEN	PB9720
OPEN	CLOSED	CLOSED	PB9360
J13	J14		BAND TO PROM SELECTION-- ※※
OUT	OUT		48, 64, 96, 128
OUT	IN		48, 64, 128
IN	OUT		48, 96, 128
IN	IN		48, 128

※ VT IS USED TO TRUNCATE THE INPUT, HOWEVER UNCONTROLLED PAPER MOTION WILL RESULT UNLESS THE ''3 CHNL EVFU'' OPTION IS IMPLEMENTED.

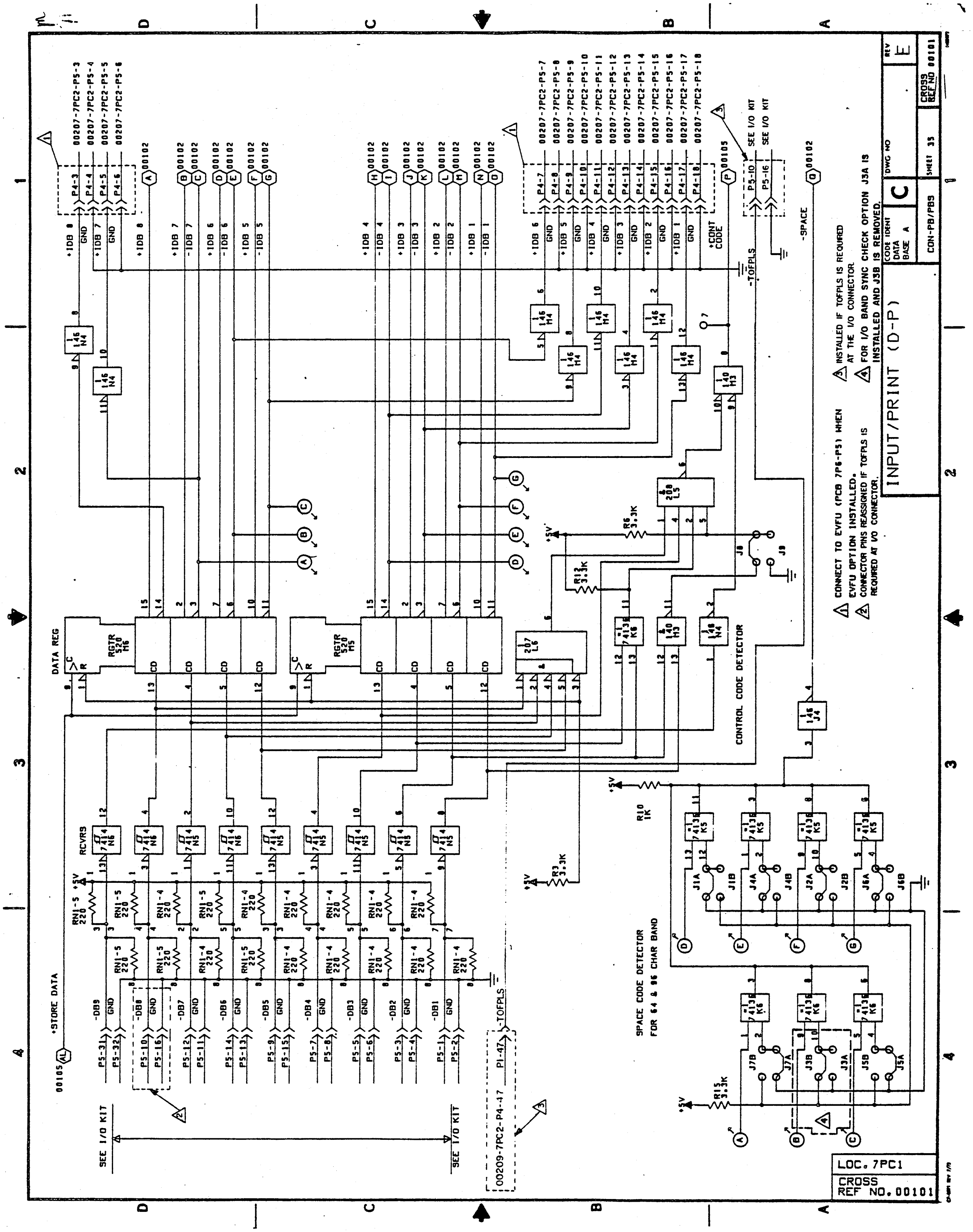
※※ TYPICALLY THE PROMS MAY BE ONLY SELECTED BY ONE TYPE BAND. UNLESS CODES FOR DIFFERENT TYPE BANDS ARE SUBSETS OF ONE ANOTHER, PROMS WILL HAVE TO BE REPLACED TO OBTAIN ALL THE COMBINATIONS SHOWN ABOVE.

LOC.
CROSS
REF NO. 00100

INPUT/PRINT (D-P) JUMPER CHART	CODE IDENT	C	DWG NO	REV A
	CON-PB/PBS		SHEET 34	CROSS REF NO 00100



INPUT/PRINT (D-P)



1. CONNECT TO EVFU (PCB 7P6-P5) WHEN EVFU OPTION INSTALLED.

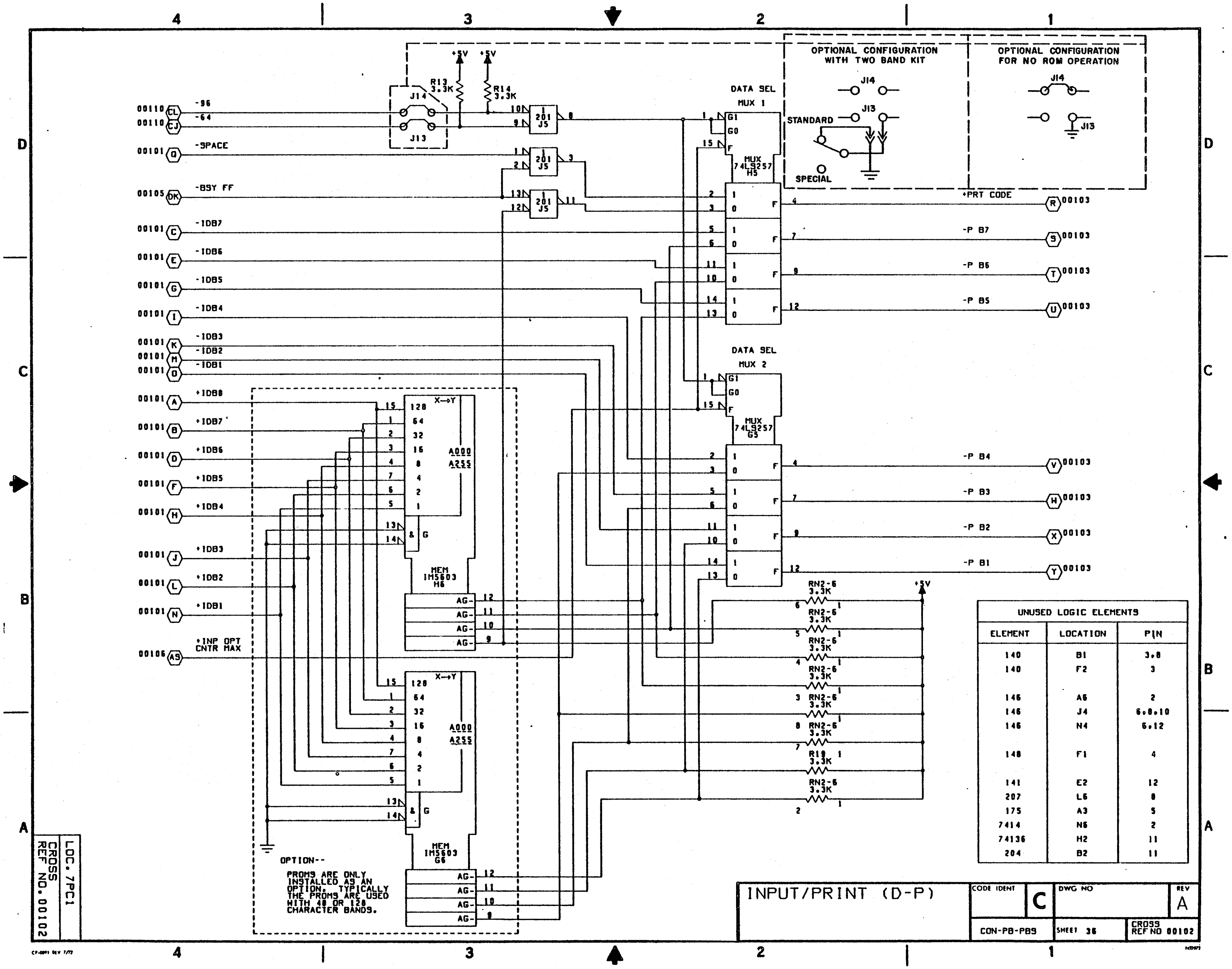
2. CONNECTOR PINS REASSIGNED IF TOFPLS IS REQUIRED AT I/O CONNECTOR.

3. INSTALLED IF TOFPLS IS REQUIRED AT THE I/O CONNECTOR.

4. FOR I/O BAND SYNC CHECK OPTION J3A IS INSTALLED AND J3B IS REMOVED.

INPUT/PRINT (D-P)

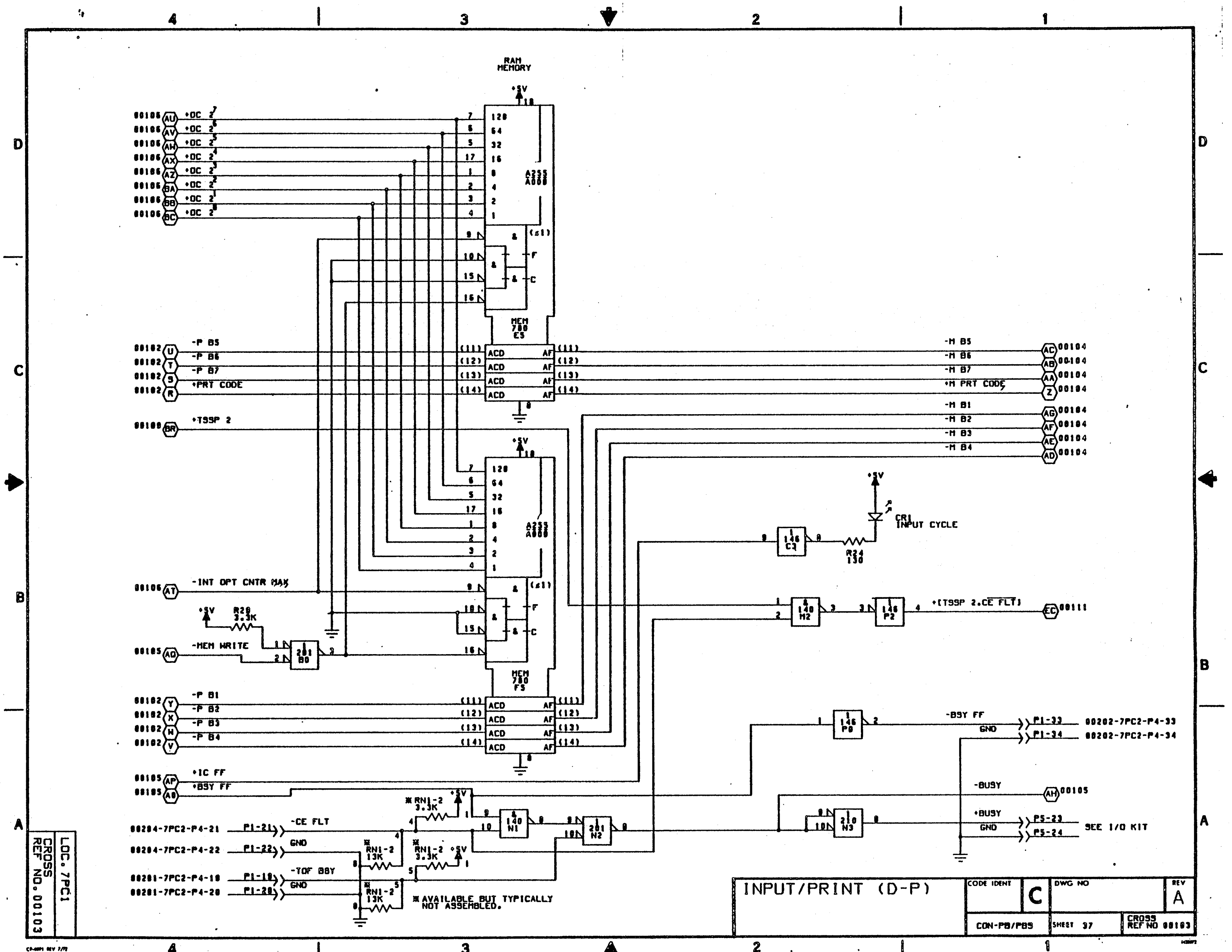
CODE IDENT	DWG NO	REV
DATA BASE A	C	E
CON-PB/PBS	SHEET 35	CROSS REF NO 00101

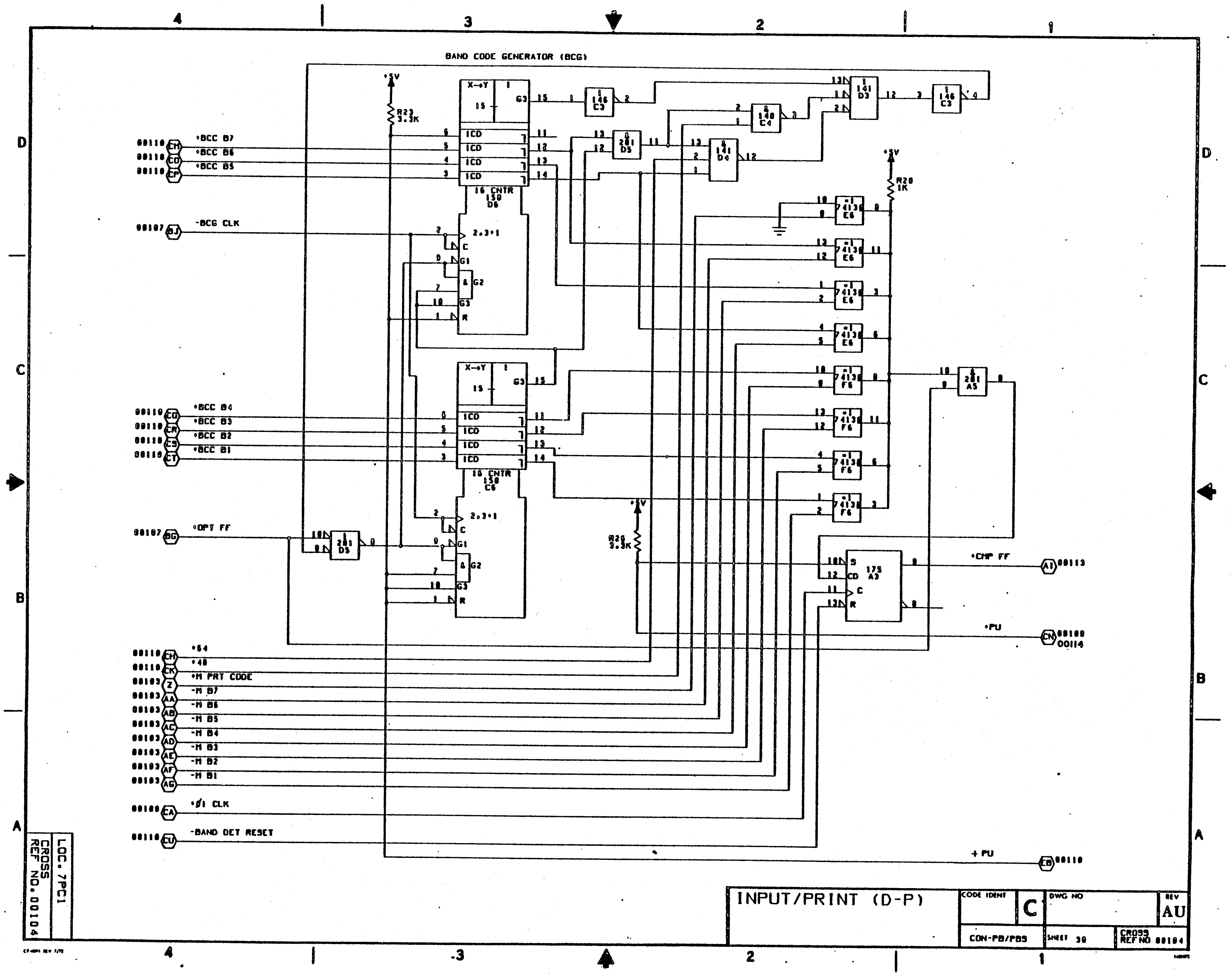


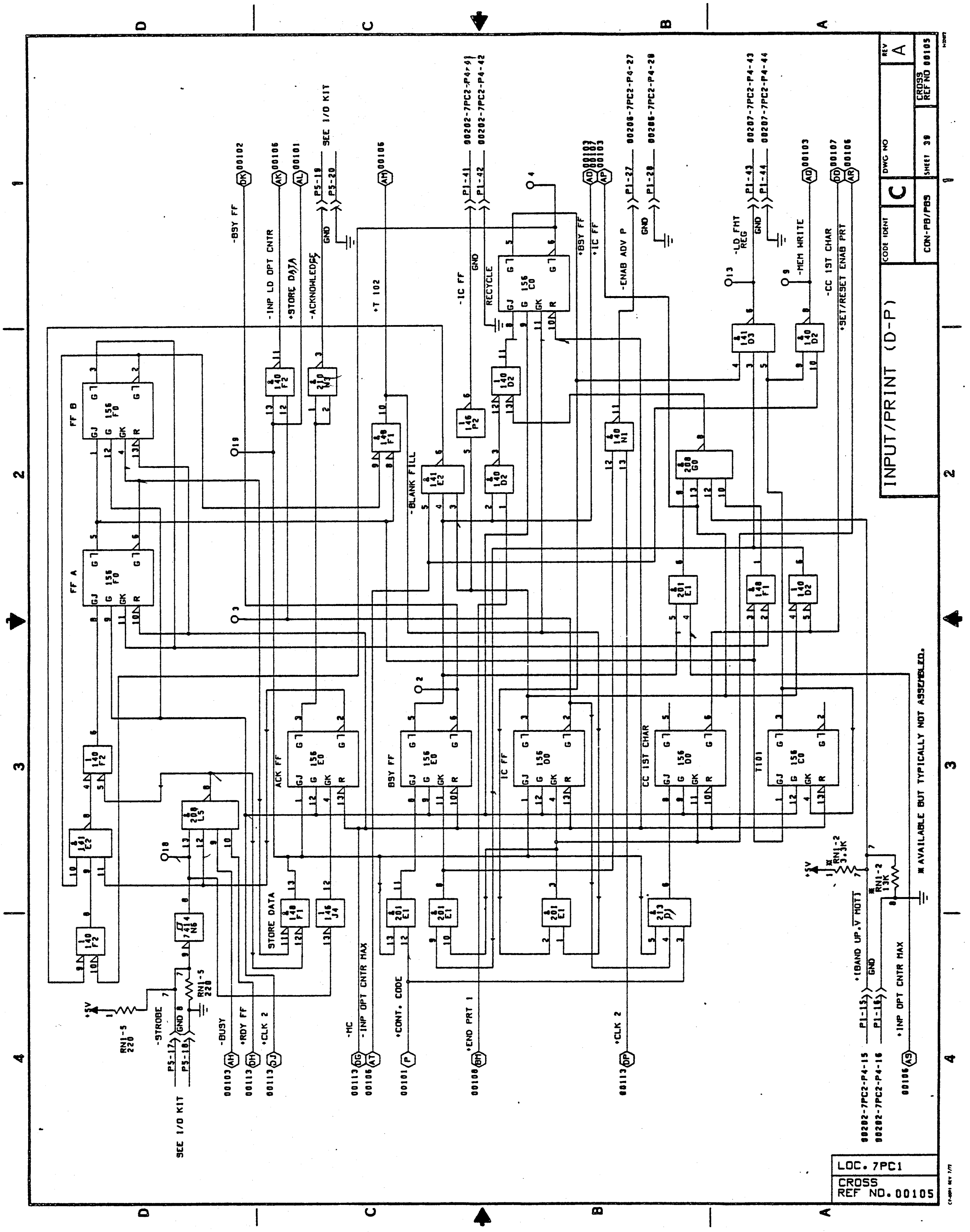
UNUSED LOGIC ELEMENTS		
ELEMENT	LOCATION	PIN
140	B1	3,8
140	F2	3
146	A6	2
146	J4	6,8,10
146	N4	6,12
148	F1	4
141	E2	12
207	L6	8
175	A3	5
7414	N6	2
74136	H2	11
204	B2	11

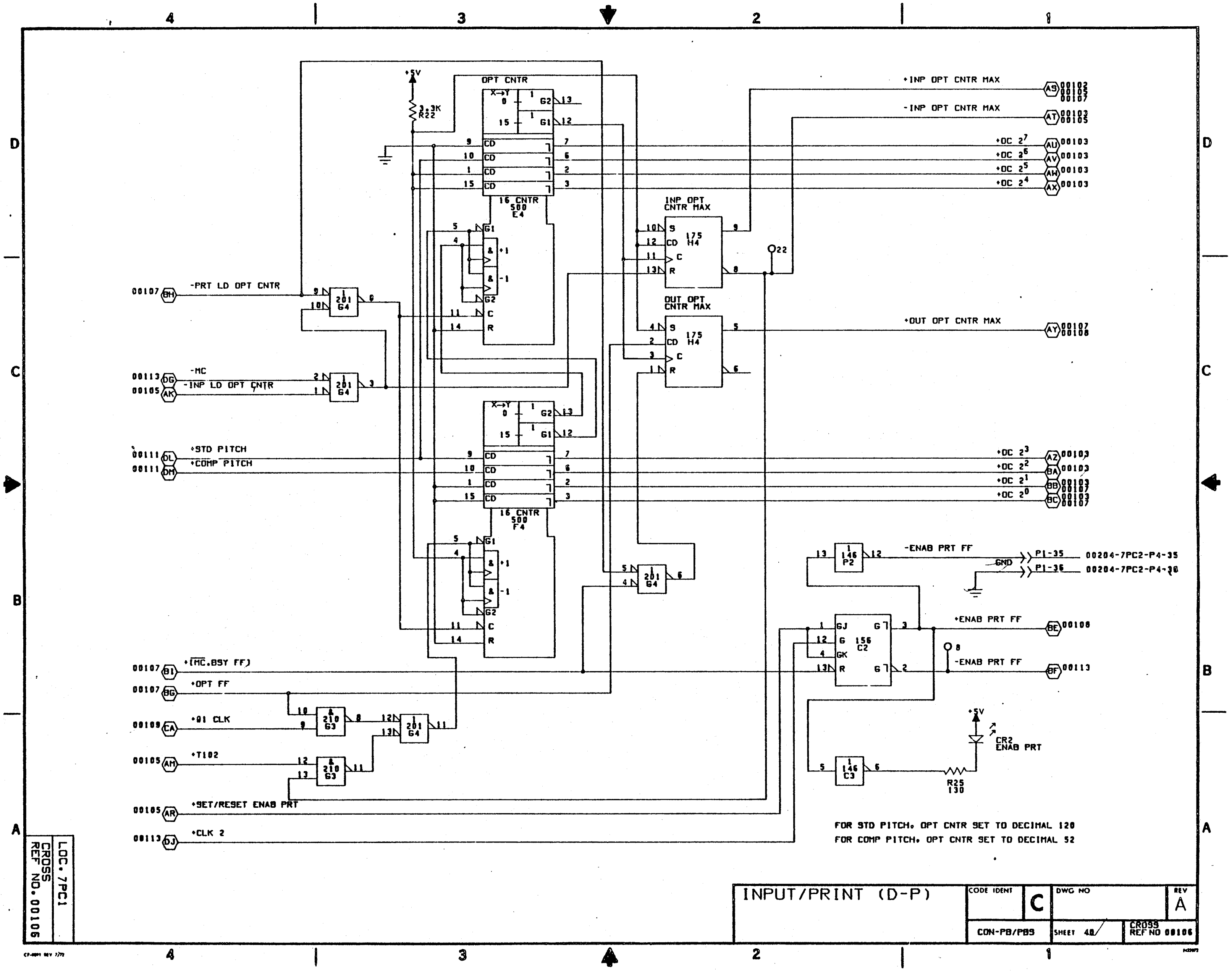
INPUT/PRINT (D-P)

CODE IDENT C
DWG NO
REV A
CON-PB-PBS
SHEET 36
CROSS REF NO 00102


RAM MEMORY
+5V
00106 AU +OC 2^7
00106 AV +OC 2^6
00106 AW +OC 2^5
00106 AX +OC 2^4
00106 AZ +OC 2^3
00106 BA +OC 2^2
00106 BB +OC 2^1
00106 BC +OC 2^0
128
64
32
16
8
4
2
1
A255 A000
(≤1)
&
F
C
MEM 780 E5
MEM 780 F5
ACD
AF
00102 U -P B5
00102 T -P B6
00102 S -P B7
00102 R +PRT CODE
00108 BR +TSSP 2
-M B5 AC 00104
-M B6 AB 00104
-M B7 AA 00104
+M PRT CODE Z 00104
-M B1 AG 00104
-M B2 AF 00104
-M B3 AE 00104
-M B4 AD 00104
CR1 INPUT CYCLE
R24 130
146 C3
140 M2
146 P2
+(TSSP 2.CE FLT) EC 00111
00106 AT -INT OPT CNTR MAX
R28 3.3K
00105 AO -MEM WRITE
201 B0
00102 Y -P B1
00102 X -P B2
00102 W -P B3
00102 V -P B4
00105 AP +IC FF
00105 AQ +BSY FF
146 P8
-BSY FF
GND
P1-33 00202-7PC2-P4-33
P1-34 00202-7PC2-P4-34
-BUSY AH 00105
+BUSY
P5-23
P5-24
SEE I/O KIT
210 N3
140 N1
201 N2
00204-7PC2-P4-21 P1-21 -CE FLT
00204-7PC2-P4-22 P1-22 GND
00201-7PC2-P4-19 P1-19 -TOF BBY
00201-7PC2-P4-20 P1-20 GND
※RN1-2 3.3K
※RN1-2 13K
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC1
CROSS REF NO. 00103
INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
A
CON-PB/PBS
SHEET 37
CROSS REF NO 00103
A
B
C
D
1
2
3
4


BAND CODE GENERATOR (BCG)
00110 CM +BCC B7
00110 CO +BCC B6
00110 CP +BCC B5
00107 BJ -BCG CLK
00110 CQ +BCC B4
00110 CR +BCC B3
00110 CS +BCC B2
00110 CT +BCC B1
00107 BG +OPT FF
00110 CH +64
00110 CK +48
00103 Z +M PRT CODE
00103 AA -M B7
00103 AB -M B6
00103 AC -M B5
00103 AD -M B4
00103 AE -M B3
00103 AF -M B2
00103 AG -M B1
00100 EA +Ø1 CLK
00110 CU -BAND DET RESET
16 CNTR 150 D6
16 CNTR 150 C6
X→Y
15
G3
ICD
2,3+1
C
G1
G2
R
R23 3.3K
R20 1K
R25 3.3K
+5V
146 C3
140 C4
141 D3
141 D4
281 D5
281 A5
74136 E6
74136 F6
175 A3
S
CD
+CMP FF
A1 00113
+PU
CN 00108 00114
+ PU
EB 00110
LOC. 7PC1
CROSS REF NO. 00104
INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
AU
CON-PB/PBS
SHEET 30
CROSS REF NO 00104


INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
SHEET 30
CON-PB/PBS
CROSS REF NO 00105
REV
A
LOC. 7PC1
CROSS REF NO. 00105
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
FF B
FF A
ACK FF
BSY FF
IC FF
CC 1ST CHAR
T101
STORE DATA
-BLANK FILL
RECYCLE
-BSY FF
-INP LD OPT CNTR
+STORE DATA
-ACKNOWLEDGE
SEE I/O KIT
P5-19
P5-20
GND
+T 102
-IC FF
P1-41
P1-42
00202-7PC2-P4-41
00202-7PC2-P4-42
+BSY FF
+IC FF
-ENAB ADV P
P1-27
P1-28
00206-7PC2-P4-27
00206-7PC2-P4-28
-LD FMT REG
P1-43
P1-44
00207-7PC2-P4-43
00207-7PC2-P4-44
-MEM WRITE
-CC 1ST CHAR
+SET/RESET ENAB PRT
-STROBE
P5-17
P5-18
GND 8
RN1-5 220
+5V
-BUSY
+RDY FF
+CLK 2
-MC
-INP OPT CNTR MAX
+CONT. CODE
+END PRT 1
+CLK 2
+(BAND UP.V MOT)
P1-15
P1-16
00202-7PC2-P4-15
00202-7PC2-P4-16
+INP OPT CNTR MAX
RN1-2 3.3K
RN1-2 13K
00102
00106
00101
00103
00107
00113
00108
DK
AK
AL
AM
AD
AP
DD
AR
AH
DH
DJ
DG
AT
P
BM
DF
AS
A
B
C
D
1
2
3
4

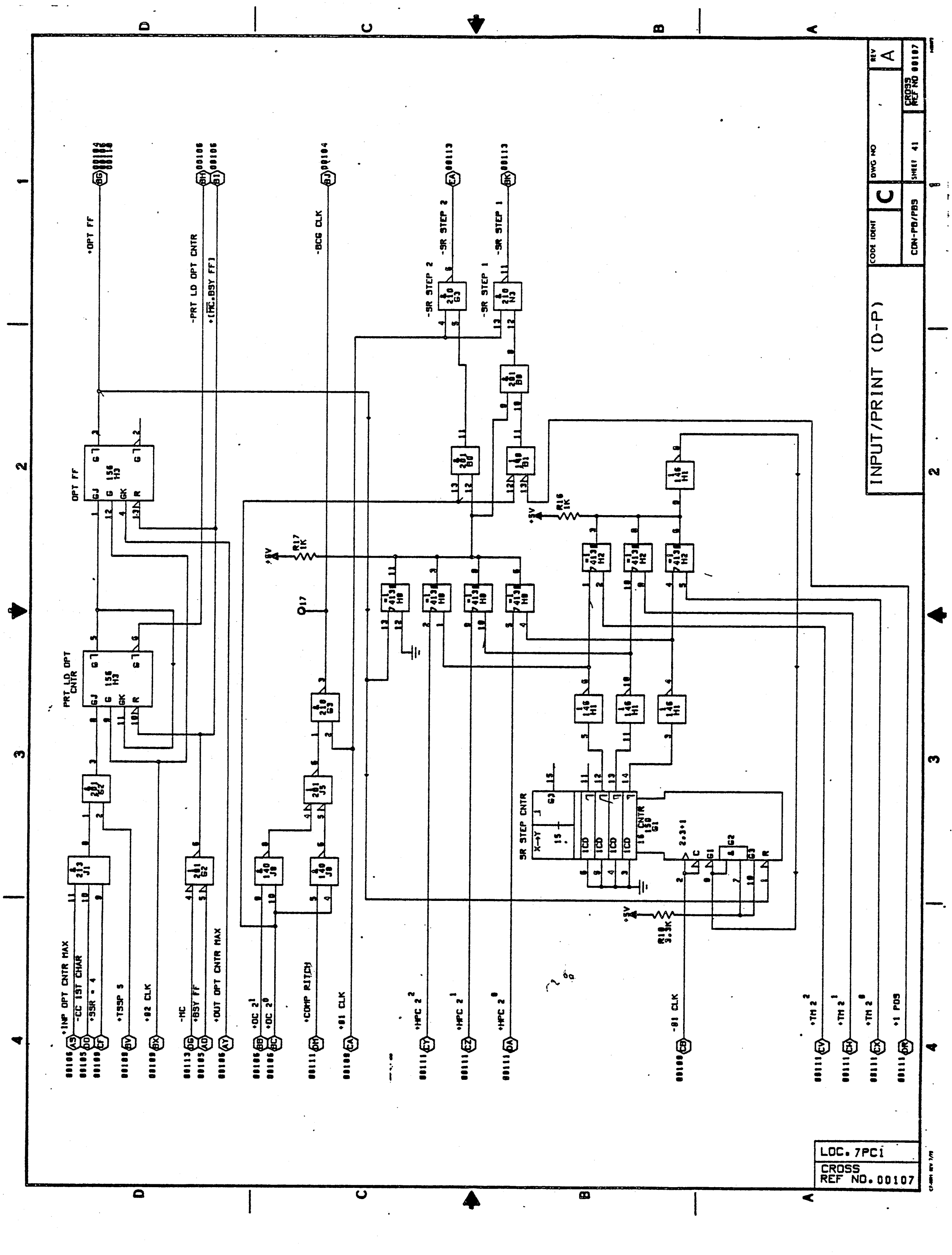


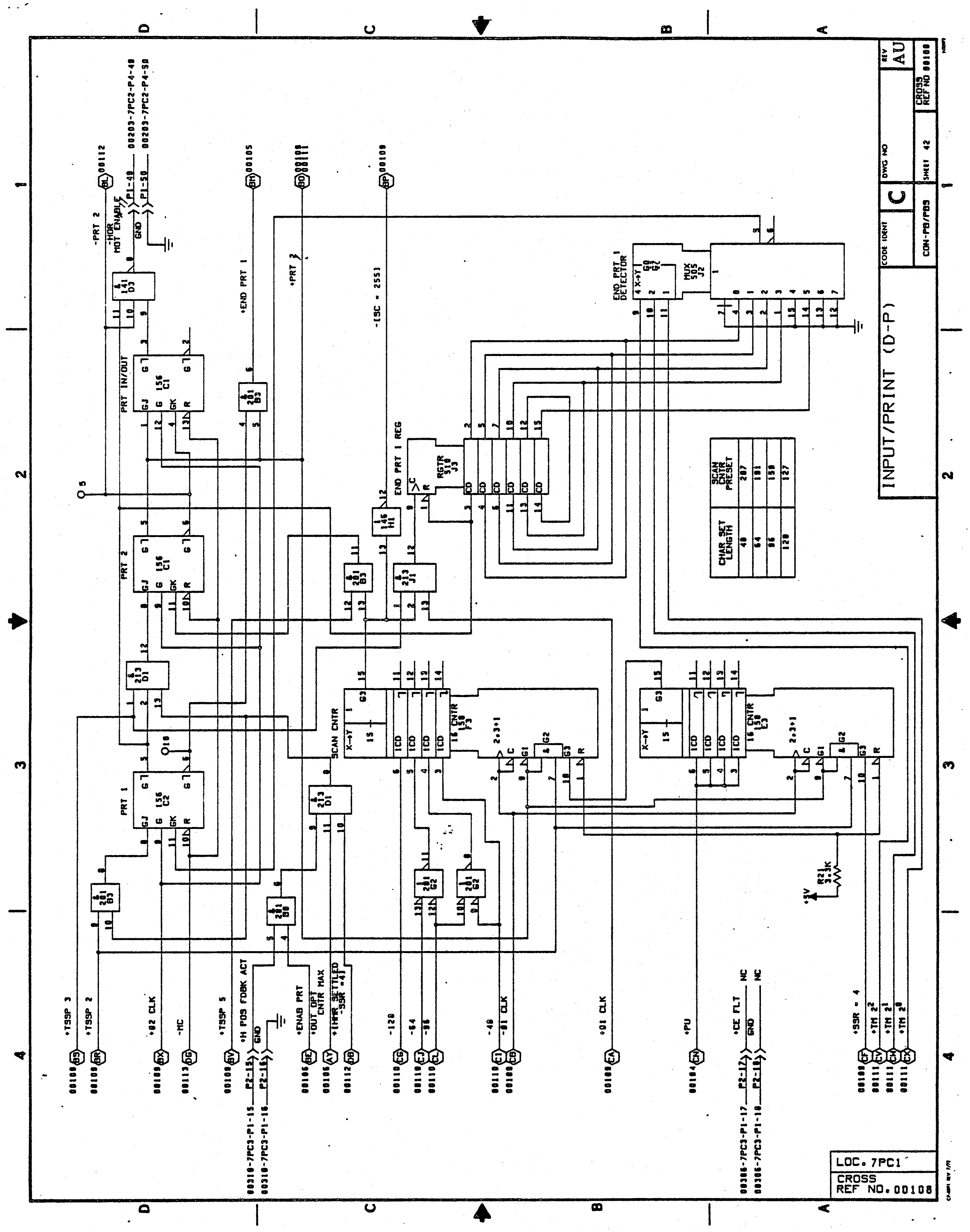
FOR STD PITCH, OPT CNTR SET TO DECIMAL 120
FOR COMP PITCH, OPT CNTR SET TO DECIMAL 52

INPUT/PRINT (D-P)

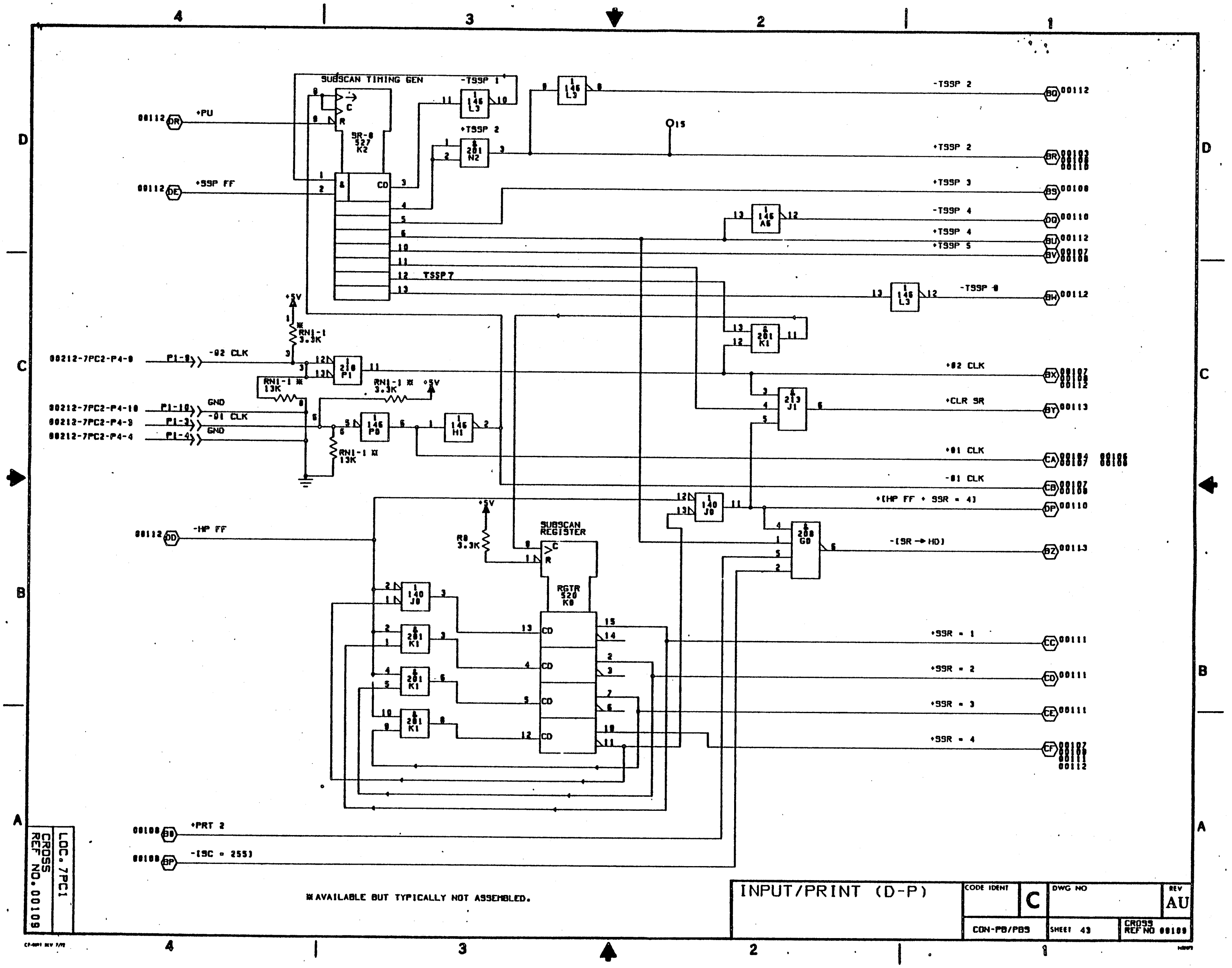
CODE IDENT C
CON-PB/PBS
DWG NO
SHEET 48
REV A
CROSS REF NO 00106

LOC. 7PC1
CROSS
REF NO. 00106


INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
SHEET 41
CDN-PB/PBS
REV
A
CROSS REF NO 00107
LOC. 7PC1
CROSS REF NO. 00107
+OPT FF
-PRT LD OPT CNTR
+(MC.BSY FF)
-BCG CLK
-SR STEP 2
-SR STEP 1
OPT FF
PRT LD OPT CNTR
SR STEP CNTR
16 CNTR
+INP OPT CNTR MAX
-CC 1ST CHAR
+SSR = 4
+TSSP 5
+Φ2 CLK
-MC
+BSY FF
+OUT OPT CNTR MAX
+OC 2^1
+OC 2^0
+COMP RIT(H)
+Φ1 CLK
+HPC 2^2
+HPC 2^1
+HPC 2^0
-Φ1 CLK
+TH 2^2
+TH 2^1
+TH 2^0
+1 POS
+5V
R17 1K
R16 1K
R18 3.3K
Q17
A
B
C
D
1
2
3
4



CHAR SET LENGTH	SCAN CNTR PRESET
40	207
64	191
96	159
128	127

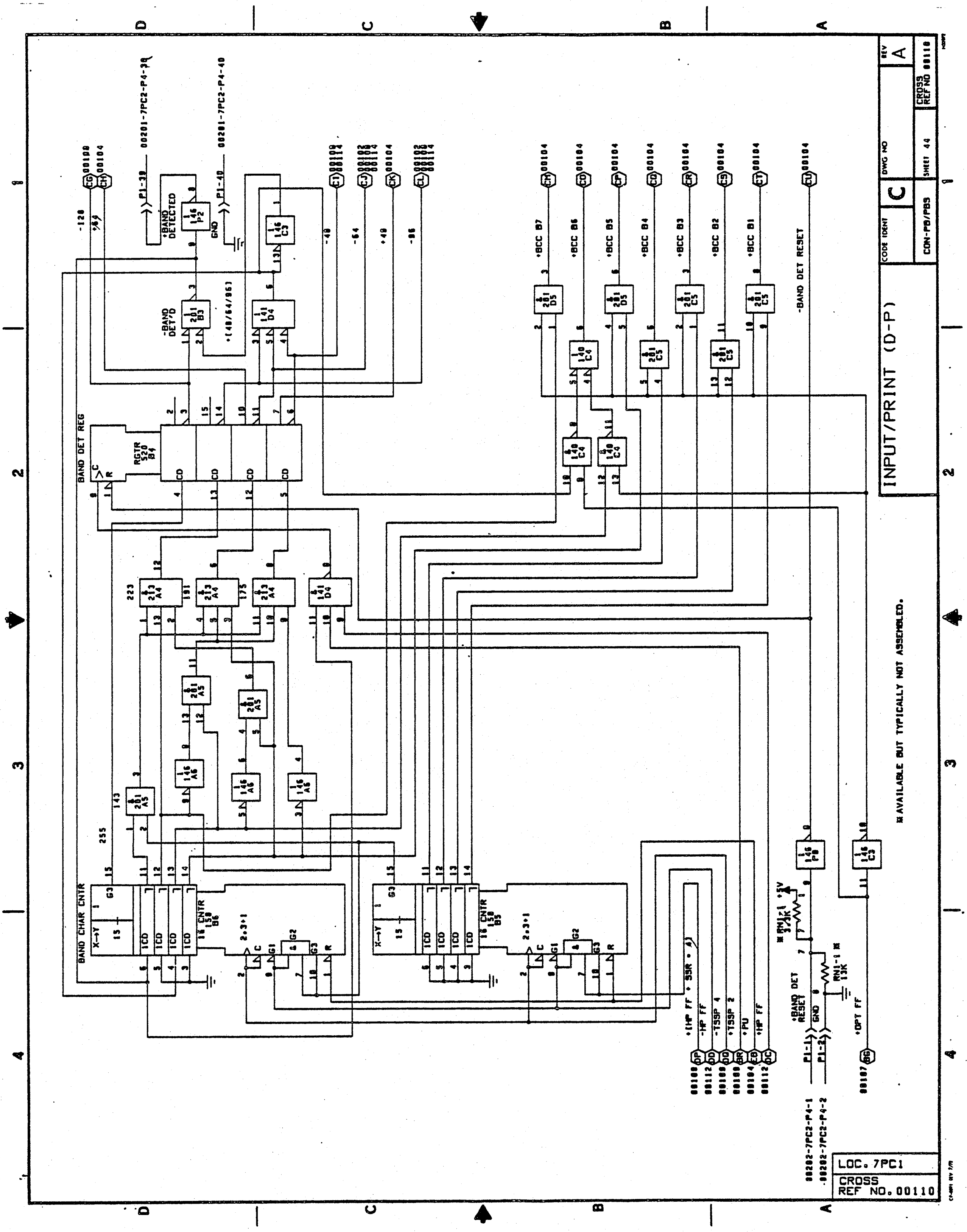


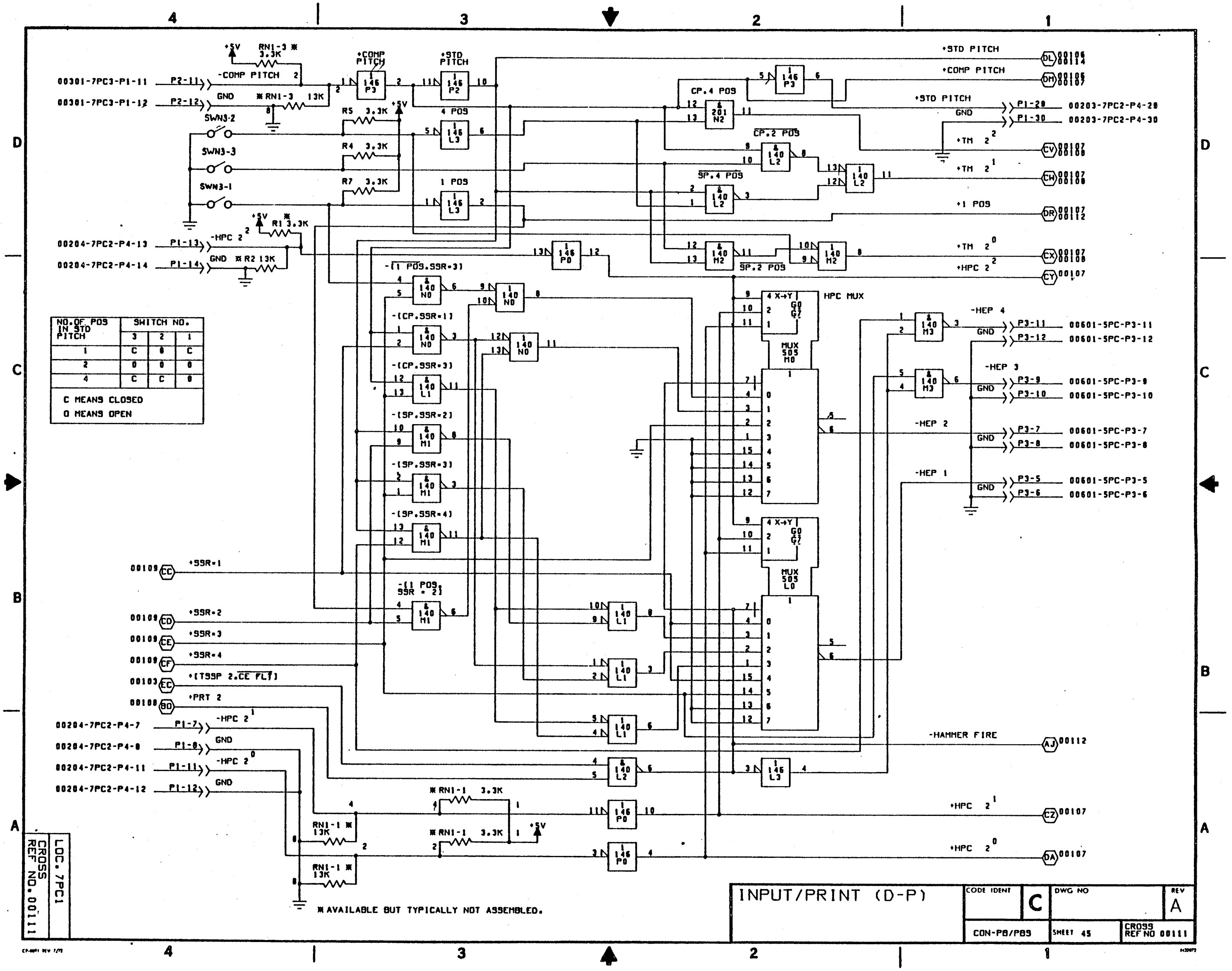
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

LOC. 7PC1
CROSS
REF NO. 00109

INPUT/PRINT (D-P)

CODE IDENT	C	DWG NO	REV AU
CON-PB/PBS		SHEET 43	CROSS REF NO 00109


INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
A
CON-PB/PBS
SHEET 44
CROSS REF NO 00110
LOC. 7PC1
CROSS REF NO. 00110
BAND DET REG
RGTR 520 B4
BAND CHAR CNTR
CNTR 150 B6
CNTR 150 B5
+BAND DETECTED
-BAND DET'D
+(48/64/96)
-BAND DET RESET
+BCC B7
+BCC B6
+BCC B5
+BCC B4
+BCC B3
+BCC B2
+BCC B1
-128
+64
-48
-64
+48
-96
P1-39
P1-40
P1-1
P1-2
00201-7PC2-P4-39
00201-7PC2-P4-40
00202-7PC2-P4-1
00202-7PC2-P4-2
+(HP FF + SSR + A)
-HP FF
-TSSP 4
+TSSP 2
+PU
+HP FF
+BAND DET RESET
GND
+OPT FF
RN1-1 13K
RN1-1 3.3K
+5V
223
191
175
143
255
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.



NO. OF POS IN STD PITCH	SWITCH NO.		
	3	2	1
1	C	0	C
2	0	0	0
4	C	C	0

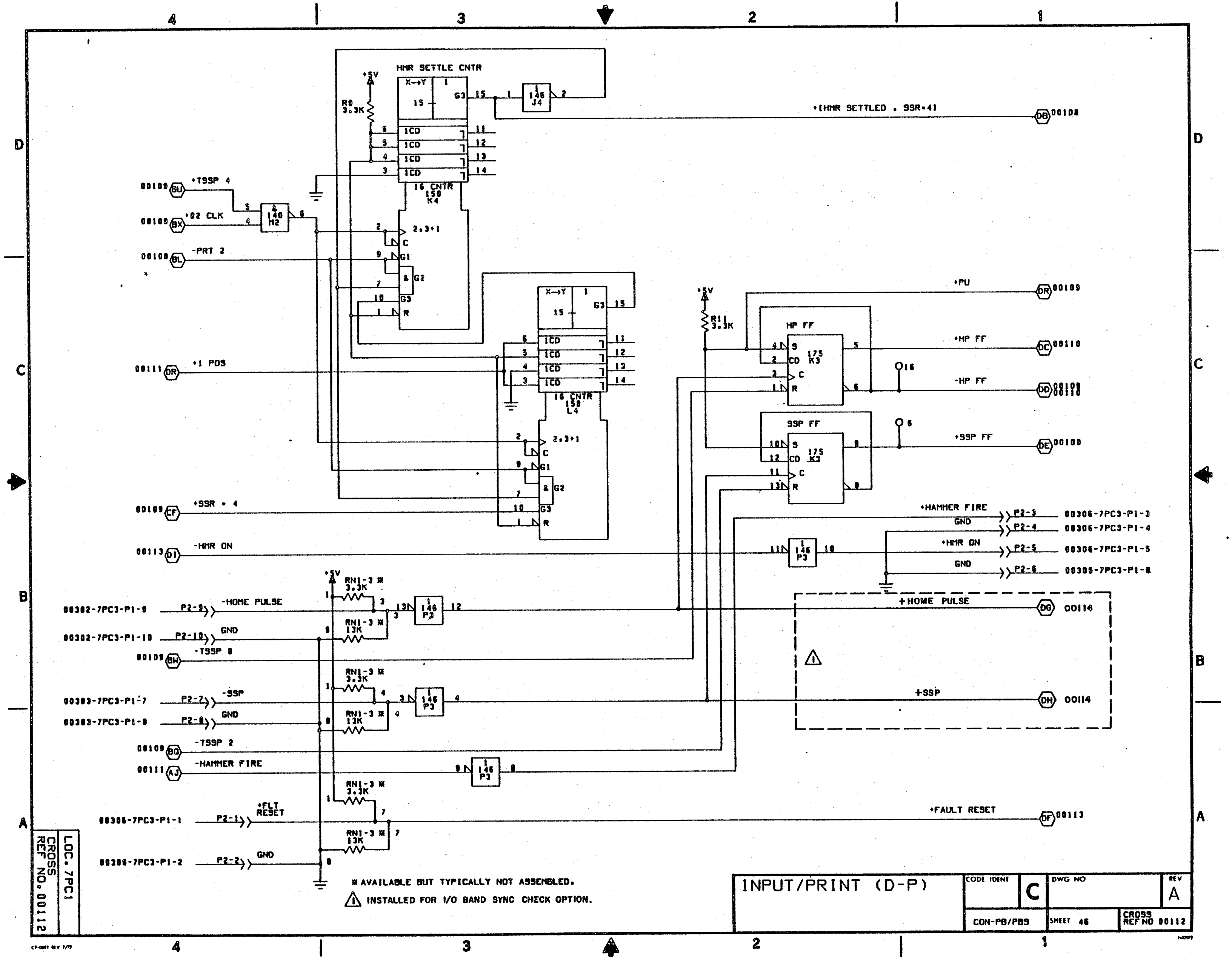
C MEANS CLOSED
0 MEANS OPEN

※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

LOC. 7PC1
CROSS REF NO. 00111

INPUT/PRINT (D-P)

CODE IDENT C
DWG NO
REV A
CON-PB/PBS
SHEET 45
CROSS REF NO 00111



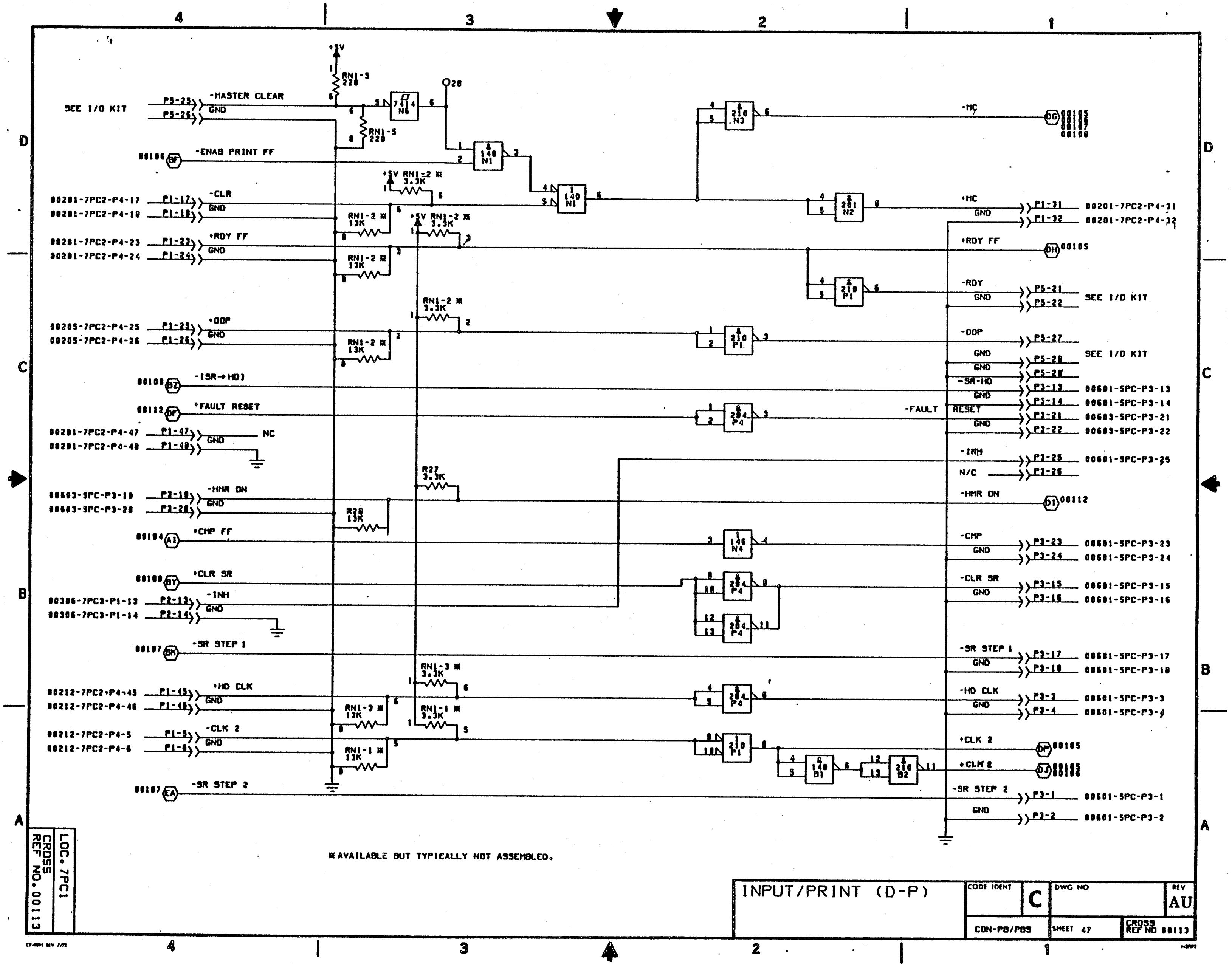
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

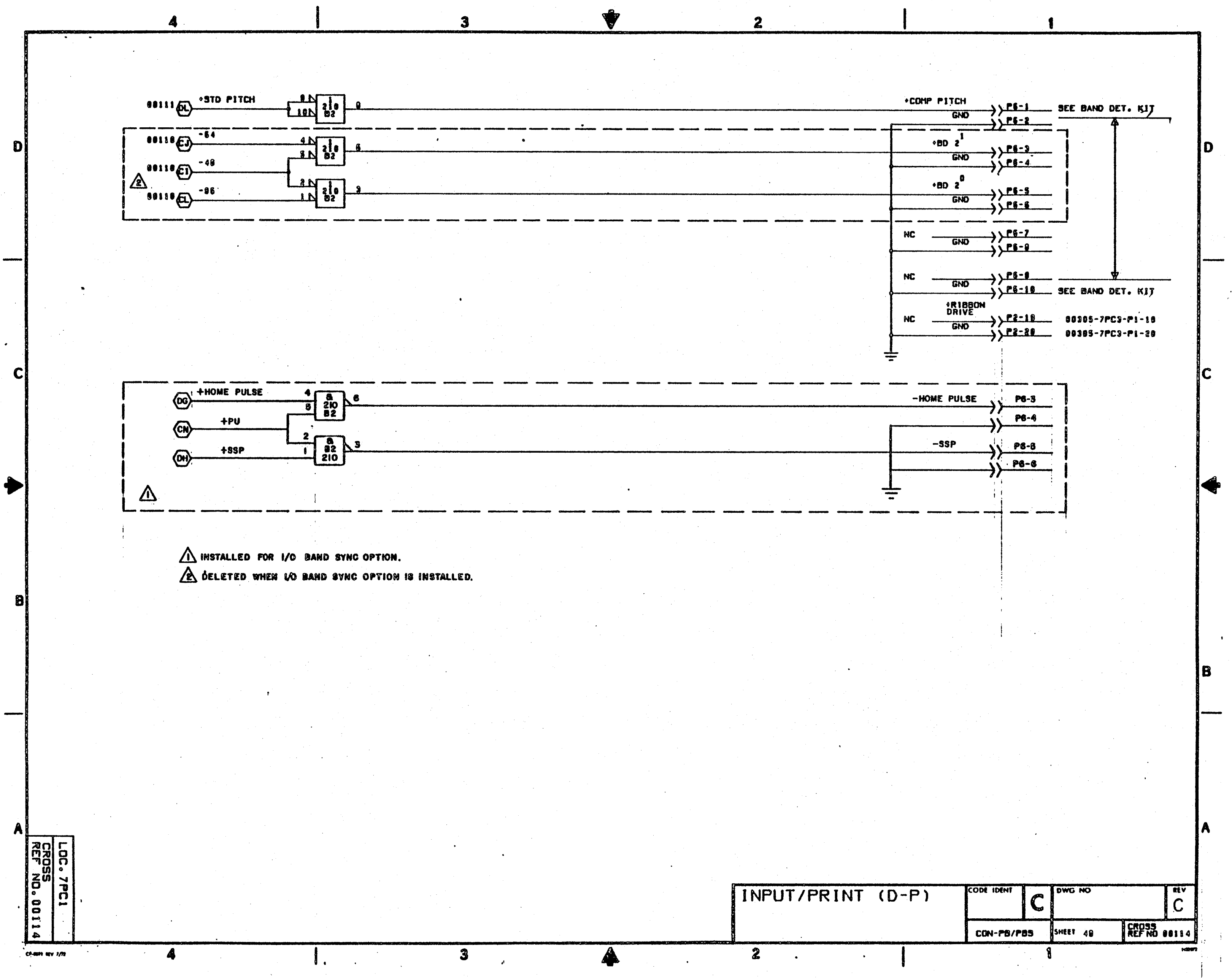
⚠ INSTALLED FOR I/O BAND SYNC CHECK OPTION.

LOC. 7PC1

CROSS REF NO. 00112

INPUT/PRINT (D-P)	CODE IDENT C	DWG NO	REV A
	CON-PB/PBS	SHEET 46	CROSS REF NO 00112


SEE I/O KIT
P5-25
-MASTER CLEAR
P5-26
GND
+5V
RN1-5
220
RN1-5
220
7414
N6
28
00106 BF
-ENAB PRINT FF
140
N1
00201-7PC2-P4-17
P1-17
-CLR
00201-7PC2-P4-18
P1-18
GND
+5V RN1-2 ※
3.3K
RN1-2 ※
13K
00201-7PC2-P4-23
P1-23
+RDY FF
00201-7PC2-P4-24
P1-24
GND
00205-7PC2-P4-25
P1-25
+DOP
00205-7PC2-P4-26
P1-26
GND
00108 BZ
-(SR→HD)
00112 DF
+FAULT RESET
00201-7PC2-P4-47
P1-47
00201-7PC2-P4-48
P1-48
GND
NC
00603-5PC-P3-18
P3-18
-HMR ON
00603-5PC-P3-28
P3-28
GND
R27
3.3K
R28
13K
00104 A1
+CMP FF
00108 BY
+CLR SR
00306-7PC3-P1-13
P2-13
-INH
00306-7PC3-P1-14
P2-14
GND
00107 BK
-SR STEP 1
00212-7PC2-P4-45
P1-45
+HD CLK
00212-7PC2-P4-46
P1-46
GND
RN1-3 ※
3.3K
RN1-3 ※
13K
RN1-1 ※
3.3K
RN1-1 ※
13K
00212-7PC2-P4-5
P1-5
-CLK 2
00212-7PC2-P4-6
P1-6
GND
00107 EA
-SR STEP 2
210
N3
201
N2
210
P1
210
P1
204
P4
146
N4
204
P4
204
P4
204
P4
210
P1
140
B1
210
B2
-MC
DG 00105 00106 00107 00108
+MC
P1-31
00201-7PC2-P4-31
GND
P1-32
00201-7PC2-P4-32
+RDY FF
DH 00105
-RDY
P5-21
SEE I/O KIT
GND
P5-22
-DOP
P5-27
SEE I/O KIT
GND
P5-28
GND
P5-28
-SR-HD
P3-13
00601-5PC-P3-13
GND
P3-14
00601-5PC-P3-14
-FAULT
RESET
P3-21
00603-5PC-P3-21
GND
P3-22
00603-5PC-P3-22
-INH
P3-25
00601-5PC-P3-25
N/C
P3-26
-HMR ON
D1 00112
-CMP
P3-23
00601-5PC-P3-23
GND
P3-24
00601-5PC-P3-24
-CLR SR
P3-15
00601-5PC-P3-15
GND
P3-16
00601-5PC-P3-16
-SR STEP 1
P3-17
00601-5PC-P3-17
GND
P3-18
00601-5PC-P3-18
-HD CLK
P3-3
00601-5PC-P3-3
GND
P3-4
00601-5PC-P3-4
+CLK 2
DP 00105
+CLK 2
DJ 00105 00106
-SR STEP 2
P3-1
00601-5PC-P3-1
GND
P3-2
00601-5PC-P3-2
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC1
CROSS REF NO. 00113
INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
AU
CON-PB/PBS
SHEET 47
CROSS REF NO 00113
4
3
2
1
D
C
B
A



⚠1 INSTALLED FOR I/O BAND SYNC OPTION.

⚠2 DELETED WHEN I/O BAND SYNC OPTION IS INSTALLED.

LOC. 7PC1
CROSS
REF NO. 00114

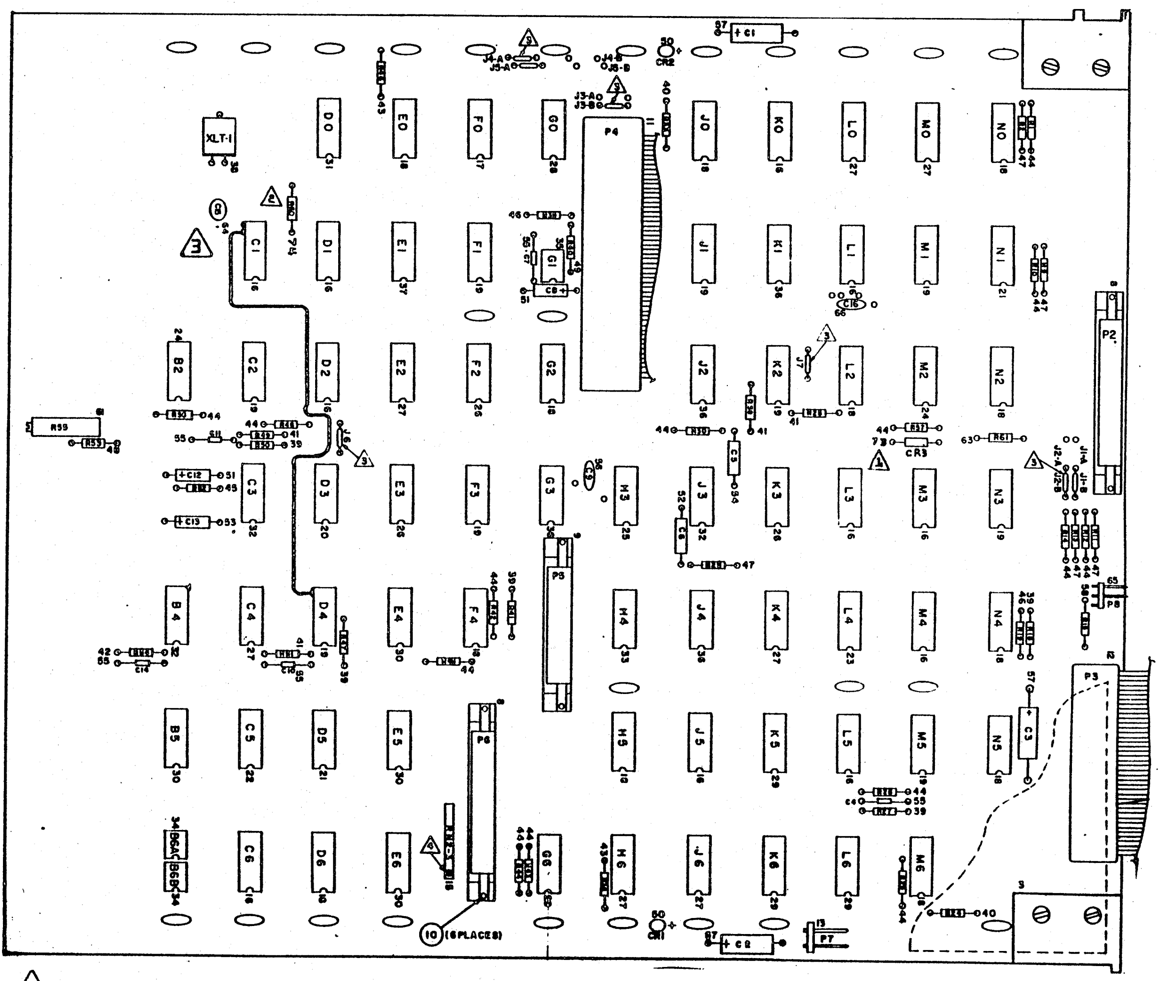
INPUT/PRINT (D-P)	CODE IDENT	C	DWG NO	REV C
	CON-P8/P8S		SHEET 40	CROSS REF NO 00114

JUMPER NUMBER		FUNCTION
J1A-J2A,	J1B-J2B	START/STOP CONTROL OF READY--
IN	OUT	STANDARD START/STOP CONTROL OF READY.
OUT	IN	EXTERNAL CONTROL OF READY VIA ADAPTORS WHICH USE ''-EXT START PUL'' & ''-EXT STOP PUL''.
J3A	J3B	VERTICAL ADVANCE CONTROL--
IN	OUT	12 CHNL EVFU OPTION OR WHEN ASCII CONTROL CODES ARE NOT USED WITH THE EXTERNAL ADVANCE OPTION.
OUT	IN	CONTROL CODES ARE STANDARD ASCII WITHOUT EXTERNAL ADVANCE OPTION OR WHEN EXTERNAL ADVANCE OPTION IS USED IN CONJUNCTION WITH CR.
J4A-J5A,	J4B-J5B	
IN	OUT	STANDARD PAPER FORMATTING
OUT	IN	NEVER USED
J6		AUTO PERF SKIP (APS) SELECTION--
IN		APS NOT ACTIVE
OUT		APS ACTIVE
J7		FROM FEED CONTROL
IN		NO EVFU OPTION
OUT		EVFU OPTION

LOC.
CROSS
REF NO. 00200

OSC. HORZ. & VERT.
MOT. JUMPER
CHART

CODE IDENT		DWG NO	REV
	C		A
CON-PB/PBS		SHEET 48	CROSS REF NO 00200

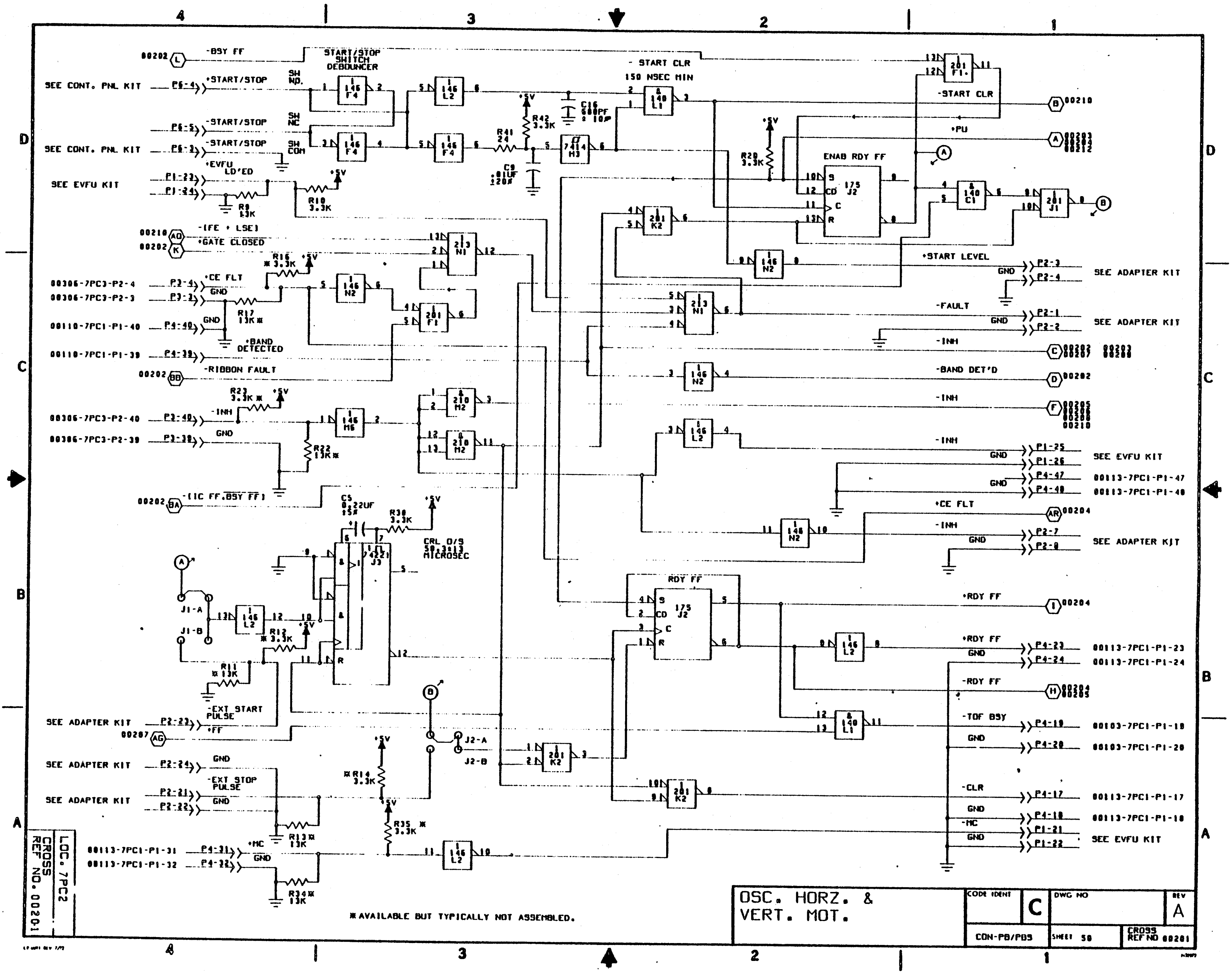


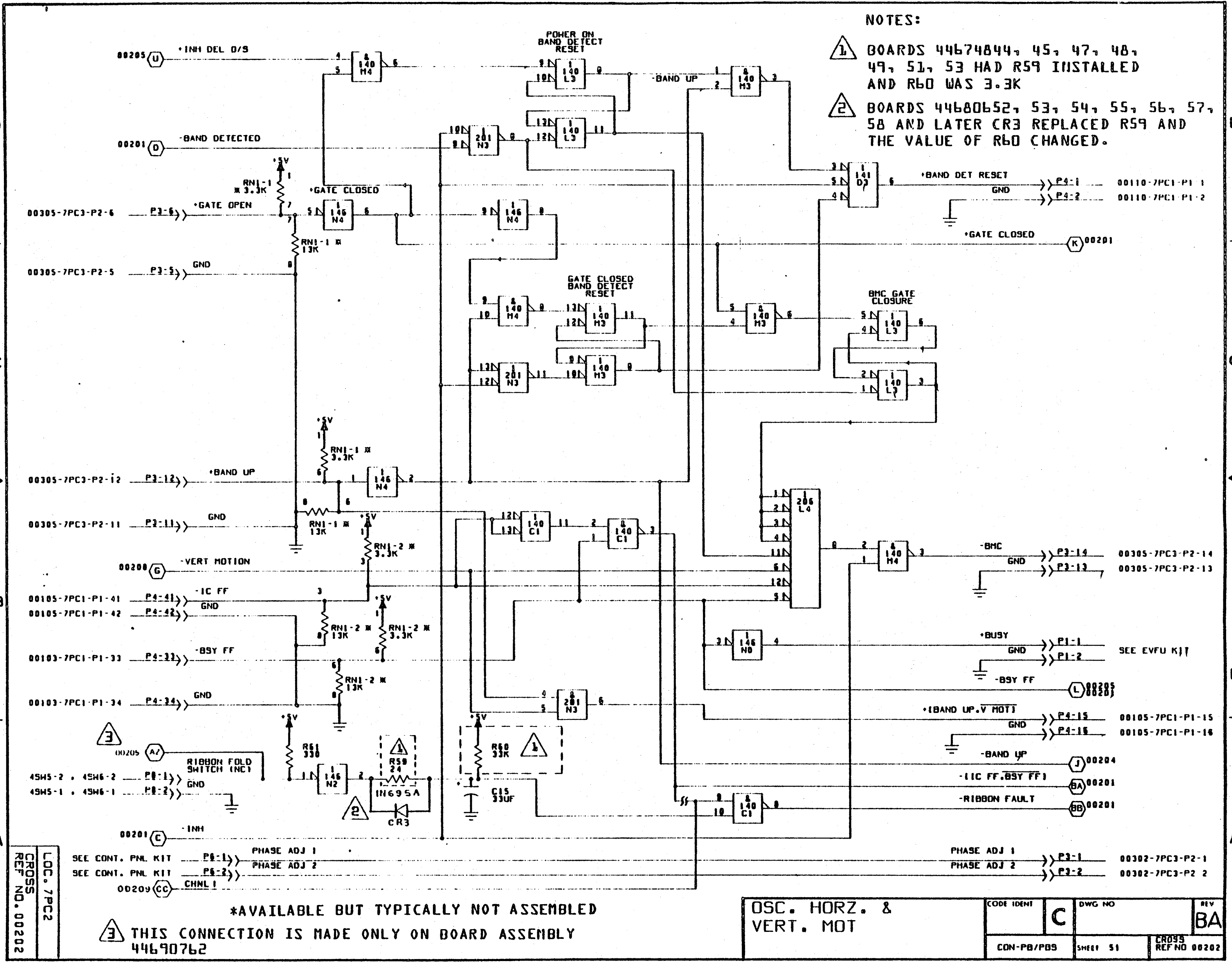
1 CR3 REPLACED R59.

2 R60 VALUE WAS CHANGED FROM 3.3K TO 33K WHEN CR3 REPLACED R59.

3 CUT FOIL BETWEEN C1-9 AND C1-5 ADD JUMPER WIRE FROM D4-8 TO C1-9
DETECTION OF RIBBON FAULT IS INHIBITED UNTIL TOP OF FORMS OPTION

OSC. HORIZONTAL & VERT. MOTION


00202 L -BSY FF
START/STOP SWITCH DEBOUNCER
SEE CONT. PNL KIT P6-4 +START/STOP
SH NO.
P6-5 -START/STOP
SH NC
SEE CONT. PNL KIT P6-3 -START/STOP
SH COM
SEE EVFU KIT P1-23 +EVFU LD'ED
P1-24
R9 13K
R10 3.3K
+5V
1 146 F4
1 146 L2
1 146 F4
- START CLR
150 NSEC MIN
& 140 L1
R41 24
R42 3.3K
C16 680PF ± 10P
C9 .01UF ±20%
7414 H3
R29 3.3K
ENAB RDY FF
175 J2
S CD C R
201 F1
-START CLR
B 00210
+PU
A 00203 00204 00212
& 140 C1
201 J1
B
201 K2
146 N2
+START LEVEL
GND
P2-3 P2-4 SEE ADAPTER KIT
00210 AD -(FE + LSE)
00202 K +GATE CLOSED
213 N1
R16 3.3K
00306-7PC3-P2-4 P3-4 +CE FLT
00306-7PC3-P2-3 P3-3 GND
R17 13K
00110-7PC1-P1-40 P4-40 GND
+BAND DETECTED
00110-7PC1-P1-39 P4-39
00202 BB -RIBBON FAULT
146 N2
201 F1
213 N1
-FAULT
GND
P2-1 P2-2 SEE ADAPTER KIT
-INH
C 00202 00203 00207 00208
146 N2
-BAND DET'D
D 00202
-INH
F 00205 00206 00208 00210
R23 3.3K
-INH
00306-7PC3-P2-40 P3-40
00306-7PC3-P2-39 P3-39 GND
146 M6
R22 13K
& 210 M2
& 210 M2
146 L2
-INH
GND
P1-25 P1-26 SEE EVFU KIT
GND
P4-47 00113-7PC1-P1-47
P4-48 00113-7PC1-P1-48
+CE FLT
AR 00204
146 N2
-INH
GND
P2-7 P2-8 SEE ADAPTER KIT
00202 BA -(IC FF.BSY FF)
C5 8.22UF ±5%
R38 3.3K
CRL O/S 50±3±13 MICROSEC
74121 J3
A
J1-A
J1-B
146 L2
R12 3.3K
R11 13K
SEE ADAPTER KIT P2-23 -EXT START PULSE
00207 AG +FF
RDY FF
175 J2
S CD C R
+RDY FF
I 00204
146 L2
+RDY FF
GND
P4-23 00113-7PC1-P1-23
P4-24 00113-7PC1-P1-24
-RDY FF
H 00204 00205
& 140 L1
-TOF BSY
P4-19 00103-7PC1-P1-19
GND
P4-20 00103-7PC1-P1-20
B
J2-A
J2-B
201 K2
R14 3.3K
R35 3.3K
201 K2
-CLR
P4-17 00113-7PC1-P1-17
GND
P4-18 00113-7PC1-P1-18
-MC
GND
P1-21 P1-22 SEE EVFU KIT
SEE ADAPTER KIT P2-24 GND
P2-21 -EXT STOP PULSE
SEE ADAPTER KIT P2-22 GND
R13 13K
00113-7PC1-P1-31 P4-31 +MC
00113-7PC1-P1-32 P4-32 GND
R34 13K
146 L2
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC2
CROSS REF NO. 00201
OSC. HORZ. & VERT. MOT.
CODE IDENT C
DWG NO
REV A
CON-P8/P85
SHEET 58
CROSS REF NO 00201
A B C D
1 2 3 4



NOTES:

1. BOARDS 44674844, 45, 47, 48, 49, 51, 53 HAD R59 INSTALLED AND R60 WAS 3.3K
2. BOARDS 44680652, 53, 54, 55, 56, 57, 58 AND LATER CR3 REPLACED R59 AND THE VALUE OF R60 CHANGED.

*AVAILABLE BUT TYPICALLY NOT ASSEMBLED

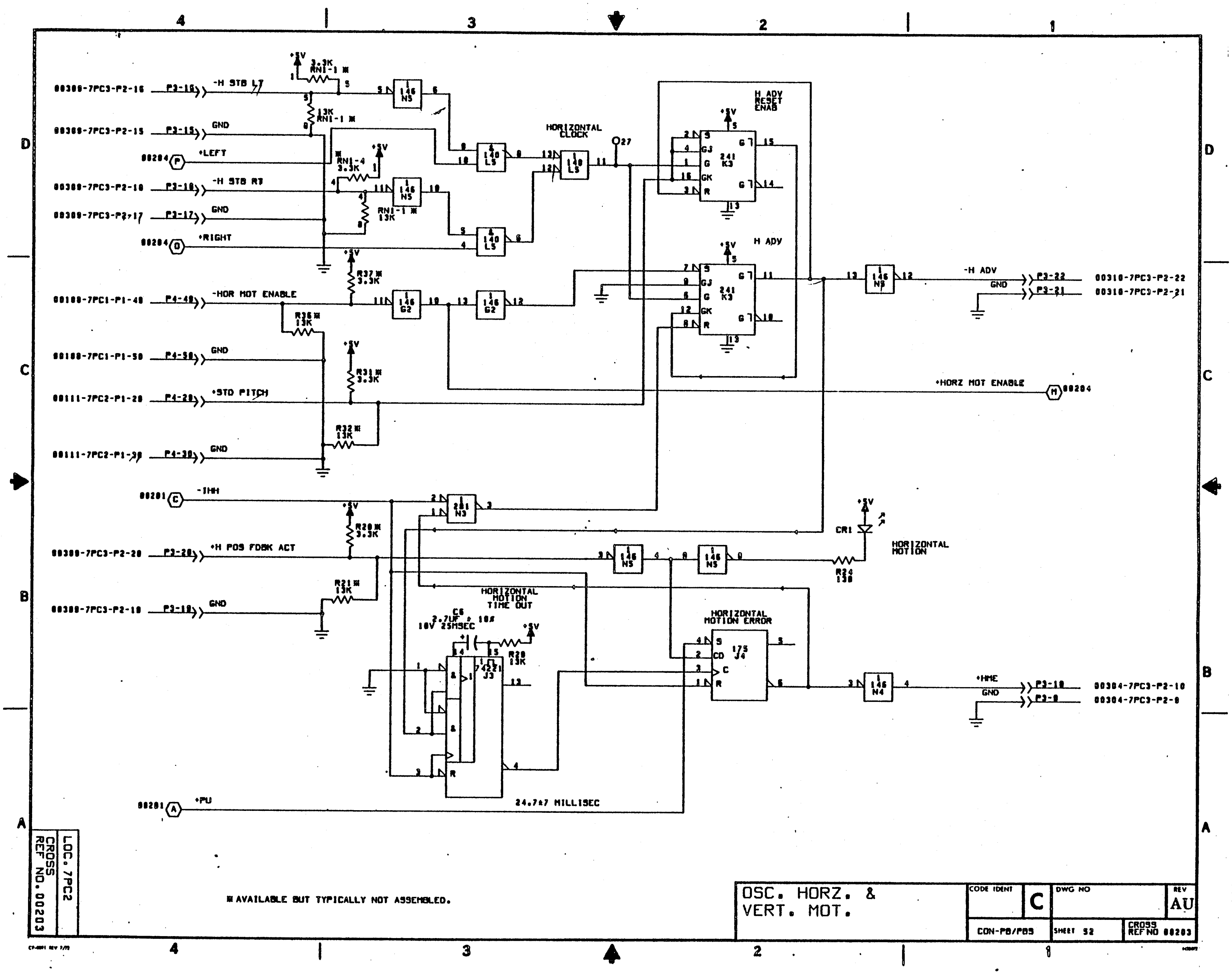
3. THIS CONNECTION IS MADE ONLY ON BOARD ASSEMBLY 44690762

LOC. 7PC2

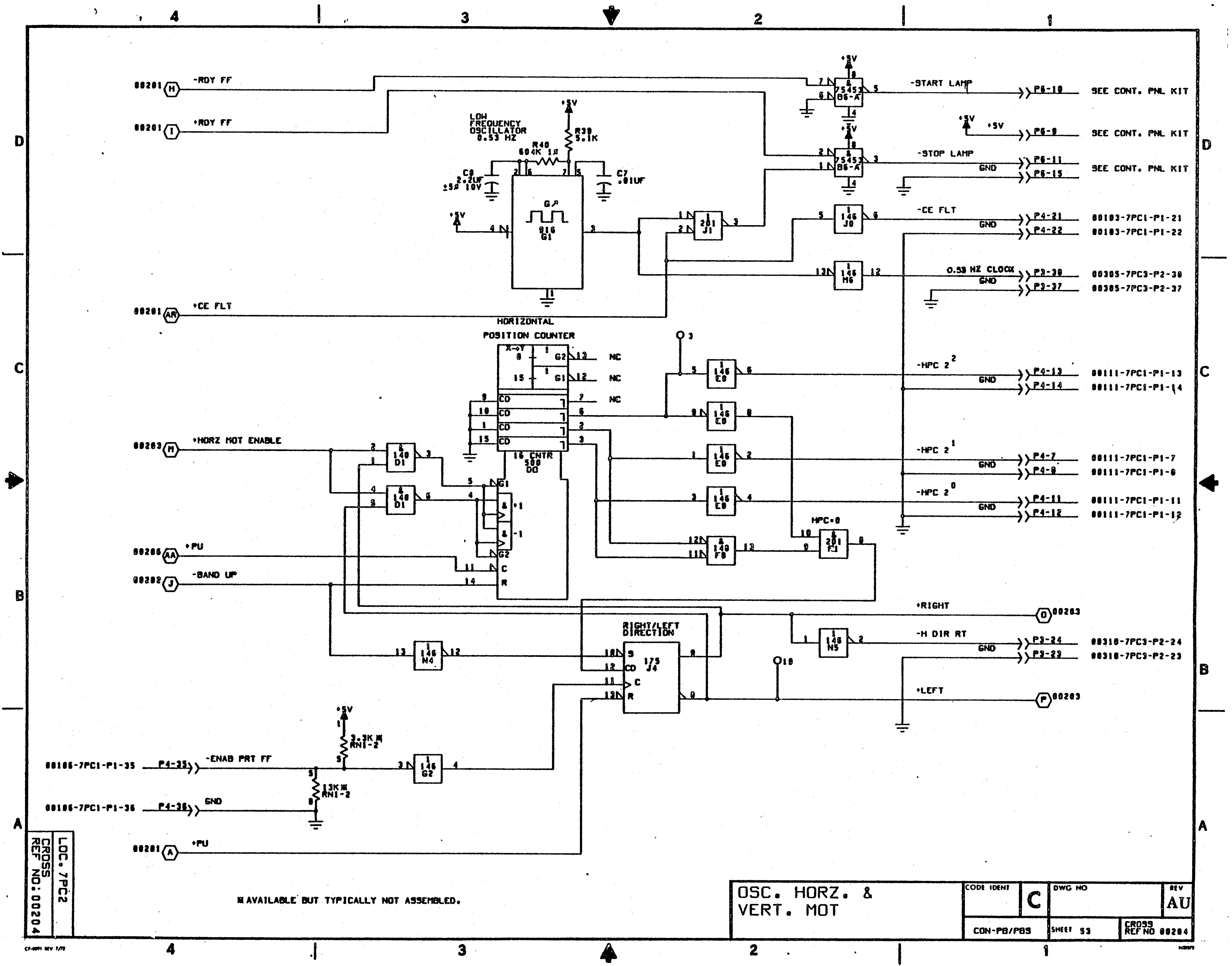
CROSS REF NO. 00202

OSC. HORZ. &
VERT. MOT

CODE IDENT	C	DWG NO	REV BA
CON-PB/PBS		SHEET 51	CROSS REF NO 00202



00308-7PC3-P2-16
P3-16
-H STB L7
00308-7PC3-P2-15
P3-15
GND
00204 P
+LEFT
00308-7PC3-P2-18
P3-18
-H STB R7
00308-7PC3-P2-17
P3-17
GND
00204 Q
+RIGHT
00108-7PC1-P1-40
P4-40
-HOR MOT ENABLE
00108-7PC1-P1-50
P4-50
GND
00111-7PC2-P1-20
P4-20
+STD PITCH
00111-7PC2-P1-30
P4-30
GND
00201 C
-IHH
00308-7PC3-P2-20
P3-20
+H POS FDBK ACT
00308-7PC3-P2-10
P3-10
GND
00201 A
+PU
+5V
3.3K RN1-1 *
13K RN1-1 *
RN1-4 * 3.3K
RN1-1 * 13K
R37 * 3.3K
R36 * 13K
R31 * 3.3K
R32 * 13K
R20 * 3.3K
R21 * 13K
146 N5
140 L5
146 G2
HORIZONTAL CLOCK
27
H ADV RESET ENAB
241 K3
H ADV
146 N9
-H ADV
GND
P3-22
P3-21
00310-7PC3-P2-22
00310-7PC3-P2-21
+HORZ MOT ENABLE
H 00204
281 N3
CR1
R24 130
HORIZONTAL MOTION
HORIZONTAL MOTION TIME OUT
C6 2.7UF ± 10% 10V 25MSEC
R29 13K
74221 J3
24.7±7 MILLISEC
HORIZONTAL MOTION ERROR
175 J4
S
CD
C
R
146 N4
+HME
GND
P3-10
P3-8
00304-7PC3-P2-10
00304-7PC3-P2-8
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC2
CROSS REF NO. 00203
OSC. HORZ. & VERT. MOT.
CODE IDENT
C
DWG NO
REV
AU
CON-P8/P85
SHEET 52
CROSS REF NO 00203
A
B
C
D
1
2
3
4

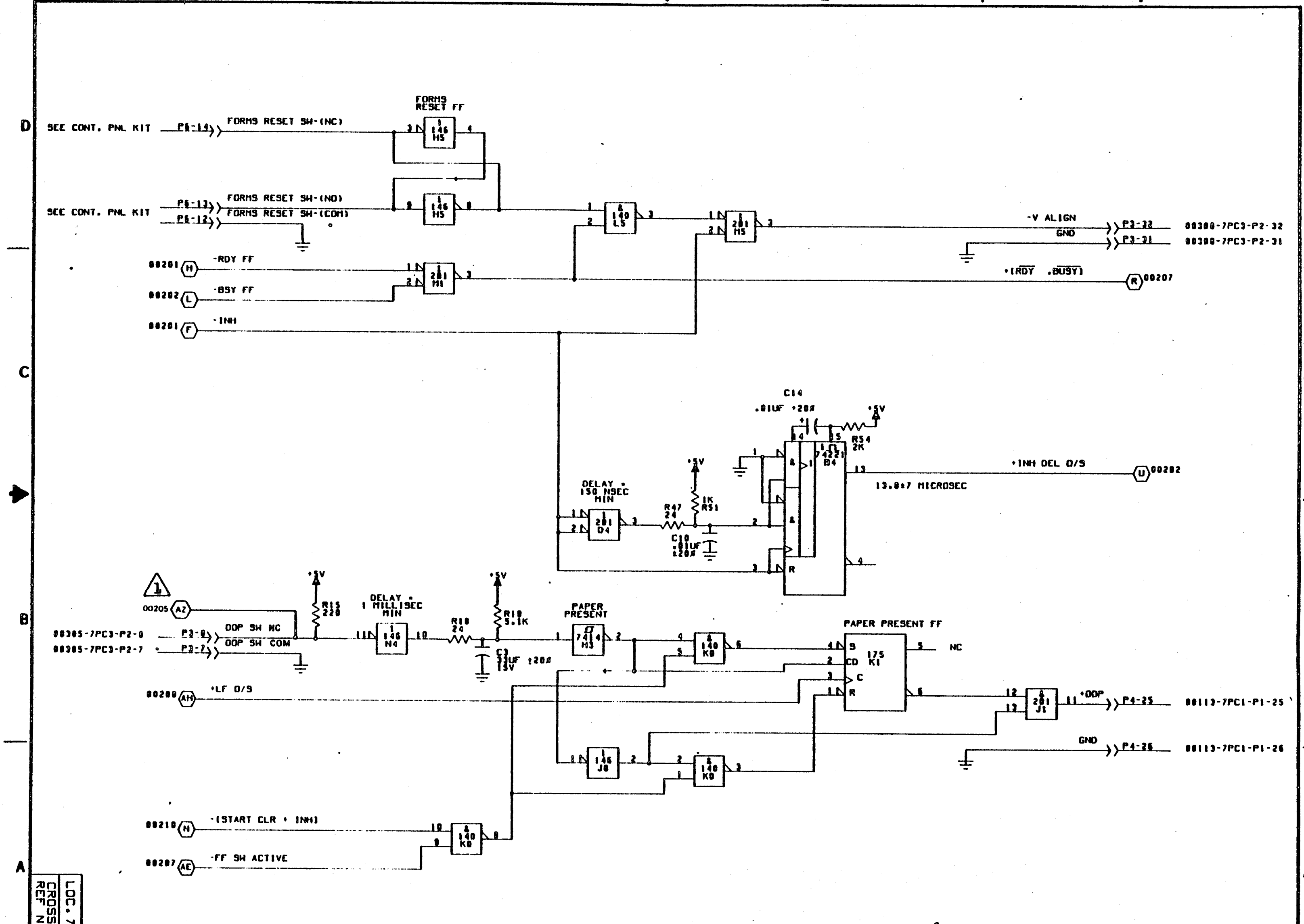


✻ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

LOC. 7PC2
CROSS REF NO: 00204

OSC. HORZ. &
VERT. MOT

CODE IDENT	DWG NO	REV
C		AU
CON-PB/PBS	SHEET 53	CROSS REF NO 00204



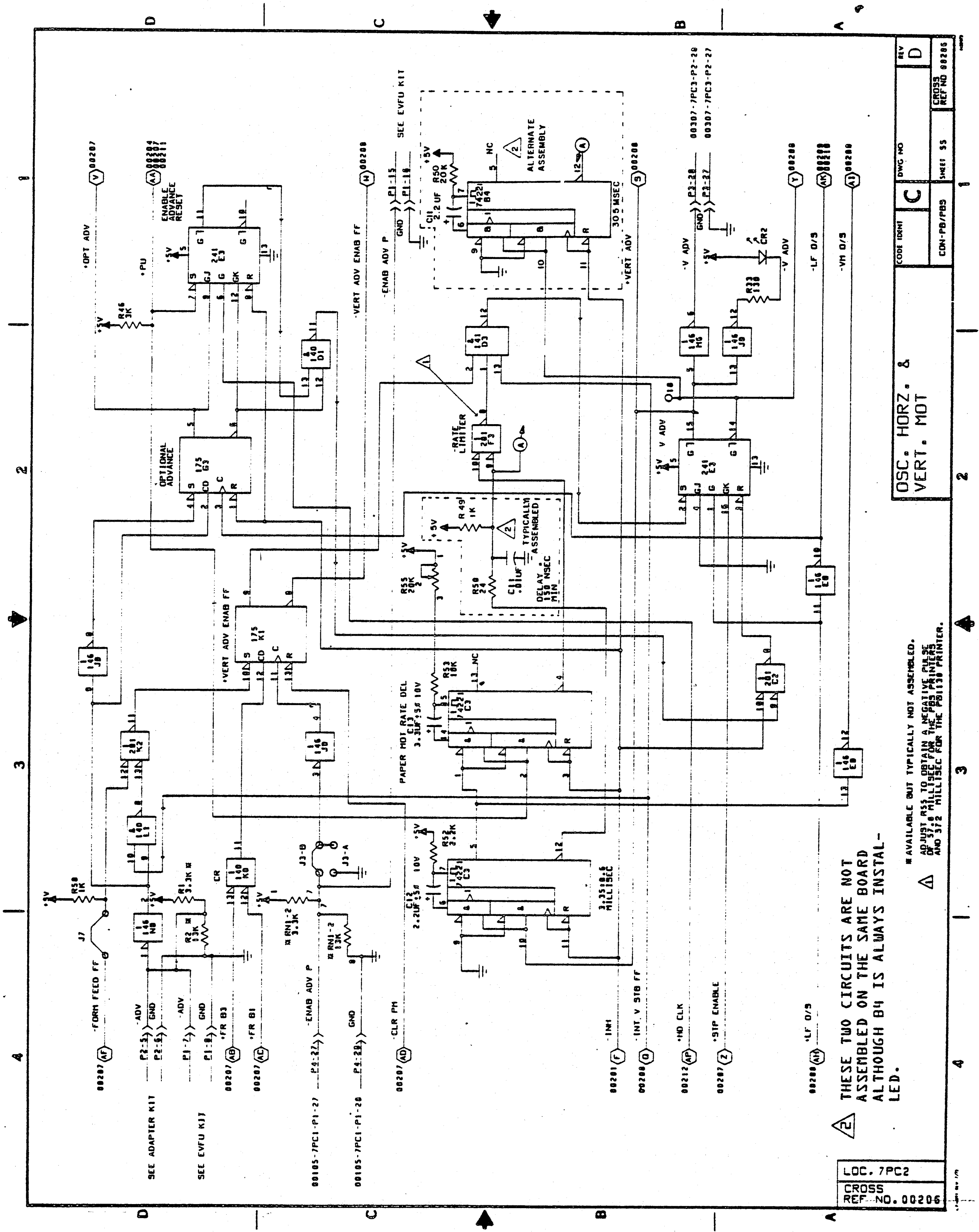
1 THIS CONNECTION IS MADE ONLY ON BOARD ASSEMBLY 44690762

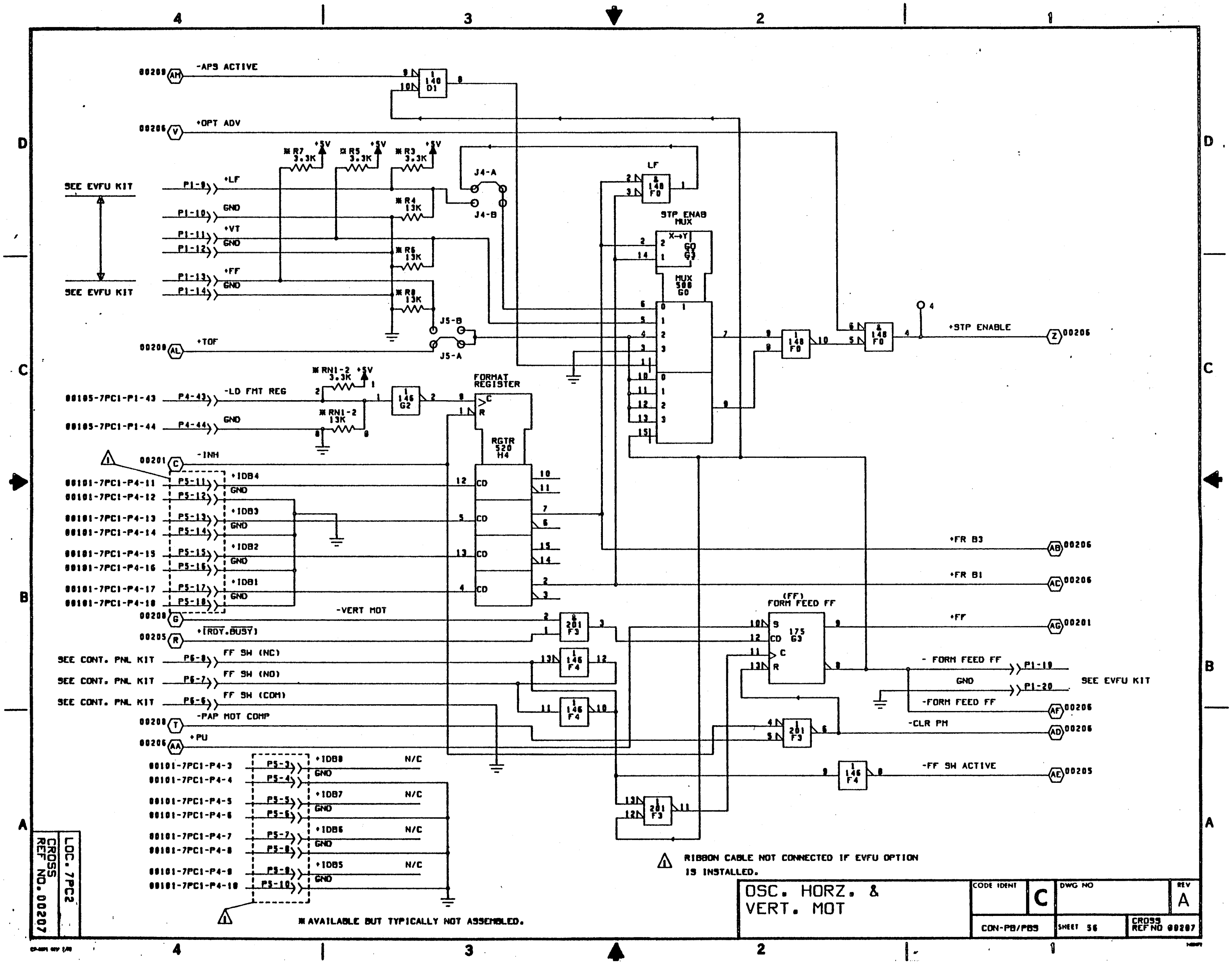
LOC. 7PC2

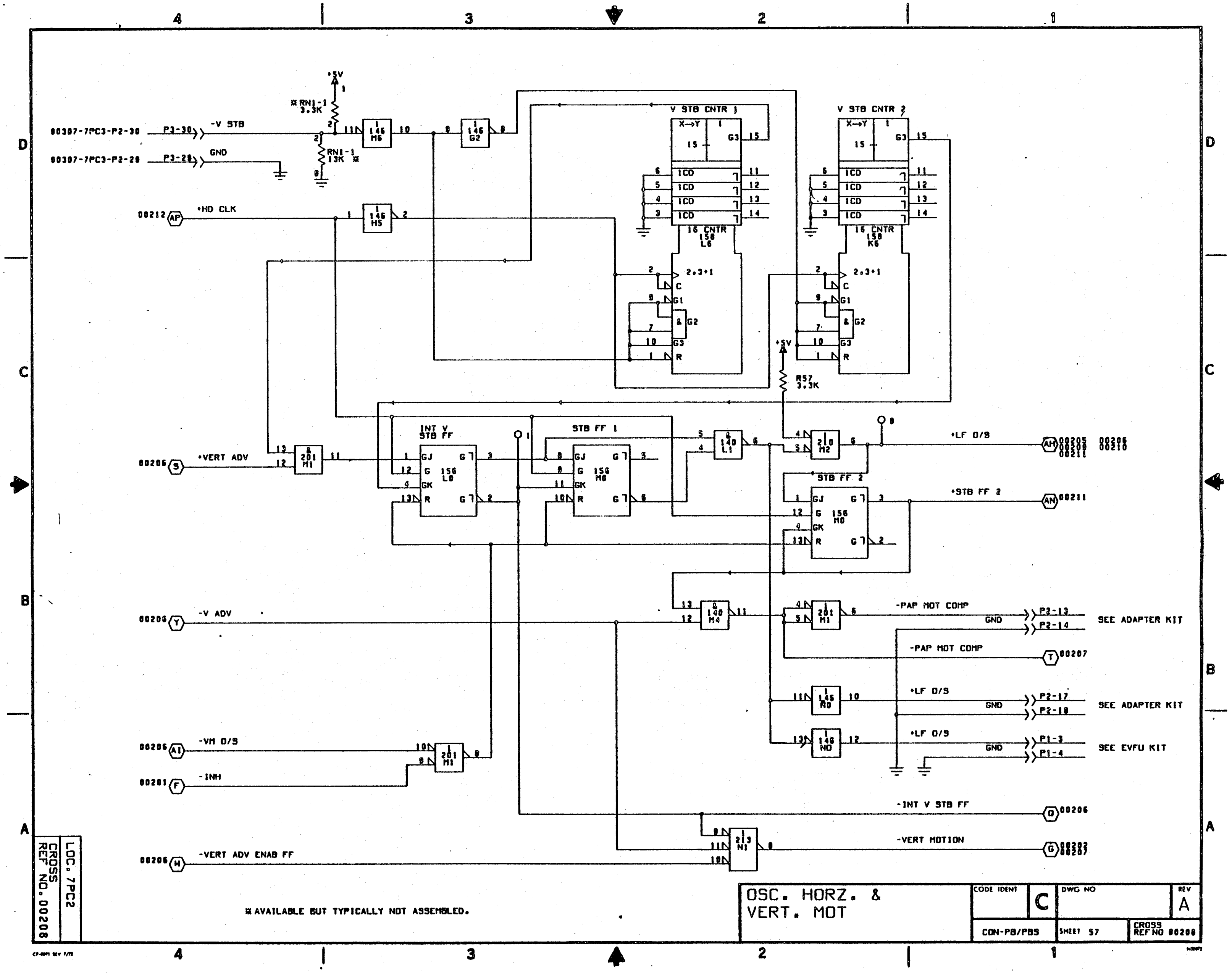
CROSS REF NO. 00205

OSC. HORZ. & VERT. MOT

CODE IDENT	C	DWG NO	REV BA
CON-PB/PBS		SHEET 54	CROSS REF NO 00205


OSC. HORZ. & VERT. MOT
CODE IDENT C
CON-PB/PB5
SHEET 55
REV D
CROSS REF NO 00206
LOC. 7PC2
CROSS REF NO. 00206
THESE TWO CIRCUITS ARE NOT ASSEMBLED ON THE SAME BOARD ALTHOUGH B4 IS ALWAYS INSTALLED.
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
ADJUST R55 TO OBTAIN A NEGATIVE PULSE OF 57.8 MILLISEC FOR THE PB5 PRINTERS AND 372 MILLISEC FOR THE PB1130 PRINTER.
ALTERNATE ASSEMBLY
TYPICALLY ASSEMBLED
DELAY 150 NSEC MIN
305 NSEC
3.3518.6 MILLISEC
PAPER MOT RATE DEL
OPTIONAL ADVANCE
ENABLE ADVANCE RESET
-RATE LIMITER
+VERT ADV ENAB FF
-VERT ADV ENAB FF
-ENAB ADV P
+VERT ADV
+OPT ADV
+PU
-V ADV
V ADV
-LF O/S
-VM O/S
-FORM FEED FF
-ADV
+FR B3
+FR B1
-CLR PM
-INH
-INT V STB FF
+HD CLK
+STP ENABLE
+LF O/S
SEE ADAPTER KIT
SEE EVFU KIT
00105-7PC1-P1-27
00105-7PC1-P1-28
00307-7PC3-P2-28
00307-7PC3-P2-27
J7
J3-A
J3-B
CR2
R46 3K
R50 20K
R49 1K
R55 20K
R53 10K
R52 3.3K
R58 1K
R1 3.3K
R2 13K
R33 130
RN1-2 3.3K
RN1-2 13K
C11 2.2UF
C11 .01UF
C13 3.3UF 35 10V
C12 2.2UF 35 10V
74221 B4
74221 C3
175 G3
175 K1
241 E3
241 E3
201 F3
201 K2
201 E2
141 D3
140 D1
140 L1
140 K8
146 J8
146 J9
146 M6
146 N8
146 E8
146 J8
+5V
GND
NC


00208 AM -APS ACTIVE
00206 V +OPT ADV
00208 AL +TOF
SEE EVFU KIT
SEE EVFU KIT
P1-9 +LF
P1-10 GND
P1-11 +VT
P1-12 GND
P1-13 +FF
P1-14 GND
* R7 3.3K +5V
* R5 3.3K +5V
* R3 3.3K +5V
* R4 13K
* R6 13K
* R8 13K
J4-A
J4-B
J5-B
J5-A
1 140 D1
LF
& 148 F0
STP ENAB MUX
X→Y
G0 G3
MUX 508 G0
1 148 F0
& 148 F0
4
+STP ENABLE
Z 00206
00105-7PC1-P1-43 P4-43 -LD FMT REG
00105-7PC1-P1-44 P4-44 GND
* RN1-2 3.3K +5V
* RN1-2 13K
1 146 G2
FORMAT REGISTER
RGTR 520 H4
CD
00201 C -INH
00101-7PC1-P4-11 P5-11 +IDB4
00101-7PC1-P4-12 P5-12 GND
00101-7PC1-P4-13 P5-13 +IDB3
00101-7PC1-P4-14 P5-14 GND
00101-7PC1-P4-15 P5-15 +IDB2
00101-7PC1-P4-16 P5-16 GND
00101-7PC1-P4-17 P5-17 +IDB1
00101-7PC1-P4-18 P5-18 GND
00208 G -VERT MOT
00205 R +(RDY.BUSY)
SEE CONT. PNL KIT P6-8 FF SW (NC)
SEE CONT. PNL KIT P6-7 FF SW (NO)
SEE CONT. PNL KIT P6-6 FF SW (COM)
00208 T -PAP MOT COMP
00206 AA +PU
00101-7PC1-P4-3 P5-3 +IDB8 N/C
00101-7PC1-P4-4 P5-4 GND
00101-7PC1-P4-5 P5-5 +IDB7 N/C
00101-7PC1-P4-6 P5-6 GND
00101-7PC1-P4-7 P5-7 +IDB6 N/C
00101-7PC1-P4-8 P5-8 GND
00101-7PC1-P4-9 P5-9 +IDB5 N/C
00101-7PC1-P4-10 P5-10 GND
& 201 F3
1 146 F4
1 146 F4
(FF) FORM FEED FF
175 G3
S CD C R
1 201 F3
1 201 F3
1 146 F4
+FR B3 AB 00206
+FR B1 AC 00206
+FF AG 00201
- FORM FEED FF P1-19
GND P1-20
SEE EVFU KIT
-FORM FEED FF AF 00206
-CLR PM AD 00206
-FF SW ACTIVE AE 00205
1 RIBBON CABLE NOT CONNECTED IF EVFU OPTION IS INSTALLED.
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
OSC. HORZ. & VERT. MOT
CODE IDENT C
DWG NO
REV A
CON-PB/PBS
SHEET 56
CROSS REF NO 00207
LOC. 7PC2
CROSS REF NO. 00207
4 3 2 1
D C B A

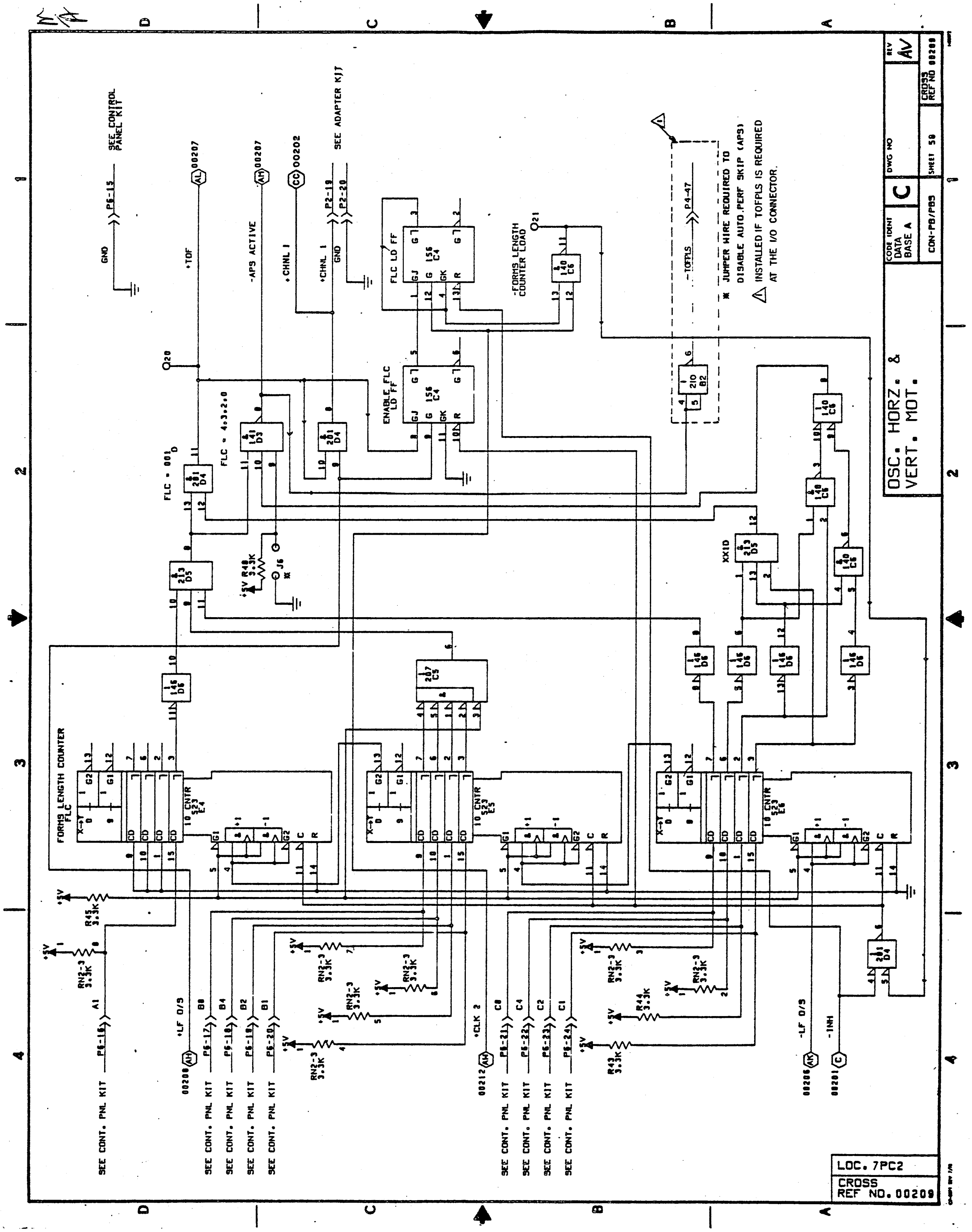


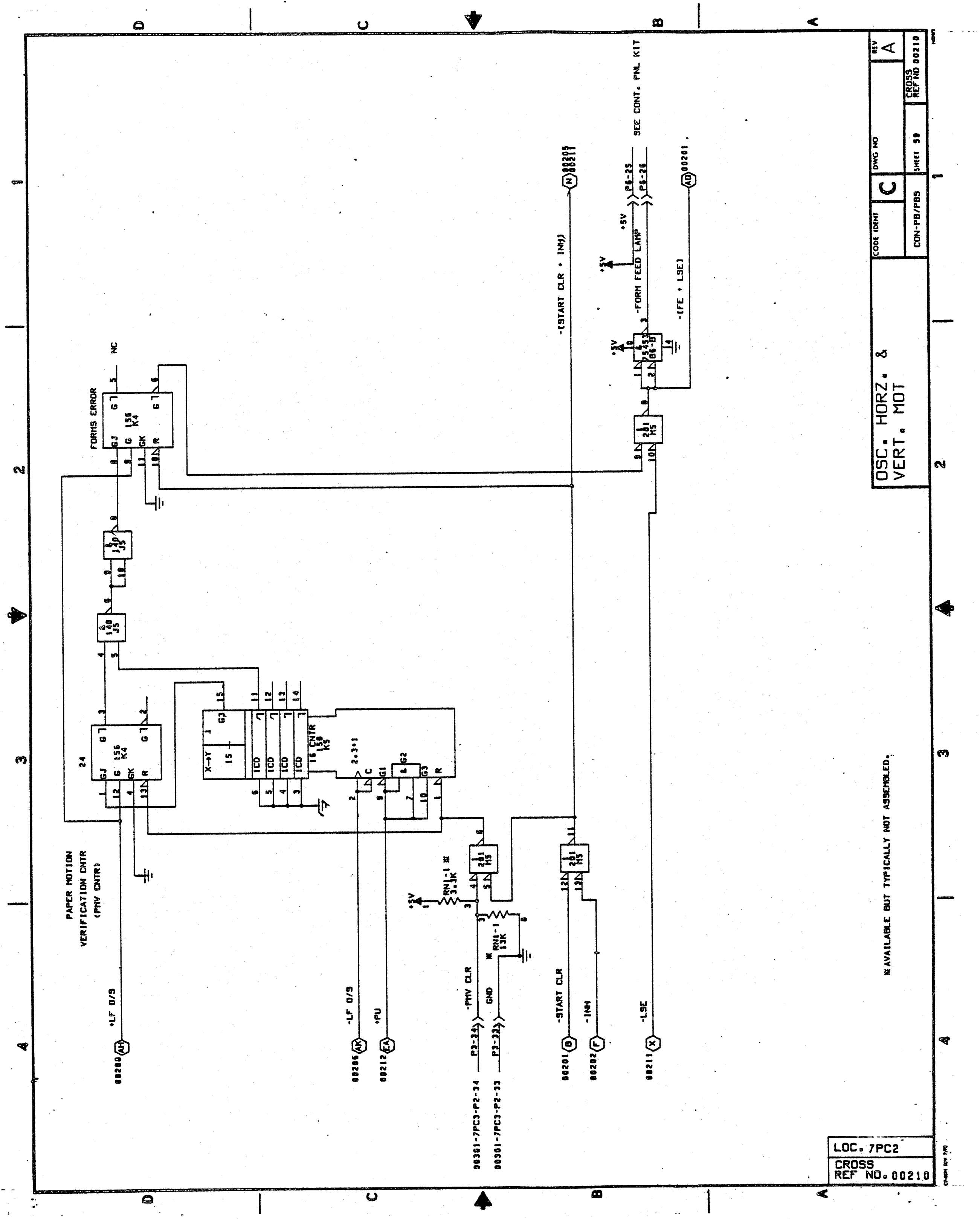
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

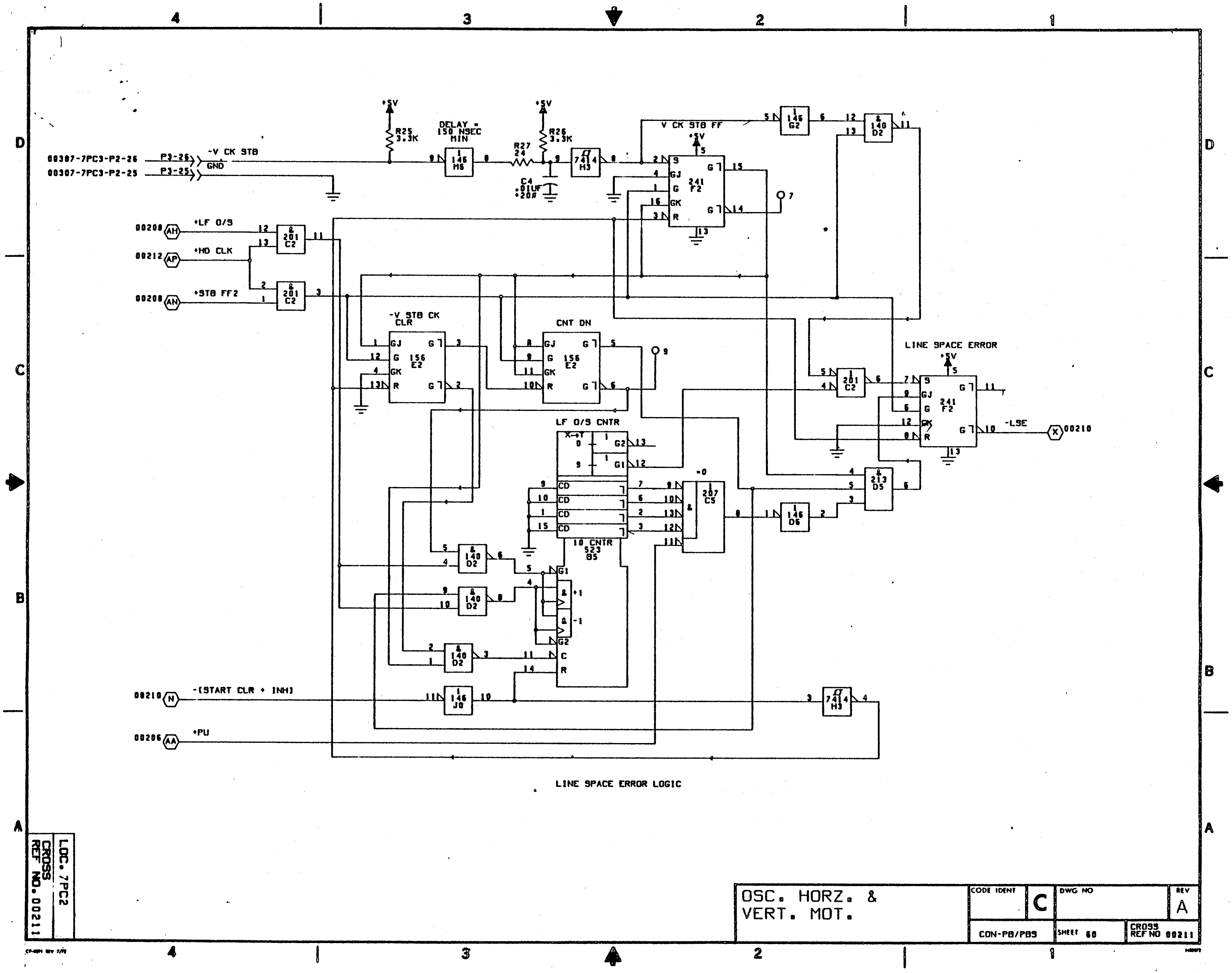
LOC. 7PC2

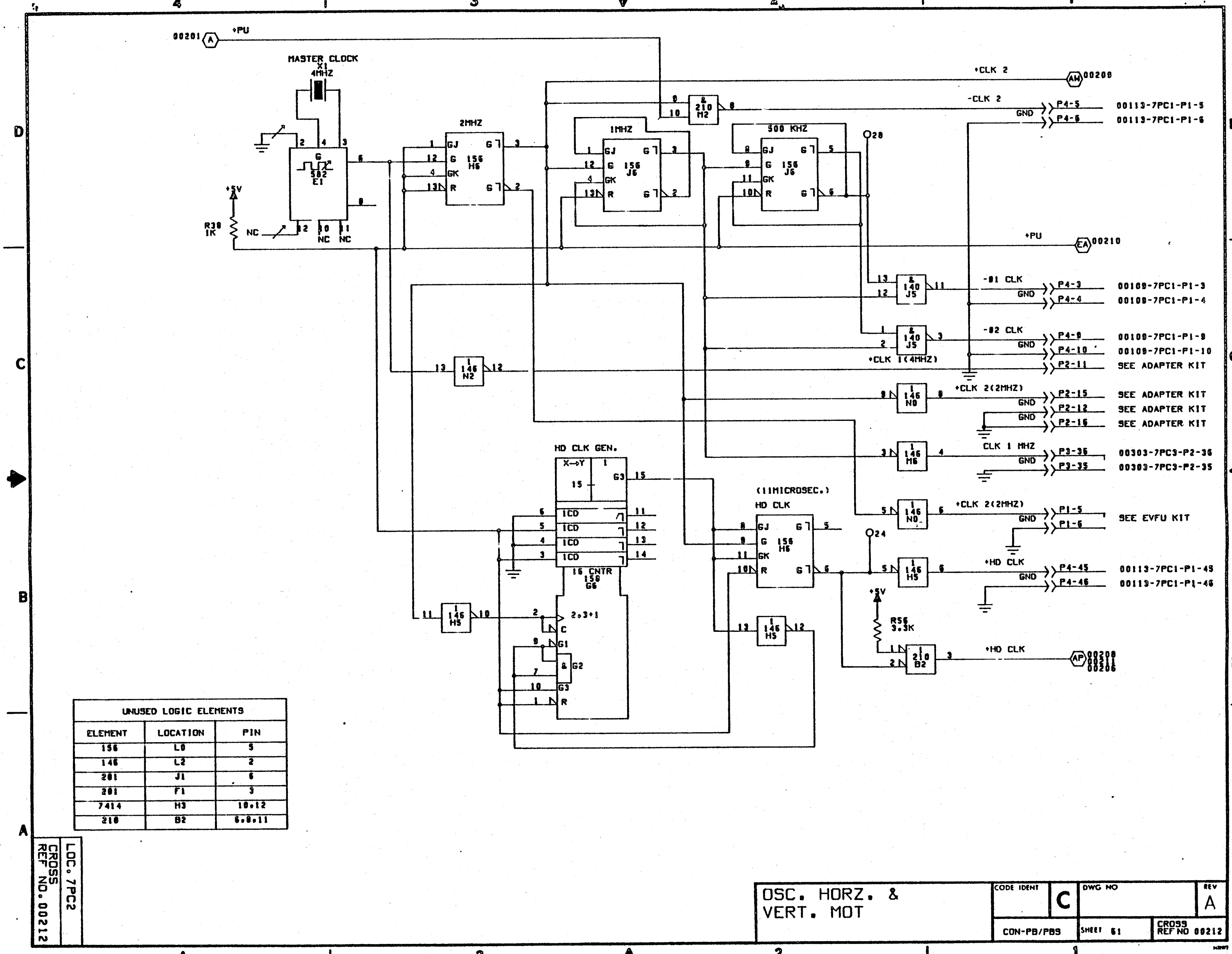
CROSS REF NO. 00208

OSC. HORZ. & VERT. MOT	CODE IDENT C	DWG NO	REV A
	CON-PB/PBS	SHEET 57	CROSS REF NO 00208


OSC. HORZ. & VERT. MOT.
LOC. 7PC2
CROSS REF NO. 00209
CODE IDENT DATA BASE A
C
DWG NO
SHEET 58
CROSS REF NO 00209
REV AV
CON-PB/PB5
✱ JUMPER WIRE REQUIRED TO DISABLE AUTO.PERF SKIP (APS)
1 INSTALLED IF TOFPLS IS REQUIRED AT THE I/O CONNECTOR.
-TOFPLS
P4-47
FORMS LENGTH COUNTER FLC
10 CNTR 523 E4
10 CNTR 523 E5
10 CNTR 523 E6
FLC LD FF
ENABLE FLC LD FF
-FORMS LENGTH COUNTER LOAD
FLC = 001
FLC = 4+3+2+0
XX1D
GND
P6-15
SEE CONTROL PANEL KIT
+TOF
-APS ACTIVE
+CHNL 1
SEE ADAPTER KIT
P2-19
P2-20
00207
00202
+5V R48 3.3K
J6
+5V R45 3.3K
RN2-3 3.3K
R44 3.3K
R43 3.3K
+LF O/S
+CLK 2
-LF O/S
-INH
00208
00212
00206
00201
A1
B8
B4
B2
B1
C8
C4
C2
C1
P6-16
P6-17
P6-18
P6-19
P6-20
P6-21
P6-22
P6-23
P6-24
SEE CONT. PNL KIT
O20
O21


OSC. HORZ. & VERT. MOT
CODE IDENT
C
DWG NO
REV
A
CON-PB/PBS
SHEET 59
CROSS REF NO 00210
LOC. 7PC2
CROSS REF NO. 00210
PAPER MOTION VERIFICATION CNTR (PMV CNTR)
FORMS ERROR
NC
156 K4
140 J5
16 CNTR 159 K5
X→Y
CTR
1CD
2,3+1
201 M5
75452 B6-B
RN1-1 3.1K
RN1-1 13K
+5V
+LF O/S
-LF O/S
+PU
-PMV CLR
GND
-START CLR
-INH
-LSE
-(START CLR + INH)
-FORM FEED LAMP
-(FE + LSE)
SEE CONT. PNL KIT
P6-25
P6-26
P3-34
P3-32
00300
00206
00212
00301-7PC3-P2-34
00301-7PC3-P2-33
00201
00202
00211
00205
00211
00201
AH
AK
EA
B
F
X
N
AD
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
D
C
B
A
1
2
3
4


V CK STB FF
DELAY = 150 NSEC MIN
R25 3.3K
R26 3.3K
R27 24
C4 .01UF ±20%
+5V
00307-7PC3-P2-26
00307-7PC3-P2-25
P3-26
P3-25
-V CK STB
GND
00208 AH +LF O/S
00212 AP +HD CLK
00208 AN +STB FF2
-V STB CK CLR
156 E2
CNT DN
LF O/S CNTR
10 CNTR 523 B5
207 C5
=0
LINE SPACE ERROR
241 F2
-LSE
00210 X
213 D5
146 D6
201 C2
140 D2
146 G2
146 H6
7414 H3
146 J0
00210 N -(START CLR + INH)
00206 AA +PU
LINE SPACE ERROR LOGIC
LOC. 7PC2
CROSS REF NO. 00211
OSC. HORZ. & VERT. MOT.
CODE IDENT C
DWG NO
REV A
CON-PB/PBS
SHEET 60
CROSS REF NO 00211



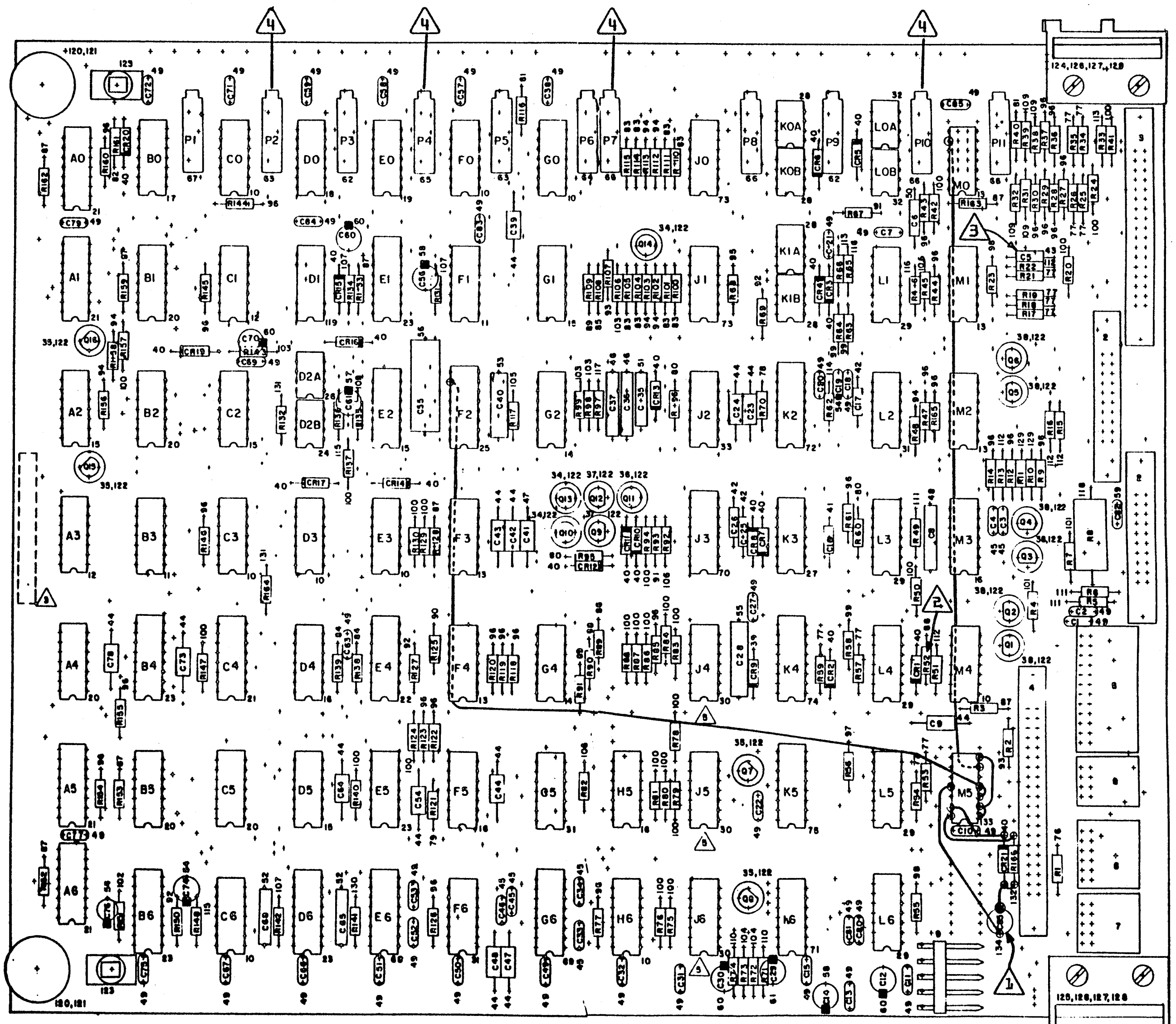
UNUSED LOGIC ELEMENTS		
ELEMENT	LOCATION	PIN
156	L0	5
146	L2	2
201	J1	6
201	F1	3
7414	H3	10,12
210	B2	6,8,11

LOC. 7PC2
CROSS
REF NO. 00212

OSC. HORZ. &
VERT. MOT

CODE IDENT		DWG NO	REV
	C		A
CON-PB/PBS		SHEET 61	CROSS REF NO 00212

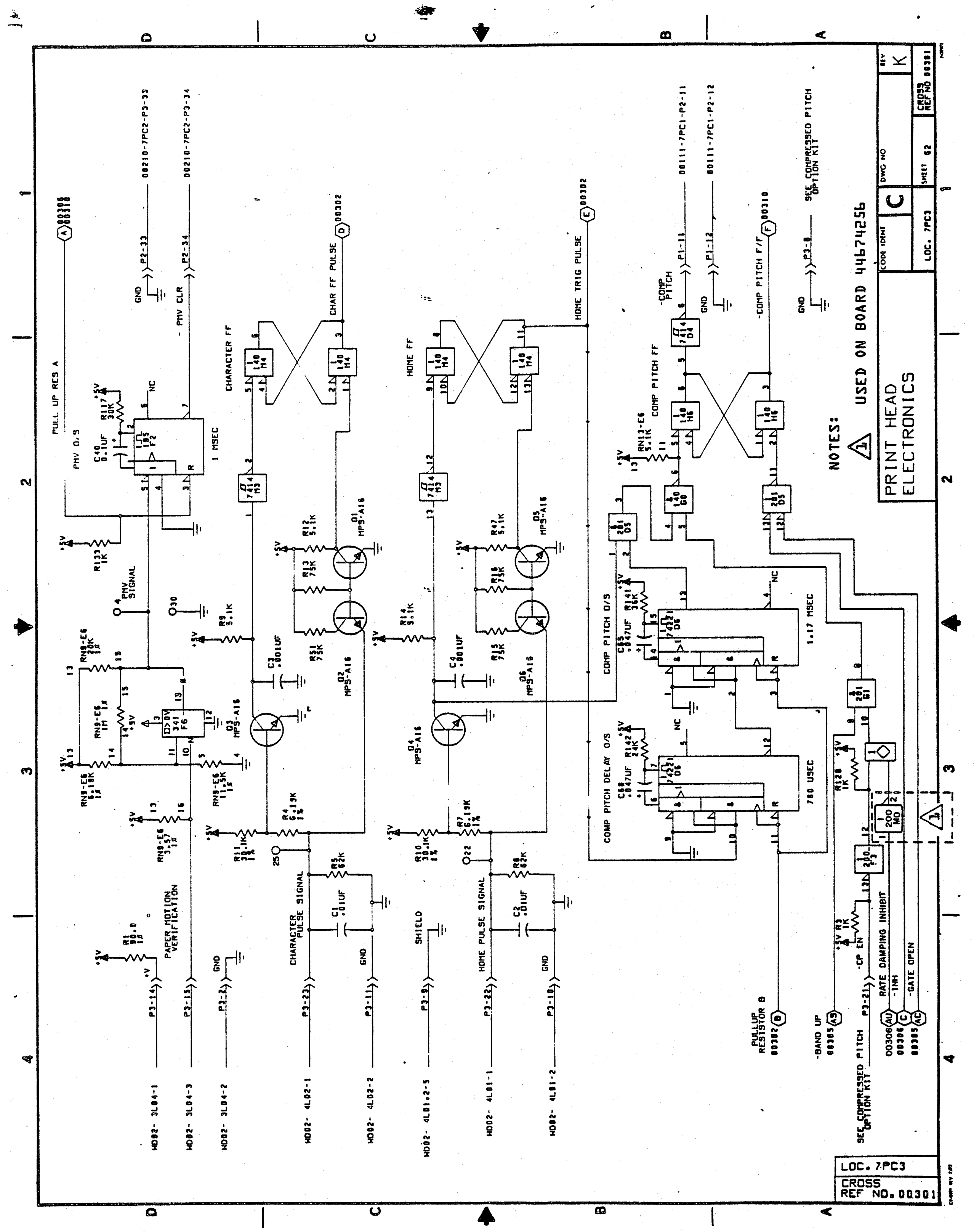
CP-0091 REV 7/77

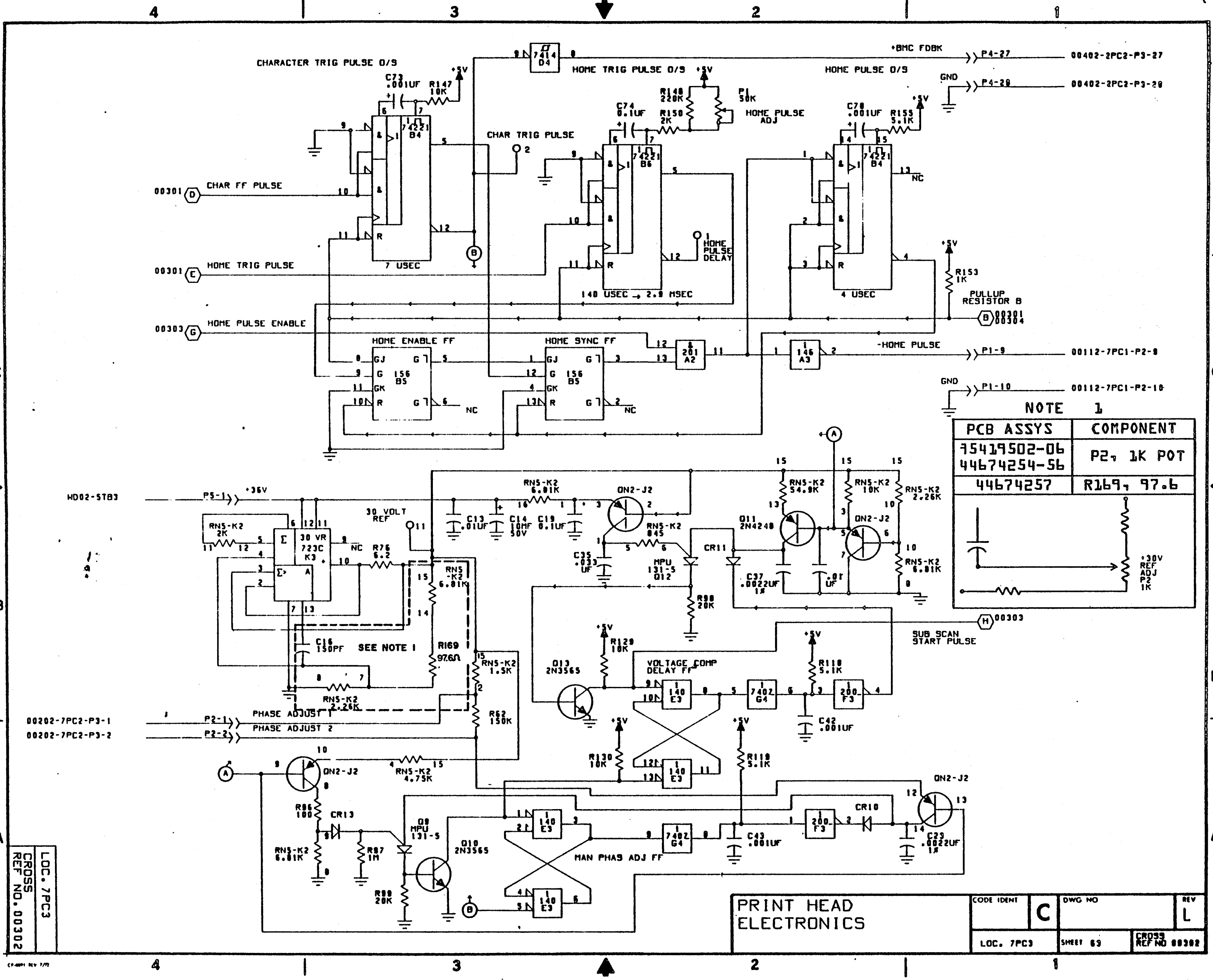


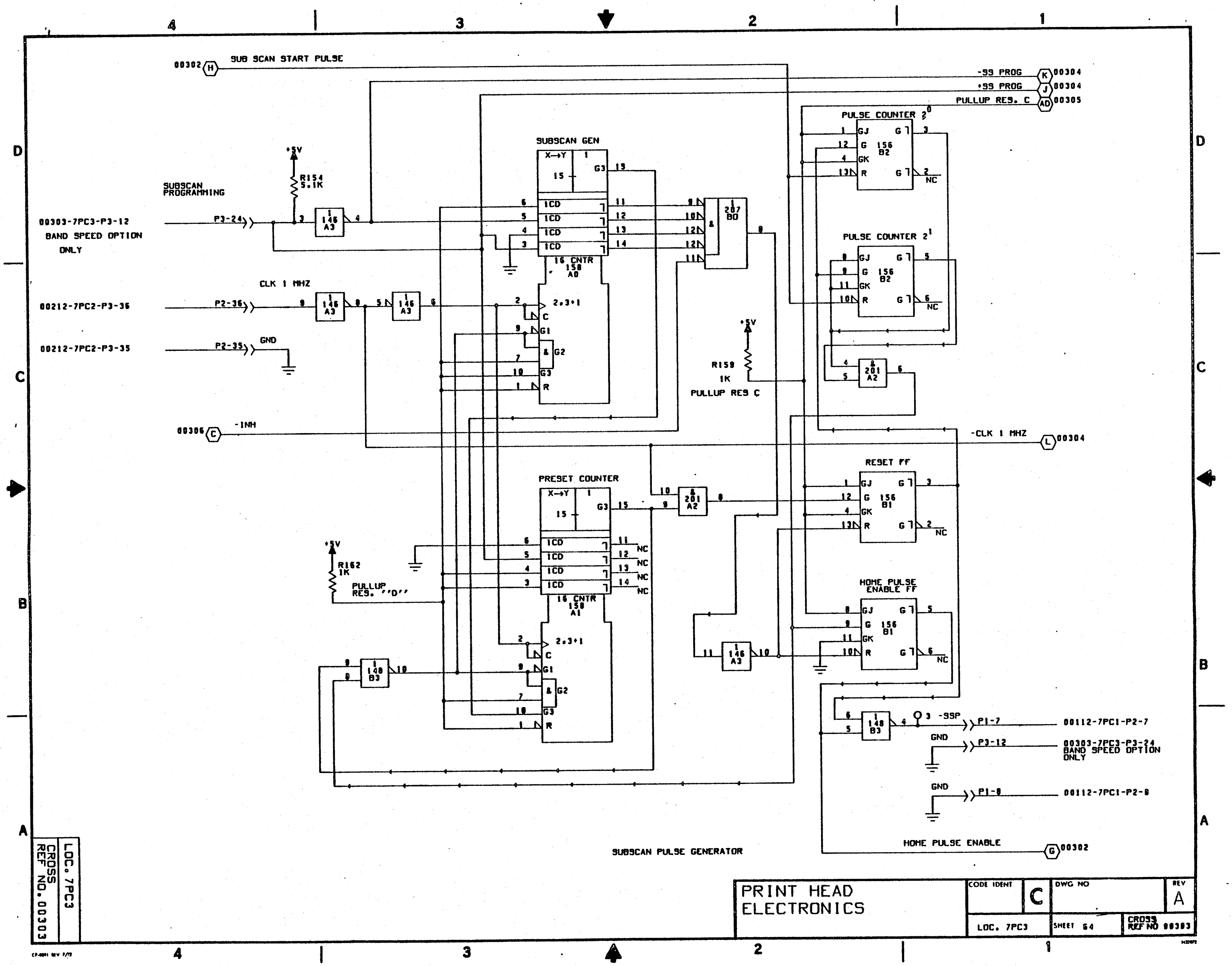
NOTES:

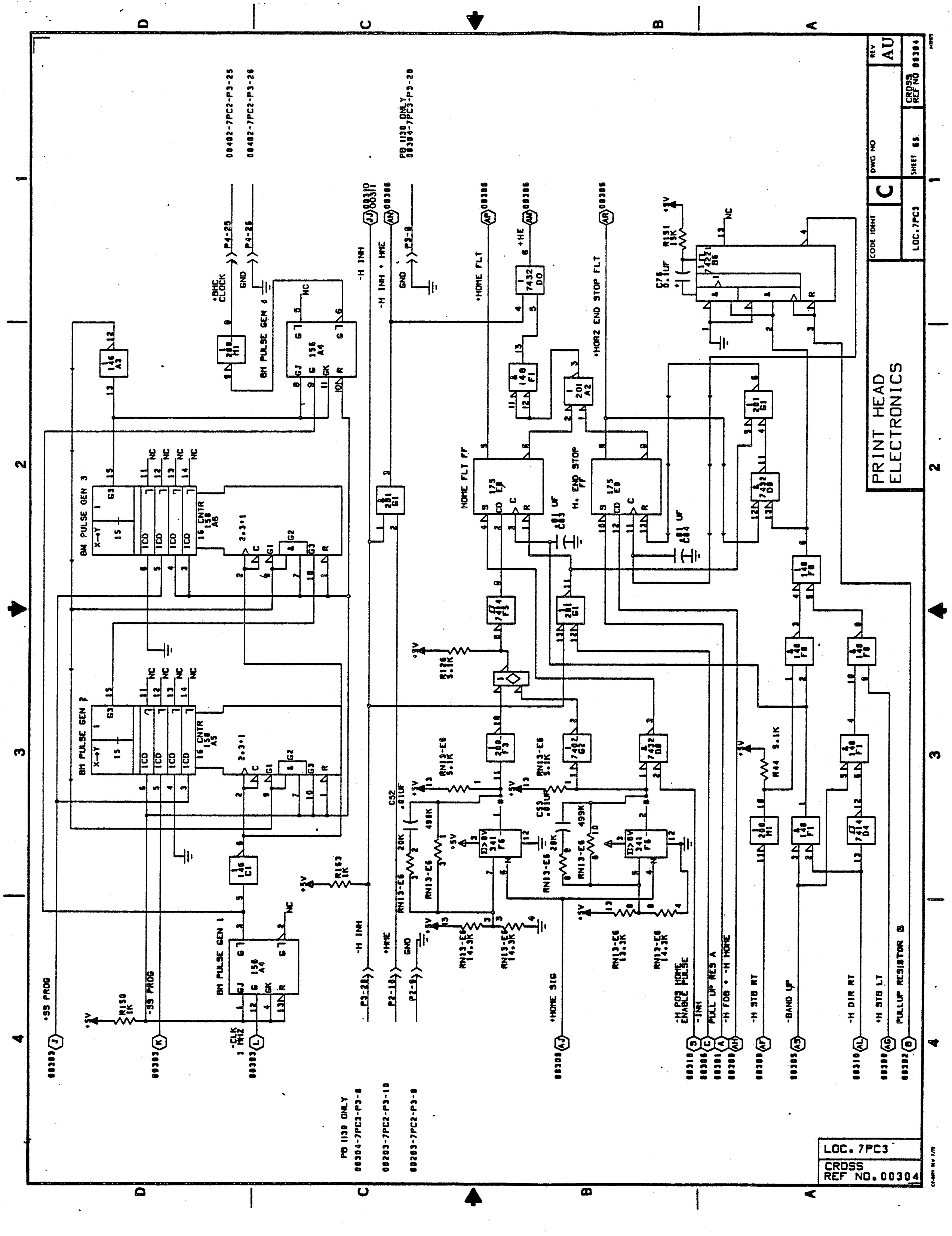
1. C86 ON BOARD 44674256.
2. FND NUM 093 ON BOARD 44674256 TAB 55 WAS 1.1K, TAB 56 IS 2.2K
3. C5 IS 1500 PF ON BOARD 44674256 WAS 390 PF ON BOARD 44674255
4. ADJUSTMENT POTS REPLACED ON BOARDS 44674257 WITH FIXED RESISTORS. P2 IS NOW R169, P4 IS NOW CR22, P7 IS NOW R167, AND P10 IS NOW R168.

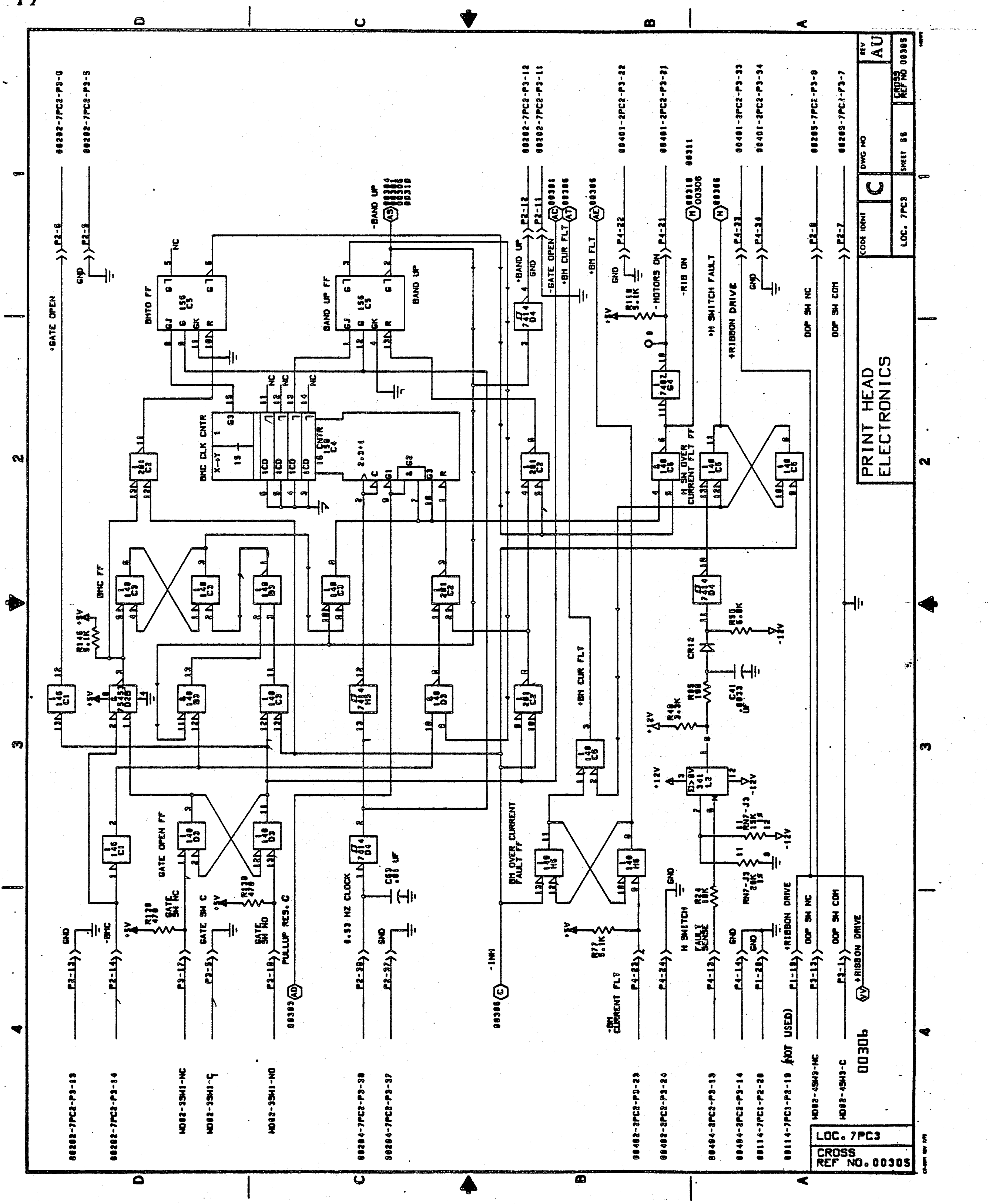
44674255/56/57 PRINT HEAD ELECTRONICS

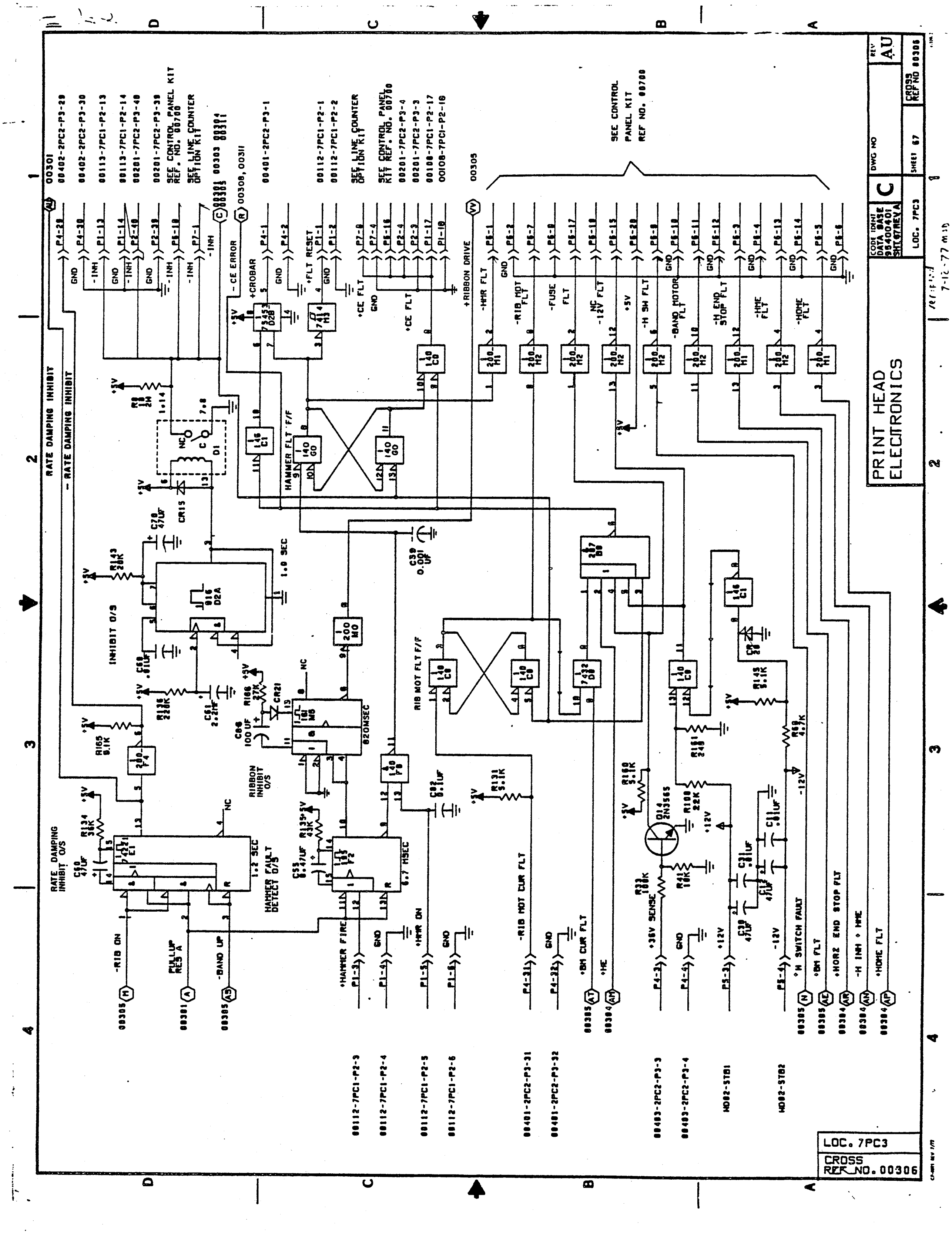

PRINT HEAD ELECTRONICS
NOTES:
1 USED ON BOARD 44674256
CODE IDENT
DWG NO C
REV K
LOC. 7PC3
SHEET 62
CROSS REF NO 00301
LOC. 7PC3
CROSS REF NO. 00301
PULL UP RES A
PMV O/S
1 MSEC
C40 0.1UF
R117 30K
- PMV CLR
GND
P2-33
P2-34
00210-7PC2-P3-33
00210-7PC2-P3-34
00306 00310
CHARACTER FF
CHAR FF PULSE
00302
HOME FF
HOME TRIG PULSE
00302
COMP PITCH FF
-COMP PITCH
P1-11
P1-12
00111-7PC1-P2-11
00111-7PC1-P2-12
-COMP PITCH F/F
00310
SEE COMPRESSED PITCH OPTION KIT
P3-8
RN13-E6 5.1K
COMP PITCH O/S
1.17 MSEC
C65 .047UF
R141 36K
COMP PITCH DELAY O/S
C68 .047UF
R142 24K
780 USEC
PMV SIGNAL
R133 1K
RN8-E6 20K 1%
RN9-E6 1M 1%
RN9-E6 6.19K 1%
RN9-E6 11.5K 1%
RN9-E6 3.57 1%
R9 5.1K
R14 5.1K
C3 .001UF
C4 .001UF
R12 5.1K
R13 75K
R51 75K
R47 5.1K
R16 75K
R15 75K
Q1 MPS-A16
Q2 MPS-A16
Q3 MPS-A16
Q4 MPS-A16
Q5 MPS-A16
Q6 MPS-A16
R4 6.19K 1%
R7 6.19K 1%
R11 30.1K 1%
R10 30.1K 1%
R5 62K
R6 62K
C1 .01UF
C2 .01UF
R1 90.0 1%
PAPER MOTION VERIFICATION
CHARACTER PULSE SIGNAL
HOME PULSE SIGNAL
SHIELD
GND
P3-14
P3-15
P3-2
P3-23
P3-11
P3-9
P3-22
P3-10
HD02- 3L04-1
HD02- 3L04-3
HD02- 3L04-2
HD02- 4L02-1
HD02- 4L02-2
HD02- 4L01+2-5
HD02- 4L01-1
HD02- 4L01-2
PULLUP RESISTOR B
00302
-BAND UP
00305
-CP EN
P3-21
RATE DAMPING INHIBIT
-INH
-GATE OPEN
00306
00306
00305
R128 1K
R3 1K
SEE COMPRESSED PITCH OPTION KIT

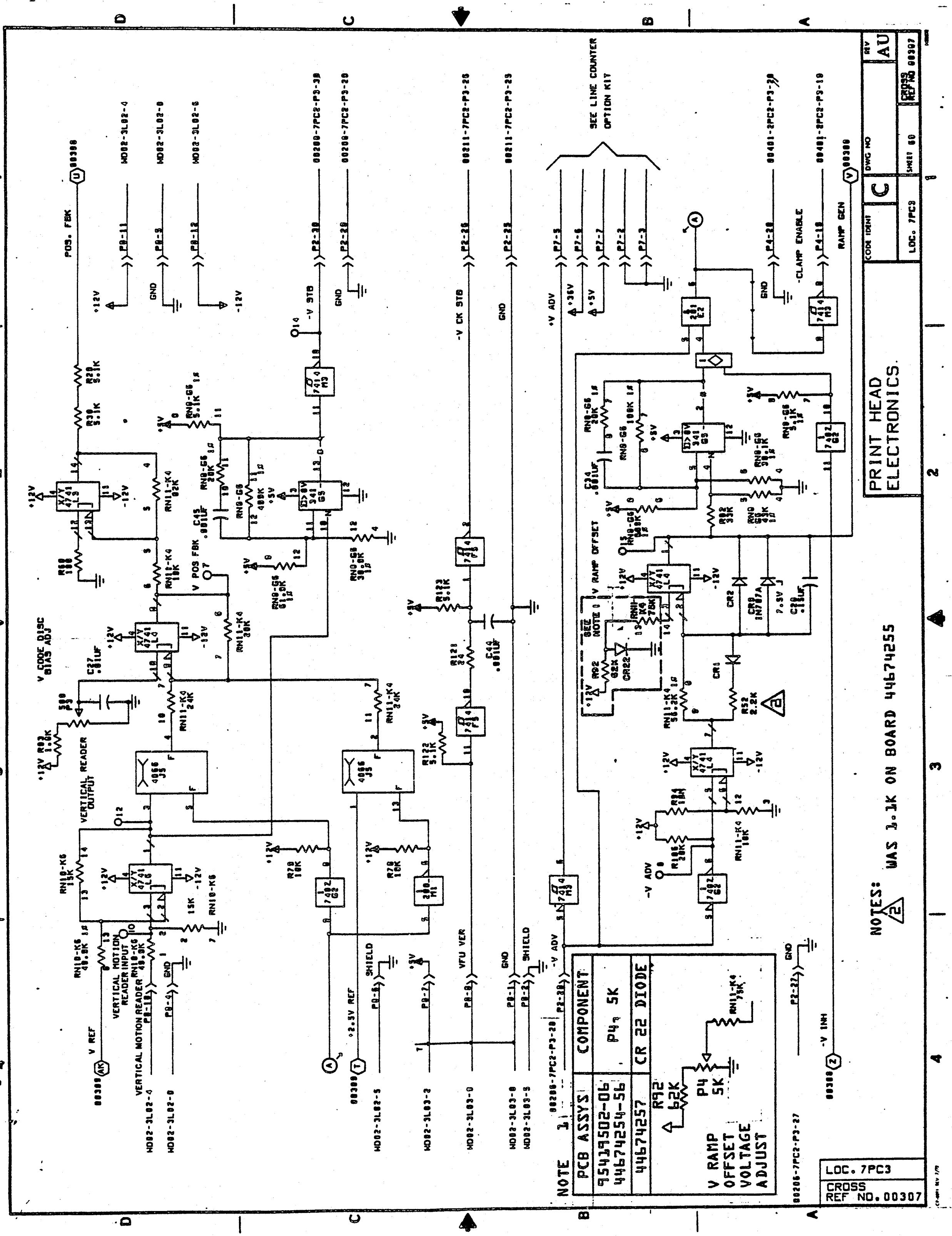

CHARACTER TRIG PULSE O/S
HOME TRIG PULSE O/S
HOME PULSE O/S
+BMC FDBK
P4-27 00402-2PC2-P3-27
GND
P4-28 00402-2PC2-P3-28
C73 .001UF
R147 10K
+5V
74221 B4
7 USEC
CHAR TRIG PULSE
00301 D CHAR FF PULSE
00301 E HOME TRIG PULSE
00303 G HOME PULSE ENABLE
7414 D4
C74 0.1UF
R148 220K
R150 2K
P1 50K
HOME PULSE ADJ
74221 B6
HOME PULSE DELAY
140 USEC → 2.9 MSEC
C78 .001UF
R155 5.1K
74221 B4
4 USEC
NC
R153 1K
PULLUP RESISTOR B
B 00301 00304
HOME ENABLE FF
156 B5
HOME SYNC FF
156 B5
201 A2
146 A3
-HOME PULSE
P1-9 00112-7PC1-P2-8
GND
P1-10 00112-7PC1-P2-10
NOTE 1
PCB ASSYS | COMPONENT
75419502-06 44674254-56 | P2, 1K POT
44674257 | R169, 97.6
+30V REF ADJ P2 1K
HD02-STB3
P5-1 +36V
RN5-K2 2K
30 VR 723C K3
30 VOLT REF
R76 6.2
RN5-K2 6.81K
C13 .01UF
C14 10MF 50V
C19 0.1UF
QN2-J2
RN5-K2 845
C35 .033 UF
MPU 131-5 Q12
CR11
R98 20K
Q11 2N4248
RN5-K2 54.9K
RN5-K2 10K
RN5-K2 2.26K
QN2-J2
RN5-K2 6.81K
C37 .0022UF 1%
.01 UF
C16 150PF
SEE NOTE 1
R169 97.6Ω
RN5-K2 1.5K
R62 150K
RN5-K2 2.26K
00202-7PC2-P3-1 P2-1 PHASE ADJUST 1
00202-7PC2-P3-2 P2-2 PHASE ADJUST 2
Q13 2N3565
R129 10K
VOLTAGE COMP DELAY FF
140 E3
7402 G4
R118 5.1K
200 F3
C42 .001UF
H 00303 SUB SCAN START PULSE
R130 10K
R119 5.1K
QN2-J2
RN5-K2 4.75K
R86 100
CR13
RN5-K2 6.81K
R87 1M
Q8 MPU 131-5
Q10 2N3565
R88 20K
MAN PHAS ADJ FF
140 E3
7402 G4
C43 .001UF
200 F3
CR10
QN2-J2
C23 .0022UF 1%
PRINT HEAD ELECTRONICS
CODE IDENT C
DWG NO
REV L
LOC. 7PC3
SHEET 63
CROSS REF NO 00302
LOC. 7PC3
CROSS REF NO. 00302

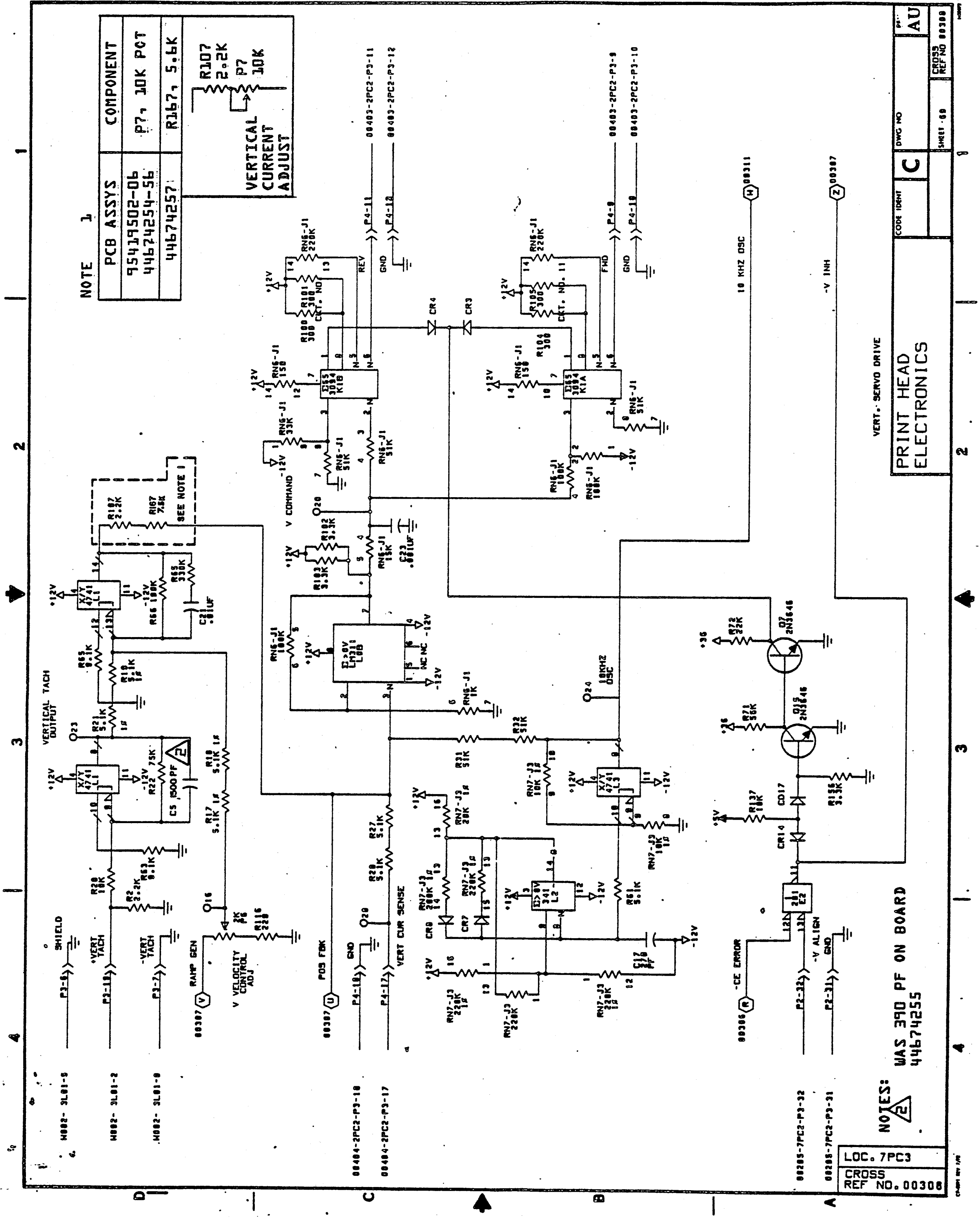

SUBSCAN PULSE GENERATOR
PRINT HEAD ELECTRONICS
CODE IDENT C
DWG NO
REV A
LOC. 7PC3
SHEET 64
CROSS REF NO 00303
LOC. 7PC3
CROSS REF NO. 00303
00302 H SUB SCAN START PULSE
-99 PROG K 00304
+99 PROG J 00304
PULLUP RES. C AD 00305
SUBSCAN PROGRAMMING
00303-7PC3-P3-12 BAND SPEED OPTION ONLY
P3-24
R154 5.1K
+5V
CLK 1 MHZ
00212-7PC2-P3-36
P2-36
00212-7PC2-P3-35
P2-35
GND
00306 C -INH
146 A3
SUBSCAN GEN
X→Y
16 CNTR 158 A0
2,3+1
PRESET COUNTER
16 CNTR 158 A1
207 B0
201 A2
R159 1K PULLUP RES C
R162 1K PULLUP RES. "D"
148 B3
PULSE COUNTER 2^0
PULSE COUNTER 2^1
156 B2
RESET FF
HOME PULSE ENABLE FF
156 B1
-CLK 1 MHZ L 00304
-99P
P1-7 00112-7PC1-P2-7
P3-12 00303-7PC3-P3-24 BAND SPEED OPTION ONLY
P1-8 00112-7PC1-P2-8
HOME PULSE ENABLE G 00302
NC

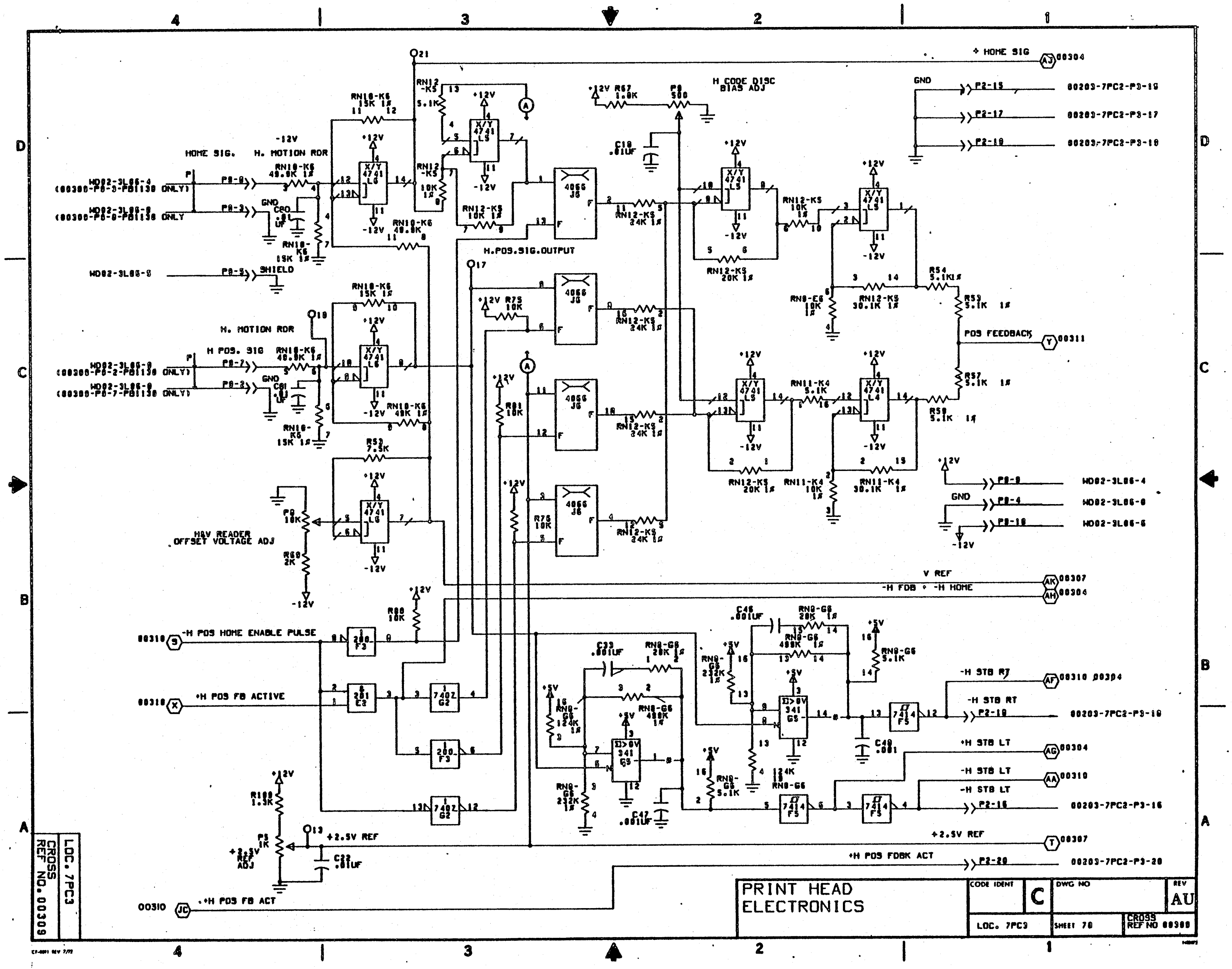

PRINT HEAD ELECTRONICS
CODE IDENT C
DWG NO
REV AU
LOC. 7PC3
SHEET 65
CROSS REF NO 00304
LOC. 7PC3
CROSS REF NO. 00304
BM PULSE GEN 1
BM PULSE GEN 2
BM PULSE GEN 3
BM PULSE GEN 6
156 A4
16 CNTR 158 A5
16 CNTR 158 A6
146 C1
146 A3
280 H1
HOME FLT FF
175 E0
H. END STOP FF
175 E0
7432 D0
148 F1
201 A2
201 G1
7432 D0
7402 G2
200 F3
7414 F5
148 F0
148 F1
7414 D4
200 H1
341 F6
74221 B6
+BMC CLOCK
GND
P4-25
P4-26
00402-7PC2-P3-25
00402-7PC2-P3-26
-H INH
-H INH • HME
P3-9
PB 1130 ONLY 00304-7PC3-P3-20
+HOME FLT
+HE
+HORZ END STOP FLT
+99 PROG
-99 PROG
R158 1K
R163 1K
R126 5.1K
R151 15K
R44 5.1K
C52 .01UF
C53 .01UF
C76 0.1UF
C83 .01 UF
C84 .01 UF
RN13-E6 14.3K
RN13-E6 13.3K
RN13-E6 5.1K
RN13-E6 20K
499K
-CLK 1 MHZ
+HOME SIG
-H POS HOME ENABLE PULSE
-INH
PULL UP RES A
-H FDB • -H HOME
-H STB RT
-BAND UP
-H DIR RT
+H STB LT
PULLUP RESISTOR B
PB 1130 ONLY
00304-7PC3-P3-8
00203-7PC2-P3-10
00203-7PC2-P3-9
P3-20
P2-10
P2-9
+HME
+5V
NC

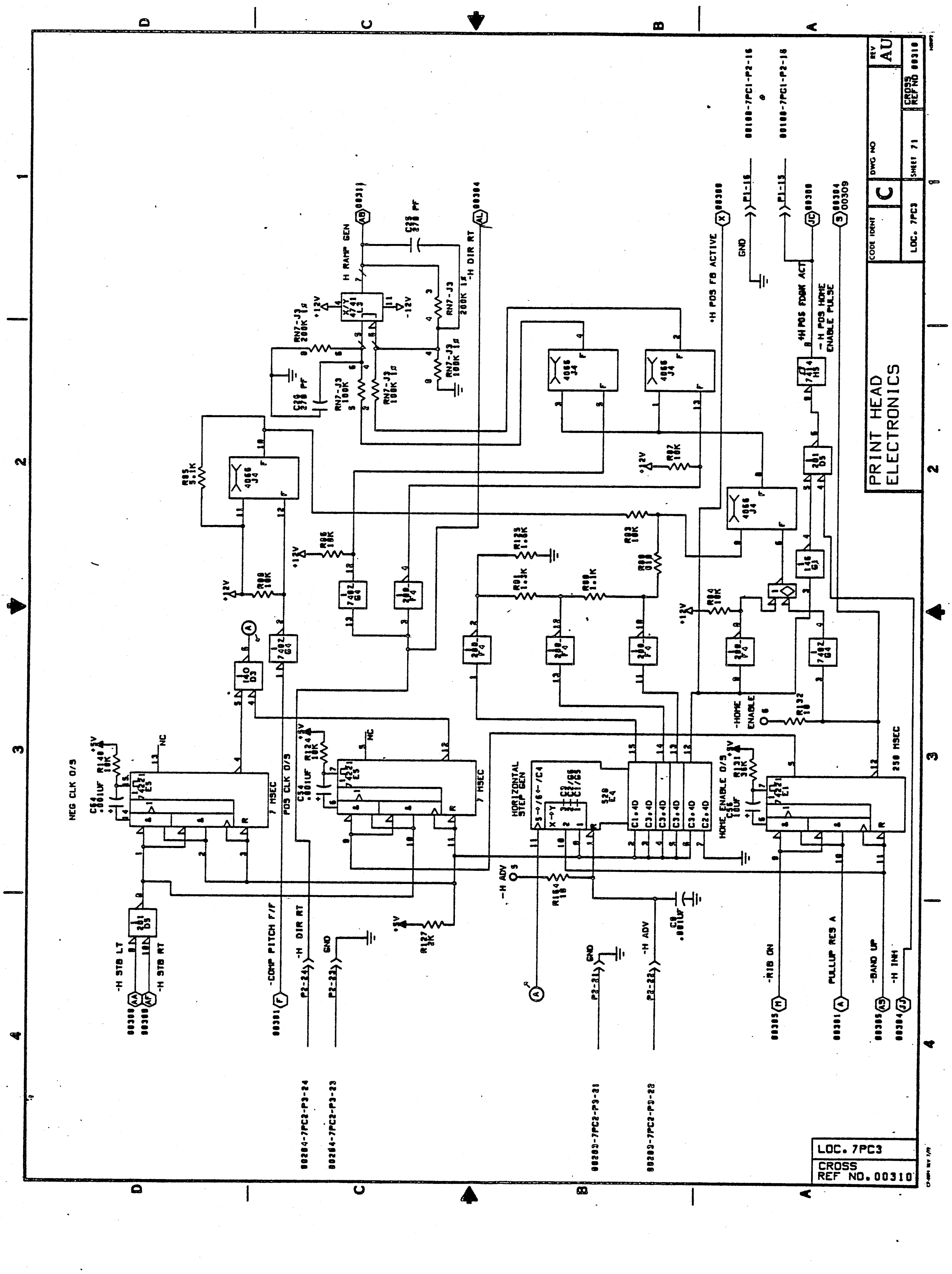

PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00305
00306
BMTO FF
BAND UP FF
BMC CLK CNTR
BMC FF
GATE OPEN FF
BM OVER CURRENT FAULT FF
H SW OVER CURRENT FLT FF
+GATE OPEN
-BAND UP
+BAND UP
-GATE OPEN
+BM CUR FLT
+BM FLT
-MOTORS ON
-R18 ON
+H SWITCH FAULT
+RIBBON DRIVE
DDP SW NC
DDP SW COM
-BMC
GATE SW NC
GATE SW C
GATE SW NO
PULLUP RES. C
0.93 HZ CLOCK
-INH
-BM CURRENT FLT
H SWITCH FAULT SENSE
+BM CUR FLT
(NOT USED)
GND

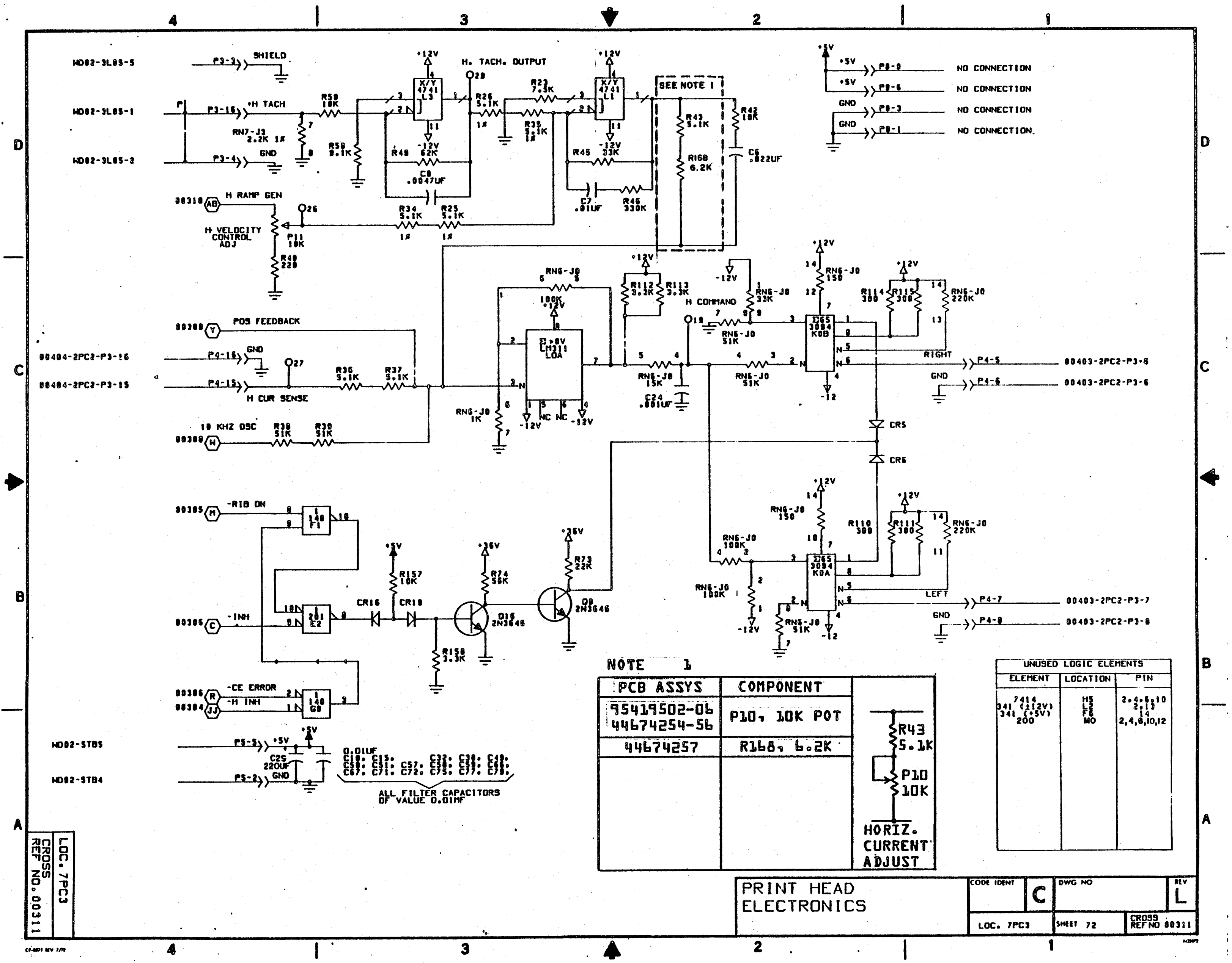

PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00306
DWG NO
C
CODE IDENT DATA BASE 95400401 SHT 67 REV A
SHEET 67
REV AU
SEE CONTROL PANEL KIT REF NO. 00700
SEE LINE COUNTER OPTION KIT
RATE DAMPING INHIBIT
- RATE DAMPING INHIBIT
INHIBIT O/S
1.0 SEC
RATE DAMPING INHIBIT O/S
1.2 SEC
HAMMER FAULT DETECT O/S
6.7 MSEC
RIBBON INHIBIT O/S
620MSEC
HAMMER FLT F/F
RIB MOT FLT F/F
-CE ERROR
+CROBAR
+FLT RESET
+CE FLT
+RIBBON DRIVE
-HMR FLT
-RIB MOT FLT
-FUSE FLT
-NC -12V FLT
+5V
-H SW FLT
-BAND MOTOR FLT
-H END STOP FLT
-HME FLT
-HOME FLT
-RIB ON
PULLUP RES A
-BAND UP
+HAMMER FIRE
+HMR ON
-RIB MOT CUR FLT
+BM CUR FLT
+HE
+36V SENSE
+12V
-12V
+H SWITCH FAULT
+BM FLT
+HORZ END STOP FLT
-H INH + HME
+HOME FLT
Q14 2N3565
D1
CR15
CR21


PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00307
CODE IDENT
DWG NO
C
REV
AU
SHEET 60
NOTES:
2 WAS 1.1K ON BOARD 44674255
NOTE 1
PCB ASSYS
COMPONENT
95419502-06
44674254-56
P4, 5K
44674257
CR 22 DIODE
V RAMP OFFSET VOLTAGE ADJUST
R92 62K
P4 5K
RN11-K4 75K
POS. FBK
V POS FBK
V CODE DISC BIAS ADJ
VERTICAL READER OUTPUT
VERTICAL MOTION READER INPUT
VERTICAL MOTION READER
V REF
+2.5V REF
SHIELD
VFU VER
GND
-V ADV
+V ADV
-V STB
-V CK STB
V RAMP OFFSET
SEE NOTE 1
SEE LINE COUNTER OPTION KIT
-CLAMP ENABLE
RAMP GEN
-V INH
+12V
-12V
+5V
+36V
4741 L3
4741 L4
4741 L6
4066 J5
7414 M3
7414 F5
7402 G2
341 G5
208 H1
281 E2
R29 5.1K
R30 5.1K
R88 100
R93 1.0K
P3 500
C27 .01UF
C45 .001UF
C44 .001UF
C34 .001UF
C28 .15UF
R121 24
R122 5.1K
R123 5.1K
R78 10K
R79 10K
R84 18K
R106 20K
R52 2.2K
R82 33K
CR1
CR2
CR8 1N747A
CR22
RN11-K4 92K
RN11-K4 10K
RN11-K4 30K
RN11-K4 24K
RN11-K4 58.2K
RN10-K6 15K
RN10-K6 49.9K
RN9-G6 5.1K
RN9-G6 20K
RN9-G6 499K
RN9-G6 61.9K
RN9-G6 30.9K
RN9-G6 100K
RN9-G6 499K
RN9-G6 43K
P8-11
P8-9
P8-12
P8-10
P8-4
P8-5
P8-7
P8-8
P8-1
P8-2
P2-30
P2-29
P2-26
P2-25
P2-28
P2-27
P2-22
P7-5
P7-6
P7-7
P7-2
P7-3
P4-20
P4-19
HD02-3L02-4
HD02-3L02-8
HD02-3L02-6
HD02-3L02-5
HD02-3L03-2
HD02-3L03-6
HD02-3L03-8
HD02-3L03-5
00209-7PC2-P3-30
00209-7PC2-P3-29
00211-7PC2-P3-26
00211-7PC2-P3-25
00209-7PC2-P3-28
00209-7PC2-P3-27
00401-2PC2-P3-20
00401-2PC2-P3-19
00308
A
B
C
D
1
2
3
4

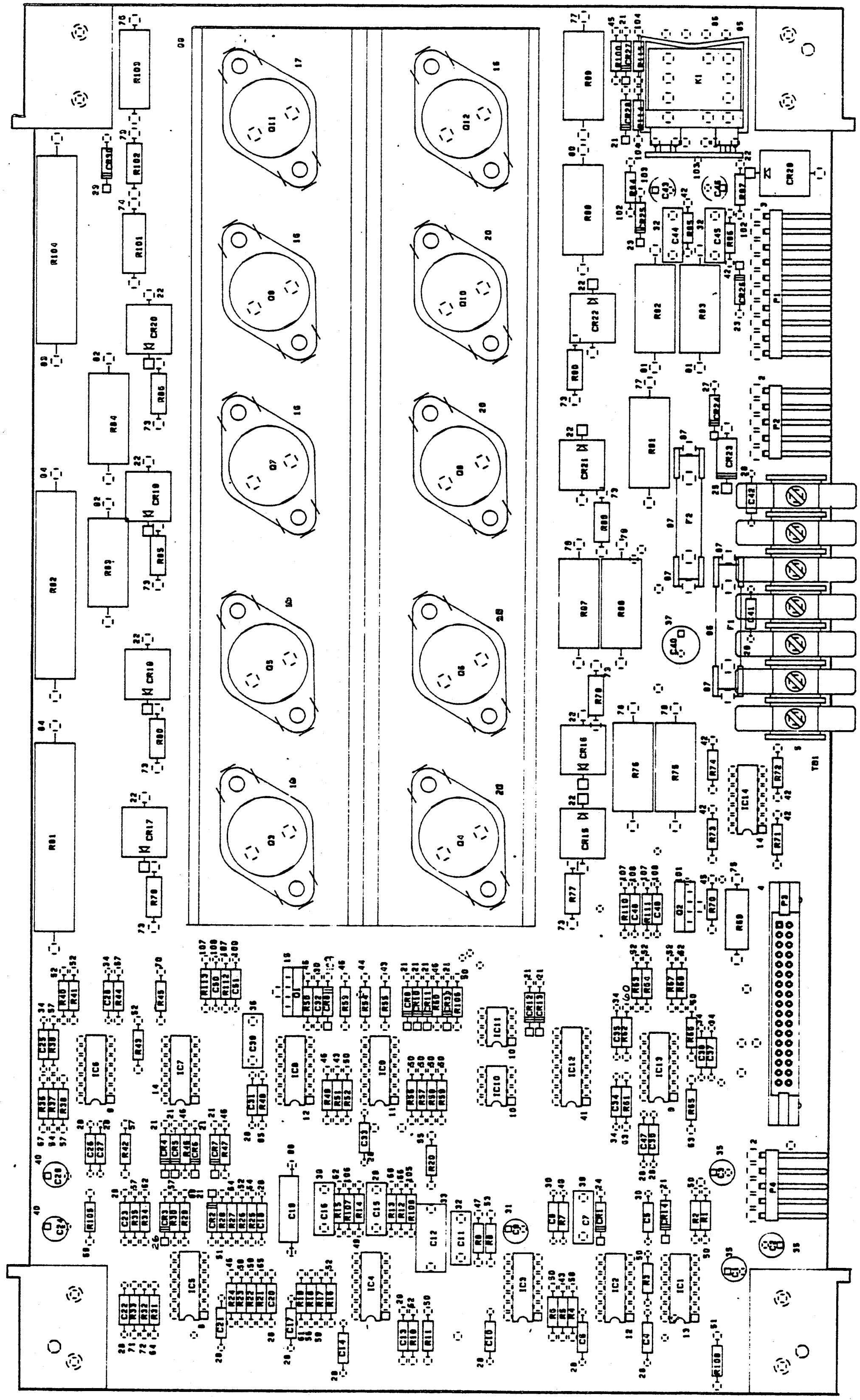

NOTE 1
PCB ASSYS
COMPONENT
95419502-06
44674254-56
P7, 10K PCT
44674257
R167, 5.6K
R107 2.2K
P7 10K
VERTICAL CURRENT ADJUST
VERT. SERVO DRIVE
PRINT HEAD ELECTRONICS
CODE IDENT
C
DWG NO
AU
CROSS REF NO 00308
LOC. 7PC3
CROSS REF NO. 00308
NOTES:
2
WAS 390 PF ON BOARD 44674255
VERTICAL TACH OUTPUT
V COMMAND
VERT CUR SENSE
POS FBK
RAMP GEN
V VELOCITY CONTROL ADJ
SHIELD
+VERT TACH
-VERT TACH
10 KHZ OSC
-V INH
-CE ERROR
-V ALIGN
GND
REV
FWD
SEE NOTE 1
2N3646


PRINT HEAD ELECTRONICS
CODE IDENT C
DWG NO
REV AU
LOC. 7PC3
SHEET 70
CROSS REF NO 00309
LOC. 7PC3
CROSS REF NO. 00309
+ HOME SIG
00304
GND
P2-15
P2-17
P2-19
00203-7PC2-P3-19
00203-7PC2-P3-17
00203-7PC2-P3-18
H CODE DISC BIAS ADJ
+12V R67 1.0K
P8 500
C18 .01UF
HOME SIG.
H. MOTION RDR
-12V
RN10-K6 40.0K 1%
RN10-K6 15K 1%
RN12-K5 5.1K
RN12-K5 10K 1%
X/Y 4741 L6
X/Y 4741 L5
4066 J6
RN12-K5 24K 1%
RN12-K5 20K 1%
RN12-K5 30.1K 1%
RN8-E6 10K 1%
R54 5.1K 1%
R53 5.1K 1%
POS FEEDBACK
00311
R57 5.1K 1%
R58 5.1K 1%
RN11-K4 5.1K
RN11-K4 10K 1%
RN11-K4 30.1K 1%
X/Y 4741 L4
HD02-3L86-4
HD02-3L86-8
HD02-3L86-5
(00300-P8-3-PB1130 ONLY)
(00300-P8-8-PB1130 ONLY)
SHIELD
H.POS.SIG.OUTPUT
H. MOTION RDR
H POS. SIG
(00300-P8-2-PB1130 ONLY)
(00300-P8-7-PB1130 ONLY)
C80 .01 UF
C81 .01 UF
R75 10K
R81 10K
R76 10K
R53 7.5K
P9 10K
R69 2K
H&V READER OFFSET VOLTAGE ADJ
P8-9
P8-4
P8-10
V REF
00307
-H FDB + -H HOME
00304
R80 10K
00310
-H POS HOME ENABLE PULSE
200 F3
+H POS FB ACTIVE
281 E2
7402 G2
C33 .001UF
C46 .001UF
RN8-G6 20K 1%
RN8-G6 400K 1%
RN8-G6 232K 1%
RN8-G6 124K 1%
RN8-G6 5.1K
341 G5
C47 .001UF
C49 .001
7414 F5
-H STB RT
00310 00304
-H STB RT
P2-10
00203-7PC2-P3-10
+H STB LT
00304
-H STB LT
00310
-H STB LT
P2-16
00203-7PC2-P3-16
R100 1.3K
P1 1K
+2.5V REF ADJ
C32 .01UF
+2.5V REF
+2.5V REF
00307
+H POS FDBK ACT
P2-20
00203-7PC2-P3-20
+H POS FB ACT
00310


PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00310
CODE IDENT C
SHEET 71
REV AU
NEG CLK O/S
POS CLK O/S
7 MSEC
HORIZONTAL STEP GEN
HOME ENABLE O/S
250 MSEC
H RAMP GEN
-H DIR RT
+H POS FB ACTIVE
+H POS FDBK ACT
-H POS HOME ENABLE PULSE
-HOME ENABLE
-H STB LT
-H STB RT
-COMP PITCH F/F
-H ADV
-RIB ON
PULLUP RES A
-BAND UP
-H INH
GND
+12V
-12V
+5V
4066 J4
4741 L3
74221 E5
74221 E1
7402 G4
7404 H5
00180-7PC1-P2-16
00180-7PC1-P2-15
00284-7PC2-P3-24
00284-7PC2-P3-23
00283-7PC2-P3-21
00283-7PC2-P3-22

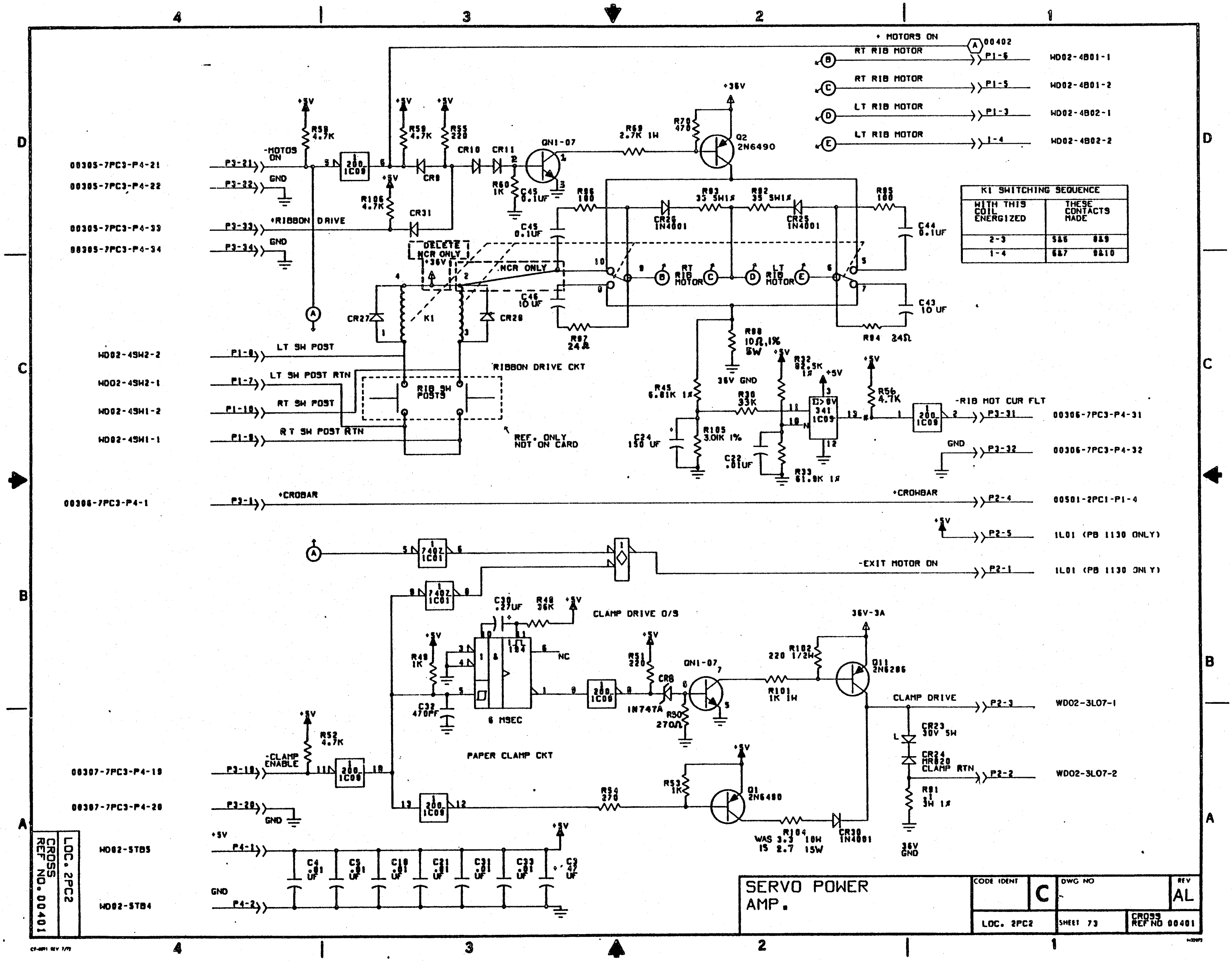


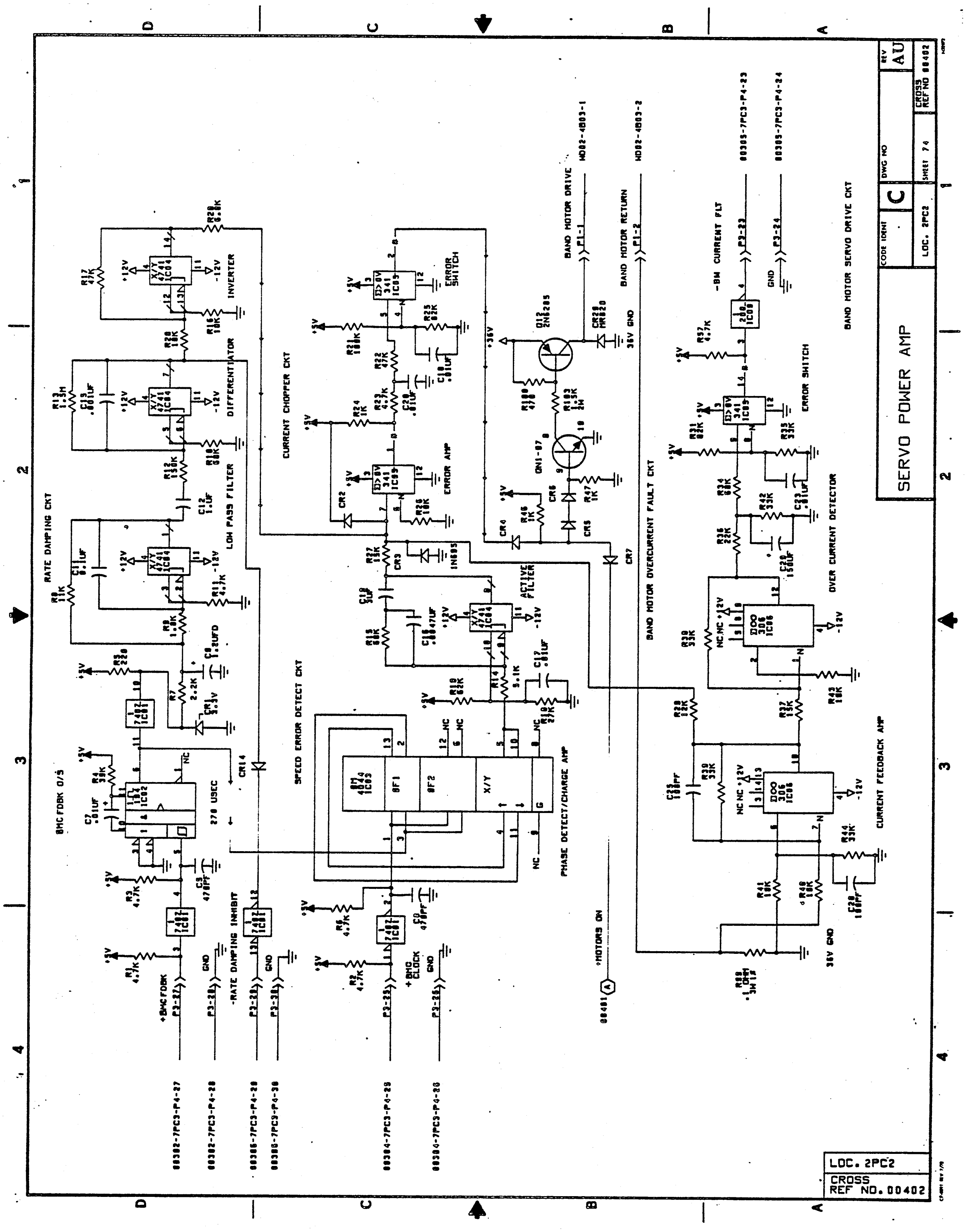
WD02-3L05-5
P3-3
SHIELD
WD02-3L05-1
P
P3-16
+H TACH
RN7-J3 2.2K 1%
WD02-3L05-2
P3-4
GND
R50 10K
R59 9.1K
+12V
X/Y 4741 L3
R49 62K
-12V
C8 .0047UF
H. TACH. OUTPUT
29
R26 5.1K 1%
R23 7.5K
R35 5.1K 1%
X/Y 4741 L1
R45 33K
C7 .01UF
R46 330K
SEE NOTE 1
R43 5.1K
R168 6.2K
R42 10K
C6 .022UF
00310 AB
H RAMP GEN
26
H VELOCITY CONTROL ADJ
P11 10K
R40 220
R34 5.1K 1%
R25 5.1K 1%
+5V
P8-9
P8-6
P8-3
P8-1
NO CONNECTION
NO CONNECTION
NO CONNECTION
NO CONNECTION.
00308 Y
POS FEEDBACK
00404-2PC2-P3-16
P4-16
GND
27
00404-2PC2-P3-15
P4-15
H CUR SENSE
R36 5.1K
R37 5.1K
10 KHZ OSC
00309 W
R38 51K
R39 51K
RN6-J0 100K
LM311 L0A
NC NC
RN6-J0 1K
R112 3.3K
R113 3.3K
RN6-J0 15K
C24 .001UF
H COMMAND
19
RN6-J0 33K
RN6-J0 51K
RN6-J0 150
Σ65 3094 K0B
R114 300
R115 300
RN6-J0 220K
RIGHT
P4-5
00403-2PC2-P3-5
P4-6
00403-2PC2-P3-6
CR5
CR6
-12
00305 M
-RIB ON
140 F1
00306 C
-INH
281 E2
00306 R
-CE ERROR
00304 JJ
-H INH
140 G0
CR16
CR19
R157 10K
+36V
R74 56K
Q16 2N3646
R158 3.3K
R73 22K
Q8 2N3646
RN6-J0 100K
R110 300
R111 300
Σ65 3094 K0A
LEFT
P4-7
00403-2PC2-P3-7
P4-8
00403-2PC2-P3-8
WD02-STB5
P5-3
WD02-STB4
P5-2
C25 220UF
0.01UF
C10: C15: C32: C38: C48:
C50: C51: C57: C58: C59: C60:
C67: C71: C72: C75: C77: C78:
ALL FILTER CAPACITORS OF VALUE 0.01MF
NOTE 1
PCB ASSYS
COMPONENT
95419502-06
44674254-56
P10, 10K POT
44674257
R168, 6.2K
R43 5.1K
P10 10K
HORIZ. CURRENT ADJUST
UNUSED LOGIC ELEMENTS
ELEMENT
LOCATION
PIN
7414
341 (±12V)
341 (+5V)
200
H5
L2
F6
M0
2,4,6,10
2,13
14
2,4,6,10,12
PRINT HEAD ELECTRONICS
CODE IDENT
C
DWG NO
REV
L
LOC. 7PC3
SHEET 72
CROSS REF NO 00311
LOC. 7PC3
CROSS REF NO. 00311

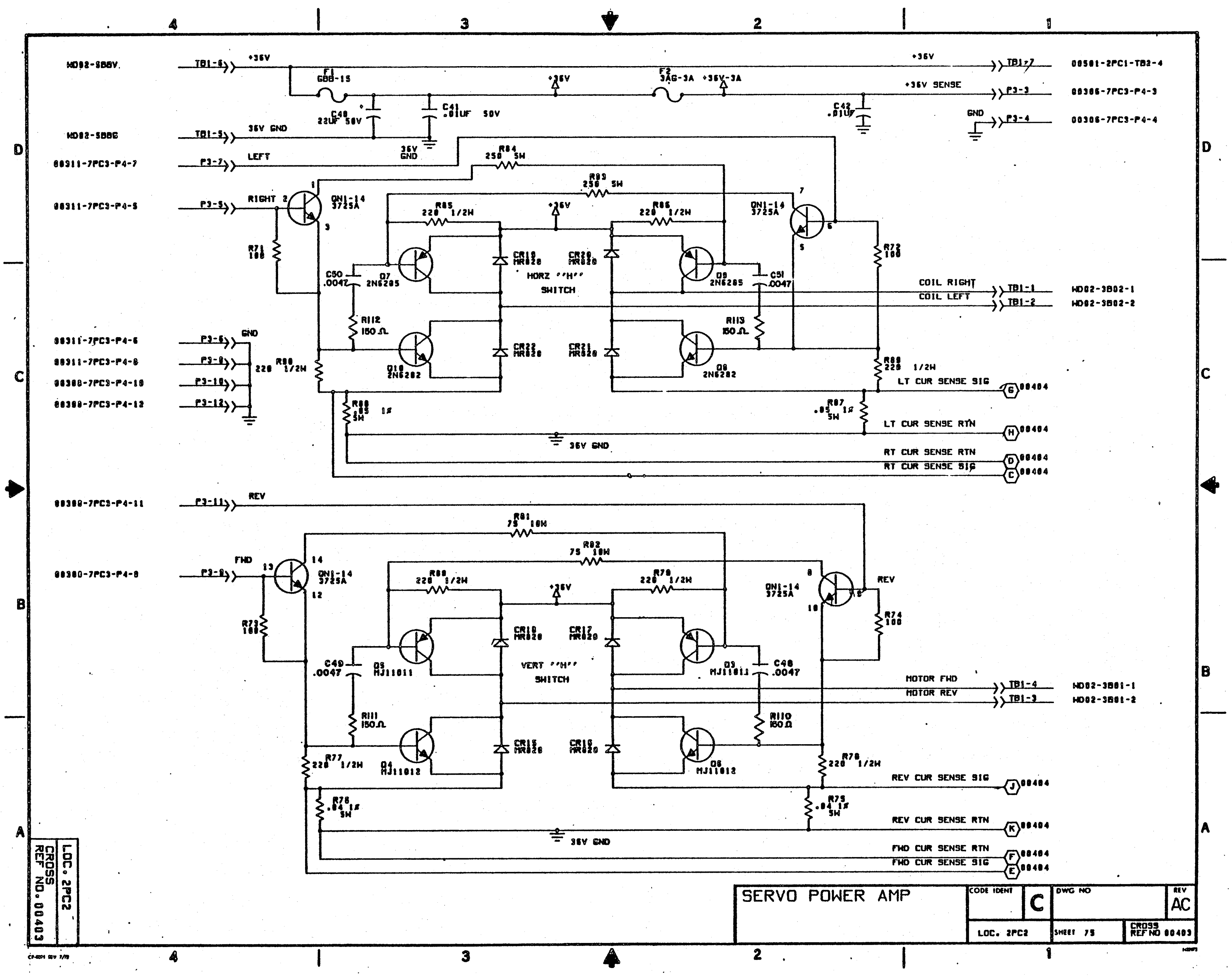


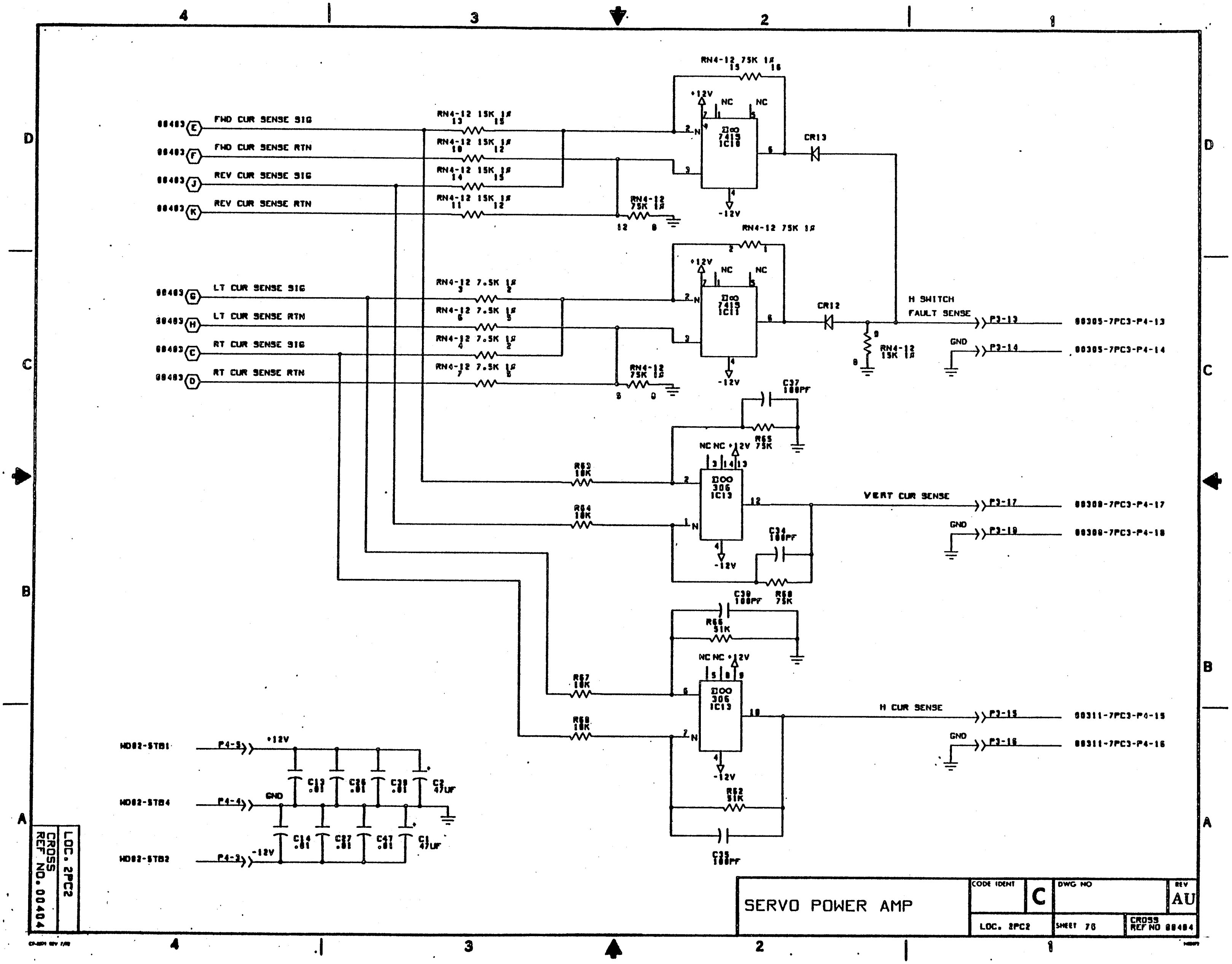
△1 SEE PARTS MANUAL

SERVO POWER AMPLIFIER


+MOTORS ON
RT RIB MOTOR
LT RIB MOTOR
WD02-4B01-1
WD02-4B01-2
WD02-4B02-1
WD02-4B02-2
00305-7PC3-P4-21
00305-7PC3-P4-22
00305-7PC3-P4-33
00305-7PC3-P4-34
-MOTORS ON
+RIBBON DRIVE
GND
+36V
Q2 2N6490
QN1-07
K1
LT SW POST
LT SW POST RTN
RT SW POST
RT SW POST RTN
WD02-4SH2-2
WD02-4SH2-1
WD02-4SH1-2
WD02-4SH1-1
RIB SW POSTS
RIBBON DRIVE CKT
REF. ONLY NOT ON CARD
DELETE NCR ONLY
NCR ONLY
K1 SWITCHING SEQUENCE
WITH THIS COIL ENERGIZED
THESE CONTACTS MADE
2-3 5&6 8&9
1-4 6&7 9&10
36V GND
-RIB MOT CUR FLT
00306-7PC3-P4-31
00306-7PC3-P4-32
+CROBAR
+CROWBAR
00306-7PC3-P4-1
00501-2PC1-P1-4
1L01 (PB 1130 ONLY)
-EXIT MOTOR ON
CLAMP DRIVE O/S
6 MSEC
PAPER CLAMP CKT
36V-3A
Q11 2N6286
Q1 2N6480
CLAMP DRIVE
CLAMP RTN
WD02-3L07-1
WD02-3L07-2
-CLAMP ENABLE
00307-7PC3-P4-19
00307-7PC3-P4-20
WD02-5TB5
WD02-5TB4
WAS 3.3 10W IS 2.7 15W
36V GND
SERVO POWER AMP.
CODE IDENT C
DWG NO
REV AL
LOC. 2PC2
SHEET 73
CROSS REF NO 00401


SERVO POWER AMP
LOC. 2PC2
CROSS REF NO. 00402
CODE IDENT
DWG NO
C
REV
AU
SHEET 74
RATE DAMPING CKT
LOW PASS FILTER
DIFFERENTIATOR
INVERTER
CURRENT CHOPPER CKT
ERROR AMP
ERROR SWITCH
ACTIVE FILTER
SPEED ERROR DETECT CKT
PHASE DETECT/CHARGE AMP
BMC FDBK O/S
270 USEC
BAND MOTOR DRIVE
BAND MOTOR RETURN
BAND MOTOR OVERCURRENT FAULT CKT
OVER CURRENT DETECTOR
CURRENT FEEDBACK AMP
-BM CURRENT FLT
BAND MOTOR SERVO DRIVE CKT
+BMC FDBK
-RATE DAMPING INHIBIT
+BMC CLOCK
GND
MOTORS ON
36V GND
HD02-4503-1
HD02-4503-2
00305-7PC3-P4-23
00305-7PC3-P4-24
00302-7PC3-P4-27
00302-7PC3-P4-28
00306-7PC3-P4-28
00306-7PC3-P4-30
00304-7PC3-P4-29
00304-7PC3-P4-30


SERVO POWER AMP
CODE IDENT C
DWG NO
REV AC
LOC. 2PC2
SHEET 75
CROSS REF NO 00403
LOC. 2PC2
CROSS REF NO. 00403
HD02-SBBV.
HD02-SBBG
00311-7PC3-P4-7
00311-7PC3-P4-5
00311-7PC3-P4-6
00311-7PC3-P4-8
00308-7PC3-P4-10
00308-7PC3-P4-12
00308-7PC3-P4-11
00308-7PC3-P4-9
TB1-6
TB1-5
P3-7
P3-5
P3-6
P3-8
P3-10
P3-12
P3-11
P3-9
+36V
36V GND
LEFT
RIGHT
GND
REV
FWD
F1 GBB-15
C40 22UF 50V
C41 .01UF 50V
36V GND
F2 3AG-3A
+36V-3A
+36V SENSE
C42 .01UF
GND
TB1-7
P3-3
P3-4
00501-2PC1-TB2-4
00306-7PC3-P4-3
00306-7PC3-P4-4
R84 250 5W
R83 250 5W
QN1-14 3725A
R71 100
R85 220 1/2W
R86 220 1/2W
C50 .0047
Q7 2N6285
Q9 2N6285
C51 .0047
CR19 MR820
CR20 MR820
HORZ "H" SWITCH
R112 150 Ω
R113 150 Ω
Q10 2N6282
Q8 2N6282
CR22 MR820
CR21 MR820
R90 220 1/2W
R89 220 1/2W
R88 .05 1% 5W
R87 .05 1% 5W
R72 100
COIL RIGHT
COIL LEFT
TB1-1
TB1-2
HD02-3B02-1
HD02-3B02-2
LT CUR SENSE SIG
LT CUR SENSE RTN
RT CUR SENSE RTN
RT CUR SENSE SIG
36V GND
00404
R81 75 10W
R82 75 10W
R73 100
R80 220 1/2W
R79 220 1/2W
C49 .0047
Q5 MJ11011
Q3 MJ11011
C48 .0047
CR18 MR820
CR17 MR820
VERT "H" SWITCH
R111 150 Ω
R110 150 Ω
Q4 MJ11012
Q6 MJ11012
CR15 MR820
CR16 MR820
R77 220 1/2W
R78 220 1/2W
R76 .04 1% 5W
R75 .04 1% 5W
R74 100
MOTOR FWD
MOTOR REV
TB1-4
TB1-3
HD02-3B01-1
HD02-3B01-2
REV CUR SENSE SIG
REV CUR SENSE RTN
FWD CUR SENSE RTN
FWD CUR SENSE SIG
G
H
D
C
J
K
F
E
A
B
C
D
1
2
3
4



SERVO POWER AMP

CODE IDENT C

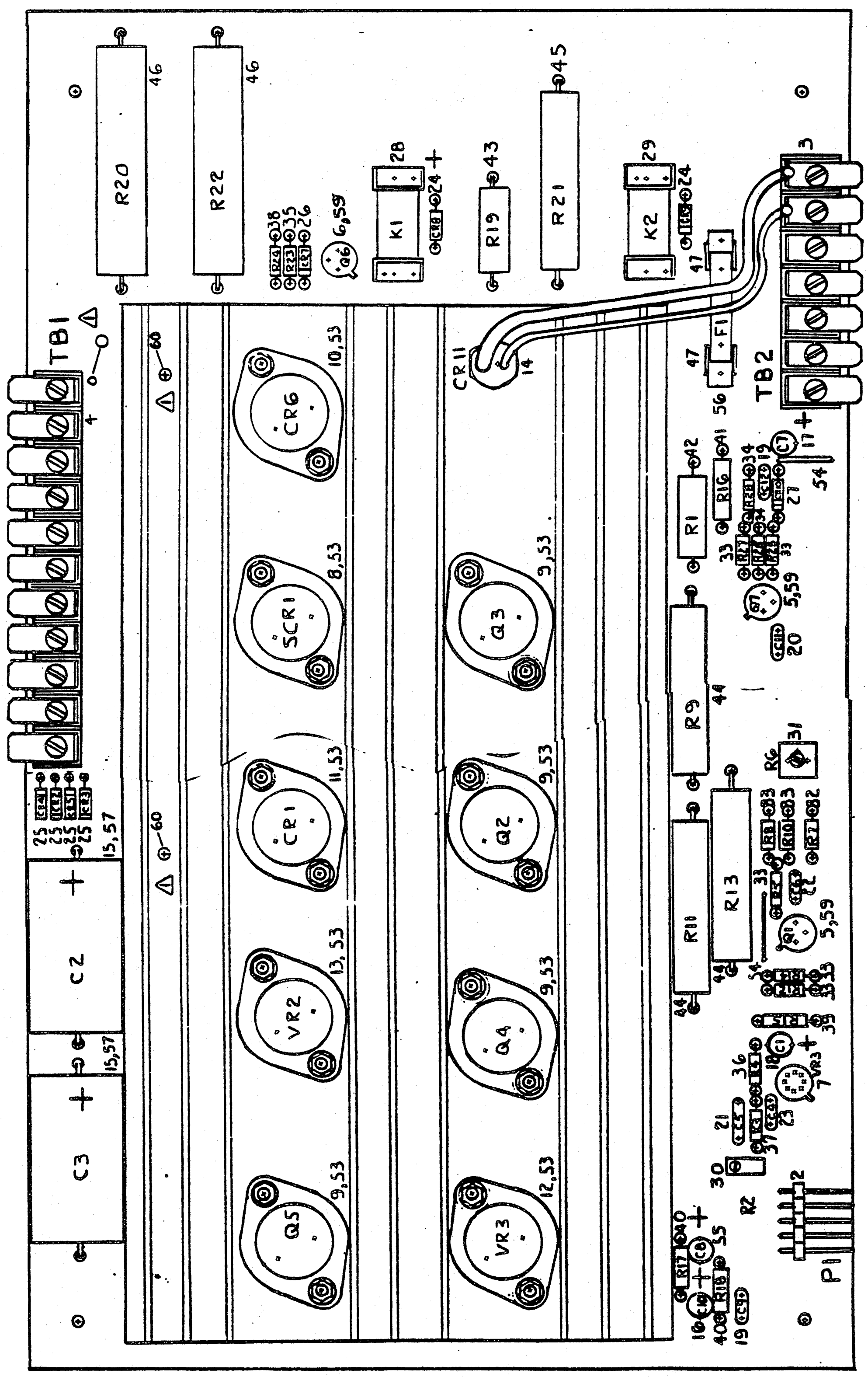
DWG NO

REV AU

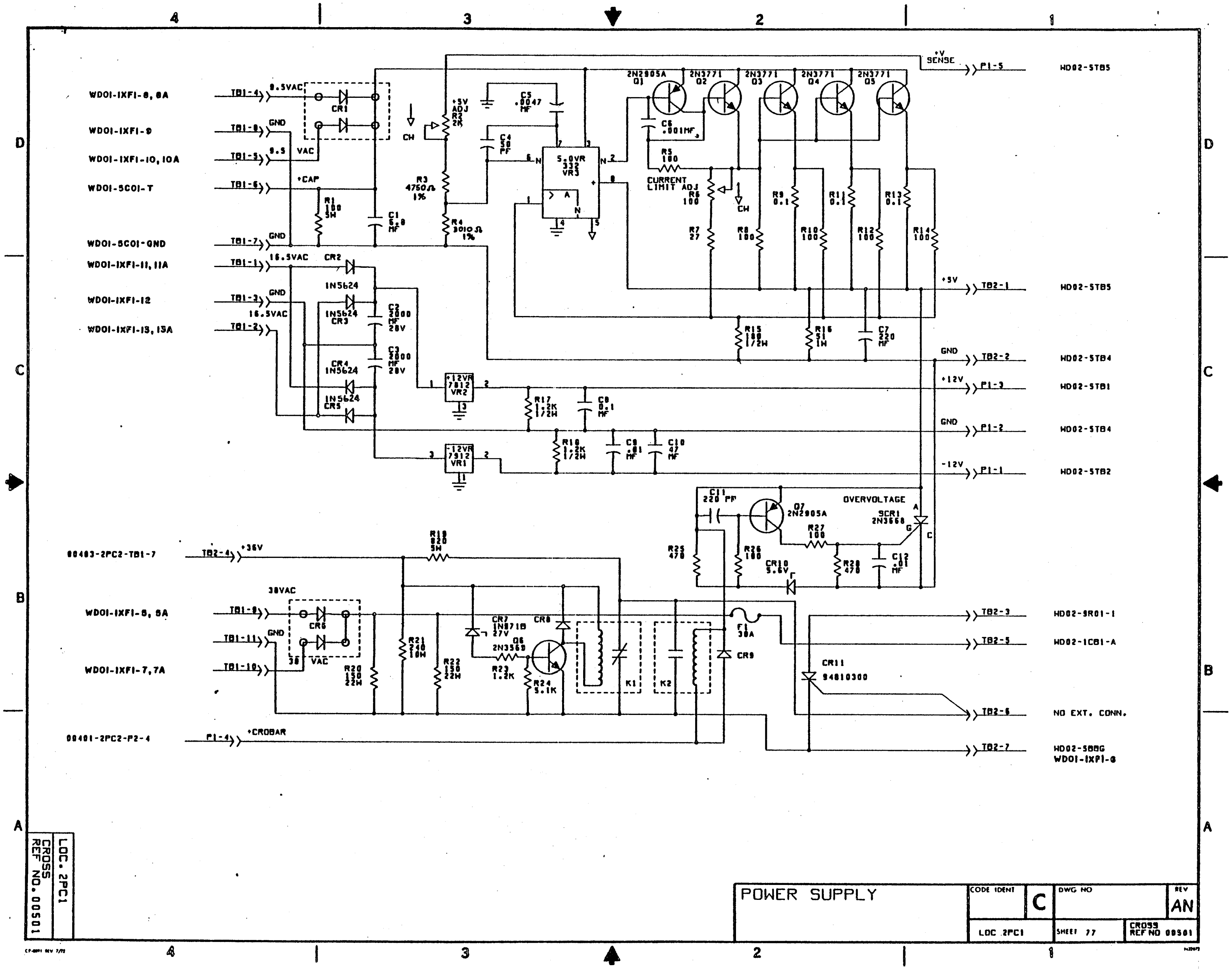
LOC. 2PC2

SHEET 78

CROSS REF NO 00404



POWER SUPPLY



LOC. 2PC1
CROSS
REF NO. 00501

POWER SUPPLY

CODE IDENT C
DWG NO
REV AN
LOC 2PC1
SHEET 77
CROSS REF NO 00501

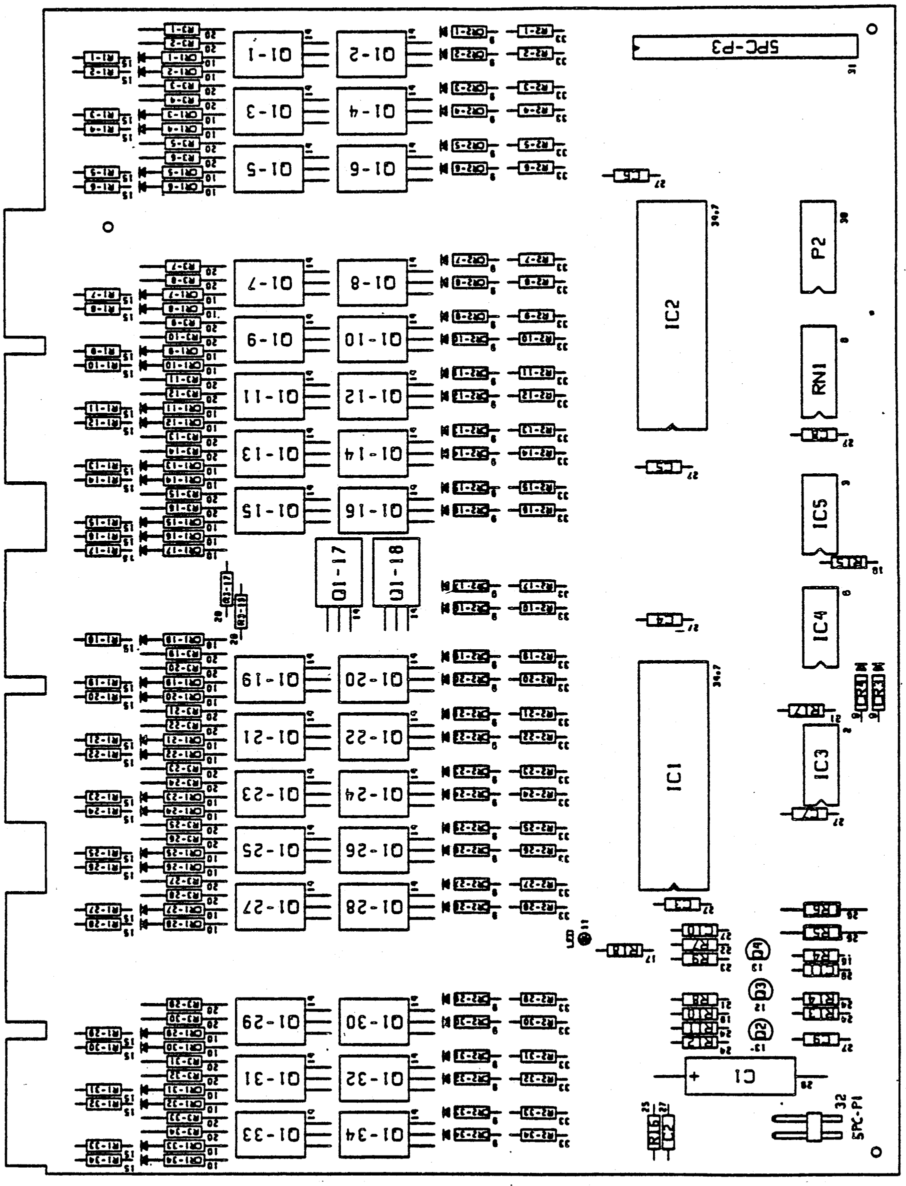
JUMPER/ TERMINATOR NUMBER	FUNCTION	360 LPM COLM 1-136	720 LPM COLM 1-68	720 LPM COLM 69-136	1130 LPM ODD COLM 1-67	1130 LPM EVEN COLM 2-68	1130 LPM ODD COLM 69-135	1130 LPM EVEN COLM 70-136
J1	-CMP	IN	OUT	IN	OUT	OUT	IN	IN
J2	-HEP4	OUT	OUT	OUT	OUT	IN	OUT	IN
J3	-HEP3	OUT	OUT	OUT	IN	OUT	IN	OUT
J4	-HEP2	OUT	IN	IN	OUT	OUT	OUT	OUT
J5	-HEP1	IN	IN	IN	IN	OUT	IN	OUT
J6	-SR STEP2	OUT	OUT	OUT	OUT	IN	OUT	IN
J7	-SR STEP1	IN	IN	IN	IN	OUT	IN	OUT
J8	-CMP OUT	OUT	OUT	IN	OUT	OUT	IN	IN
J9	-HEP	IN	OUT	OUT	OUT	OUT	OUT	OUT
J10	-CMP FROM SHIFT REG.	OUT	IN	OUT	IN	IN	OUT	OUT
J11	-HEP2	OUT	OUT	OUT	OUT	IN	OUT	IN
T1	CLK TERMINATOR	IN	IN	OUT	IN	OUT	OUT	OUT
T2	-SR STEP1 TERMINATOR	IN	IN	OUT	IN	OUT	OUT	OUT
T3	-SR STEP2 TERMINATOR	OUT	OUT	OUT	IN	OUT	OUT	OUT

HAMMER DRIVER CKT #	300 LPM SPC1 COIL #	720 LPM SPC1 COIL #	720 LPM SPC2 COIL #	1130 LPM SPC1 COIL #	1130 LPM SPC2 COIL #	1130 LPM SPC3 COIL #	1130 LPM SPC4 COIL #
1	1	1	69	1	2	69	70
2	5	3	71	3	4	71	72
3	9	5	73	5	6	73	74
4	13	7	75	7	8	75	76
5	17	9	77	9	10	77	78
6	21	11	79	11	12	79	80
7	25	13	81	13	14	81	82
8	29	15	83	15	16	83	84
9	33	17	85	17	18	85	86
10	37	19	87	19	20	87	88
11	41	21	89	21	22	89	90
12	45	23	91	23	24	91	92
13	49	25	93	25	26	93	94
14	53	27	95	27	28	95	96
15	57	29	97	29	30	97	98
16	61	31	99	31	32	99	100
17	65	33	101	33	34	101	102
18	69	35	103	35	36	103	104
19	73	37	105	37	38	105	106
20	77	39	107	39	40	107	108
21	81	41	109	41	42	109	110
22	85	43	111	43	44	111	112
23	89	45	113	45	46	113	114
24	93	47	115	47	48	115	116
25	97	49	117	49	50	117	118
26	101	51	119	51	52	119	120
27	105	53	121	53	54	121	122
28	109	55	123	55	56	123	124
29	113	57	125	57	58	125	126
30	117	59	127	59	60	127	128
31	121	61	129	61	62	129	130
32	125	63	131	63	64	131	132
33	129	65	133	65	66	133	134
34	133	67	135	67	68	135	136

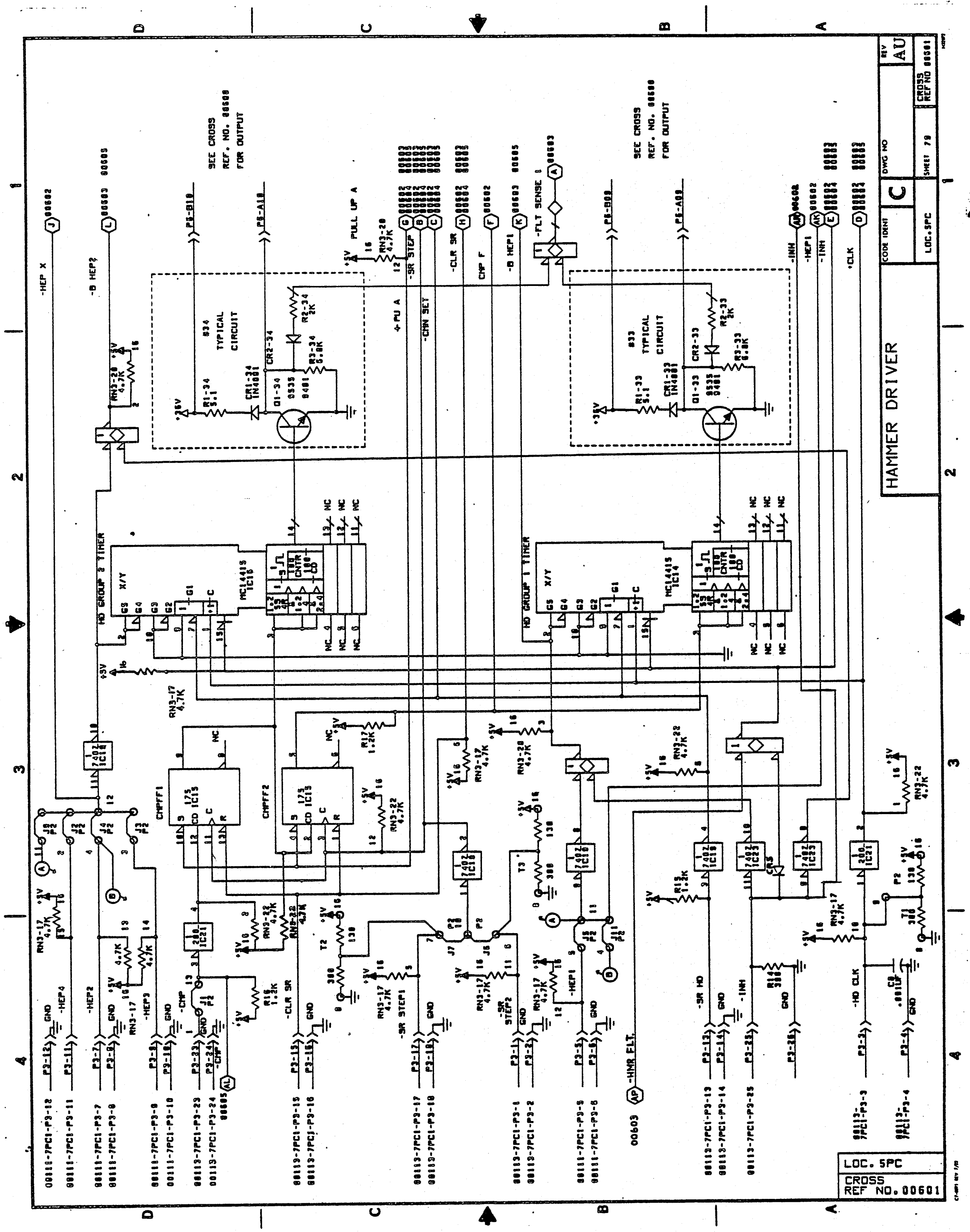
LOC. SPC
CROSS
REF NO. 00600

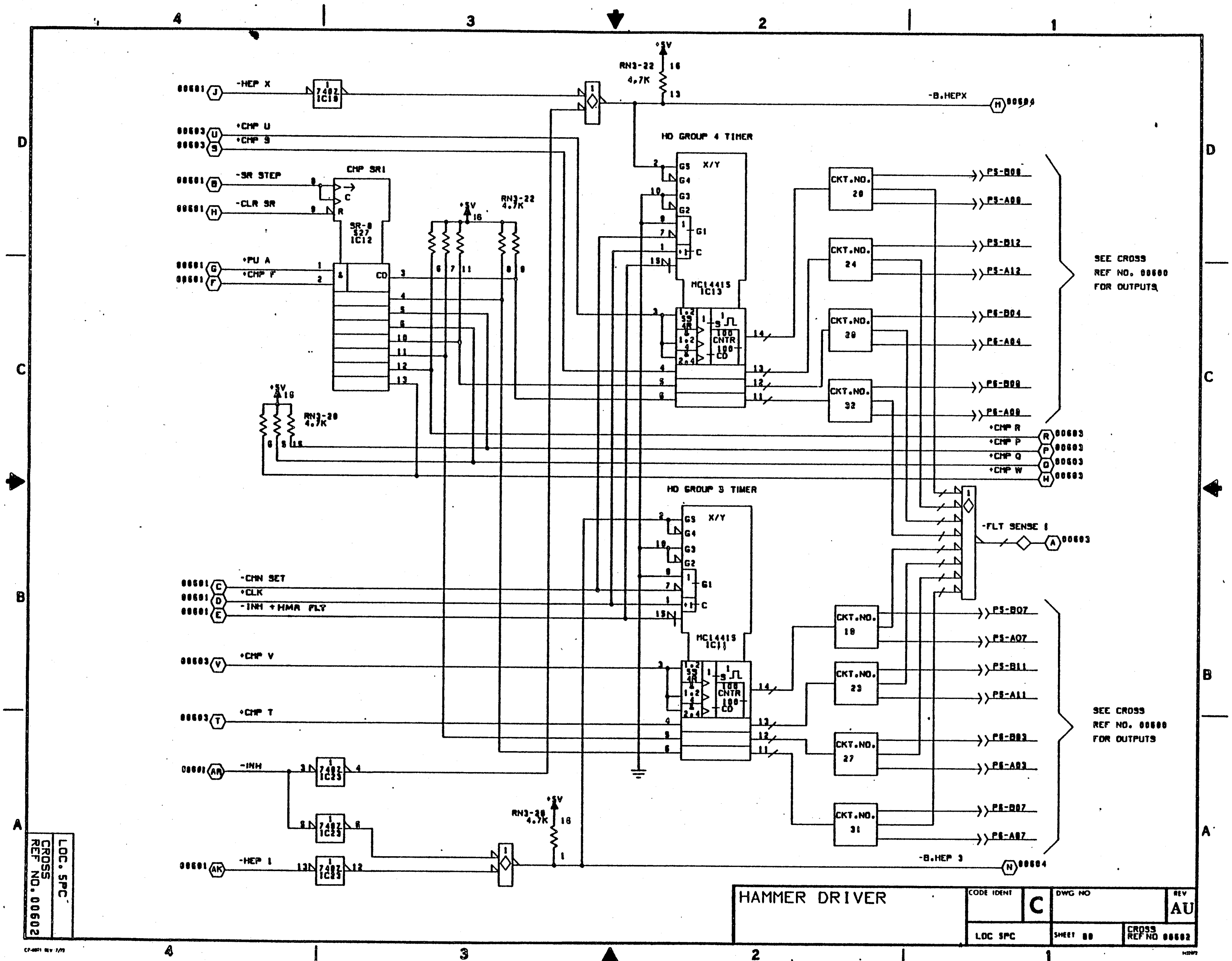
HAMMER DRIVER
PROGRAM CHARTS

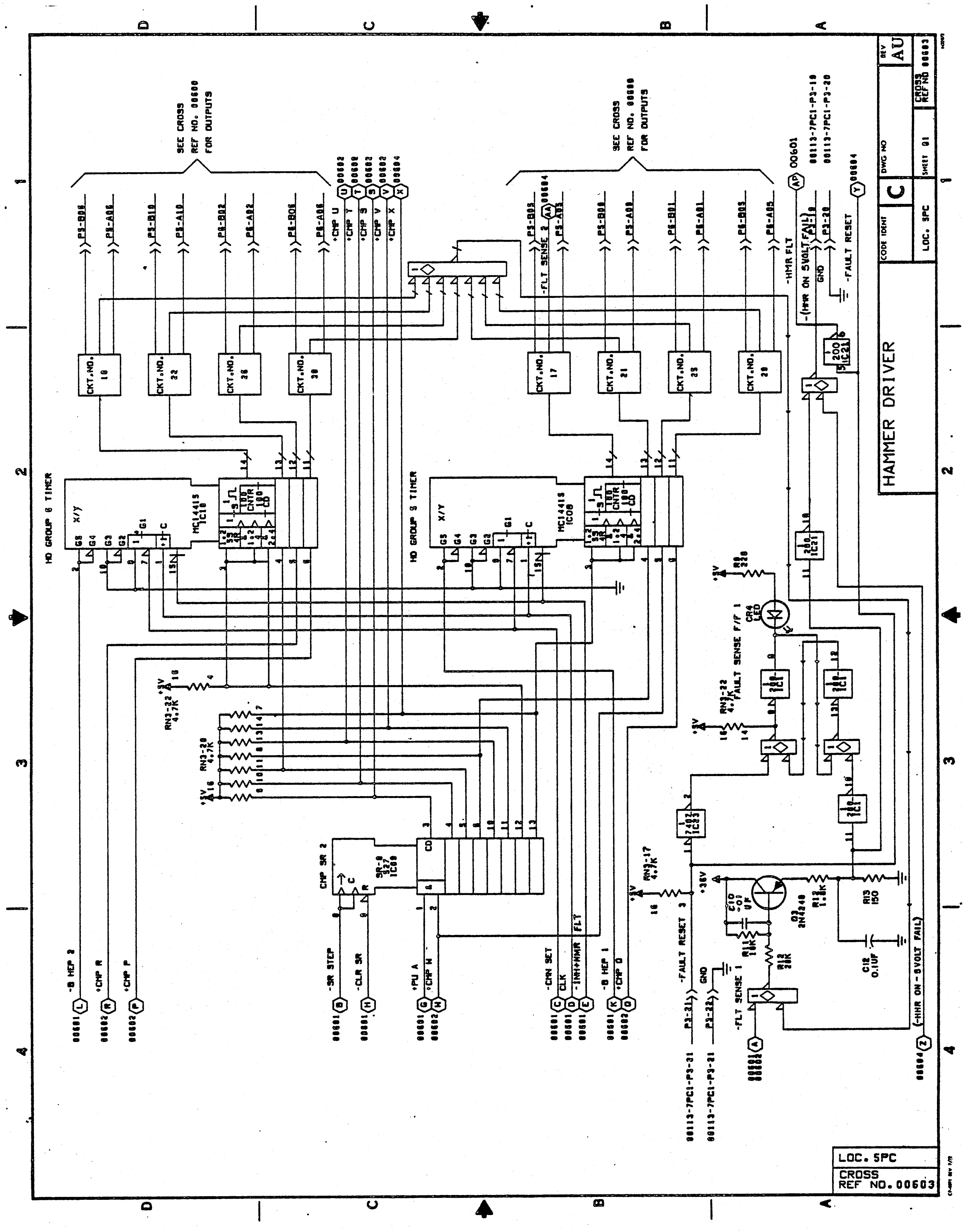
CODE IDENT C
DWG NO
REV A
LOC. SPC
SHEET 70
CROSS REF NO 00600

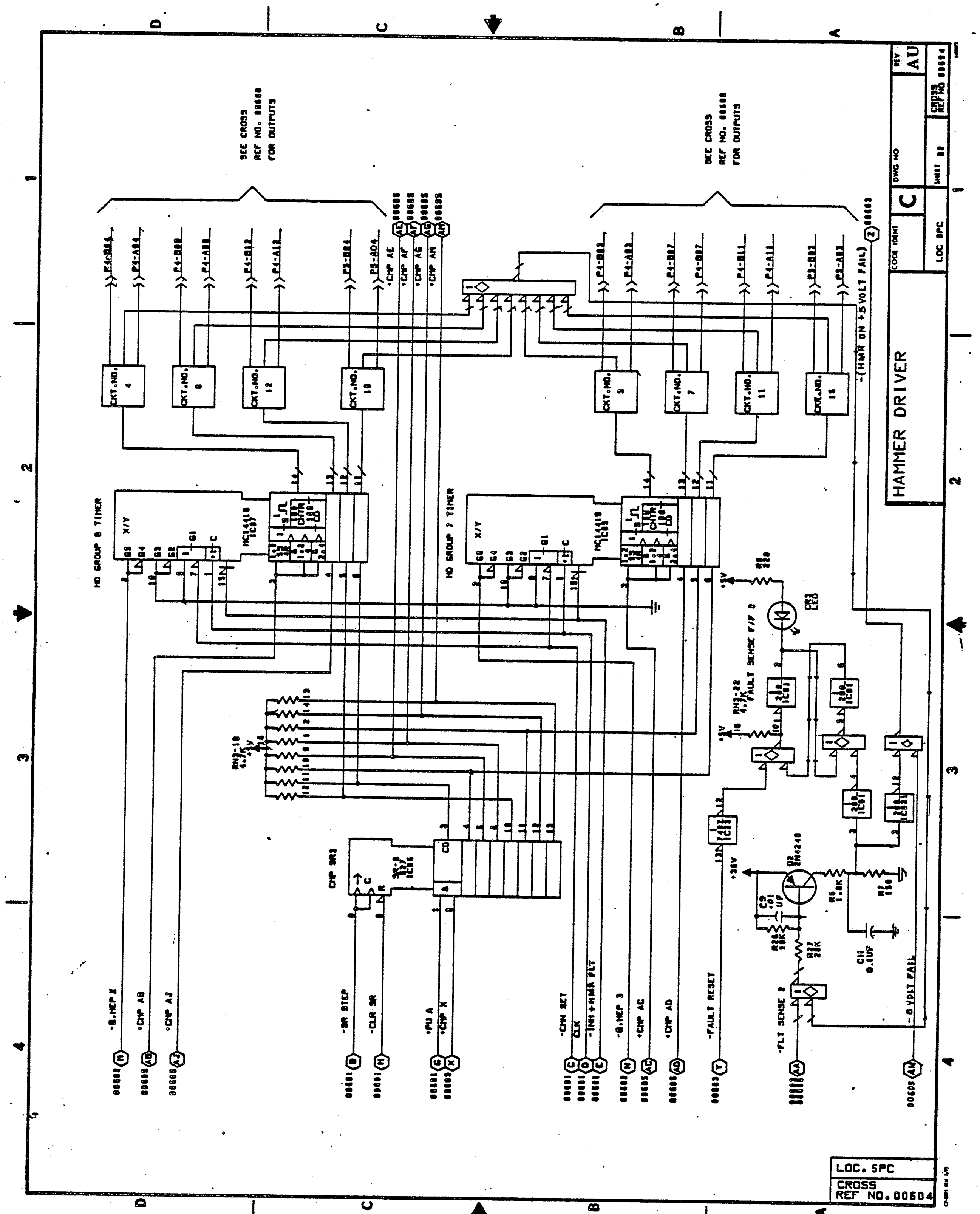


HAMMER DRIVER

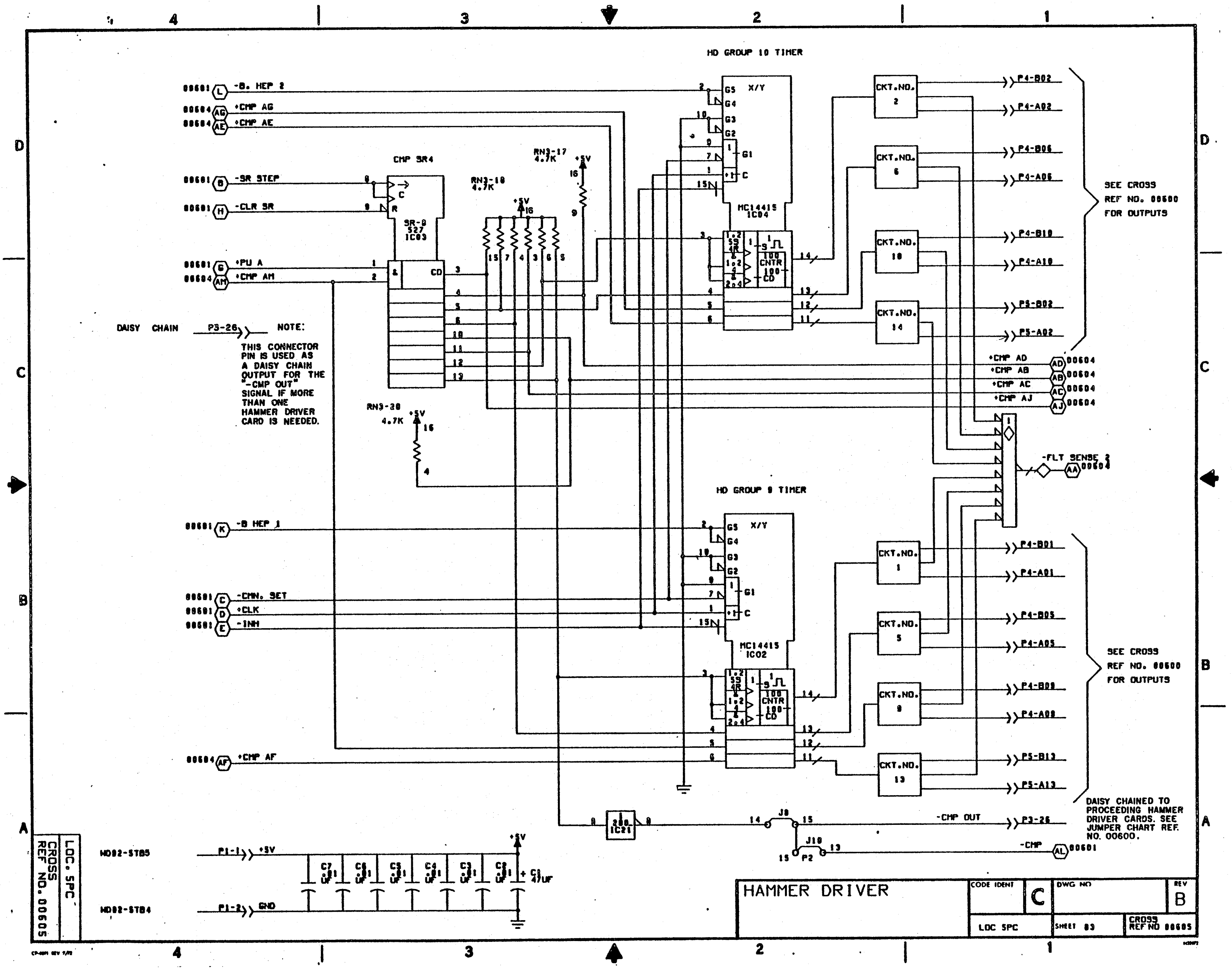

HAMMER DRIVER
LOC. 5PC
CROSS REF NO. 00601
CODE IDENT
DWG NO
C
REV
AU
SHEET 79
LOC. 5PC
HD GROUP 2 TIMER
X/Y
MC14415 1C16
HD GROUP 1 TIMER
MC14415 1C14
CNTR
Q34 TYPICAL CIRCUIT
Q33 TYPICAL CIRCUIT
SEE CROSS REF. NO. 00600 FOR OUTPUT
P5-B10
P5-A10
P6-B09
P5-A09
+36V
R1-34 5.1
CR1-34 1N4001
Q1-34
CR2-34
R2-34 2K
R3-34 6.8K
R1-33 5.1
CR1-33 1N4001
Q1-33
CR2-33
R2-33 2K
R3-33 6.8K
PULL UP A
RN3-20 4.7K
-SR STEP
-CLR SR
CMP F
-B HEP1
-FLT SENSE 1
-HEP X
-B HEP2
-PU A
-CMN SET
-INH
-HEP1
-CLK
CMPFF1
CMPFF2
175 1C15
RN3-17 4.7K
RN3-22 4.7K
R17 1.2K
R15 1.2K
R16 1.2K
R14 300
7402 1C18
7402 1C19
7402 1C23
200 1C21
CR5
C8 .001UF
-HEP4
-HEP2
-HEP3
-CMP
-CMP
-CLR SR
-SR STEP1
-SR STEP2
-HEP1
-HMR FLT.
-SR HD
-INH
-HD CLK
GND
00601-7PC1-P3-12
00601-7PC1-P3-11
00601-7PC1-P3-7
00601-7PC1-P3-8
00601-7PC1-P3-9
00601-7PC1-P3-10
00603-7PC1-P3-23
00603-7PC1-P3-24
00603-7PC1-P3-15
00603-7PC1-P3-16
00603-7PC1-P3-17
00603-7PC1-P3-18
00603-7PC1-P3-1
00603-7PC1-P3-2
00601-7PC1-P3-5
00601-7PC1-P3-6
00603-7PC1-P3-13
00603-7PC1-P3-14
00603-7PC1-P3-25
00603-7PC1-P3-3
00603-7PC1-P3-4
00603
00605
D
C
B
A
1
2
3
4

-HEP X
-B.HEPX
+CMP U
+CMP S
-SR STEP
-CLR SR
+PU A
+CMP F
CMP SR1
SR-8
IC12
RN3-22
4.7K
+5V
HD GROUP 4 TIMER
X/Y
MC14415
IC13
CNTR
CKT.NO. 20
CKT.NO. 24
CKT.NO. 28
CKT.NO. 32
PS-B00
PS-A00
PS-B12
PS-A12
PS-B04
PS-A04
PS-B08
PS-A08
SEE CROSS
REF NO. 00600
FOR OUTPUTS
+CMP R
+CMP P
+CMP Q
+CMP W
RN3-20
4.7K
HD GROUP 3 TIMER
MC14415
IC11
-FLT SENSE 1
-CMN SET
+CLK
-INH +HMR FLT
+CMP V
+CMP T
-INH
-HEP 1
7402
IC23
IC18
CKT.NO. 19
CKT.NO. 23
CKT.NO. 27
CKT.NO. 31
PS-B07
PS-A07
PS-B11
PS-A11
PS-B03
PS-A03
PS-B07
PS-A07
-B.HEP 3
00601
00603
00604
HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AU
LOC SPC
SHEET 80
CROSS
REF NO 00602
LOC. SPC
CROSS
REF NO. 00602


HAMMER DRIVER
CODE IDENT C
DWG NO
REV AU
SHEET 01
LOC. SPC
CROSS REF NO. 00603
HD GROUP 6 TIMER
HD GROUP 5 TIMER
MC14415 IC10
MC14415 IC08
CKT. NO. 18
CKT. NO. 22
CKT. NO. 26
CKT. NO. 30
CKT. NO. 17
CKT. NO. 21
CKT. NO. 25
CKT. NO. 29
SEE CROSS REF NO. 00600 FOR OUTPUTS
P5-B06
P5-A06
P5-B10
P5-A10
P6-B02
P6-A02
P6-B06
P6-A06
P5-B05
P5-A05
P5-B09
P5-A09
P6-B01
P6-A01
P6-B05
P6-A05
+CHP U
+CHP T
+CHP S
+CHP V
+CHP X
-FLT SENSE 2
-HMR FLT
-(HMR ON 5VOLT FAIL)
GND
-FAULT RESET
00113-7PC1-P3-19
00113-7PC1-P3-20
AP 00601
CHP SR 2
SR-8 5L27 IC09
-B HEP 2
+CHP R
+CHP P
-SR STEP
-CLR SR
+PU A
+CHP W
-CMN SET
CLK
-INH+HMR
FLT
-B HEP 1
+CHP Q
-FAULT RESET 3
-FLT SENSE 1
-(HMR ON 5VOLT FAIL)
00113-7PC1-P3-21
00113-7PC1-P3-22
RN3-22 4.7K
RN3-20 4.7K
RN3-17 4.7K
+5V
+36V
CR4 LED
R9 220
FAULT SENSE F/F 1
C10 .01 UF
R11 10K
R12 20K
Q2 2N4240
R13 1.8K
R13 150
C12 0.1UF
7402 IC23
200 IC21
LOC. SPC
CROSS REF NO. 00603


HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AU
LOC. SPC
SHEET 82
CROSS REF NO. 00604
LOC. SPC
CROSS
REF NO. 00604
SEE CROSS
REF NO. 00600
FOR OUTPUTS
HD GROUP 8 TIMER
HD GROUP 7 TIMER
MC14418
X/Y
CTR
CKT. NO. 4
CKT. NO. 8
CKT. NO. 12
CKT. NO. 16
CKT. NO. 3
CKT. NO. 7
CKT. NO. 11
CKT. NO. 15
P4-B04
P4-A04
P4-B08
P4-A08
P4-B12
P4-A12
P5-B04
P5-A04
P4-B03
P4-A03
P4-B07
P4-A07
P4-B11
P4-A11
P5-B03
P5-A03
+CMP AE
+CMP AF
+CMP AG
+CMP AH
-(HMR ON +5 VOLT FAIL)
CMP SR2
-B.HEP 8
+CMP AB
+CMP AJ
-SR STEP
-CLR SR
+PU A
+CMP X
-CMN SET
CLK
-INH+HMR PLT
-B.HEP 3
+CMP AC
+CMP AD
-FAULT RESET
-FLT SENSE 2
-5 VOLT FAIL
FAULT SENSE F/F 2
CR3
LED
RN3-18
4.7K
RN3-22
4.7K
+5V
+36V
Q2
C9
.01UF
C10
0.1UF
R6
R7
R26
10K
R27
A
B
C
D
1
2
3
4

JUL., 82



DAISY CHAIN P3-26

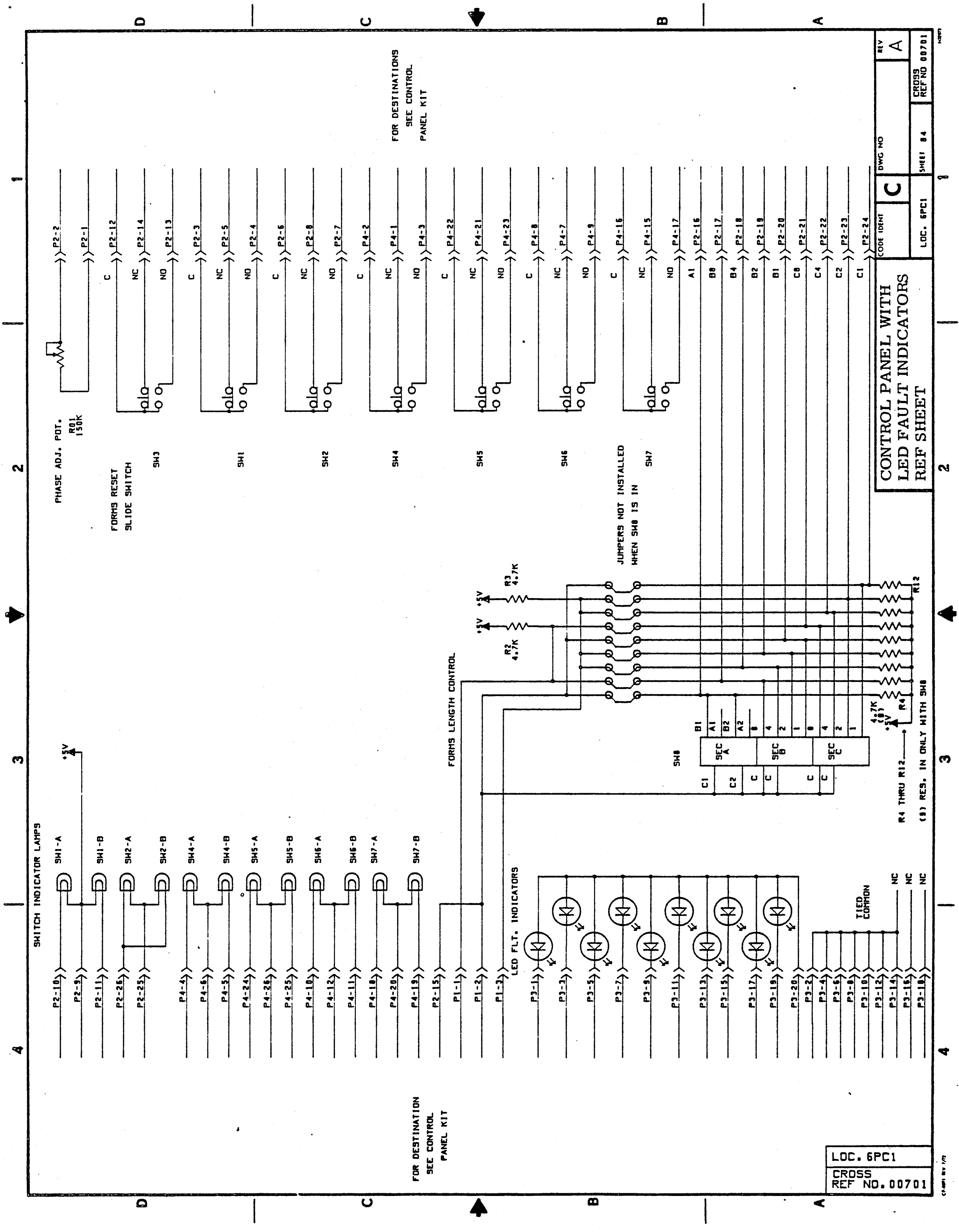
NOTE:
THIS CONNECTOR PIN IS USED AS A DAISY CHAIN OUTPUT FOR THE "-CMP OUT" SIGNAL IF MORE THAN ONE HAMMER DRIVER CARD IS NEEDED.

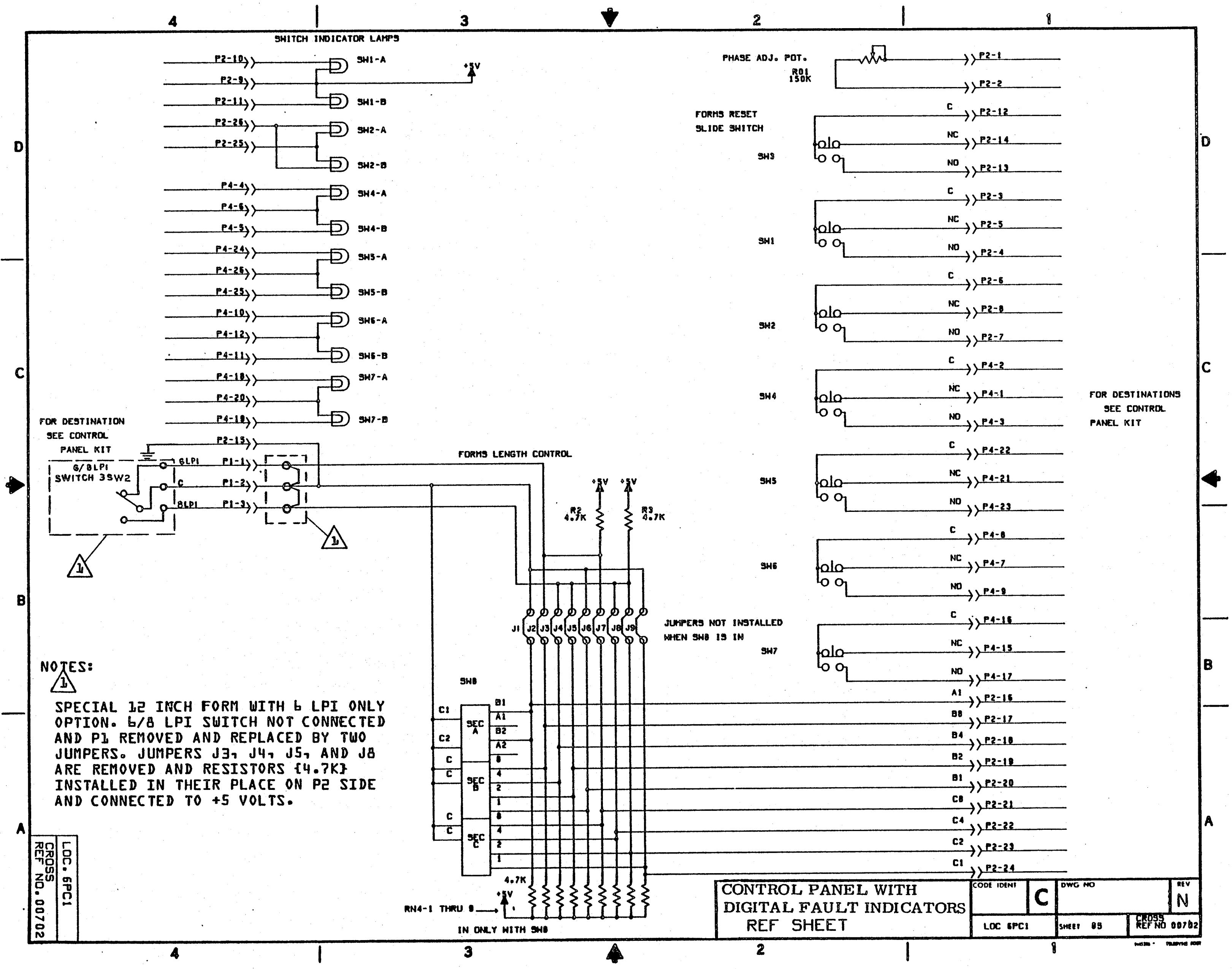
SEE CROSS
REF NO. 00600
FOR OUTPUTS

DAISY CHAINED TO PROCEEDING HAMMER DRIVER CARDS. SEE JUMPER CHART REF. NO. 00600.

HAMMER DRIVER
CODE IDENT C
DWG NO
REV B
LOC SPC
SHEET 03
CROSS REF NO 00605

LOC. SPC
CROSS
REF NO. 00605


CONTROL PANEL WITH LED FAULT INDICATORS REF SHEET
CODE IDENT
C
DWG NO
REV
A
LOC. 6PC1
SHEET 84
CROSS REF NO 00701
FOR DESTINATIONS SEE CONTROL PANEL KIT
PHASE ADJ. POT.
R01 150K
FORMS RESET SLIDE SWITCH
SH3
SH1
SH2
SH4
SH5
SH6
SH7
JUMPERS NOT INSTALLED WHEN SH8 IS IN
P2-2
P2-1
C
P2-12
NC
P2-14
NO
P2-13
P2-3
P2-5
P2-4
P2-6
P2-8
P2-7
P4-2
P4-1
P4-3
P4-22
P4-21
P4-23
P4-8
P4-7
P4-9
P4-16
P4-15
P4-17
A1
P2-16
B8
P2-17
B4
P2-18
B2
P2-19
B1
P2-20
C8
P2-21
C4
P2-22
C2
P2-23
C1
P2-24
+5V
R3 4.7K
R2 4.7K
R12
R4
4.7K (8)
SH8
SEC A
SEC B
SEC C
A2
R4 THRU R12 (8) RES. IN ONLY WITH SH8
FORMS LENGTH CONTROL
SWITCH INDICATOR LAMPS
SH1-A
SH1-B
SH2-A
SH2-B
SH4-A
SH4-B
SH5-A
SH5-B
SH6-A
SH6-B
SH7-A
SH7-B
LED FLT. INDICATORS
TIED COMMON
P2-10
P2-9
P2-11
P2-26
P2-25
P4-4
P4-6
P4-5
P4-24
P4-26
P4-25
P4-10
P4-12
P4-11
P4-18
P4-20
P4-19
P2-15
P1-1
P1-2
P1-3
P3-1
P3-3
P3-5
P3-7
P3-9
P3-11
P3-13
P3-15
P3-17
P3-19
P3-20
P3-2
P3-4
P3-6
P3-8
P3-10
P3-12
P3-14
P3-16
P3-18
FOR DESTINATION SEE CONTROL PANEL KIT
LOC. 6PC1
CROSS REF NO. 00701
D
C
B
A
1
2
3
4



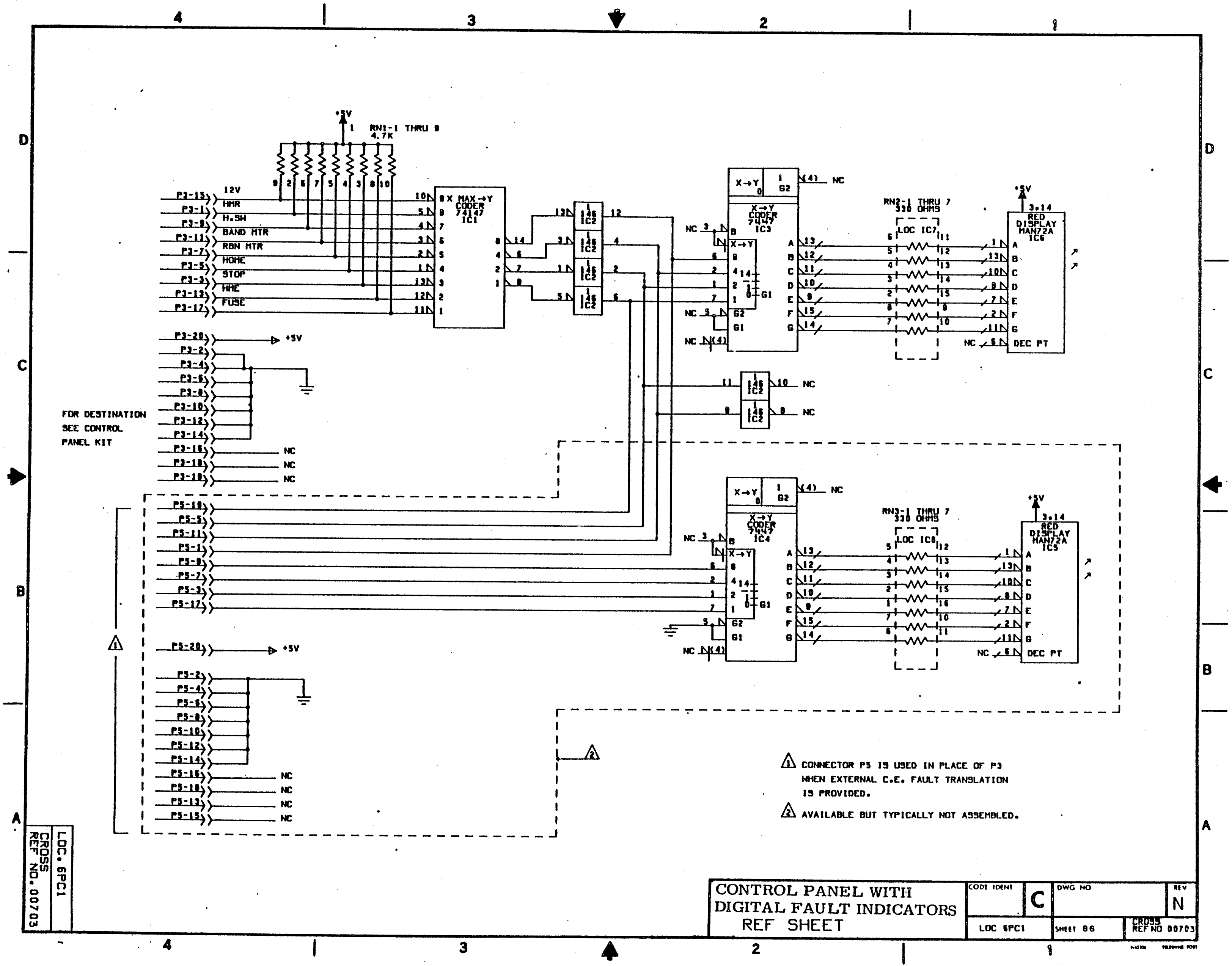
NOTES:

1. SPECIAL 12 INCH FORM WITH 6 LPI ONLY OPTION. 6/8 LPI SWITCH NOT CONNECTED AND P1 REMOVED AND REPLACED BY TWO JUMPERS. JUMPERS J3, J4, J5, AND J8 ARE REMOVED AND RESISTORS (4.7K) INSTALLED IN THEIR PLACE ON P2 SIDE AND CONNECTED TO +5 VOLTS.

LOC. 6PC1
CROSS
REF NO. 00702

CONTROL PANEL WITH
DIGITAL FAULT INDICATORS
REF SHEET

CODE IDENT	C	DWG NO	REV N
LOC 6PC1		SHEET 85	CROSS REF NO 00702



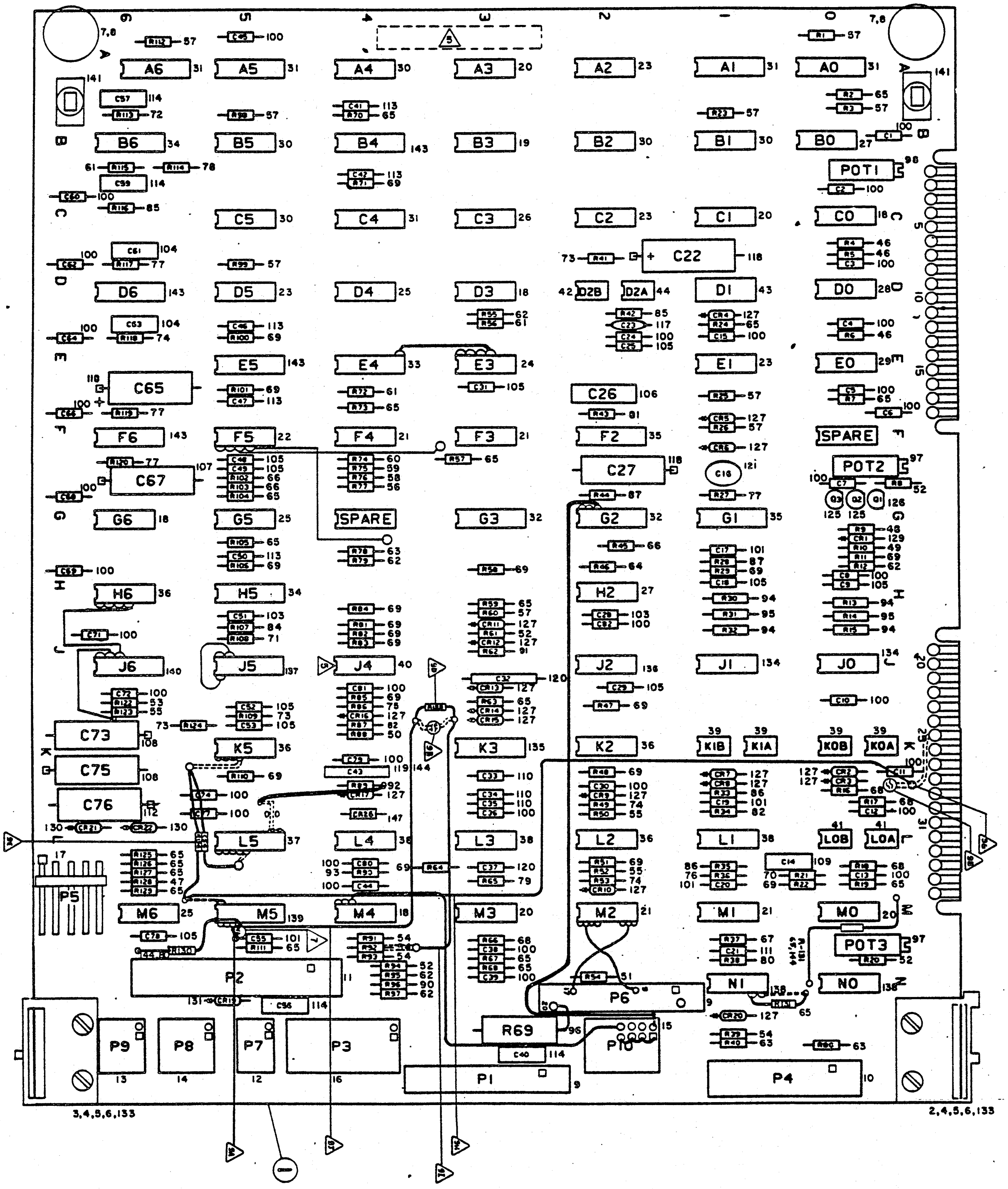
FOR DESTINATION SEE CONTROL PANEL KIT

△1 CONNECTOR P5 IS USED IN PLACE OF P3 WHEN EXTERNAL C.E. FAULT TRANSLATION IS PROVIDED.

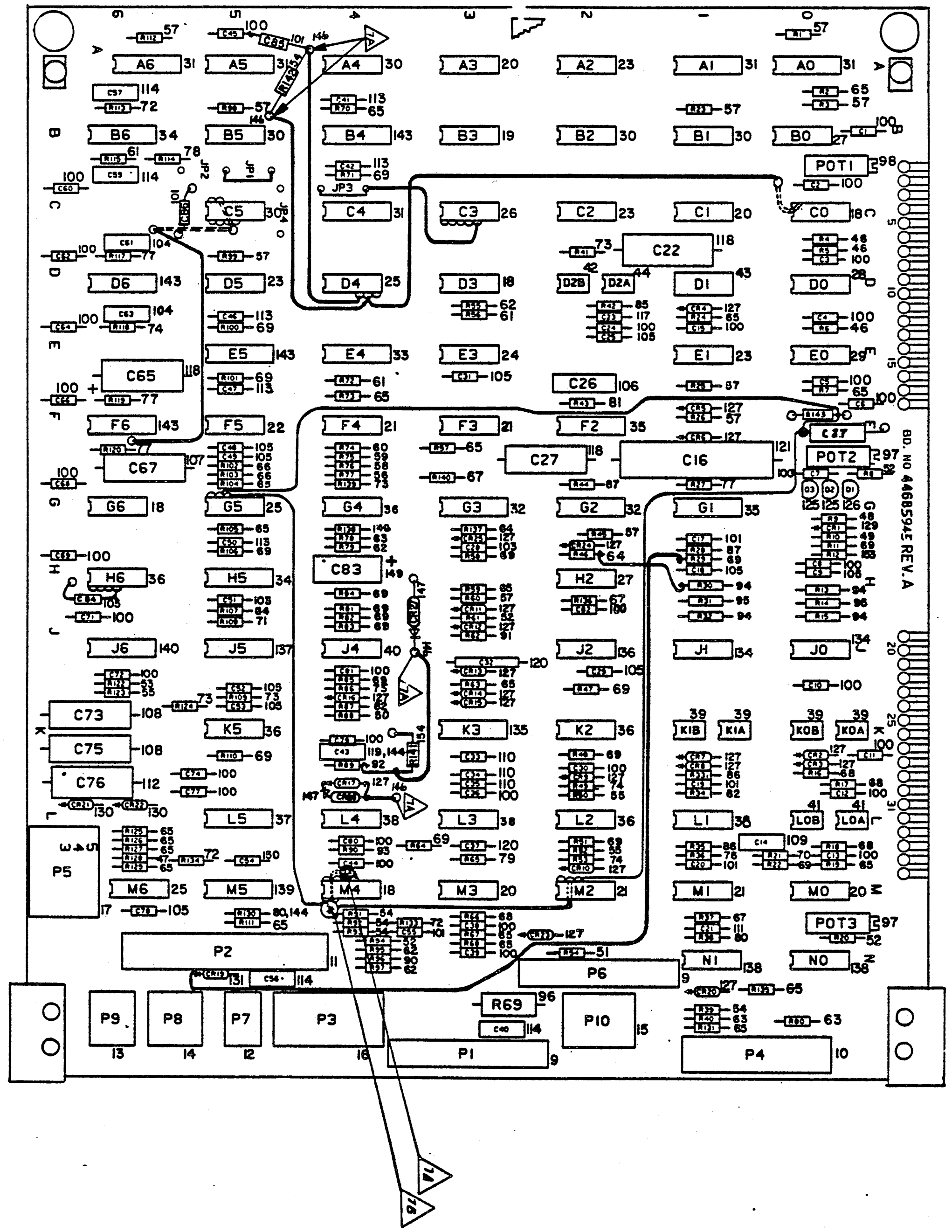
△2 AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

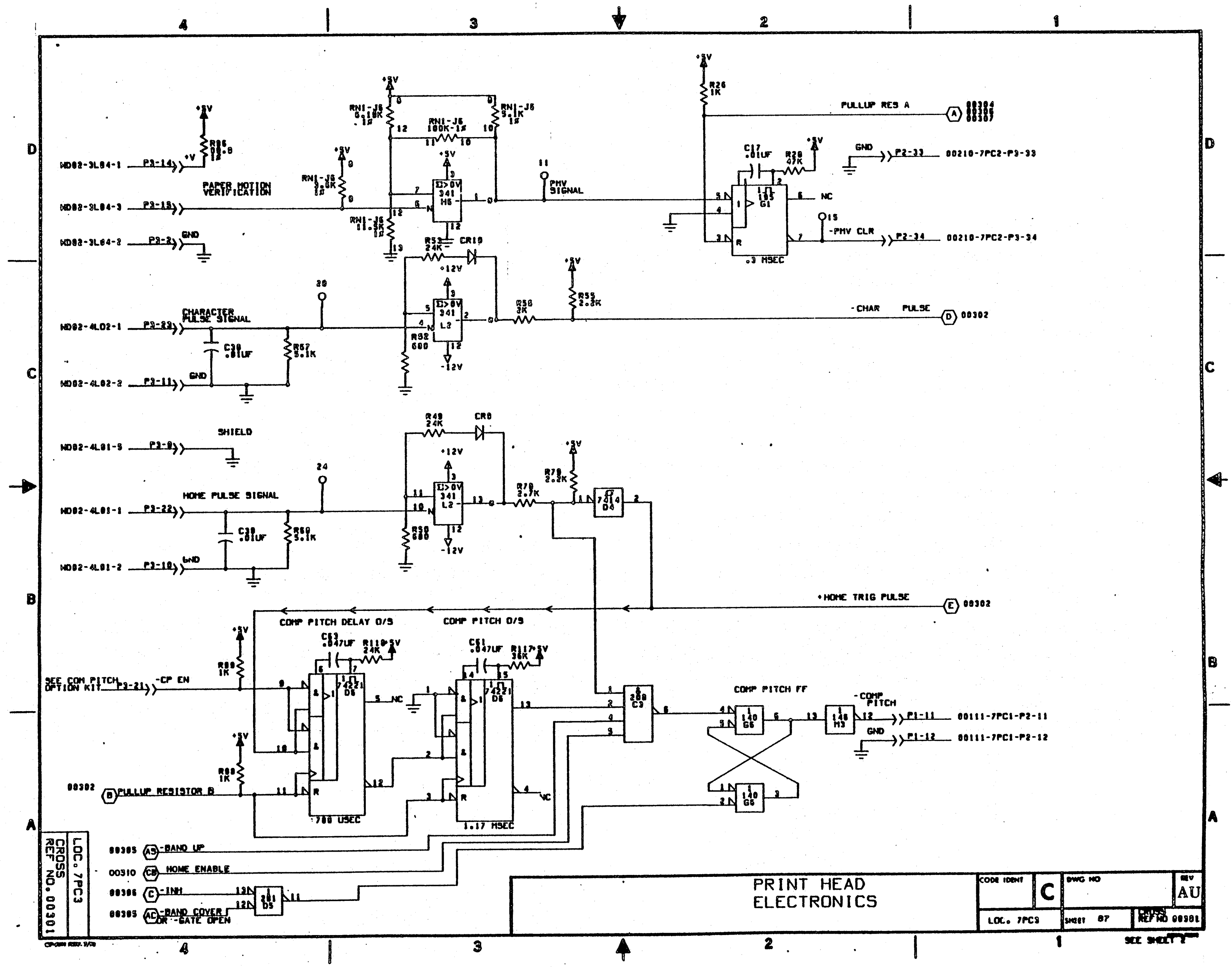
CONTROL PANEL WITH
DIGITAL FAULT INDICATORS
REF SHEET

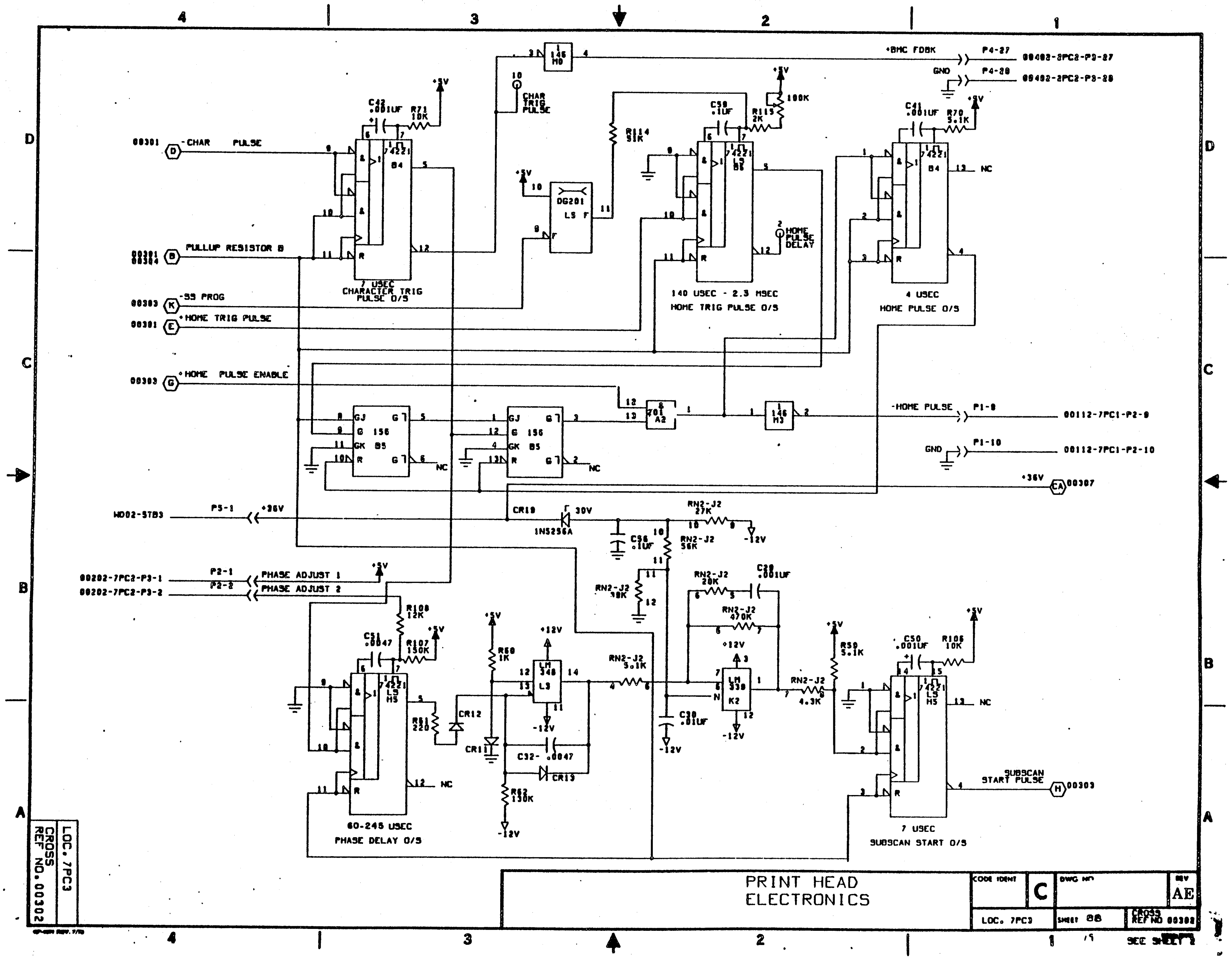
44685119 PRINT HEAD ELECTRONICS ASSEMBLY (INACTIVE)

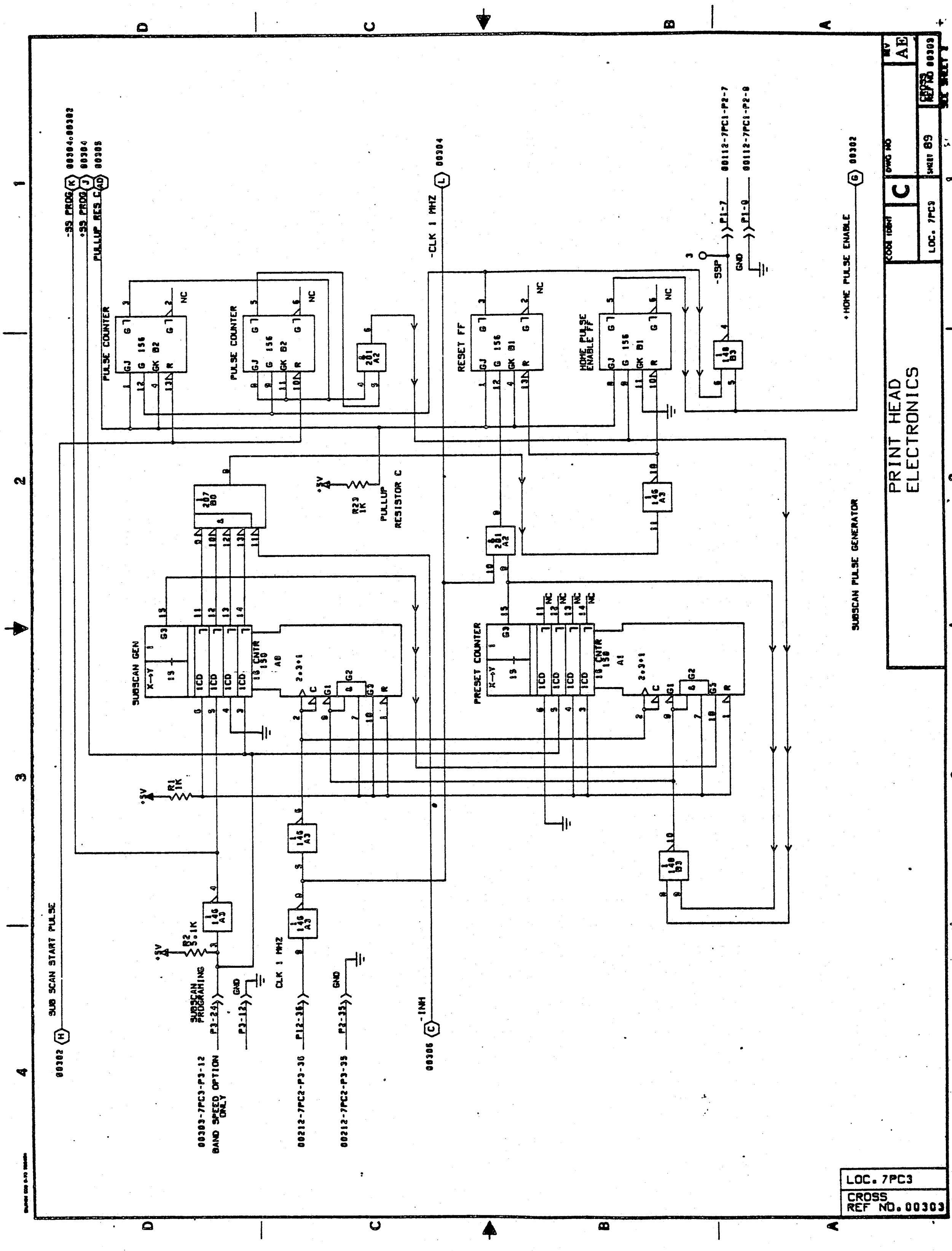


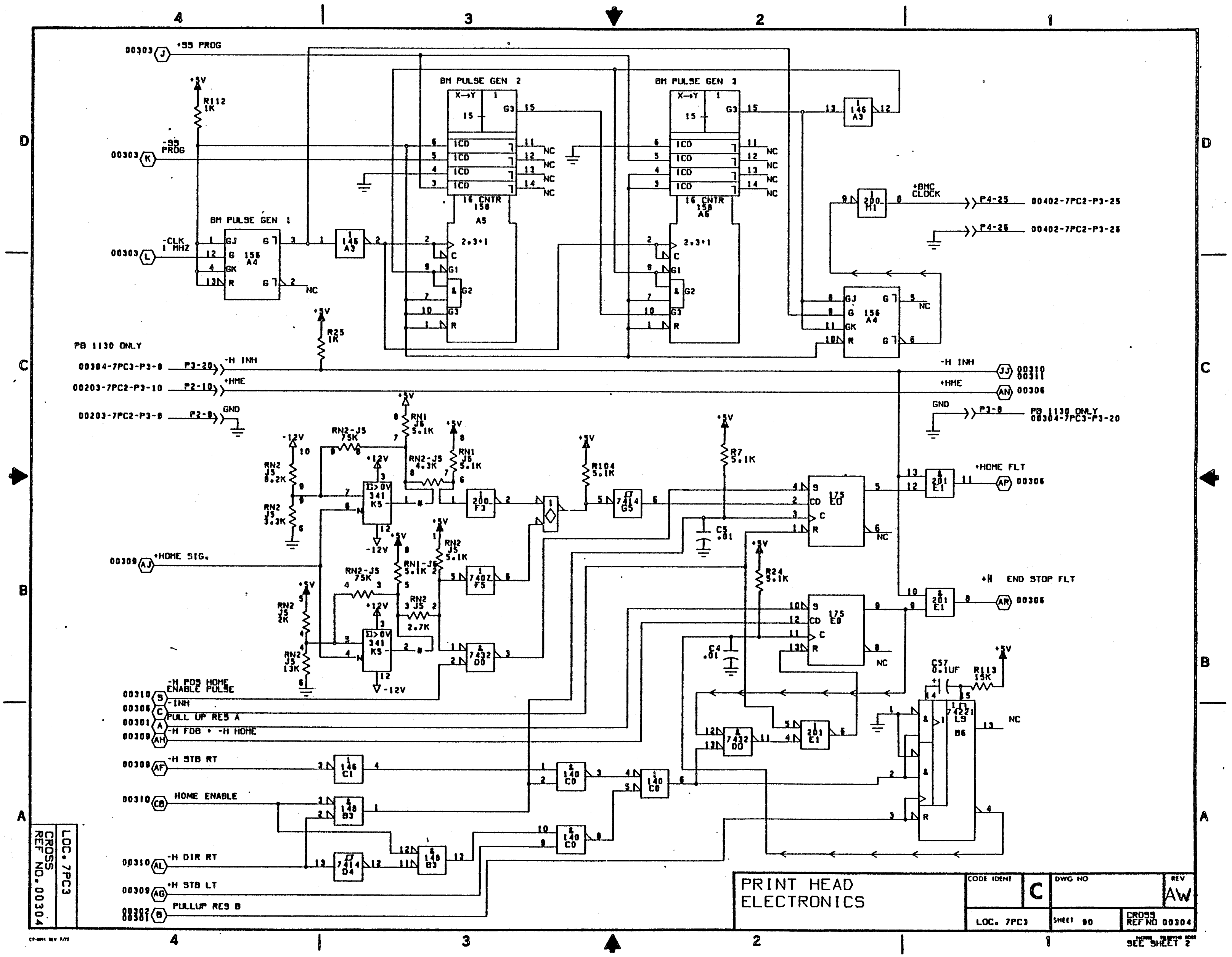
44685945 PRINT HEAD ELECTRONICS ASSEMBLY



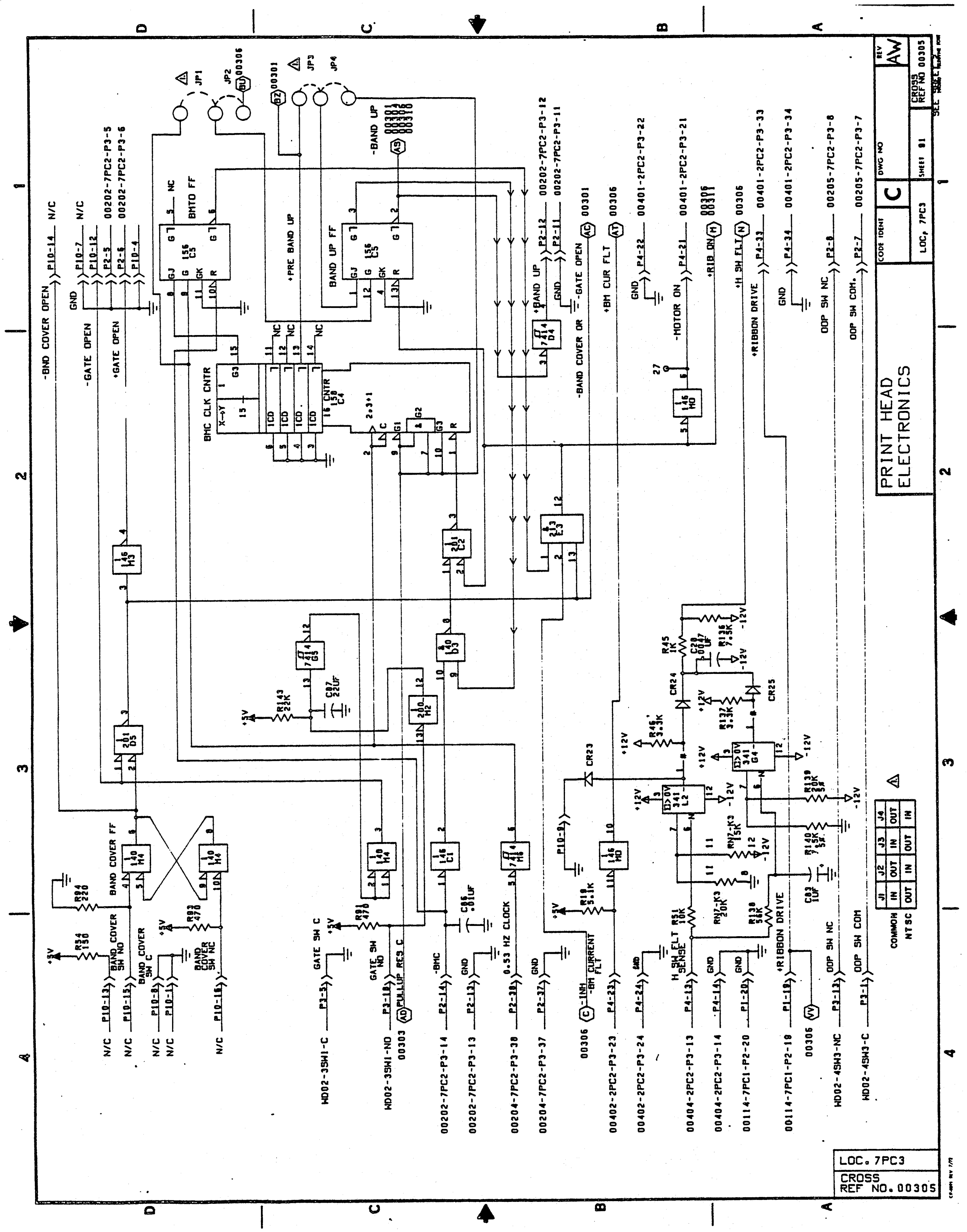
PRINT HEAD
ELECTRONICS
CODE IDENT
C
DWG NO
REV
AU
LOC. 7PC3
SHEET 87
CROSS
REF NO 00301
SEE SHEET 2
LOC. 7PC3
CROSS
REF NO. 00301
HD02-3L04-1
P3-14
+V
+5V
R96
68.0
1%
HD02-3L04-3
P3-19
PAPER MOTION
VERIFICATION
HD02-3L04-2
P3-2
GND
RN1-J6
6.19K
.1%
RN1-J6
3.6K
1%
RN1-J6
100K-1%
RN1-J6
5.1K
1%
RN1-J6
11.5K
1%
341
H6
11
PMV
SIGNAL
HD02-4L02-1
P3-23
CHARACTER
PULSE SIGNAL
30
C39
.01UF
R57
5.1K
HD02-4L02-2
P3-11
GND
R53
24K
CR19
+12V
-12V
341
L2
R92
680
R56
3K
R55
2.2K
-CHAR PULSE
D
00302
HD02-4L01-5
P3-8
SHIELD
24
HOME PULSE SIGNAL
HD02-4L01-1
P3-22
C38
.01UF
R59
5.1K
HD02-4L01-2
P3-10
GND
R49
24K
CR8
341
L2
R93
680
R70
2.7K
R78
2.2K
7014
D4
R26
1K
PULLUP RES A
A
00304
00306
00307
C17
.01UF
R28
47K
185
G1
.3 MSEC
NC
15
-PMV CLR
P2-33
00210-7PC2-P3-33
P2-34
00210-7PC2-P3-34
+HOME TRIG PULSE
E
00302
COMP PITCH DELAY O/S
COMP PITCH O/S
SEE COM PITCH
OPTION KIT
P3-21
-CP EN
R89
1K
R88
1K
00302
B
PULLUP RESISTOR B
C63
.047UF
R118
24K
74221
D6
.780 USEC
C61
.047UF
R117
36K
74221
D6
1.17 MSEC
280
C3
COMP PITCH FF
140
G6
140
H3
-COMP
PITCH
P1-11
00111-7PC1-P2-11
P1-12
00111-7PC1-P2-12
00305
A5
-BAND UP
00310
C8
HOME ENABLE
00306
C
-INH
00305
AC
-BAND COVER
OR -GATE OPEN
201
D5

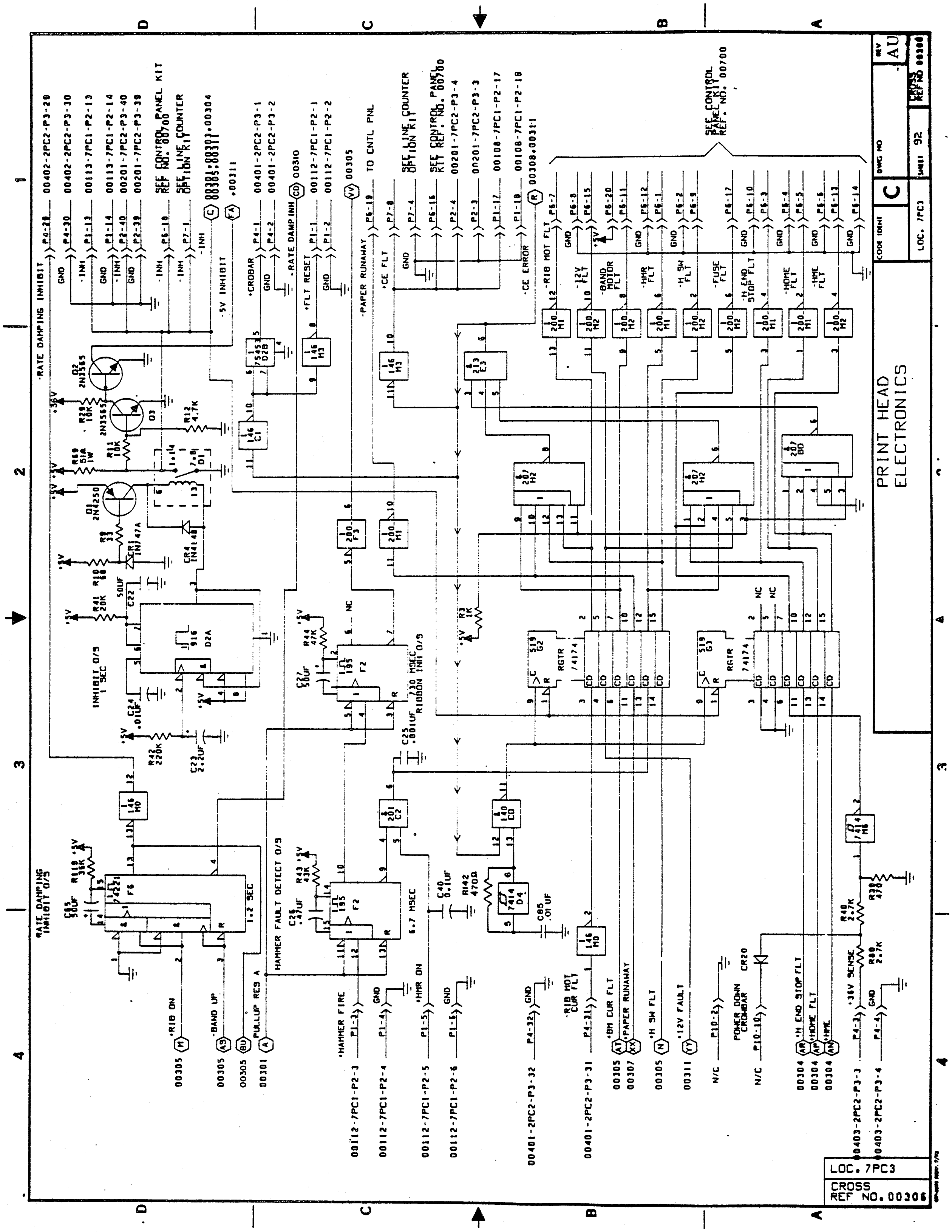

PRINT HEAD ELECTRONICS
CODE IDENT C
DWG NO
REV AE
LOC. 7PC3
SHEET 88
CROSS REF NO 00302
SEE SHEET 2
LOC. 7PC3
CROSS REF NO. 00302
00301 D -CHAR PULSE
00301 00304 B PULLUP RESISTOR B
00303 K -SS PROG
00301 E +HOME TRIG PULSE
00303 G +HOME PULSE ENABLE
HD02-STB3 P5-1 +36V
00202-7PC2-P3-1 P2-1 PHASE ADJUST 1
00202-7PC2-P3-2 P2-2 PHASE ADJUST 2
C42 .001UF R71 10K +5V
74221 B4
7 USEC CHARACTER TRIG PULSE O/S
CHAR TRIG PULSE 10
146 H0
+BMC FDBK P4-27 00402-2PC2-P3-27
GND P4-28 00402-2PC2-P3-28
DG201 LS F
R114 51K
C59 .1UF R115 2K 100K
74221 L5 B8
HOME PULSE DELAY 2
140 USEC - 2.3 MSEC HOME TRIG PULSE O/S
C41 .001UF R70 5.1K
74221 B4 NC
4 USEC HOME PULSE O/S
156 B5
701 A2
146 H3
-HOME PULSE P1-9 00112-7PC1-P2-9
GND P1-10 00112-7PC1-P2-10
+36V CA 00307
CR19 30V 1N5256A
C36 .1UF
RN2-J2 27K
RN2-J2 56K
RN2-J2 18K
RN2-J2 20K
C28 .001UF
RN2-J2 470K
-12V
C51 .0047 R108 12K R107 150K
74221 L5 H5
60-245 USEC PHASE DELAY O/S
R81 220 CR12 CR11
R60 1K
LM 348 L3
C32- .0047 CR13
R62 130K
RN2-J2 5.1K
C30 .01UF
LM 339 K2
RN2-J2 4.3K
R59 5.1K
C50 .001UF R106 10K
74221 L5 H5
SUBSCAN START PULSE H 00303
7 USEC SUBSCAN START O/S
+5V +12V NC


PRINT HEAD ELECTRONICS
SUBSCAN PULSE GENERATOR
LOC. 7PC3
CROSS REF NO. 00303
C
SHEET 89
REV AE
PULSE COUNTER
G 156 B2
RESET FF
HOME PULSE ENABLE FF
G 156 B1
SUBSCAN GEN
16 CNTR 150 A8
PRESET COUNTER
16 CNTR 150 A1
207 B8
201 A2
146 A3
140 B3
R29 1K
PULLUP RESISTOR C
R1 1K
R2 5.1K
+5V
-SS PROG
+SS PROG
PULLUP RES C
-CLK 1 MHZ
-INH
+HOME PULSE ENABLE
-SSP
SUB SCAN START PULSE
SUBSCAN PROGRAMING
CLK 1 MHZ
GND
NC
00303-7PC3-P3-12
BAND SPEED OPTION ONLY
00212-7PC2-P3-36
00212-7PC2-P3-35
00112-7PC1-P2-7
00112-7PC1-P2-8
D
C
B
A
1
2
3
4

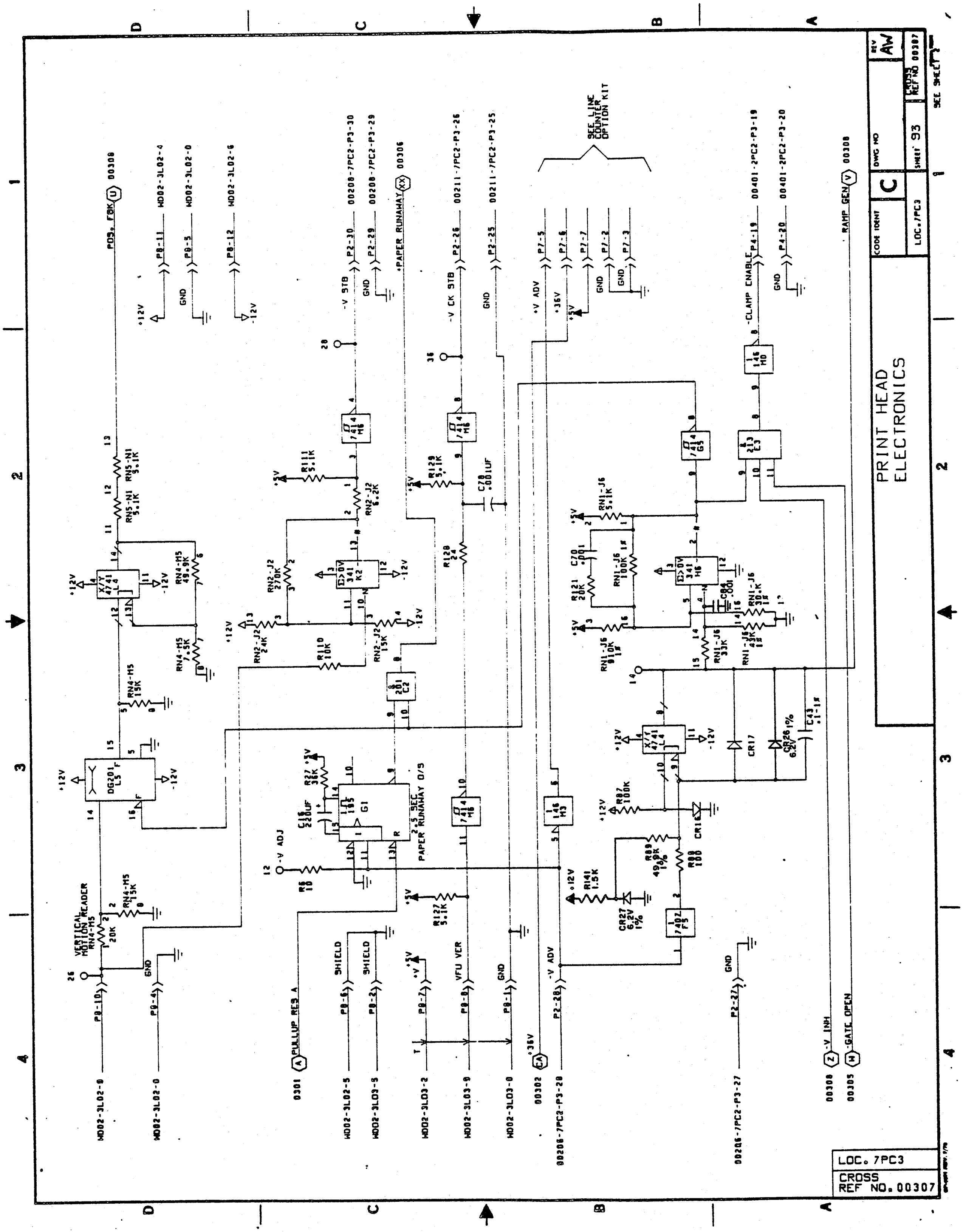


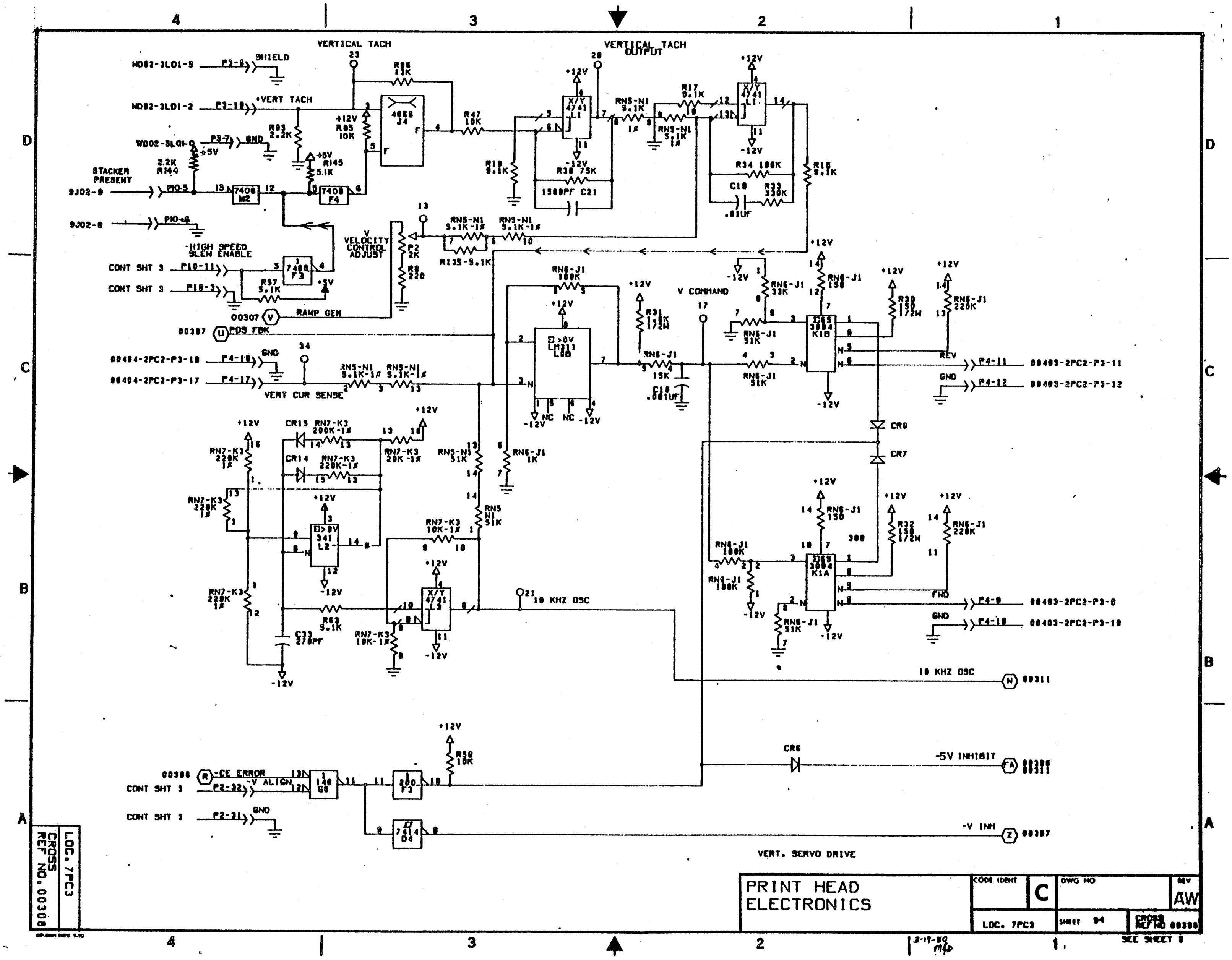
BM PULSE GEN 1
BM PULSE GEN 2
BM PULSE GEN 3
16 CNTR 158 A5
16 CNTR 158 A6
156 A4
146 A3
200 H1
00303 J +SS PROG
00303 K -SS PROG
00303 L -CLK 1 MHZ
R112 1K
R25 1K
+BMC CLOCK
P4-25 00402-7PC2-P3-25
P4-26 00402-7PC2-P3-26
PB 1130 ONLY
00304-7PC3-P3-8 P3-20 -H INH
00203-7PC2-P3-10 P2-10 +HME
00203-7PC2-P3-8 P2-8 GND
-H INH JJ 00310 00311
+HME AN 00306
GND P3-8 PB 1130 ONLY 00304-7PC3-P3-20
+HOME FLT AP 00306
+H END STOP FLT AR 00306
RN2-J5 75K
RN1 J6 5.1K
RN2-J5 4.3K
RN2 J5 8.2K
RN2 J5 3.3K
RN2 J5 2K
RN2 J5 13K
RN2 J5 2.7K
RN1-J6 5.1K
341 K5
200 F3
7402 F5
7432 D0
7414 G5
R104 5.1K
R7 5.1K
R24 5.1K
C5 .01
C4 .01
175 E0
201 E1
C57 0.1UF
R113 15K
74221 L5 B6
140 C0
146 C1
148 B3
7414 D4
00309 AJ +HOME SIG.
00310 S -H POS HOME ENABLE PULSE
00306 C -INH
00301 A PULL UP RES A
00309 AH -H FDB + -H HOME
00309 AF -H STB RT
00310 CB HOME ENABLE
00310 AL -H DIR RT
00309 AG +H STB LT
00302 00301 B PULLUP RES B
+5V
+12V
-12V
NC
LOC. 7PC3
CROSS REF NO. 00304
PRINT HEAD ELECTRONICS
CODE IDENT
C
DWG NO
REV
AW
SHEET 90
CROSS REF NO 00304
SEE SHEET 2

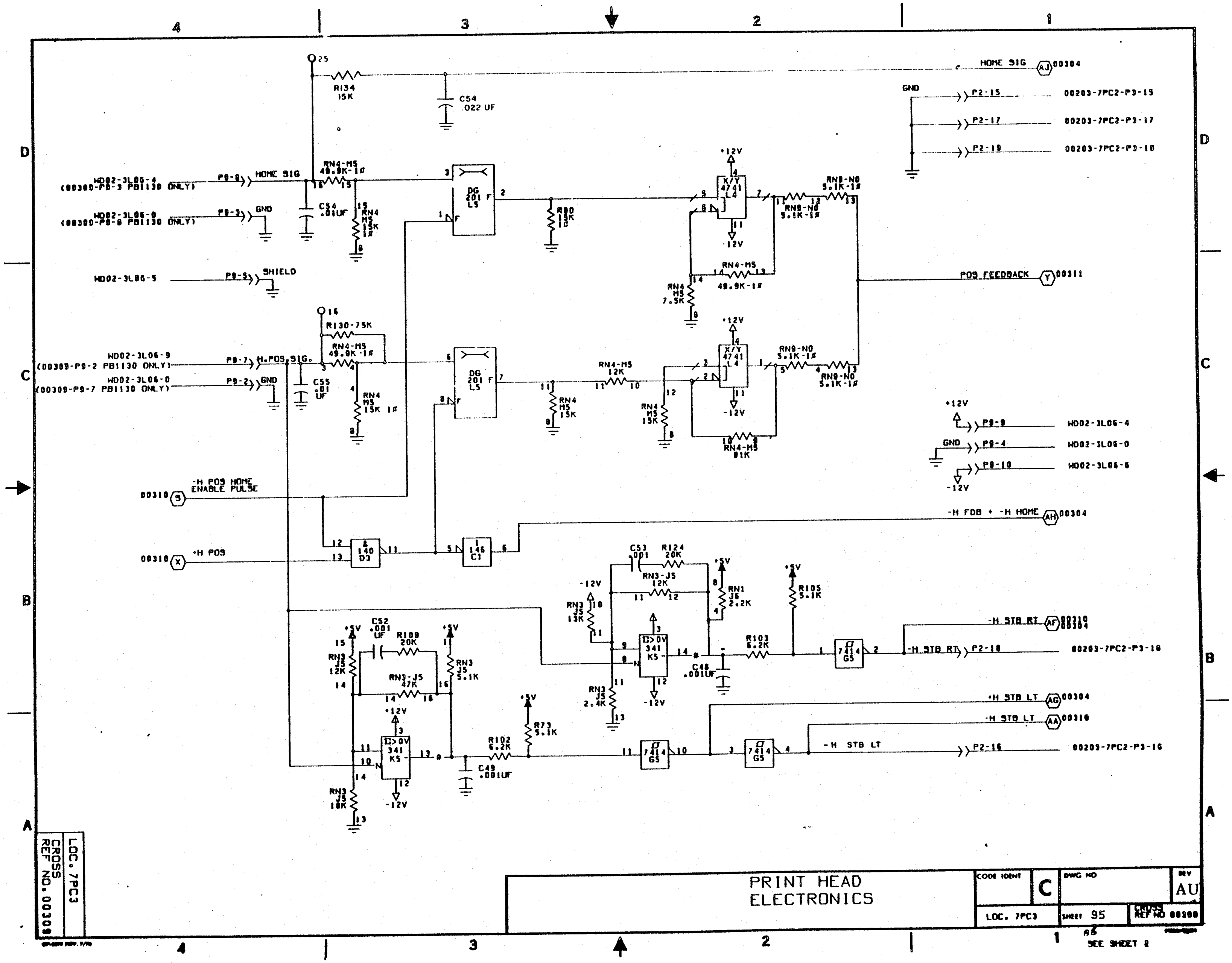

PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00305
CODE IDENT
C
DWG NO
SHEET 01
REV AW
BMC CLK CNTR
BAND UP FF
BMTO FF
BAND COVER FF
-BND COVER OPEN
-GATE OPEN
+GATE OPEN
+PRE BAND UP
-BAND UP
+BAND UP
-BAND COVER OR -GATE OPEN
+BM CUR FLT
-MOTOR ON
+RIB ON
+H SW FLT
+RIBBON DRIVE
OOP SW NC
OOP SW COM
BAND COVER SW NO
BAND COVER SW C
BAND COVER SW NC
GATE SW C
GATE SW NO
PULLUP RES C
-BMC
0.53 HZ CLOCK
-BM CURRENT FLT
-INH
H SW FLT SENSE
JP1
JP2
JP3
JP4
COMMON
NTSC
J1 J2 J3 J4
IN OUT IN OUT
OUT IN OUT IN

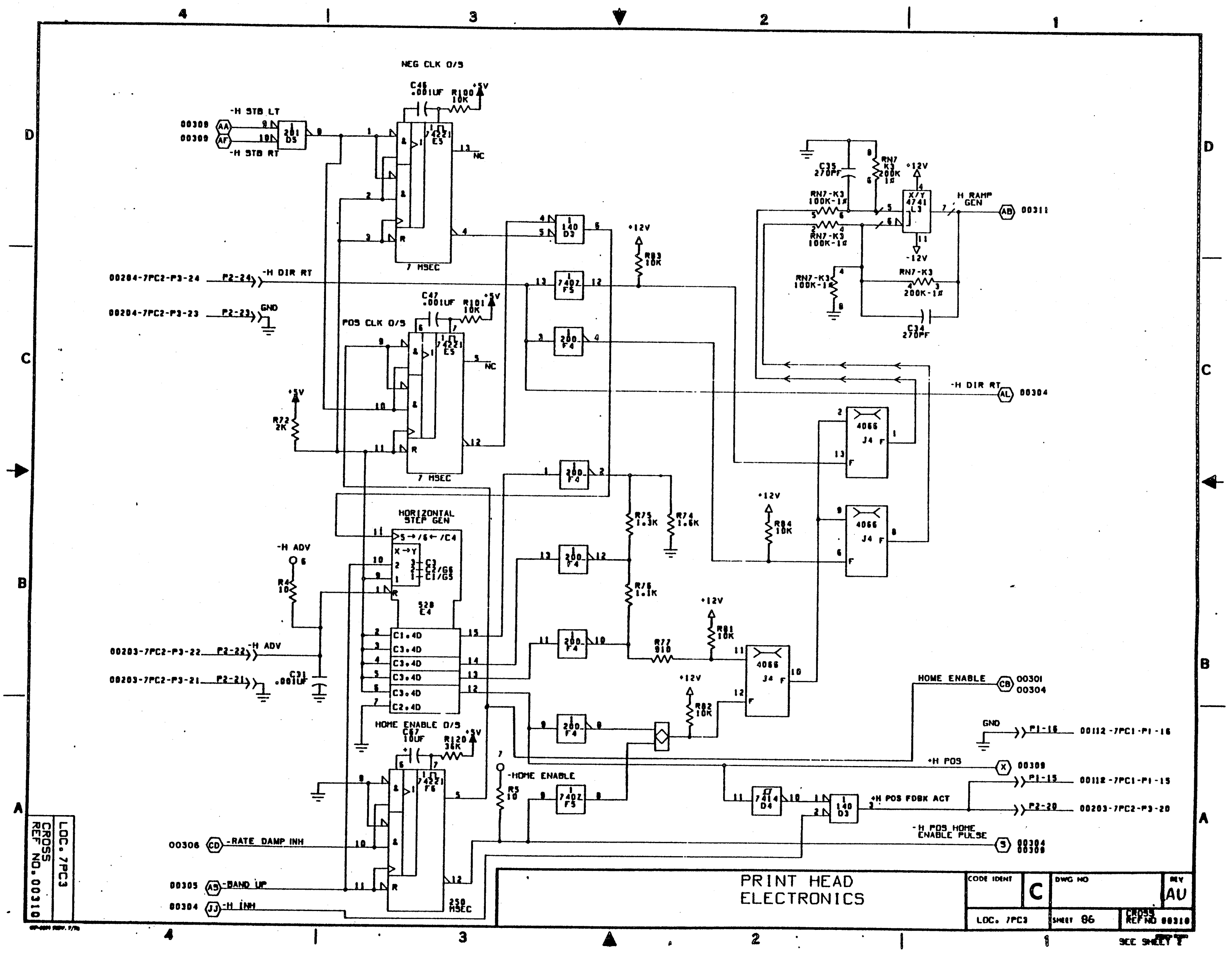

PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00306
SHEET 92
REV AU
RATE DAMPING INHIBIT O/S
RATE DAMPING INHIBIT
-5V INHIBIT
INHIBIT O/S 1 SEC
1.2 SEC
6.7 MSEC
230 MSEC RIBBON INH O/S
HAMMER FAULT DETECT O/S
+RIB ON
-BAND UP
PULLUP RES A
+HAMMER FIRE
+HMR ON
-RIB MOT CUR FLT
+BH CUR FLT
+PAPER RUNAWAY
+H SW FLT
+12V FAULT
POWER DOWN CROWBAR
+H END STOP FLT
+HOME FLT
+HME
+36V SENSE
+CROBAR
-RATE DAMP INH
+FLT RESET
-PAPER RUNAWAY
+CE FLT
-CE ERROR
-RIB MOT FLT
-12V FLT
-BAND MOTOR FLT
-HMR FLT
-H SW FLT
-FUSE FLT
-H END STOP FLT
-HOME FLT
-HME FLT
TO CNTL PNL
SEE CONTROL PANEL KIT REF NO. 00700
SEE LINE COUNTER OPTION KIT
RGTR 74174
Q1 2N4250
Q2 2N3565
Q3 2N3565
D

APR. 83

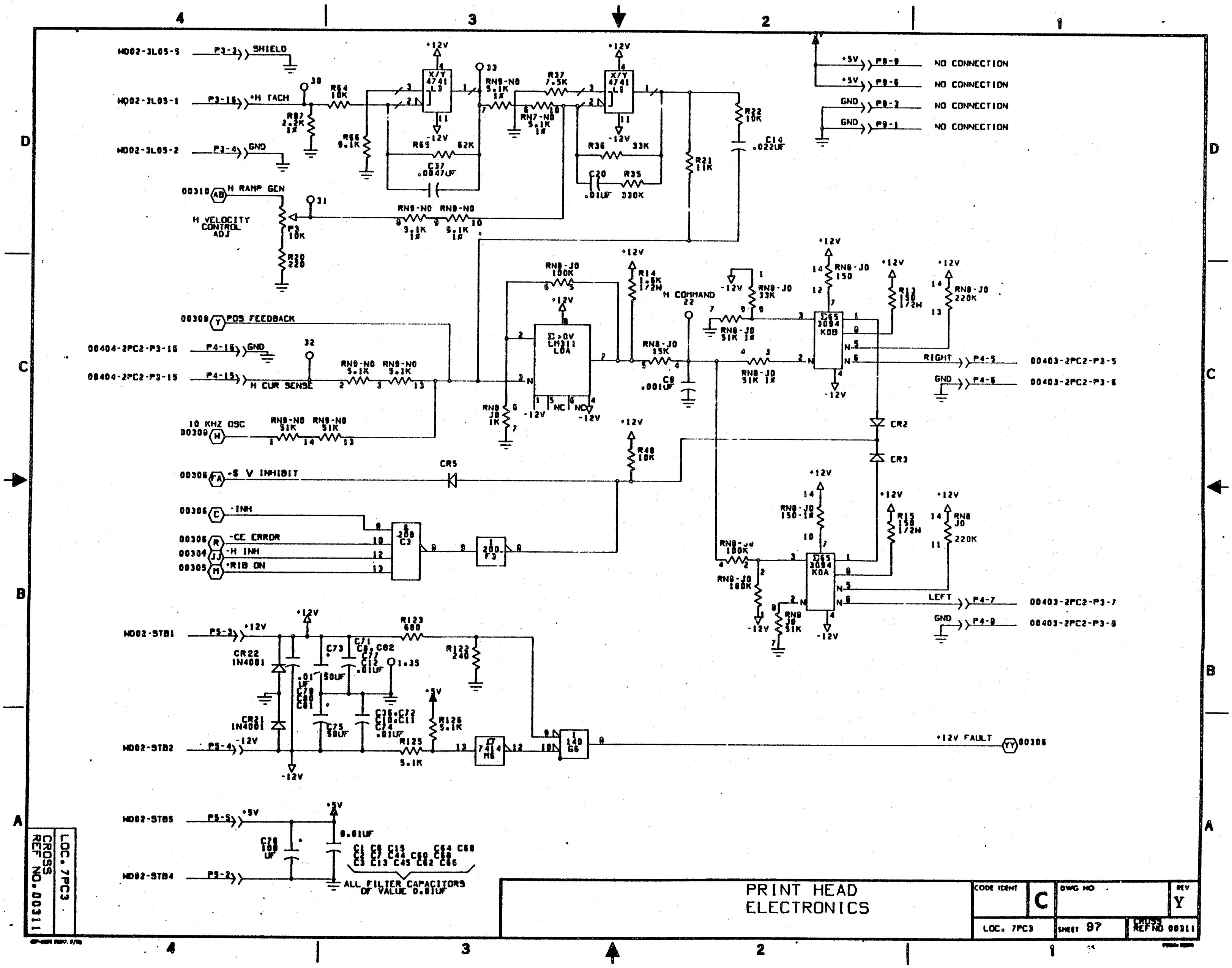

PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00307
CODE IDENT
DWG NO
C
SHEET 93
REV AW
SEE SHEET 2
SEE LINE COUNTER OPTION KIT
VERTICAL MOTION READER
PULLUP RES A
SHIELD
VFU VER
GND
-V ADV
+36V
-V INH
GATE OPEN
RAMP GEN
-CLAMP ENABLE
-V STB
-V CK STB
PAPER RUNAWAY
PD9, FBK
2.5 SEC PAPER RUNAWAY O/S
-V ADJ
DG201 L5
X/Y 4741 L4
341 K2
341 H6
7414 M6
7414 G5
213 E3
146 H0
146 M3
201 C2
7402 F5
185 G1
CR17
CR26 6.2V 1%
CR27 6.2V 1%
CR16
C43 .1-1%
C70 .001UF
C15 220UF
R27 36K
R87 100K
R89 49.9K 1%
R88 100
R141 1.5K
R127 5.1K
R129 5.1K
R111 5.1K
R110 10K
R120 24
R6 10
R121 20K
HD02-3L02-8
HD02-3L02-0
HD02-3L02-5
HD02-3L03-5
HD02-3L03-2
HD02-3L03-9
HD02-3L03-0
00208-7PC2-P3-28
00206-7PC2-P3-27
00208-7PC2-P3-30
00208-7PC2-P3-29
00211-7PC2-P3-26
00211-7PC2-P3-25
00401-2PC2-P3-19
00401-2PC2-P3-20
HD02-3L02-4
HD02-3L02-6
00306
00308
00305
00302
0301


VERTICAL TACH
23
VERTICAL TACH OUTPUT
20
HD02-3LD1-5
P3-6
SHIELD
HD02-3LD1-2
P3-10
+VERT TACH
WD02-3LD1-0
P3-7
GND
+5V
2.2K R144
STACKER PRESENT
9J02-9
P10-5
9J02-8
P10-8
7406 M2
7408 F4
R95 2.2K
+12V R85 10K
R145 5.1K
4066 J4
R86 13K
R47 10K
R18 9.1K
X/Y 4741 L1
R38 75K
1500PF C21
RN5-N1 5.1K 1%
R17 9.1K
R34 100K
C18 .01UF
R33 330K
R16 9.1K
13
RN5-N1 5.1K-1%
R135-5.1K
V VELOCITY CONTROL ADJUST
P2 2K
R8 220
-HIGH SPEED SLEW ENABLE
CONT SHT 3
P10-11
P10-3
7408 F3
R57 5.1K
00307
V
RAMP GEN
U
POS FBK
RN6-J1 100K
LM311 L0B
NC
+12V
-12V
R31 1.0K 1/2W
RN6-J1 15K
C19 .001UF
V COMMAND
17
RN6-J1 33K
RN6-J1 51K
RN6-J1 150
3084 K1B
R30 150 1/2W
RN6-J1 220K
REV
P4-11
00403-2PC2-P3-11
GND
P4-12
00403-2PC2-P3-12
00404-2PC2-P3-18
P4-18
34
00404-2PC2-P3-17
P4-17
VERT CUR SENSE
RN5-N1 5.1K-1%
CR8
CR7
CR15
RN7-K3 200K-1%
CR14
RN7-K3 220K-1%
RN7-K3 20K-1%
RN5-N1 51K
RN6-J1 1K
RN7-K3 220K 1%
341 L2
RN7-K3 10K-1%
X/Y 4741 L3
RN5 N1 51K
R63 9.1K
C33 270PF
21
10 KHZ OSC
RN6-J1 100K
RN6-J1 51K
3084 K1A
R32 150 1/2W
300
FWD
P4-9
00403-2PC2-P3-9
P4-10
00403-2PC2-P3-10
H
00311
00308
R
-CE ERROR
P2-32
-V ALIGN
P2-31
140 G6
200 F3
R59 10K
7414 D4
CR6
-5V INHIBIT
FA
00308
00311
-V INH
Z
00307
VERT. SERVO DRIVE
LOC. 7PC3
CROSS REF NO. 00308
PRINT HEAD ELECTRONICS
CODE IDENT
C
DWG NO
REV
AW
SHEET 94
CROSS REF NO 00308
SEE SHEET 2
3-19-80
MAD
A
B
C
D
1
2
3
4

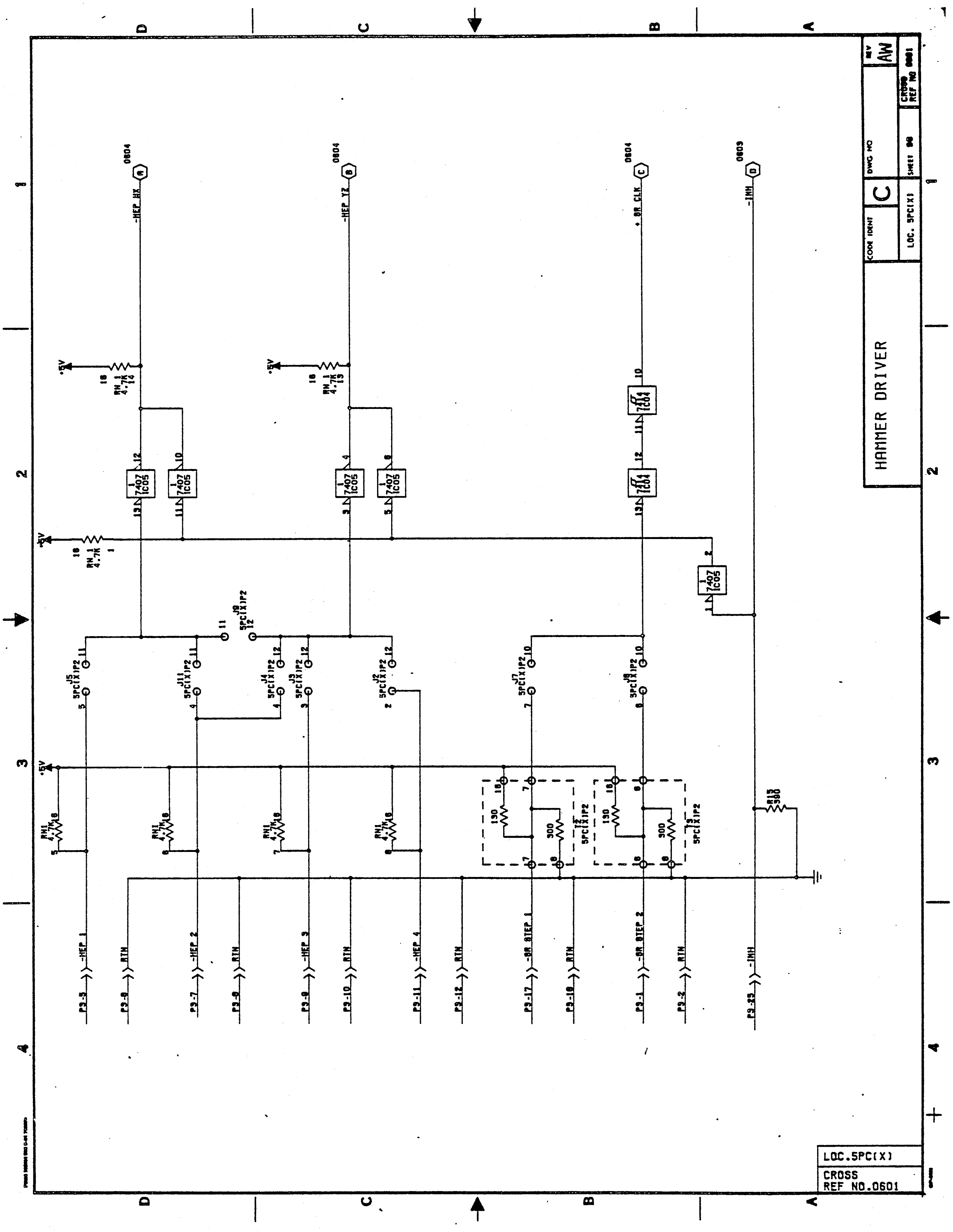

PRINT HEAD
ELECTRONICS
CODE IDENT C
DWG NO
REV AU
LOC. 7PC3
SHEET 95
CROSS REF NO 00309
SEE SHEET 2
LOC. 7PC3
CROSS REF NO. 00309
HOME SIG (AJ) 00304
P2-15 00203-7PC2-P3-15
P2-17 00203-7PC2-P3-17
P2-19 00203-7PC2-P3-19
GND
R134 15K
C54 .022 UF
HD02-3L06-4 (00380-P8-3 PB1130 ONLY) P8-8 HOME SIG
HD02-3L06-8 (00380-P8-8 PB1130 ONLY) P8-3 GND
HD02-3L06-5 P8-5 SHIELD
RN4-M5 49.9K-1%
C34 .01UF
RN4 M5 15K 1%
DG 201 L5
R80 15K 1%
X/Y 4741 L4
+12V
-12V
RN9-N0 5.1K-1%
RN4-M5 49.9K-1%
RN4 M5 7.5K
POS FEEDBACK (Y) 00311
R130-75K
HD02-3L06-9 (00309-P8-2 PB1130 ONLY) P8-7 H.POS SIG.
HD02-3L06-0 (00309-P8-7 PB1130 ONLY) P8-2 GND
C55 .01 UF
RN4 M5 15K 1%
RN4 M5 15K
RN4-M5 12K
RN4 M5 15K
RN4-M5 91K
+12V P8-9 HD02-3L06-4
GND P8-4 HD02-3L06-0
-12V P8-10 HD02-3L06-6
00310 (S) -H POS HOME ENABLE PULSE
00310 (X) +H POS
& 140 D3
1 146 C1
-H FDB + -H HOME (AH) 00304
C53 .001
R124 20K
RN3-J5 12K
RN1 J6 2.2K
RN3 J5 13K
Σ>0V 341 K5
RN3 J5 2.4K
C48 .001UF
R103 6.2K
R105 5.1K
+5V
7414 G5
-H STB RT (AF) 00310 00304
-H STB RT P2-18 00203-7PC2-P3-18
+H STB LT (AG) 00304
-H STB LT (AA) 00310
-H STB LT P2-16 00203-7PC2-P3-16
C52 .001 UF
R109 20K
RN3 J5 12K
RN3-J5 47K
RN3 J5 5.1K
RN3 J5 18K
R102 6.2K
C49 .001UF
R73 5.1K
A B C D
1 2 3 4

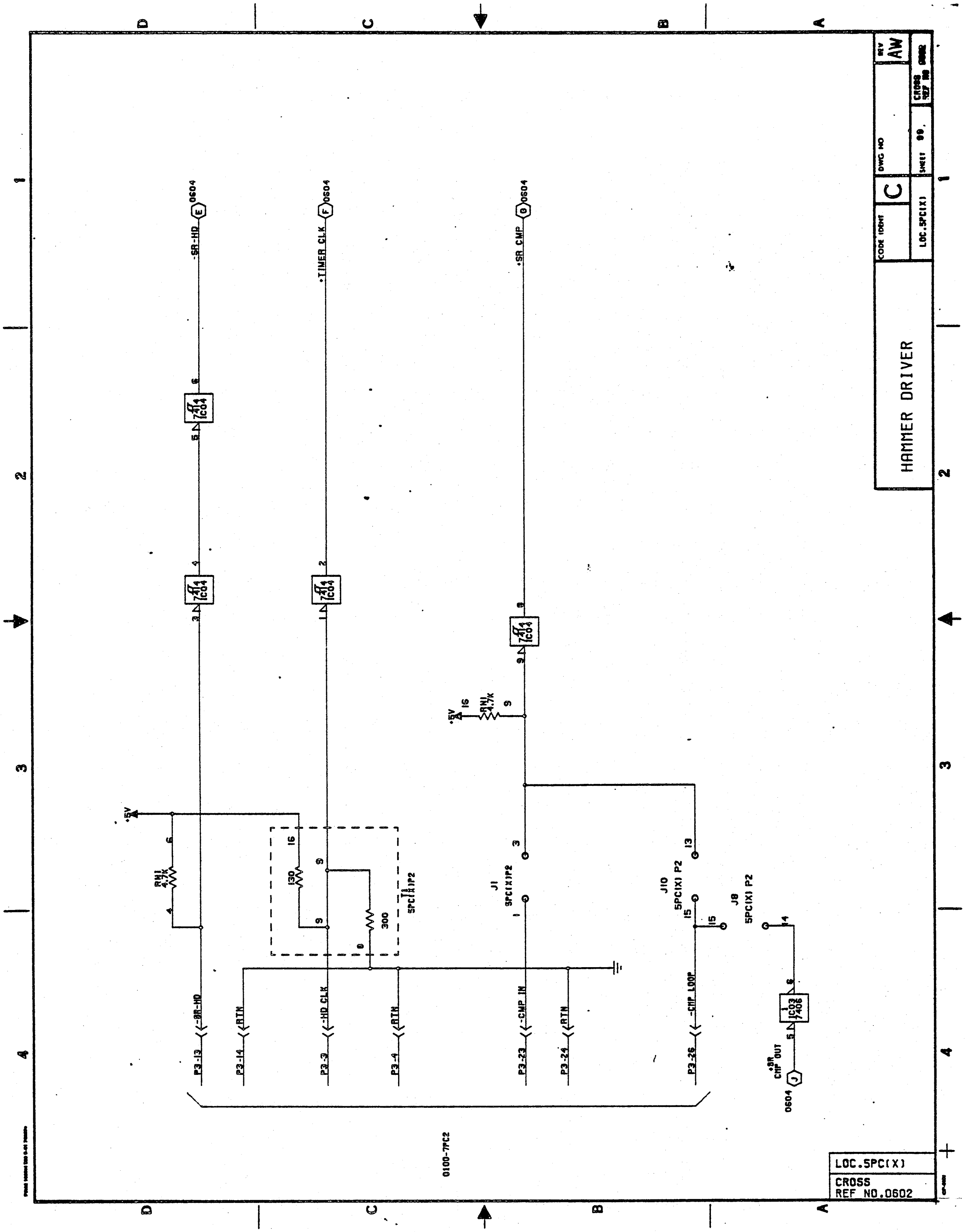


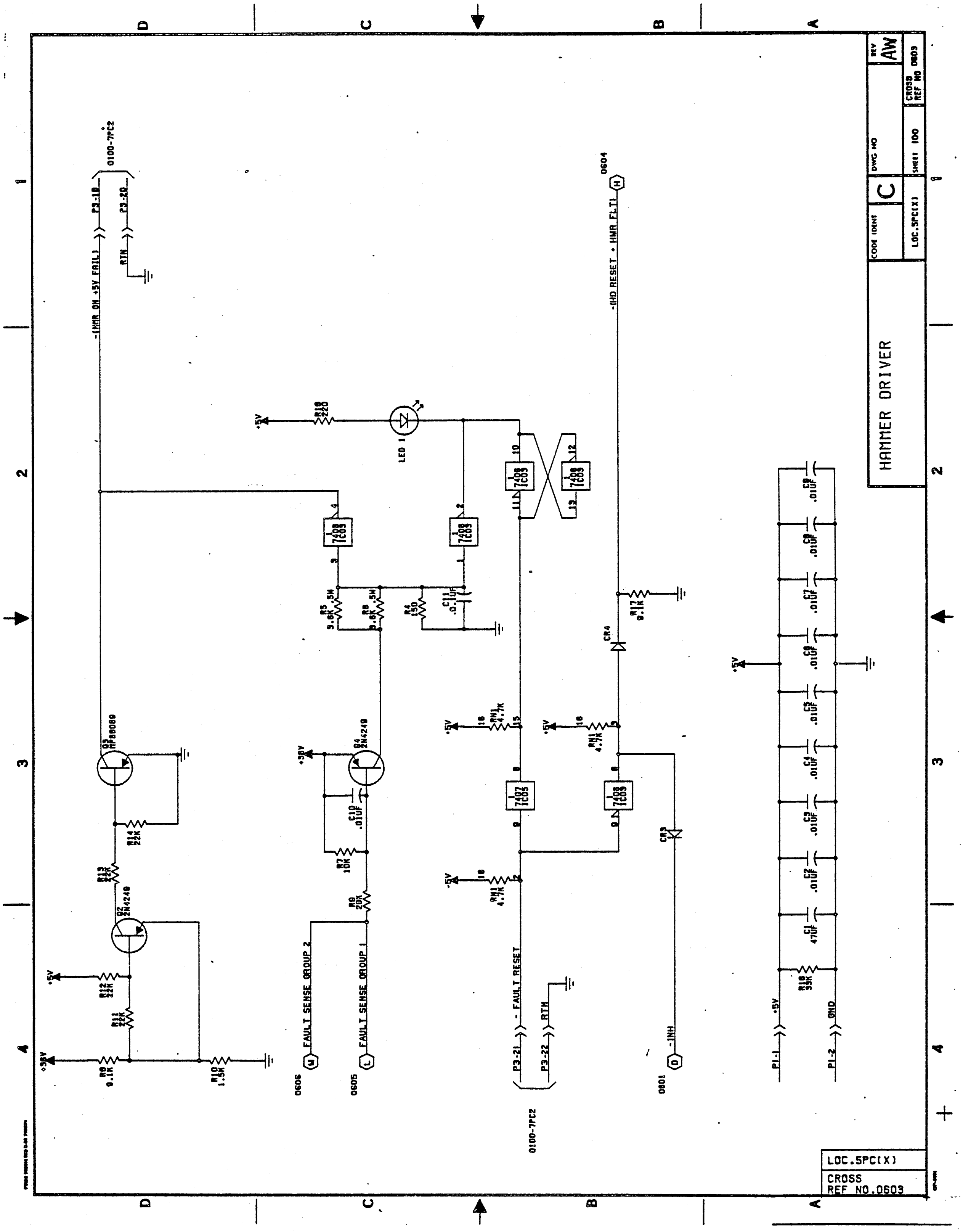
PRINT HEAD ELECTRONICS

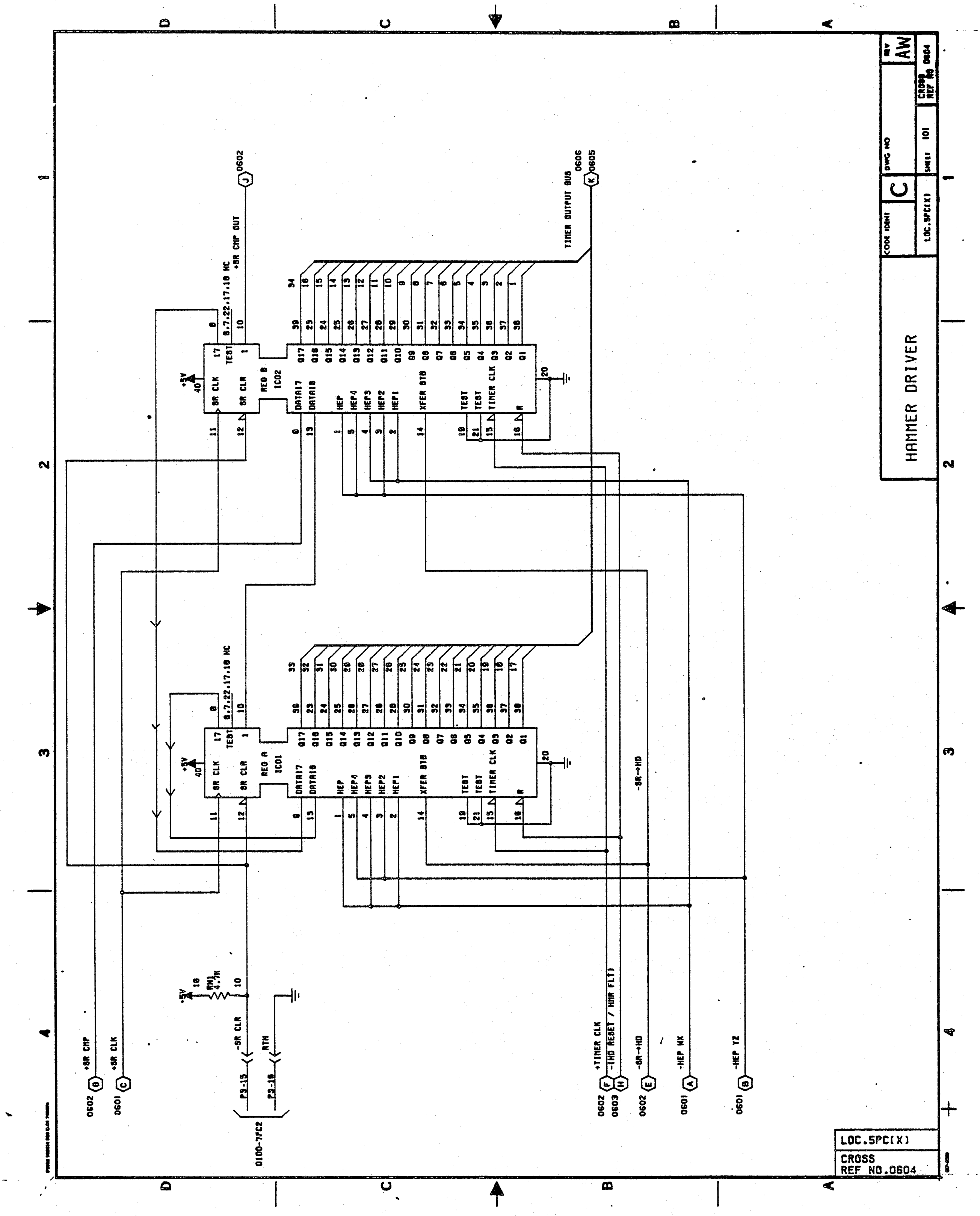


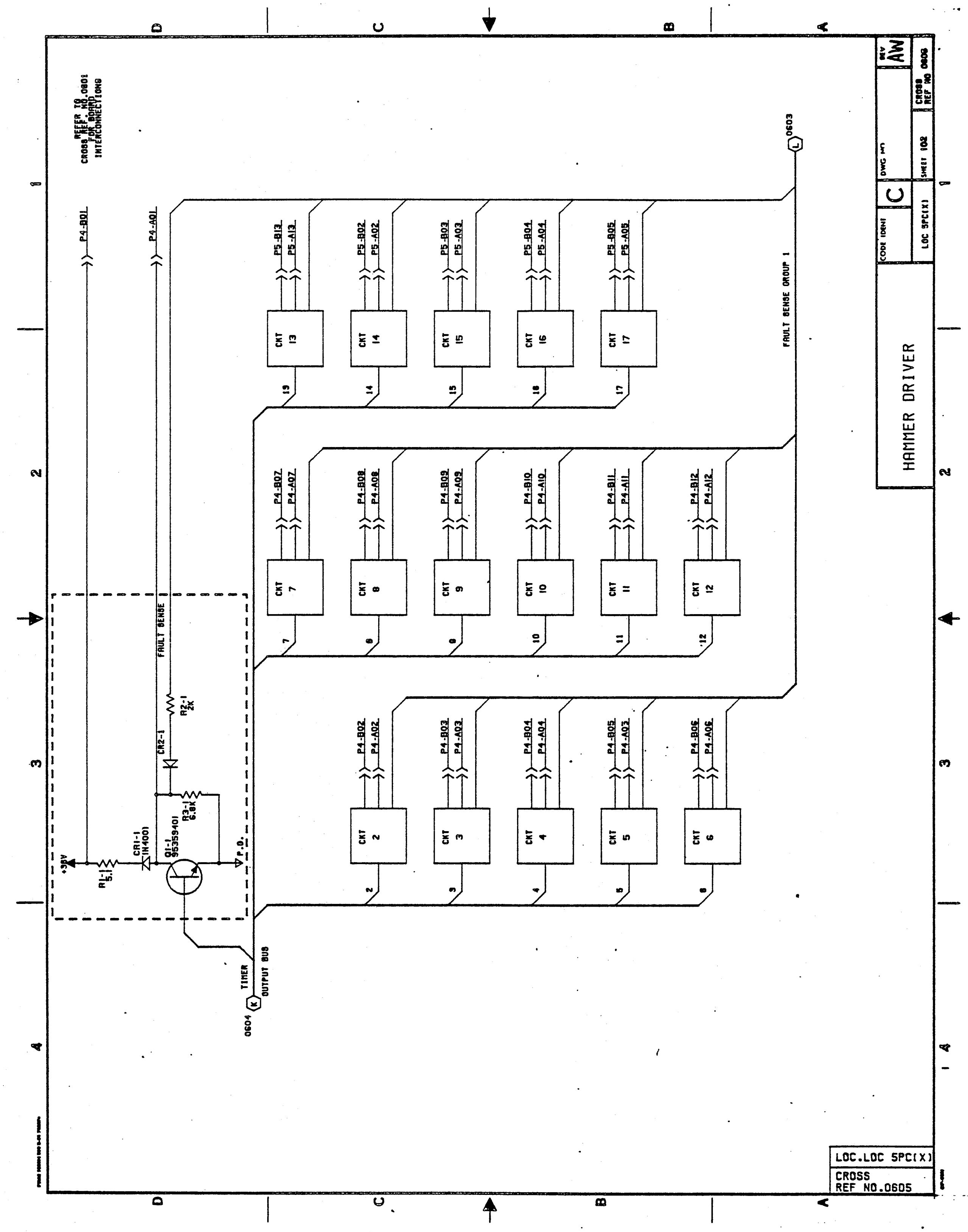
PRINT HEAD ELECTRONICS

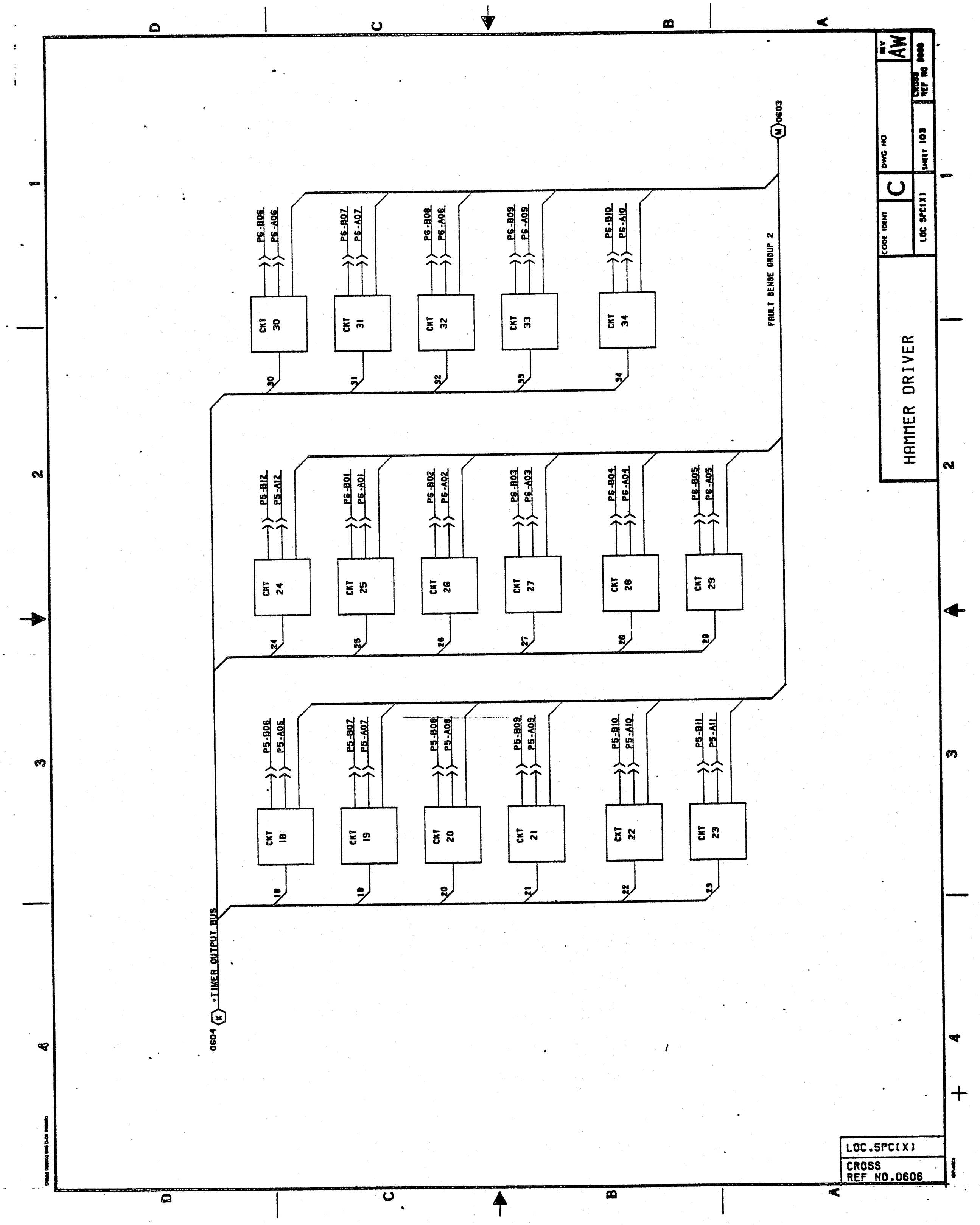

HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AW
LOC. 5PC(X)
SHEET 98
CROSS REF NO 0601
LOC.5PC(X)
CROSS
REF NO.0601
-HEP HX
-HEP YZ
+ BR CLK
-INH
0604
0603
+5V
RN 1
4.7K
7407
IC05
7404
IC04
J5
J11
J4
J3
J2
J7
J8
J10
5PC(X)P2
190
300
R15
390
P9-5
P9-6
P9-7
P9-8
P9-9
P9-10
P9-11
P9-12
P9-17
P9-18
P9-1
P9-2
P9-23
-HEP 1
-HEP 2
-HEP 3
-HEP 4
-BR STEP 1
-BR STEP 2
RTN
-INH

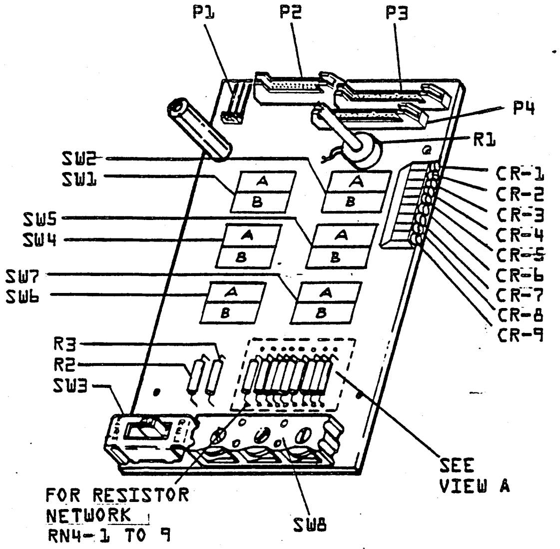

HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AW
LOC.SPC(X)
SHEET 90
CROSS REF NO 0602
-SR-HD
0604
E
+TIMER CLK
0604
F
+SR CMP
0604
G
74 14
IC04
+5V
RN1
4.7K
130
300
16
SPC(X)P2
J1
SPC(X)P2
J10
SPC(X) P2
J8
SPC(X) P2
-SR-HD
RTN
-HD CLK
RTN
-CMP IN
RTN
-CMP LOOP
P3-13
P3-14
P3-3
P3-4
P3-23
P3-24
P3-26
+SR CMP OUT
0604
J
IC03
7406
0100-7PC2
LOC.SPC(X)
CROSS
REF NO.0602
D
C
B
A
1
2
3
4


HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AW
LOC.5PC(X)
SHEET 100
CROSS REF NO 0603
LOC.5PC(X)
CROSS REF NO.0603
-(HMR ON +5V FAIL)
P3-18
P3-20
RTN
0100-7PC2
-(HD RESET + HMR FLT)
0604
H
Q3 MP8609
Q2 2N4249
Q4 2N4249
R8 9.1K
R10 1.5K
R11 22K
R12 22K
R13 22K
R14 22K
R7 10K
R9 20K
C10 .01UF
R5 9.6K .5M
R6 9.6K .5M
R4 150
C11 .01UF
R18 220
LED 1
7408 1C09
7407 1C05
RN1 4.7K
R17 9.1K
CR4
CR3
+5V
+38V
FAULT SENSE GROUP 2
FAULT SENSE GROUP 1
0606
0605
M
L
P3-21
- FAULT RESET
P3-22
RTN
0100-7PC2
-INH
D
0801
P1-1
+5V
P1-2
GND
R16 39K
C1 47UF
C2 .01UF
C3 .01UF
C4 .01UF
C5 .01UF
C6 .01UF
C7 .01UF
C8 .01UF
C9 .01UF
A
B
C
D
1
2
3
4

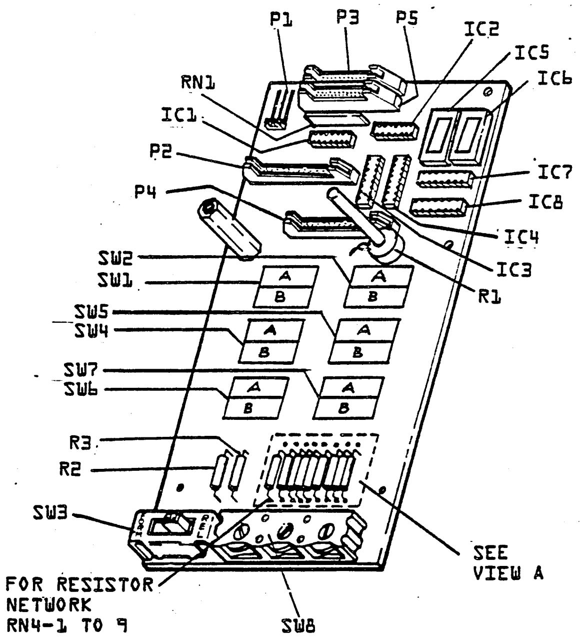

HAMMER DRIVER
CODE IDENT
C
DWG NO
SHEET 101
REV AW
CROSS REF NO 0604
LOC.5PC(X)
LOC.5PC(X)
CROSS REF NO.0604
REG B IC02
REG A IC01
SR CLK
SR CLR
TEST
DATA17
DATA18
HEP
HEP4
HEP3
HEP2
HEP1
XFER STB
TIMER CLK
R
Q17 Q16 Q15 Q14 Q13 Q12 Q11 Q10 Q9 Q8 Q7 Q6 Q5 Q4 Q3 Q2 Q1
+5V
40
20
6,7,22,17,18 NC
+SR CMP OUT
TIMER OUTPUT BUS
0602 J
0606 K 0605
-SR→HD
RN1 4.7K
+SR CMP
+SR CLK
-SR CLR
RTN
P3-15
P3-16
0100-7PC2
+TIMER CLK
-(HD RESET / HMR FLT)
-SR→HD
-HEP WX
-HEP YZ
0602 G
0601 C
0602 F
0603 H
0602 E
0601 A
0601 B
D C B A
1 2 3 4


HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AW
LOC SPC(X)
SHEET 102
CROSS REF NO 0606
LOC.LOC SPC(X)
CROSS REF NO.0605
REFER TO CROSS REF. NO.0601 FOR BOARD INTERCONNECTIONS
P4-B01
P4-A01
FAULT SENSE
FAULT SENSE GROUP 1
0603
0604
TIMER
OUTPUT BUS
+38V
R1-1 5.1
CR1-1 1N4001
Q1-1 9535940I
R3-1 6.8K
CR2-1
R2-1 2K
P.D.
CKT 2
CKT 3
CKT 4
CKT 5
CKT 6
CKT 7
CKT 8
CKT 9
CKT 10
CKT 11
CKT 12
CKT 13
CKT 14
CKT 15
CKT 16
CKT 17
P4-B02 P4-A02
P4-B03 P4-A03
P4-B04 P4-A04
P4-B05 P4-A03
P4-B06 P4-A06
P4-B07 P4-A07
P4-B08 P4-A08
P4-B09 P4-A09
P4-B10 P4-A10
P4-B11 P4-A11
P4-B12 P4-A12
P5-B13 P5-A13
P5-B02 P5-A02
P5-B03 P5-A03
P5-B04 P5-A04
P5-B05 P5-A05
D
C
B
A
1
2
3
4


HAMMER DRIVER
CODE IDENT
C
DWG NO
REV
AW
CROSS REF NO 0606
LOC 5PC(X)
SHEET 108
M 0603
FAULT SENSE GROUP 2
CKT 30
CKT 31
CKT 32
CKT 33
CKT 34
P6-B06
P6-A06
P6-B07
P6-A07
P6-B08
P6-A08
P6-B09
P6-A09
P6-B10
P6-A10
CKT 24
CKT 25
CKT 26
CKT 27
CKT 28
CKT 29
P5-B12
P5-A12
P6-B01
P6-A01
P6-B02
P6-A02
P6-B03
P6-A03
P6-B04
P6-A04
P6-B05
P6-A05
CKT 18
CKT 19
CKT 20
CKT 21
CKT 22
CKT 23
P5-B06
P5-A06
P5-B07
P5-A07
P5-B08
P5-A08
P5-B09
P5-A09
P5-B10
P5-A10
P5-B11
P5-A11
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
0604 K TIMER OUTPUT BUS
LOC.5PC(X)
CROSS
REF NO.0606
D
C
B
A
1
2
3
4

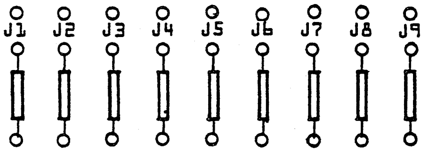


CONTROL PANEL
WITH DIGITAL FAULT INDICATORS

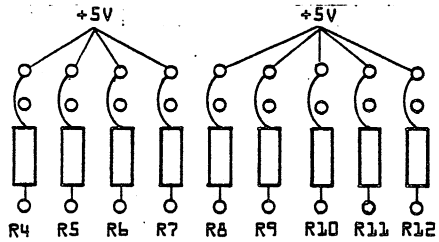


CONTROL PANEL
WITH LED FAULT INDICATORS

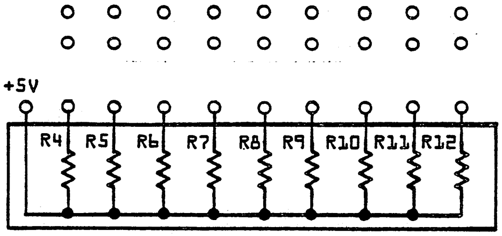
VIEW A WITH 11 INCH FIXED FORM OR EVFU PRINTER OPTION. SW8 IS NOT INSTALLED.



VIEW A WITH VARIABLE FORMS OPTION USING SW8 AND R4 - R12 (4.7K)

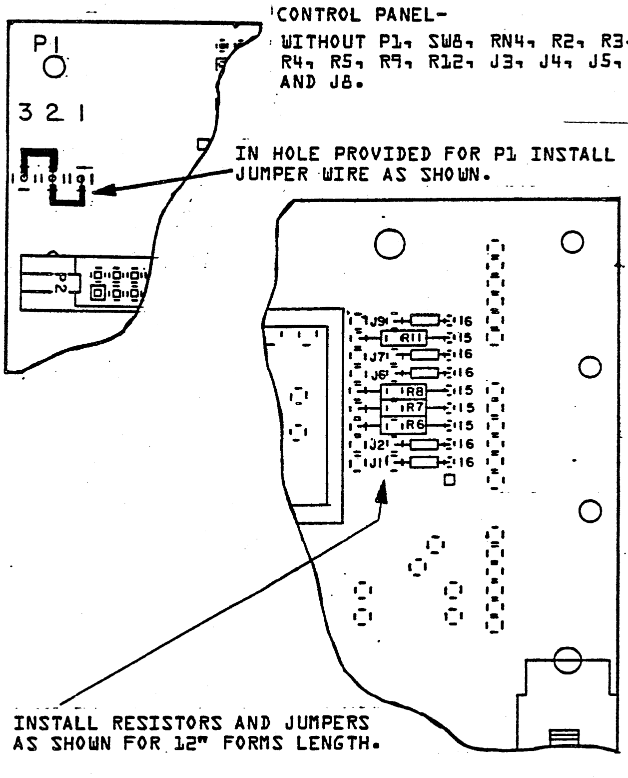


VIEW A WITH VARIABLE FORMS OPTION USING SW8 AND RN4



RN4 RESISTOR NETWORK 4.7K RESISTORS

SPECIAL OPTION: 12 INCH FIXED FORM, 6 LPI. PRINTER- WITHOUT EVFU AND 6/8 LPI SWITCH 35W2 DISCONNECTED.

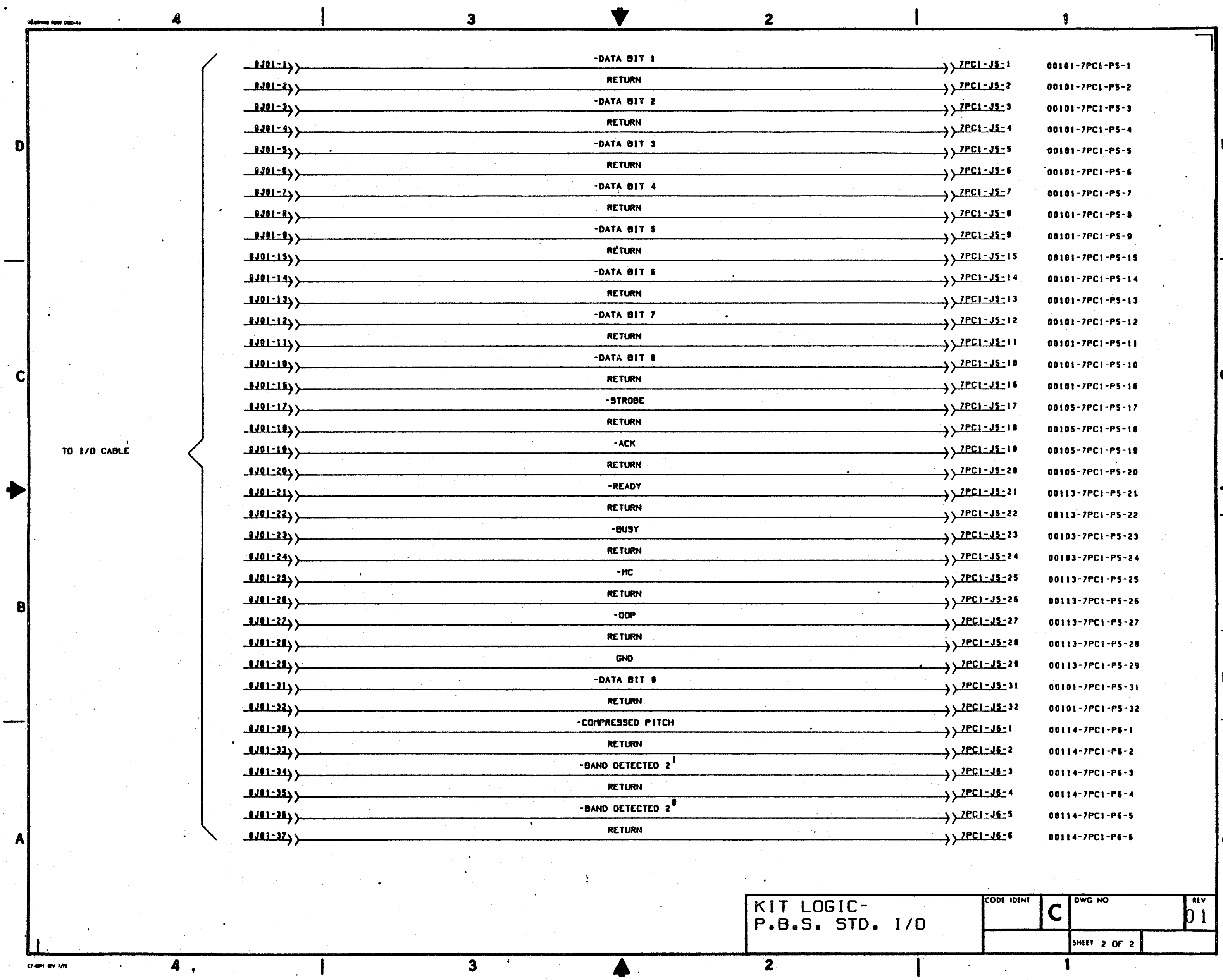


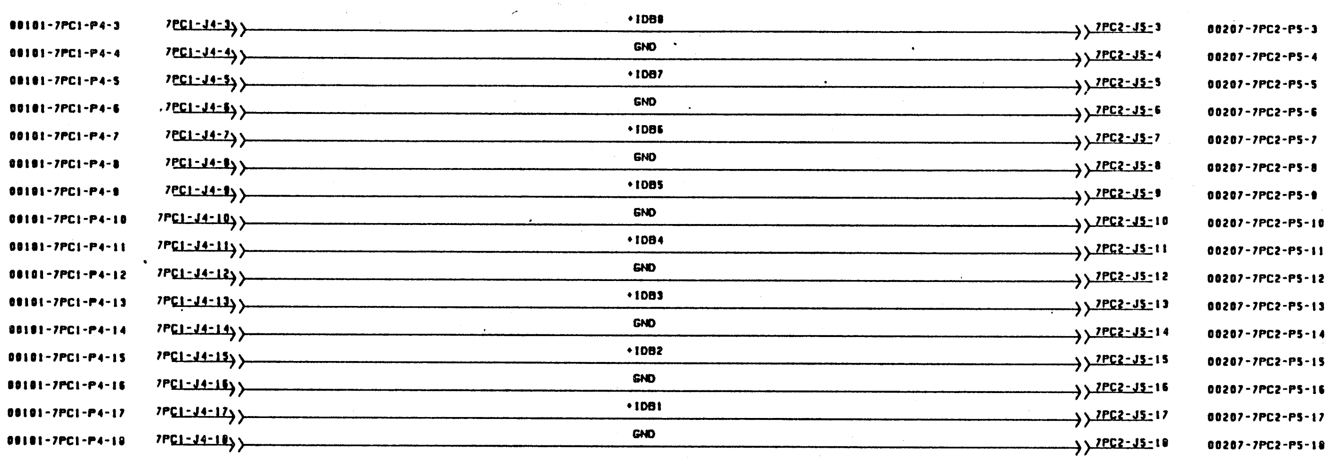
CONTROL PANEL- WITHOUT P1, SW8, RN4, R2, R3, R4, R5, R9, R12, J3, J4, J5, AND J8.

IN HOLE PROVIDED FOR P1 INSTALL JUMPER WIRE AS SHOWN.

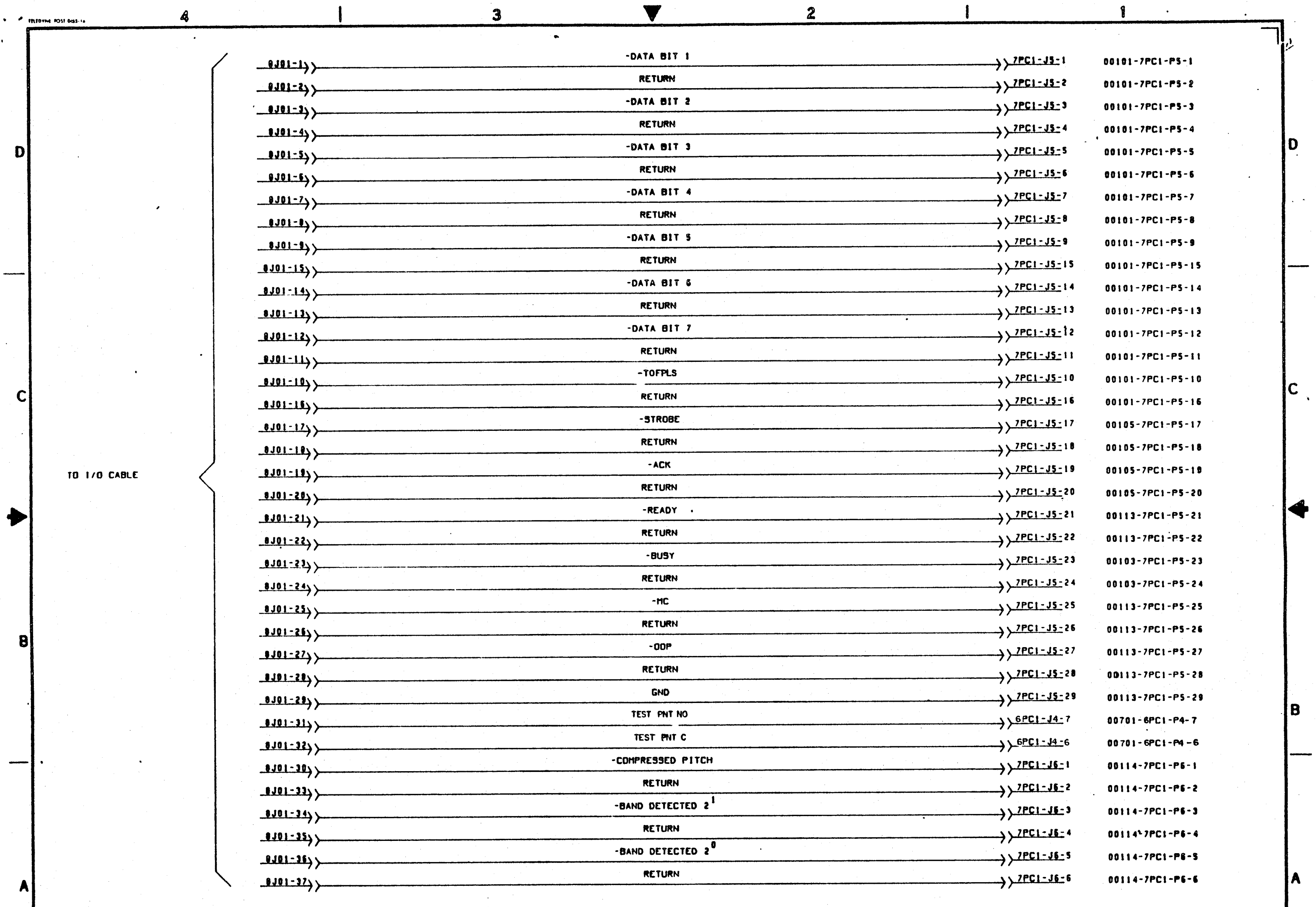
INSTALL RESISTORS AND JUMPERS AS SHOWN FOR 12" FORMS LENGTH.

CONTROL PANEL BOARD ASSEMBLIES

4
3
2
1
D
C
B
A
TO I/O CABLE
8J01-1 -DATA BIT 1 7PC1-J5-1 00101-7PC1-P5-1
8J01-2 RETURN 7PC1-J5-2 00101-7PC1-P5-2
8J01-3 -DATA BIT 2 7PC1-J5-3 00101-7PC1-P5-3
8J01-4 RETURN 7PC1-J5-4 00101-7PC1-P5-4
8J01-5 -DATA BIT 3 7PC1-J5-5 00101-7PC1-P5-5
8J01-6 RETURN 7PC1-J5-6 00101-7PC1-P5-6
8J01-7 -DATA BIT 4 7PC1-J5-7 00101-7PC1-P5-7
8J01-8 RETURN 7PC1-J5-8 00101-7PC1-P5-8
8J01-9 -DATA BIT 5 7PC1-J5-9 00101-7PC1-P5-9
8J01-15 RETURN 7PC1-J5-15 00101-7PC1-P5-15
8J01-14 -DATA BIT 6 7PC1-J5-14 00101-7PC1-P5-14
8J01-13 RETURN 7PC1-J5-13 00101-7PC1-P5-13
8J01-12 -DATA BIT 7 7PC1-J5-12 00101-7PC1-P5-12
8J01-11 RETURN 7PC1-J5-11 00101-7PC1-P5-11
8J01-10 -DATA BIT 8 7PC1-J5-10 00101-7PC1-P5-10
8J01-16 RETURN 7PC1-J5-16 00101-7PC1-P5-16
8J01-17 -STROBE 7PC1-J5-17 00105-7PC1-P5-17
8J01-18 RETURN 7PC1-J5-18 00105-7PC1-P5-18
8J01-19 -ACK 7PC1-J5-19 00105-7PC1-P5-19
8J01-20 RETURN 7PC1-J5-20 00105-7PC1-P5-20
8J01-21 -READY 7PC1-J5-21 00113-7PC1-P5-21
8J01-22 RETURN 7PC1-J5-22 00113-7PC1-P5-22
8J01-23 -BUSY 7PC1-J5-23 00103-7PC1-P5-23
8J01-24 RETURN 7PC1-J5-24 00103-7PC1-P5-24
8J01-25 -MC 7PC1-J5-25 00113-7PC1-P5-25
8J01-26 RETURN 7PC1-J5-26 00113-7PC1-P5-26
8J01-27 -OOP 7PC1-J5-27 00113-7PC1-P5-27
8J01-28 RETURN 7PC1-J5-28 00113-7PC1-P5-28
8J01-29 GND 7PC1-J5-29 00113-7PC1-P5-29
8J01-31 -DATA BIT 9 7PC1-J5-31 00101-7PC1-P5-31
8J01-32 RETURN 7PC1-J5-32 00101-7PC1-P5-32
8J01-30 -COMPRESSED PITCH 7PC1-J6-1 00114-7PC1-P6-1
8J01-33 RETURN 7PC1-J6-2 00114-7PC1-P6-2
8J01-34 -BAND DETECTED 2^1 7PC1-J6-3 00114-7PC1-P6-3
8J01-35 RETURN 7PC1-J6-4 00114-7PC1-P6-4
8J01-36 -BAND DETECTED 2^0 7PC1-J6-5 00114-7PC1-P6-5
8J01-37 RETURN 7PC1-J6-6 00114-7PC1-P6-6
KIT LOGIC-
P.B.S. STD. I/O
CODE IDENT
C
DWG NO
REV
01
SHEET 2 OF 2



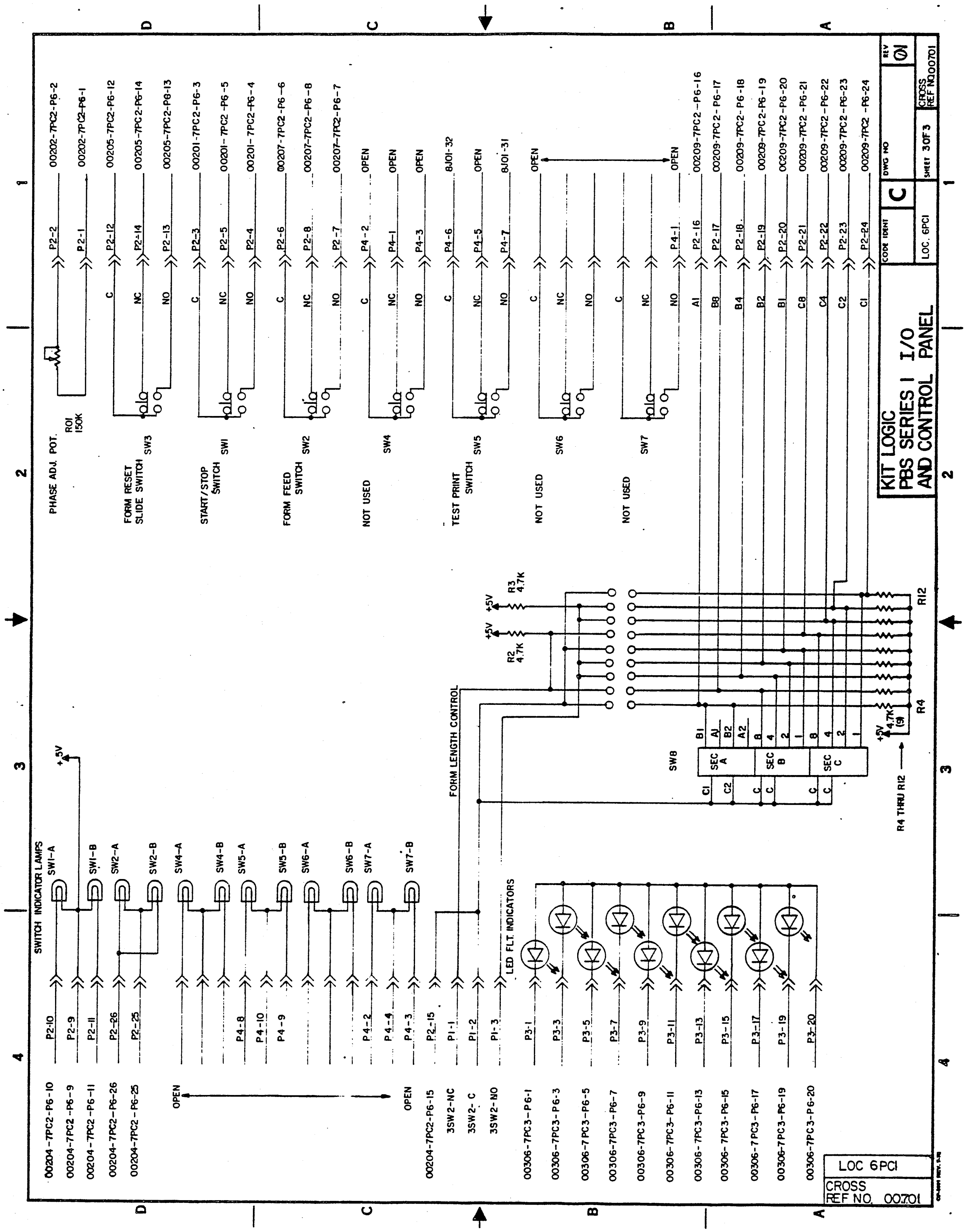
KIT LOGIC DATA BITS	CODE IDENT	C	DWG NO
		SHEET 2 OF 2	REV 01

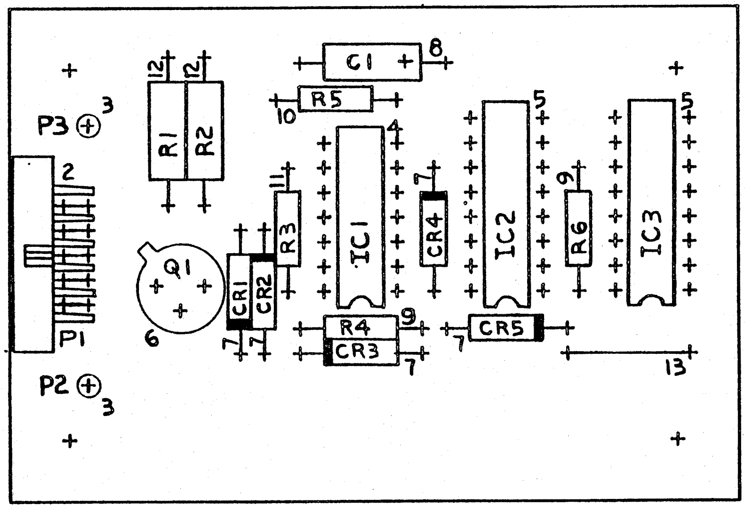


8J01-1	-DATA BIT 1	7PC1-J5-1	00101-7PC1-P5-1
8J01-2	RETURN	7PC1-J5-2	00101-7PC1-P5-2
8J01-3	-DATA BIT 2	7PC1-J5-3	00101-7PC1-P5-3
8J01-4	RETURN	7PC1-J5-4	00101-7PC1-P5-4
8J01-5	-DATA BIT 3	7PC1-J5-5	00101-7PC1-P5-5
8J01-6	RETURN	7PC1-J5-6	00101-7PC1-P5-6
8J01-7	-DATA BIT 4	7PC1-J5-7	00101-7PC1-P5-7
8J01-8	RETURN	7PC1-J5-8	00101-7PC1-P5-8
8J01-9	-DATA BIT 5	7PC1-J5-9	00101-7PC1-P5-9
8J01-15	RETURN	7PC1-J5-15	00101-7PC1-P5-15
8J01-14	-DATA BIT 6	7PC1-J5-14	00101-7PC1-P5-14
8J01-13	RETURN	7PC1-J5-13	00101-7PC1-P5-13
8J01-12	-DATA BIT 7	7PC1-J5-12	00101-7PC1-P5-12
8J01-11	RETURN	7PC1-J5-11	00101-7PC1-P5-11
8J01-10	-TOFPLS	7PC1-J5-10	00101-7PC1-P5-10
8J01-16	RETURN	7PC1-J5-16	00101-7PC1-P5-16
8J01-17	-STROBE	7PC1-J5-17	00105-7PC1-P5-17
8J01-18	RETURN	7PC1-J5-18	00105-7PC1-P5-18
8J01-19	-ACK	7PC1-J5-19	00105-7PC1-P5-19
8J01-20	RETURN	7PC1-J5-20	00105-7PC1-P5-20
8J01-21	-READY	7PC1-J5-21	00113-7PC1-P5-21
8J01-22	RETURN	7PC1-J5-22	00113-7PC1-P5-22
8J01-23	-BUSY	7PC1-J5-23	00103-7PC1-P5-23
8J01-24	RETURN	7PC1-J5-24	00103-7PC1-P5-24
8J01-25	-MC	7PC1-J5-25	00113-7PC1-P5-25
8J01-26	RETURN	7PC1-J5-26	00113-7PC1-P5-26
8J01-27	-OOP	7PC1-J5-27	00113-7PC1-P5-27
8J01-28	RETURN	7PC1-J5-28	00113-7PC1-P5-28
8J01-29	GND	7PC1-J5-29	00113-7PC1-P5-29
8J01-31	TEST PNT NO	6PC1-J4-7	00701-6PC1-P4-7
8J01-32	TEST PNT C	6PC1-J4-6	00701-6PC1-P4-6
8J01-30	-COMPRESSED PITCH	7PC1-J6-1	00114-7PC1-P6-1
8J01-33	RETURN	7PC1-J6-2	00114-7PC1-P6-2
8J01-34	-BAND DETECTED 2^1	7PC1-J6-3	00114-7PC1-P6-3
8J01-35	RETURN	7PC1-J6-4	00114-7PC1-P6-4
8J01-36	-BAND DETECTED 2^0	7PC1-J6-5	00114-7PC1-P6-5
8J01-37	RETURN	7PC1-J6-6	00114-7PC1-P6-6

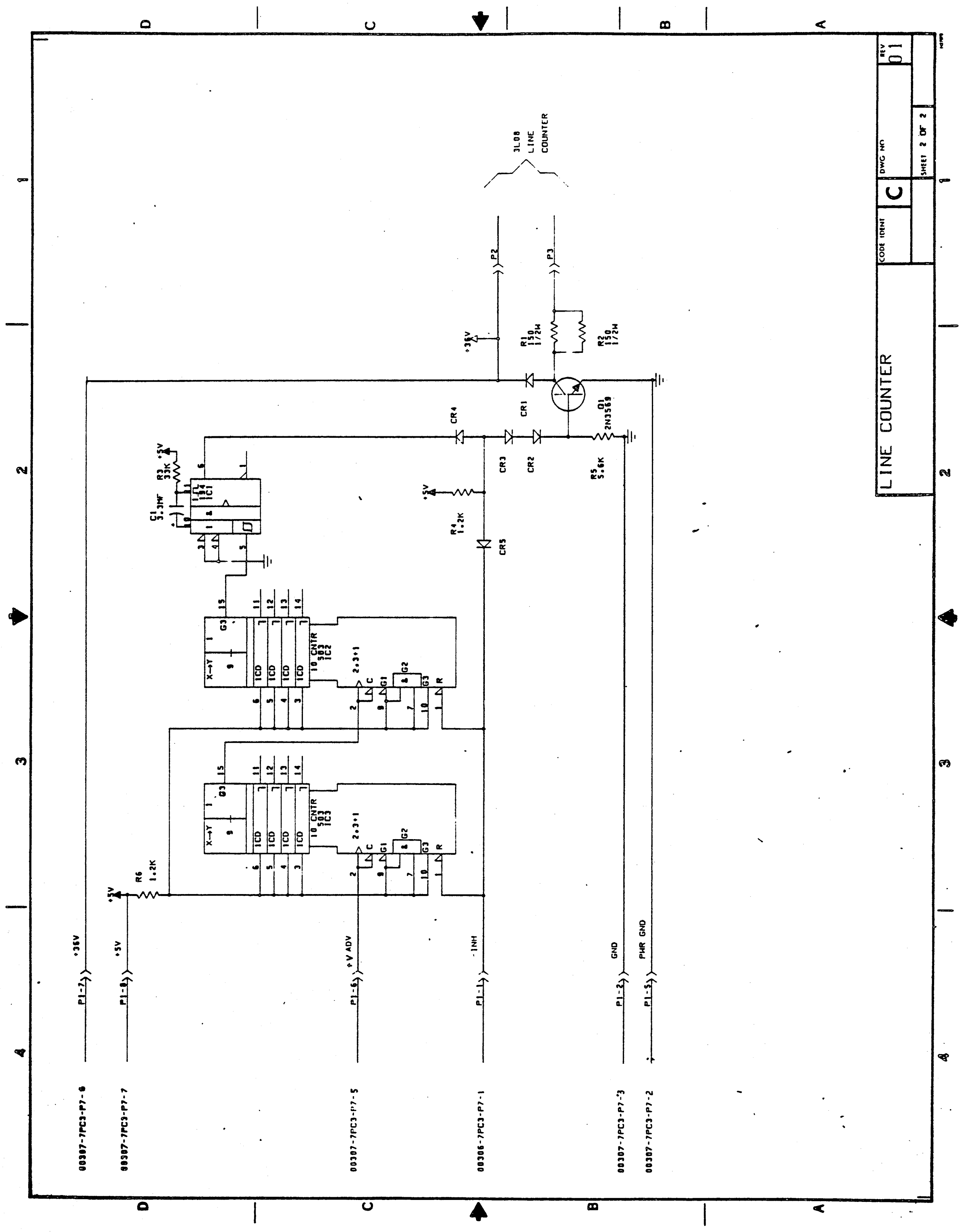
KIT LOGIC-
P.B.S. SERIES I I/O
AND CONTROL PANEL

CODE IDENT		DWG NO	REV
	C		01
		SHEET 2 OF 3	


KIT LOGIC
PBS SERIES I I/O
AND CONTROL PANEL
CODE IDENT
C
DWG NO
REV
01
LOC. 6PCI
SHEET 3 OF 3
CROSS REF NO. 00701
LOC 6PCI
CROSS REF NO. 00701
PHASE ADJ. POT.
R01 150K
FORM RESET SLIDE SWITCH SW3
START/STOP SWITCH SW1
FORM FEED SWITCH SW2
NOT USED SW4
TEST PRINT SWITCH SW5
NOT USED SW6
NOT USED SW7
C
NC
NO
00202-7PC2-P6-2
00202-7PC2-P6-1
00205-7PC2-P6-12
00205-7PC2-P6-14
00205-7PC2-P6-13
00201-7PC2-P6-3
00201-7PC2-P6-5
00201-7PC2-P6-4
00207-7PC2-P6-6
00207-7PC2-P6-8
00207-7PC2-P6-7
OPEN
8J01-32
8J01-31
00209-7PC2-P6-16
00209-7PC2-P6-17
00209-7PC2-P6-18
00209-7PC2-P6-19
00209-7PC2-P6-20
00209-7PC2-P6-21
00209-7PC2-P6-22
00209-7PC2-P6-23
00209-7PC2-P6-24
P2-2
P2-1
P2-12
P2-14
P2-13
P2-3
P2-5
P2-4
P2-6
P2-8
P2-7
P4-2
P4-1
P4-3
P4-6
P4-5
P4-7
P4-1
P2-16
P2-17
P2-18
P2-19
P2-20
P2-21
P2-22
P2-23
P2-24
A1
B8
B4
B2
B1
C8
C4
C2
C1
R3 4.7K
R2 4.7K
+5V
R12
R4
4.7K (9)
R4 THRU R12
SW8
SEC A
SEC B
SEC C
B1
A1
B2
A2
8
4
2
1
C1
C2
FORM LENGTH CONTROL
SWITCH INDICATOR LAMPS
SW1-A
SW1-B
SW2-A
SW2-B
SW4-A
SW4-B
SW5-A
SW5-B
SW6-A
SW6-B
SW7-A
SW7-B
LED FLT INDICATORS
P2-10
P2-9
P2-11
P2-26
P2-25
P4-8
P4-10
P4-9
P4-2
P4-4
P4-3
P2-15
P1-1
P1-2
P1-3
P3-1
P3-3
P3-5
P3-7
P3-9
P3-11
P3-13
P3-15
P3-17
P3-19
P3-20
00204-7PC2-P6-10
00204-7PC2-P6-9
00204-7PC2-P6-11
00204-7PC2-P6-26
00204-7PC2-P6-25
00204-7PC2-P6-15
3SW2-NC
3SW2-C
3SW2-NO
00306-7PC3-P6-1
00306-7PC3-P6-3
00306-7PC3-P6-5
00306-7PC3-P6-7
00306-7PC3-P6-9
00306-7PC3-P6-11
00306-7PC3-P6-13
00306-7PC3-P6-15
00306-7PC3-P6-17
00306-7PC3-P6-19
00306-7PC3-P6-20
A
B
C
D
1
2
3
4



LINE COUNTER

LINE COUNTER
CODE IDENT
C
DWG NO
REV
01
SHEET 2 OF 2
3L08
LINE
COUNTER
P2
P3
+36V
R1
150
1/2W
R2
150
1/2W
CR1
Q1
2N3569
CR4
CR3
CR2
R5
5.6K
+5V
R4
1.2K
CR5
R3
33K
C1
3.3MF
1Ω
194
IC1
&
1
6
3
4
5
11
12
13
14
15
G3
X→Y
9
1CD
CNTR
502
IC2
2÷3+1
C
G1
G2
&
G3
R
6
5
4
3
2
8
7
10
1
CNTR
503
IC3
R6
1.2K
+5V
+36V
P1-7
+5V
P1-8
+V ADV
P1-6
-INH
P1-1
GND
P1-2
PWR GND
P1-5
00307-7PC3-P7-8
00307-7PC3-P7-7
00307-7PC3-P7-5
00306-7PC3-P7-1
00307-7PC3-P7-3
00307-7PC3-P7-2
D
C
B
A
1
2
3
4

PART B
BAND PRINTER LOGIC DIAGRAMS

CONTENTS

BOARD IDENTIFICATION FOR LOGIC SET 95400400

CROSS REF NO.	LOCATION	PART NUMBER	EARLIER NUMBER
401-404	2PC2	44673133	44673132
100-114	* 7PC1	44673075	44673071
	↓	44673076	44783072
	↓	44673077	44673073
	7PC1	44673078	44673074
200-212	* 7PC2	44674057	44673052
	↓	44673058	44673053
	↓	44673059	44673054
	↓	44673060	44673055
	7PC2	44673061	44673056
301-311	7PC3	95419506	95419505

* SEE PARTS MANAUAL FOR BOARD IDENTIFICATION

WARNING

NOISE LEVEL UNDER BONNET WHILE PRINTING MAY BE HAZARDOUS TO HEARING. KEEP EXPOSURE TO A MINIMUM. REFER TO MAINTENANCE AIDS TO QUIETLY TEST.

NOTE

THIS MANUAL COVERS THE LOGIC BOARDS AS LISTED ON THIS PAGE AS DOCUMENTED IN LOGIC SET 95400400. REFER TO THE PARTS MANUAL TO IDENTIFY OTHER BOARDS. A NEW SET OF BOARDS AND LOGIC SET 95400401 ARE NOW DOCUMENTED IN SECTION 3A. PRINTERS CONTAINING A MIXTURE OF BOARDS FROM THE TWO LOGIC SETS WILL REQUIRE THE USE OF BOTH A AND B PARTS OF SECTION 3.

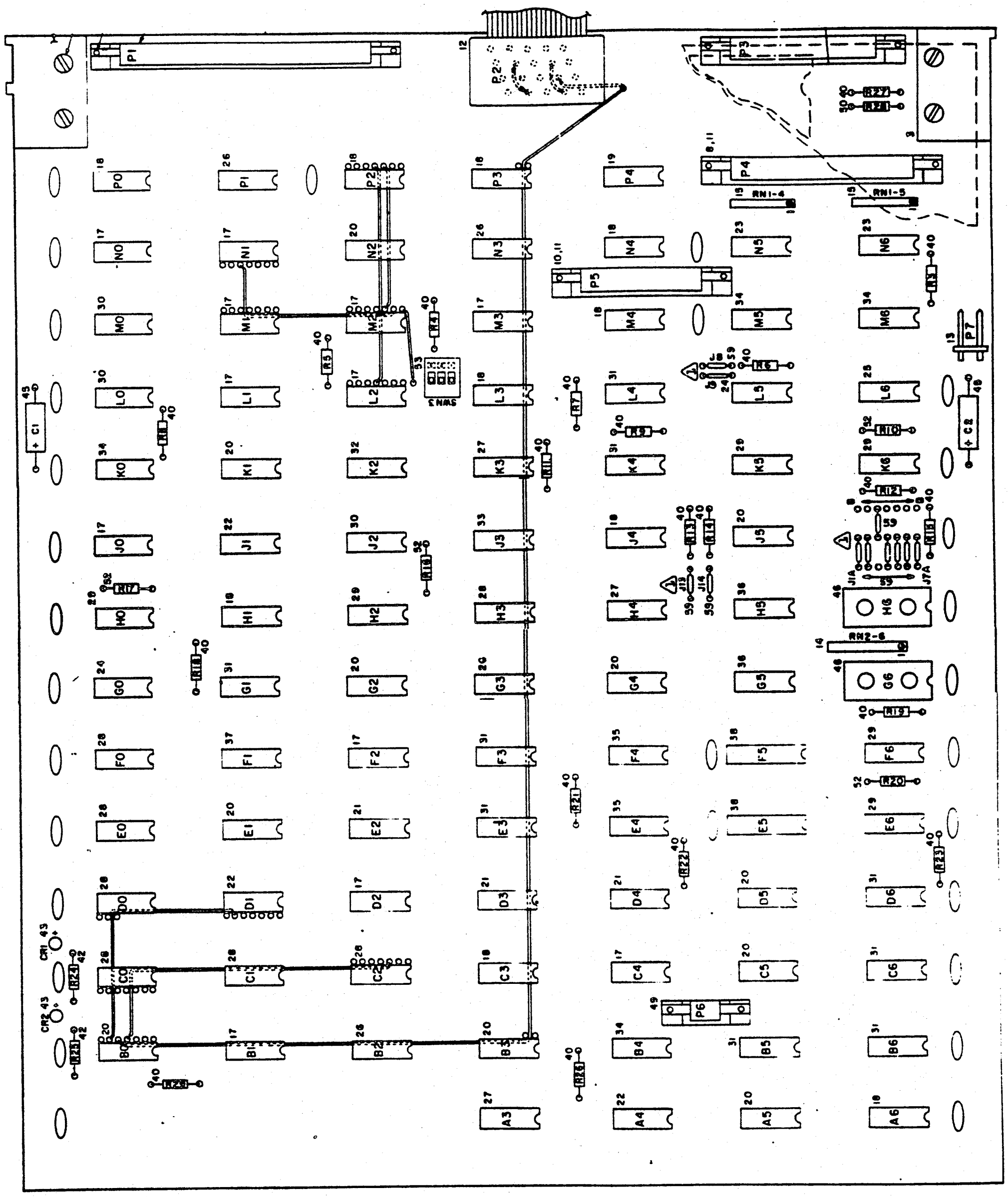
JUMPER NUMBER	FUNCTION
J1A-J7A, J1B-J7B	BLANK/SPACE CODE SELECTION-- ASSEMBLED TO SELECT SPACE CODE FOR CHARACTER BANDS WHICH DO NOT USE PROMS. ALL ''A'' JUMPER WIRES REPRESENT LOGICAL ''1''S. THEREFORE ASSUME THAT THE BLANK/SPACE CODE ≡0 100 000 =040_8. THE FOLLOWING JUMPER WIRES WOULD BE ASSEMBLED- J3B, J1A, J2A, J4A THRU J7A.
J8 J9	CONTROL CODE DETECTION--
IN OUT	ACCEPTS STANDARD ASCII CONTROL CODES OF LF, CR AND FF.
OUT OUT	ACCEPTS STANDARD ASCII CONTROL CODES OF LF, CR, VT AND FF. *
OUT IN	ACCEPTS DB9≡0 AS A CONTROL CODE FOR 12 CHNL EVFU OPTION.
SW1 SW2 SW3	MACHINE TYPE DEFINITION--
CLOSED OPEN CLOSED	PB1130
OPEN OPEN OPEN	PBS720
OPEN CLOSED CLOSED	PBS360
J13 J14	BAND TO PROM SELECTION-- **
OUT OUT	48, 64, 96, 128
OUT IN	48, 64, 128
IN OUT	48, 96, 128
IN IN	48, 128

* VT IS USED TO TRUNCATE THE INPUT, HOWEVER UNCONTROLLED PAPER MOTION WILL RESULT UNLESS THE ''3 CHNL EVFU'' OPTION IS IMPLICATED.

** TYPICALLY THE PROMS MAY BE ONLY SELECTED BY ONE TYPE BAND. UNLESS CODES FOR DIFFERENT TYPE BANDS ARE SUBSETS OF ONE ANOTHER, PROMS WILL HAVE TO BE REPLACED TO OBTAIN ALL THE COMBINATIONS SHOWN ABOVE.

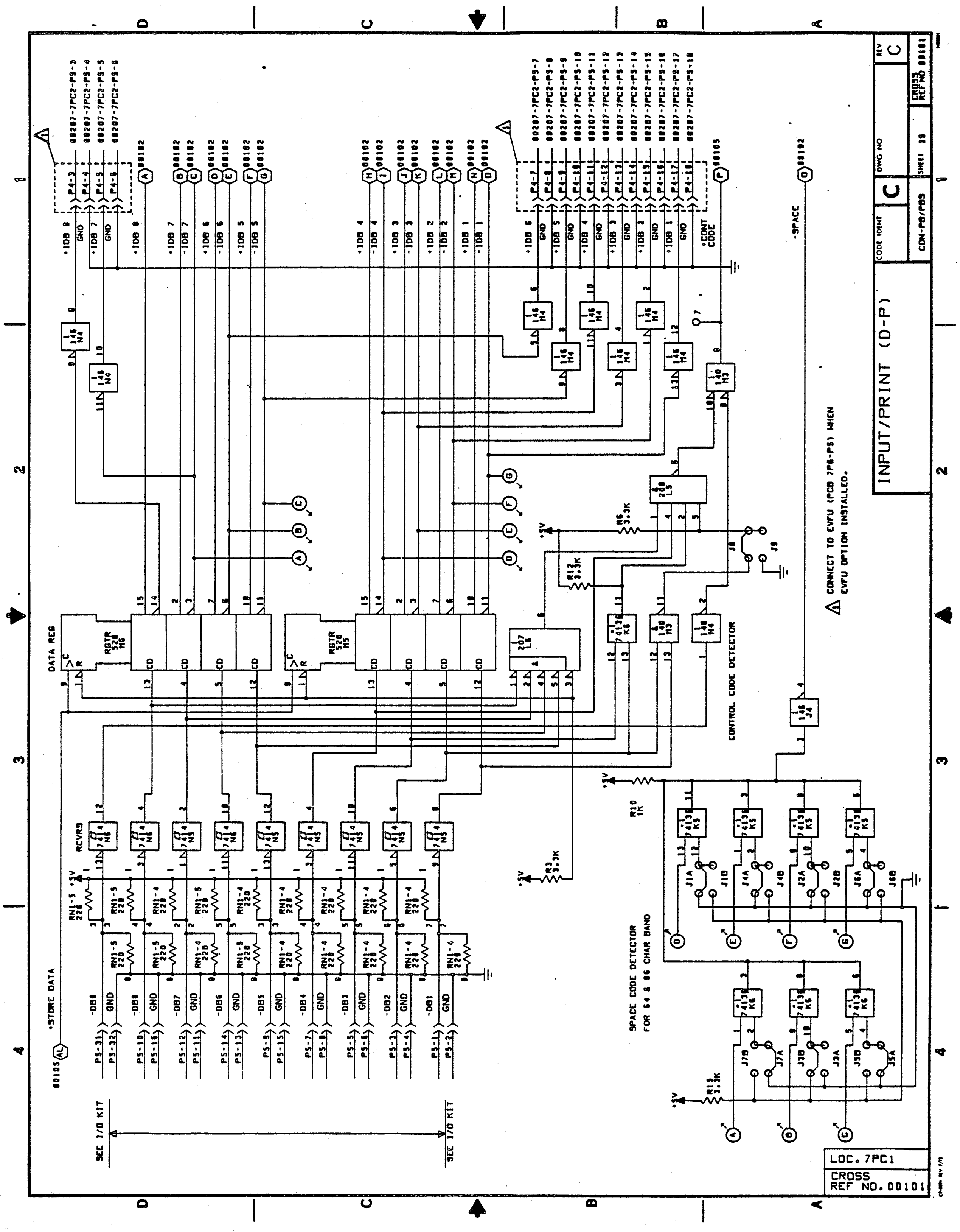
LOC.
CROSS
REF NO. 00100

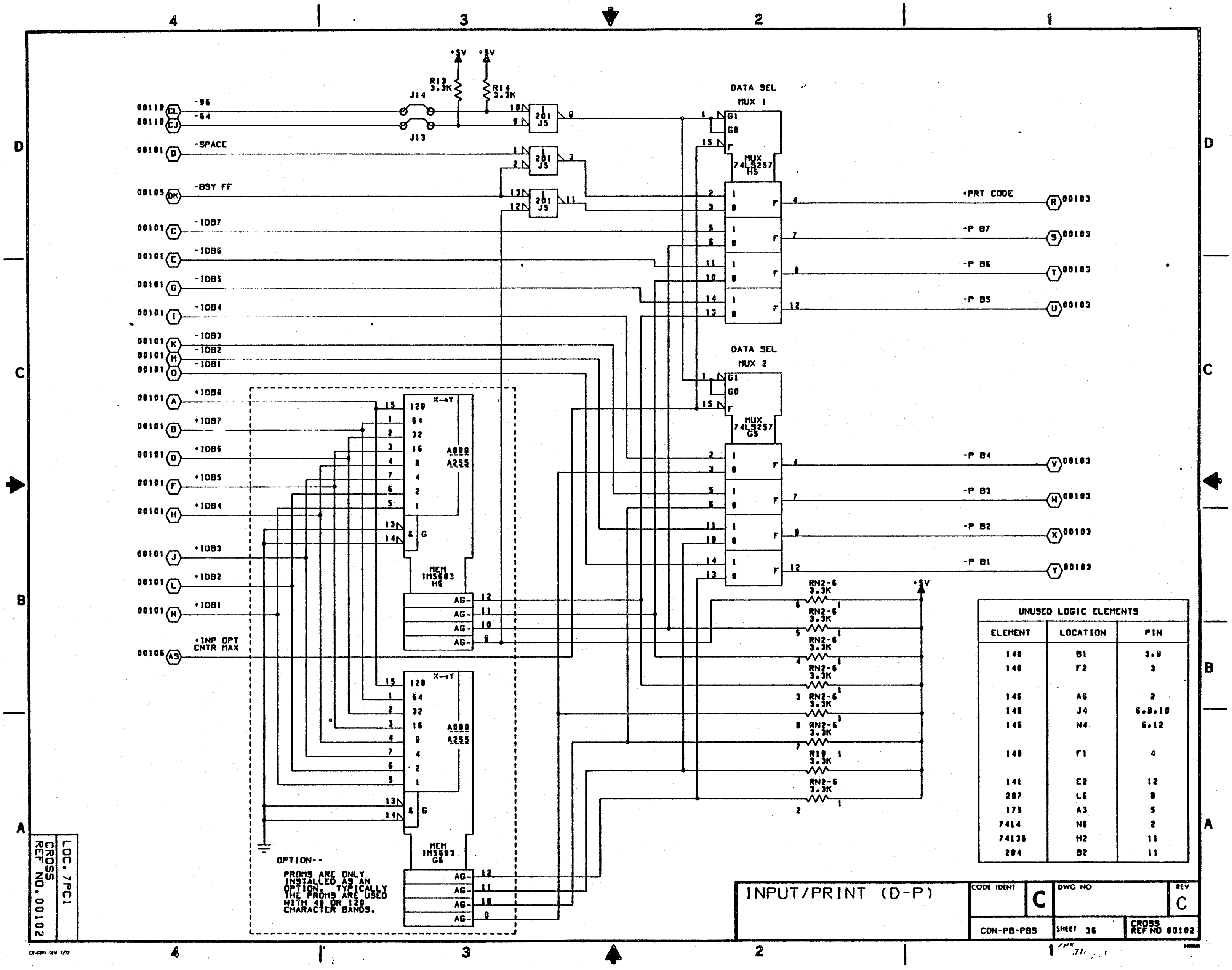
INPUT/PRINT (D-P) JUMPER CHART	CODE IDENT C	DWG NO	REV A
	CON-PB/PBS	SHEET 34	CROSS REF NO 00100



INPUT/PRINT (D-P)

PART B


INPUT/PRINT (D-P)
CODE IDENT
DWG NO
C
REV
C
CON-PB/PBS
SHEET 38
CROSS REF NO 00101
LOC. 7PC1
CROSS REF NO. 00101
DATA REG
RGTR 520 N6
RGTR 520 N5
RCVRS
+STORE DATA
CONTROL CODE DETECTOR
SPACE CODE DETECTOR FOR 64 & 96 CHAR BAND
-SPACE
+CONT CODE
SEE I/O KIT
SEE I/O KIT
CONNECT TO EVFU (PCB 7P8-PS) WHEN EVFU OPTION INSTALLED.

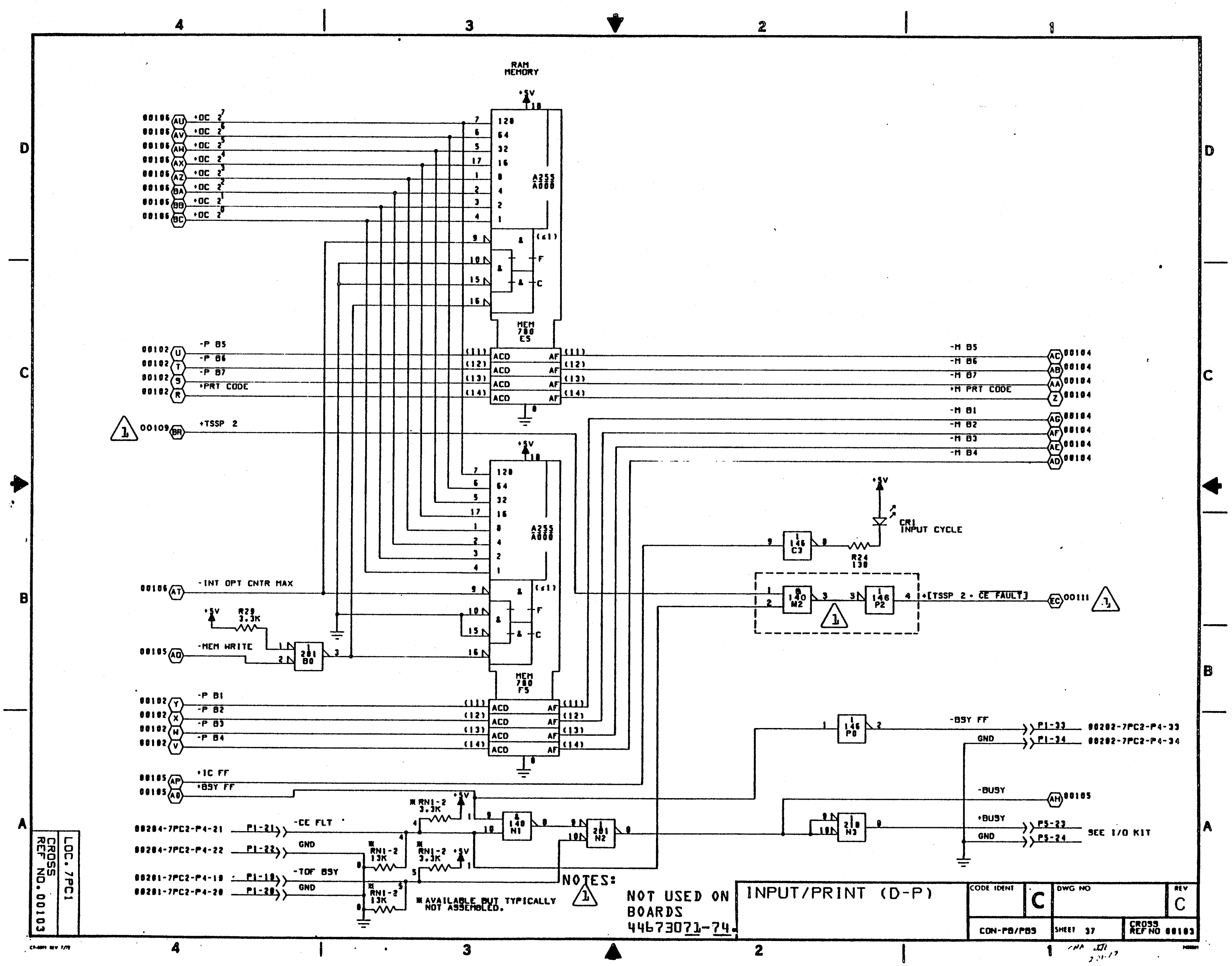


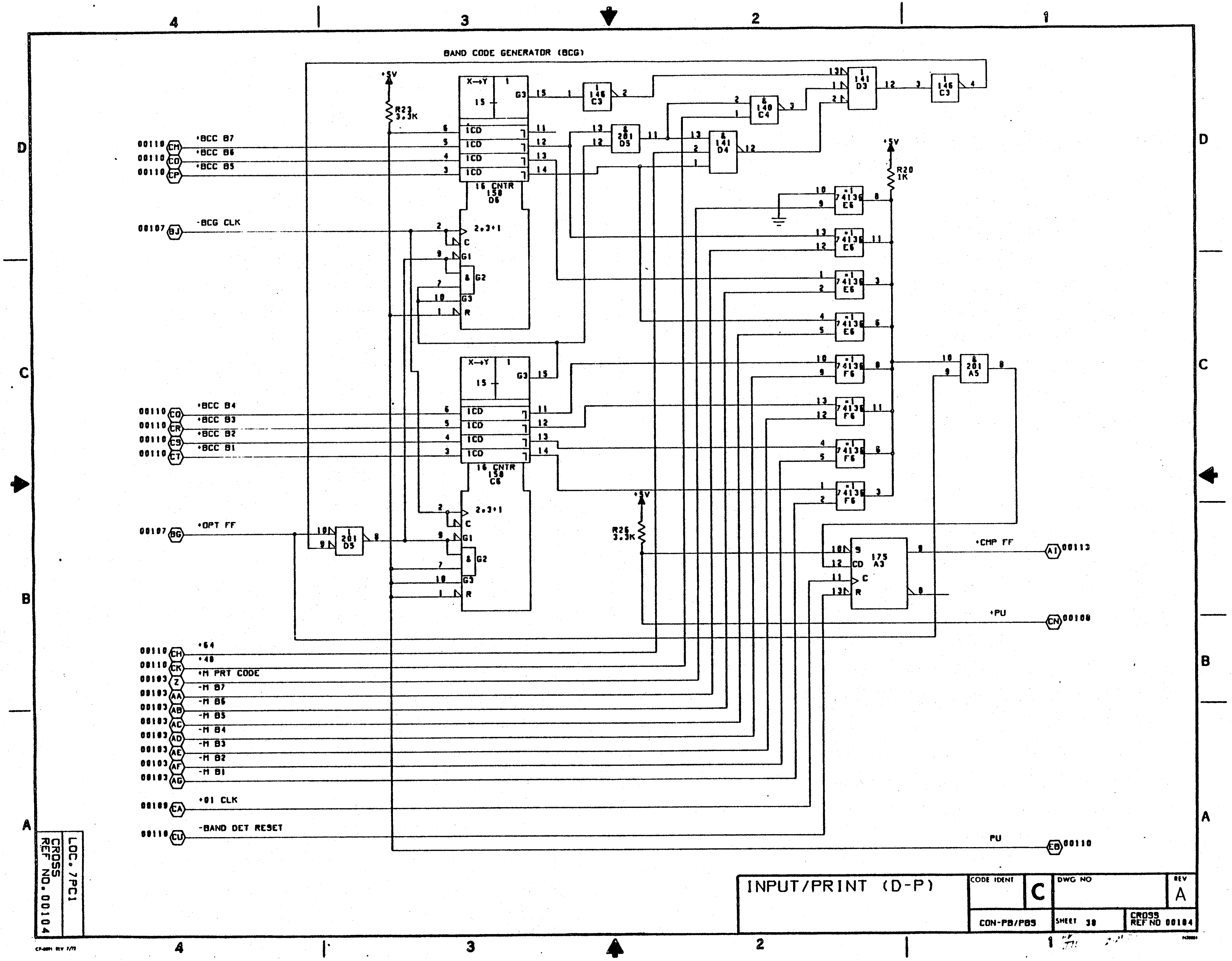
UNUSED LOGIC ELEMENTS		
ELEMENT	LOCATION	PIN
140	B1	3,8
140	F2	3
146	A6	2
146	J4	6,8,10
146	N4	6,12
140	F1	4
141	E2	12
207	L6	8
175	A3	5
7414	N6	2
74136	H2	11
284	B2	11

INPUT/PRINT (D-P)

CODE IDENT C
DWG NO
REV C
CON-PB-PB5
SHEET 36
CROSS REF NO 00102

PART B

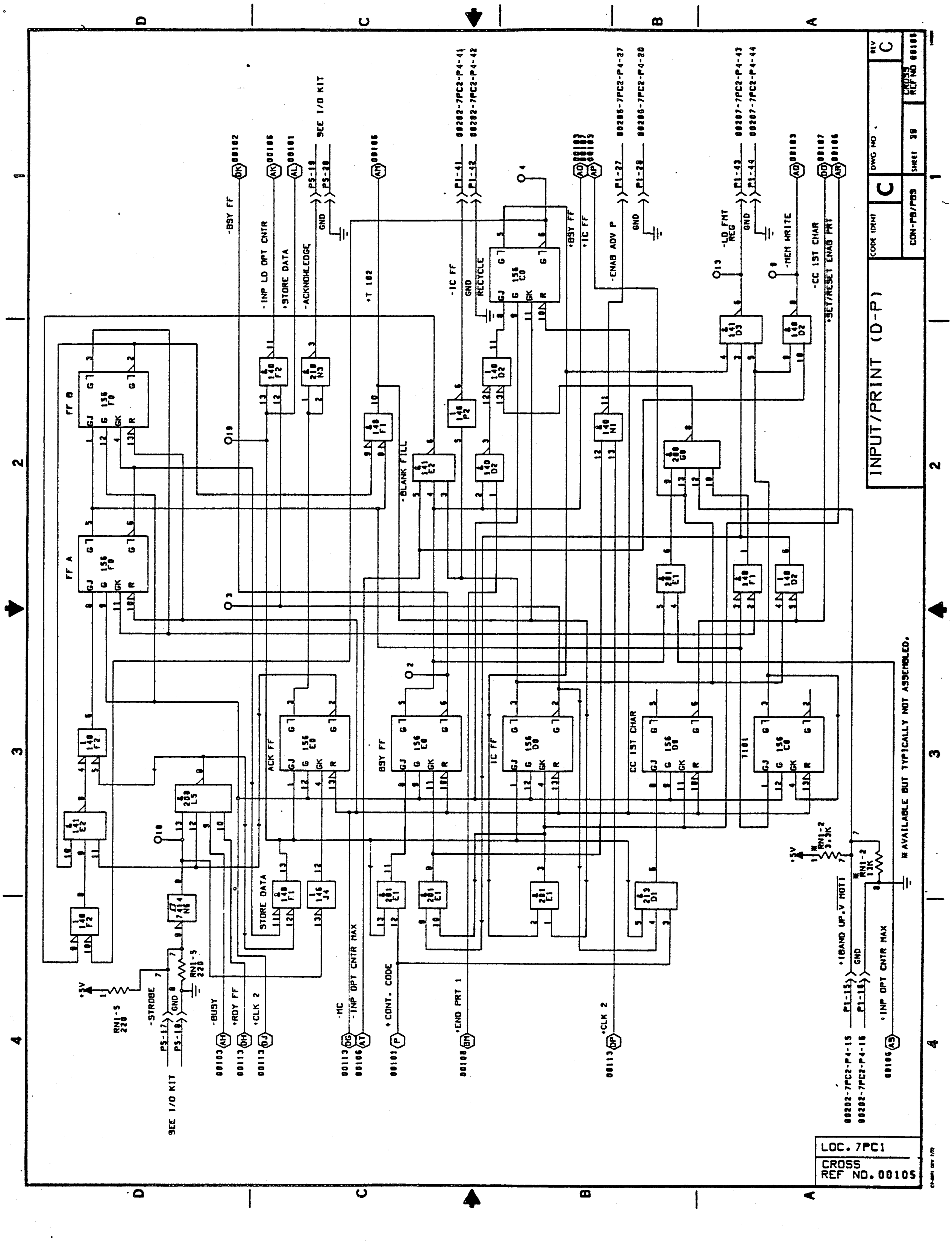

RAM MEMORY
+5V
A255 A000
MEM 780 E5
MEM 780 F5
00106 AU +OC 2^7
00106 AV +OC 2^6
00106 AW +OC 2^5
00106 AX +OC 2^4
00106 AZ +OC 2^3
00106 BA +OC 2^2
00106 BB +OC 2^1
00106 BC +OC 2^0
00102 U -P B5
00102 T -P B6
00102 S -P B7
00102 R +PRT CODE
00109 BR +TSSP 2
00106 AT -INT OPT CNTR MAX
R29 3.3K
00105 AD -MEM WRITE
201 B0
00102 Y -P B1
00102 X -P B2
00102 W -P B3
00102 V -P B4
00105 AP +IC FF
00105 AQ +BSY FF
-M B5 AC 00104
-M B6 AB 00104
-M B7 AA 00104
+M PRT CODE Z 00104
-M B1 AG 00104
-M B2 AF 00104
-M B3 AE 00104
-M B4 AD 00104
CR1 INPUT CYCLE
R24 130
146 C3
140 M2
146 P2
+[TSSP 2 · CE FAULT] EC 00111
146 P0
-BSY FF P1-33 00202-7PC2-P4-33
GND P1-34 00202-7PC2-P4-34
-BUSY AH 00105
+BUSY P5-23
GND P5-24
SEE I/O KIT
218 N3
201 N2
140 N1
RN1-2 3.3K
RN1-2 13K
00204-7PC2-P4-21 P1-21 -CE FLT
00204-7PC2-P4-22 P1-22 GND
00201-7PC2-P4-18 P1-18 -TOF BSY
00201-7PC2-P4-20 P1-20 GND
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
NOTES:
1 NOT USED ON BOARDS 44673071-74.
INPUT/PRINT (D-P)
CODE IDENT C
DWG NO
REV C
CON-P8/PB9
SHEET 37
CROSS REF NO 00103
LOC. 7PC1
CROSS REF NO. 00103



INPUT/PRINT (D-P)

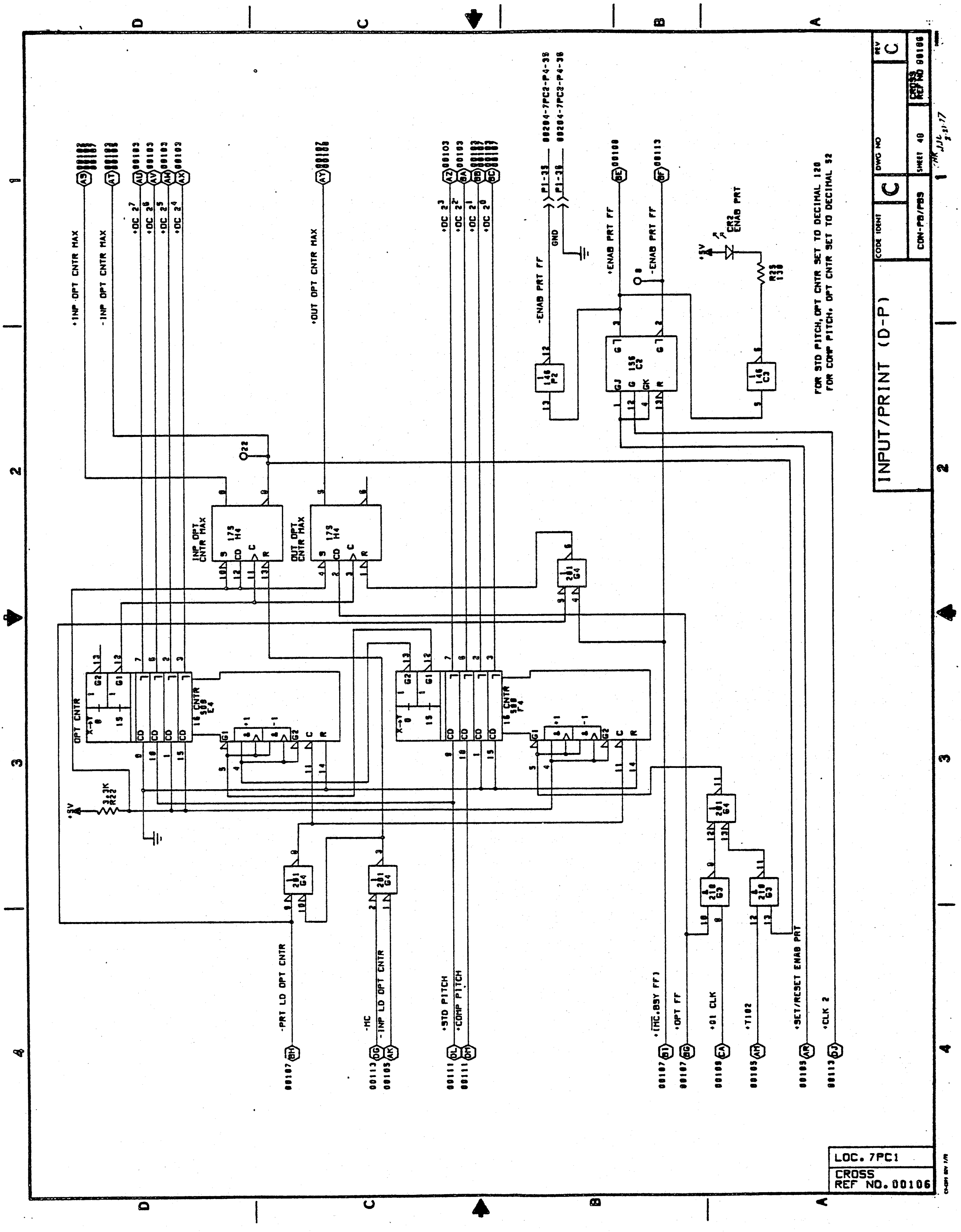
CODE IDENT	DWG NO	REV
C		A
CON-PB/PBS	SHEET 38	CROSS REF NO 00104

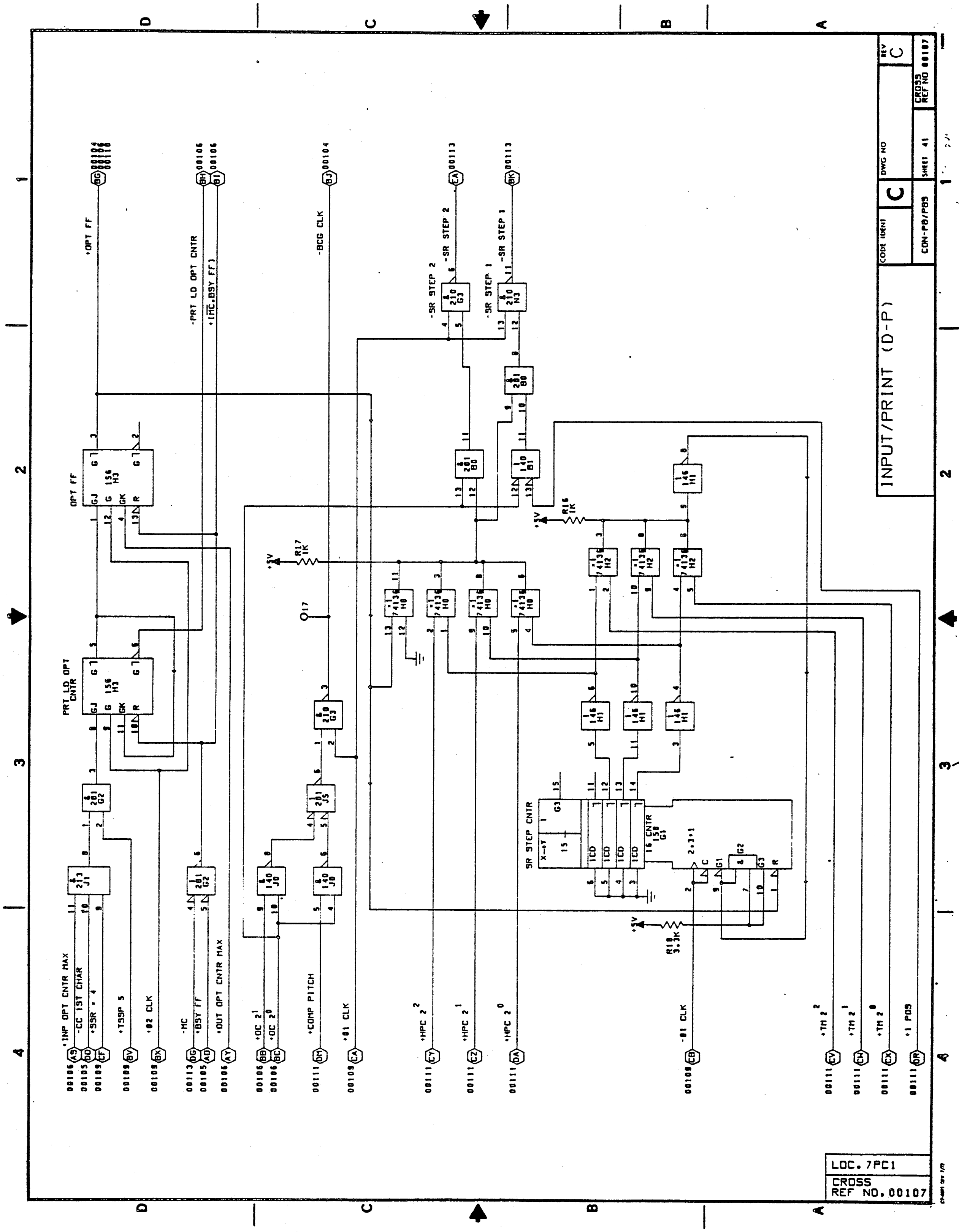
PART B

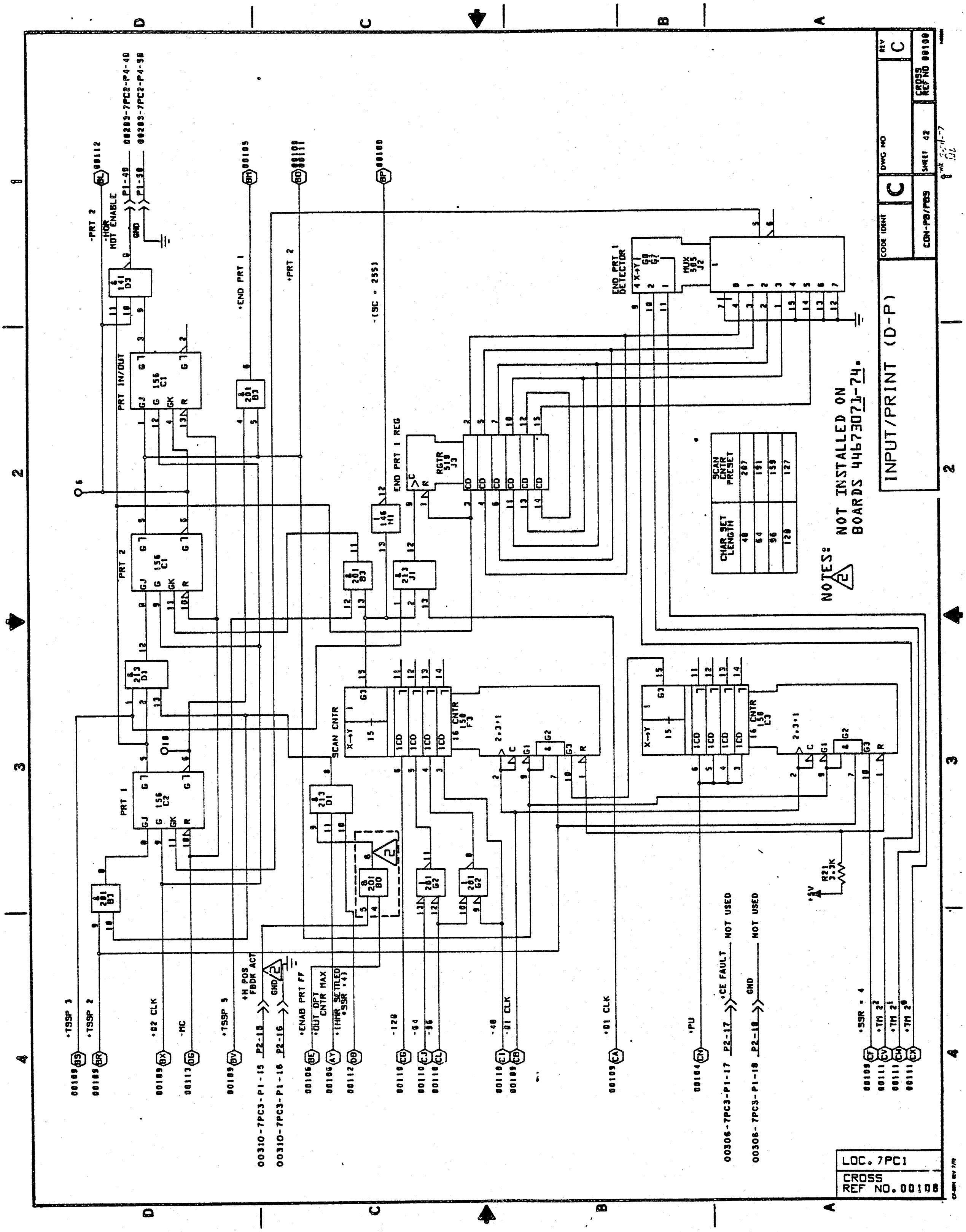


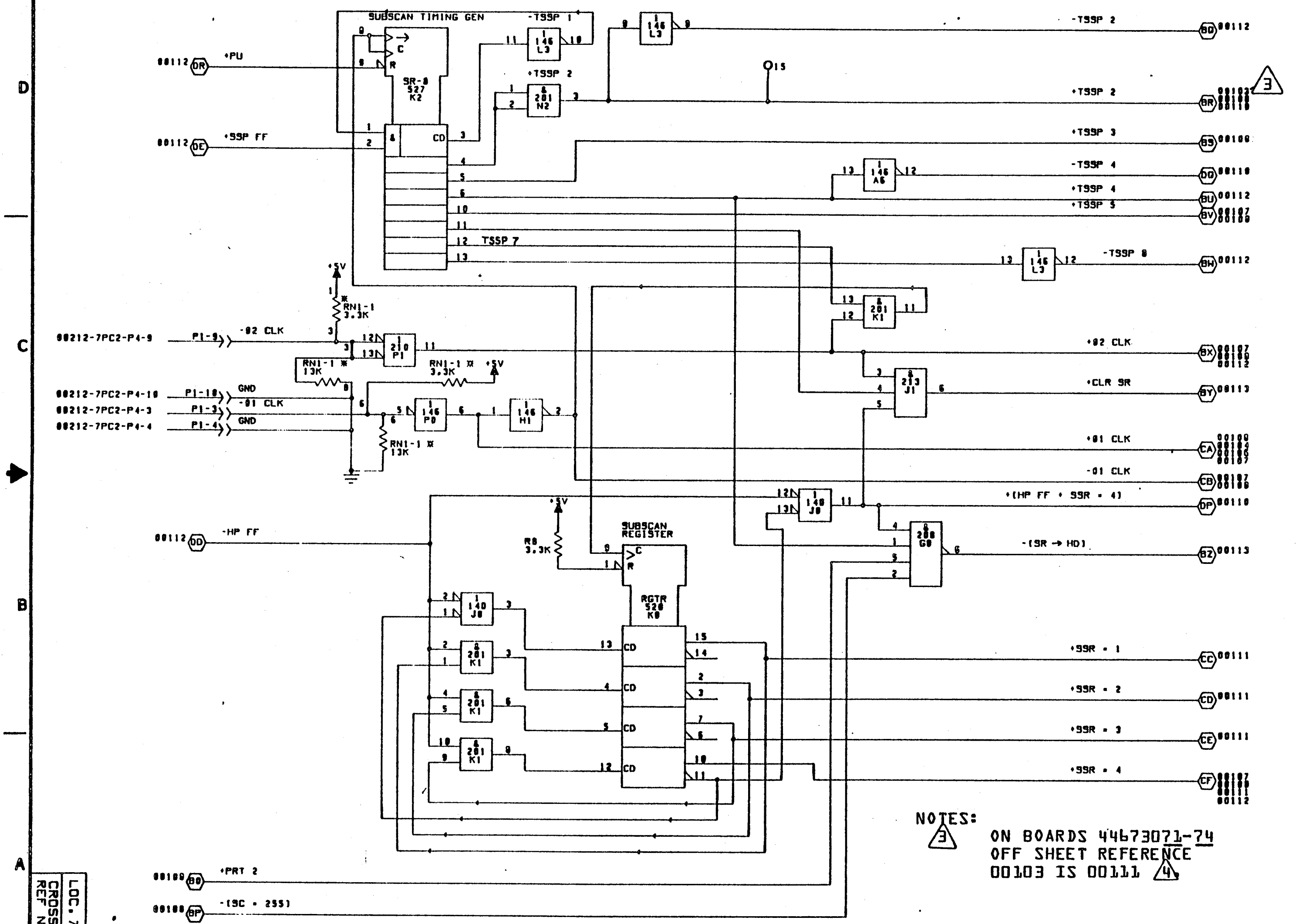
INPUT/PRINT (D-P)
CODE IDENT C
DWG NO.
CDN-PB/PBS
SHEET 39
CROSS REF NO 00105
REV C
LOC. 7PC1
CROSS REF NO. 00105
FF B
FF A
ACK FF
BSY FF
IC FF
CC 1ST CHAR
T101
-BSY FF
-INP LD OPT CNTR
+STORE DATA
-ACKNOWLEDGE
SEE I/O KIT
+T 102
-IC FF
RECYCLE
+BSY FF
+IC FF
-ENAB ADV P
-LD FMT REG
-MEM WRITE
-CC 1ST CHAR
+SET/RESET ENAB PRT
-BLANK FILL
STORE DATA
-STROBE
-BUSY
+RDY FF
+CLK 2
-MC
-INP OPT CNTR MAX
+CONT. CODE
+END PRT 1
+CLK 2
+(BAND UP,V MOTT)
+INP OPT CNTR MAX
GND
+5V
RN1-5 220
RN1-2 3.3K
RN1-2 1K
P5-17
P5-18
P5-19
P5-20
P1-41
P1-42
P1-27
P1-28
P1-43
P1-44
P1-15
P1-16
00202-7PC2-P4-41
00202-7PC2-P4-42
00206-7PC2-P4-27
00206-7PC2-P4-28
00207-7PC2-P4-43
00207-7PC2-P4-44
00202-7PC2-P4-15
00202-7PC2-P4-16
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

PART B


INPUT/PRINT (D-P)
CODE IDENT
DWG NO
C
REV
C
CON-PB/PB9
SHEET 40
CROSS REF NO 00106
LOC. 7PC1
CROSS REF NO. 00106
FOR STD PITCH, OPT CNTR SET TO DECIMAL 128
FOR COMP PITCH, OPT CNTR SET TO DECIMAL 92
+INP OPT CNTR MAX
-INP OPT CNTR MAX
+DC 2^7
+DC 2^6
+DC 2^5
+DC 2^4
+OUT OPT CNTR MAX
+DC 2^3
+DC 2^2
+DC 2^1
+DC 2^0
-ENAB PRT FF
GND
P1-35
P1-36
00204-7PC2-P4-35
00204-7PC2-P4-36
+ENAB PRT FF
-ENAB PRT FF
+5V
CR2
ENAB PRT
R23
130
146 P2
156 C2
146 C3
INP OPT CNTR MAX
173 H4
OUT OPT CNTR MAX
173 H4
201 G4
OPT CNTR
16 CNTR
508 E4
16 CNTR
508 F4
X-Y
+5V
2.2K
R22
22
210 G3
201 G4
-PRT LD OPT CNTR
-MC
-INP LD OPT CNTR
+STD PITCH
+COMP PITCH
+(MC.BSY FF)
+OPT FF
+01 CLK
+T102
+SET/RESET ENAB PRT
+CLK 2
00107 BH
00113 BG
00105 AK
00111 DL
00111 DM
00107 B1
00107 BG
00108 EA
00105 AM
00105 AR
00113 DJ
D
C
B
A
1
2
3
4


INPUT/PRINT (D-P)
CODE IDENT
DWG NO
C
REV
C
CON-PB/PBS
SHEET 41
CROSS REF NO 00107
LOC. 7PC1
CROSS REF NO. 00107
OPT FF
PRT LD OPT CNTR
SR STEP CNTR
16 CNTR 158 G1
+OPT FF
-PRT LD OPT CNTR
+(MC.BSY FF)
-BCG CLK
-SR STEP 2
-SR STEP 1
+INP OPT CNTR MAX
-CC 1ST CHAR
+SSR + 4
+TSSP 5
+02 CLK
-MC
+BSY FF
+OUT OPT CNTR MAX
+OC 2^1
+OC 2^0
+COMP PITCH
+01 CLK
+HPC 2^2
+HPC 2^1
+HPC 2^0
-01 CLK
+TM 2^2
+TM 2^1
+TM 2^0
+1 POS
R17 1K
R16 1K
R18 3.3K
+5V
17
00106 AS
00105 DD
00109 CF
00109 BV
00109 BX
00113 DG
00105 AD
00106 AY
00106 BB
00106 BC
00111 DM
00109 CA
00111 CY
00111 CZ
00111 DA
00109 CB
00111 CV
00111 CW
00111 CX
00111 DR
BG 00104 00106 00110
BH 00106
BI 00106
BJ 00104
EA 00113
BK 00113
D
C
B
A
1
2
3
4


INPUT/PRINT (D-P)
NOTES: 2 NOT INSTALLED ON BOARDS 4467307L-74.
CHAR SET LENGTH
SCAN CNTR PRESET
48
207
64
191
96
159
120
127
PRT 1
PRT 2
PRT IN/OUT
156 C2
156 C1
141 D3
213 D1
201 B3
213 J1
146 H1
END PRT 1 REG
RGTR 518 J3
END PRT 1 DETECTOR
MUX 505 J2
SCAN CNTR
16 CNTR 158 F3
16 CNTR 158 E3
213 D1
201 B0
201 G2
R21 3.3K
+5V
-PRT 2
-HDR NOT ENABLE
GND
P1-48
P1-50
00203-7PC2-P4-48
00203-7PC2-P4-50
+END PRT 1
+PRT 2
-(SC = 255)
+TSSP 3
+TSSP 2
+02 CLK
-MC
+TSSP 5
+H POS FBDK ACT
GND
+ENAB PRT FF
+OUT OPT CNTR MAX
+(HMR SETTLED +SSR ÷4)
-120
-64
-96
-48
-01 CLK
+01 CLK
+PU
+CE FAULT
NOT USED
GND
NOT USED
+SSR ÷ 4
+TM 2²
+TM 2¹
+TM 2⁰
00310-7PC3-P1-15 P2-15
00310-7PC3-P1-16 P2-16
00308-7PC3-P1-17 P2-17
00308-7PC3-P1-18 P2-18
LOC. 7PC1
CROSS REF NO. 00108
CODE IDENT
DWG NO
REV
C
CDN-PB/PBS
SHEET 42
CROSS REF NO 00108



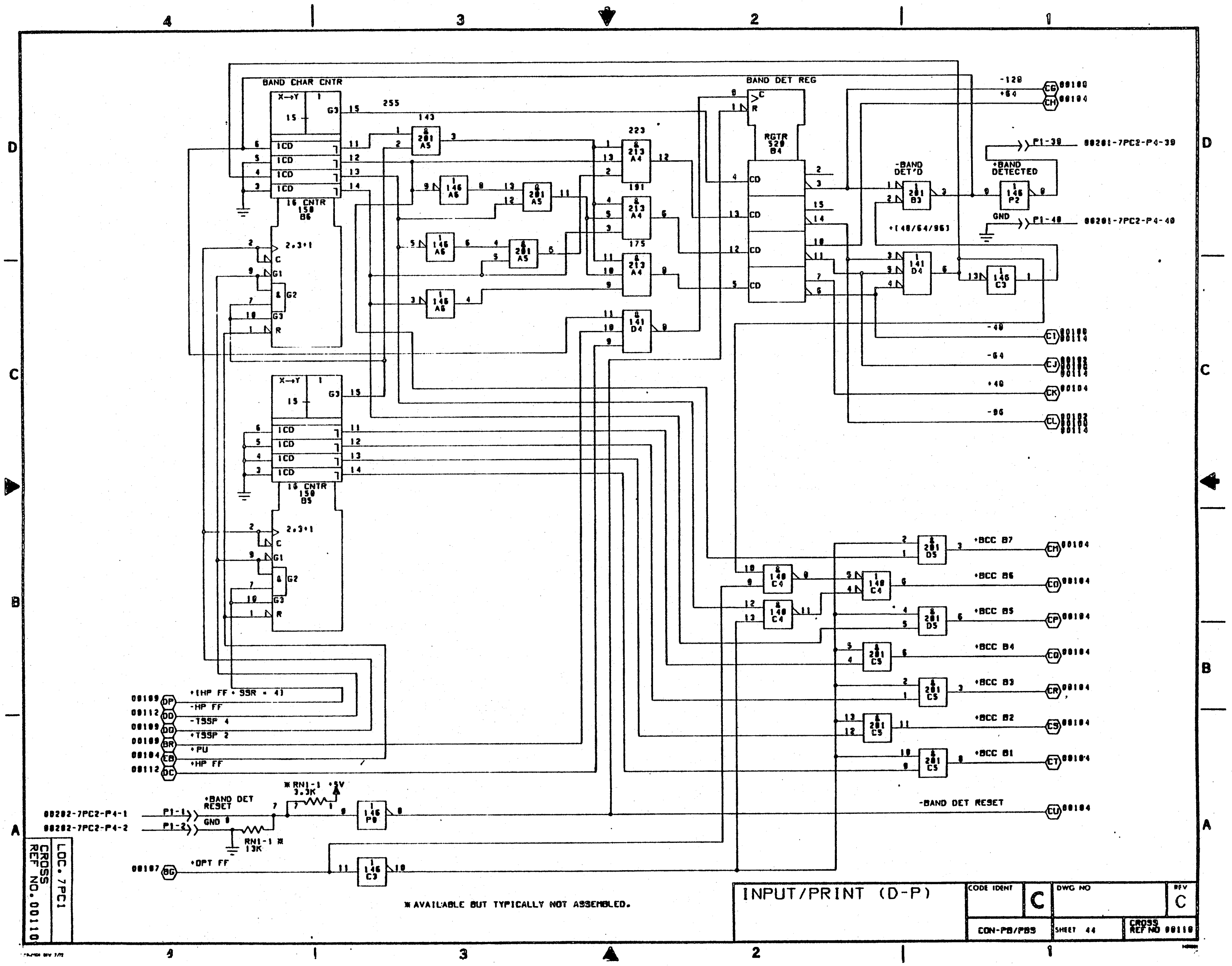
NOTES:

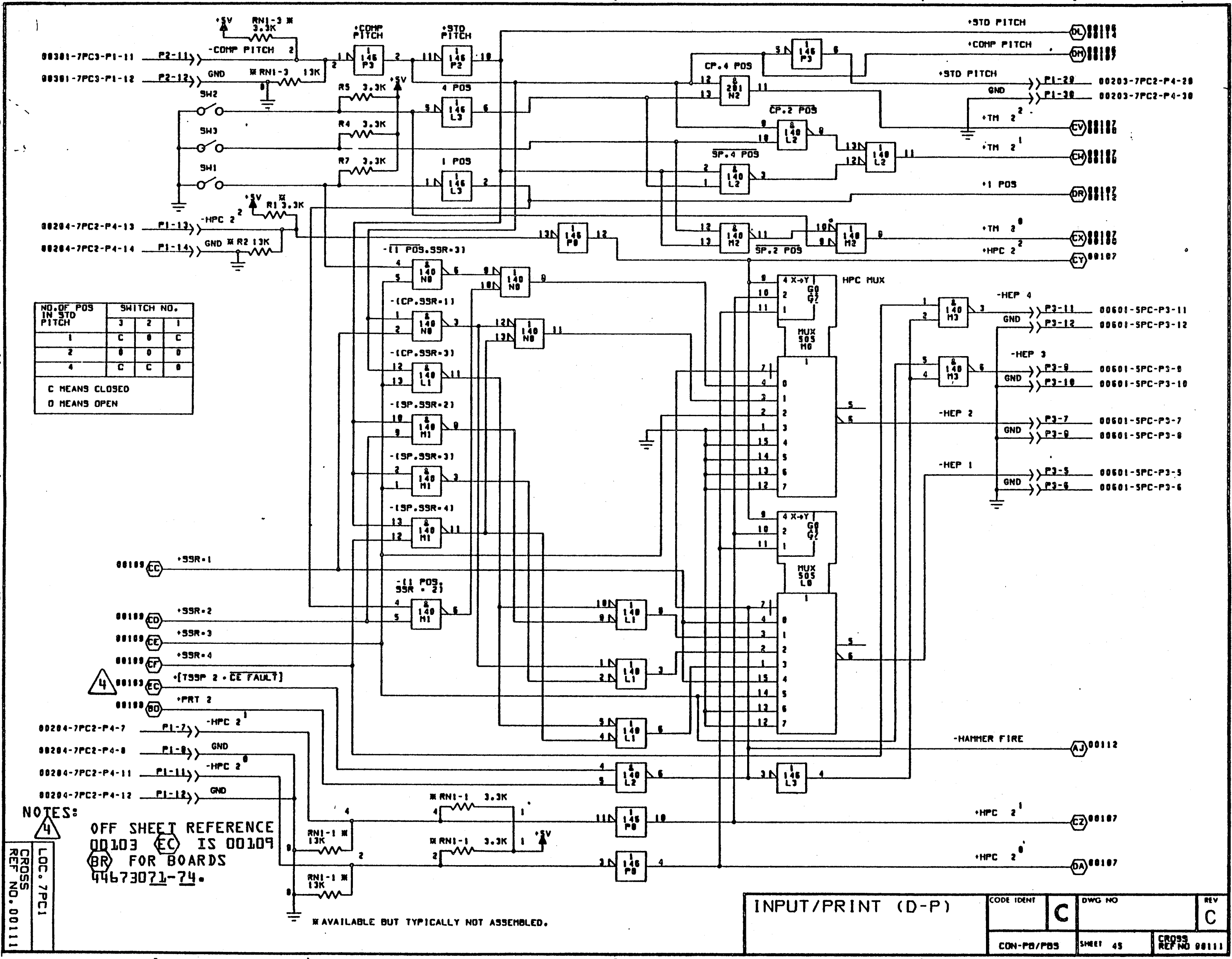
△3 ON BOARDS 44673071-74 OFF SHEET REFERENCE 00103 IS 00111 △4

※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

INPUT/PRINT (D-P)	CODE IDENT	C	DWG NO	REV C
	CON-PB/PBS		SHEET 43	CROSS REF NO 00109

LOC. 7PC1
CROSS REF NO. 00109


BAND CHAR CNTR
16 CNTR 150 B6
16 CNTR 150 B5
X→Y
G3
ICD
2,3+1
G1
G2
R
255
143
223
191
175
BAND DET REG
RGTR 520 B4
CD
-BAND DET'D
+BAND DETECTED
+(40/64/96)
GND
P1-39
P1-40
00201-7PC2-P4-39
00201-7PC2-P4-40
-128
+64
-40
-64
+40
-96
CG
CH
CI
CJ
CK
CL
+BCC B7
+BCC B6
+BCC B5
+BCC B4
+BCC B3
+BCC B2
+BCC B1
-BAND DET RESET
+(HP FF · SSR - 4)
-HP FF
-TSSP 4
+TSSP 2
+PU
+HP FF
+BAND DET RESET
GND
P1-1
P1-2
00202-7PC2-P4-1
00202-7PC2-P4-2
※RN1-1 3.3K
+5V
RN1-1 ※ 13K
+OPT FF
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
INPUT/PRINT (D-P)
CODE IDENT C
DWG NO
REV C
CON-PB/PBS
SHEET 44
CROSS REF NO 00110
LOC. 7PC1
CROSS REF NO. 00110



NO.OF POS IN STD PITCH	SWITCH NO.		
	3	2	1
1	C	0	C
2	0	0	0
4	C	C	0

C MEANS CLOSED
0 MEANS OPEN

NOTES:

4. OFF SHEET REFERENCE 00103 (EC) IS 00109 (BR) FOR BOARDS 44673071-74.

LOC. 7PC1

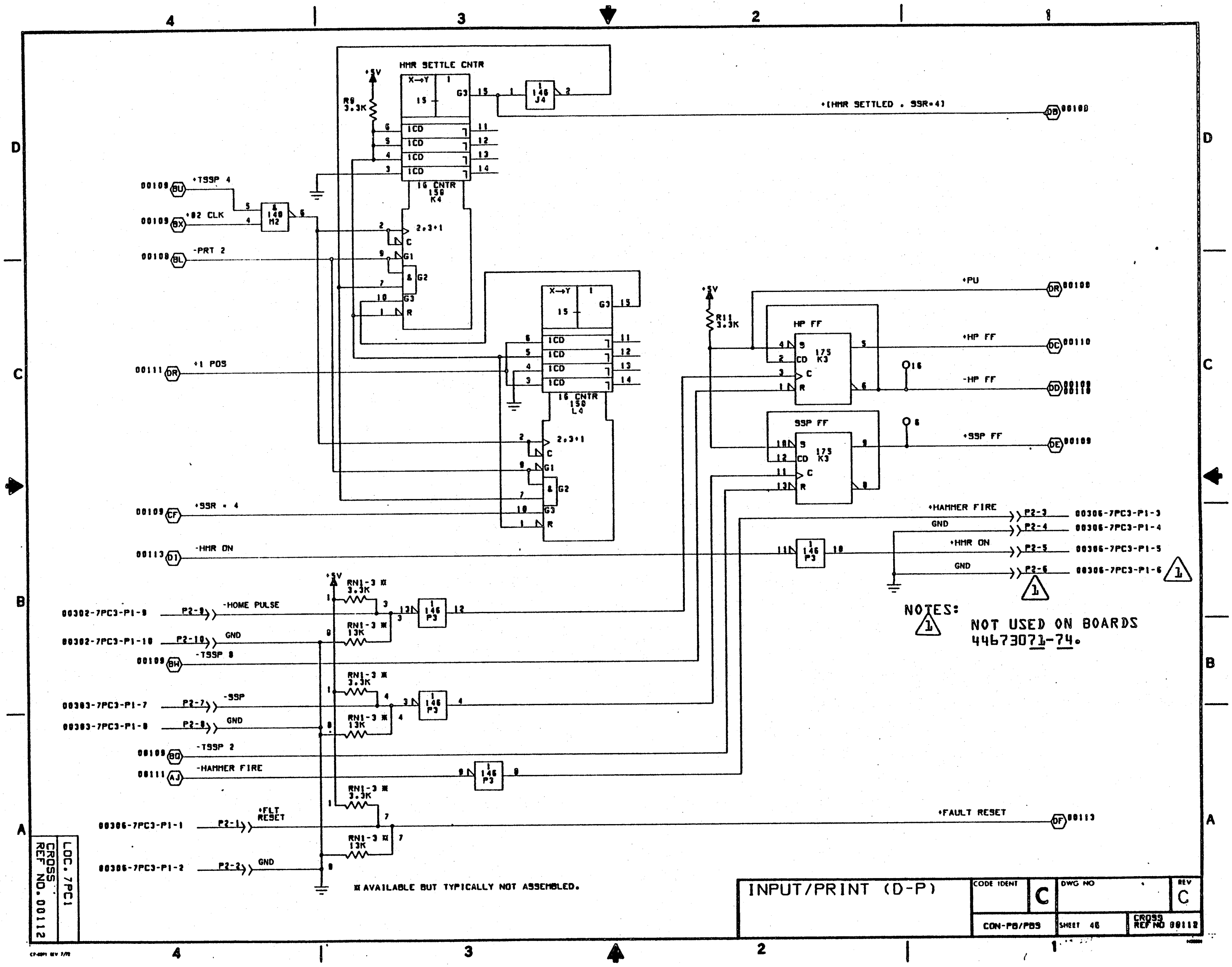
CROSS REF NO. 00111

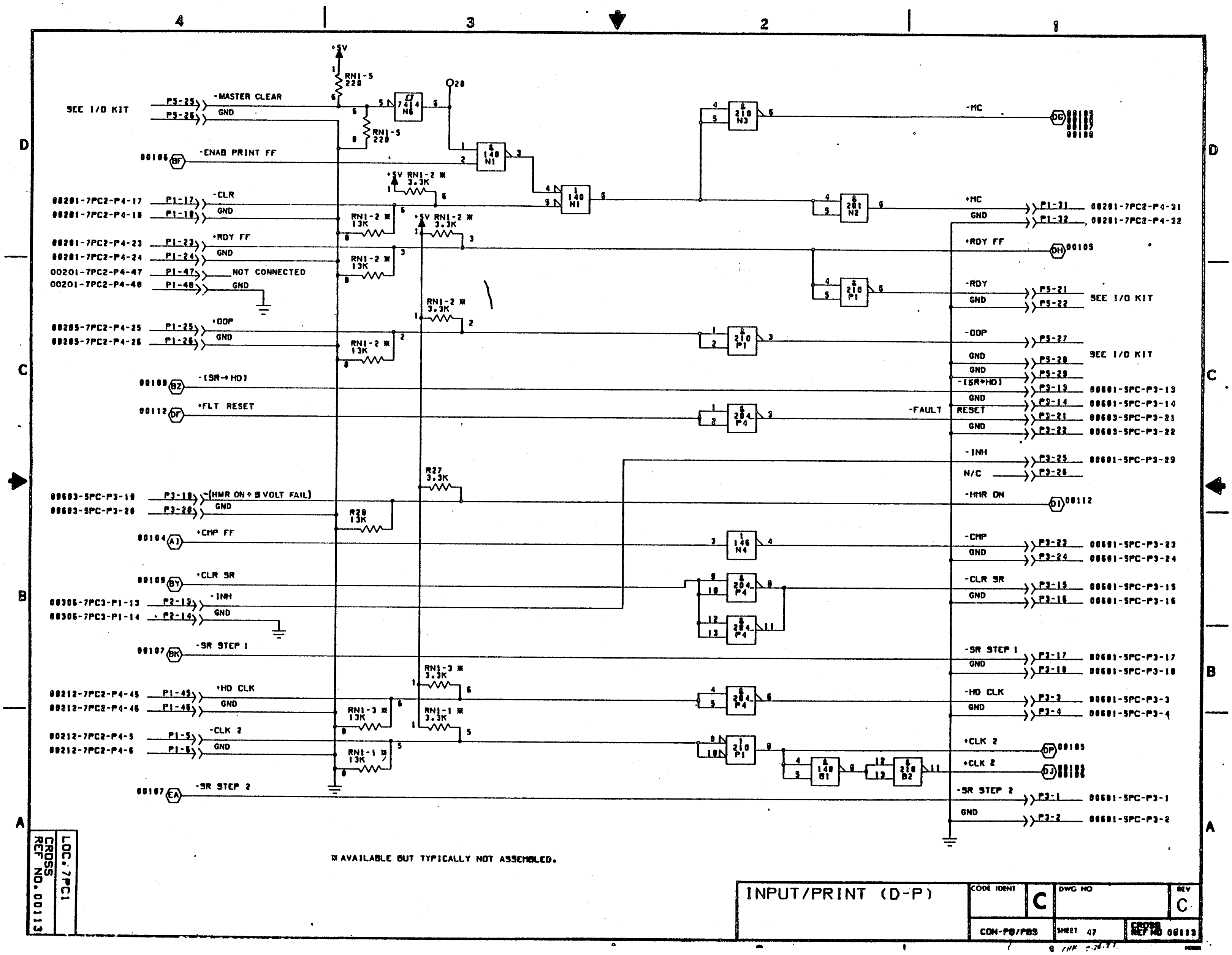
INPUT/PRINT (D-P)

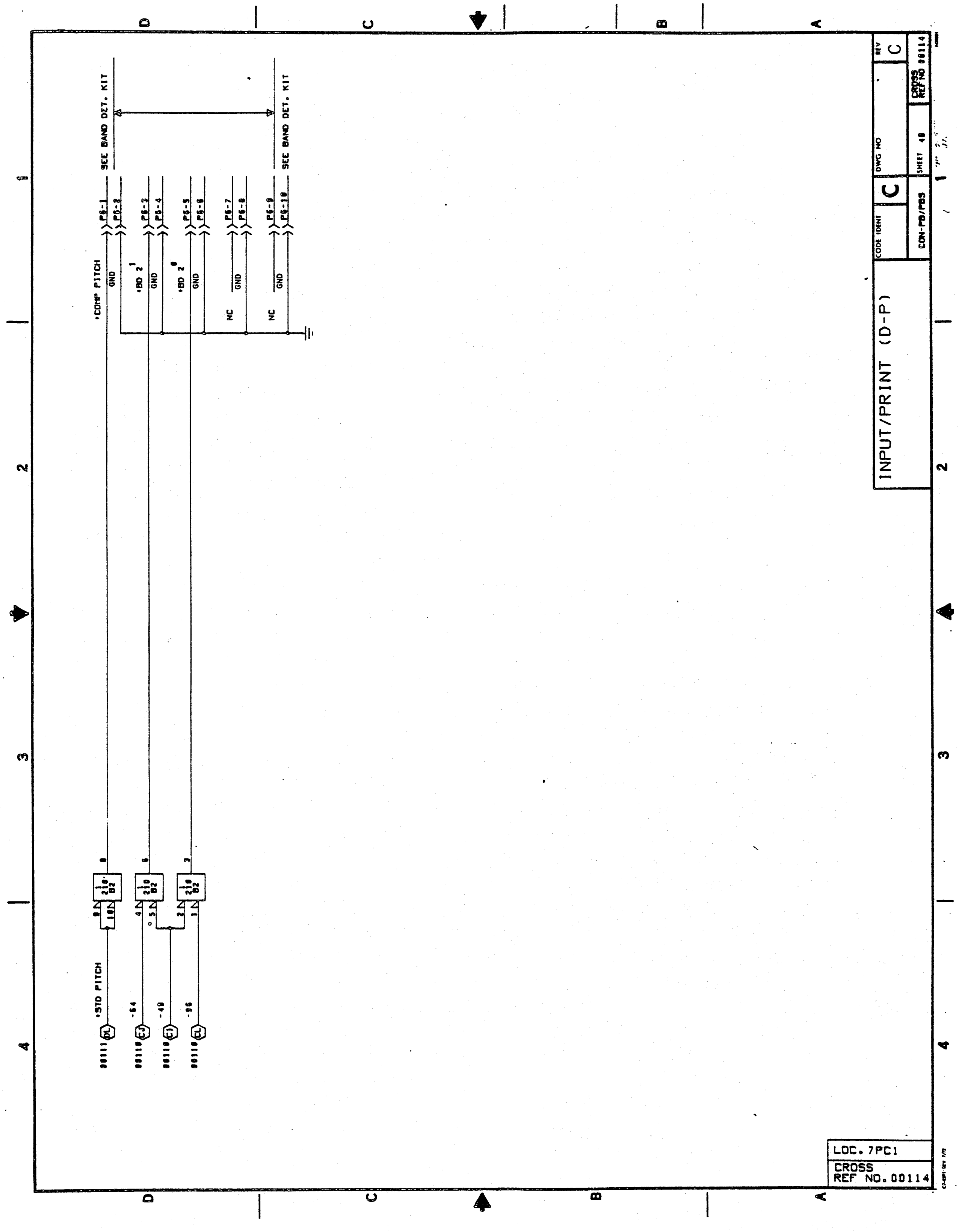
CODE IDENT	C	DWG NO	REV C
CON-P0/P05		SHEET 45	CROSS REF NO 00111

CHK JJL

PART B


HMR SETTLE CNTR
16 CNTR 150 K4
16 CNTR 150 L4
146 J4
140 M2
146 P3
HP FF
SSP FF
175 K3
R9 3.3K
R11 3.3K
+5V
+TSSP 4
+02 CLK
-PRT 2
+1 POS
+SSR + 4
-HMR ON
-HOME PULSE
GND
-TSSP 8
-SSP
-TSSP 2
-HAMMER FIRE
+FLT RESET
+(HMR SETTLED . SSR=4)
+PU
+HP FF
-HP FF
+SSP FF
+HAMMER FIRE
+HMR ON
+FAULT RESET
RN1-3 ※ 3.3K
RN1-3 ※ 13K
00302-7PC3-P1-9
00302-7PC3-P1-10
00303-7PC3-P1-7
00303-7PC3-P1-8
00306-7PC3-P1-1
00306-7PC3-P1-2
00306-7PC3-P1-3
00306-7PC3-P1-4
00306-7PC3-P1-5
00306-7PC3-P1-6
NOTES:
1 NOT USED ON BOARDS 44673071-74.
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
INPUT/PRINT (D-P)
CODE IDENT C
DWG NO
REV C
CON-PB/PBS
SHEET 46
CROSS REF NO 00112
LOC. 7PC1
CROSS REF NO. 00112


4
3
2
1
D
C
B
A
+5V
RN1-5 220
RN1-5 220
SEE I/O KIT
P5-25
P5-26
-MASTER CLEAR
GND
7414 N6
20
00106 BF
-ENAB PRINT FF
& 140 N1
1 140 N1
& 210 N3
-MC
DG 00105 00106 00107 00108
00201-7PC2-P4-17
00201-7PC2-P4-18
P1-17
P1-18
-CLR
GND
+5V RN1-2 ✻ 3.3K
RN1-2 ✻ 13K
00201-7PC2-P4-23
00201-7PC2-P4-24
00201-7PC2-P4-47
00201-7PC2-P4-48
P1-23
P1-24
P1-47
P1-48
+RDY FF
GND
NOT CONNECTED
GND
& 201 N2
+MC
GND
P1-31
P1-32
00201-7PC2-P4-31
00201-7PC2-P4-32
+RDY FF
DH 00105
& 210 P1
-RDY
GND
P5-21
P5-22
SEE I/O KIT
00205-7PC2-P4-25
00205-7PC2-P4-26
P1-25
P1-26
+OOP
GND
RN1-2 ✻ 3.3K
& 210 P1
-OOP
P5-27
GND
GND
P5-28
P5-29
SEE I/O KIT
00109 BZ
-(SR→HD)
-(SR→HD)
P3-13
00601-5PC-P3-13
GND
P3-14
00601-5PC-P3-14
00112 DF
+FLT RESET
& 204 P4
-FAULT
RESET
P3-21
00603-5PC-P3-21
GND
P3-22
00603-5PC-P3-22
-INH
P3-25
00601-5PC-P3-29
N/C
P3-26
R27 3.3K
00603-5PC-P3-19
00603-5PC-P3-20
P3-19
P3-20
-(HMR ON + 5 VOLT FAIL)
GND
R28 13K
-HMR ON
DI 00112
00104 AI
+CMP FF
1 146 N4
-CMP
GND
P3-23
P3-24
00601-5PC-P3-23
00601-5PC-P3-24
00108 BY
+CLR SR
00306-7PC3-P1-13
00306-7PC3-P1-14
P2-13
P2-14
-INH
GND
& 204 P4
& 204 P4
-CLR SR
GND
P3-15
P3-16
00601-5PC-P3-15
00601-5PC-P3-16
00107 BK
-SR STEP 1
-SR STEP 1
GND
P3-17
P3-18
00601-5PC-P3-17
00601-5PC-P3-18
RN1-3 ✻ 3.3K
RN1-1 ✻ 3.3K
00212-7PC2-P4-45
00212-7PC2-P4-46
P1-45
P1-46
+HD CLK
GND
RN1-3 ✻ 13K
& 204 P4
-HD CLK
GND
P3-3
P3-4
00601-5PC-P3-3
00601-5PC-P3-4
00212-7PC2-P4-5
00212-7PC2-P4-6
P1-5
P1-6
-CLK 2
GND
RN1-1 ✻ 13K
& 210 P1
& 140 B1
& 210 B2
+CLK 2
DP 00105
+CLK 2
DJ 00105 00106
00107 EA
-SR STEP 2
-SR STEP 2
GND
P3-1
P3-2
00601-5PC-P3-1
00601-5PC-P3-2
✻AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC1
CROSS REF NO. 00113
INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
C
CON-P8/PBS
SHEET 47
CROSS REF NO 00113
8 CHK 2-28-77


+COMP PITCH
GND
+BD 2
1
GND
+BD 2
0
GND
NC
GND
NC
GND
P6-1
P6-2
P6-3
P6-4
P6-5
P6-6
P6-7
P6-8
P6-9
P6-10
SEE BAND DET. KIT
SEE BAND DET. KIT
210
B2
8
9
10
6
4
5
3
2
1
+STD PITCH
-64
-48
-96
00111
DL
00110
CJ
00110
C1
00110
CL
INPUT/PRINT (D-P)
CODE IDENT
C
DWG NO
REV
C
CON-PB/PBS
SHEET 48
CROSS REF NO 00114
LOC. 7PC1
CROSS REF NO. 00114
A
B
C
D
1
2
3
4

JUMPER NUMBER			FUNCTION
J1A-J2A, J1B-J2B			START/STOP CONTROL OF READY--
	IN	OUT	STANDARD START/STOP CONTROL OF READY.
	OUT	IN	EXTERNAL CONTROL OF READY VIA ADAPTORS WHICH USE ''-EXT START PUL'' & ''-EXT STOP PUL''.
J3A J3B			VERTICAL ADVANCE CONTROL--
	IN	OUT	12 CHNL EVFU OPTION OR WHEN ASCII CONTROL CODES ARE NOT USED WITH THE EXTERNAL ADVANCE OPTION.
	OUT	IN	CONTROL CODES ARE STANDARD ASCII WITHOUT EXTERNAL ADVANCE OPTION OR WHEN EXTERNAL ADVANCE OPTION IS USED IN CONJUNCTION WITH CR.
J4A-J5A, J4B-J5B			
	IN	OUT	STANDARD PAPER FORMATTING
	OUT	IN	NEVER USED
J6			AUTO PERF SKIP (APS) SELECTION--
	IN		APS NOT ACTIVE
	OUT		APS ACTIVE
J7			FROM FEED CONTROL
	IN		NO EVFU OPTION
	OUT		EVFU OPTION

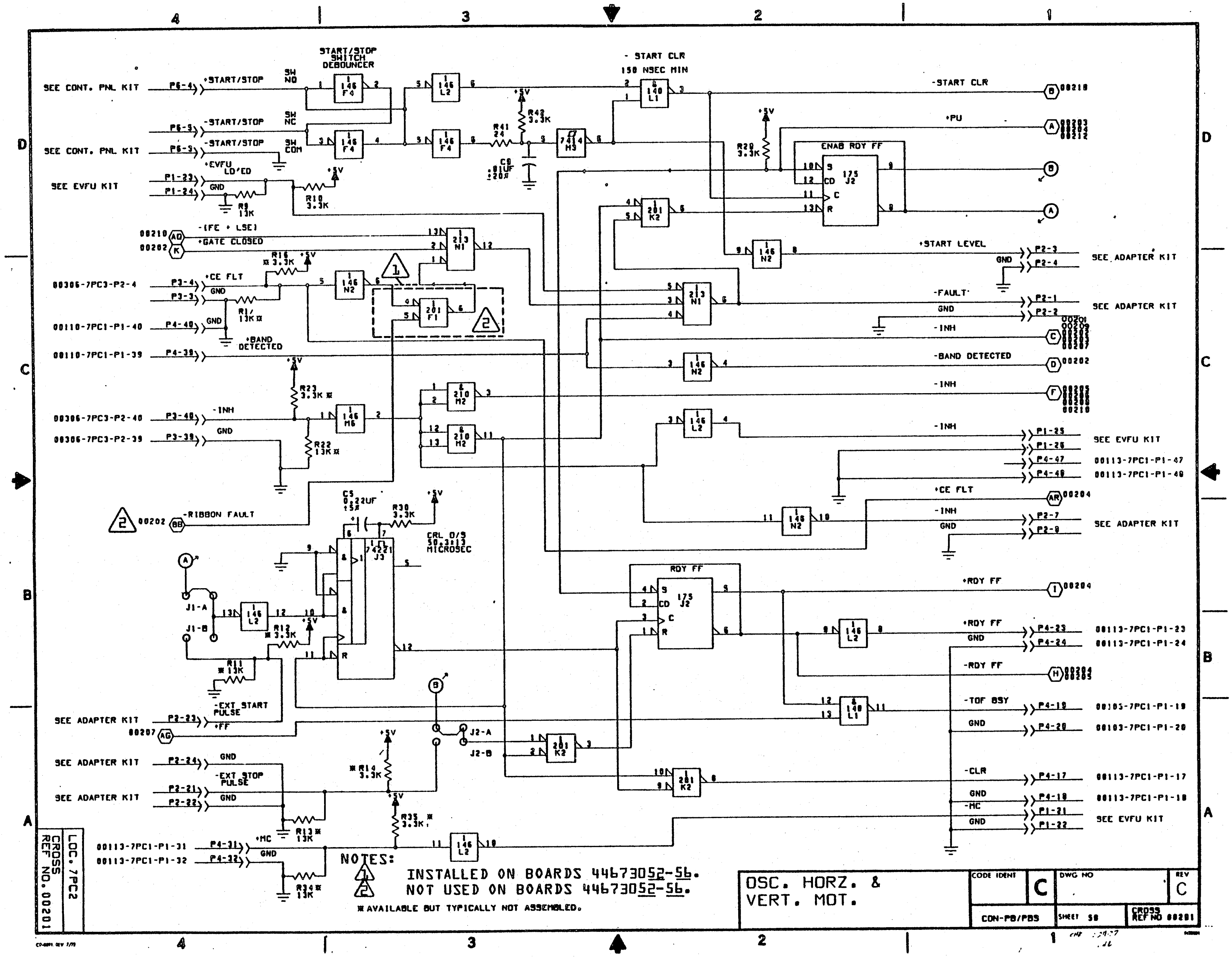
LOC.
CROSS
REF NO. 00200

OSC. HORZ. & VERT.
MOT. JUMPER
CHART

CODE IDENT		DWG NO	REV
	C		A
CON-PB/PBS		SHEET 49	CROSS REF NO 00200

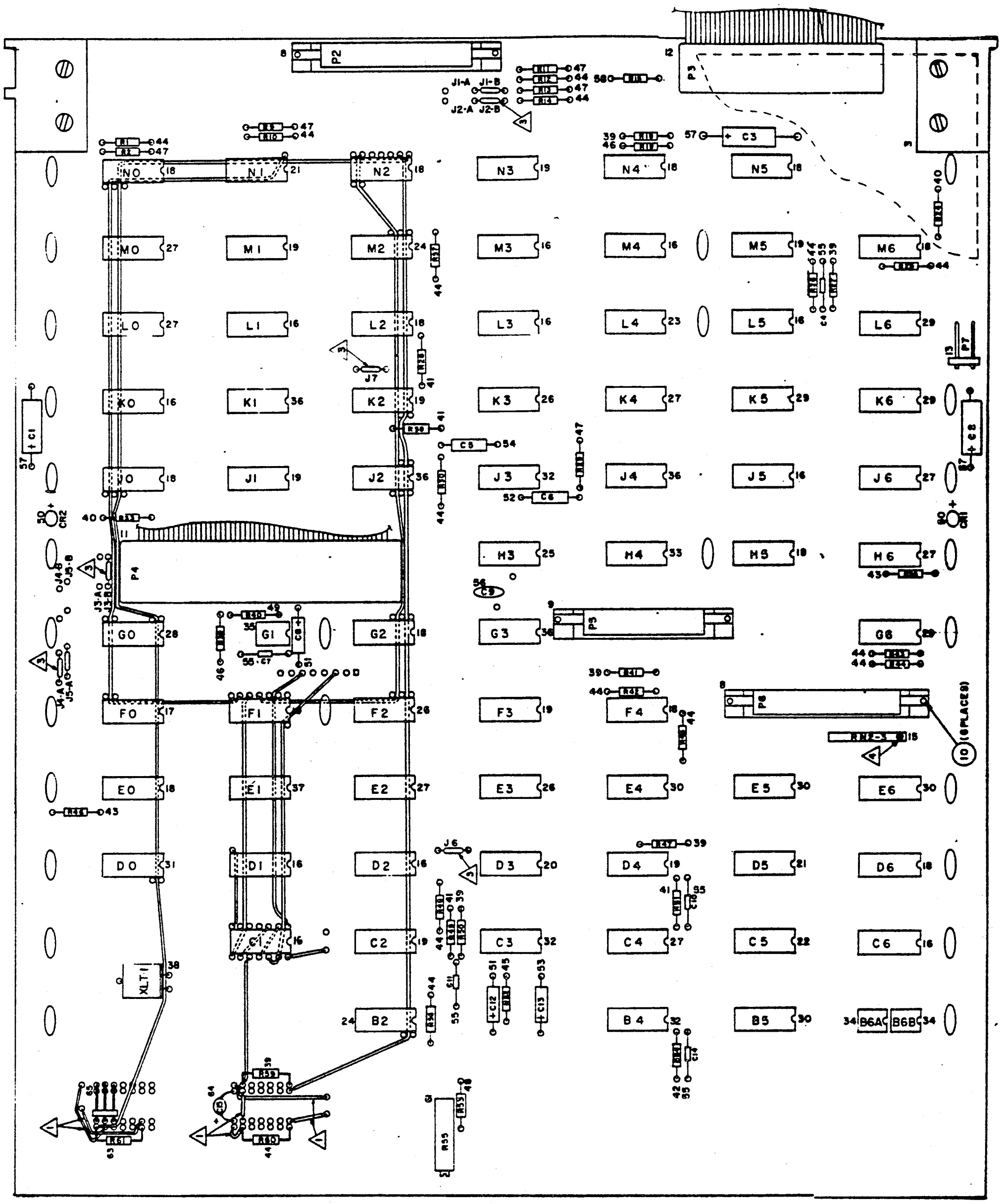
PART
B

PART B

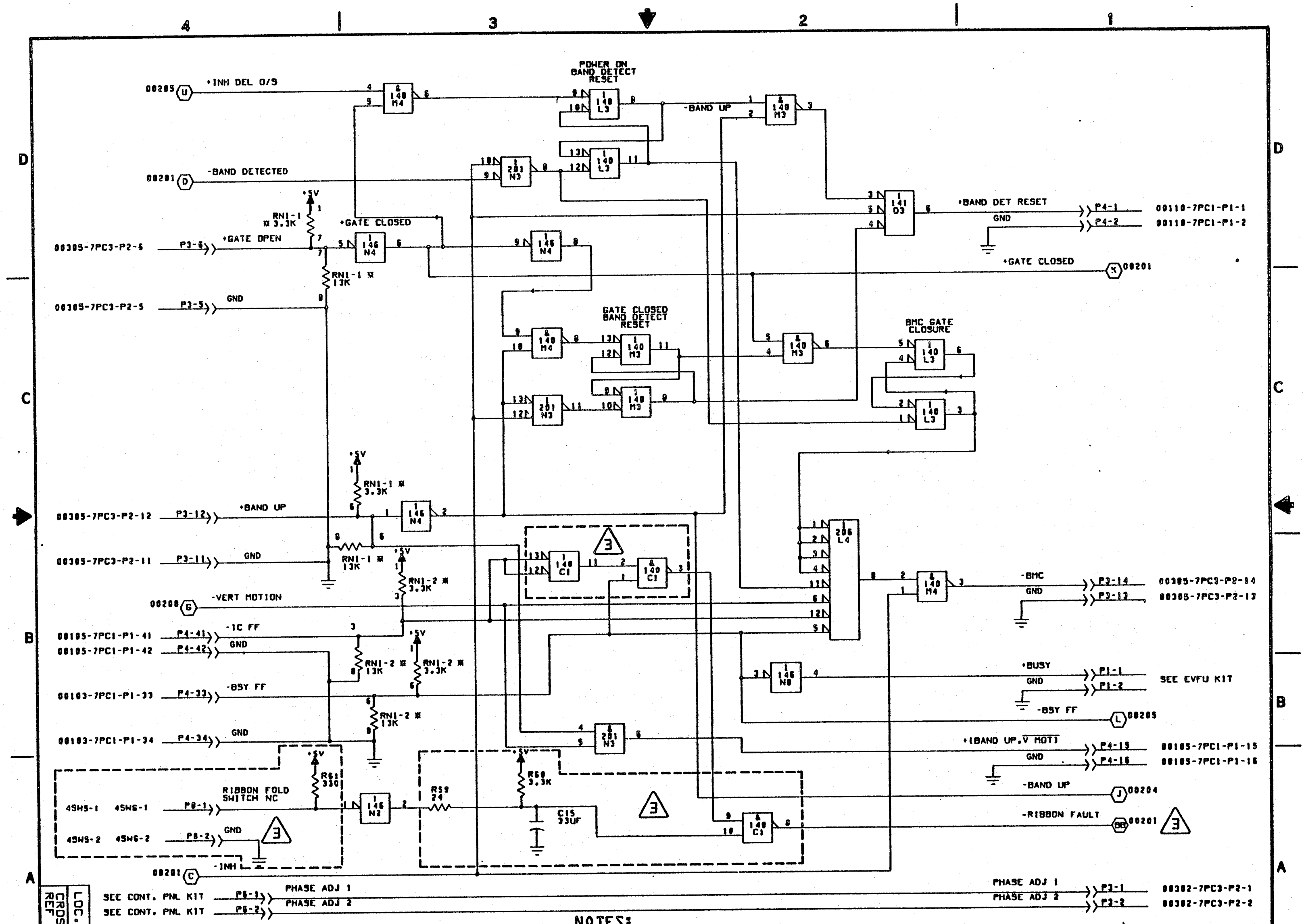


NOTES:
1 INSTALLED ON BOARDS 44673052-56.
2 NOT USED ON BOARDS 44673052-56.
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

OSC. HORZ. &
VERT. MOT.



OSC. HORZ. & VERTICAL MOTION



LOC. 7PC2

CROSS REF NO. 00202

NOTES:

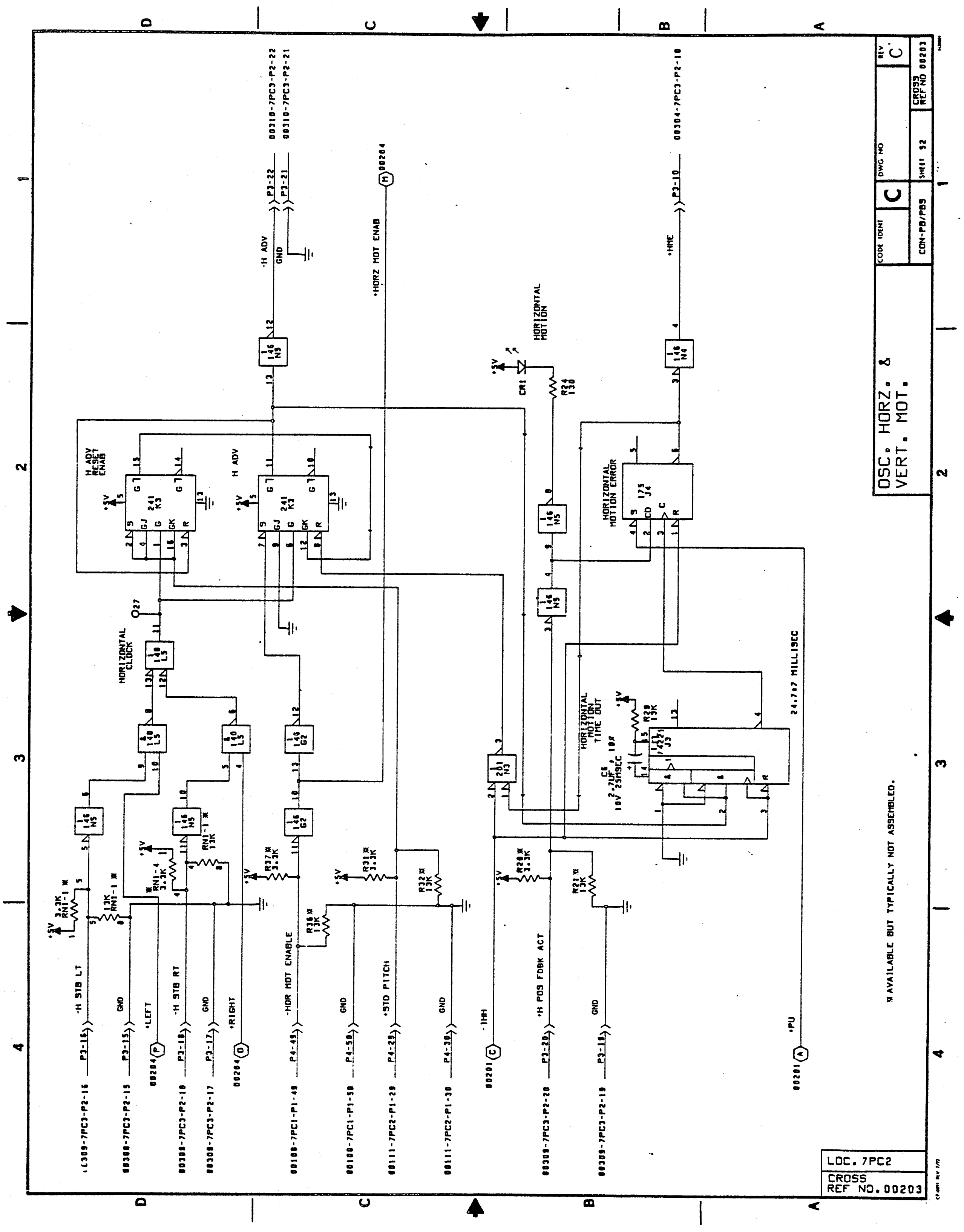
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

3 NOT INSTALLED ON BOARDS 44673052-56

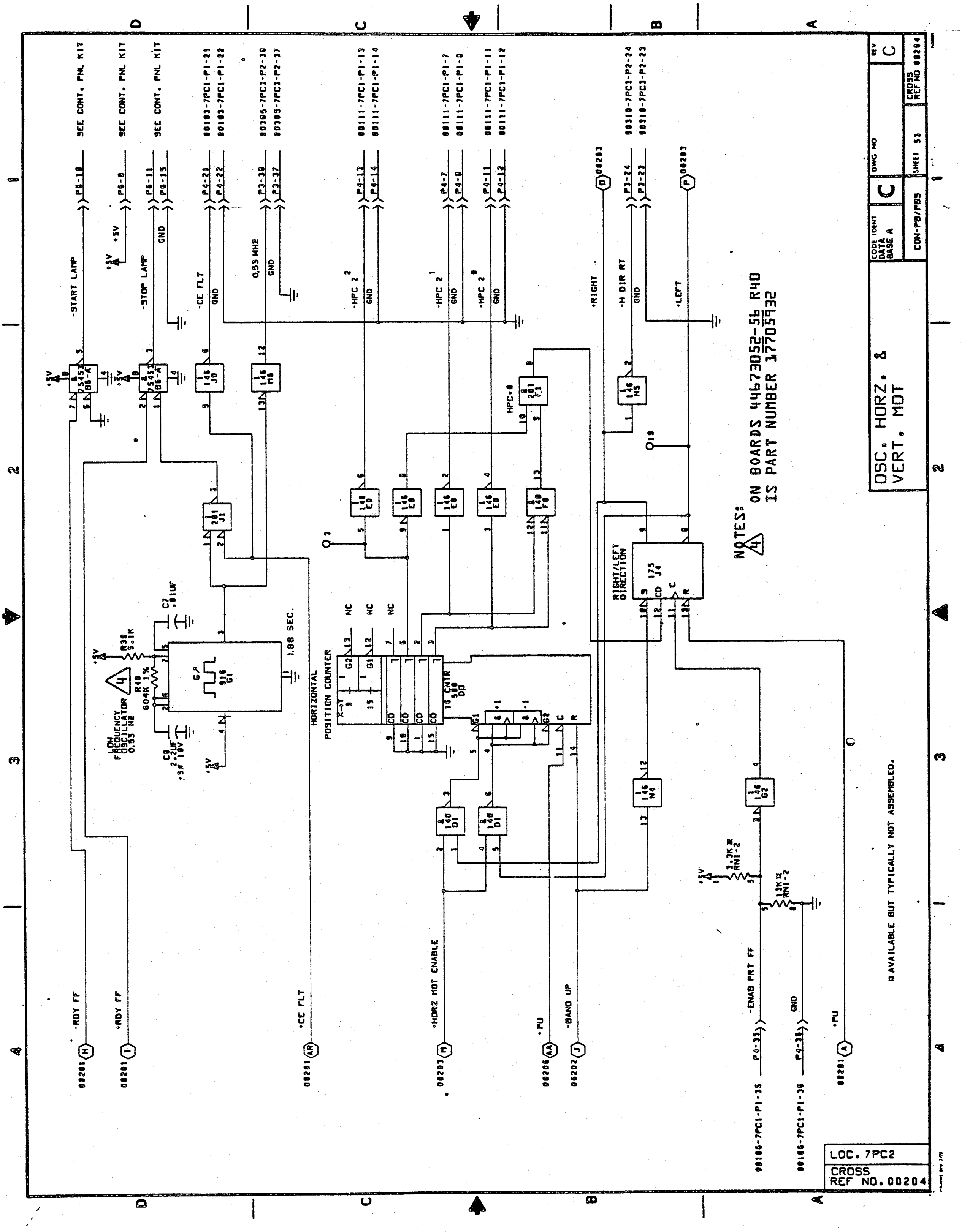
OSC. HORZ. & VERT. MOT	CODE IDENT	C	DWG NO	REV C
	CON-PB/PBS		SHEET 51	CROSS REF NO 00202

CP-0071 REV 7/72

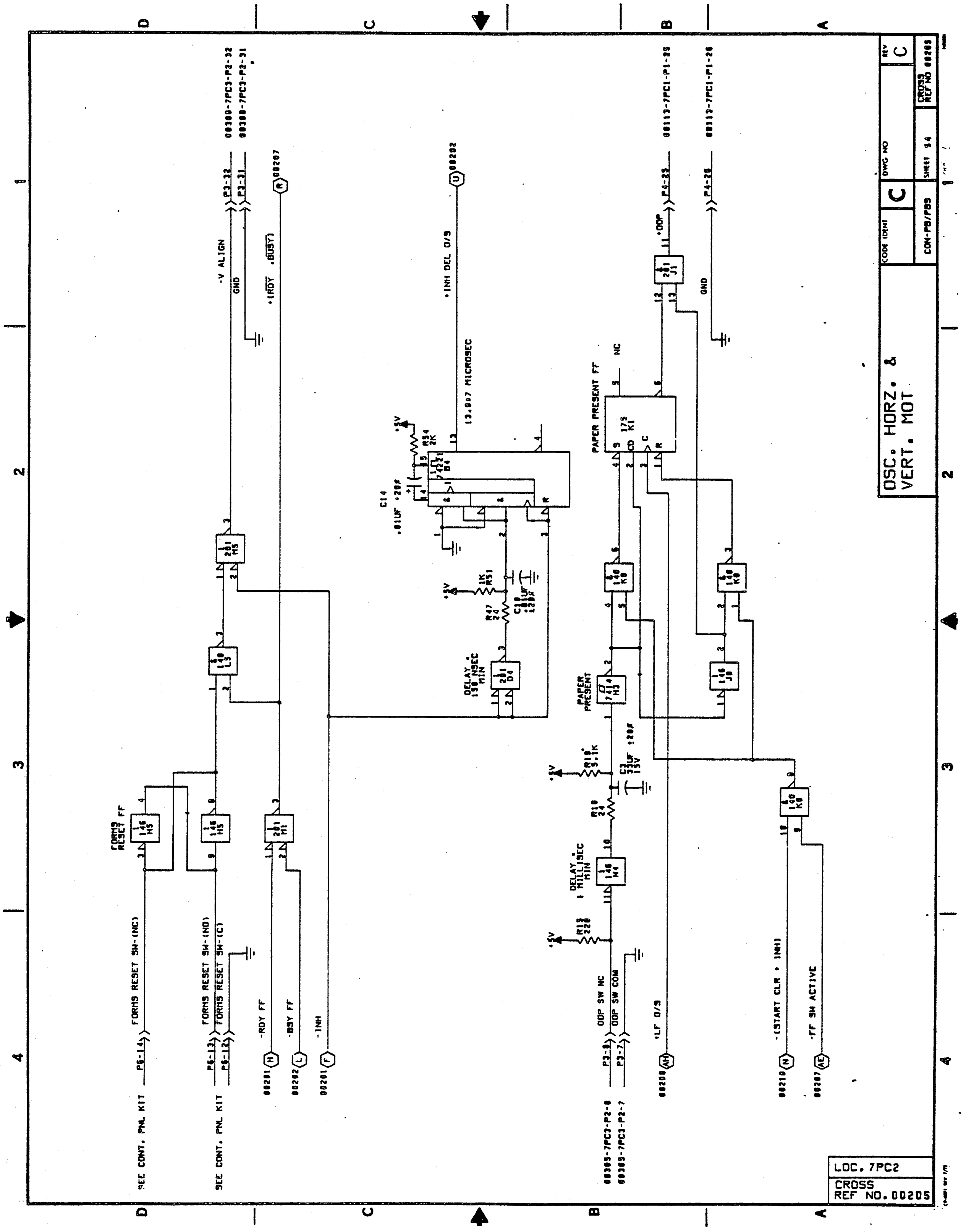
PART B



OSC. HORZ. & VERT. MOT.
CODE IDENT C
DWG NO
REV C
CON-PB/PB5
SHEET 52
CROSS REF NO 00203
LOC. 7PC2
CROSS REF NO. 00203
-H ADV
GND
00310-7PC3-P2-22
00310-7PC3-P2-21
P3-22
P3-21
+HORZ MOT ENAB
00204
+HME
P3-10
00304-7PC3-P2-10
HORIZONTAL MOTION
CR1
R24 130
H ADV RESET ENAB
H ADV
241 K3
HORIZONTAL MOTION ERROR
175 J4
HORIZONTAL CLOCK
146 L5
27
HORIZONTAL MOTION TIME OUT
C6 2.7UF, 10% 10V 25MSEC
R29 13K
1/423 J3
24,767 MILLISEC
201 N3
146 G2
146 N5
146 N4
R37 3.3K
R31 3.3K
R32 13K
R36 13K
R20 3.3K
R21 13K
RN1-1 3.3K
RN1-1 13K
RN1-4 3.3K
-H STB LT
GND
+LEFT
-H STB RT
GND
+RIGHT
-HOR MOT ENABLE
GND
+STD PITCH
GND
-1HH
+H POS FDBK ACT
GND
+PU
P3-16
P3-15
P
P3-18
P3-17
D
P4-49
P4-50
P4-29
P4-30
C
P3-20
P3-19
A
00309-7PC3-P2-16
00308-7PC3-P2-15
00204
00308-7PC3-P2-18
00308-7PC3-P2-17
00204
00100-7PC1-P1-49
00100-7PC1-P1-50
00111-7PC2-P1-29
00111-7PC2-P1-30
00201
00309-7PC3-P2-20
00309-7PC3-P2-19
00201
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
A
B
C
D
1
2
3
4

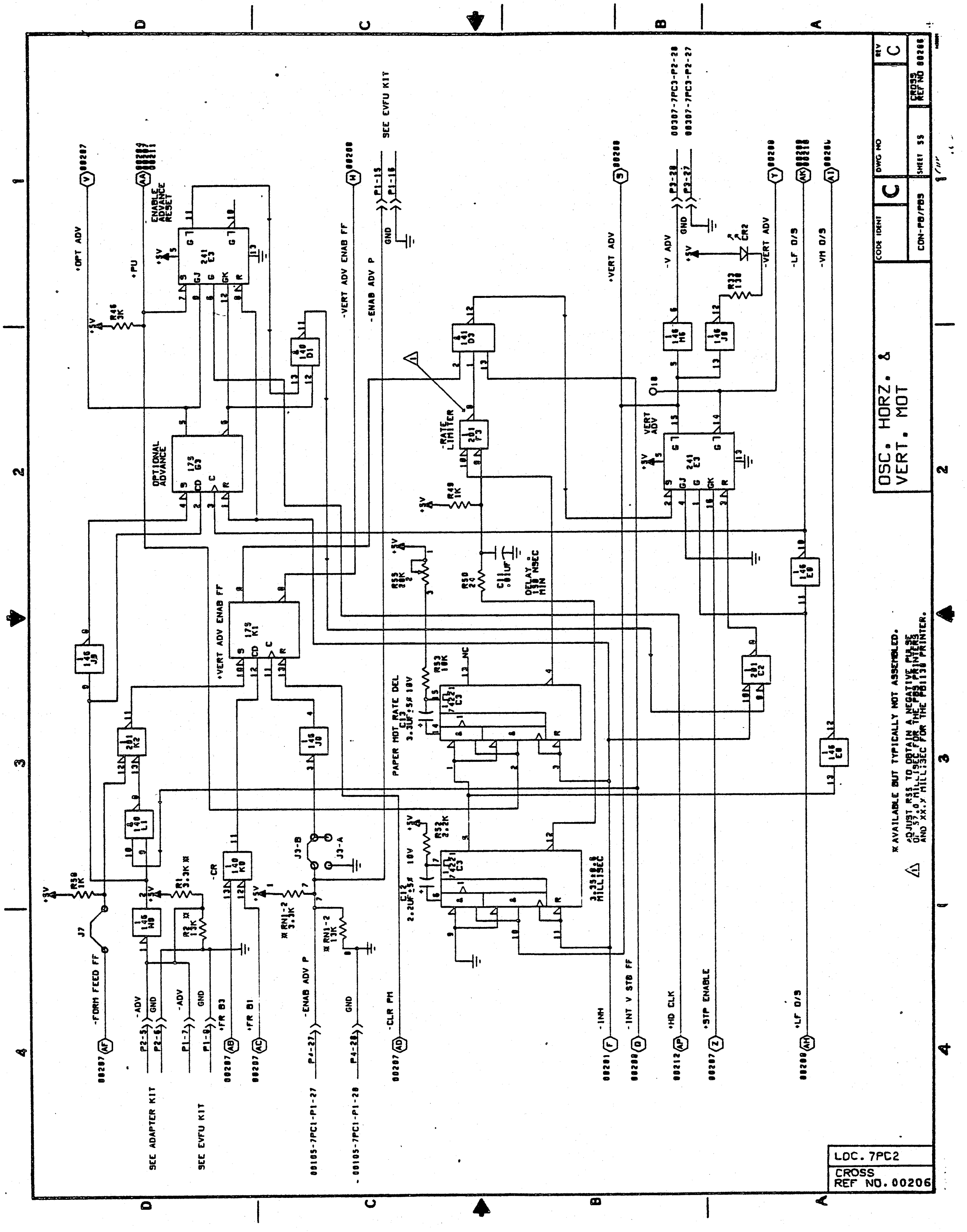

OSC. HORZ. &
VERT. MOT
CODE IDENT DATA BASE A
C
DWG NO
REV C
CON-PB/PBS
SHEET 53
CROSS REF NO 00204
NOTES:
4 ON BOARDS 44673052-56 R40 IS PART NUMBER 17705932
LOC. 7PC2
CROSS REF NO. 00204
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOW FREQUENCY OSCILLATOR 0.53 HZ
1.88 SEC.
HORIZONTAL POSITION COUNTER
RIGHT/LEFT DIRECTION
-START LAMP
-STOP LAMP
-CE FLT
0.53 MHZ
-HPC 2
-HPC 2
-HPC 2
HPC-0
+RIGHT
-H DIR RT
+LEFT
GND
+5V
SEE CONT. PNL KIT
SEE CONT. PNL KIT
SEE CONT. PNL KIT
00103-7PC1-P1-21
00103-7PC1-P1-22
00305-7PC3-P2-30
00305-7PC3-P2-37
00111-7PC1-P1-13
00111-7PC1-P1-14
00111-7PC1-P1-7
00111-7PC1-P1-8
00111-7PC1-P1-11
00111-7PC1-P1-12
00310-7PC3-P2-24
00310-7PC3-P2-23
-RDY FF
+RDY FF
+CE FLT
+HORZ MOT ENABLE
+PU
-BAND UP
-ENAB PRT FF
GND
+PU
00201
00201
00201
00203
00206
00202
00201
00106-7PC1-P1-35
00106-7PC1-P1-36
R39 5.1K
R40 604K 1%
C7 .01UF
C8 2.2UF 10V
3.3K RN1-2
13K RN1-2
75453 B6-A
201 J1
916 G1
146 J0
146 M6
146 E0
140 D1
146 N4
146 G2
146 N5
201 E1
175 J4
16 CNTR 508 D0
A B C D
1 2 3 4

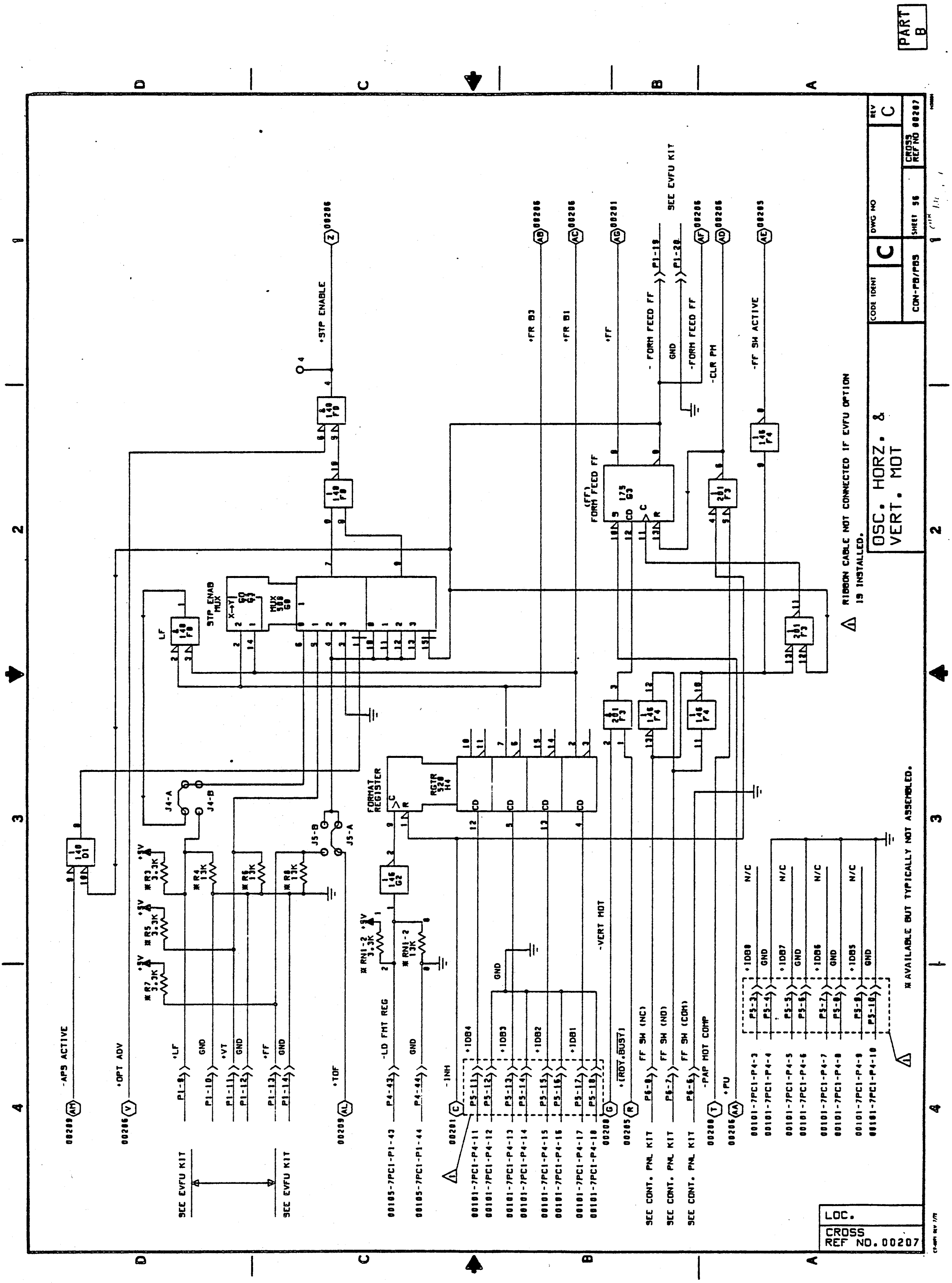
PART B

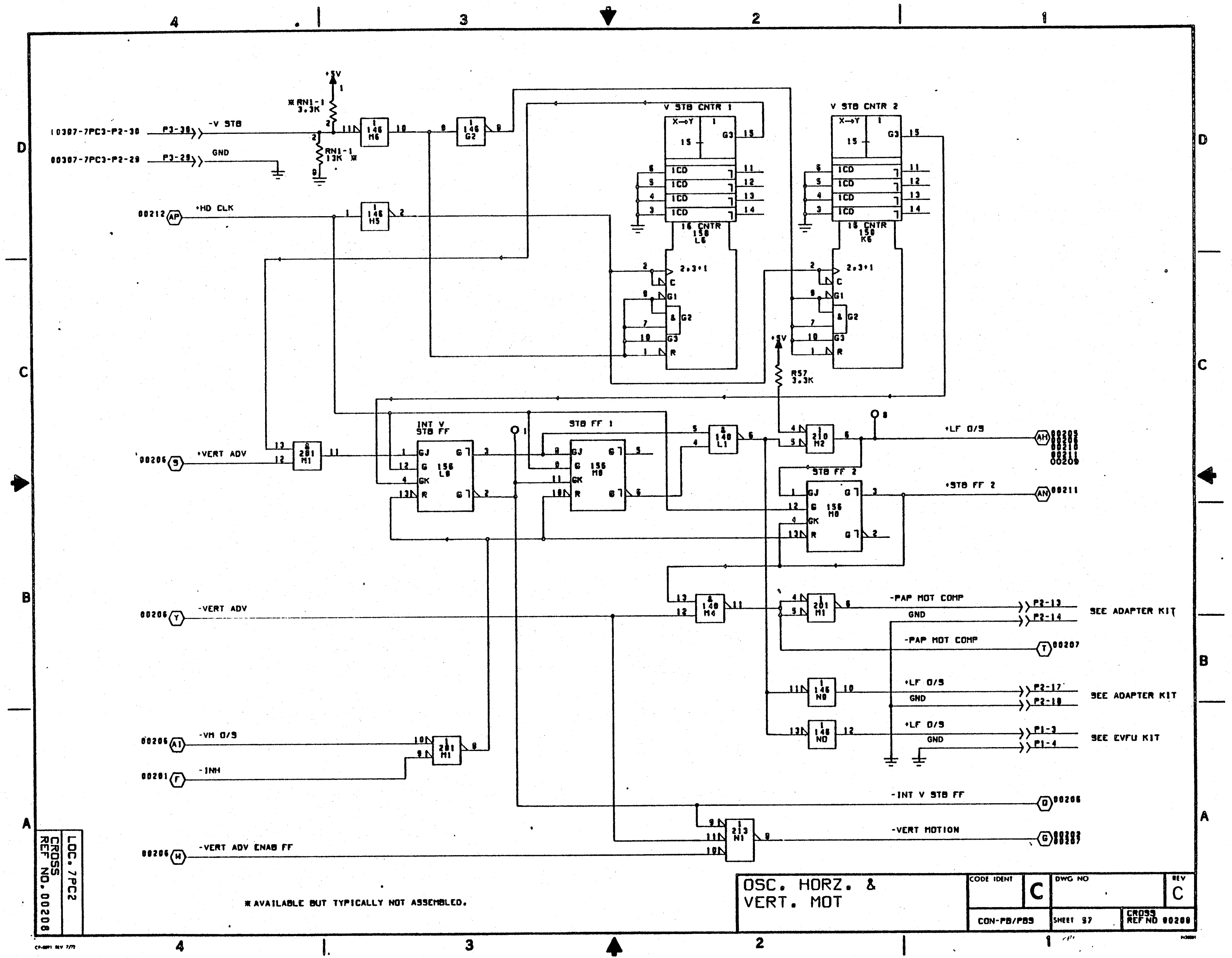


OSC. HORZ. & VERT. MOT
CODE IDENT
C
DWG NO
REV
C
CON-PB/PBS
SHEET 94
CROSS REF NO 00205
LOC. 7PC2
CROSS REF NO. 00205
FORMS RESET FF
FORMS RESET SW-(NC)
FORMS RESET SW-(NO)
FORMS RESET SW-(C)
SEE CONT. PNL KIT
P6-14
P6-13
P6-12
-RDY FF
-BSY FF
-INH
-V ALIGN
GND
+(RDY .BUSY)
P3-32
P2-31
00300-7PC3-P2-32
00300-7PC3-P2-31
00207
+INH DEL O/S
00202
13.007 MICROSEC
C14
.01UF ±20%
R34
2K
74121
B4
R51
1K
R47
24
C18
.01UF ±20%
DELAY 150 NSEC MIN
D4
PAPER PRESENT FF
NC
175
K1
PAPER PRESENT
H3
DELAY 1 MILLISEC MIN
N4
R18
5.1K
R19
24
R13
220
C3
33UF 15V
±20%
OOP SW NC
OOP SW COM
P3-8
P3-7
00305-7PC3-P2-8
00305-7PC3-P2-7
+LF O/S
00208
-(START CLR + INH)
00210
-FF SW ACTIVE
00207
+OOP
P4-29
P4-28
00113-7PC1-P1-29
00113-7PC1-P1-28
GND
+5V
146
140
201
H5
L5
M1
K8
J8
J1
D
C
B
A
1
2
3
4

PART B

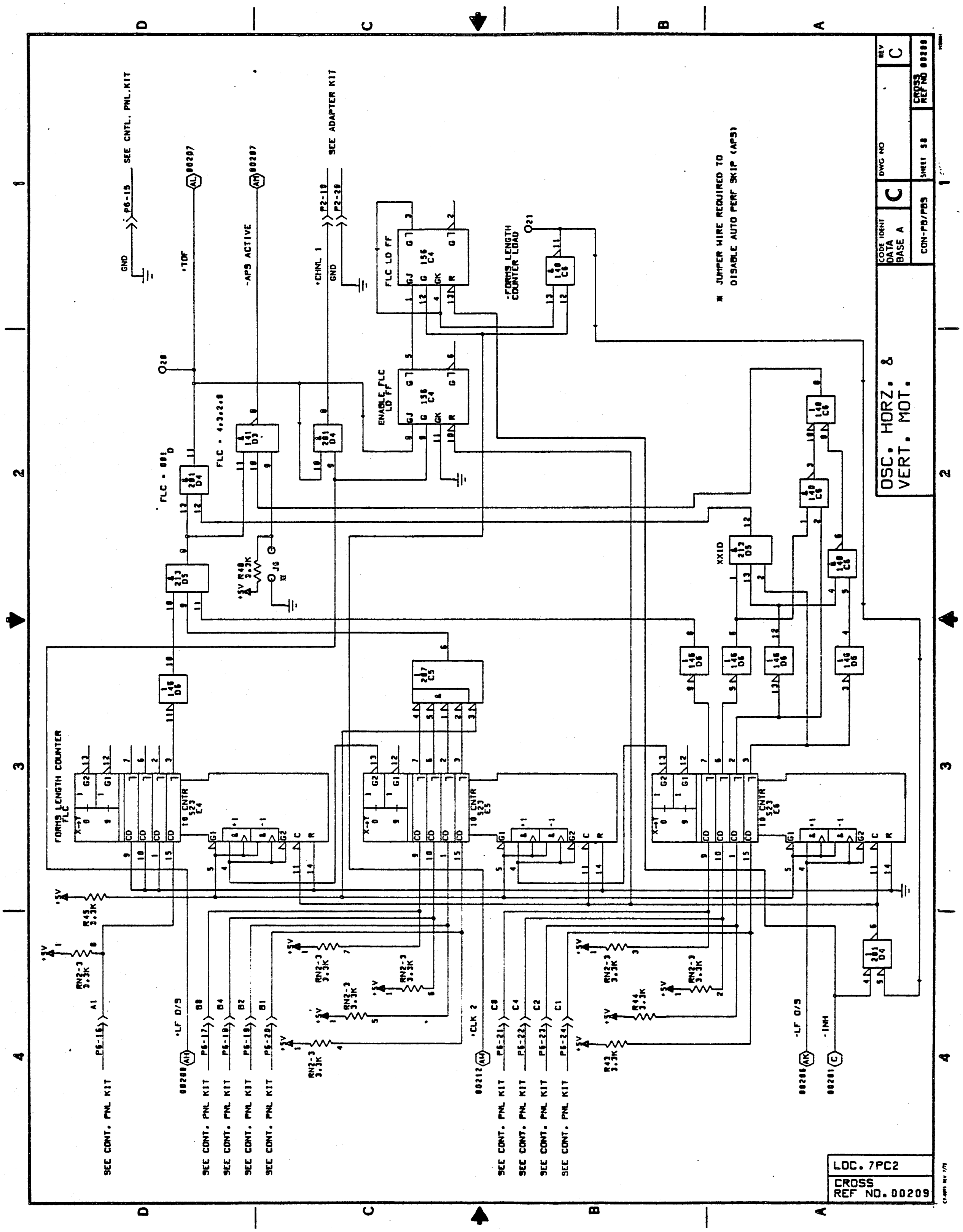

OSC. HORZ. & VERT. MOT
CODE IDENT C
DWG NO
REV C
CON-PB/PBS
SHEET 55
CROSS REF NO 00206
LOC. 7PC2
CROSS REF NO. 00206
※ AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
ADJUST R55 TO OBTAIN A NEGATIVE PULSE OF 57.0 MILLISEC FOR THE PBS PRINTERS AND XX.Y MILLISEC FOR THE PB1130 PRINTER.
+OPT ADV
+PU
ENABLE ADVANCE RESET
OPTIONAL ADVANCE
-VERT ADV ENAB FF
-ENAB ADV P
SEE EVFU KIT
+VERT ADV
-V ADV
-VERT ADV
-LF D/S
-VM D/S
-RATE LIMITER
VERT ADV
DELAY = 130 NSEC MIN
PAPER MOT RATE DEL
3.3 ±0.8 MILLISEC
-FORM FEED FF
-ADV
-CR
+FR B3
+FR B1
-CLR PM
-INH
-INT V STB FF
+HD CLK
+STP ENABLE
+LF D/S
SEE ADAPTER KIT
SEE EVFU KIT
00105-7PC1-P1-27
00105-7PC1-P1-28
00307-7PC3-P2-28
00307-7PC3-P2-27

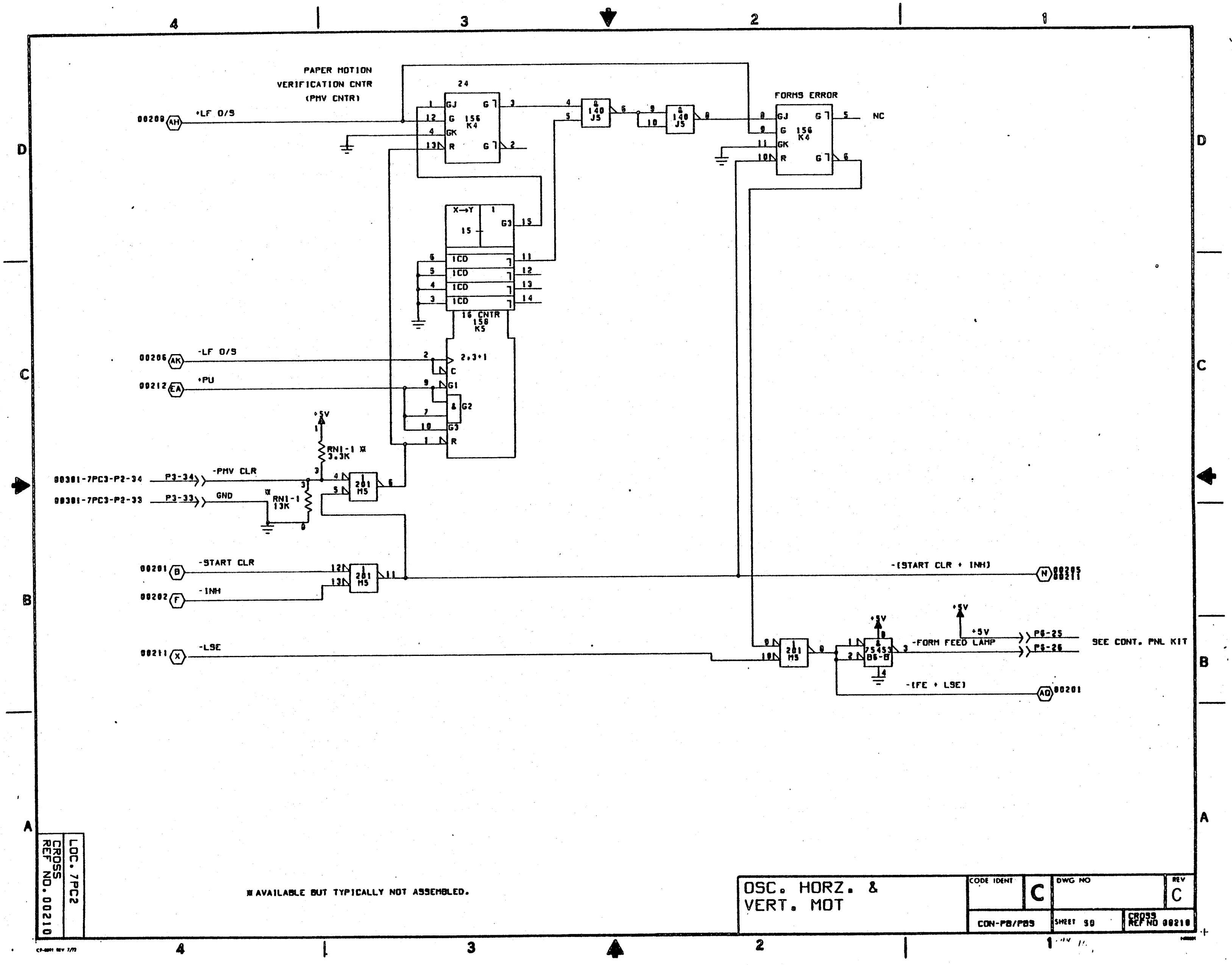

PART B
OSC. HORZ. & VERT. MOT
CODE IDENT C
DWG NO C
REV C
SHEET 56
CON-PB/PBS
CROSS REF NO 00207
LOC.
CROSS REF NO. 00207
RIBBON CABLE NOT CONNECTED IF EVFU OPTION IS INSTALLED.
* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
+STP ENABLE
+FR B3
+FR B1
+FF
- FORM FEED FF
GND
-FORM FEED FF
-CLR PM
-FF SW ACTIVE
SEE EVFU KIT
P1-19
P1-20
(FF) FORM FEED FF
175 G3
STP ENAB MUX
MUX 508 G8
LF
FORMAT REGISTER
RGTR 528 H4
J4-A
J4-B
J5-A
J5-B
-APS ACTIVE
+OPT ADV
+LF
+VT
+FF
+TOF
GND
-LD FMT REG
-INH
+IDB4
+IDB3
+IDB2
+IDB1
-VERT MOT
+(RDY.BUSY)
FF SW (NC)
FF SW (NO)
FF SW (COM)
-PAP MOT COMP
+PU
+IDB8
+IDB7
+IDB6
+IDB5
N/C
SEE EVFU KIT
SEE CONT. PNL. KIT
00105-7PC1-P1-43
00105-7PC1-P1-44
00101-7PC1-P4-11
00101-7PC1-P4-12
00101-7PC1-P4-13
00101-7PC1-P4-14
00101-7PC1-P4-15
00101-7PC1-P4-16
00101-7PC1-P4-17
00101-7PC1-P4-18
00101-7PC1-P4-3
00101-7PC1-P4-4
00101-7PC1-P4-5
00101-7PC1-P4-6
00101-7PC1-P4-7
00101-7PC1-P4-8
00101-7PC1-P4-9
00101-7PC1-P4-10
* R3 3.3K
* R4 13K
* R5 3.3K
* R6 13K
* R7 3.3K
* R8 13K
* RN1-2 3.3K
* RN1-2 13K
+5V


10307-7PC3-P2-30
P3-30
-V STB
00307-7PC3-P2-28
P3-28
GND
※RN1-1 3.3K
RN1-1 13K ※
+5V
1 146 M6
1 146 G2
00212 AP
+HD CLK
1 146 H5
V STB CNTR 1
X→Y
G3
1CD
16 CNTR 158 L6
2,3+1
C
G1
& G2
G3
R
V STB CNTR 2
16 CNTR 158 K6
R57 3.3K
+5V
00206 S
+VERT ADV
& 281 M1
INT V STB FF
GJ
G 156 L8
GK
R
STB FF 1
G 156 M8
& 140 L1
1 210 M2
STB FF 2
G 156 M8
+LF O/S
AH 00205 00206 00210 00211 00209
+STB FF 2
AN 00211
00206 Y
-VERT ADV
& 140 M4
& 201 M1
-PAP MOT COMP
GND
P2-13
P2-14
SEE ADAPTER KIT
-PAP MOT COMP
T 00207
1 146 N8
+LF O/S
GND
P2-17
P2-18
SEE ADAPTER KIT
1 146 N8
+LF O/S
GND
P1-3
P1-4
SEE EVFU KIT
00206 A1
-VM O/S
00201 F
-INH
& 281 M1
-INT V STB FF
D 00206
1 213 N1
-VERT MOTION
G 00202 00207
00206 H
-VERT ADV ENAB FF
※AVAILABLE BUT TYPICALLY NOT ASSEMBLED.
LOC. 7PC2
CROSS REF NO. 00208
OSC. HORZ. & VERT. MOT
CODE IDENT C
DWG NO
REV C
CON-PB/PBS
SHEET 97
CROSS REF NO 00208
A
B
C
D
1
2
3
4

PART B

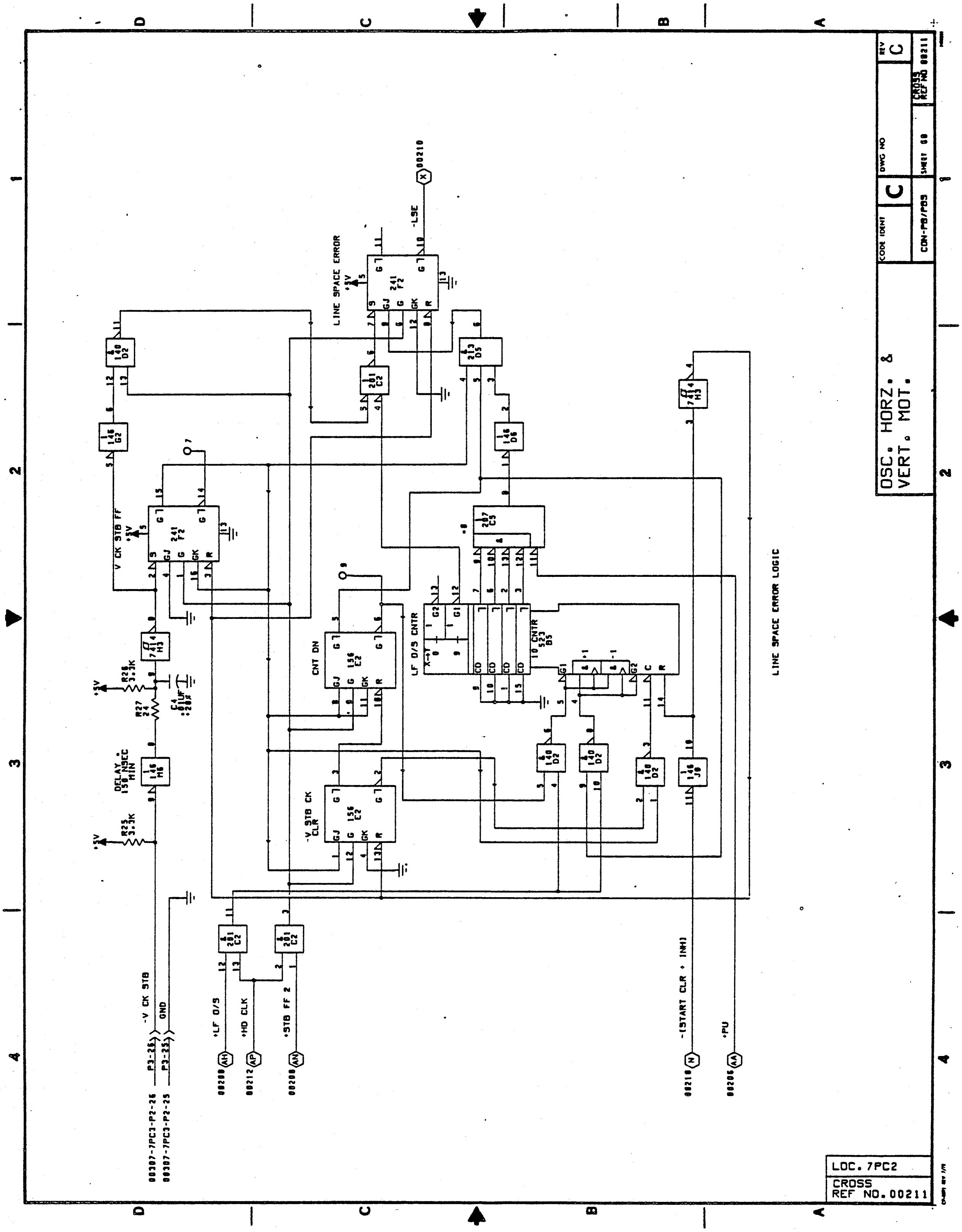
PART B

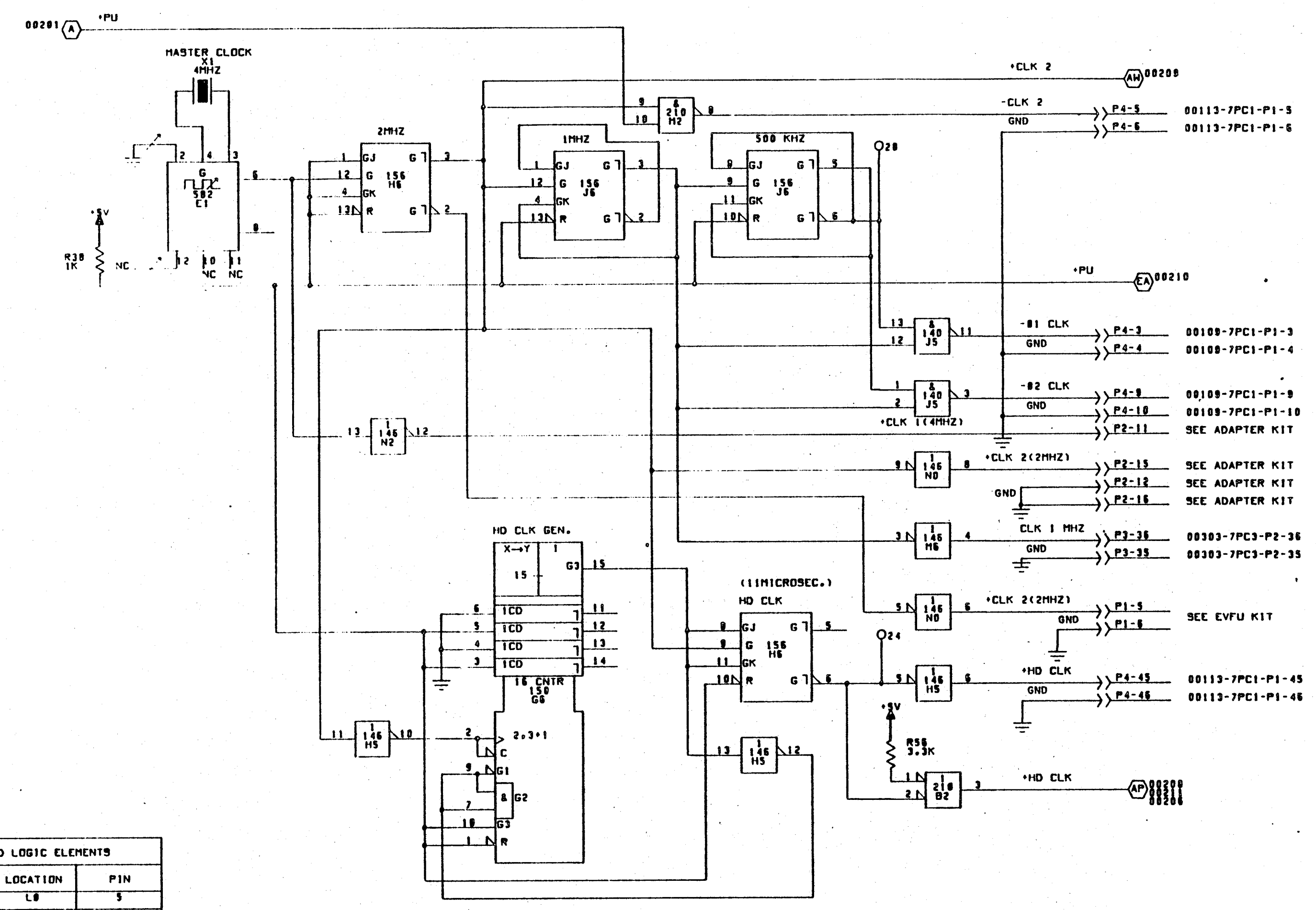

OSC. HORZ. & VERT. MOT.
CODE IDENT DATA BASE A
C
DWG NO
REV C
CON-PB/PB5
SHEET 58
CROSS REF NO 00288
LOC. 7PC2
CROSS REF NO. 00209
FORMS LENGTH COUNTER FLC
10 CNTR 523 E4
10 CNTR 523 E5
10 CNTR 523 E6
FLC LD FF
ENABLE FLC LD FF
156 C4
-FORMS LENGTH COUNTER LOAD
* JUMPER WIRE REQUIRED TO DISABLE AUTO PERF SKIP (APS)
GND
P6-15
SEE CNTL. PNL. KIT
+TOF
-APS ACTIVE
+CHNL 1
P2-19
P2-20
SEE ADAPTER KIT
00207
FLC = 001
FLC = 4,3,2,0
XX10
+5V R40 3.3K
J6
+5V
R45 3.3K
RN2-3 3.3K
R44 3.3K
R43 3.3K
+LF D/S
-LF D/S
+CLK 2
-INH
P6-16
P6-17
P6-18
P6-19
P6-20
P6-21
P6-22
P6-23
P6-24
A1
B8
B4
B2
B1
C8
C4
C2
C1
SEE CONT. PNL KIT
00208
00212
00206
00201
D
C
B
A
1
2
3
4



* AVAILABLE BUT TYPICALLY NOT ASSEMBLED.

PART B


OSC. HORZ. & VERT. MOT.
LOC. 7PC2
CROSS REF NO. 00211
CODE IDENT
DWG NO
C
REV
C
CON-PB/PB3
SHEET 60
CROSS REF NO 00211
LINE SPACE ERROR LOGIC
LINE SPACE ERROR
-LSE
00210
V CK STB FF
CNT DN
-V STB CK CLR
LF O/S CNTR
10 CNTR 523 B5
DELAY 150 NSEC MIN
R25 3.3K
R26 3.3K
R27 24
C4 .01UF ±20%
+5V
-V CK STB
GND
P3-26
P3-25
00307-7PC3-P2-26
00307-7PC3-P2-25
+LF O/S
+HD CLK
+STB FF 2
00208
00212
00208
-(START CLR + INH)
+PU
00210
00205
D
C
B
A
1
2
3
4



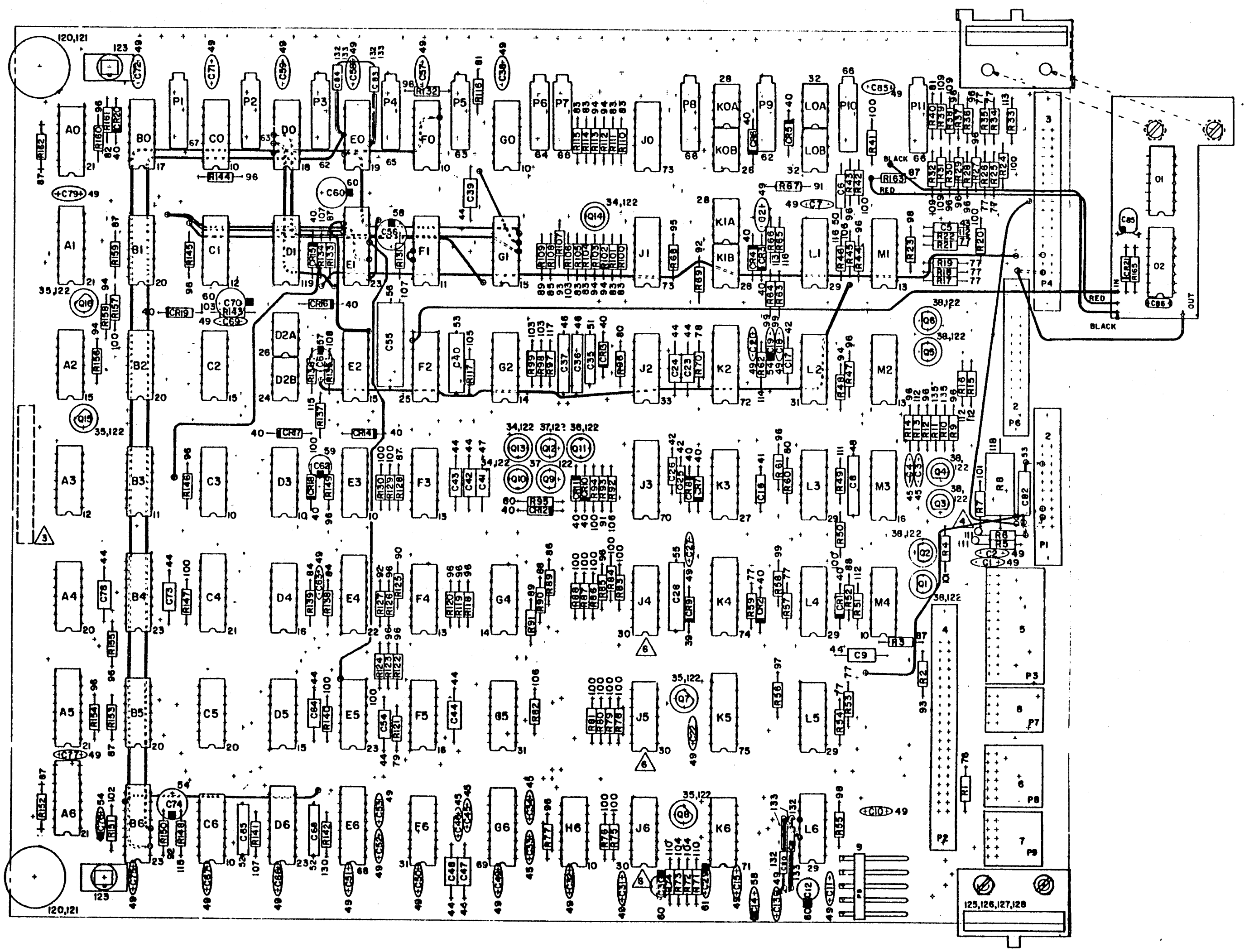
UNUSED LOGIC ELEMENTS		
ELEMENT	LOCATION	PIN
156	L0	5
146	L2	2
201	J1	6,0
201	F1	3,6,11
7414	H3	10,12
210	B2	6,0,11

LOC. 7PC2
CROSS
REF NO. 00212

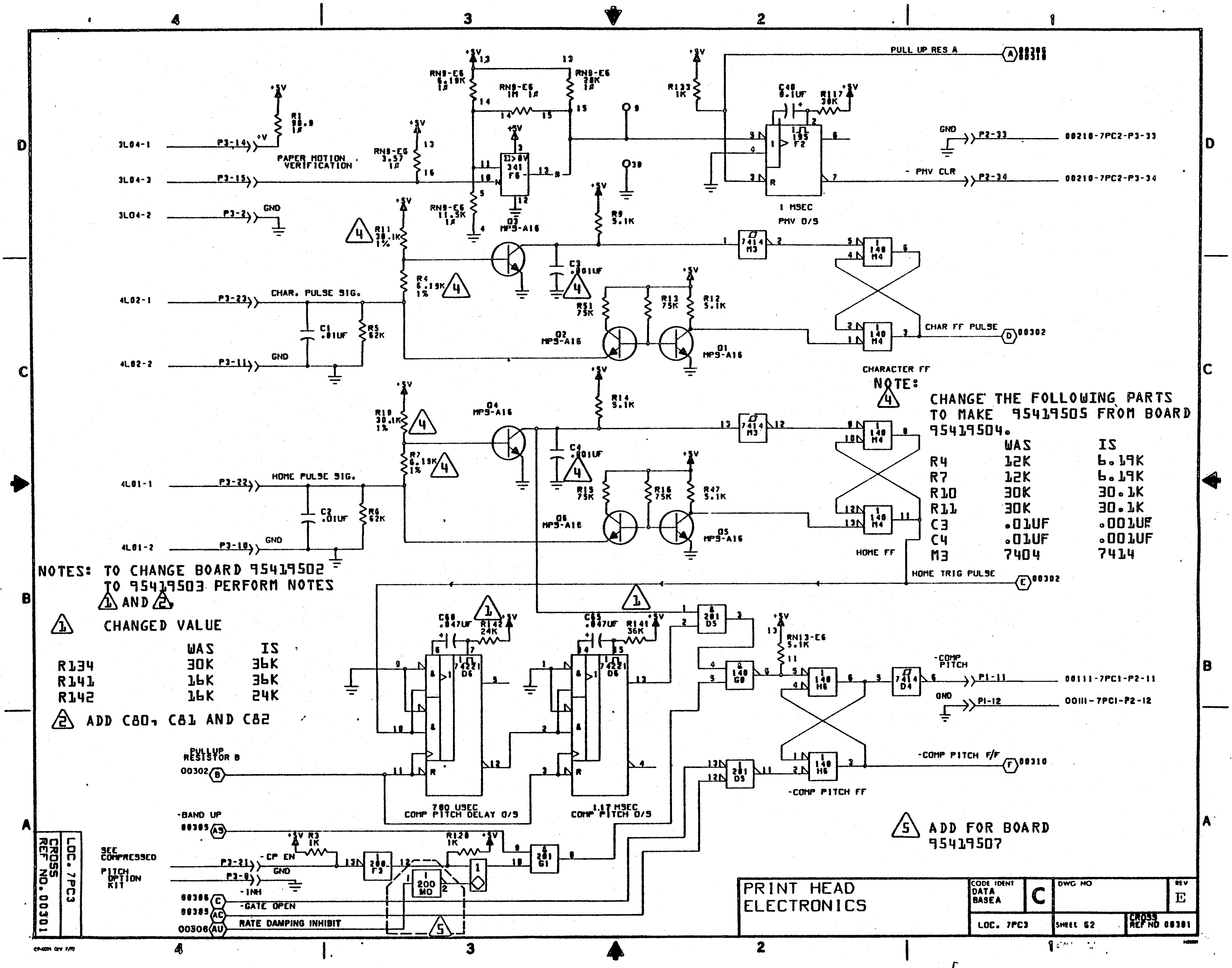
OSC. HORZ. &
VERT. MOT

CODE IDENT C
DWG NO
REV C
CON-PB/PBS
SHEET 61
CROSS REF NO 00212

PART B



PRINT HEAD ELECTRONICS



NOTE: ⚠4 CHANGE THE FOLLOWING PARTS TO MAKE 95419505 FROM BOARD 95419504.

	WAS	IS
R4	12K	6.19K
R7	12K	6.19K
R10	30K	30.1K
R11	30K	30.1K
C3	.01UF	.001UF
C4	.01UF	.001UF
M3	7404	7414

NOTES: TO CHANGE BOARD 95419502 TO 95419503 PERFORM NOTES ⚠1 AND ⚠2.

⚠1 CHANGED VALUE

	WAS	IS
R134	30K	36K
R141	16K	36K
R142	16K	24K

⚠2 ADD C80, C81 AND C82

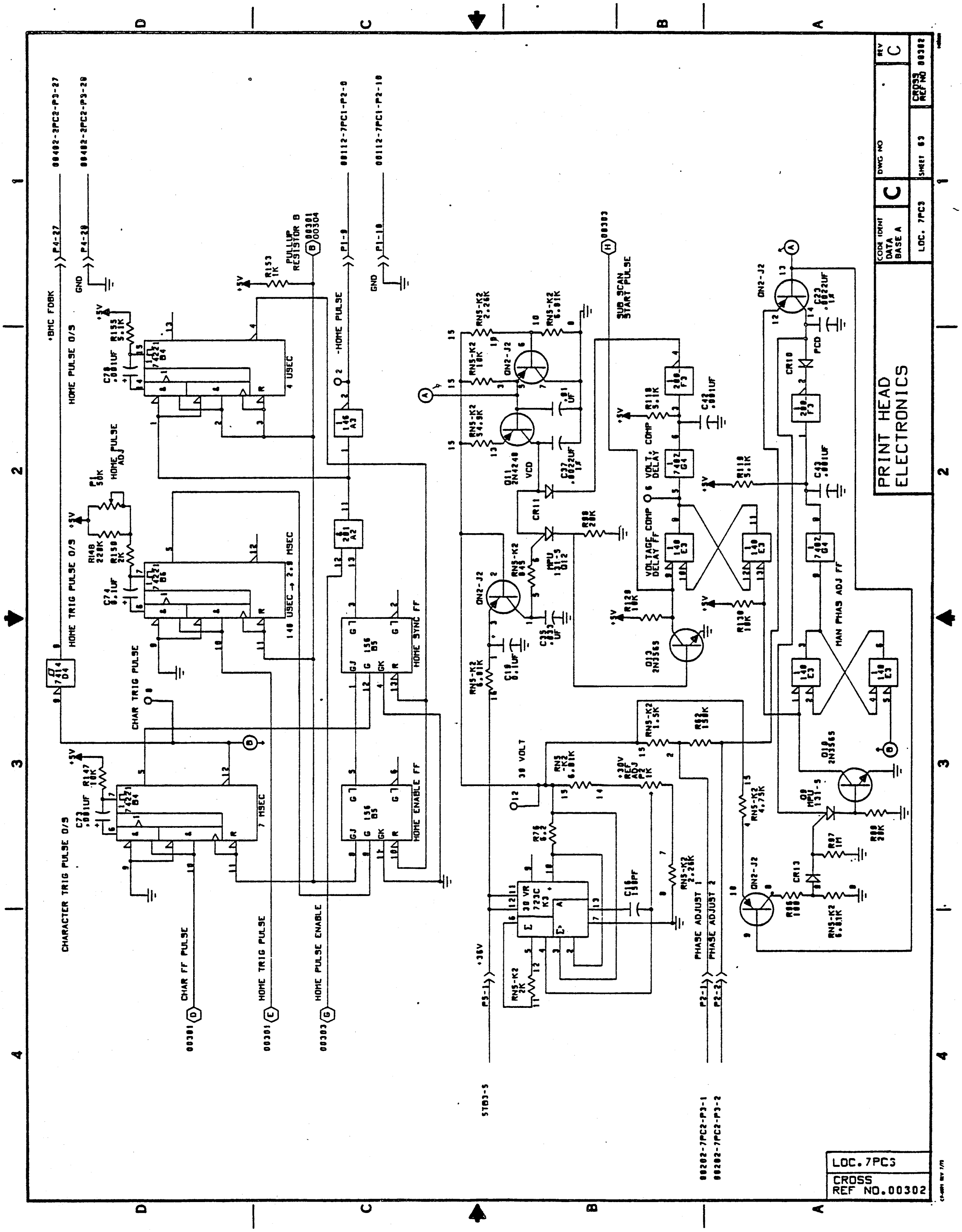
⚠5 ADD FOR BOARD 95419507

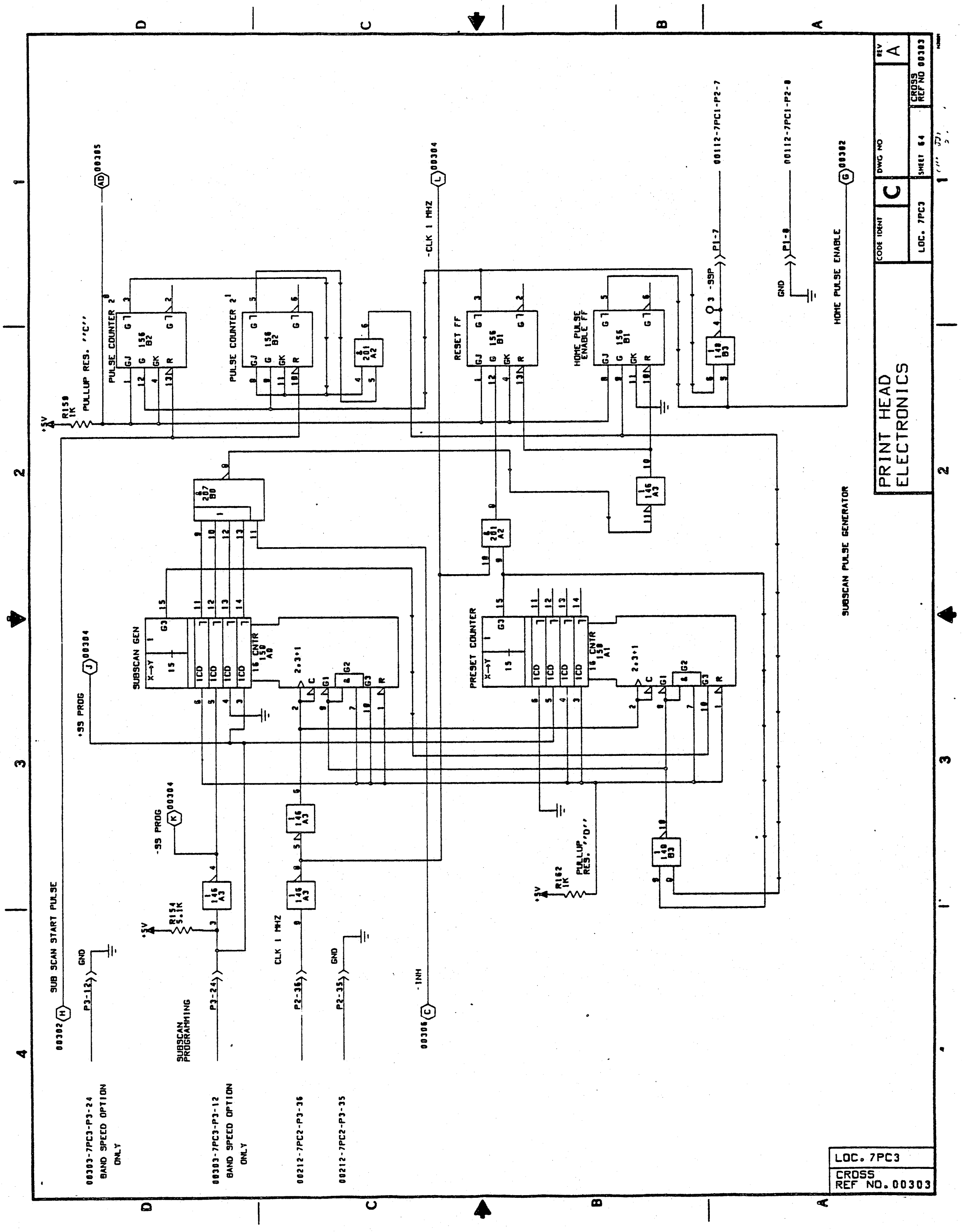
LOC. 7PC3
CROSS REF NO. 00301

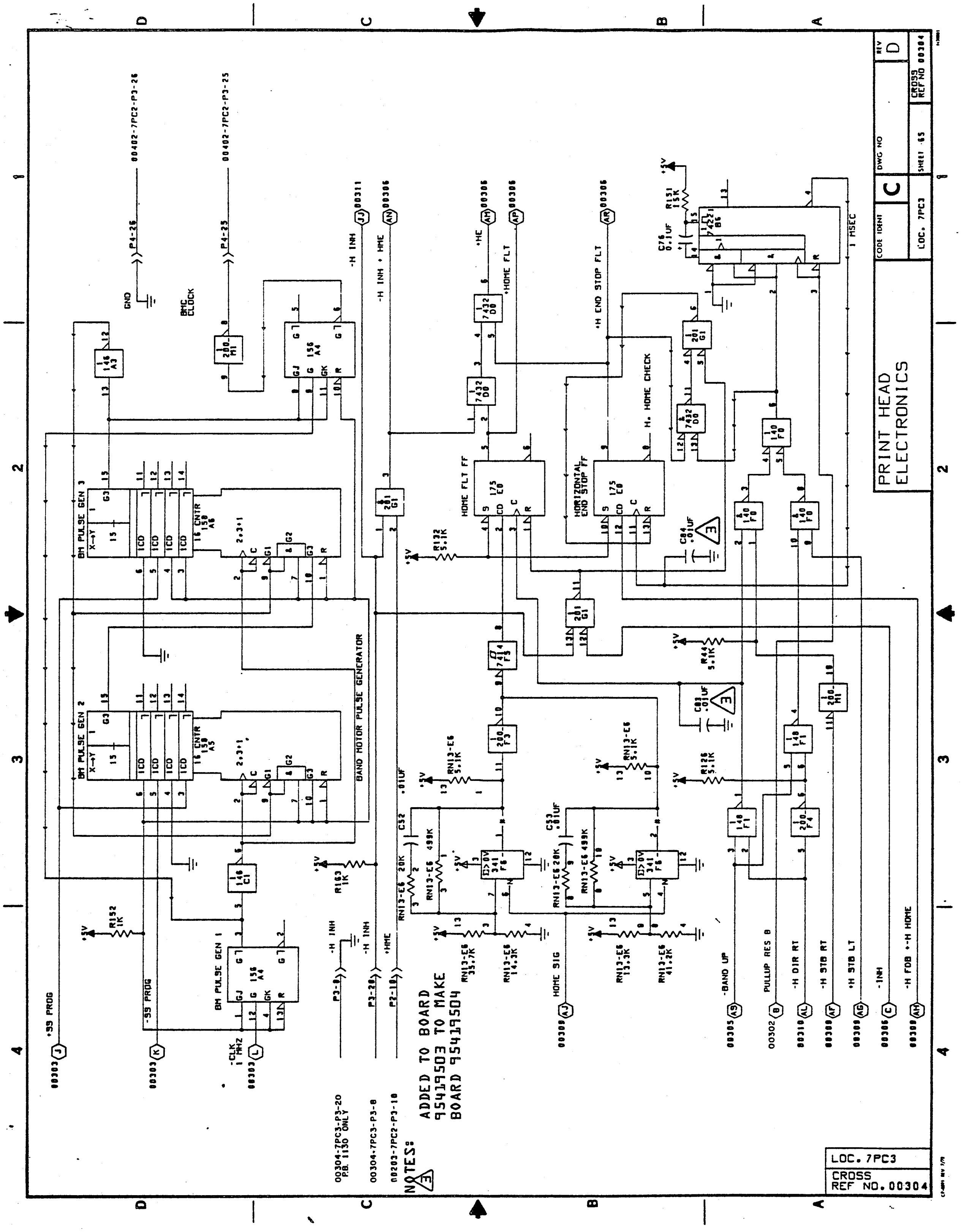
PRINT HEAD ELECTRONICS

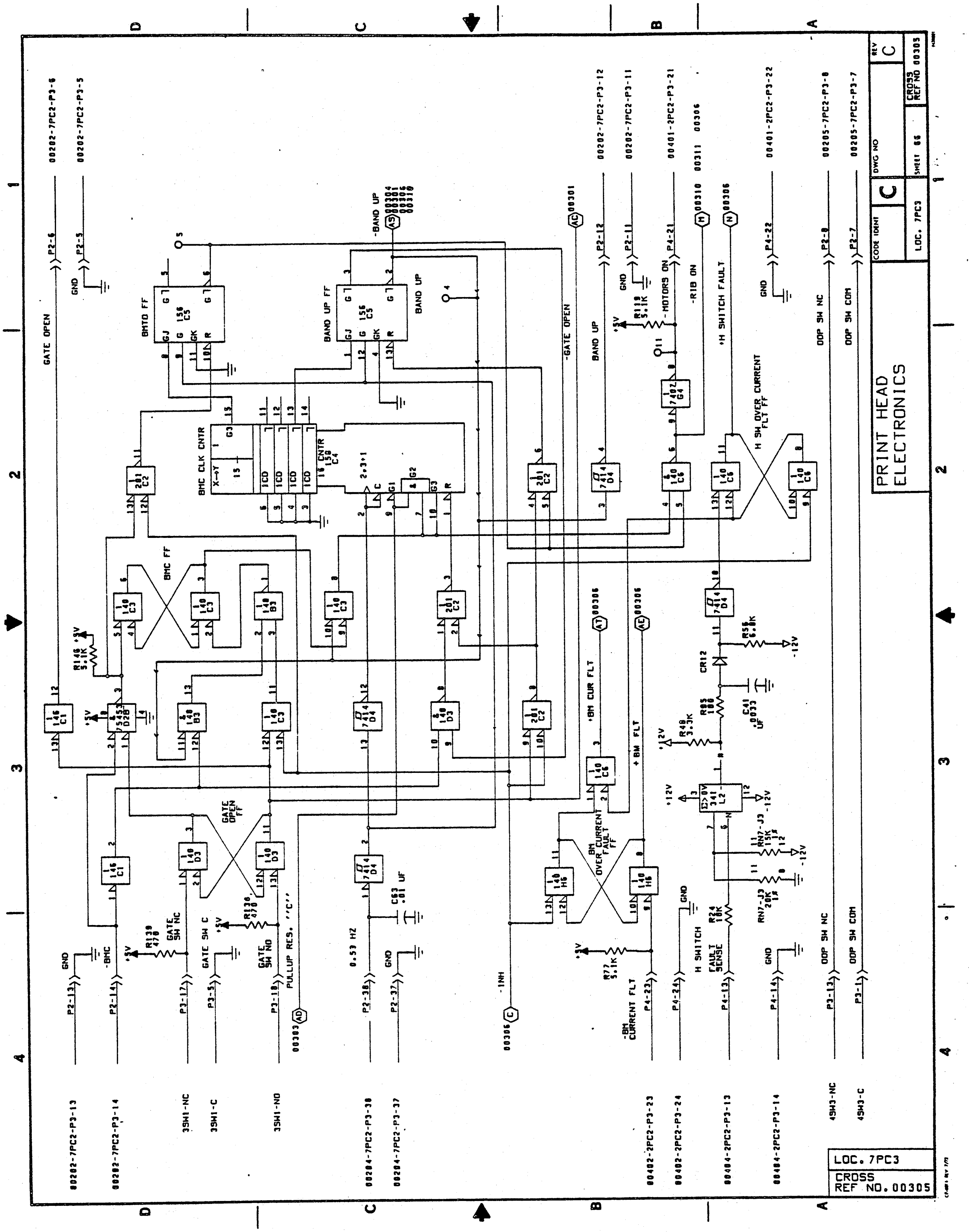
CODE IDENT	DATA BASEA	C	DWG NO		REV E
LOC. 7PC3			SHEET 62	CROSS REF NO 00301	

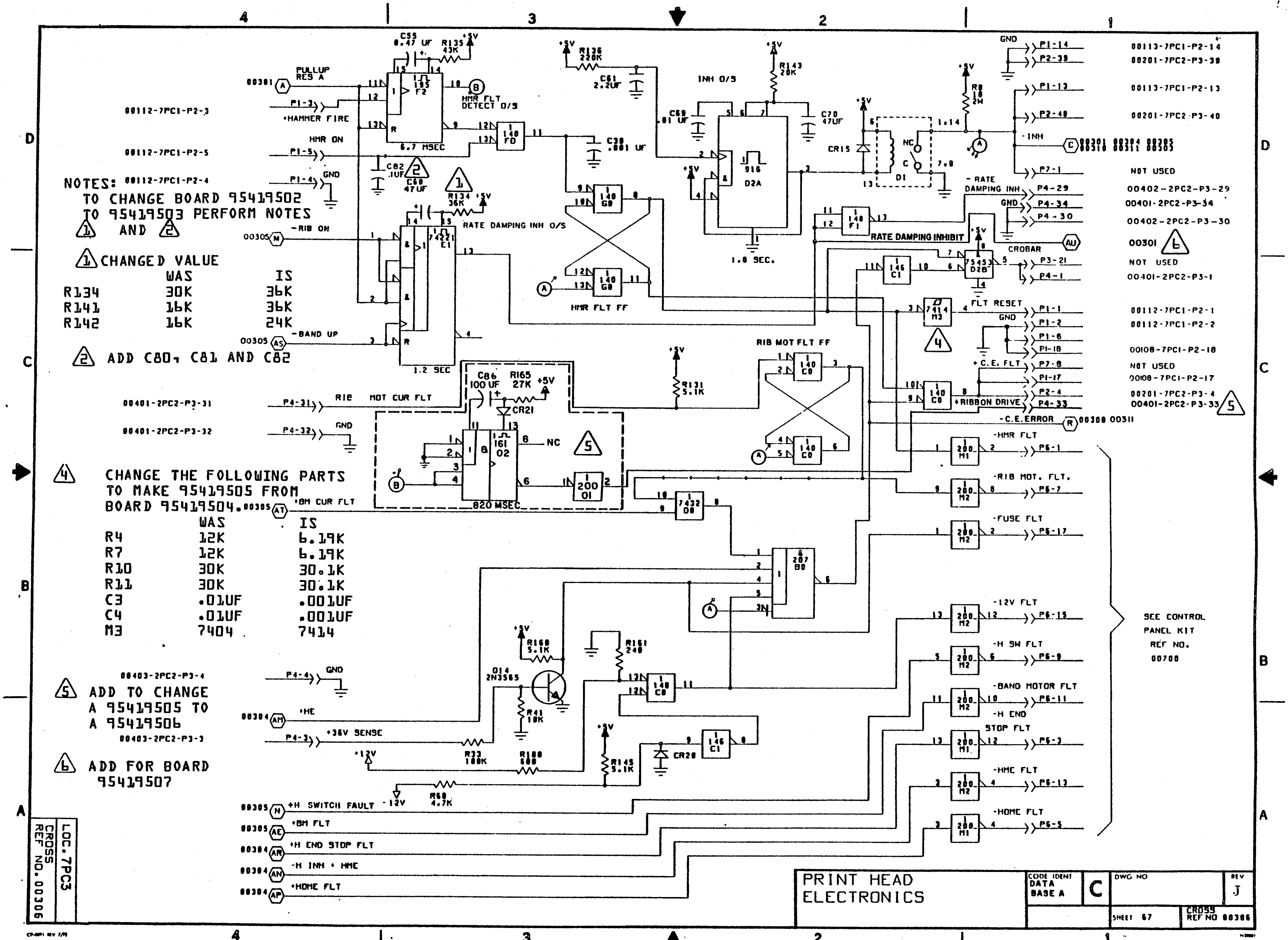
PART
B


PRINT HEAD ELECTRONICS
CODE IDENT DATA BASE A
C
LOC. 7PC3
SHEET 03
CROSS REF NO 00302
REV C
LOC. 7PC3
CROSS REF NO. 00302
CHARACTER TRIG PULSE 0/S
HOME TRIG PULSE 0/S
HOME PULSE 0/S
+BMC FDBK
HOME PULSE ADJ
CHAR TRIG PULSE
CHAR FF PULSE
HOME TRIG PULSE
HOME PULSE ENABLE
HOME SYNC FF
HOME ENABLE FF
-HOME PULSE
PULLUP RESISTOR B
SUB SCAN START PULSE
VOLTAGE COMP DELAY FF
VOLT. COMP DELAY
VCO
MAN PHAS ADJ FF
30 VOLT
PHASE ADJUST 1
PHASE ADJUST 2
+30V REF ADJ
723C K3
7 MSEC
140 USEC → 2.0 MSEC
4 USEC
00402-2PC2-P3-27
00402-2PC2-P3-28
00112-7PC1-P2-8
00112-7PC1-P2-10
00202-7PC2-P3-1
00202-7PC2-P3-2
STB3-5
00301
00303
00304
P4-27
P4-28
P1-8
P1-10
P3-1
P2-1
P2-2
GND
+5V
+30V


PRINT HEAD ELECTRONICS
CODE IDENT
C
DWG NO
REV
A
LOC. 7PC3
SHEET 64
CROSS REF NO 00303
SUBSCAN PULSE GENERATOR
PULSE COUNTER 2⁰
PULSE COUNTER 2¹
RESET FF
HOME PULSE ENABLE FF
HOME PULSE ENABLE
PULLUP RES. "C"
R150 1K
+5V
-CLK 1 MHZ
00304
00305
00302
00112-7PC1-P2-7
00112-7PC1-P2-8
P1-7
P1-8
GND
3 -SSP
156 B2
156 B1
201 A2
140 B3
146 A3
207 B0
SUBSCAN GEN
PRESET COUNTER
16 CNTR 150 A0
16 CNTR 150 A1
2,3+1
+SS PROG
-SS PROG
R154 5.1K
R162 1K
PULLUP RES. "D"
SUB SCAN START PULSE
SUBSCAN PROGRAMMING
CLK 1 MHZ
-INH
00306
P3-12
P3-24
P2-36
P2-35
00303-7PC3-P3-24 BAND SPEED OPTION ONLY
00303-7PC3-P3-12 BAND SPEED OPTION ONLY
00212-7PC2-P3-36
00212-7PC2-P3-35
LOC. 7PC3
CROSS REF NO. 00303
A
B
C
D
1
2
3
4


PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00304
CODE IDENT
DWG NO
C
REV D
SHEET 65
BAND MOTOR PULSE GENERATOR
BM PULSE GEN 1
BM PULSE GEN 2
BM PULSE GEN 3
HOME FLT FF
HORIZONTAL END STOP FF
H. HOME CHECK
1 MSEC
+S9 PROG
-S9 PROG
-CLK 1 MHZ
-H INH
+HME
HOME SIG
-BAND UP
PULLUP RES B
-H DIR RT
-H STB RT
+H STB LT
-INH
-H FDB +-H HOME
-H INH + HME
+HE
+HOME FLT
+H END STOP FLT
GND
BMC CLOCK
00402-7PC2-P3-26
00402-7PC2-P3-25
P4-26
P4-25
00304-7PC3-P3-20 P.B. 1130 ONLY
00304-7PC3-P3-8
00203-7PC2-P3-18
NOTES:
ADDED TO BOARD 95419503 TO MAKE BOARD 95419504
1
2
3
4
A
B
C
D


PRINT HEAD ELECTRONICS
LOC. 7PC3
CROSS REF NO. 00305
SHEET 66
REV C
BMTO FF
BAND UP FF
BMC CLK CNTR
BMC FF
GATE OPEN FF
BM OVER CURRENT FAULT FF
H SW OVER CURRENT FLT FF
GATE OPEN
BAND UP
-GATE OPEN
+BM CUR FLT
+BM FLT
-MOTORS ON
-RIB ON
+H SWITCH FAULT
OOP SW NC
OOP SW COM
-BMC
GATE SW NC
GATE SW C
GATE SW NO
PULLUP RES. "C"
0.53 HZ
-INH
-BM CURRENT FLT
H SWITCH
FAULT SENSE
GND



NOTES: TO CHANGE BOARD 95419502 TO 95419503 PERFORM NOTES ① AND ②

① CHANGED VALUE

	WAS	IS
R134	30K	36K
R141	16K	36K
R142	16K	24K

② ADD C80, C81 AND C82

④ CHANGE THE FOLLOWING PARTS TO MAKE 95419505 FROM BOARD 95419504.

	WAS	IS
R4	12K	6.19K
R7	12K	6.19K
R10	30K	30.1K
R11	30K	30.1K
C3	.01UF	.001UF
C4	.01UF	.001UF
M3	7404	7414

⑤ ADD TO CHANGE A 95419505 TO A 95419506

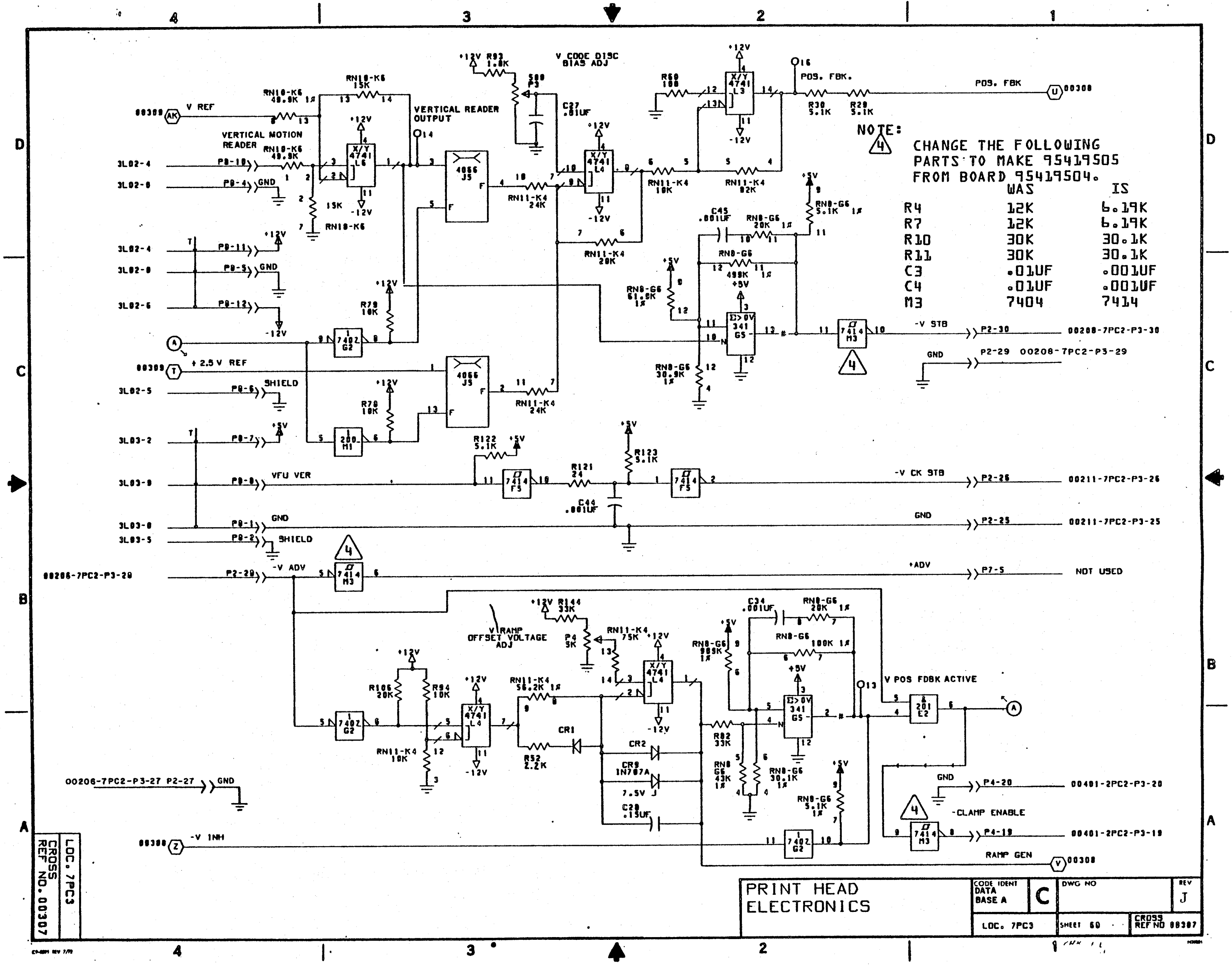
⑥ ADD FOR BOARD 95419507

LOC. 7PC3
CROSS REF NO. 00306

PRINT HEAD ELECTRONICS

CODE IDENT DATA BASE A C
DWG NO
REV J
SHEET 67
CROSS REF NO 00306

PART B



NOTE: 4 CHANGE THE FOLLOWING PARTS TO MAKE 95419505 FROM BOARD 95419504.

	WAS	IS
R4	12K	6.19K
R7	12K	6.19K
R10	30K	30.1K
R11	30K	30.1K
C3	.01UF	.001UF
C4	.01UF	.001UF
M3	7404	7414

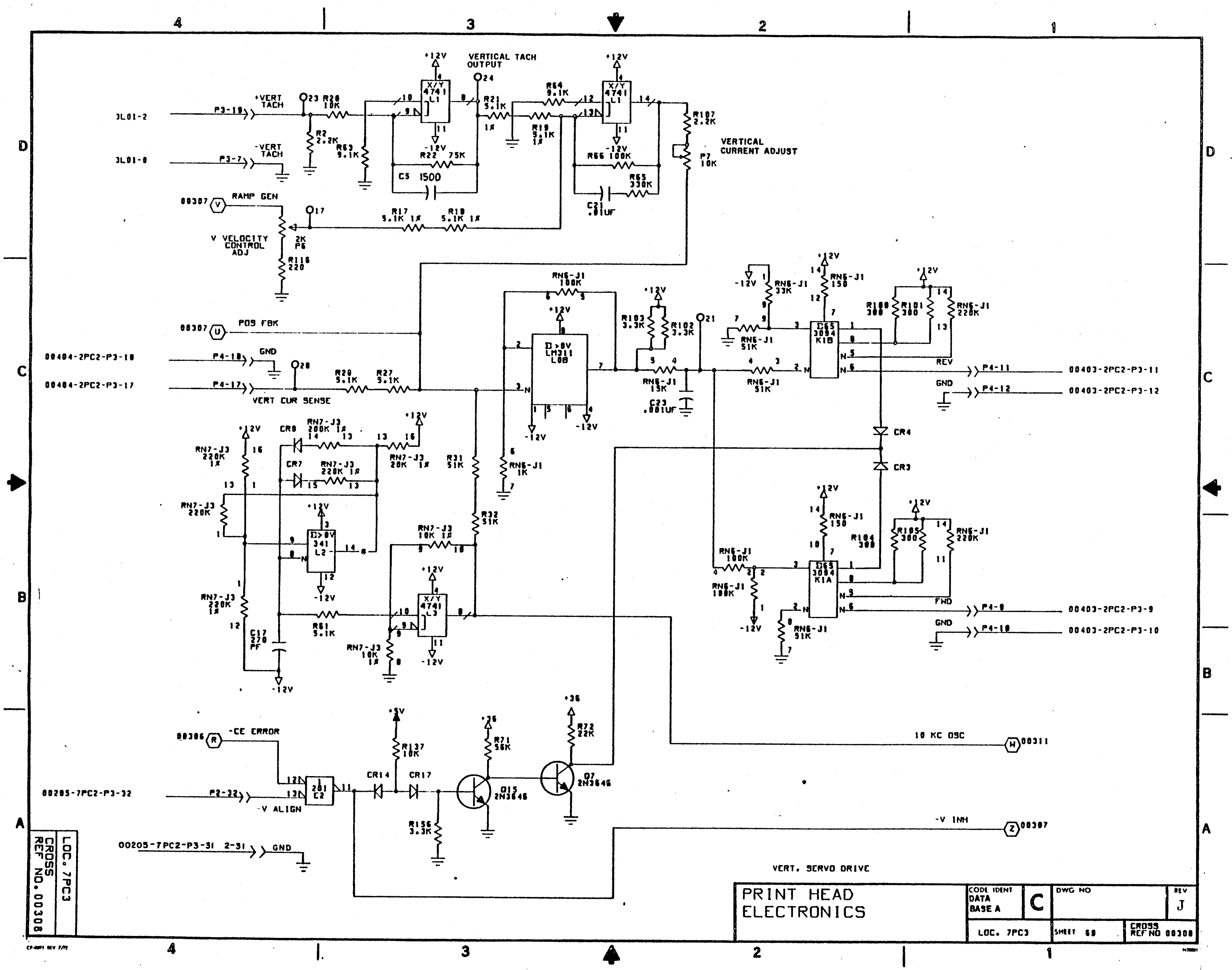
PRINT HEAD ELECTRONICS

CODE IDENT DATA BASE A C DWG NO REV J

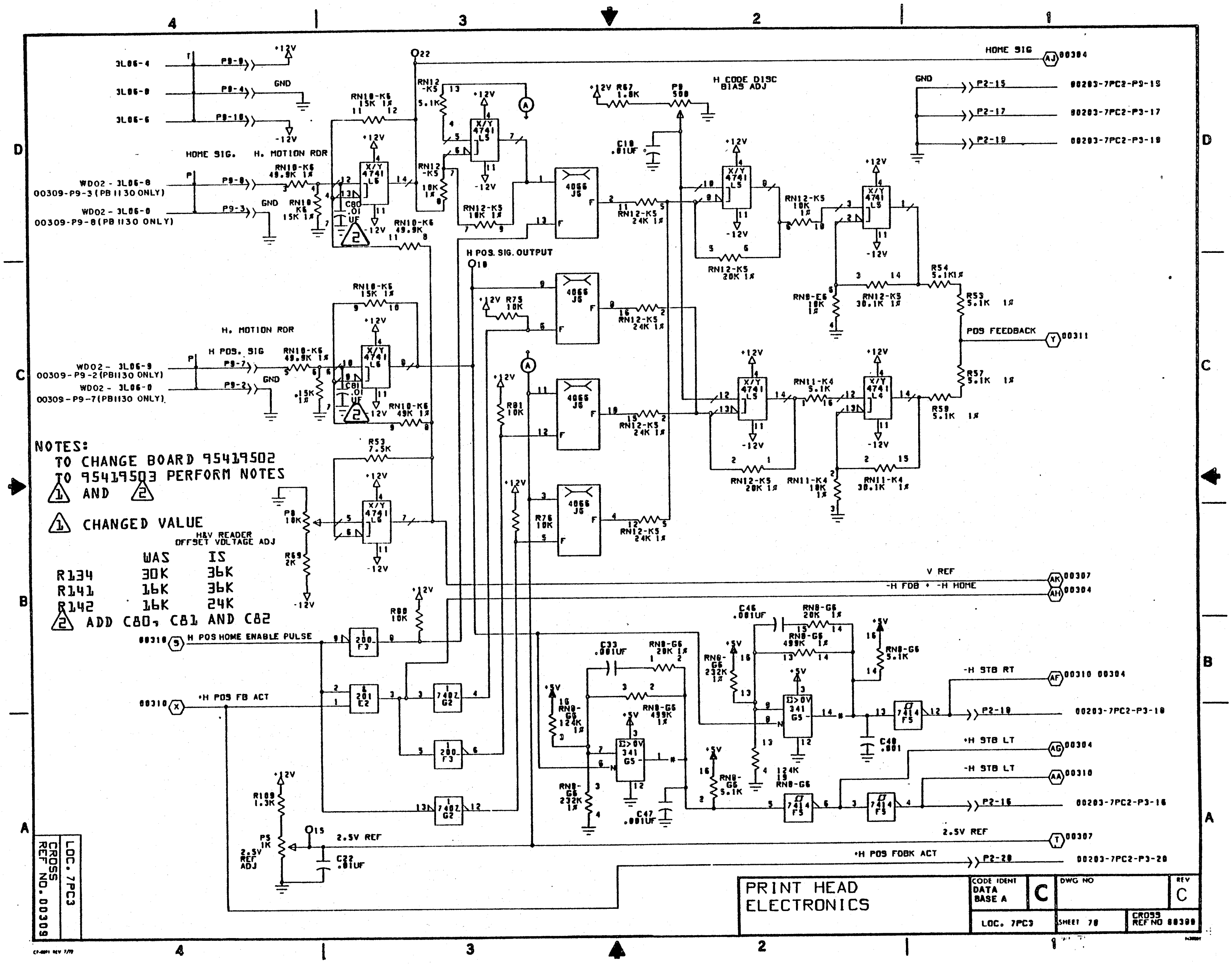
LOC. 7PC3 SHEET 60 CROSS REF NO 00307

LOC. 7PC3

CROSS REF NO. 00307


VERT. SERVO DRIVE
PRINT HEAD ELECTRONICS
CODE IDENT DATA BASE A
C
DWG NO
REV J
LOC. 7PC3
SHEET 68
CROSS REF NO 00308
LOC. 7PC3
CROSS REF NO. 00308
3L01-2
3L01-8
P3-19
P3-7
+VERT TACH
-VERT TACH
VERTICAL TACH OUTPUT
VERTICAL CURRENT ADJUST
RAMP GEN
V VELOCITY CONTROL ADJ
00307 V
00307 U
POS FBK
GND
VERT CUR SENSE
00404-2PC2-P3-18
00404-2PC2-P3-17
P4-18
P4-17
X/Y 4741 L1
X/Y 4741 L3
LM311 L08
341 L2
D65 3084 K1B
D65 3084 K1A
281 E2
R28 10K
R2 2.2K
R63 9.1K
R22 75K
C5 1500
R21 5.1K
R64 9.1K
R19 9.1K
R66 100K
R65 330K
C21 .01UF
R107 2.2K
P7 10K
R17 5.1K
R18 5.1K
2K P6
R116 220
R29 5.1K
R27 5.1K
R31 51K
R32 51K
R103 3.3K
R102 3.3K
C23 .001UF
R100 300
R101 300
R105 300
R104 300
RN6-J1 100K
RN6-J1 33K
RN6-J1 51K
RN6-J1 150
RN6-J1 220K
RN6-J1 15K
RN6-J1 1K
RN7-J3 200K
RN7-J3 220K
RN7-J3 20K
RN7-J3 10K
R61 5.1K
C17 270 PF
CR8
CR7
CR4
CR3
CR14
CR17
R137 10K
R71 56K
R72 22K
R156 3.3K
Q15 2N3646
Q7 2N3646
+12V
-12V
+5V
+36
REV
FWD
P4-11
P4-12
P4-9
P4-10
00403-2PC2-P3-11
00403-2PC2-P3-12
00403-2PC2-P3-9
00403-2PC2-P3-10
10 KC OSC
00311 H
-V INH
00307 Z
00306 R
-CE ERROR
00205-7PC2-P3-32
P2-32
-V ALIGN
00205-7PC2-P3-31 2-31
O23
O24
O17
O28
O21
A
B
C
D
1
2
3
4

PART B



NOTES:
TO CHANGE BOARD 95419502
TO 95419503 PERFORM NOTES
1 AND 2

1 CHANGED VALUE

	WAS	IS
R134	30K	36K
R141	16K	36K
R142	16K	24K

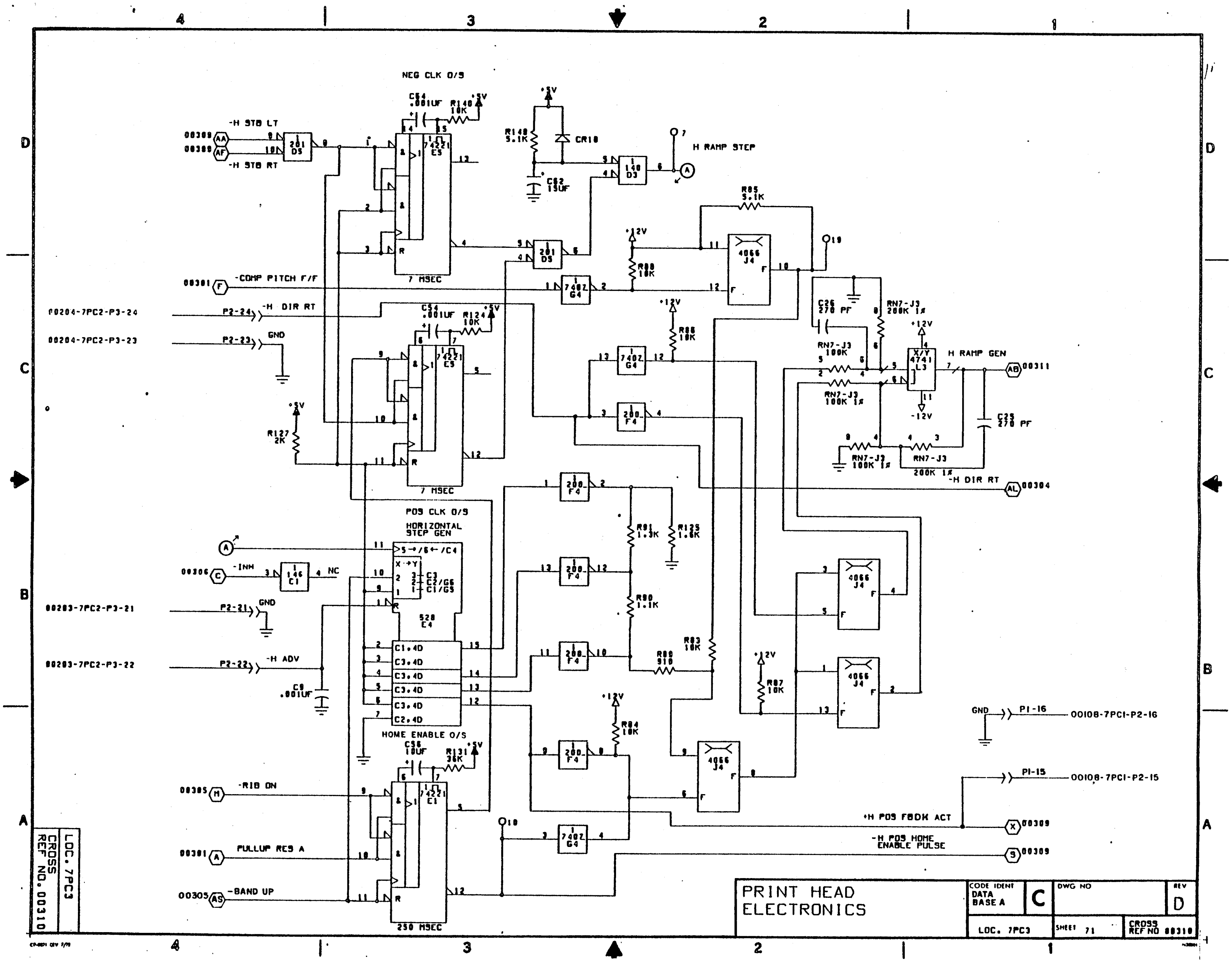
2 ADD C80, C81 AND C82

LOC. 7PC3
CROSS REF NO. 00309

PRINT HEAD ELECTRONICS

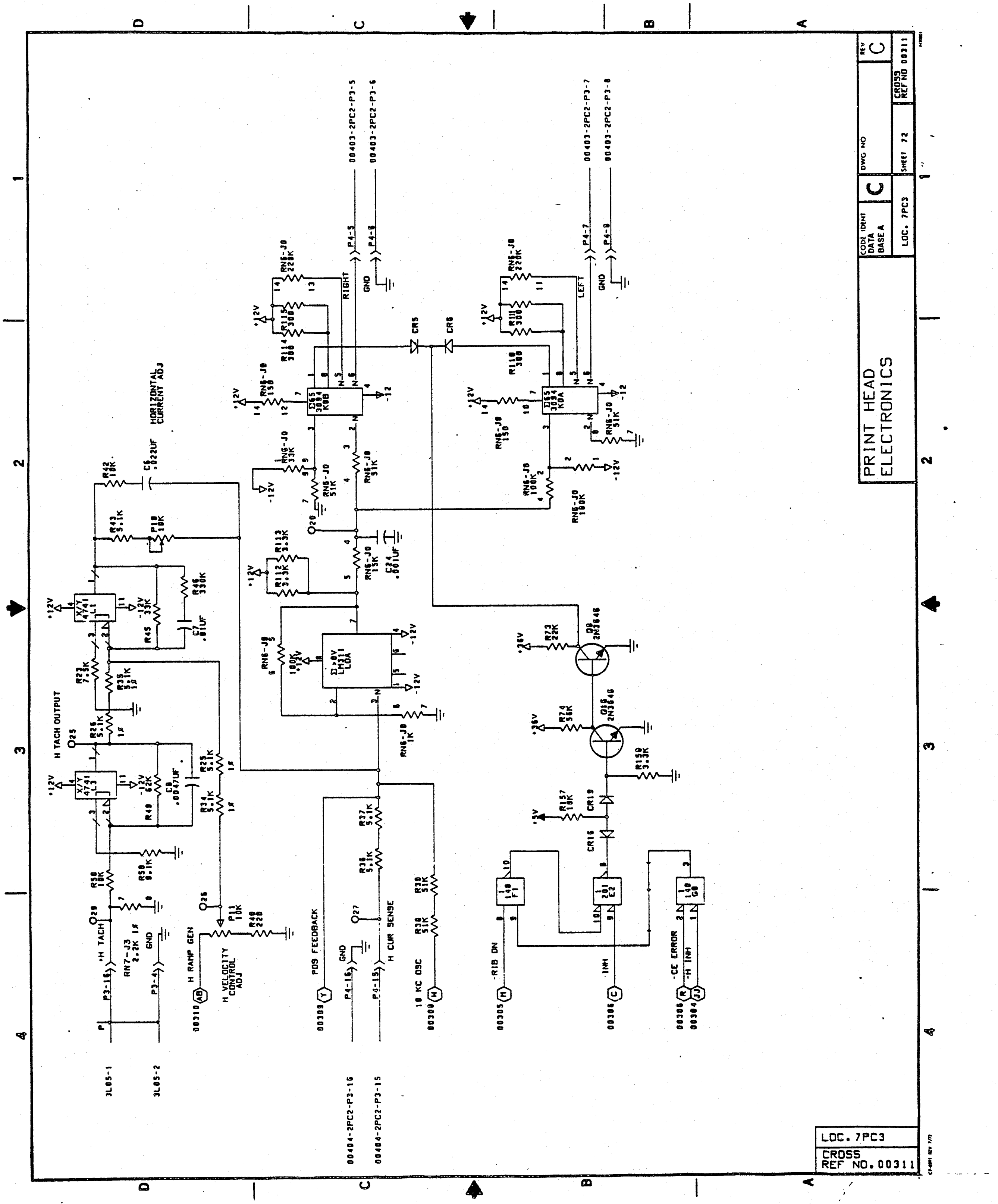
CODE IDENT DATA BASE A
C
DWG NO
REV C
LOC. 7PC3
SHEET 78
CROSS REF NO 00308

PART B

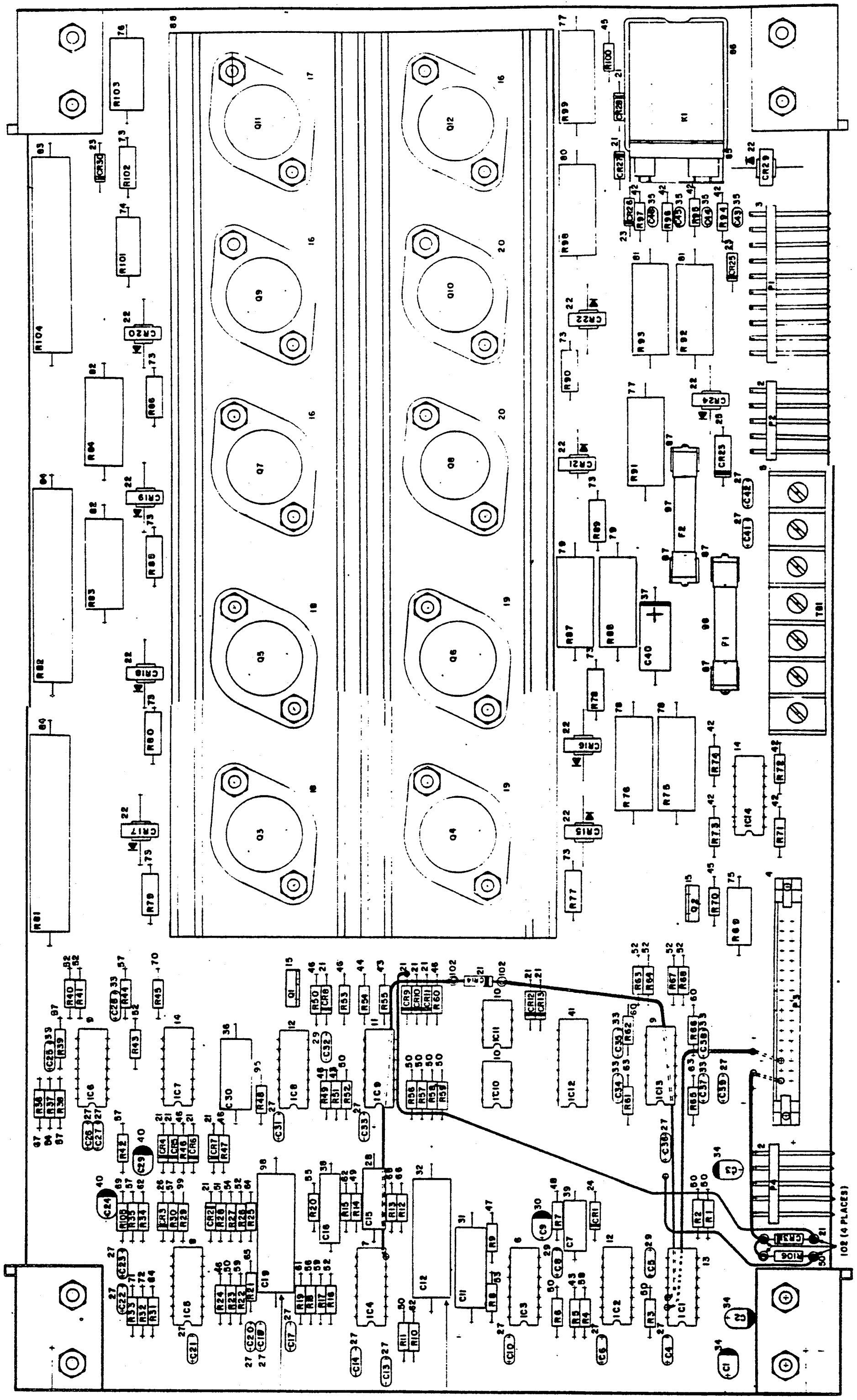

NEG CLK O/S
C54 .001UF
R140 10K
+5V
74221 E5
7 MSEC
00308 AA -H STB LT
00308 AF -H STB RT
201 D5
R148 5.1K
CR18
C82 15UF
140 D3
H RAMP STEP
R85 5.1K
4066 J4
+12V
R88 10K
7402 G4
00301 F -COMP PITCH F/F
00204-7PC2-P3-24 P2-24 -H DIR RT
00204-7PC2-P3-23 P2-23 GND
C54 .001UF
R124 10K
74221 E5
7 MSEC
R127 2K
R86 10K
200 F4
C26 270 PF
RN7-J3 200K 1%
RN7-J3 100K
RN7-J3 100K 1%
4741 L3
+12V
-12V
H RAMP GEN
AB 00311
C25 270 PF
RN7-J3 100K 1%
RN7-J3 200K 1%
-H DIR RT
AL 00304
POS CLK O/S
HORIZONTAL STEP GEN
528 E4
C1,4D
C3,4D
C2,4D
A
00306 C -INH
146 C1
NC
00203-7PC2-P3-21 P2-21 GND
00203-7PC2-P3-22 P2-22 -H ADV
C8 .001UF
R91 1.3K
R125 1.6K
R90 1.1K
R83 10K
R80 910
R87 10K
R84 10K
HOME ENABLE O/S
C56 10UF
R131 36K
74221 C1
250 MSEC
00305 H -RIB ON
00301 A PULLUP RES A
00305 AS -BAND UP
GND P1-16 00108-7PC1-P2-16
P1-15 00108-7PC1-P2-15
+H POS FBDK ACT
X 00309
-H POS HOME ENABLE PULSE
S 00309
LOC. 7PC3
CROSS REF NO. 00310
PRINT HEAD ELECTRONICS
CODE IDENT DATA BASE A
C
DWG NO
REV D
SHEET 71
LOC. 7PC3
CROSS REF NO 00310

PART B

PART B

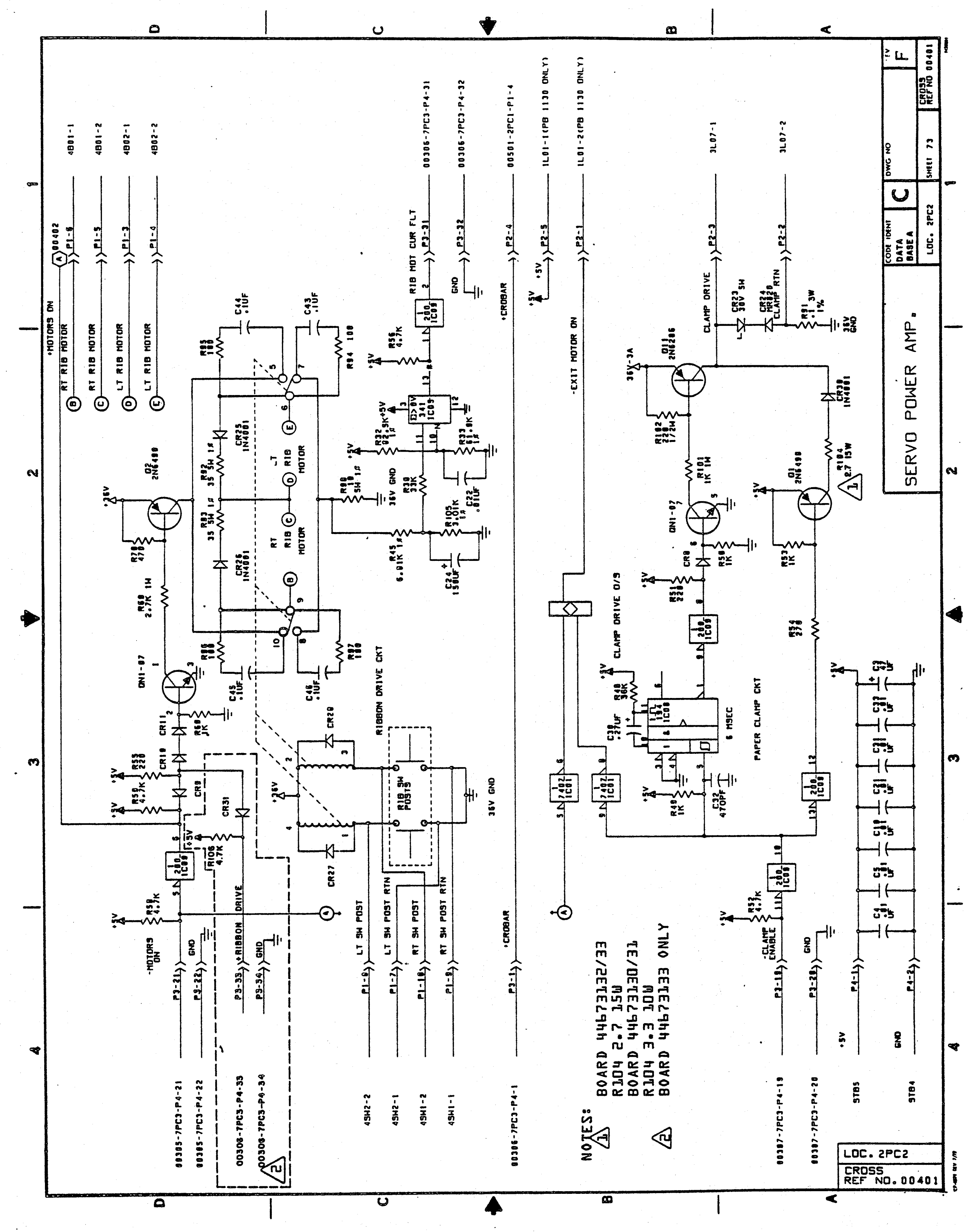


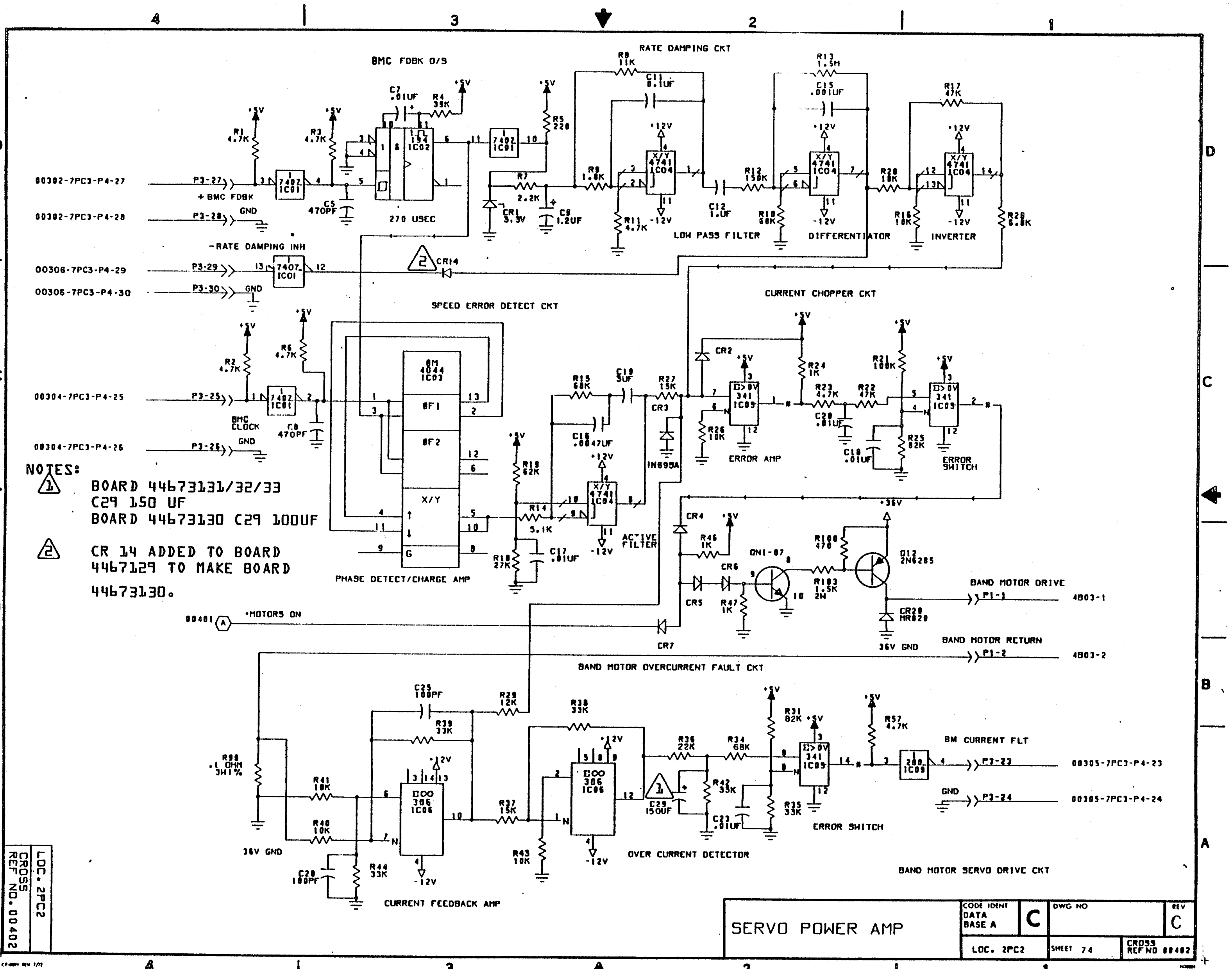
PRINT HEAD ELECTRONICS
CODE IDENT DATA BASE A
C
DWG NO
REV C
LOC. 7PC3
SHEET 72
CROSS REF NO 00311
LOC. 7PC3
CROSS REF NO. 00311
HORIZONTAL CURRENT ADJ
H TACH OUTPUT
H VELOCITY CONTROL ADJ
H RAMP GEN
POS FEEDBACK
H CUR SENSE
10 KC OSC
-RIB ON
-INH
-CE ERROR
-H INH
+H TACH
GND
RIGHT
LEFT
00403-2PC2-P3-5
00403-2PC2-P3-6
00403-2PC2-P3-7
00403-2PC2-P3-8
00404-2PC2-P3-16
00404-2PC2-P3-15
3L05-1
3L05-2
00310
00309
00308
00305
00306
00304
P4-5
P4-6
P4-7
P4-8
P3-16
P3-4
P4-16
P4-15
RN7-J3 2.2K 1%
Q9 2N3646
Q10 2N3646
R73 22K
R74 36K
R157 10K
R159 3.3K
CR5
CR6
CR10
CR16
+36V
+5V
LM311 L0A
3094 K0A
3094 K0B
4741 L1
4741 L3
C24 .001UF
C6 .022UF
C7 .01UF
C8 .0047UF
R42 10K
R43 5.1K
P10 10K
R46 330K
R45 33K
R29 7.5K
R39 5.1K 1%
R26 5.1K 1%
R25 5.1K 1%
R34 5.1K 1%
R40 62K
R50 10K
R59 8.1K
P11 10K
R48 220
R37 5.1K
R36 5.1K
R38 51K
R39 51K
R112 3.3K
R113 3.3K
R114 300
R115 300
R110 300
R111 300
RN6-J0 220K
RN6-J0 150
RN6-J0 33K
RN6-J0 51K
RN6-J0 15K
RN6-J0 100K
RN6-J0 1K
+12V
-12V
E2
F1
G8



SERVO POWER AMPLIFIER

PART B


SERVO POWER AMP.
CODE IDENT DATA BASE A
C
DWG NO
SHEET 73
LOC. 2PC2
CROSS REF NO 00401
REV F
NOTES:
1 BOARD 44673132/33 R104 2.7 15W
BOARD 44673130/31 R104 3.3 10W
2 BOARD 44673133 ONLY
RIBBON DRIVE CKT
PAPER CLAMP CKT
RIB SW POSTS
RT RIB MOTOR
LT RIB MOTOR
-MOTORS ON
+RIBBON DRIVE
LT SW POST
LT SW POST RTN
RT SW POST
RT SW POST RTN
+CROBAR
RIB MOT CUR FLT
-EXIT MOTOR ON
CLAMP DRIVE
CLAMP DRIVE O/S
CLAMP RTN
-CLAMP ENABLE
36V GND
+5V
GND
STB5
STB4
2N6490
2N6286
6 MSEC



NOTES:

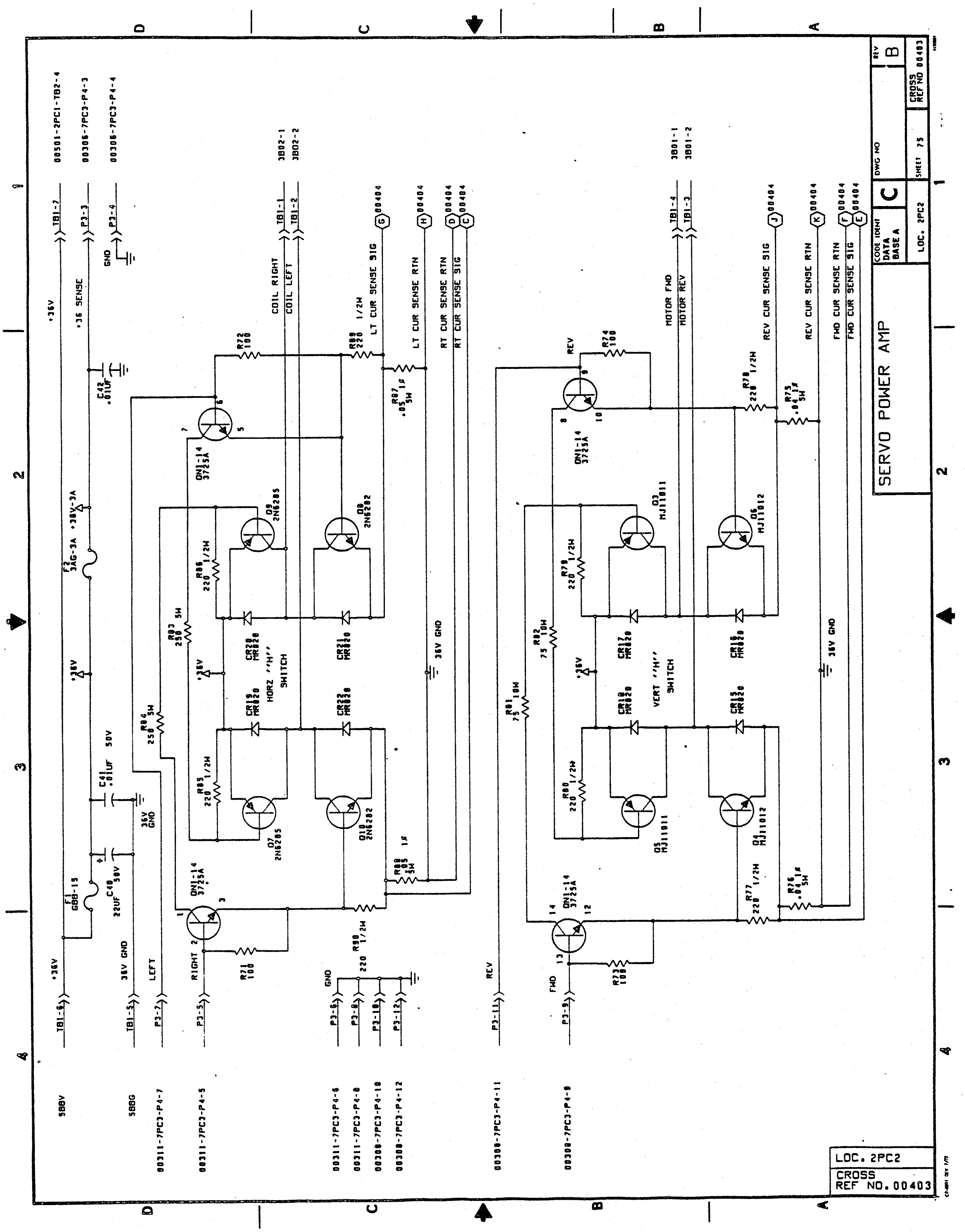
1. BOARD 44673131/32/33 C29 150 UF
BOARD 44673130 C29 100UF

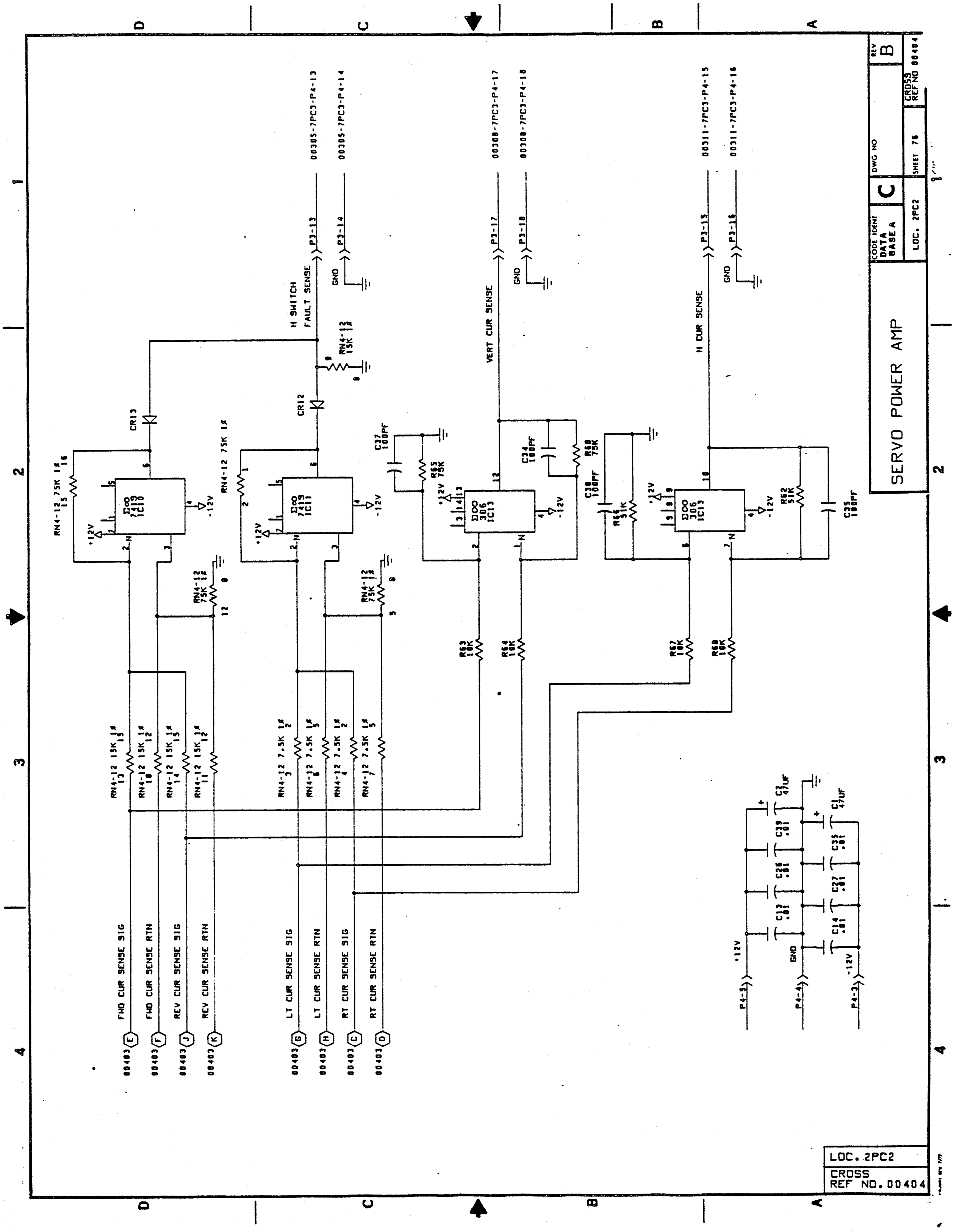
2. CR 14 ADDED TO BOARD 4467129 TO MAKE BOARD 44673130.

SERVO POWER AMP

CODE IDENT DATA BASE A C | DWG NO | REV C
LOC. 2PC2 | SHEET 74 | CROSS REF NO 00402

LOC. 2PC2
CROSS
REF NO. 00402


SERVO POWER AMP
CODE IDENT
DATA BASE A
DWG NO
C
REV
B
CROSS REF NO 00403
LOC. 2PC2
SHEET 75
LOC. 2PC2
CROSS REF NO. 00403
00501-2PC1-TB2-4
00306-7PC3-P4-3
00306-7PC3-P4-4
3B02-1
3B02-2
3B01-1
3B01-2
TB1-7
P3-3
P3-4
GND
TB1-1
TB1-2
TB1-4
TB1-3
+36V
+36 SENSE
COIL RIGHT
COIL LEFT
LT CUR SENSE SIG
LT CUR SENSE RTN
RT CUR SENSE RTN
RT CUR SENSE SIG
MOTOR FWD
MOTOR REV
REV CUR SENSE SIG
REV CUR SENSE RTN
FWD CUR SENSE RTN
FWD CUR SENSE SIG
00404
C42 .01UF
F2 3AG-3A
+36V-3A
+36V
36V GND
HORZ "H" SWITCH
VERT "H" SWITCH
QN1-14 3725A
Q9 2N6285
Q8 2N6282
Q7 2N6285
Q10 2N6282
Q3 MJ11011
Q6 MJ11012
Q5 MJ11011
Q4 MJ11012
CR20 MR820
CR21 MR820
CR19 MR820
CR22 MR820
CR17 MR820
CR16 MR820
CR18 MR820
CR15 MR820
R72 100
R89 220 1/2W
R87 .05 1Ω 5W
R86 220 1/2W
R83 250 5W
R84 250 5W
R85 220 1/2W
R88 .05 5W 1Ω
R90 220 1/2W
R71 100
R74 100
R78 220 1/2W
R75 .04 1Ω 5W
R79 220 1/2W
R82 75 10W
R81 75 10W
R80 220 1/2W
R77 220 1/2W
R76 .04 1Ω 5W
R73 100
C41 .01UF 50V
C40 22UF 50V
F1 GBB-15
36V GND
REV
FWD
RIGHT
LEFT
TB1-6
TB1-5
P3-7
P3-5
P3-6
P3-8
P3-10
P3-12
P3-11
P3-9
SBBV
SBBG
00311-7PC3-P4-7
00311-7PC3-P4-5
00311-7PC3-P4-6
00311-7PC3-P4-8
00308-7PC3-P4-10
00308-7PC3-P4-12
00308-7PC3-P4-11
00308-7PC3-P4-9
A
B
C
D
1
2
3
4


SERVO POWER AMP
CODE IDENT
DATA BASE A
C
DWG NO
REV
B
LOC. 2PC2
SHEET 76
CROSS REF NO 00404
LOC. 2PC2
CROSS
REF NO. 00404
H SWITCH FAULT SENSE
P3-13
P3-14
00305-7PC3-P4-13
00305-7PC3-P4-14
GND
VERT CUR SENSE
P3-17
P3-18
00308-7PC3-P4-17
00308-7PC3-P4-18
H CUR SENSE
P3-15
P3-16
00311-7PC3-P4-15
00311-7PC3-P4-16
RN4-12 15K 1%
CR12
CR13
RN4-12 75K 1%
7415 IC10
7415 IC11
306 IC13
C37 100PF
R65 75K
C34 100PF
R60 75K
C38 100PF
R66 51K
R62 51K
C35 100PF
+12V
-12V
R63 10K
R64 10K
R67 10K
R68 10K
RN4-12 15K 1%
RN4-12 7.5K 1%
FWD CUR SENSE SIG
FWD CUR SENSE RTN
REV CUR SENSE SIG
REV CUR SENSE RTN
LT CUR SENSE SIG
LT CUR SENSE RTN
RT CUR SENSE SIG
RT CUR SENSE RTN
00403 E
00403 F
00403 J
00403 K
00403 G
00403 H
00403 C
00403 D
P4-5
P4-4
P4-3
+12V
GND
-12V
C2 47UF
C1 47UF
C39 .01
C36 .01
C26 .01
C27 .01
C13 .01
C14 .01
D
C
B
A
1
2
3
4

UNIQUE CDC LOGIC

UNIQUE LOGIC

These printers include some standard and some unique features above and beyond the common printer covered in this manual. This section contains the unique logic to be used in conjunction with the common logic (Section 3). References to off-sheet locations in the common logic will reference this logic (Section 4) for the special interface board (7PC5) by the notes "SEE I/O KIT" or "SEE ADAPTER KIT". The logic schematic for the control panel should be used from this logic (Section 4) and not the control panel in the common logic (Section 3).

CONTENTS

BOARD IDENTIFICATION

LOCATION	PART NUMBER	OLD NUMBER
7PC5		44674997
	*44675721	*44672593

*With Data Strobe Delay option

SHEET NO.	CROSS REF NO.	MODULE LOCATION	REV	LOGIC DIAGRAM TITLE
1			A	LOGIC DIAGRAM CONTENTS SHEET
2			A	KEY TO DIAGRAMS
3			A	KEY TO DIAGRAMS
4			A	KEY TO DIAGRAMS
5			A	KEY TO DIAGRAMS
6			A	KEY TO DIAGRAMS
7			A	KEY TO DIAGRAMS
8			A	BLOCK DIAGRAM
9			A	BLOCK DIAGRAM
10			A	TIMING DIAGRAM
11			A	TIMING DIAGRAM
12			A	TIMING DIAGRAM
13			A	TIMING DIAGRAM
14			A	TIMING DIAGRAM
15	00701	6PC1	A	CONTROL PANEL
16	20001	7PC5	A	OEM INTERFACE
17	20002	7PC5	A	OEM INTERFACE
18	20003	7PC5	A	OEM INTERFACE
19	20004	7PC5	A	OEM INTERFACE
20	20005	7PC5	A	OEM INTERFACE
21	20006	7PC5	A	OEM INTERFACE
22	20007	7PC5	A	OEM INTERFACE
23	20008	7PC5	A	OEM INTERFACE
24	20009	7PC5	A	OEM INTERFACE
25	20010	7PC5	A	OEM INTERFACE
26	20011	7PC5	A	OEM INTERFACE
27	20012	7PC5	A	OEM INTERFACE
28	20013	7PC5	A	OEM INTERFACE
29	20014	7PC5	A	OEM INTERFACE
30	20101	8PC1	A	I/O CONNECTOR BOARD (SHORT LINE)
31	20102	8PC1	A	I/O CONNECTOR BOARD (LONG LINE)

1. CONFIGURATION DRAWING

SEE COMMON PRINTER
LOGIC SET

2. CHASSIS MAP

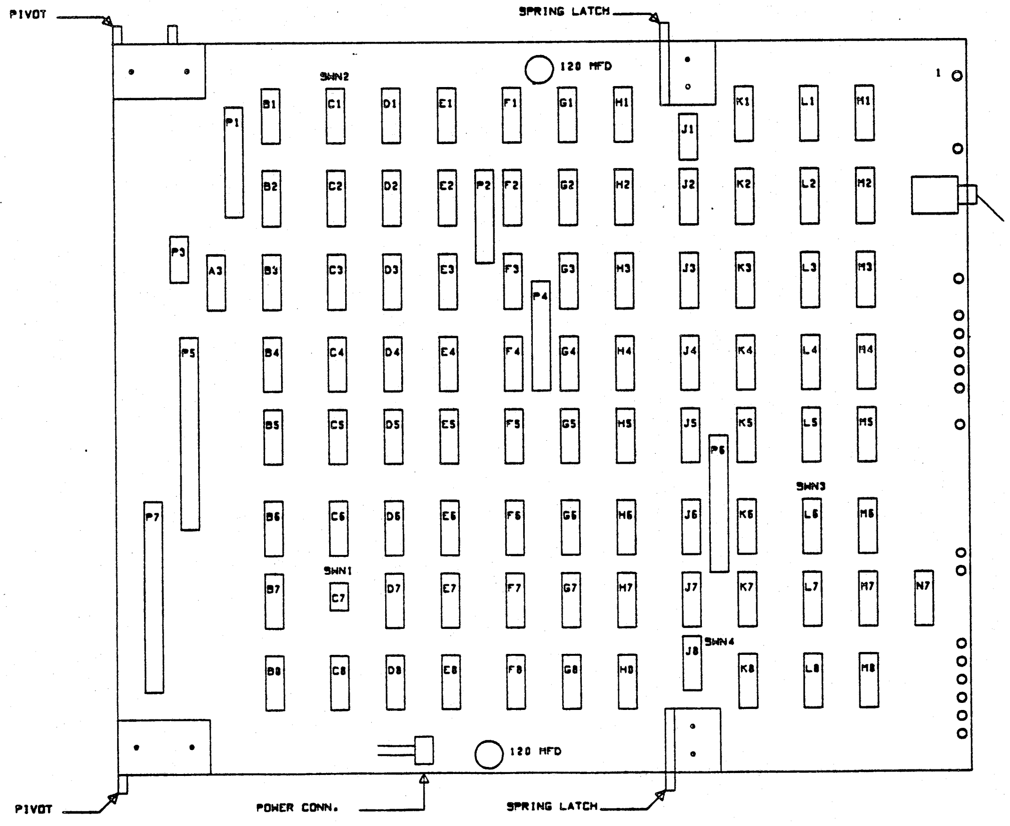
TOP VIEW

PRINT HEAD ELECTRONICS BOARD 00301 THRU 00311	7PC3	EVFU BOARD	7PC6
OSC. HORZ. & VERT. MOT. 00201 THRU 00212	7PC2	OEM ADAPTER BOARD 20001 THRU 20014	7PC5
INPUT/PRINT (D-P) 00101 THRU 00114	7PC1	SPARE	7PC4

SEE COMMON PRINTER LOGIC SET FOR
ADDITIONAL PCB LOCATIONS

3. PHYSICAL LOCATION CODES

A. THE DRAWING BELOW SHOWS THE CONFIGURATION OF THE OEM I/O ADAPTER BOARD. SEE THE COMMON PRINTER LOGIC SET OR EVFU LOGIC SET FOR THE CONFIGURATION OF OTHER PC BOARDS.



KEY TO DIAGRAMS

CODE IDENT
DATA BASE 01

C

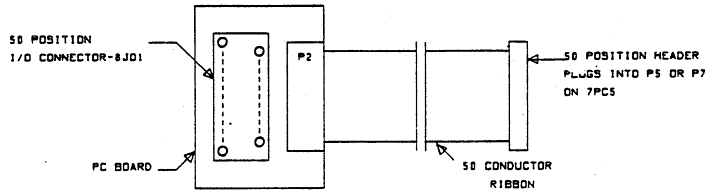
DWG NO

SHEET 2

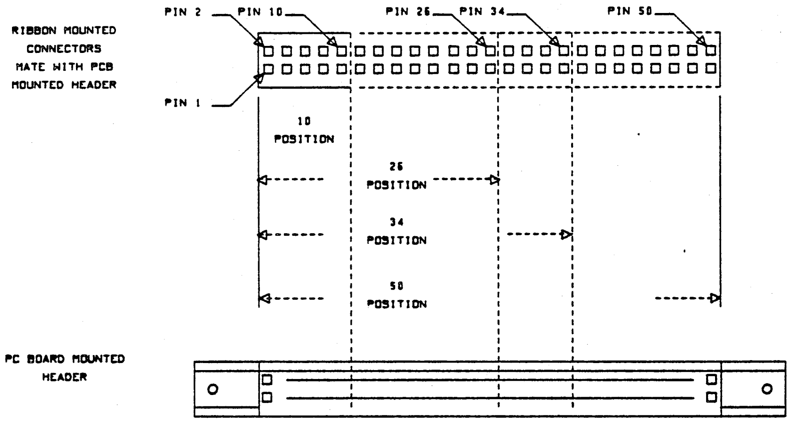
REV
A

3. PHYSICAL LOCATION CODES CON'T

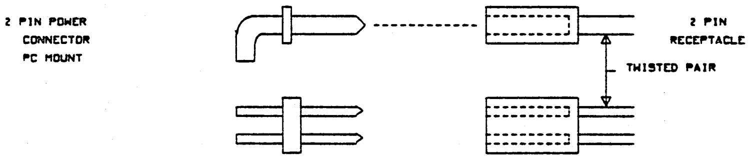
B. I/O CONNECTOR & PC BOARD



C. FLAT CABLE CONNECTORS



D. POWER CONNECTORS



KEY TO DIAGRAMS

CODE IDENT DATA BASE 01

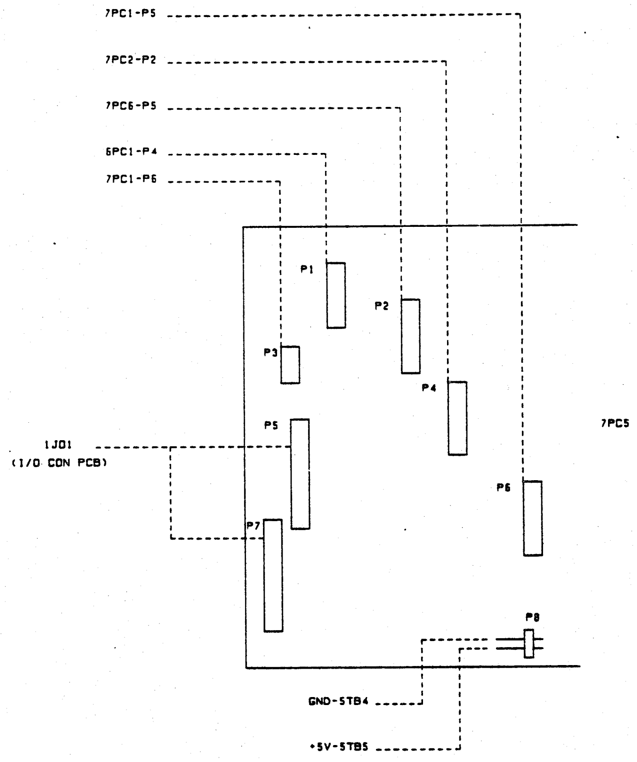
C

DWG NO

SHEET 3

A

E. CABLE LOCATIONS



KEY TO DIAGRAMS

CODE IDENT DATA BASE 01

DWG NO C

REV A

SHEET 4

4. SPECIAL NOMENCLATURE

THE ABBREVIATIONS LISTED BELOW ARE UNIQUE TO THIS ADAPTER
OR ARE NOT COMMONLY USED IN STANDARD NOMENCLATURE.

ACK	=	ACKNOWLEDGE	MC	=	MASTER CLEAR
BC	=	BUFFER CLEAR	MUX	=	MULTIPLEXER
BOF	=	BOTTOM OF FORM	NC	=	NO CONNECTION
BUF	=	BUFFER	N.C.	=	NORMALLY CLOSED
C.	=	COMMON	N.O.	=	NORMALLY OPEN
CC	=	CONTROL CODE	OOP	=	OUT OF PAPER
CHAR	=	CHARACTER	O/S	=	ONE-SHOT
CLK	=	CLOCK	PBS	=	BAND PRINTER
CLR	=	CLEAR	RCV	=	RECEIVED
COMP	=	COMPRESSED	RCVRS	=	RECEIVERS
CNTR	=	COUNTER	RDY	=	READY
CTRL	=	CONTROL	REG	=	REGISTER
DBX	=	DATA BIT X	REQ	=	REQUEST
DET	=	DETECT	RNX	=	RESISTOR NETWORK X
DLY	=	DELAY	RST	=	RESET
ENAB	=	ENABLE	RTN	=	RETURN
EVFU	=	ELECTRONIC VERTICAL FORMAT UNIT	SEL	=	SELECT LINE
EXT		EXTERNAL	SEQ	=	SEQUENCING
FF	=	FLIP-FLOP	SR	=	SHIFT REGISTER
FMT	=	FORMAT	SS	=	SINGLE SPACE
GND	=	GROUND	STB	=	STROBE
INH	=	INHIBIT	SW	=	SWITCH
I/O	=	INPUT/OUTPUT	SWX-Y	=	DIP SWITCH X-SECTION Y
LC	=	LINE COUNTER	TP	=	TEST PRINT
LD	=	LOAD	TX	=	TIMING PULSE X
LF	=	LINE FEED	VFU	=	VERTICAL FORMAT UNIT
LR	=	LINE READY	XMTR	=	TRANSMITTER

5. LOGIC LEVELS

HIGH OUTPUT VOLTAGE = 5.5V MAX/2.4V MIN
LOW OUTPUT VOLTAGE = 0.4V MAX/0V MIN

HIGH INPUT VOLTAGE = 5.5V MAX/2.0V MIN
LOW INPUT VOLTAGE = 0.8V MAX/0V MIN

6. POWER SUPPLY CONNECTIONS

ALL STANDARD IC PACKAGES HAVE THE FOLLOWING POWER SUPPLY CONNECTIONS WHICH ARE NOT SHOWN ON THE LOGIC ELEMENT SYMBOL

14 PIN DEVICE = GROUND ON PIN 7 AND +5V ON PIN 14
16 PIN DEVICE = GROUND ON PIN 8 AND +5V ON PIN 16

ALL NON-STANDARD IC PACKAGES WILL HAVE THEIR NON-STANDARD GROUND AND SUPPLY CONNECTIONS SHOWN AS PART OF THE LOGIC ELEMENT SYMBOL

7. REPETITIVE DETAILS

THE LOGIC PRINTED CIRCUIT CARD WILL HAVE FILTER CAPACITORS GENERALLY LOCATED AS SHOWN ON THE MODULE DRAWING (SHEET 2) PER THE FOLLOWING GUIDE-

DECOUPLING CAPACITORS (120 MFD) LOCATED ALONG THE UPPER AND LOWER EDGE OF THE PC BOARD

HIGH FREQUENCY CAPACITORS (0.01 MFD) LOCATED BETWEEN USED IC LOCATIONS (APPROX. 1 CAP PER 3 IC'S)

THESE CAPACITORS ARE NOT SHOWN ON THE LOGIC DRAWINGS

KEY TO DIAGRAMS

CODE IDENT DATA BASE 01
C
DWG NO
SHEET 5
REV A

8. GENERAL NOTES

A. DUE TO THE LARGE NUMBER OF CIRCUITS LOCATED ON EACH MODULE. MORE THAN ONE SHEET IS USUALLY REQUIRED FOR EACH MODULE. THE BOARDS FUNCTIONAL NAME. CIRCUIT MODULE LOCATION. AND CROSS REFERENCE NUMBER APPEAR ON EACH SHEET. EACH SYMBOL IN THE DIAGRAMS REFLECTS THE LOGIC FUNCTION PERFORMED. COMPONENT TYPE OR ELEMENT IDENTIFIER. AND LOCATION OF ALL OR PART OF AN INTEGRATED CIRCUIT PACKAGE OR DISCREET COMPONENT(S). FOR DETAILED INFORMATION ON SYMBOLS. PART NUMBER. AND PACKAGE TYPE REFER TO CIRCUIT DESCRIPTIONS.

B. CERTAIN OPTIONAL FUNCTIONS ON THE OEM ADAPTER ARE PROGRAMMED BY DUAL-IN-LINE SWITCH MODULES. THE TABLE BELOW SHOWS THE FUNCTIONS WHICH CAN BE PROGRAMMED. AND THE REQUIRED SWITCH SETTINGS. NOTE THAT THE PHYSICAL SWITCHES MAY BE LABELED EITHER ON/OFF OR OPEN/CLOSED. WITH ON = CLOSED AND OFF = OPEN.

FUNCTION	SWITCH SETTINGS REQUIRED AND NOTES			CROSS REF. NO.
6 DATA BIT I/O	SW1-4 OFF			20001
7 DATA BIT I/O	SW1-4 ON			20001
NO PARITY CHECKING	SW1-1 OFF	SW1-2 OFF	SW1-3 OFF	20001 20007
ODD PARITY CHECKING	SW1-1 ON	SW1-2 ON	SW1-3 OFF	20001 20007
EVEN PARITY CHECKING	SW1-1 ON	SW1-2 OFF	SW1-3 ON	20001 20007
NO VFU CHANNELS	SW3-1 OFF SW3-3 OFF	SW3-4 OFF	SW3-7 ON	20003 20004 20005
4 VFU CHANNELS	SW3-1 ON SW3-3 OFF	SW3-4 OFF	SW3-7 OFF	20003 20004 20005
8 VFU CHANNELS	SW3-1 ON SW3-3 OFF	SW3-4 ON	SW3-7 OFF	20003 20004 20005
12 VFU CHANNELS	SW3-1 ON SW3-3 ON	SW3-4 ON	SW3-7 OFF	20003 20004 20005
2 BIT LINE COUNTER	SW3-2 OFF	SW3-5 OFF		20005
4 BIT LINE COUNTER	SW3-2 OFF	SW3-5 ON		20005
6 BIT LINE COUNTER	SW3-2 ON NOTE THAT IF ANY VFU OPTION IS SELECTED TOGETHER WITH THE 6 BIT LINE COUNTER. THE 7 DATA BIT I/O MUST BE USED	SW3-5 ON		20005
NO CONTROL PANEL TEST MODE SWITCH	SW2-1 ON			20013
CONTROL PANEL TEST MODE SWITCH	SW2-1 OFF			20013
TEST MODE PRINTED CHARACTER	SW4-7 ON SW4-6 OFF SW4-5 OFF SW4-4 ON SW4-3 ON SW4-2 OFF SW4-1 ON	NOTE THAT STANDARD TEST PRINT CHARACTER IS AN 'M'(OCTAL 115 ASCII). OTHER CODES MAY BE PROGRAMMED WITH A LOGIC 1 = ON AND A LOGIC 0 = OFF.		20004
NO CONTROL PANEL SINGLE SPACE SWITCH	SW2-9 ON			20006
CONTROL PANEL SINGLE SPACE SWITCH	SW2-9 OFF			20006
NO OUT OF PAPER STATUS	SW2-6 OFF			20006
OUT OF PAPER STATUS	SW2-6 ON			20006
NO BUFFER OVERFLOW STATUS	SW2-5 OFF			20006
BUFFER OVERFLOW STATUS	SW2-5 ON			20006
MAXIMUM LINE LENGTH 132 ONLY	SW3-8 OFF	SW3-9 ON		20011
MAXIMUM LINE LENGTH 136 ONLY	SW3-8 OFF	SW3-9 OFF		20011
MAXIMUM LINE LENGTH 132 STD. PITCH.198 COMP. PITCH.	SW3-8 ON	SW3-9 ON		20011
MAXIMUM LINE LENGTH 136 STD. PITCH. 204 COMP. PITCH.	SW3-8 ON	SW3-9 OFF		20011
NO COMPRESSED PITCH STATUS	SW2-4 OFF			20008

KEY TO DIAGRAMS

CODE IDENT DATA BASE 01

C

DWG NO

SHEET 6

REV A

8. GENERAL NOTES CONTINUED

FUNCTION	SWITCH SETTINGS REQUIRED AND NOTES		CROSS REF. NO.
COMPRESSED PITCH STATUS	SW2-4 ON		20008
NO BAND DETECT STATUS	SW2-2 OFF	SW2-3 OFF	20008
BAND DETECT STATUS	SW2-2 ON	SW2-3 ON	20008
CHARACTER REQUEST/ DATA STROBE HANDSHAKING	SW2-8 ON		20009
INFORMATION READY/ OUTPUT RESUME HANDSHAKING	SW2-8 OFF		20009
STANDARD DATA SEQUENCING	SW2-7 OFF		20010
OPTIONAL DATA SEQUENCING	SW2-7 ON	NOTE THAT OPTIONAL DATA SEQUENCING CAN NOT BE USED WITH PRE-PRINT PAPER MOTION	20010
POST PRINT PAPER MOTION	SW3-6 ON		20010
PRE-PRINT PAPER MOTION	SW3-6 OFF	NOTE THAT PRE-PRINT PAPER MOTION CAN NOT BE USED WITH OPTIONAL DATA SEQUENCING	20010

9. IDENTIFIER LIST

ELEMENT IDENTIFIER	CLOSEST GENERIC EQUIVALENT	DESCRIPTION
140	7400	QUAD 2 INPUT NAND
141	7410	TRIPLE 3 INPUT NAND
146	7404	HEX INVERTER
148	7402	QUAD 2 INPUT NOR
156	74107	DUAL J-K MASTER/SLAVE FF WITH RESET
158	74161/9316	COUNTER, SYNCHRONOUS 4 BIT BINARY
175	7474	DUAL D-TYPE FF
189	74157/9322	MULTIPLEXER, QUAD 2 INPUT
201	7408	QUAD 2 INPUT AND
208	7420	DUAL 4 INPUT NAND
210	7437	QUAD 2 INPUT NAND BUFFER
213	7411	TRIPLE 3 INPUT AND
224	7427	TRIPLE 3 INPUT NOR
241	7476	DUAL J-K MASTER/SLAVE FF WITH SET AND CLEAR
502	74180	8 BIT PARITY CHECKER
505	74151	MULTIPLEXER, 8 INPUT
520	74175	LATCH, 4 BIT WITH TRUE & COMPLEMENT OUTPUTS
527	74164	SHIFT REGISTER, 8 BIT SERIAL IN, PARALLEL OUT
7414	7414	HEX SCHMITT TRIGGER
7432	7432	QUAD 2 INPUT OR
74221	74221	DUAL MONOSTABLE MULTIVIBRATOR
75453	75453	DRIVER, DUAL OR WITH OPEN COLLECTOR OUTPUTS
8820	8820	DUAL DIFFERENTIAL LINE RECEIVER
8830	8830	DUAL DIFFERENTIAL LINE DRIVER
1M5603	1M5603	READ ONLY MEMORY, 256 X 4

REV A

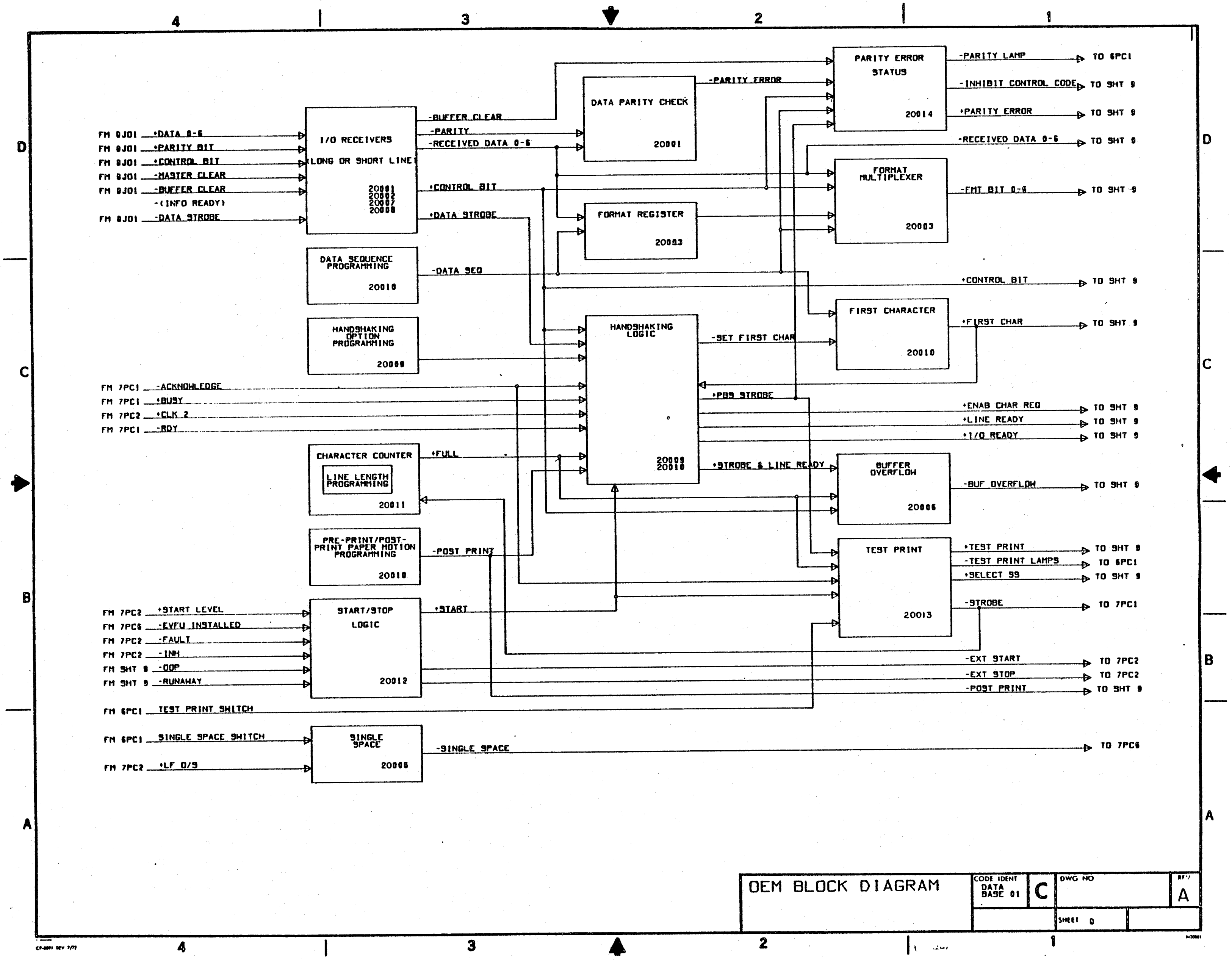
DWG NO

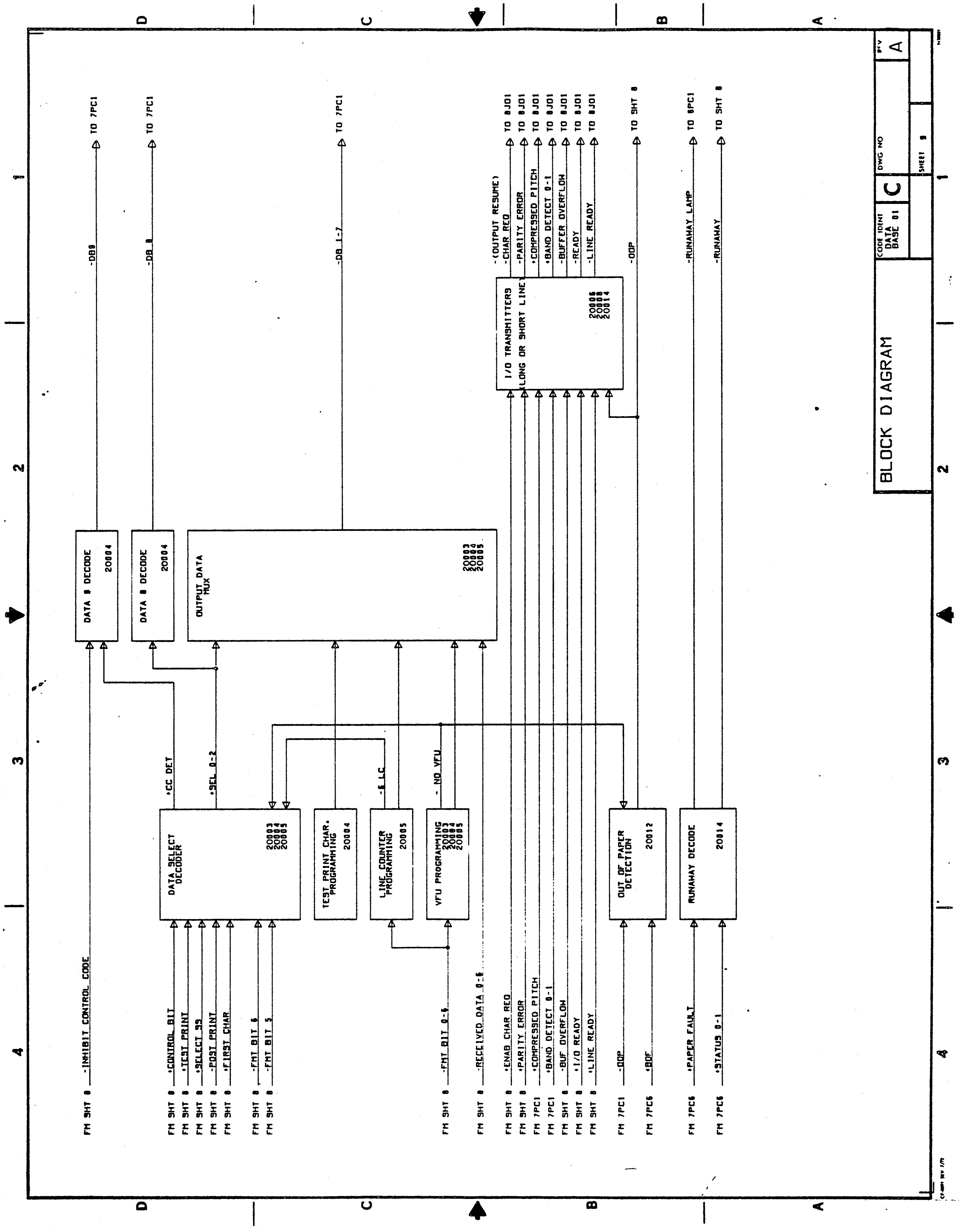
SHEET 7

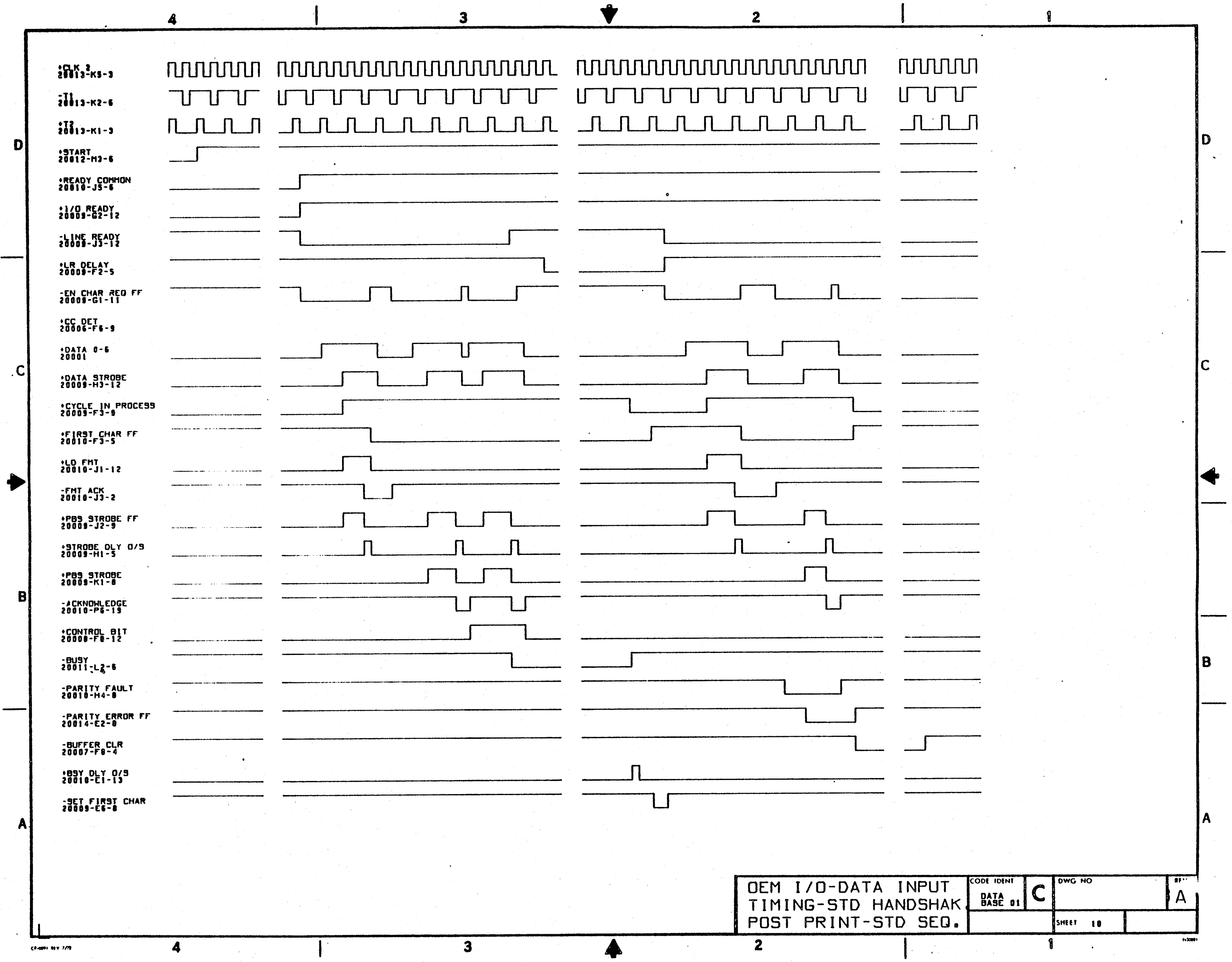
C

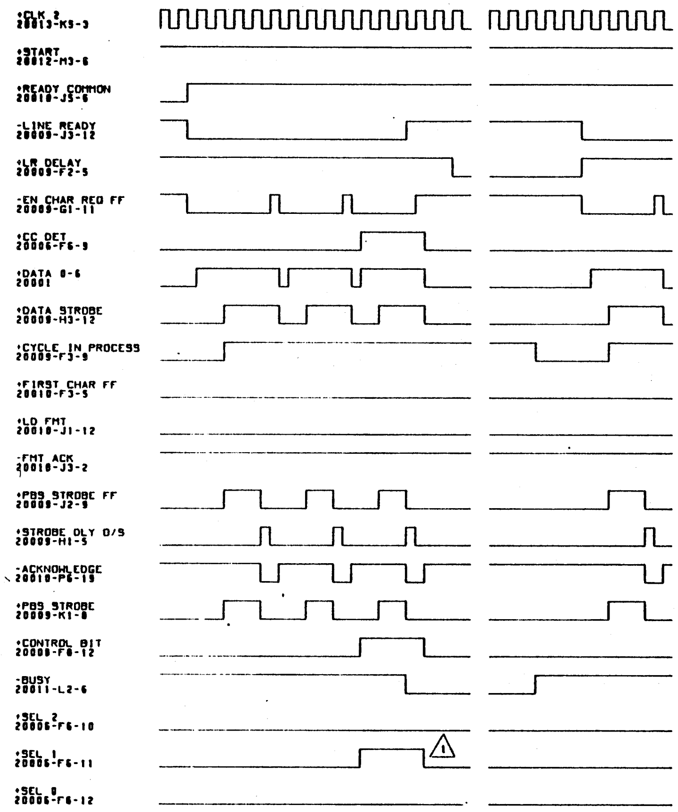
CODE IDENT DATA BASE 01

KEY TO DIAGRAMS


OEM BLOCK DIAGRAM
CODE IDENT DATA BASE 01
C
DWG NO
SHEET 0
REV A
4
3
2
1
D
C
B
A
FM 8J01 +DATA 0-6
FM 8J01 +PARITY BIT
FM 8J01 +CONTROL BIT
FM 8J01 -MASTER CLEAR
FM 8J01 -BUFFER CLEAR
-(INFO READY)
FM 8J01 -DATA STROBE
I/O RECEIVERS
LONG OR SHORT LINE
20001
20002
20007
20008
-BUFFER CLEAR
-PARITY
-RECEIVED DATA 0-6
+CONTROL BIT
+DATA STROBE
DATA SEQUENCE PROGRAMMING
20010
-DATA SEQ
HANDSHAKING OPTION PROGRAMMING
20009
FM 7PC1 -ACKNOWLEDGE
FM 7PC1 +BUSY
FM 7PC2 +CLK 2
FM 7PC1 -RDY
CHARACTER COUNTER
LINE LENGTH PROGRAMMING
20011
+FULL
PRE-PRINT/POST-PRINT PAPER MOTION PROGRAMMING
20010
-POST PRINT
FM 7PC2 +START LEVEL
FM 7PC6 -EVFU INSTALLED
FM 7PC2 -FAULT
FM 7PC2 -INH
FM SHT 9 -OOP
FM SHT 9 -RUNAWAY
START/STOP LOGIC
20012
+START
FM 6PC1 TEST PRINT SWITCH
FM 6PC1 SINGLE SPACE SWITCH
FM 7PC2 +LF 0/9
SINGLE SPACE
20006
-SINGLE SPACE
DATA PARITY CHECK
20001
-PARITY ERROR
FORMAT REGISTER
20003
HANDSHAKING LOGIC
20009
20010
-SET FIRST CHAR
+PBS STROBE
+STROBE & LINE READY
PARITY ERROR STATUS
20014
-PARITY LAMP
TO 6PC1
-INHIBIT CONTROL CODE
TO SHT 9
+PARITY ERROR
TO SHT 9
-RECEIVED DATA 0-6
TO SHT 9
FORMAT MULTIPLEXER
20003
-FMT BIT 0-6
TO SHT 9
+CONTROL BIT
TO SHT 9
FIRST CHARACTER
20010
+FIRST CHAR
TO SHT 9
+ENAB CHAR REQ
TO SHT 9
+LINE READY
TO SHT 9
+I/O READY
TO SHT 9
BUFFER OVERFLOW
20006
-BUF OVERFLOW
TO SHT 9
TEST PRINT
20013
+TEST PRINT
TO SHT 9
-TEST PRINT LAMPS
TO 6PC1
+SELECT 99
TO SHT 9
-STROBE
TO 7PC1
-EXT START
TO 7PC2
-EXT STOP
TO 7PC2
-POST PRINT
TO SHT 9
TO 7PC6

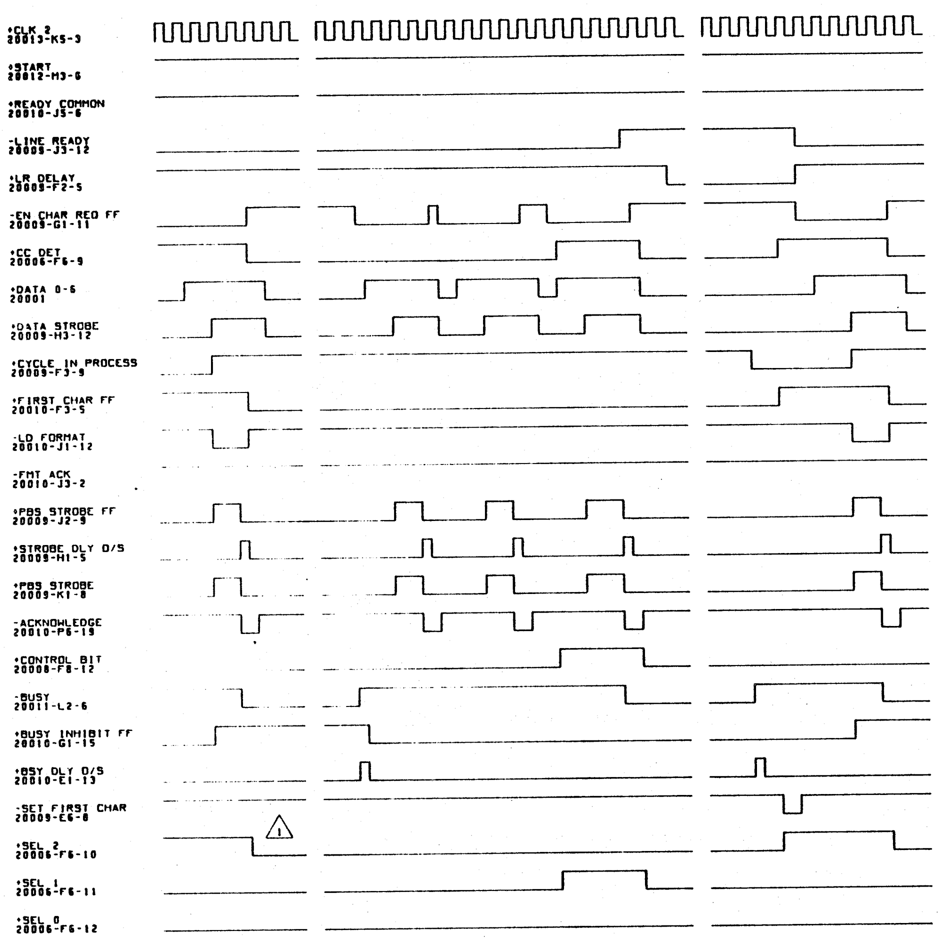

BLOCK DIAGRAM
CODE IDENT DATA BASE 01
C
DWG NO
SHEET 9
REV A
DATA 9 DECODE 20004
DATA 8 DECODE 20004
OUTPUT DATA MUX 20003 20004 20005
DATA SELECT DECODER 20003 20004 20005
TEST PRINT CHAR. PROGRAMMING 20004
LINE COUNTER PROGRAMMING 20005
VFU PROGRAMMING 20003 20004 20005
OUT OF PAPER DETECTION 20012
RUNAWAY DECODE 20014
I/O TRANSMITTERS LONG OR SHORT LINE 20006 20008 20014
FM SHT 8 -INHIBIT CONTROL CODE
FM SHT 8 +CONTROL BIT
FM SHT 8 +TEST PRINT
FM SHT 8 +SELECT 99
FM SHT 8 -POST PRINT
FM SHT 8 +FIRST CHAR
FM SHT 8 -FMT BIT 6
FM SHT 8 -FMT BIT 5
FM SHT 8 -FMT BIT 0-6
FM SHT 8 -RECEIVED DATA 0-6
FM SHT 8 +ENAB CHAR REQ
FM SHT 8 +PARITY ERROR
FM 7PC1 +COMPRESSED PITCH
FM 7PC1 +BAND DETECT 0-1
FM SHT 8 -BUF OVERFLOW
FM SHT 8 +I/O READY
FM SHT 8 +LINE READY
FM 7PC1 -OOP
FM 7PC6 +BOF
FM 7PC6 +PAPER FAULT
FM 7PC6 +STATUS 0-1
+CC DET
+SEL 0-2
-6 LC
- NO VFU
-DB9 TO 7PC1
-DB 8 TO 7PC1
-DB 1-7 TO 7PC1
-(OUTPUT RESUME)
-CHAR REQ TO 8J01
-PARITY ERROR TO 8J01
+COMPRESSED PITCH TO 8J01
+BAND DETECT 0-1 TO 8J01
-BUFFER OVERFLOW TO 8J01
-READY TO 8J01
-LINE READY TO 8J01
-OOP TO SHT 8
-RUNAWAY LAMP TO 6PC1
-RUNAWAY TO SHT 8
D
C
B
A
1
2
3
4


4
3
2
1
D
C
B
A
+CLK 2
20013-K5-3
-T1
20013-K2-6
+T2
20013-K1-3
+START
20012-M3-6
+READY COMMON
20010-J5-6
+I/O READY
20009-G2-12
-LINE READY
20009-J3-12
+LR DELAY
20009-F2-5
-EN CHAR REQ FF
20009-G1-11
+CC DET
20006-F6-9
+DATA 0-6
20001
+DATA STROBE
20009-H3-12
+CYCLE IN PROCESS
20009-F3-9
+FIRST CHAR FF
20010-F3-5
+LD FMT
20010-J1-12
-FMT ACK
20010-J3-2
+PBS STROBE FF
20009-J2-9
+STROBE DLY O/S
20009-H1-5
+PBS STROBE
20009-K1-8
-ACKNOWLEDGE
20010-P6-19
+CONTROL BIT
20008-F8-12
-BUSY
20011-L2-6
-PARITY FAULT
20010-H4-8
-PARITY ERROR FF
20014-E2-8
-BUFFER CLR
20007-F8-4
+BSY DLY O/S
20010-E1-13
-SET FIRST CHAR
20009-E6-8
OEM I/O-DATA INPUT
TIMING-STD HANDSHAK
POST PRINT-STD SEQ.
CODE IDENT
DATA BASE 01
C
DWG NO
A
SHEET 10



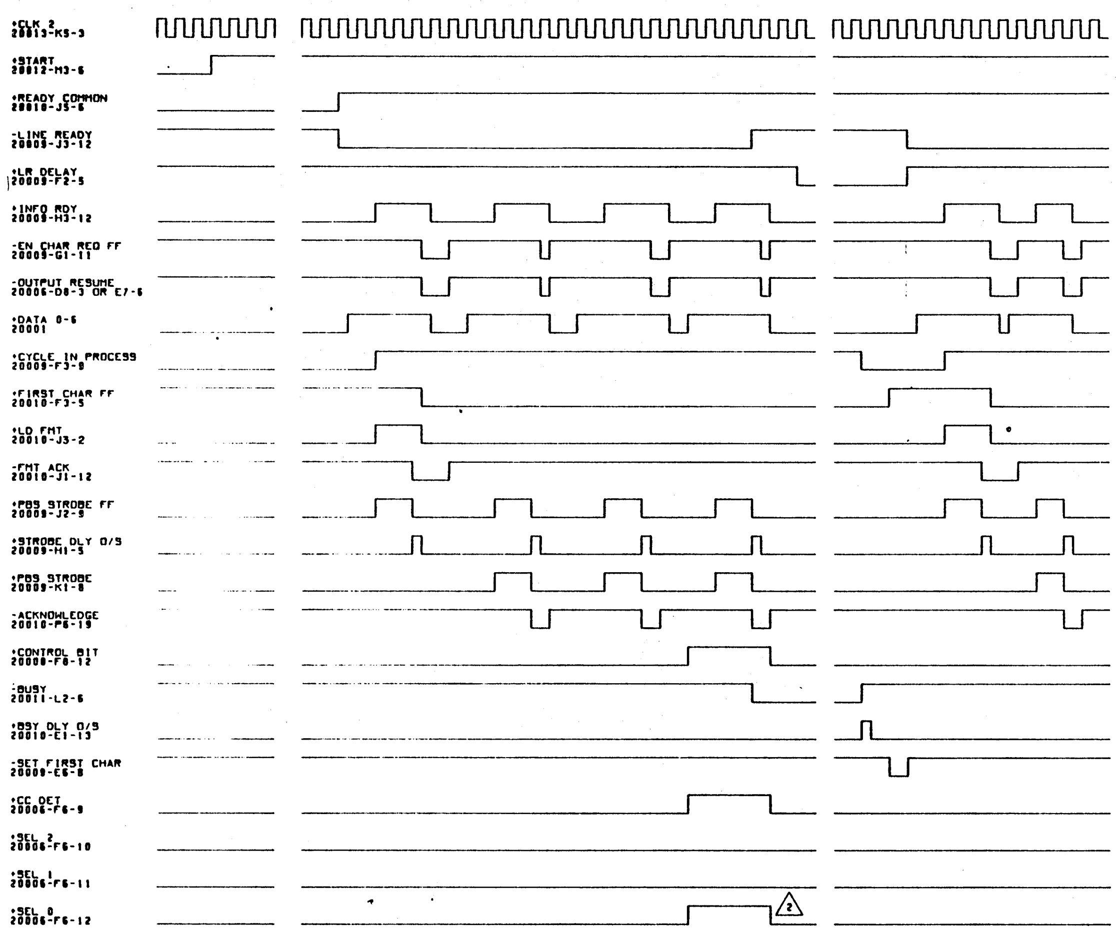
NOTES: 1 ASSUMES A LINE COUNT PAPER MOTION COMMAND

OEM I/O-DATA INPUT TIMING-STD HANDSHAK. POST PRINT-OPT. SEQ.	CODE IDENT DATA BASE 01	C	DWG NO
			REV A
			SHEET 11



NOTES: 1 ASSUMES A LINE COUNT PAPER MOTION COMMAND

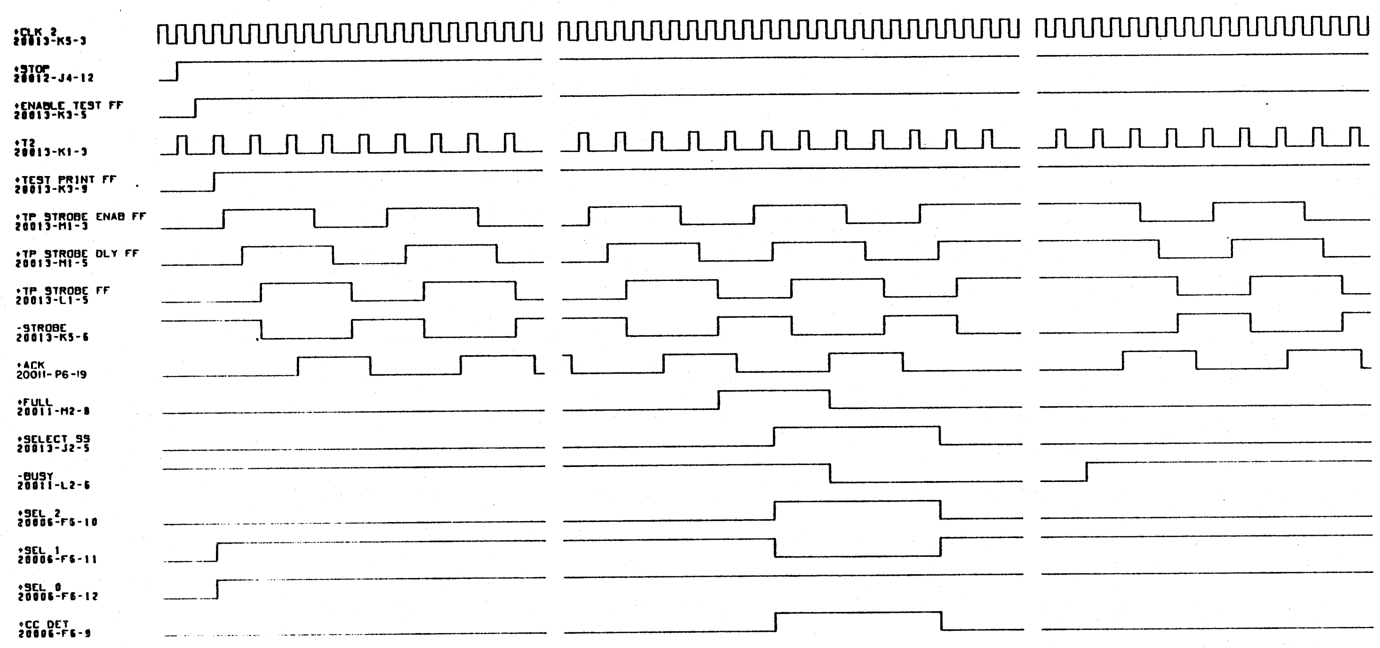
OEM I/O-DATA INPUT TIMING-STD HANDSHAK. PRE PRINT-STD. SEQ.	CODE IDENT DATA BASE 01	C	DWG NO	REV A
			SHEET 12	



NOTES: 2 ASSUMES A VFU PAPER MOTION COMMAND

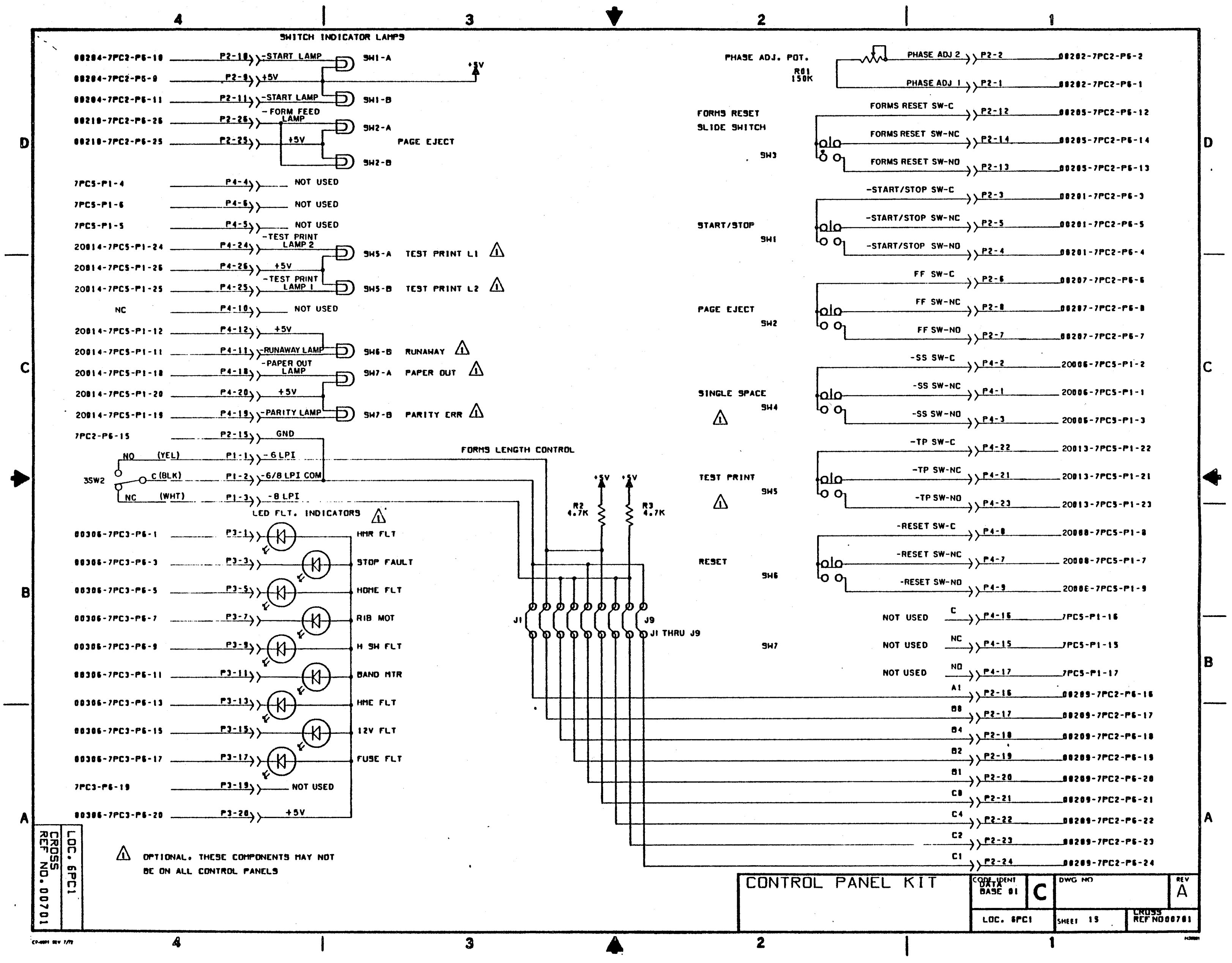
OEM I/O-DATA TIMING
OPTIONAL HANDSHAK.
POST PRINT-STD SEQ.

CODE IDENT		DWG NO	REV
DATA BASE 01	C		A
		SHEET 13	

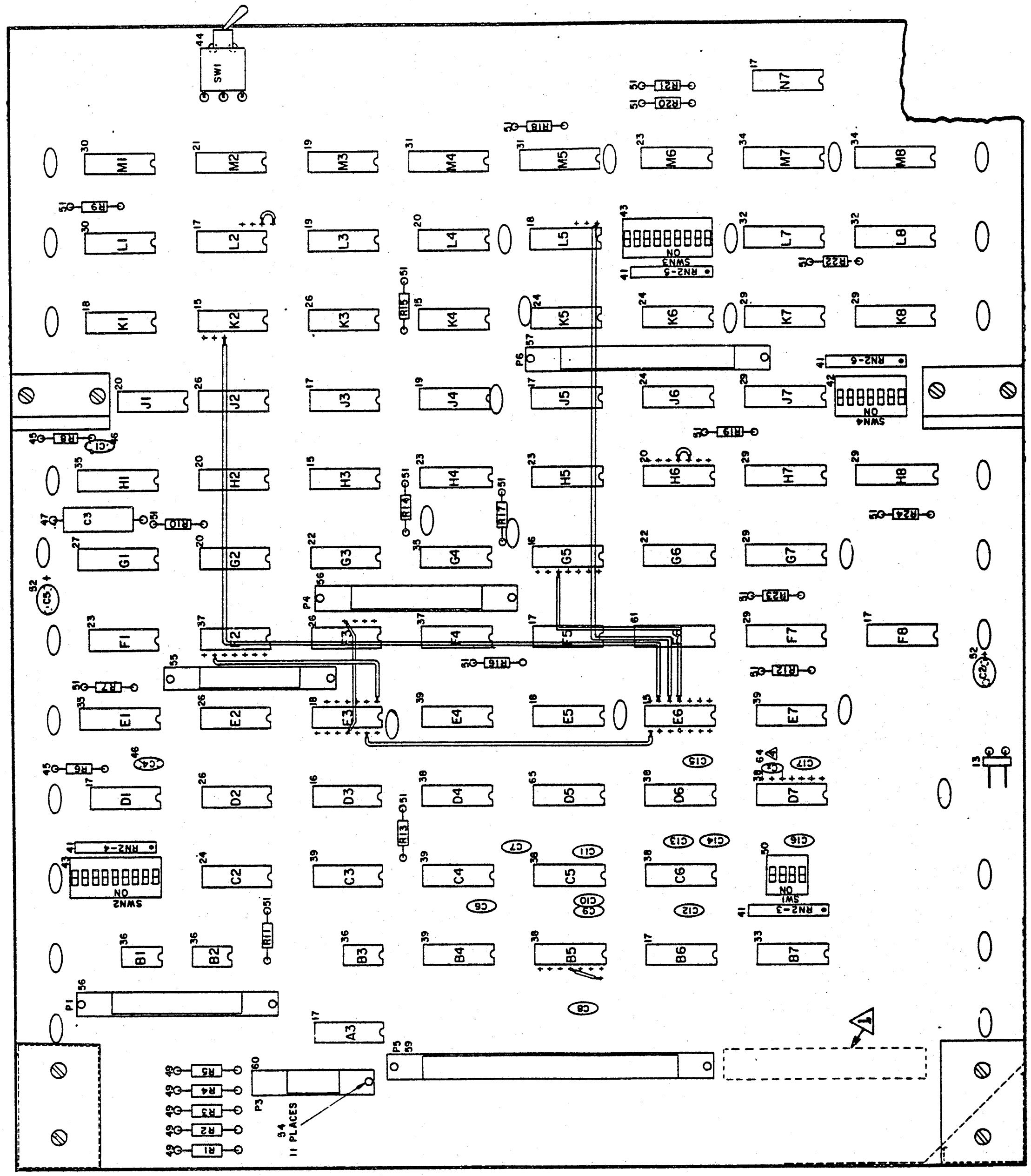


OEM I/O-TEST PRINT
TIMING

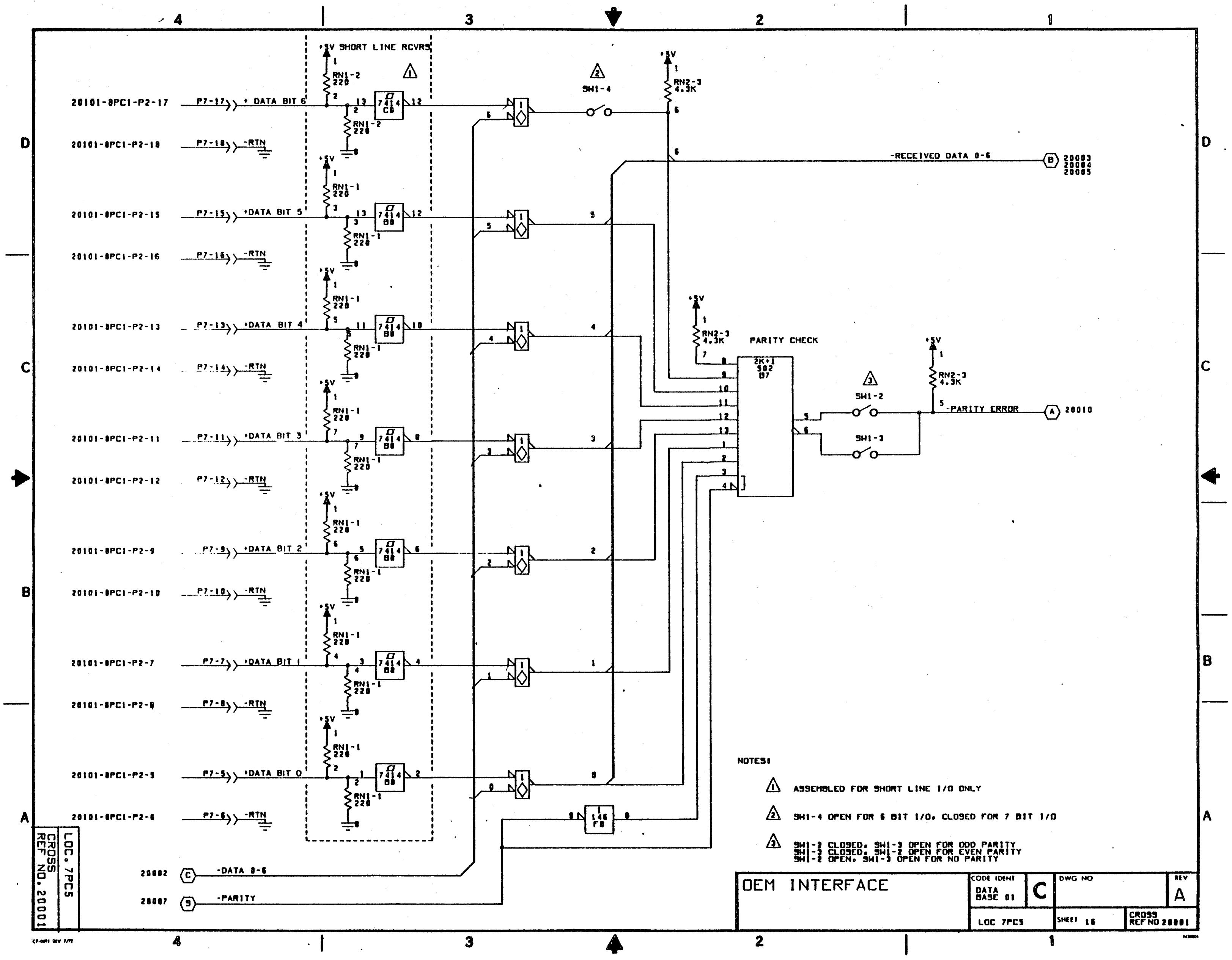
CODE IDENT DATA BASE 01	C	DWG NO	REV A
		SHEET 14	



⚠ OPTIONAL. THESE COMPONENTS MAY NOT BE ON ALL CONTROL PANELS

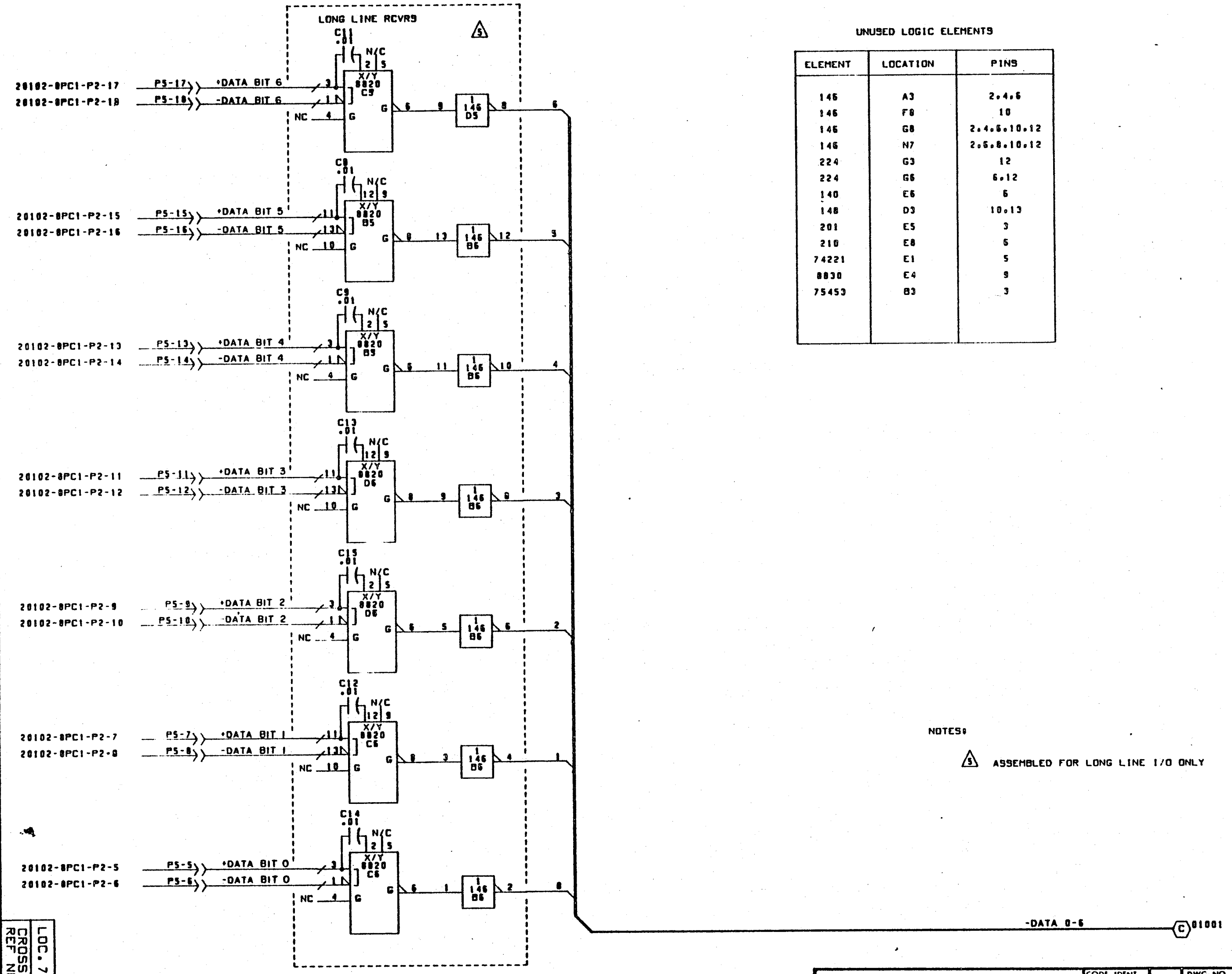


NOTES:
1 LABEL



NOTES:

1. ASSEMBLED FOR SHORT LINE I/O ONLY
2. SW1-4 OPEN FOR 6 BIT I/O. CLOSED FOR 7 BIT I/O
3. SW1-2 CLOSED. SW1-3 OPEN FOR ODD PARITY
SW1-3 CLOSED. SW1-2 OPEN FOR EVEN PARITY
SW1-2 OPEN. SW1-3 OPEN FOR NO PARITY



UNUSED LOGIC ELEMENTS

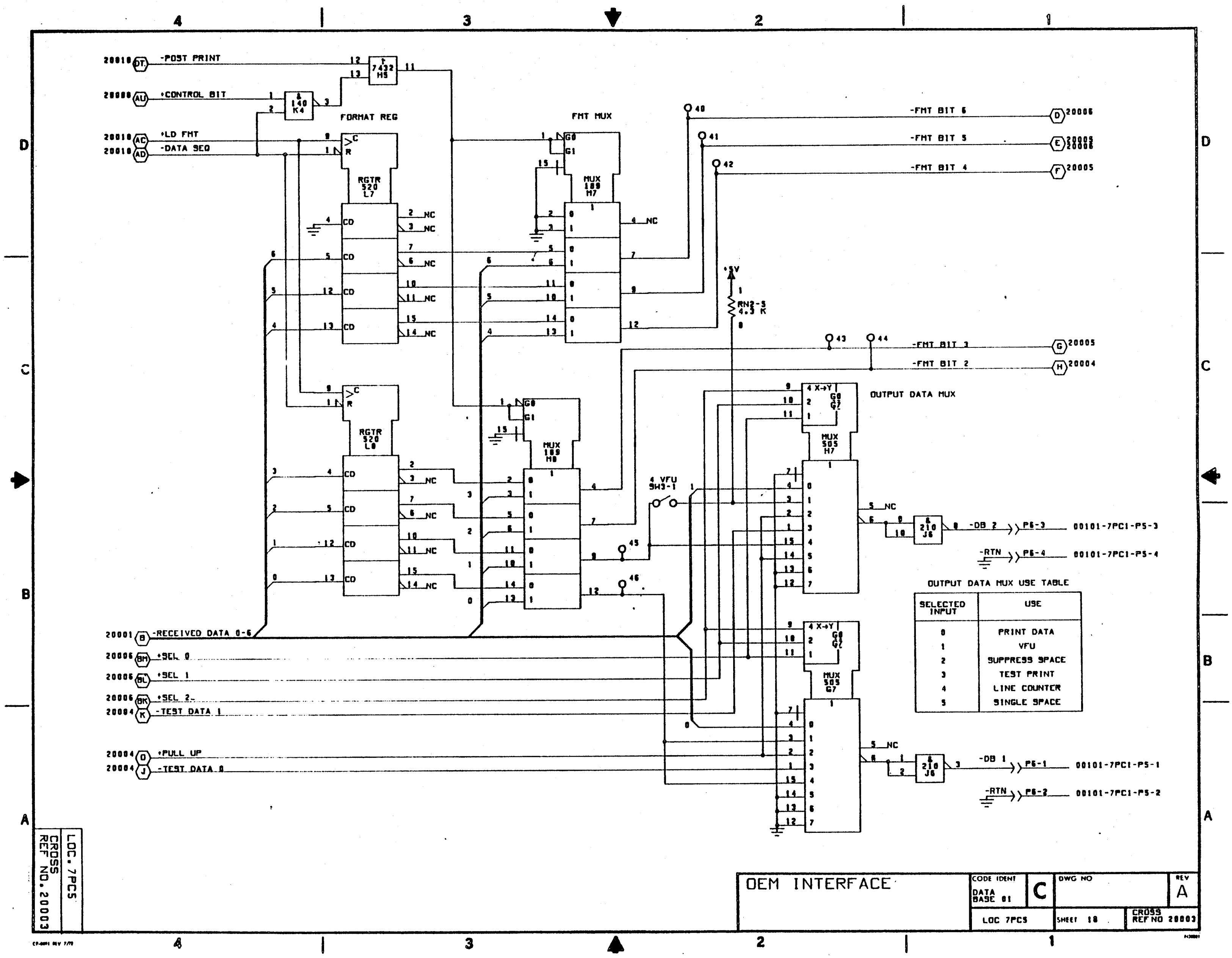
ELEMENT	LOCATION	PINS
146	A3	2,4,6
146	F8	10
146	G8	2,4,6,10,12
146	N7	2,6,8,10,12
224	G3	12
224	G6	6,12
140	E6	6
148	D3	10,13
201	E5	3
210	E8	6
74221	E1	5
8830	E4	9
75453	B3	3

NOTES:

5 ASSEMBLED FOR LONG LINE I/O ONLY

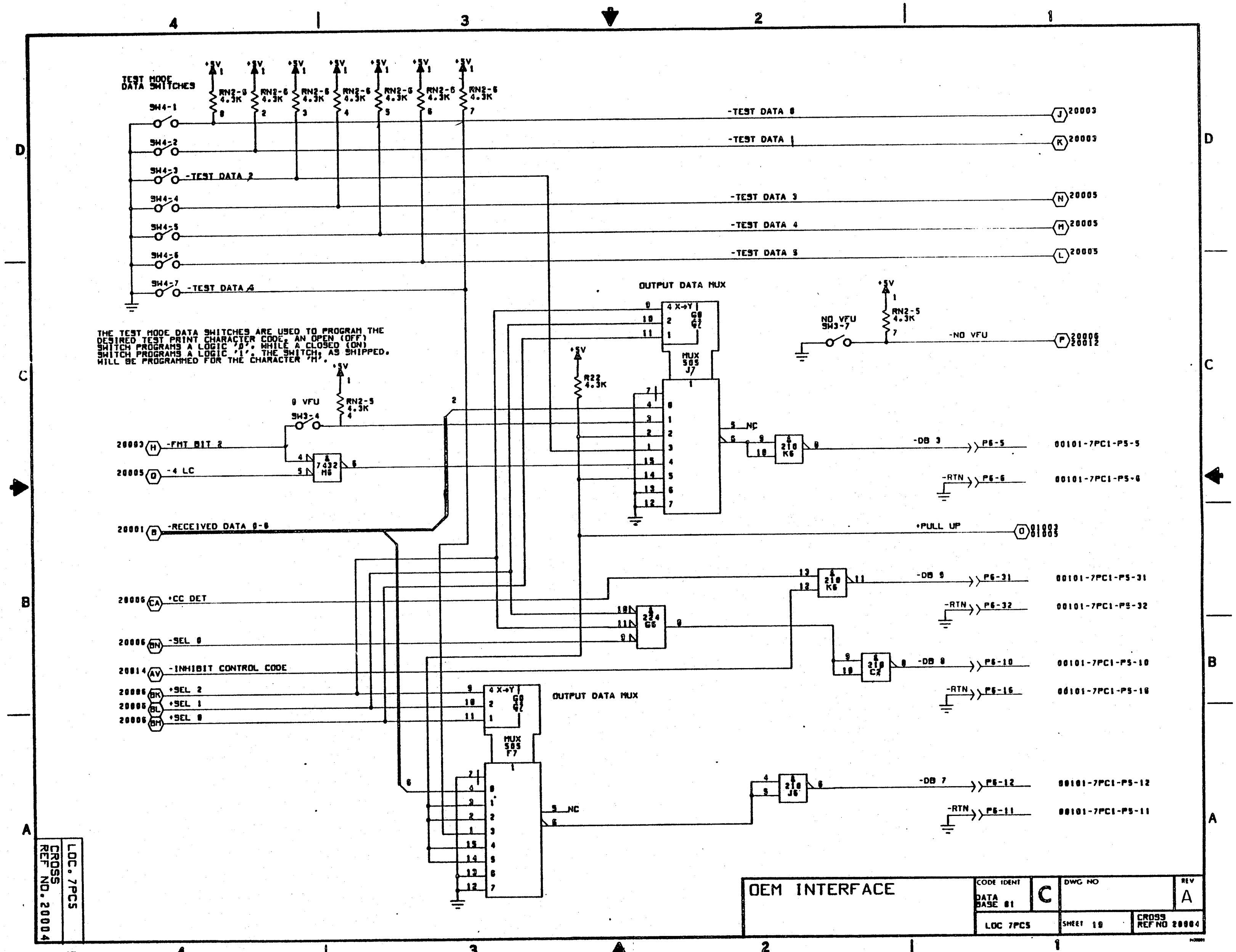
OEM INTERFACE	CODE IDENT DATA BASE 01	C	DWG NO
	LOC 7PC5	SHEET 17	CROSS REF NO 20002

REV A

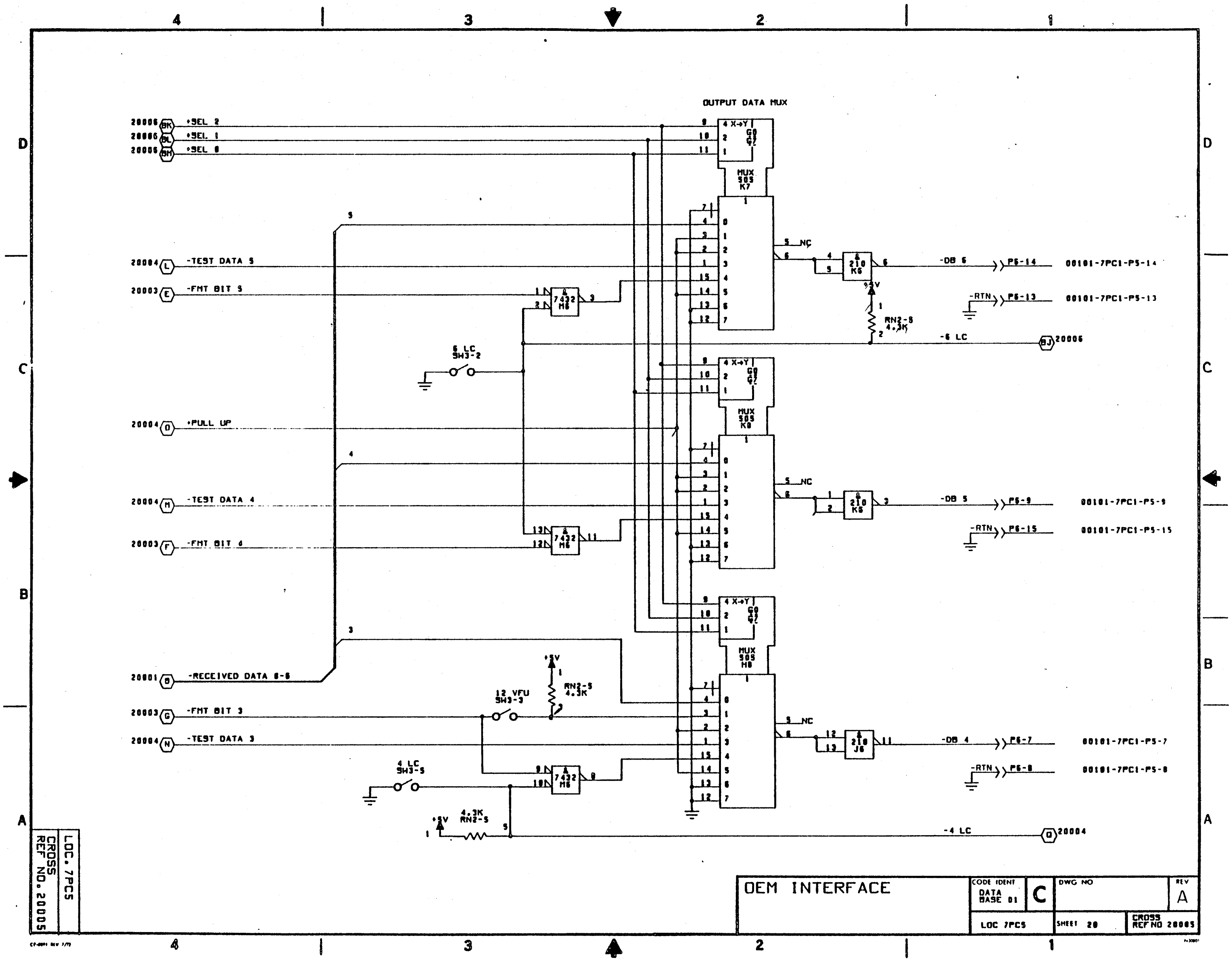


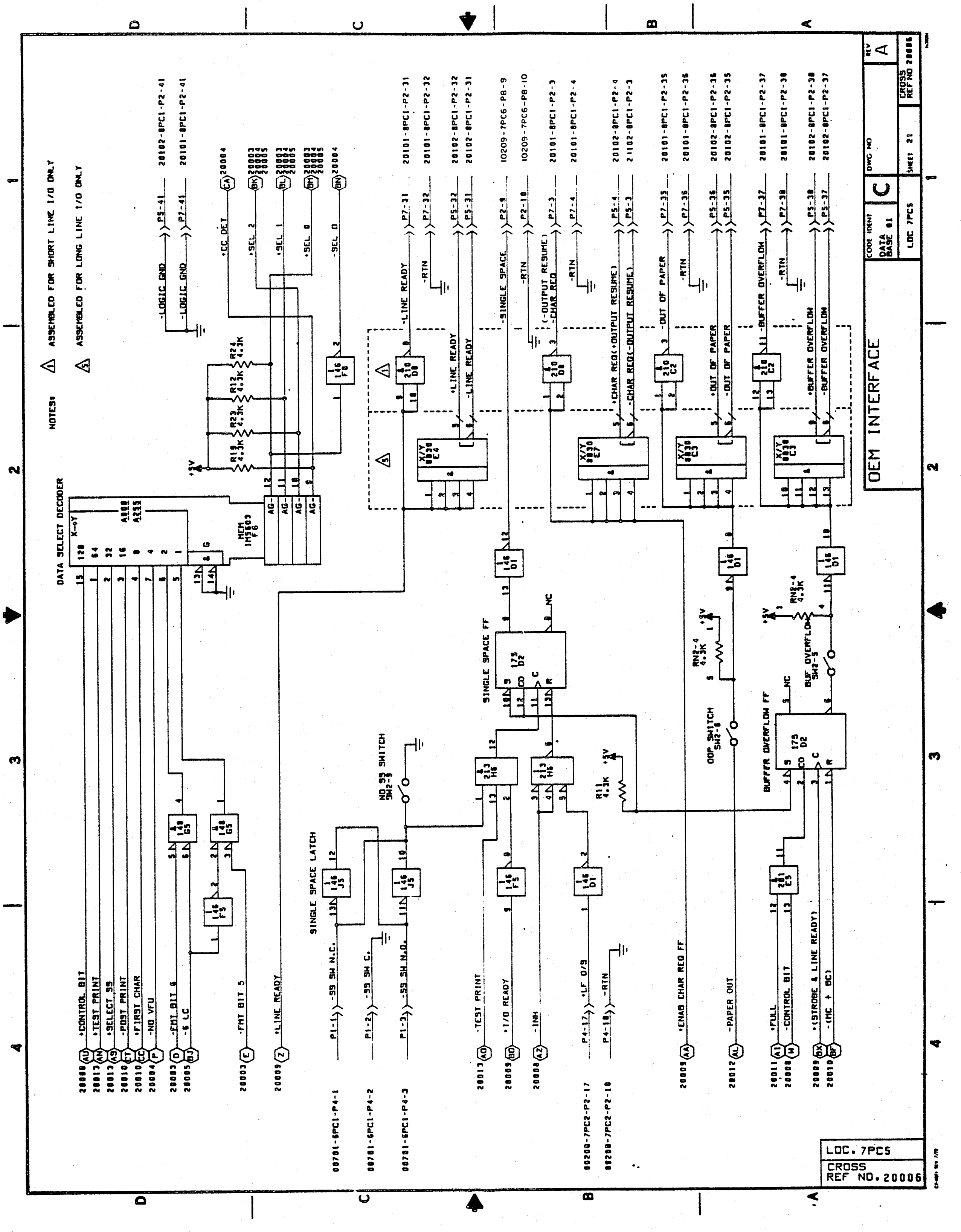
OUTPUT DATA MUX USE TABLE

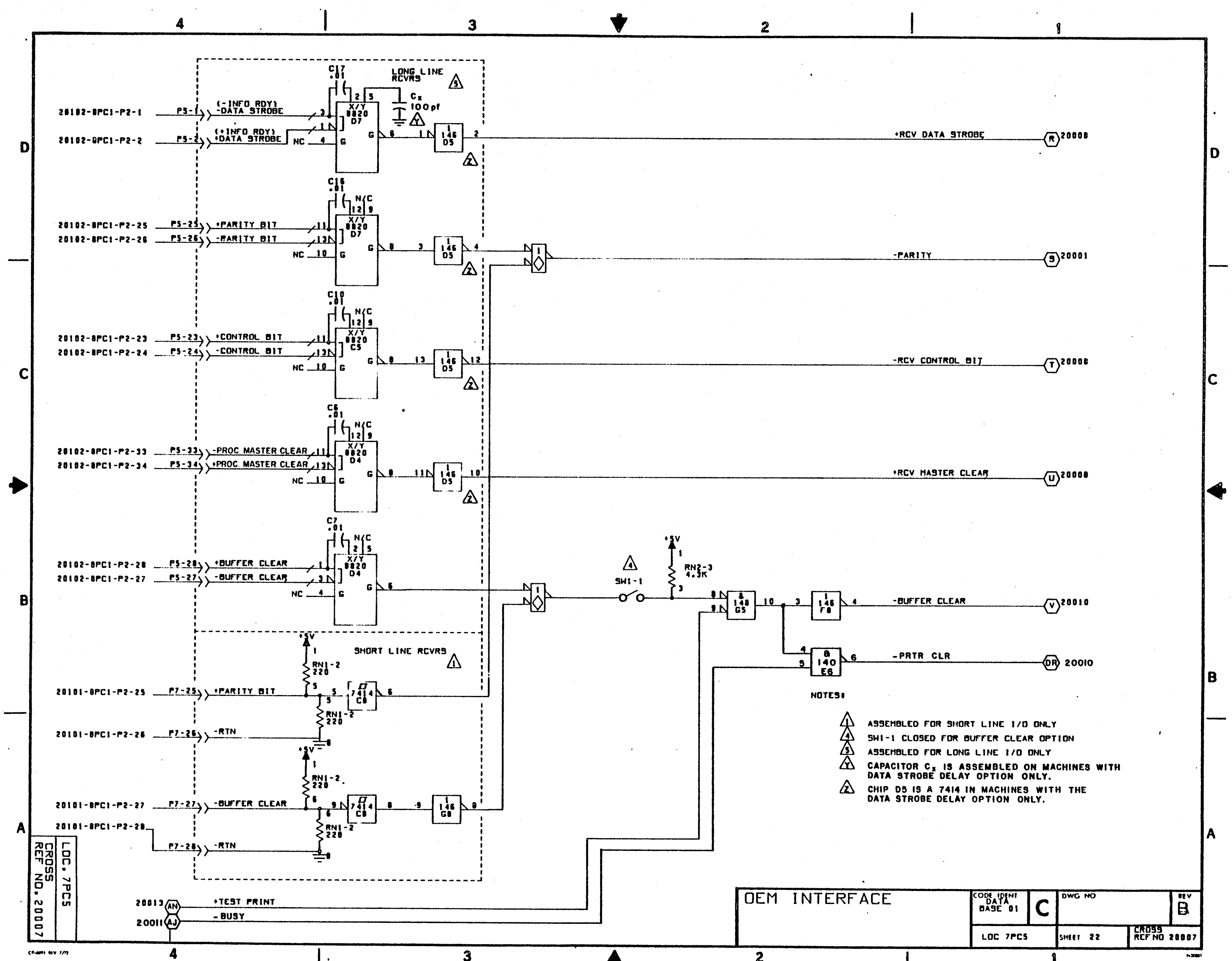
SELECTED INPUT	USE
0	PRINT DATA
1	VFU
2	SUPPRESS SPACE
3	TEST PRINT
4	LINE COUNTER
5	SINGLE SPACE



THE TEST MODE DATA SWITCHES ARE USED TO PROGRAM THE DESIRED TEST PRINT CHARACTER CODE. AN OPEN (OFF) SWITCH PROGRAMS A LOGIC '0', WHILE A CLOSED (ON) SWITCH PROGRAMS A LOGIC '1'. THE SWITCH, AS SHIPPED, WILL BE PROGRAMMED FOR THE CHARACTER 'M'.

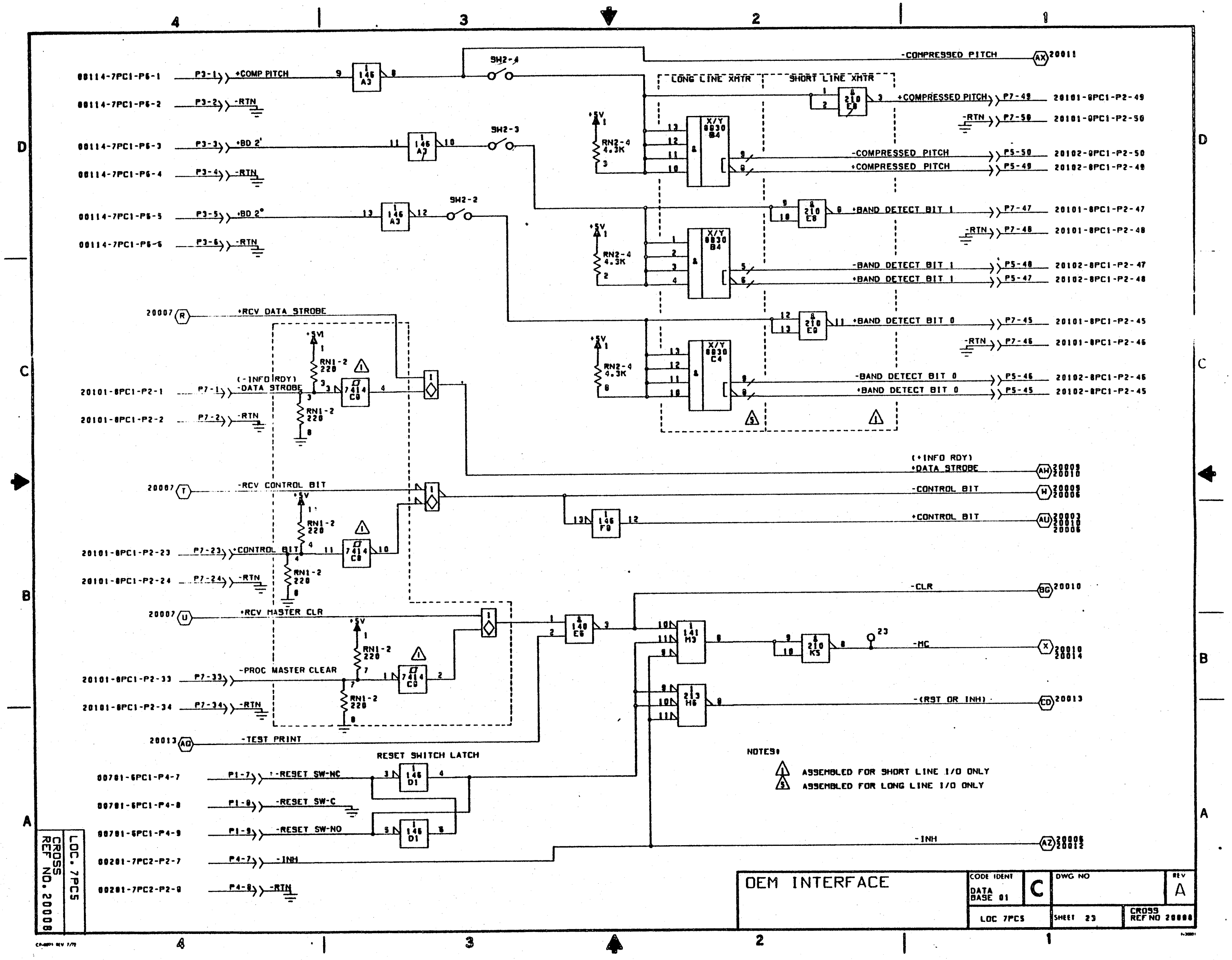

OUTPUT DATA MUX
20006 BK +SEL 2
20006 BL +SEL 1
20006 BM +SEL 0
20004 L -TEST DATA 5
20003 E -FMT BIT 5
20004 D +PULL UP
20004 M -TEST DATA 4
20003 F -FMT BIT 4
20001 B -RECEIVED DATA 0-6
20003 G -FMT BIT 3
20004 N -TEST DATA 3
6 LC SW3-2
12 VFU SW3-3
4 LC SW3-5
+5V
RN2-5 4.3K
RN2-8 4.3K
4.3K RN2-5
7432 H8
MUX 505 K7
MUX 505 K8
MUX 505 H8
4 X→Y
G0 G1 G2
NC
210 K6
210 J6
-DB 6
P5-14
00101-7PC1-P5-14
-RTN
P5-13
00101-7PC1-P5-13
-6 LC
BJ 20006
-DB 5
P5-9
00101-7PC1-P5-9
P5-15
00101-7PC1-P5-15
-DB 4
P5-7
00101-7PC1-P5-7
P5-8
00101-7PC1-P5-8
-4 LC
Q 20004
LOC. 7PC5
CROSS REF NO. 20005
OEM INTERFACE
CODE IDENT
DATA BASE 01
C
DWG NO
REV
A
LOC 7PC5
SHEET 20
CROSS REF NO 20005
D
C
B
A
4
3
2
1

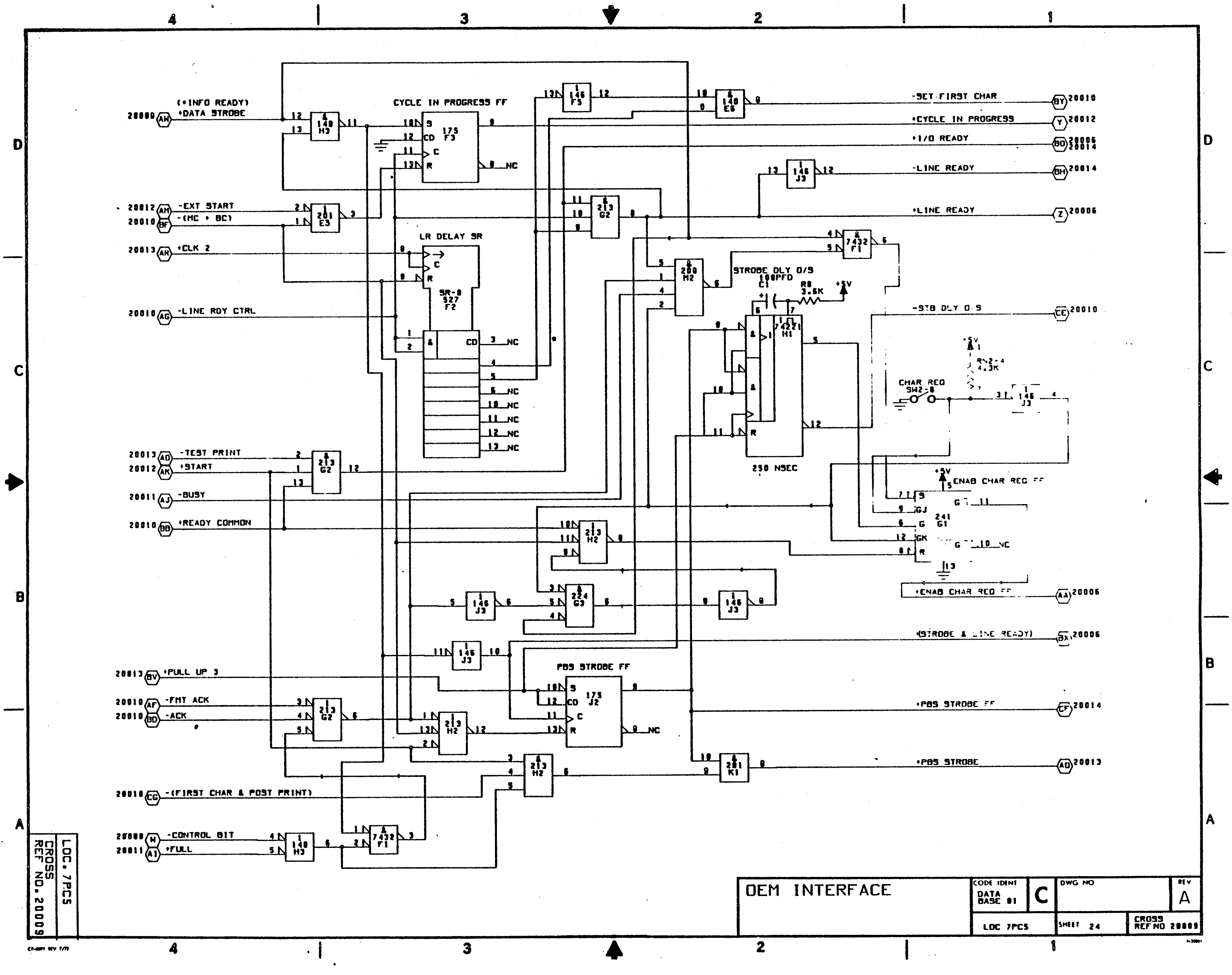

OEM INTERFACE
CODE IDENT DATA BASE 01
C
DWG NO
CROSS REF NO 20006
REV A
SHEET 21
LOC 7PC5
LOC. 7PC5
CROSS REF NO. 20006
NOTES:
1 ASSEMBLED FOR SHORT LINE I/O ONLY
5 ASSEMBLED FOR LONG LINE I/O ONLY
DATA SELECT DECODER
MEM IM5603 F6
SINGLE SPACE LATCH
SINGLE SPACE FF
BUFFER OVERFLOW FF
NO 99 SWITCH SW2-9
OOP SWITCH SW2-8
BUF OVERFLOW SW2-5
+CONTROL BIT
+TEST PRINT
+SELECT 99
-POST PRINT
+FIRST CHAR
-NO VFU
-FMT BIT 6
-6 LC
-FMT BIT 5
+LINE READY
-99 SW N.C.
-99 SW C.
-99 SW N.O.
-TEST PRINT
+I/O READY
-INH
+LF O/S
-RTN
+ENAB CHAR REQ FF
-PAPER OUT
+FULL
-CONTROL BIT
+(STROBE & LINE READY)
-(MC + BC)
-LOGIC GND
+CC DET
+SEL 2
+SEL 1
+SEL 0
-SEL 0
-LINE READY
+SINGLE SPACE
(-OUTPUT RESUME)
-CHAR REQ
+CHAR REQ(+OUTPUT RESUME)
-CHAR REQ(-OUTPUT RESUME)
-OUT OF PAPER
+OUT OF PAPER
-BUFFER OVERFLOW
+BUFFER OVERFLOW
R19 4.3K
R23 4.3K
R12 4.3K
R24 4.3K
R11 4.3K
RN3-4 4.3K
+5V

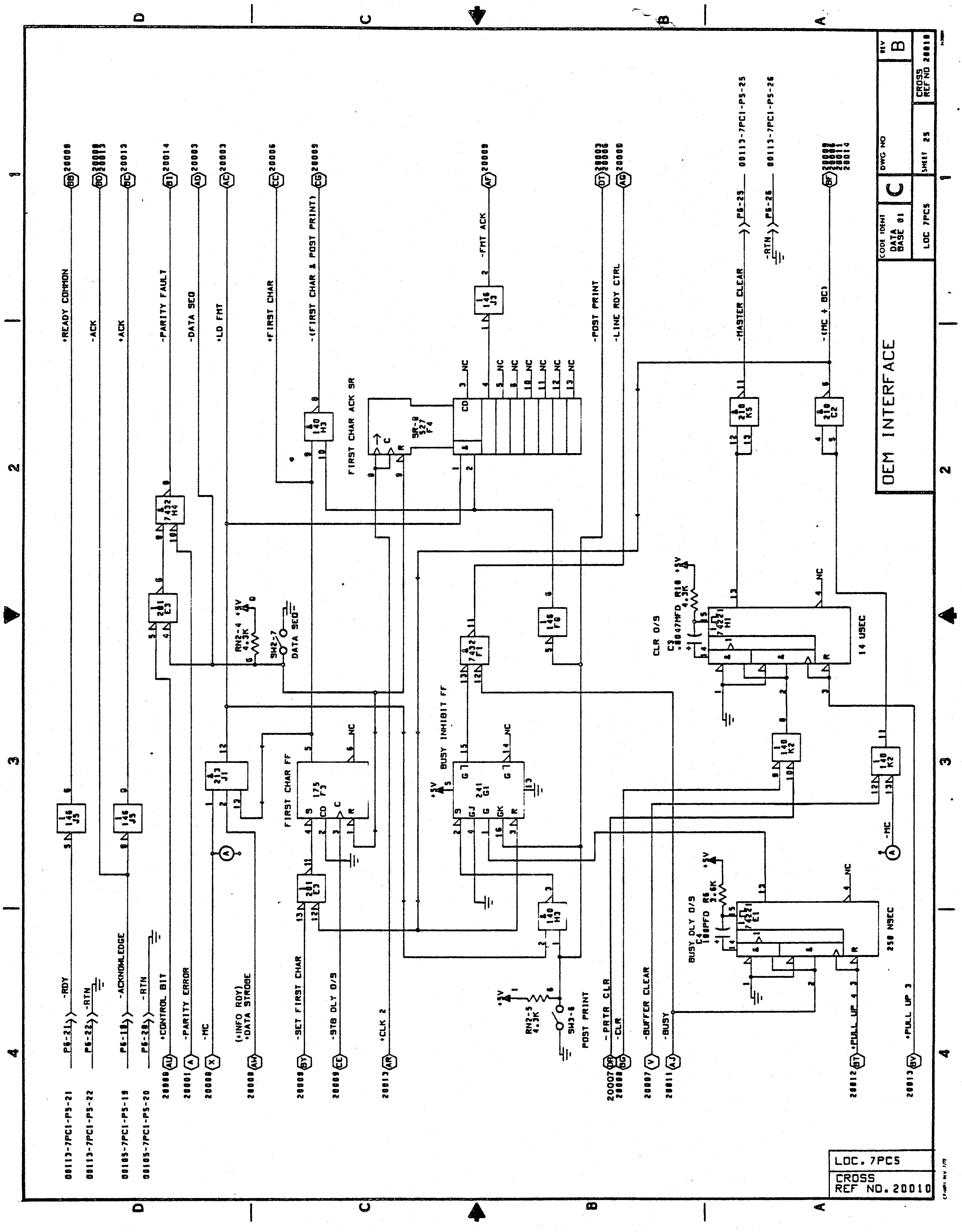


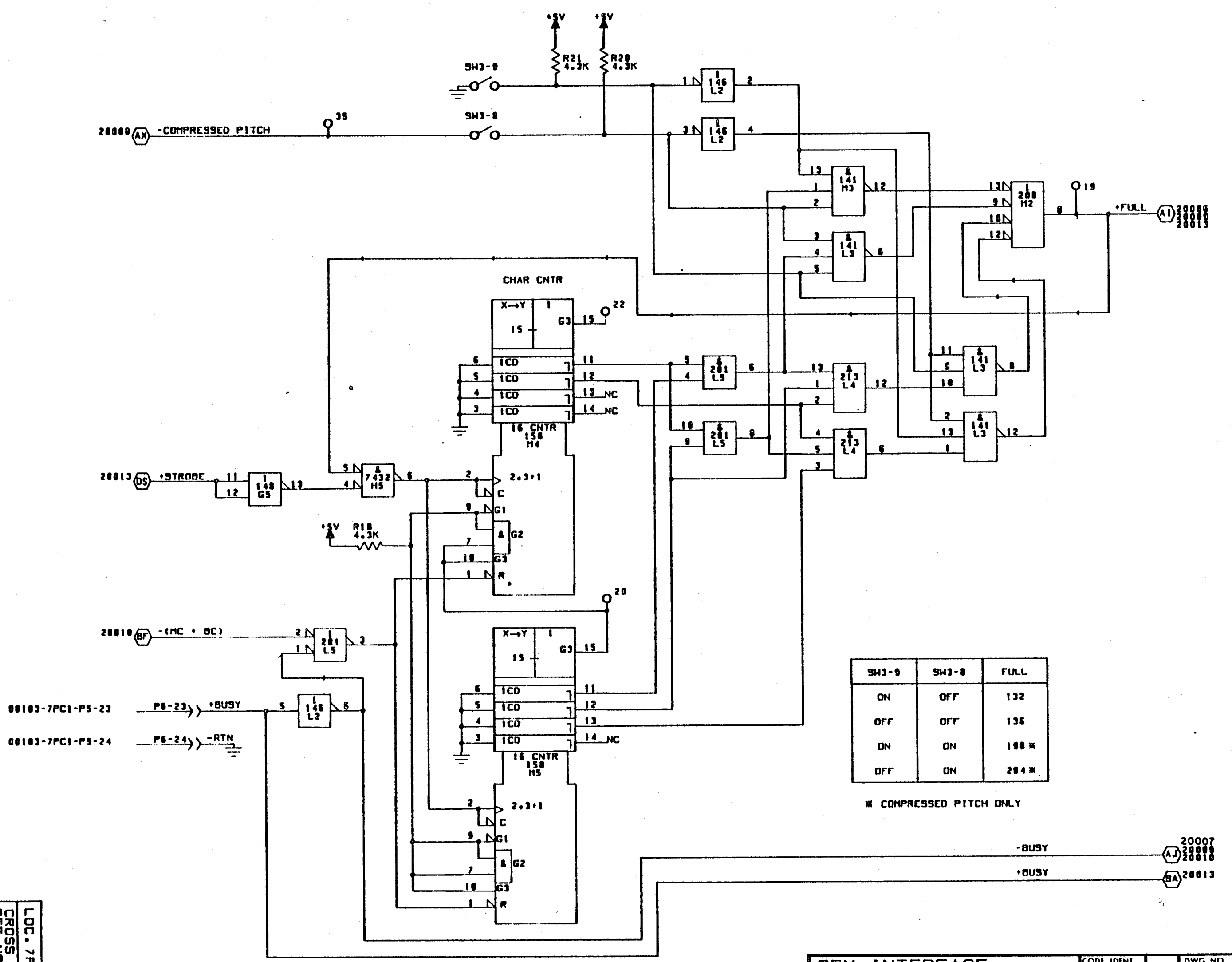
NOTES:

1. ASSEMBLED FOR SHORT LINE I/O ONLY
4. SW1-1 CLOSED FOR BUFFER CLEAR OPTION
5. ASSEMBLED FOR LONG LINE I/O ONLY
Y. CAPACITOR C_x IS ASSEMBLED ON MACHINES WITH DATA STROBE DELAY OPTION ONLY.
Z. CHIP D5 IS A 7414 IN MACHINES WITH THE DATA STROBE DELAY OPTION ONLY.


00114-7PC1-P6-1
P3-1
+COMP PITCH
00114-7PC1-P6-2
P3-2
-RTN
00114-7PC1-P6-3
P3-3
+BD 2'
00114-7PC1-P6-4
P3-4
-RTN
00114-7PC1-P6-5
P3-5
+BD 2°
00114-7PC1-P6-6
P3-6
-RTN
146 A3
146 A3
146 A3
SW2-4
SW2-3
SW2-2
-COMPRESSED PITCH
20011
LONG LINE XMTR
SHORT LINE XMTR
210 E8
+COMPRESSED PITCH
P7-49
20101-8PC1-P2-49
-RTN
P7-50
20101-8PC1-P2-50
+5V
RN2-4 4.3K
X/Y 8830 B4
-COMPRESSED PITCH
P5-50
20102-8PC1-P2-50
+COMPRESSED PITCH
P5-49
20102-8PC1-P2-49
210 E8
+BAND DETECT BIT 1
P7-47
20101-8PC1-P2-47
-RTN
P7-48
20101-8PC1-P2-48
X/Y 8830 B4
-BAND DETECT BIT 1
P5-48
20102-8PC1-P2-47
+BAND DETECT BIT 1
P5-47
20102-8PC1-P2-48
210 E8
+BAND DETECT BIT 0
P7-45
20101-8PC1-P2-45
-RTN
P7-46
20101-8PC1-P2-46
X/Y 8830 C4
-BAND DETECT BIT 0
P5-46
20102-8PC1-P2-46
+BAND DETECT BIT 0
P5-45
20102-8PC1-P2-45
20007
+RCV DATA STROBE
(-INFO RDY)
-DATA STROBE
20101-8PC1-P2-1
P7-1
20101-8PC1-P2-2
P7-2
-RTN
RN1-2 220
7414 C8
(+INFO RDY)
+DATA STROBE
20009
20010
20007
-RCV CONTROL BIT
-CONTROL BIT
20009
20006
146 F8
+CONTROL BIT
20003
20010
20006
20101-8PC1-P2-23
P7-23
+CONTROL BIT
20101-8PC1-P2-24
P7-24
-RTN
7414 C8
20007
+RCV MASTER CLR
140 E8
-CLR
20010
141 H3
210 K5
23
-MC
20010
20014
20101-8PC1-P2-33
P7-33
-PROC MASTER CLEAR
7414 C8
20101-8PC1-P2-34
P7-34
-RTN
213 H6
-(RST OR INH)
20013
20013
-TEST PRINT
RESET SWITCH LATCH
00781-6PC1-P4-7
P1-7
-RESET SW-NC
146 D1
00781-6PC1-P4-8
P1-8
-RESET SW-C
00781-6PC1-P4-9
P1-9
-RESET SW-NO
146 D1
00281-7PC2-P2-7
P4-7
-INH
-INH
20005
20012
00281-7PC2-P2-8
P4-8
-RTN
NOTES:
ASSEMBLED FOR SHORT LINE I/O ONLY
ASSEMBLED FOR LONG LINE I/O ONLY
LOC. 7PC5
CROSS REF NO. 20008
OEM INTERFACE
CODE IDENT
DATA BASE 01
C
DWG NO
REV
A
LOC 7PC5
SHEET 23
CROSS REF NO 20008

(+INFO READY)
+DATA STROBE
-EXT START
-(MC + BC)
+CLK 2
-LINE RDY CTRL
-TEST PRINT
+START
-BUSY
+READY COMMON
+PULL UP 3
-FMT ACK
-ACK
-(FIRST CHAR & POST PRINT)
-CONTROL BIT
+FULL
CYCLE IN PROGRESS FF
175 F3
LR DELAY SR
SR-8 527 F2
STROBE DLY O/S
100PFD C1
R8 3.6K
+5V
74221 H1
250 NSEC
CHAR REQ SW2-8
RN2-4 4.3K
ENAB CHAR REQ FF
241 G1
PBS STROBE FF
175 J2
-SET FIRST CHAR
+CYCLE IN PROGRESS
+I/O READY
-LINE READY
+LINE READY
-STB DLY O-S
+ENAB CHAR REQ FF
+(STROBE & LINE READY)
+PBS STROBE FF
+PBS STROBE
OEM INTERFACE
CODE IDENT DATA BASE 01
C
DWG NO
REV A
LOC 7PCS
SHEET 24
CROSS REF NO 20009
LOC. 7PCS
CROSS REF NO. 20009


OEM INTERFACE
CODE IDENT DATA BASE 01
DWG NO C
REV B
LOC 7PC5
SHEET 25
CROSS REF NO 20010
LOC. 7PC5
CROSS REF NO. 20010
+READY COMMON
-ACK
+ACK
-PARITY FAULT
-DATA SEQ
+LD FMT
+FIRST CHAR
-(FIRST CHAR & POST PRINT)
-FMT ACK
-POST PRINT
-LINE RDY CTRL
-MASTER CLEAR
-RTN
-(MC + BC)
P5-25
P5-26
00113-7PC1-P5-25
00113-7PC1-P5-26
FIRST CHAR ACK SR
SR-9 S27 F4
FIRST CHAR FF
175 F3
BUSY INHIBIT FF
241 G1
CLR O/S
C3 .0047MFD
R10 4.3K
14 USEC
BUSY DLY O/S
C4 100PFD
R6 3.6K
250 NSEC
RN2-4 4.3K
SW2-7 DATA SEQ
RN2-5 4.3K
SW3-6 POST PRINT
P6-21 -RDY
P6-22 -RTN
P6-19 -ACKNOWLEDGE
P6-20 -RTN
00113-7PC1-P5-21
00113-7PC1-P5-22
00105-7PC1-P5-19
00105-7PC1-P5-20
+CONTROL BIT
-PARITY ERROR
-MC
(+INFO RDY) +DATA STROBE
-SET FIRST CHAR
-STB DLY O/S
+CLK 2
-PRTR CLR
-CLR
-BUFFER CLEAR
-BUSY
+PULL UP 4 3
+PULL UP 3
146 J5
213 J1
201 E3
140 H3
7432 H4
146 J3
146 F9
7432 F1
7422 H1
7422 E1
140 K2
210 K5
210 C2
D
C
B
A
1
2
3
4



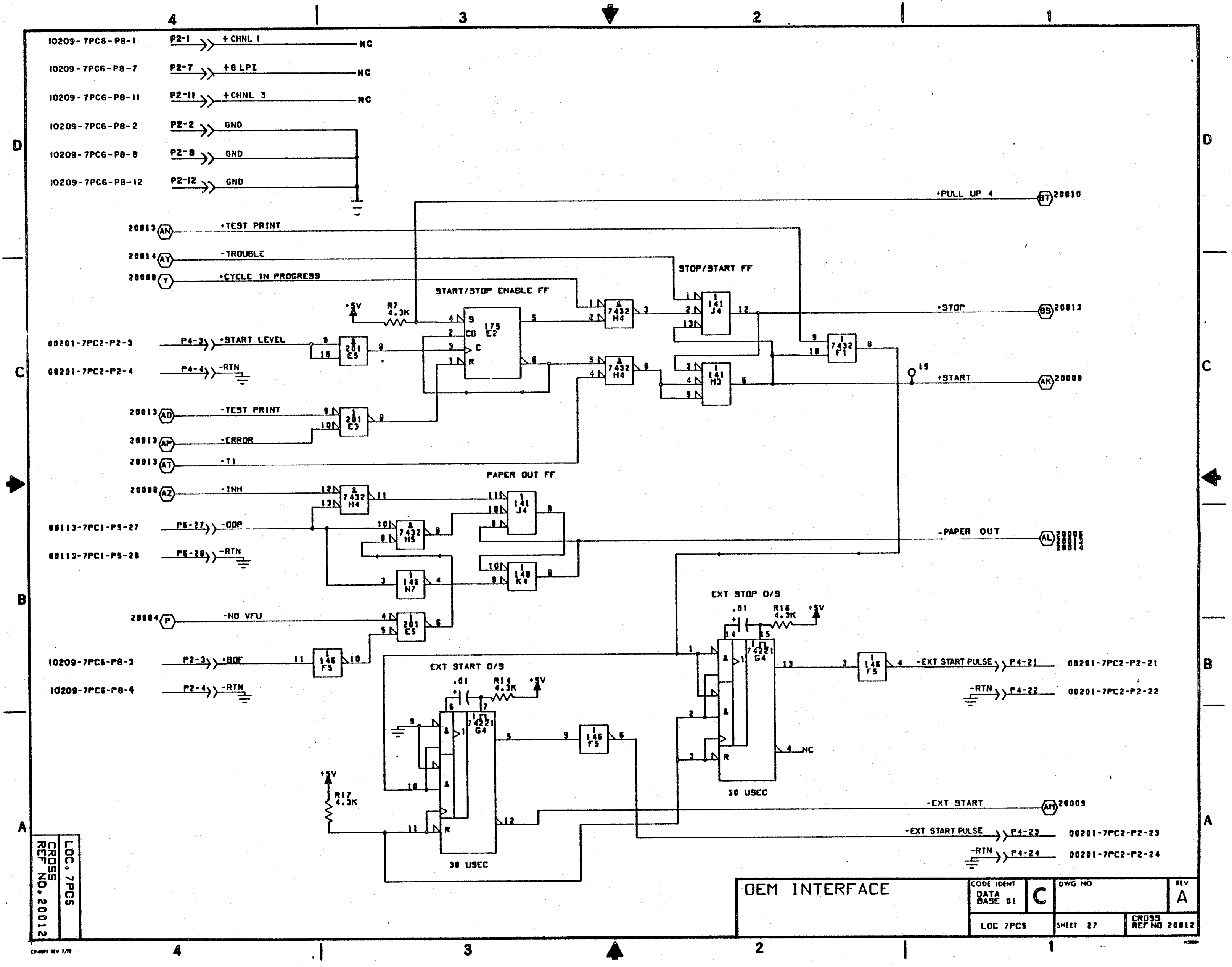
SW3-9	SW3-8	FULL
ON	OFF	132
OFF	OFF	136
ON	ON	198 ※
OFF	ON	204 ※

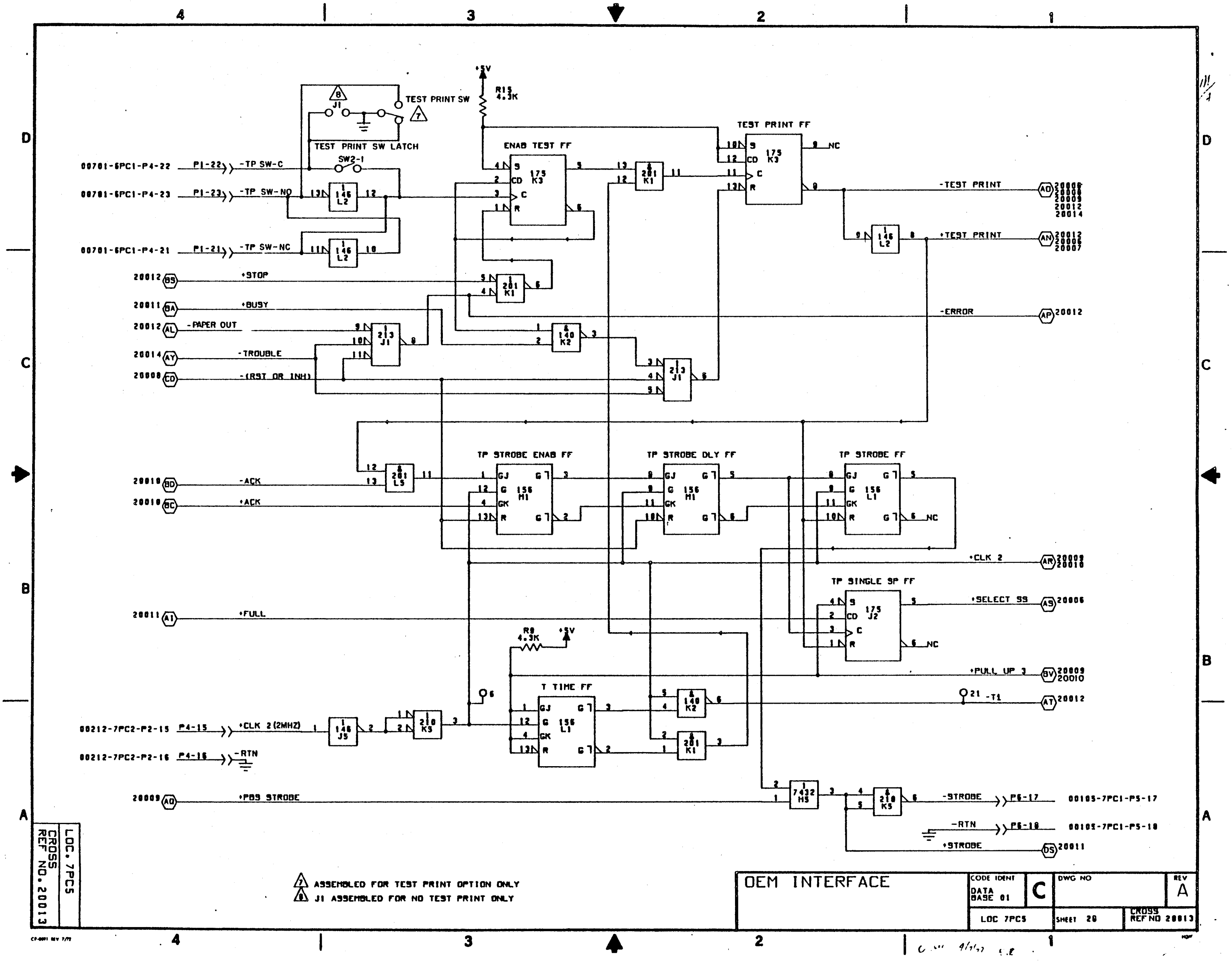
※ COMPRESSED PITCH ONLY

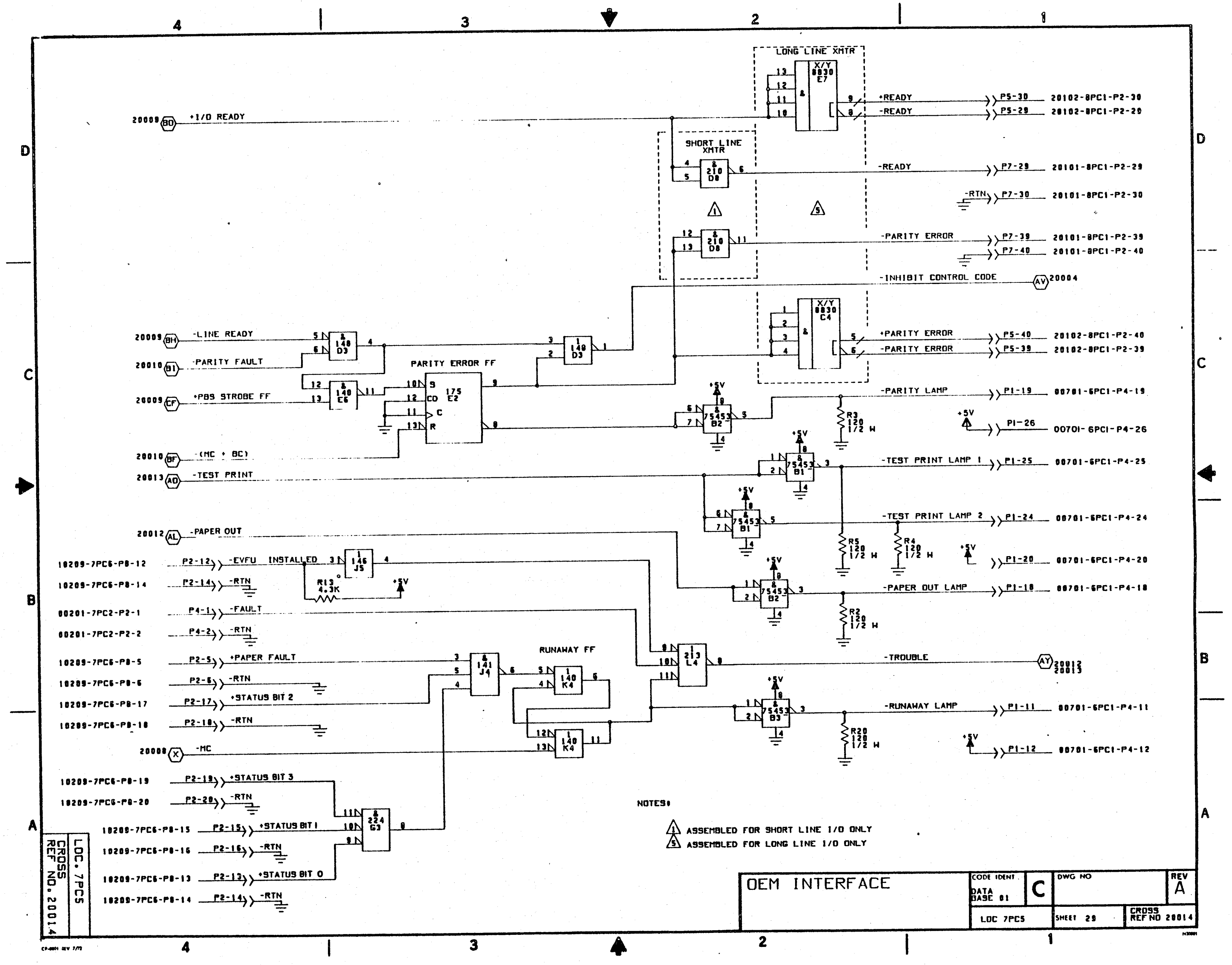
LOC. 7PC5
CROSS
REF NO. 20011

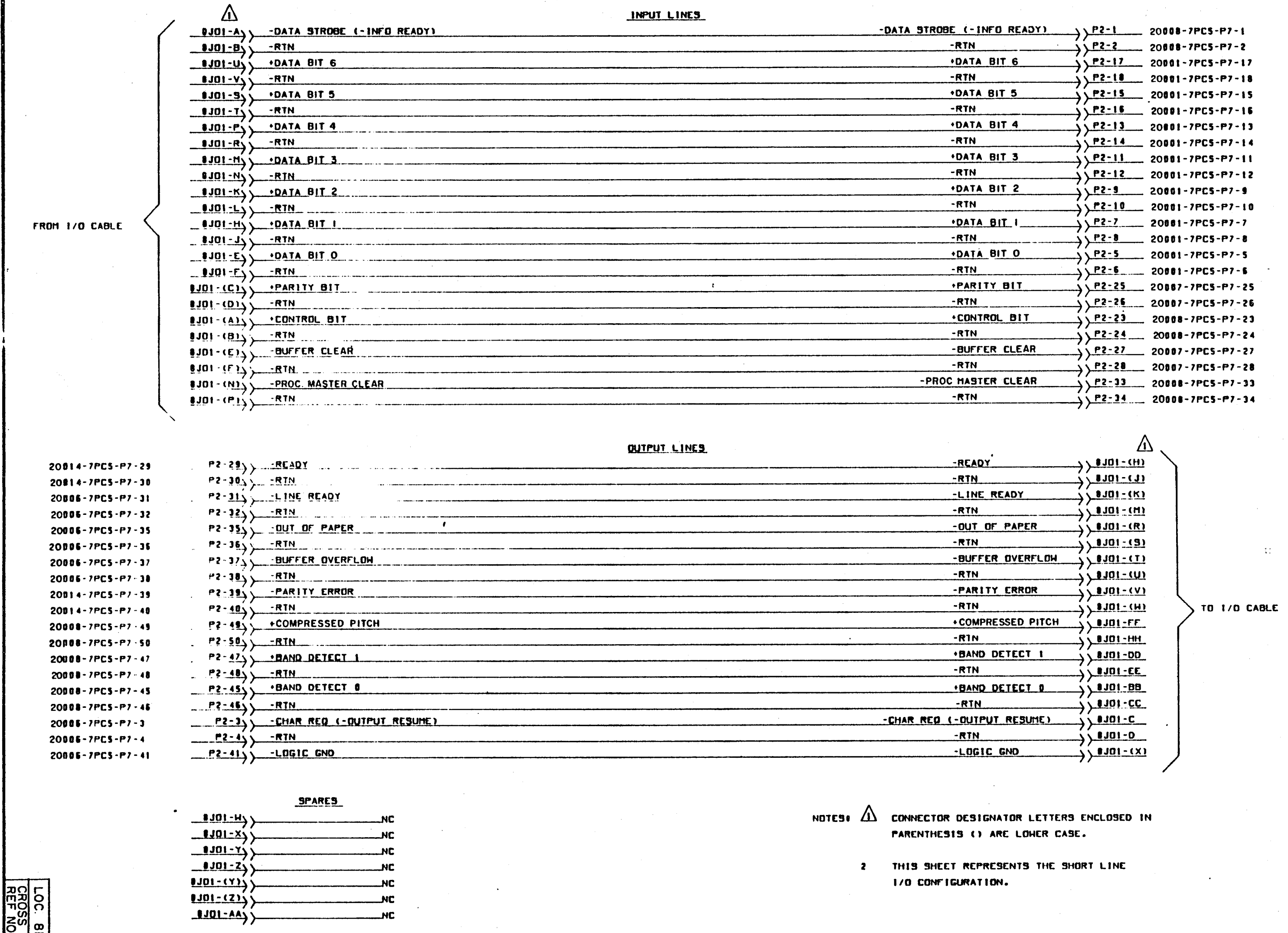
OEM INTERFACE

CODE IDENT DATA BASE 01	C	DWG NO	REV B
LOC 7PC5		SHEET 26	CROSS REF NO 20011


10209-7PC6-P8-1 P2-1 +CHNL 1 NC
10209-7PC6-P8-7 P2-7 +8 LPI NC
10209-7PC6-P8-11 P2-11 +CHNL 3 NC
10209-7PC6-P8-2 P2-2 GND
10209-7PC6-P8-8 P2-8 GND
10209-7PC6-P8-12 P2-12 GND
+PULL UP 4 BT 20010
20013 AN +TEST PRINT
20014 AY -TROUBLE
20008 Y +CYCLE IN PROGRESS
STOP/START FF
START/STOP ENABLE FF
+5V
R7 4.3K
173 E2
S CD C R
7432 H4
141 J4
141 H3
7432 F1
+STOP BS 20013
15
+START AK 20009
00201-7PC2-P2-3 P4-3 +START LEVEL
00201-7PC2-P2-4 P4-4 -RTN
201 E5
201 E3
20013 AD -TEST PRINT
20013 AP -ERROR
20013 AT -T1
PAPER OUT FF
20008 AZ -INH
7432 H4
7432 H5
141 J4
140 K4
146 N7
00113-7PC1-P5-27 P5-27 -OOP
00113-7PC1-P5-28 P5-28 -RTN
-PAPER OUT AL 20006 20013 20014
20004 P -NO VFU
201 E5
10209-7PC6-P8-3 P2-3 +BOF
10209-7PC6-P8-4 P2-4 -RTN
146 F5
EXT STOP O/S
.01
R16 4.3K
+5V
74221 G4
30 USEC
NC
146 F5
-EXT START PULSE P4-21 00201-7PC2-P2-21
-RTN P4-22 00201-7PC2-P2-22
EXT START O/S
.01
R14 4.3K
+5V
74221 G4
30 USEC
146 F5
+5V
R17 4.3K
-EXT START AM 20009
-EXT START PULSE P4-23 00201-7PC2-P2-23
-RTN P4-24 00201-7PC2-P2-24
LOC. 7PC5
CROSS REF NO. 20012
OEM INTERFACE
CODE IDENT DATA BASE 01
C
DWG NO
REV A
LOC 7PC5
SHEET 27
CROSS REF NO 20012
4 3 2 1
D C B A


TEST PRINT SW
TEST PRINT SW LATCH
J1
SW2-1
+5V
R15 4.3K
ENAB TEST FF
175 K3
TEST PRINT FF
201 K1
NC
00701-6PC1-P4-22 P1-22 -TP SW-C
00701-6PC1-P4-23 P1-23 -TP SW-NO
00701-6PC1-P4-21 P1-21 -TP SW-NC
146 L2
-TEST PRINT
AD 20006 20008 20009 20012 20014
+TEST PRINT
AN 20012 20006 20007
20012 BS +STOP
20011 BA +BUSY
20012 AL -PAPER OUT
20014 AY -TROUBLE
20008 CD -(RST OR INH)
213 J1
140 K2
-ERROR
AP 20012
TP STROBE ENAB FF
TP STROBE DLY FF
TP STROBE FF
156 M1
156 L1
201 L5
20010 BD -ACK
20010 BC +ACK
+CLK 2
AR 20009 20010
TP SINGLE SP FF
175 J2
+SELECT SS
AS 20006
20011 AI +FULL
R8 4.3K
T TIME FF
+PULL UP 3
BV 20009 20010
21 -T1
AT 20012
6
00212-7PC2-P2-15 P4-15 +CLK 2 (2MHZ)
00212-7PC2-P2-16 P4-16 -RTN
146 J5
210 K5
20008 AO +PBS STROBE
7432 H5
-STROBE P5-17 00105-7PC1-P5-17
-RTN P5-18 00105-7PC1-P5-18
+STROBE DS 20011
7 ASSEMBLED FOR TEST PRINT OPTION ONLY
8 J1 ASSEMBLED FOR NO TEST PRINT ONLY
LOC. 7PC5
CROSS REF NO. 20013
OEM INTERFACE
CODE IDENT DATA BASE 01
C
DWG NO
REV A
LOC 7PC5
SHEET 20
CROSS REF NO 20013
A
B
C
D
1
2
3
4
C 9/7/77


LONG LINE XMTR
X/Y 8830 E7
+READY
-READY
P5-30 20102-8PC1-P2-30
P5-29 20102-8PC1-P2-29
20009 BO +I/O READY
SHORT LINE XMTR
& 210 D8
-READY
P7-29 20101-8PC1-P2-29
-RTN P7-30 20101-8PC1-P2-30
-PARITY ERROR
P7-39 20101-8PC1-P2-39
P7-40 20101-8PC1-P2-40
-INHIBIT CONTROL CODE
AV 20004
X/Y 8830 C4
+PARITY ERROR
-PARITY ERROR
P5-40 20102-8PC1-P2-40
P5-39 20102-8PC1-P2-39
20009 BH -LINE READY
20010 BI -PARITY FAULT
20009 CF +PB9 STROBE FF
& 140 D3
1 140 D3
& 140 E6
PARITY ERROR FF
175 E2
S CD C R
-PARITY LAMP
P1-19 00701-6PC1-P4-19
+5V
P1-26 00701-6PC1-P4-26
R3 120 1/2 W
& 75453 B2
& 75453 B1
20010 BF -(MC + BC)
20013 AD -TEST PRINT
-TEST PRINT LAMP 1
P1-25 00701-6PC1-P4-25
-TEST PRINT LAMP 2
P1-24 00701-6PC1-P4-24
R5 120 1/2 W
R4 120 1/2 W
P1-20 00701-6PC1-P4-20
20012 AL -PAPER OUT
10209-7PC6-P8-12 P2-12 -EVFU INSTALLED
1 146 J5
R13 4.3K
10209-7PC6-P8-14 P2-14 -RTN
-PAPER OUT LAMP
P1-18 00701-6PC1-P4-18
R2 120 1/2 W
00201-7PC2-P2-1 P4-1 -FAULT
00201-7PC2-P2-2 P4-2 -RTN
1 213 L4
-TROUBLE
AY 20012 20013
RUNAWAY FF
10209-7PC6-P8-5 P2-5 +PAPER FAULT
& 141 J4
1 140 K4
10209-7PC6-P8-6 P2-6 -RTN
10209-7PC6-P8-17 P2-17 +STATUS BIT 2
10209-7PC6-P8-18 P2-18 -RTN
& 75453 B3
-RUNAWAY LAMP
P1-11 00701-6PC1-P4-11
R20 120 1/2 W
20008 X -MC
P1-12 00701-6PC1-P4-12
10209-7PC6-P8-19 P2-19 +STATUS BIT 3
10209-7PC6-P8-20 P2-20 -RTN
& 224 G3
10209-7PC6-P8-15 P2-15 +STATUS BIT 1
10209-7PC6-P8-16 P2-16 -RTN
10209-7PC6-P8-13 P2-13 +STATUS BIT 0
10209-7PC6-P8-14 P2-14 -RTN
NOTES:
1 ASSEMBLED FOR SHORT LINE I/O ONLY
5 ASSEMBLED FOR LONG LINE I/O ONLY
OEM INTERFACE
CODE IDENT
DATA BASE 01
C
DWG NO
REV A
LOC 7PC5
SHEET 29
CROSS REF NO 20014
LOC. 7PC5
CROSS REF NO. 20014
A B C D
1 2 3 4



INPUT LINES

8J01-A	-DATA STROBE (-INFO READY)	P2-1	20008-7PC5-P7-1
8J01-B	-RTN	P2-2	20008-7PC5-P7-2
8J01-U	+DATA BIT 6	P2-17	20001-7PC5-P7-17
8J01-V	-RTN	P2-18	20001-7PC5-P7-18
8J01-S	+DATA BIT 5	P2-15	20001-7PC5-P7-15
8J01-T	-RTN	P2-16	20001-7PC5-P7-16
8J01-P	+DATA BIT 4	P2-13	20001-7PC5-P7-13
8J01-R	-RTN	P2-14	20001-7PC5-P7-14
8J01-M	+DATA BIT 3	P2-11	20001-7PC5-P7-11
8J01-N	-RTN	P2-12	20001-7PC5-P7-12
8J01-K	+DATA BIT 2	P2-9	20001-7PC5-P7-9
8J01-L	-RTN	P2-10	20001-7PC5-P7-10
8J01-H	+DATA BIT 1	P2-7	20001-7PC5-P7-7
8J01-J	-RTN	P2-8	20001-7PC5-P7-8
8J01-E	+DATA BIT 0	P2-5	20001-7PC5-P7-5
8J01-F	-RTN	P2-6	20001-7PC5-P7-6
8J01-(C)	+PARITY BIT	P2-25	20007-7PC5-P7-25
8J01-(D)	-RTN	P2-26	20007-7PC5-P7-26
8J01-(A)	+CONTROL BIT	P2-23	20008-7PC5-P7-23
8J01-(B)	-RTN	P2-24	20008-7PC5-P7-24
8J01-(E)	-BUFFER CLEAR	P2-27	20007-7PC5-P7-27
8J01-(F)	-RTN	P2-28	20007-7PC5-P7-28
8J01-(N)	-PROC MASTER CLEAR	P2-33	20008-7PC5-P7-33
8J01-(P)	-RTN	P2-34	20008-7PC5-P7-34

OUTPUT LINES

20014-7PC5-P7-29	P2-29	-READY	8J01-(H)
20014-7PC5-P7-30	P2-30	-RTN	8J01-(J)
20006-7PC5-P7-31	P2-31	-LINE READY	8J01-(K)
20006-7PC5-P7-32	P2-32	-RTN	8J01-(M)
20006-7PC5-P7-35	P2-35	-OUT OF PAPER	8J01-(R)
20006-7PC5-P7-36	P2-36	-RTN	8J01-(S)
20006-7PC5-P7-37	P2-37	-BUFFER OVERFLOW	8J01-(T)
20006-7PC5-P7-38	P2-38	-RTN	8J01-(U)
20014-7PC5-P7-39	P2-39	-PARITY ERROR	8J01-(V)
20014-7PC5-P7-40	P2-40	-RTN	8J01-(W)
20008-7PC5-P7-49	P2-49	+COMPRESSED PITCH	8J01-FF
20008-7PC5-P7-50	P2-50	-RTN	8J01-HH
20008-7PC5-P7-47	P2-47	+BAND DETECT 1	8J01-DD
20008-7PC5-P7-48	P2-48	-RTN	8J01-EE
20008-7PC5-P7-45	P2-45	+BAND DETECT 0	8J01-BB
20008-7PC5-P7-46	P2-46	-RTN	8J01-CC
20006-7PC5-P7-3	P2-3	-CHAR REQ (-OUTPUT RESUME)	8J01-C
20006-7PC5-P7-4	P2-4	-RTN	8J01-D
20006-7PC5-P7-41	P2-41	-LOGIC GND	8J01-(X)

SPARES

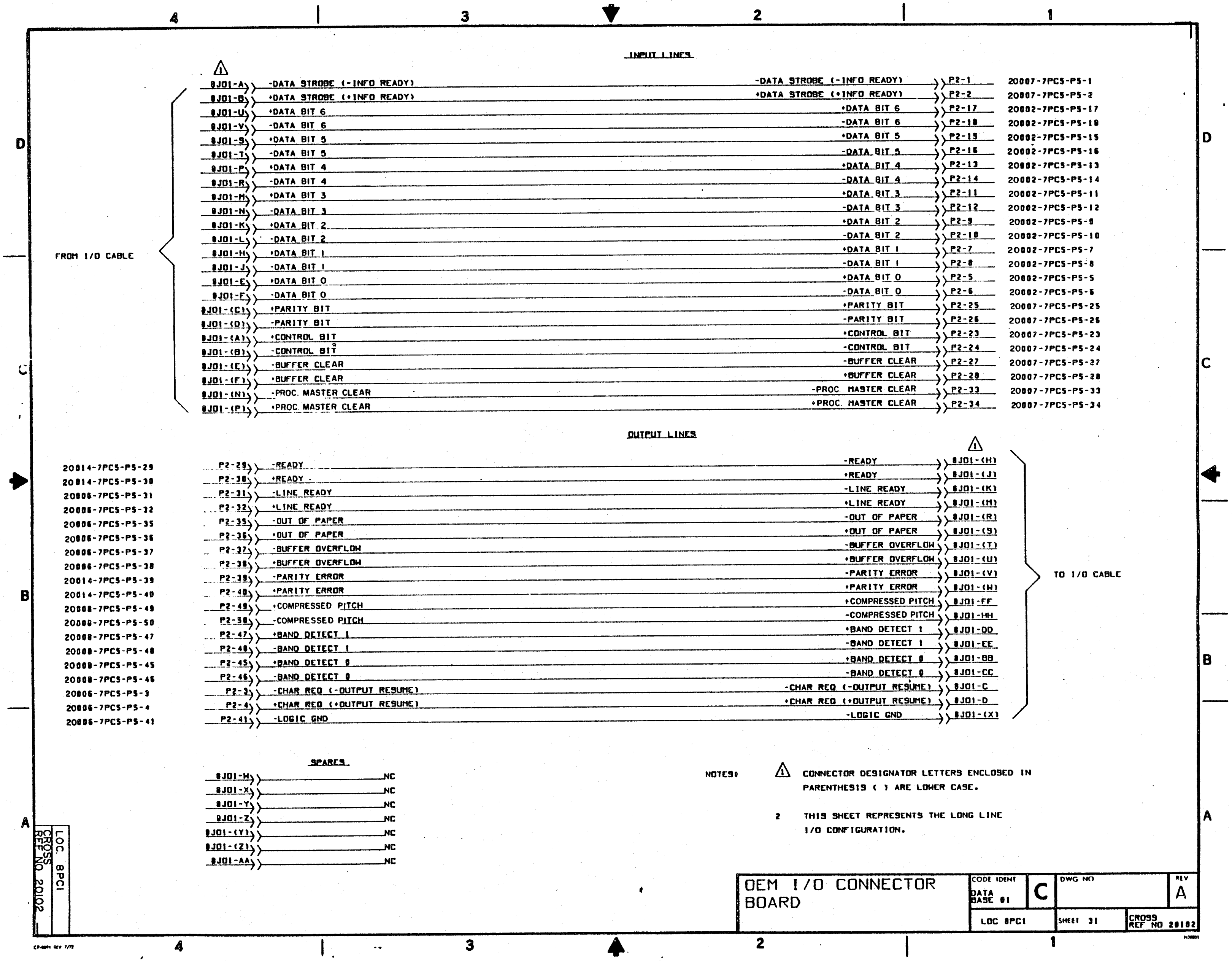
8J01-W	NC
8J01-X	NC
8J01-Y	NC
8J01-Z	NC
8J01-(Y)	NC
8J01-(Z)	NC
8J01-AA	NC

NOTES: ⚠1 CONNECTOR DESIGNATOR LETTERS ENCLOSED IN PARENTHESIS ( ) ARE LOWER CASE.

2 THIS SHEET REPRESENTS THE SHORT LINE I/O CONFIGURATION.

OEM I/O CONNECTOR BOARD	CODE IDENT DATA BASE 01	C	DWG NO		REV A
	LOC 8PC1		SHEET 38	CROSS REF NO 20101	

LOC. 8PC1
CROSS REF NO 20101



INPUT LINES

8J01-A	-DATA STROBE (-INFO READY)	-DATA STROBE (-INFO READY)	P2-1	20007-7PCS-PS-1
8J01-B	+DATA STROBE (+INFO READY)	+DATA STROBE (+INFO READY)	P2-2	20007-7PCS-PS-2
8J01-U	+DATA BIT 6	+DATA BIT 6	P2-17	20002-7PCS-PS-17
8J01-V	-DATA BIT 6	-DATA BIT 6	P2-18	20002-7PCS-PS-18
8J01-S	+DATA BIT 5	+DATA BIT 5	P2-15	20002-7PCS-PS-15
8J01-T	-DATA BIT 5	-DATA BIT 5	P2-16	20002-7PCS-PS-16
8J01-P	+DATA BIT 4	+DATA BIT 4	P2-13	20002-7PCS-PS-13
8J01-R	-DATA BIT 4	-DATA BIT 4	P2-14	20002-7PCS-PS-14
8J01-M	+DATA BIT 3	+DATA BIT 3	P2-11	20002-7PCS-PS-11
8J01-N	-DATA BIT 3	-DATA BIT 3	P2-12	20002-7PCS-PS-12
8J01-K	+DATA BIT 2	+DATA BIT 2	P2-9	20002-7PCS-PS-9
8J01-L	-DATA BIT 2	-DATA BIT 2	P2-10	20002-7PCS-PS-10
8J01-H	+DATA BIT 1	+DATA BIT 1	P2-7	20002-7PCS-PS-7
8J01-J	-DATA BIT 1	-DATA BIT 1	P2-8	20002-7PCS-PS-8
8J01-E	+DATA BIT 0	+DATA BIT 0	P2-5	20002-7PCS-PS-5
8J01-F	-DATA BIT 0	-DATA BIT 0	P2-6	20002-7PCS-PS-6
8J01-(C)	+PARITY BIT	+PARITY BIT	P2-25	20007-7PCS-PS-25
8J01-(D)	-PARITY BIT	-PARITY BIT	P2-26	20007-7PCS-PS-26
8J01-(A)	+CONTROL BIT	+CONTROL BIT	P2-23	20007-7PCS-PS-23
8J01-(B)	-CONTROL BIT	-CONTROL BIT	P2-24	20007-7PCS-PS-24
8J01-(E)	-BUFFER CLEAR	-BUFFER CLEAR	P2-27	20007-7PCS-PS-27
8J01-(F)	+BUFFER CLEAR	+BUFFER CLEAR	P2-28	20007-7PCS-PS-28
8J01-(N)	-PROC. MASTER CLEAR	-PROC. MASTER CLEAR	P2-33	20007-7PCS-PS-33
8J01-(P)	+PROC. MASTER CLEAR	+PROC. MASTER CLEAR	P2-34	20007-7PCS-PS-34

OUTPUT LINES

20014-7PCS-PS-29	P2-29	-READY	-READY	8J01-(H)
20014-7PCS-PS-30	P2-30	+READY	+READY	8J01-(J)
20006-7PCS-PS-31	P2-31	-LINE READY	-LINE READY	8J01-(K)
20006-7PCS-PS-32	P2-32	+LINE READY	+LINE READY	8J01-(M)
20006-7PCS-PS-35	P2-35	-OUT OF PAPER	-OUT OF PAPER	8J01-(R)
20006-7PCS-PS-36	P2-36	+OUT OF PAPER	+OUT OF PAPER	8J01-(S)
20006-7PCS-PS-37	P2-37	-BUFFER OVERFLOW	-BUFFER OVERFLOW	8J01-(T)
20006-7PCS-PS-38	P2-38	+BUFFER OVERFLOW	+BUFFER OVERFLOW	8J01-(U)
20014-7PCS-PS-39	P2-39	-PARITY ERROR	-PARITY ERROR	8J01-(V)
20014-7PCS-PS-40	P2-40	+PARITY ERROR	+PARITY ERROR	8J01-(W)
20008-7PCS-PS-49	P2-49	+COMPRESSED PITCH	+COMPRESSED PITCH	8J01-FF
20008-7PCS-PS-50	P2-50	-COMPRESSED PITCH	-COMPRESSED PITCH	8J01-HH
20008-7PCS-PS-47	P2-47	+BAND DETECT 1	+BAND DETECT 1	8J01-DD
20008-7PCS-PS-48	P2-48	-BAND DETECT 1	-BAND DETECT 1	8J01-EE
20008-7PCS-PS-45	P2-45	+BAND DETECT 0	+BAND DETECT 0	8J01-BB
20008-7PCS-PS-46	P2-46	-BAND DETECT 0	-BAND DETECT 0	8J01-CC
20006-7PCS-PS-3	P2-3	-CHAR REQ (-OUTPUT RESUME)	-CHAR REQ (-OUTPUT RESUME)	8J01-C
20006-7PCS-PS-4	P2-4	+CHAR REQ (+OUTPUT RESUME)	+CHAR REQ (+OUTPUT RESUME)	8J01-D
20006-7PCS-PS-41	P2-41	-LOGIC GND	-LOGIC GND	8J01-(X)

SPARES

8J01-W	NC
8J01-X	NC
8J01-Y	NC
8J01-Z	NC
8J01-(Y)	NC
8J01-(Z)	NC
8J01-AA	NC

NOTES:

1. CONNECTOR DESIGNATOR LETTERS ENCLOSED IN PARENTHESIS ( ) ARE LOWER CASE.
2. THIS SHEET REPRESENTS THE LONG LINE I/O CONFIGURATION.

OEM I/O CONNECTOR BOARD	CODE IDENT DATA BASE 01	C	DWG NO	REV A
	LOC 8PC1		SHEET 31	CROSS REF NO 20102

LOC. 8PC1
CROSS REF NO 20102

REVISION PACKET INSTRUCTION SHEET

Title: Field Service Manual Publication No. 44677820

REVISION 2

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Revised to incorporate corrections and Engineering Change Orders (ECO):
PH15755 Setup and adjustment specification change, PH15789-Correction logic set, PH15867-New 7PC3 board, PH15887- Logo Change (NCR), PH15912- Platen replacement

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete

Cover
Revision Record
v, vi, vii, viii
1-1, 1-2, 1-5, 1-6,
2-5, 2-6, 2-7, 2-8,
2-9, 2-10, 2-11, 2-12,
2-13, 2-14, 2-15, 2-16,
2-17, 2-18, 2-19, 2-20,
2-23, 2-24, 2-29, 2-30,
2-31, 2-32, 2-45, 2-46,
2-49, 2-50, 2-51, 2-52,
2-53, 2-54, 2-59, 2-60,
3-1, 3-2, 3-65, 3-66, 3-67
3-68, 3-71, 3-72, 3-73, 3-74,
3-75, 3-76, 3-77, 3-78, 3-81,
3-82, 3-131, 3-132, 3-137,
3-138

Add

Cover
Revision Record
v, vi, vii, viii
1-1, 1-2, 1-5, 1-6,
2-5, 2-6, 2-7, 2-8,
2-9, 2-10, 2-11,
2-12, 2-13, 2-14,
2-15, 2-16, 2-17,
2-18, 2-19, 2-20,
2-23, 2-24, 2-29,
2-30, 2-31, 2-32,
2-45, 2-46, 2-49,
2-50, 2-51, 2-52,
2-53, 2-54, 2-59,
2-60, 2-82A, 2-82B,
3-1, 3-2, 3-65, 3-66,
3-67, 3-68, 3-71,
3-72, 3-73, 3-74,
3-75, 3-76, 3-77,
3-78, 3-81, 3-82,
3-131, 3-132, 3-137,
3-138

Delete

Add

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY Kert Wolfe Kert Wolfe DATE 3/79

REVISION PACKET INSTRUCTION SHEET

Title: NCR 6420 Field Service Manual Publication No. 44677820

REVISION 3

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to incorporate corrections.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
cover	cover		
Revision Record	Revision Record		
2-7,2-8,	2-7,2-8,		
2-9,2-10,	2-9,2-10,		
2-45,2-46,	2-45,2-46,		
2-47,2-48,	2-47,2-48,		
2-61,2-62,	2-61,2-62		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J. Walter APPROVED BY Kert Wolfe DATE 4-79

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 4

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate corrections and ECO's: PH15962-Flight time tool, PH15966-Correct wiring diagram D. C. Distribution, PH15998-Designate XFMR inputs, PH16003-Digital fault indicator, PH16156-Oscillator Horizontal & Vert motion PCB.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

<u>Revise Your Manual As Follows:</u>

Delete	Add	Delete	Add
cover	cover		
Revision Record	Revision Record		
2-2, 2-84, 2-87, 2-92, 3-1, 3-12, 3-52, 3-54, 3-57, 3-58, 3-78, 3-91, 3-92	2-2, 2-84, 2-87, 2-92, 3-1, 3-12, 3-52, 3-54, 3-57, 3-58, 3-78, 3-91, 3-92, 3-92A, 3-92B, 3-92C/3-92D		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY JM Derkaz DATE 7-79

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 5

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate ECO's: PH16127- Update logic, PH16201- Servo Amp Assy, PH16225- Hammer Dr. Assy, PH16273- Bearings.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-7, 2-9, 2-10,	2-7, 2-9, 2-10,		
2-49, 2-51, 2-53,	2-49, 2-51, 2-53,		
2-73, 2-74,	2-73, 2-74,		
	2-74A/2-74B		
3-1, 3-77, 3-78,	3-1, 3-77, 3-78,		
3-85, 3-137, 3-138,	3-85, 3-137, 3-138,		
3-139.	3-139.		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J S. Walter APPROVED BY JM Derkaz DATE 10-79

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 6

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate corrections and ECO's: PH16129- belt deflection, PH16460- Printhead electronics PCB.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
cover	cover		
Revision Record	Revision Record		
2-1, 2-2, 2-5,	2-1, 2-22, 2-5,		
2-6, 2-11, 2-12,	2-6, 2-11, 2-12,		
2-15, 2-17, 2-22,	2-15, 2-17, 2-22,		
2-25, 2-26, 2-27,	2-25, 2-26, 2-27,		
2-28, 2-29, 2-33,	2-28, 2-29, 2-33,		
2-34, 2-35, 2-36,	2-34, 2-35, 2-36,		
2-37, 2-38, 2-39,	2-37, 2-38, 2-39,		
2-40, 2-41, 2-42,	2-40, 2-41, 2-42,		
2-43/2-44,	2-43/2-44,		
2-45/2-46, 2-54,	2-45/2-46, 2-54,		
2-55, 2-66,	2-55, 2-66,		
2-95/2-96, 3-1,	2-95/2-96, 3-1,		
3-35, 3-73, 3-101,	3-35, 3-73, 3-101,		
3-113,	3-113		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY Jim Walter APPROVED BY JM Derkaz DATE JAN 80

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 7

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate corrections and ECO's: PH16153-In line fuse, PH16224- level maintenance, PH16534- Line filter resistor.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete
cover
Revision Record
vi, vii
1-1, 1-5, 1-6 1-7/1-8
2-5, 2-6,2-7,2-8,
2-9, 2-22, 2-45/2-46,
2-47, 2-49, 2-51,
2-53, 2-57, 2-58,
2-84, 2-85, 2-86,
2-87, 2-91, 2-92,
3-1, 3-3, 3-11,
3-78, 3-83, 3-86,
3-88

Add
cover
Revision Record
vi, vii,
1-1, 1-5, 1-6, 1-7/1-8,
2-5,2-6,2-7,2-8,
2-9, 2-10A, 2-10B,
2-22, 2-45/2-46,
2-47, 2-49, 2-51,
2-53, 2-57, 2-58,
2-58A,2-58B,2-58C,
2-58D, 2-84, 2-85,
2-86, 2-87, 2-91,
2-92, 3-1, 3-3, 3-11
3-78, 3-83, 3-86,
3-92B, 3-92C, 3-92D,
3-92E, 3-92F, 3-92G,
3-92H, 3-92I, 3-92J,
3-92K, 3-92L, 3-92M,
3-92N, 3-92O/3-92P

Delete

Add

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J. S Walter APPROVED BY JM Derkaz DATE APR., 80

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 8

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Revised to correct Rev. 7 pages in error

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
3-77, 3-83, 3-84 3-85	3-77, 3-83, 3-84, 3-85		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY ______ APPROVED BY JM Derkaz DATE 4-29-80

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 9

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate C.E. corrections (Fault Isolation) & ECO PH16446-SW Detect Adj.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
cover Revision Record	cover Revision Record		
vi,vii, 2-41, 2-42, 2-58 2-58D, 2-83, 2-85, 2-87, 2-88, 2-89,2-90, 2-91, 2-92, 2-93, 2-94, 2-95/2-96	vi, vii, 2-41, 2-42, 2-58, 2-58D, 2-83, 2-85, 2-87, 2-88, 2-89, 2-90, 2-91, 2-92, 2-93, 2-94, 2-95, 2-96, 2-97, 2-98, 2-99/100		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY Christoph Lawrence APPROVED BY JM Derkaz DATE July, 80

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 10

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate ECO's: PH16571-New ribbon system, PH16800-Update logic, EECO PH16894-Add faston Adaptor, EECO PH16931-PHE BD (44680937), EECO PH16967-PHE BD (44680938), EECO PH17001-To Prevent crossfire, EECO PH17008-PHE BD (44684462).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-20, 2-22, 2-38,	2-20, 2-22, 2-38,		
2-39, 2-40, 2-41,	2-39, 2-40, 2-41,		
2-42, 2-43, 2-44,	2-42, 2-43, 2-44,		
2-58C, 3-11, 3-22,	2-58C, 3-11, 3-22,		
3-71, 3-77, 3-80,	3-71, 3-77, 3-80,		
3-92B, 3-92D, 3-92E,	3-92B, 3-92D, 3-92E,		
3-92F, 3-92G, 3-92H,	3-92F, 2-92G, 2-92H,		
3-92I, 3-92J, 3-92K,	3-92I, 3-92J, 3-92K,		
3-92L	3-92L		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY JM Derkaz DATE OCT., 80

REVISION PACKET INSTRUCTION SHEET

Title NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 11

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE:

Revised to correct error in "C. E. Fault Check" chart.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual as Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-87	2-87		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY J. M. Derkaz DATE 10-28-80

REVISION PACKET INSTRUCTION SHEET

Title NCR PB/PBS BAND PRINTER Publication No. 44677820

REVISION 12

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate ECO: PH17168-To reduce sense to tach. performance variations (PHE 44685119).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual as Follows:

Delete	Add	Delete	Add
cover Revision Record	cover Revision Record		
2-58C, 2-58D, 2-95, 3-92B, 3-92I	2-58C, 2-58D, 2-95, 3-92B, 3-92I		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

J.M. Derkaz JAN., 81

ORIGINATED BY APPROVED BY J.M. Derkaz DATE

REVISION PACKET INSTRUCTION SHEET

Title NCR PB/PBS (TTL) BAND PRINTER Publication No. 44677820

REVISION 13

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate ECO's: PH17304-Revised Adj. spec., PH17333-Correct terminal No's of power supply.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual as Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-40,2-49,2-58B, 2-63,2-65,2-76, 3-1,3-83	2-40,2-49,2-58B, 2-63,2-65,2-76, 3-1,3-83		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY Jm Derkaz J. M. Derkaz DATE APR., 81

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS (TTL) BAND PRINTER Publication No. 44677820

REVISION 14

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate ECO's: PH17276-Release Hammer Driver 44681993, PH17465-Logic Correction Sheet 73, EECO PH17518-Release Tach (for reliability), EECO PH17574-Remove 36V from switching post.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
cover	cover		
Revision Record	Revision Record		
2-35, 2-36, 2-58C, 2-58D, 2-78, 3-85, 3-86,3-87,3-88,3-89	2-35,2-36,2-38C,2-58D 3-78,3-85,3-86,3-87, 3-88,3-89		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY J M Derkaz DATE July 81

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS FIELD SERVICE Publication No. 44677820

REVISION 15

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate EECO PH17794-Rework 44681993 Board to 44681994. Incorporate ECO's: PH17587-Inactivate Servo Amp Bd. 44674251, replace with 44674252. PH17768-Replace Pot. Also, changed PHE Board set up adjustment procedures for 3, 7 and 11 pot boards.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
vi,vii,1-2,1-5,1-6 1-7/1-8,2-5,2-6, 2-7,2-8,2-9,2-10, 2-10A, 2-10B, 2-45, 2-46,2-47,2-49, 2-51, 2-53, 2-58, 2-58A, 2-58B, 2-58C, 2-58D, 2-90, 2-91, 3-1, 3-77, 3-82, 3-83, 3-85	vi,vii,1-2,1-5,1-6 1-7/1-8,2-5,2-6, 2-7,2-8,2-9,2-10, 2-10A, 2-10B, 2-45, 2-46,2-47,2-49, 2-51, 2-53, 2-58, 2-58A, 2-58B, 2-58C, 2-58D, 2-58E/F, 2-90, 2-91, 3-1, 3-77, 3-82, 3-83, 3-85		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY H. Starr DATE OCT., 81

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS Field Service Publication No. 44677820

REVISION 16

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to incorporate corrections and ECO PH17264-Release PHE Board (44685945).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
1-3,1-4,1-5,	1-3,1-4,1-5,1-7/1-8,		
1-7/1-8,2-2,	2-2,2-8,2-11,2-14,		
2-8,2-11,2-14,	2-15,2-16,2-16A/2-16B,		
2-15,2-16,2-17,	2-17,2-19,2-25,2-26,		
2-19,2-25,2-26,	2-27,2-28,2-29,2-35,		
2-27,2-28,2-29,	2-41,2-47, 2-49,2-51,		
2-35,2-41,2-47,	2-56,2-63,2-64,2-65,		
2-49,2-51,2-56,	2-67,2-68, 3-1 3-3,		
2-63,2-64,2-65,	3-92B,3-92C, 3-92D,		
2-67,2-68,3-1,3-3,	3-92E,3-92F,3-92G,		
3-92B,3-92C,3-92D,	3-92H,3-92I, 3-92J,3-92K,		
3-92E,3-92F,3-92G,	3-92L, 3-92M,3-92 N,		
3-92H,3-92I,3-92J,	3-92O, 3-92P		
3-92K,3-92L,3-92M,			
3-92N,3-92O			

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY J. Albee DATE JAN., 82

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS 360/720/1130 TTL BAND PRINTER **Publication No.** 44677820

REVISION 17

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate C.E. Corrections.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	**Add**	**Delete**	**Add**
cover	cover		
Revision Record	Revision Record		
2-46, 3-40, 3-44,	2-46,3-40,3-44,		
3-45, 3-49, 3-55,	3-45,3-49,3-55,		
3-56,3-66, 3-69,	3-56,3-66,3-69,		
3-70, 3-71, 3-72,	3-70,3-71,3-72,		
3-73, 3-74, 3-75,	3-73,3-74,3-75,		
3-79, 3-81, 3-86,	3-79,3-81,3-86,		
3-87, 3-88, 3-89,	3-87,3-88,3-89,		
3-92D,3-92H,3-92I,	3-92D,3-92H,3-92I,		
3-92J,3-92~~K,~~3-92L,,	3-92J,3-92K,3-92L,		
3-92M,3-92N,	3-92M,3-92N.		
3-97/3-98, 3-110,	3-97/3-98, 3-110,		
3-111, 3-115, 3-118,	3-111, 3-115,3-118,		
3-121, 3-122, 3-132,	3-121,3-122,3-132,		
3-136, 3-137, 3-138	3-136, 3-137,3-138,		
3-139,3-140,3-141,	3-139,3-140,3-141,		
3-144, 3-145,	3-144, 3-145,		
3-147/3-148	3-147/3-148		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY ______ **APPROVED BY** Jm Derkaz JM Derkaz **DATE** APR., 82

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS (TTL) BAND PRINTER Publication No. 44677820

REVISION: 19

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH16867-To provide a more reliable servo Power Amp PCB, PH17947-To update XMFR VDE Reqmt's.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

3-1, 3-3, 3-11, 3-77

Add Pages:

3-1,3-3, 3-10A/3-10B, 3-11, 3-77

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. Derkaz DATE: OCT., 82

REVISION PACKET INSTRUCTION SHEET

Title: NCR 6420-0101/0201/0301/0401 (TTL) BAND Publication No. 44677820

REVISION: 20

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH18305-Detection of ribbon fault is inhibited until top of forms PH18770-Update logic set.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Revision Record,
cover, 2-98, 3-3, 3-4, 3-10A/3-10B, 3-11, 3-12, 3-52, 3-54, 3-61, 2-92G,
9-22H, 3-92J, 3-92K, 3-92O, 3-92P, 3-92Q, 3-92R, 3-92S, 3-92T, 3-92U,
3-92V

Add Pages:

Revision Record,
cover, 2-98, 3-3, 3-4, 3-10A, 3-10B, 3-11, 3-12, 3-52, 3-54, 3-61, 2-92G,
2-93H, 3-92J, 3-92K, 3-92O, 3-92P, 3-92Q, 3-92R, 3-92S, 3-92T, 3-92U,
3-92V

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. DerkaZ DATE: APR., 83

REVISION PACKET INSTRUCTION SHEET

Title: NCR PB/PBS 300/600/1130 LPM (TTL) BAND Publication No. 44677820

REVISION: 21

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH17860-Release platen kit, PH19142/PH19143-Chg. 300/600 LPM printer capacitor assy's from 80,000 MFD. to 120,000 MFD. single cap construction, PH19511-Chg logic to new capacitor assy., PH19570-Add interconnection between ribbon fold sw input & output of paper sw input (Systyme).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:
Cover
Revision Record,
V, 2-82A, 2-82B, 3-12, 3-53, 3-57

Add Pages:
Cover
Revision Record,
V, 2-82A, 2-82B, 3-12, 3-53, 3-57

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. DERKAZ DATE: OCT 83

REVISION PACKET INSTRUCTION SHEET

Title: FIELD SERVICE MANUAL Publication No. 44677818

REVISION B

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Revised to incorporate corrections and Engineering Change Orders (ECO): PH15755 Setup and adjustment specification change. PH15789-Correct logic set, PH15867 New 7PC3 board, PH15912- Platen replacement.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete

Revision Record

v, vi , 1-1, 1-2,
1-5, 1-6, 2-5, 2-6,
2-7, 2-8, 2-9, 2-10,
2-11, 2-12, 2-13,
2-14, 2-15, 2-16,
2-17, 2-18, 2-19,
2-20, 2-23, 2-24,
2-29, 2-30, 2-31, 2-32,
2-45, 2-46, 2-49, 2-50,
2-51, 2-52, 2-53, 2-54,
2-59, 2-60,----------
3-1, 3-2, 3-65, 3-66,
3-67, 3-68, 3-71, 3-72,
3-73, 3-74, 3-75, 3-76,
3-77, 3-78, 3-81, 3-82,
3-131, 3-132, 3-137,
3-138

Add

Revision Record

v, vi, 1-1, 1-2,
1-5, 1-6, 2-5,
2-6, 2-7, 2-8,
2-9, 2-10, 2-11,
2-12, 2-13, 2-14,
2-15, 2-16, 2-17,
2-18,2-19,2-20,
2-23,2-24,2-29,
2-30,2-31,2-32,
2-45, 2-46, 2-49,
2-50, 2-51, 2-52,
2-53, 2-54, 2-59,
2-60, 2-82A, 2-82B,
3-1, 3-2, 3-65, 3-66,
3-67, 3-68, 3-71,
3-72, 3-73, 3-74, 3-75, 3-76,
3-77, 3-78, 3-81, 3-82,
3-131. 3-132, 3-137,
3-138

Delete

Add

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY Kert Wolfe Kert Wolfe DATE 3/79

REVISION PACKET INSTRUCTION SHEET

Title: CDC Field Service Manual Publication No. 44677818

REVISION C

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Revised to incorporate Corrections.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-7,2-8,	2-7,2-8,		
2-9,2-10,	2-9,2-10,		
2-45,2-46,	2-45,2-46,		
2-47,2-48,	2-47,2-48,		
2-61,2-62,	2-61,2-62		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J Walter APPROVED BY K. Wolfe DATE 4-79

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION D

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to incorporate corrections and ECO's: PH15962-Flight time tool, PH15966-Correct wire diagram D.C. Distribution, PH15998-Designate XFMR inputs, PH16003-Digital CE fault indicators, PH16156-Oscillator Horizontal & Vert. PCB.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-2, 2-84, 2-87, 2-92, 3-1, 3-12, 3-52, 3-54, 3-58, 3-78, 3-91, 3-92	2-2, 2-84, 2-87, 2-92, 3-1, 3-12, 3-52, 3-54, 3-58, 3-78, 3-91, 3-92, 3-92A, 3-92B, 3-92C/3-92D.		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J S Walter APPROVED BY J M Derby DATE 7-79

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION E

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate ECO's: PH16127-Update logic, PH16201-Servo Amp Assy, PH16225- Hammer Dr. Assy, PH16273- Bearings.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-7, 2-9, 2-10,	2-7, 2-9, 2-10		
2-49, 2-51, 2-53,	2-49, 2-51, 2-53,		
2-73, 2-74,	2-73, 2-74,		
	2-74A/2-74B,		
3-1, 3-77, 3-78,	3-1, 3-77, 3-78,		
3-85, 3-137, 3-138,	3-85, 3-137, 3-138,		
3-139,	3-139.		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY J. S. Walter APPROVED BY JM Derkaz DATE 10-79

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION F

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate corrections and ECO's: PH16129- connector keyway, PH16239-Flight time tool, PH16322-Tractor belt deflection, PH16460-Print Head Electronics PCB.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-1, 2-2, 2-5,	2-1, 2-2, 2-5,		
2-6, 2-11, 2-12,	2-6, 2-11, 2-12		
2-15, 2-17, 2-22,	2-15, 2-17, 2-22,		
2-25, 2-26, 2-27,	2-25, 2-26, 2-27,		
2-28, 2-29, 2-33,	2-28, 2-29, 2-33,		
2-34, 2-35, 2-36,	2-34, 2-35, 2-36,		
2-37, 2-38, 2-39,	2-37, 2-38, 2-39,		
2-40, 2-41, 2-42,	2-40, 2-41, 2-42,		
2-43/2-44,	2-43/2-44,		
2-45/2-46, 2-54,	2-45/2-46, 2-54,		
2055, 2-66,	2-55, 2-66,		
2-95/2-96, 3-1,	2-95/2-96, 3-1,		
3-35, 3-73, 3-101,	3-35, 3-73, 3-106,		
3-113	3-113		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY Jim Walter APPROVED BY JM Derkaz DATE JAN 80

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION G

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate corrections and ECO's: PH16153- In line fuse, PH16224- level 1 maintenance, PH16534- Line filter resistor.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete

Revision Record
vi, vii, 1-1,
1-5,1-6, 1-7/1-8,
2-5, 2-6, 2-7,
2-8, 2-9, 2-22,
2-45, 2-46, 2-47,
2-49, 2-51, 2-53,
2-57/2-58, 2-84,
2-85, 2-86, 2-87,
2-91, 2-92, 3-1,
3-3, 3-11, 3-78,
3-83, 3-86, 3-88

Add

Revision Record
vi, vii, 1-1,
1-5, 1-6, 1-7/1-8,
2-5, 2-6, 2-7,
2-8, 2-9, 2-10A,
2-10B, 2-22,
2-45/2-46, 2-47,
2-49, 2-51, 2-53,
2-57, 2-58, 2-58A,
2-58B, 2-58C, 2-58D,
2-84, 2-85, 2-86, 2-87,
2-91, 2-92, 3-1, 3-3, 3-11,
3-78, 3-83, 3-86, 3-88,
3-92B, 3-92C, 3-92D,
3-92E, 3-92F, 3-92G,
3-92H, 3-92I, 3-92J, 3-92K,
3-92L, 3-92M, 3-92N,
3-92O/3-92P

Delete

Add

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY JM Derkaz DATE APR., 80

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION H

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to correct Rev. G pages in error

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
3-77, 3-83, 3-84, 3-85	3-77, 3-83, 3-84 3-85		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY JM Derkaz DATE 4-29-80

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION H

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE:
Incorporate ECO's: PH17276-Release hammer driver 44681993, PH17465-Logic correction, EECO PH17518-release Tach. (for reliability)

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-35,2-36,2-58C, 2-58D, 3-78,3-85, 3-86,3-87,3-88, 3-89	2-35,2-36,2-58C, 2-58D,3-78,3-85, 3-86,3-87,3-88, 3-89		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY ____ APPROVED BY JM Derkaz DATE JULY 81

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION: I

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate C.E. Corrections (Fault Isolation), & ECO PH16446-SW Detect Adj.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
vi, vii, 2-41, 2-42,	vi, vii, 2-41, 2-42,		
2-58, 2-58D	2-58, 2-58D,		
2-88, 2-89, 2-90,	2-88, 2-89, 2-90,		
2-91, 2-92, 2-93,	2-91, 2-92, 2-93,		
2-94, 2-95/2-96	2-94, 2-95, 2-96,		
	2-97, 2-98, 2-99/100		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY ____ APPROVED BY JM Derkaz DATE July 80

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION J

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate ECO's: PH16571-New ribbon system, PH16800-Update logic, EECO PH16894- Faston Adaptor., EECO PH16931-PHE BD (44680937), EECO PH16967-PHE BD (44680938), EECO PH17001-To prevent crossfire, EECO PH17008-PHE BD (44684462).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-20, 2-22, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43, 2-44, 2-58C, 3-11, 3-22, 3-71, 3-77, 3-80, 3-92B, 3-92D, 3-92E, 3-92F, 3-92G, 3-92H, 3-92I, 3-92J, 3-92K, 3-92L	2-20, 2-22, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43, 2-44, 2-58C, 3-11, 3-22, 3-71, 3-77, 3-80, 3-92B, 3-92D, 3-92E, 3-92F, 3-92G, 3-92H, 3-92I, 3-92J, 3-92K, 3-92L		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY JM Derkaz DATE OCT., 80

- -

REVISION PACKET INSTRUCTION SHEET

Title CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION K

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to correct error in "C.E. Fault Check" chart

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual as Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-87	2-87		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY JMD APPROVED BY J.M. Derkaz DATE 10-28-80

REVISION PACKET INSTRUCTION SHEET

Title CDC PB/PBS BAND PRINTER Publication No. 44677818

REVISION L

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate ECO: PH17168-To reduce sense to tach. performance variations (PHE 44685119).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual as Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-58C, 2-58D, 2-95, 3-92B, 3-92I	2-58C, 2-58D, 2-95, 3-92B, 3-92I		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY J.M. Derkaz DATE JAN. 81

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION M

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate ECO's: PH17304-Revised Adj. Spec., PH17333-Correct terminal No's of power supply.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-40, 2-49, 2-58B, 2-63, 2-65, 2-76, 3-1, 3-83	2-40, 2-49, 2-58B, 2-63, 2-65, 2-76, 3-1, 3-83		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY ____ APPROVED BY Jim Derkaz JM Derkaz DATE APR., 81

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS Field Service Publication No. 44677818

REVISION O

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Incorporate EECO PH17794-Rework 44681993 Board to 44681994. Incorporate ECO's: PH17587-Inactivate Servo Amp Bd. 44674251, replace with 44674252. PH17768-Replace Pot. Also, changed PHE Board set up adjustment procedures for 3, 7 and 11 pot boards.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
vi, vii, 1-2, 1-5, 1-6, 1-7/1-8, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-10A, 2-10B, 2-45, 2-46, 2-47, 2-49, 2-51, 2-53, 2-58, 2-58A, 2-58B, 2-58C, 2-58D, 2-90, 2-91, 3-1, 3-77, 3-82, 3-83, 3-85	vi, vii, 1-2, 1-5, 1-6, 1-7/1-8, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-10A, 2-10B, 2-45, 2-46, 2-47, 2-49, 2-51, 2-53, 2-58, 2-58A, 2-58B, 2-58C, 2-58D, 2-58E/2-58F, 2-90, 2-91, 3-1, 3-77, 3-82, 3-83, 3-85		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY H. Starr DATE OCT., 81

REVISION PACKET INSTRUCTION SHEET

Title: CDC-PB/PBS FIELD SERVICE Publication No. 44677818

REVISION P

S/N EFFECTIVITY: To update all model printers

REASON FOR CHANGE: Revised to incorporate corrections and ECO PH17264-Release PHE Board (44685945).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
1-3, 1-4, 1-5,	1-3,1-4,1-5,		
1-7/1-8, 2-2,2-8,	1-7/1-8,2-2,		
2-11, 2-14,2-15,	2-8,2-11,2-14,		
2-16,2-17,2-19,	2-15,2-16,		
2-25,2-26,2-27,	2-16A/2-16B,		
2-28,2-29,2-35,	2-17, 2-19,2-25,2-26,		
2-41,2-47,2-49,	2-27,2-28,2-29,2-35,		
2-51,2-56,2-63,	2-41,2-47,2-49,2-51,		
2-64,2-65,2-67,	2-56,2-63,2-64,2-65,		
2-68,3-1,3-3,3-92B,	2-67,2-68,3-1,3-3,		
2-92C, 3-92D, 3-92E,	3-92B, 3-92C, 3-92D,		
3-92F, 3-92G, 3-92H,	3-92E,3-92F,3-92G,		
3-92I, 3-92J, 3-92K,	3-92H,3-92I,3-92J,		
3-92L, 3-92M, 3-92N,	3-92K,3-92L,3-92M,		
3-92O	3-92N,3-92O,3-92P		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY J. Albee DATE JAN. ,82

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS 360/720/1130 TTL BAND PRINTER Publication No. 44677818

REVISION Q

S/N EFFECTIVITY: To update all model printers
REASON FOR CHANGE: Incorporate C.E. Corrections.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

Revise Your Manual As Follows:

Delete	Add	Delete	Add
Revision Record	Revision Record		
2-46, 3-40, 3-44,	2-46,3-40,3-44,		
3-45, 3-49, 3-55,	3-45,3-49,3-55,		
3-56,3-66, 3-69,	3-56,3-66,3-69,		
3-70, 3-71, 3-72,	3-70,3-71,3-72,		
3-73, 3-74, 3-75,	3-73,3-74,3-75,		
3-79, 3-81, 3-86,	3-79,3-81,3-86,		
3-87, 3-88, 3-89,	3-87,3-88,3-89,		
3-92D,3-92H,3-92I,	3-92D,3-92H,3-92I,		
3-92J,3-92K,3-92L,	3-92J,3-92K,3-92L,		
3-92M,3-92N,	3-92M,3-92N,		
3-97/3-98, 3-110,	3-97/3-98, 3-110,		
3-111, 3-115, 3-118,	3-111, 3-115,3-118,		
3-121, 3-122, 3-132,	3-121,3-122,3-132,		
3-136, 3-137, 3-138	3-136, 3-137,3-138,		
3-139,3-140,3-141,	3-139,3-140,3-141,		
3-144, 3-145,	3-144, 3-145,		
3-147/3-148	3-147/3-148		

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY________ APPROVED BY Jm Derkaz JM Derkaz DATE APR., 82

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION: R

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO'S: EECO PH18068 - Release hammer driver board 44687338, PH18247 - Update signal names and off sheet references (Incorporated B/P8214 in advance of ECO).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Cover, Title, Revision Record, 2-41, 2-42, 3-1, 3-40, 3-44, 3-45, 3-49, 3-55, 3-56, 3-69, 3-70, 3-71, 3-72, 3-73, 3-74, 3-75, 3-79, 3-81, 3-85, 3-86, 3-87, 3-88, 3-89, 3-92D, 3-92E, 3-92F, 3-92G, 3-92H, 3-92I, 3-92J, 3-92K, 3-92L, 3-92M. 3-92N.

Add Pages:

Cover, Title, Revision Record, 2-41, 2-42, 3-1, 3-40, 3-44, 3-45, 3-49, 3-55, 3-56, 3-69, 3-70, 3-71, 3-72, 3-73, 3-74, 3-75, 3-79, 3-81, 3-85, 3-86, 3-87, 3-88, 3-89, 3-92D, 3-92E, 3-92F, 3-92G, 3-92H, 3-92I, 3-92J, 3-92K, 3-92L, 3-92M. 3-92N.

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. DERKAZ DATE: July, 82

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION: S

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH16867-To provide a more reliable servo Power Amp PCB, PH17947-To update XMFR VDE Reqmt's.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

3-1, 3-3, 3-11, 3-77

Add Pages:

3-1, 3-33, 3-10A/3-10B, 3-11, 3-77

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. Derkaz DATE: OCT., 82

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION: T

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH18305-Detection of ribbon fault is inhibited until top of forms PH18770-Update logic set.

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Revision Record,
2-98, 3-3, 3-4, 3-10A/3-10B, 3-11, 3-12, 3-52, 3-54, 3-61, 2-92G, 9-22H, 3-92J, 3-92K, 3-92O, 3-92P, 3-92Q, 3-92R, 3-92S, 3-92T, 3-92U, 3-92V

Add Pages:

Revision Record,
2-98, 3-3, 3-4, 3-10A, 3-10B, 3-11, 3-12, 3-52, 3-54, 3-61, 2-92G, 2-93H, 3-92J, 3-92K, 3-92O, 3-92P, 3-92Q, 3-92R, 3-92S, 3-92T, 3-92U, 3-92V

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. DerkaZ DATE: APR., 83

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS 300/600/1130 LPM (TTL) BAND Publication No. 44677818

REVISION: U

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO's: PH17860-Release platen kit, PH19142/PH19143-Chg. 300/600 LPM printer capacitor assy's from 80,000 MFD. to 120,000 MFD. single cap construction, PH19511-Chg logic to new capacitor assy, PH19570-Add interconnection between ribbon fold sw input & output of paper sw input (Systyme).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Revision Record,
V, 2-82A, 2-82B, 3-12, 3-53, 3-57

Add Pages:

Revision Record,
V, 2-82A, 2-82B, 3-12, 3-53, 3-57

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY APPROVED BY: J.M. DERKAZ DATE: OCT 83

REVISION PACKET INSTRUCTION SHEET

Tital: CDC PB/PBS 900/1130/300/600 LPM (TTL) Publication No.44677818

Revision V

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate ECO: PH20585- Update installation instruction of platen kit

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Revision Record,
2-5, 2-15, 2-16, 2-16A/2-16B, 2-82A, 2-82B,

Add Pages:

Revision Record,
2-5, 2-15, 2-16, 2-16A/2-16B, 2-82A, 2-82B

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. Derkaz DATE: JAN., 85

REVISION PACKET INSTRUCTION SHEET

Title: CDC PB/PBS (TTL) BAND PRINTER Publication No. 44677818

REVISION: W

S/N EFFECTIVITY: To update all model printers.

REASON FOR CHANGE:

Incorporate TAR 217204- Check & Clean Blower (Fan).

INSTRUCTIONS: This revision packet is to be added to your manual after all previous revision packets have been included.

REVISE YOUR MANUAL AS FOLLOWS:

Delete Pages:

Revision Record,
1-7/1-8

Add Pages:

Revision Record,
1-7,1-8

NOTE: Place this instruction sheet in the back of your manual. This will serve as a permanent record of revision changes to your manual.

ORIGINATED BY: APPROVED BY: J.M. Derkaz DATE: APR., 85
