



OPERATING AND SERVICE MANUAL

**2895B
TAPE PUNCH**

Manual Part No. 02895-90008
Microfiche Part No. 02895-90012

Printed: AUG 1975
Changed: 25 AUG 1976

Serial Numbers Prefixed:

1201, 1231, 1306, 1332,
1340, 1408, 1620, 1632

LIST OF EFFECTIVE PAGES

Changed pages are identified by a change number adjacent to the page number. Changed information is indicated by a vertical line in the margin of the page. Original pages (Change 0) do not include a change number. Insert latest changed pages and destroy superseded pages.

Change 0 (Original) Aug 1975
 Change 1 15 Jun 1976
 Change 2 25 Aug 1976

Page No.	Change No.	Page No.	Change No.
Title	2	5-1 thru 5-5	0
ii	2	5-6 Blank	0
iii thru iv	0	5-7	0
v	2	5-8 Blank	0
vi Blank	1	5-9	0
1-1	1	5-10 Blank	0
1-2	0	6-1	0
1-3	1	6-2 thru 6-3	1
1-4 Blank	0	6-4 Blank	0
2-1	0	6-5 thru 6-15	0
2-2	1	6-16	1
2-3	0	6-17 thru 6-18	0
2-4	1	FACIT SERVICE MANUAL	0
3-1 thru 3-4	0	FACIT SPARE PARTS LIST	0
4-1 thru 4-2	0		

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied or reproduced without the prior written consent of Hewlett-Packard Company.

SERIAL NUMBER PREFIX HISTORY

<u>PREFIX</u>	<u>DESCRIPTION</u>
1201	Original configuration.
1231	Rear panel (5, figure 6-1) components relocated and fuse (2) changed.
1306	Power transformer T1 and voltage selector switch changed. See page 11.7:2.
1332	Facit Control Circuit Board changed.
1340	Resistors on Logic Inverter PCA changed. See note in table 5-3.
1408	Control panel and lamp – switch assemblies changed. See page 11.7:2.
1620	Front panel (25, figure 6-1) and drawer (30) modified to provide alternate front to back positioning (2 positions) of the Tape Punch Assembly (7).
1632	The Facit Control Circuit Board changed from DTL to TTL logic elements. New part number is 1149 36 30-00. The old and new boards are interchangeable.

1-1. INTRODUCTION.

1-2. This operating and service manual covers general information, installation, operation, theory of operation, maintenance, and replaceable parts for the Hewlett-Packard 2895B Tape Punch. (See figure 1-1.) The tape punch is a Hewlett-Packard modification of the Facit 4070 Tape Punch manufactured by Facit AB, Solna, Sweden; therefore, the *Facit 4070 Tape Punch Service Manual* is included as part of the HP 2895B Operating and Service Manual.

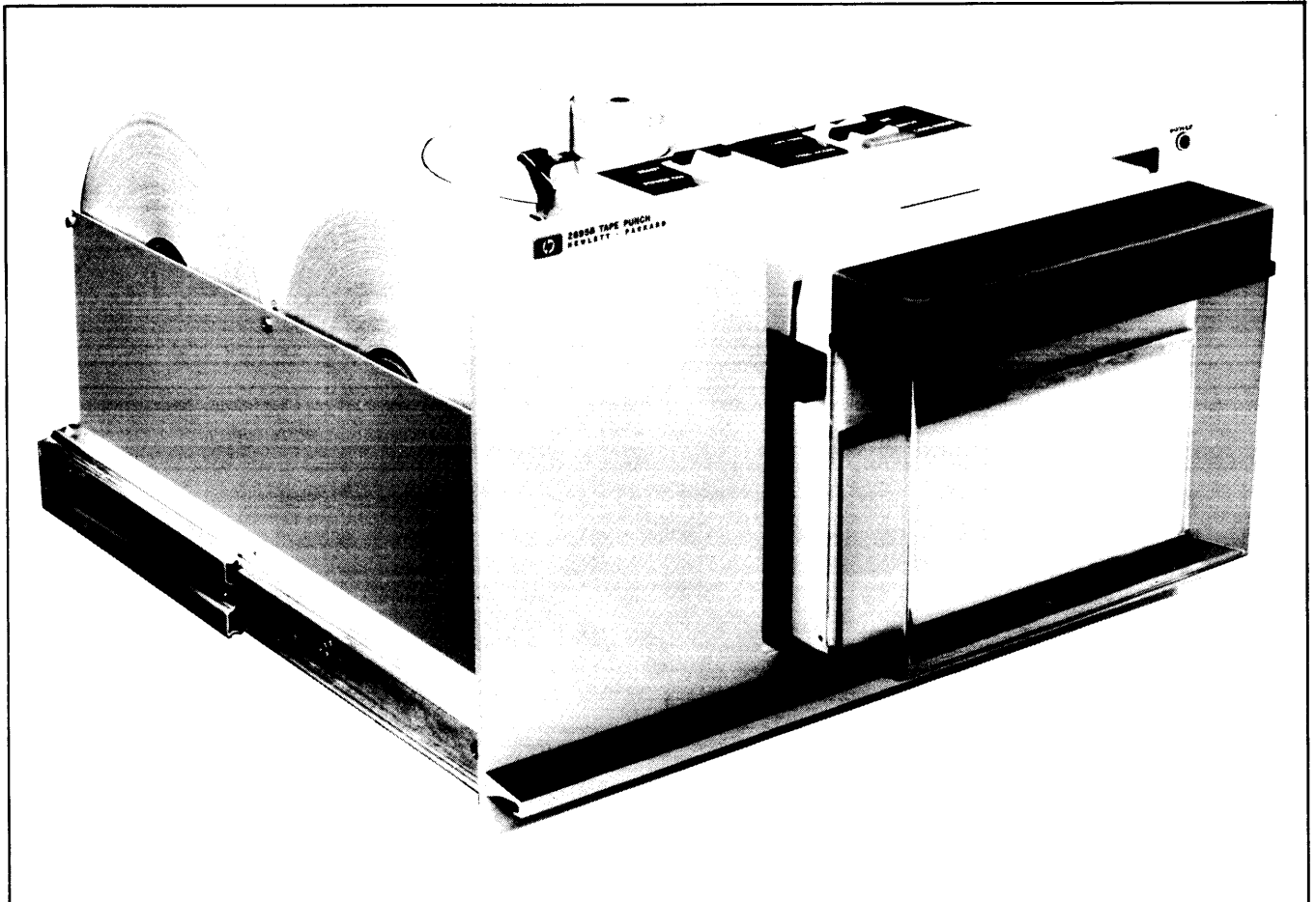
1-3. GENERAL DESCRIPTION.

1-4. The tape punch is an electromechanical device that accepts data bits from a data source (such as a computer) and actuates mechanical mechanisms to punch the data bits into a tape in an eight-level code. The unidirectional tape punch is capable of punching up to a 1-inch (25.4 mm)

wide tape at a rate of 75 characters per second and is equipped with a take-up reel for the punched tape. The tape punch weighs about 35 pounds (15.9 kilograms) and drawer-mounts in a standard 19-inch (482.6 mm) rack. The equipment furnished with each unit is as follows:

- a. Chad box with magnetic catch.
- b. Power cord.
- c. Paper tape, part no. 9280-0063.
- d. Two cardboard take-up bobbins.
- e. Rack mount assembly, 02895-60006, light gray; 02895-60008, moss gray.
- f. Operating and Service Manual 02895-90008.

1-5. The electrical circuits of the tape punch provide operating voltages and timing signals to punch and advance the paper tape. The electrical circuits are located on four printed-circuit assemblies located in the unit. Input signals



2229-1

Figure 1-1. Hewlett-Packard 2895B Tape Punch

are connected to the computer by an interconnecting cable assembly, and ac power is supplied by a separate power cable.

1-6. The Hewlett-Packard modifications to the Facit Tape Punch consist of changing the power connector, adding a drawer mounting feature that includes an ac power indicator, adding a power fuse, adding a logic inverter printed-circuit assembly (PCA), changing the rubber feet, and adding a magnetic catch to the chad box.

1-7. SPECIFICATIONS.

1-8. Specifications for the tape punch are listed in table 1-1.

1-9. IDENTIFICATION.

1-10. Hewlett-Packard uses a serial number located on the rear panel to identify each unit. The first group of digits is a serial number prefix used to identify a particular unit configuration. This prefix does not change unless unit changes are made. The serial number prefix is four digits in length. A code letter between the serial number prefix and serial number indicates the country in which the equipment

was manufactured. The last five digits identify each specific unit. If the serial number prefix on your unit does not agree with that shown on the title page of this manual, there are differences between your unit and the unit described in this manual. These differences are described in manual supplements available at the nearest HP Sales and Service Office. Sales and Service Offices are listed on the back of this manual.

1-11. Facit uses a seven digit serial number located on the bottom of the rear panel to identify each Facit unit manufactured.

1-12. Printed-circuit assembly revisions of the logic inverter PCA are identified by a letter, a series code, and a division code stamped on the PCA (A-1055-22, etc). The letter code identifies the version of the etched trace pattern on the unloaded board. The series code (middle digits) refers to the electrical characteristics of the loaded PCA and the positions of the components. The division code (last digits) identifies the Hewlett-Packard division that manufactured the PCA. If the series code stamped on the PCA does not agree with the series code shown on the schematic in this manual, there are differences between your PCA and the PCA described in this manual. These differences are described in manual supplements available at the nearest HP Sales and Service Office.

Table 1-1. Specifications

Operating Temperature:	10° to 40° C (50° to 104° F)
Relative Humidity:	*Up to 80% at 40° C (104° F) with no condensation
Punch Speed:	75 characters per second, asynchronous
Tape Type:	Paper, Mylar, or plastic
Tape Width:	Standard 5-level (11/16 inch) or 8-level (1 inch)
Tape Thickness:	
Paper:	0.003 inch to 0.005 inch (0.08 to 0.13 mm) (oiled or dry)
Plastic:	0.003 inch to 0.004 inch (0.08 to 0.11 mm)
Mylar:	0.003 inch to 0.004 inch (0.08 to 0.11 mm)
**Weight:	35 pounds (15.9 kg) (including drawer)
**Overall Dimensions:	21-3/16 inches (538.2 mm) deep, maximum 16-3/4 inches (425.5 mm) wide, 10-1/2 inch (266.7 mm) panel height
Fully extended:	Extends 20-1/8 inches (511.2 mm) from the front of a cabinet
Noise Level:	Punching all channels at full speed, measured 3.3 feet (1 meter) from the tape punch: 74 dB
**Input Signals:	Signal lengths less than 10 microseconds at 0 volts signal level are rejected as noise
"not" Punch Instruction (\overline{PI}):	Minimum pulse duration: 0.1 millisecond Minimum input impedance: 2.2K ohms Logic 1: 0 to +0.5 volts with maximum current of 12 mA Logic 0: +12 volts, 10K ohm source
Data Signals ($\overline{CH1}$ thru $\overline{CH8}$):	Minimum pulse duration: 200 microseconds Minimum input impedance: 22K ohms Logic 0: 0 to +0.5 volts with maximum current of 12 mA Logic 1: +12 volts, 10K ohm source
**Output Signals:	
"not" Punch Ready (\overline{PR}):	Changes to logic 1 during punching cycle. Changes to logic 0 after completion of punching cycle. Informs computer that tape punch is prepared to begin new punching cycle.
"not" Error 2 ($\overline{ERR 2}$):	Changes to logic 0 when tape error is detected
"not" Ready (\overline{RDY}):	Changes to logic 0 when dc power is applied to internal circuitry
"not" Tape Low (\overline{TL}):	Changes to logic 0 when tape on supply reel nears depletion
Logic 1 level for \overline{PR} , $\overline{ERR 2}$, \overline{RDY} , \overline{TL} :	+6 volts, output impedance 1K ohm
Logic 0 level for \overline{PR} , $\overline{ERR 2}$, \overline{RDY} , \overline{TL} :	+0.5 volts with maximum current of 12 mA
Power Requirements:	Voltage: 115, 127, 220, or 240 \pm 10% volts selected by power selection switch (serial prefixes 1201 and 1231); 100, 115, 220, 240 \pm 10% volts selected by power switch (serial prefix 1306). Frequency: 47.5 to 100 Hz Power Consumption: 300 VA, maximum
*Denotes limits imposed by paper tape.	
**Denotes specifications that vary from Facit specifications due to the Hewlett-Packard addition of a drawer mounting feature and a logic inverter PCA.	

2-1. INTRODUCTION.

2-2. This section contains information on unpacking, inspection, installation, and reshipment of the tape punch.

2-3. UNPACKING AND INSPECTION.

2-4. If the shipping carton is damaged upon receipt, request that the carrier's agent be present when the tape punch is unpacked. Inspect the tape punch for damage (scratches, dents, broken parts, etc). If the tape punch is damaged and fails to meet specifications, notify the carrier and the nearest Hewlett-Packard Sales and Service Office immediately. (Sales and Service Offices are listed at the back of this manual.) Retain the shipping carton and the packing material for the carrier's inspection. The Sales and Service Office will arrange for the repair or replacement of the damaged tape punch without waiting for any claims against the carrier to be settled.

2-5. INSTALLATION.

2-6. MOUNTING REQUIREMENTS.

2-7. The drawer-mounted tape punch fits in a 19-inch (483 mm) rack and requires 10-1/2 inches (267 mm) of panel height. Figure 2-1 shows the overall dimensions of the tape punch including the slide mounting parts.

Note: When determining a mounting location for the tape punch, the tape reader location should be considered. If the tape punch is mounted above the tape reader, loose chad from the tape punch may fall into the tape reader and cause reading errors.

2-8. LUBRICATION REQUIREMENTS.

2-9. Portions of the tape punch require periodic lubrication; however, the tape punch was lubricated during the manufacturing process and does not require attention until the normal maintenance procedures are executed. Section V of this manual contains maintenance information.

2-10. POWER REQUIREMENTS.

2-11. The tape punch operates from a 100- to 240-volt (serial prefix 1306 and on) or 115- to 240-volt (serial prefixes 1201, 1231) 50- to 100-hertz power source with a maximum power consumption of 300 volt-amperes. A power

selection switch located near the take-up reel provides power selection capability by the user. Depending on the input ac voltage, a 2-ampere slow-blow type fuse (see figure 2-2) provides protection from overloads. Power is connected to the tape punch by a detachable three-wire power cable.

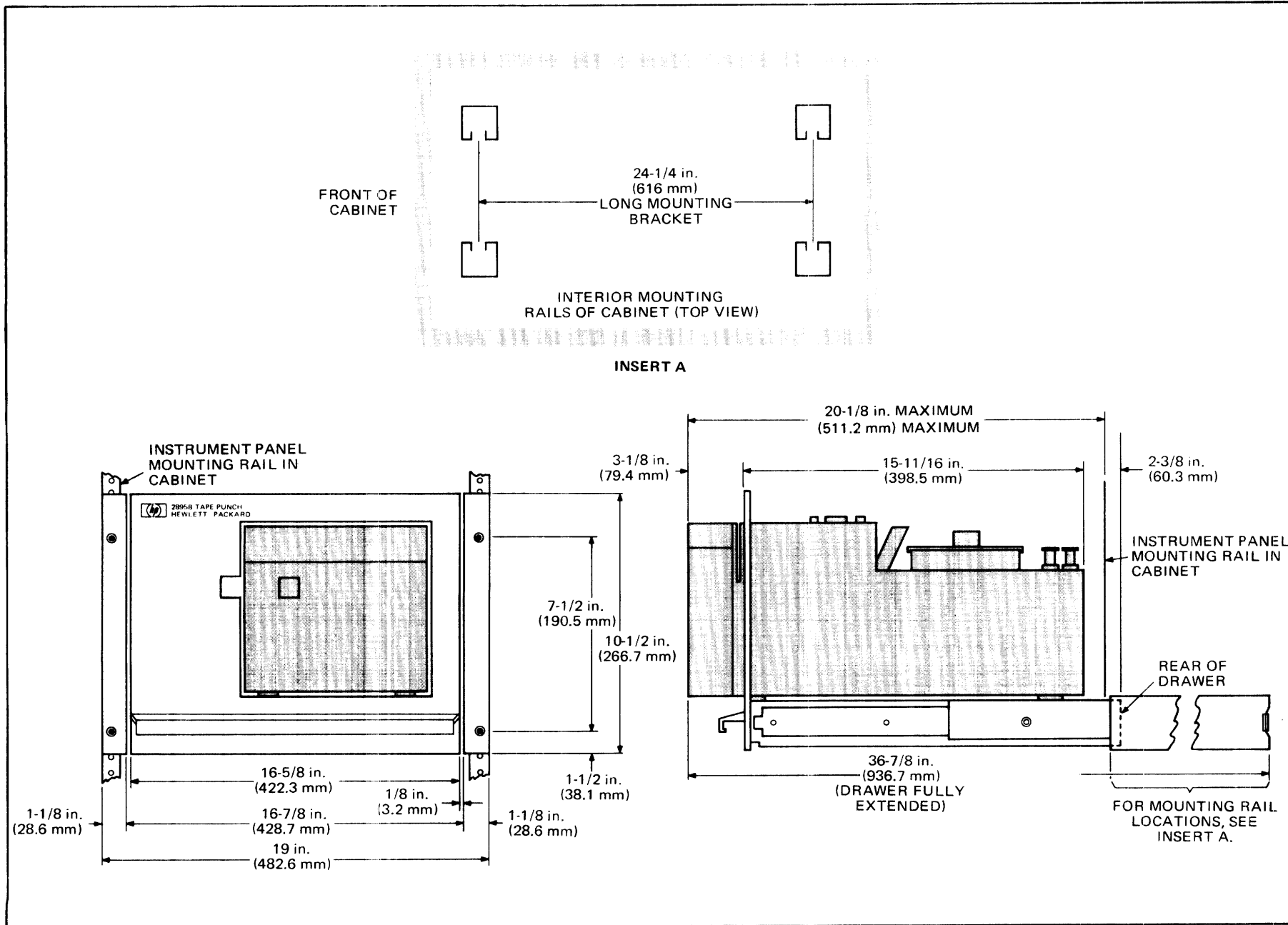
2-12. SIGNAL REQUIREMENTS.

2-13. An interconnecting cable which connects to the back of the tape punch (see figure 2-2) transfers signals from/to the computer. The signals from the computer to the tape punch are ground-true, and signal lengths less than 10 microseconds at 0 volts are rejected as noise. Signals originated by the tape punch and sent to the computer are positive-true. (Refer to table 1-1.) The data signals must have a minimum pulse duration of 200 microseconds. The punch instruction signal must have a minimum pulse duration of 0.1 millisecond. (Refer to table 5-3 for connector signal index.)

2-14. INSTALLATION PROCEDURE.

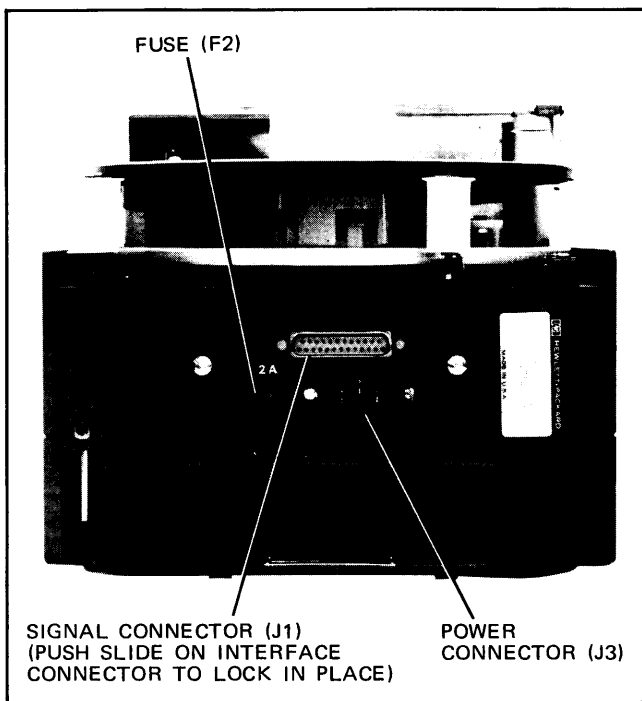
2-15. To install the tape punch, proceed as follows:

- a. Remove the tape punch and drawer-mounting parts from the shipping containers.
- b. Assemble the slide mounting drawer as shown in figure 2-3. (Refer to table 6-1 for attaching parts.)
- c. Mount the drawer in the cabinet (figure 2-3, inserts A and B) and install the tape punch in the proper location.
- d. Set the power selection switch located near the take-up reel to a setting that is compatible with the power source.
- e. Verify that the POWER ON switch (2, figure 3-1) located on the operator panel is in the off position and connect the power cable to the power connector located at the rear of the tape punch. Connect the free end of the power cable to a suitable power source.
- f. Connect the signal interconnecting cable to the signal connector located at the rear of the tape punch. Secure the connector in place by sliding the lock to the lock position, then connect the opposite end of the interconnecting cable to the computer (or other suitable signal source).
- g. Connect the POWER lamp wiring to the POWER lamp located on the drawer front panel. Using the parts listed in table 6-1, secure the POWER lamp wiring to the drawer as shown in figure 6-1.



2229-2A

Figure 2-1. Tape Punch Overall Dimensions



2157-3A

Figure 2-2. Typical Tape Punch, Rear View
(Serial Prefix 1231 and on)

- h. Roll the drawer-mounted tape punch in and out of the cabinet to ensure that the power and signal cables do not catch on the surrounding hardware.
- i. Install a roll of tape, part no. 9280-0063, according to the instructions provided in section III of this manual.
- j. Check that the tape punch is operating properly by operating the controls and observing the indications

described in paragraph 3-3. Then perform the Initial Turn On procedures described in paragraph 3-9.

- k. Check that the tape punch punches all channels properly by pressing the CODE HOLES switch (8, figure 3-1). Use the tape registration template, part no. 1535-0268, to check the punched holes resulting from the CODE HOLES switch operation.
- l. If a malfunction is detected, refer to the Maintenance section of this manual.

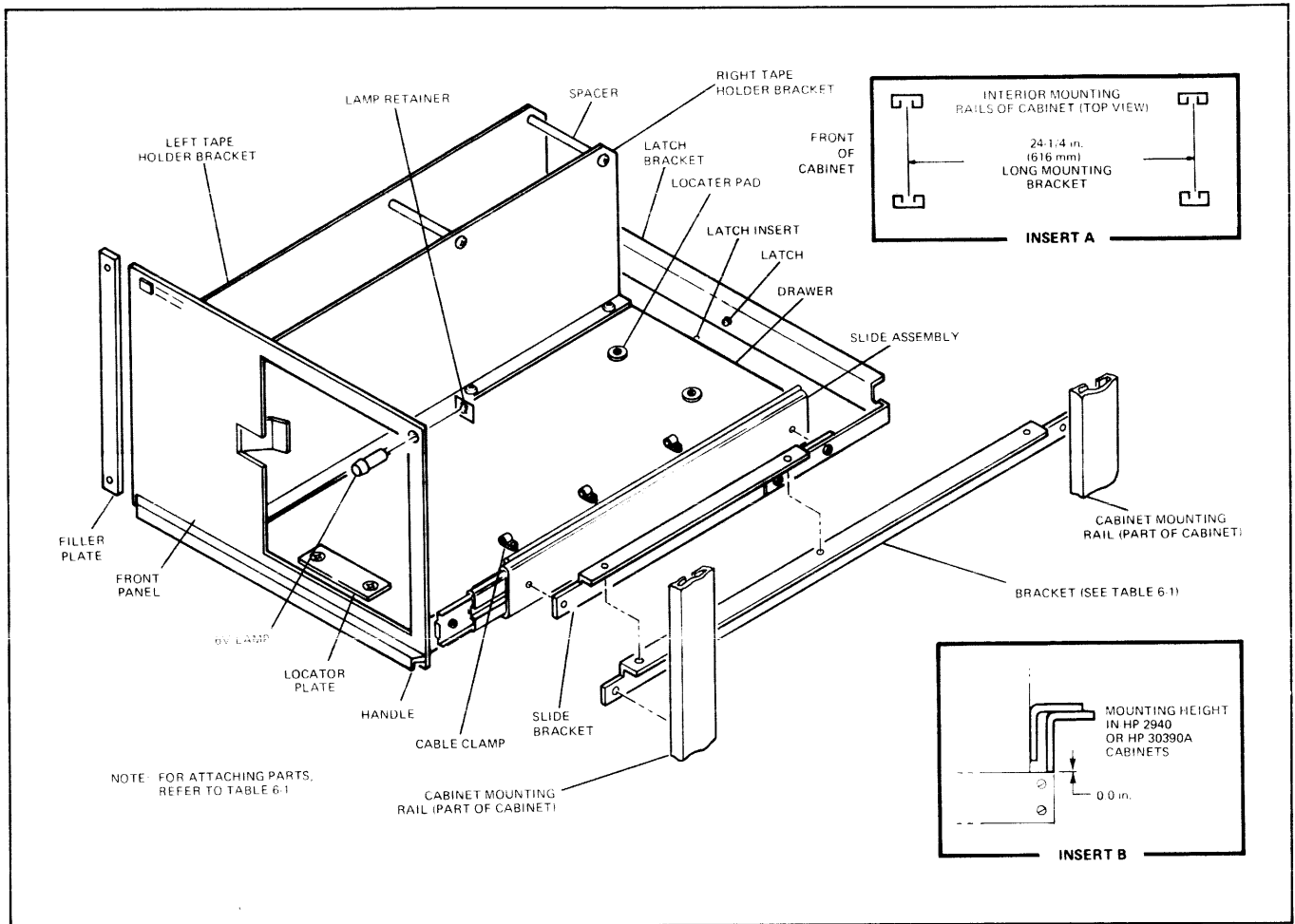
2-16. RESHIPMENT.

2-17. If the tape punch is to be shipped to Hewlett-Packard for service or repair, attach a tag to identify the owner and indicate the service or repair to be accomplished. Include the model number and full serial number of the unit.

2-18. Place the tape punch in the original container if available. If the original container is not available, a suitable container and packing material can be purchased from a local Hewlett-Packard Sales and Service Office.

2-19. If the original container is not used, wrap the tape punch in heavy paper and place it in an inner container. Place adequate packing material around all sides of the unit and place a cardboard strip over the operator panel. Place the punch and inner container in a heavy carton or wooden box and bind with strong tape or metal bands. Mark the shipping container "FRAGILE."

Note: In any correspondence, identify the unit by model number and full serial number. Refer any questions to the nearest Hewlett-Packard Sales and Service Office.



2157-12B

Figure 2-3. Assembling the Slide Drawer

6-1. INTRODUCTION.

6-2. This section contains information for ordering replaceable parts for the tape punch. Figure 6-1 is a parts location diagram of the parts that make up the tape punch, and table 6-1 lists the parts in disassembly order by index number sequence. Replaceable parts information for the portion of the tape punch manufactured by Facit (7, figure 6-1) is provided in the spare parts section of the attached *Facit 4070 Tape Punch Service Manual*; however, a few of the parts are modified to meet Hewlett-Packard requirements. These parts are denoted in table 6-1 of this section.

CAUTION

The tape punch parts manufactured by Facit are manufactured to metric measurement specifications; therefore, the attaching parts (screws and nuts, etc) have metric size threads. The parts added by Hewlett-Packard in table 6-4 conform to S.A.E. (Society of Automotive Engineers) standards. If the tape punch is disassembled, be sure to use the proper tools and keep the metric and S.A.E. parts separated to prevent possible thread damage during reassembly.

6-3. Various Facit parts and special tools have been assigned HP part numbers. These parts and special tools are listed in tables 6-2 and 6-3, and may be ordered directly from Hewlett-Packard. Table 6-2 lists the parts numerically by HP part number, then by description and corresponding Facit part number. Table 6-3 lists the parts numerically by Facit part number, then by description and corresponding HP part number.

Note: Sweden has modified its replaceable parts numbering system to show the least significant digit as a zero. The *HP 2895B Operating and Service Manual* and the *Facit 4070 Service Manual* have implemented this change. The new format is XX.XXX.XXX.XX.

6-4. A parts list for the logic inverter PCA added by Hewlett-Packard is provided as table 5-4. The table is located near the schematic and parts location diagram in

section V, preceding. Because the control circuit PCA is manufactured by Facit, the parts list, schematic diagram, and parts location diagram are located in the attached *Facit Service Manual*.

6-5. Table 6-4 numerically lists the parts for the tape punch that are added by Hewlett-Packard. The list also includes all the parts modified by Facit to meet Hewlett-Packard requirements. Table 6-4 provides the following information for each part.

- a. Description of the part. (Refer to table 6-5 for an explanation of abbreviations and reference designations used in the description column.)
- b. Typical manufacturer of the part in a five-digit code. The five-digit code is explained in table 6-6.
- c. Manufacturer's part number.
- d. Total quantity of each part added by Hewlett-Packard to the original Facit tape punch.

6-6. Items in the DESCRIPTION column of the replaceable parts lists are indented to indicate item relationships as follows:

MAJOR ASSEMBLY

- * Subassembly
- * Attaching Parts for Subassembly
---- x ----
- ** Subassembly Parts Breakdown
- ** Attaching Parts for Subassembly Parts Breakdown
---- x ----

6-7. ORDERING INFORMATION.

6-8. To order replaceable parts, address the order or inquiry to the local Hewlett-Packard Sales and Service Office. For Sales and Service Office locations, refer to the list at the end of this manual. Specify the following information for each part ordered.

- a. Instrument model and serial number.
- b. Hewlett-Packard part number for each part.
- c. Description of each part.
- d. Circuit reference designation if applicable.

Table 6-1. HP 2895B Tape Punch Replaceable Parts

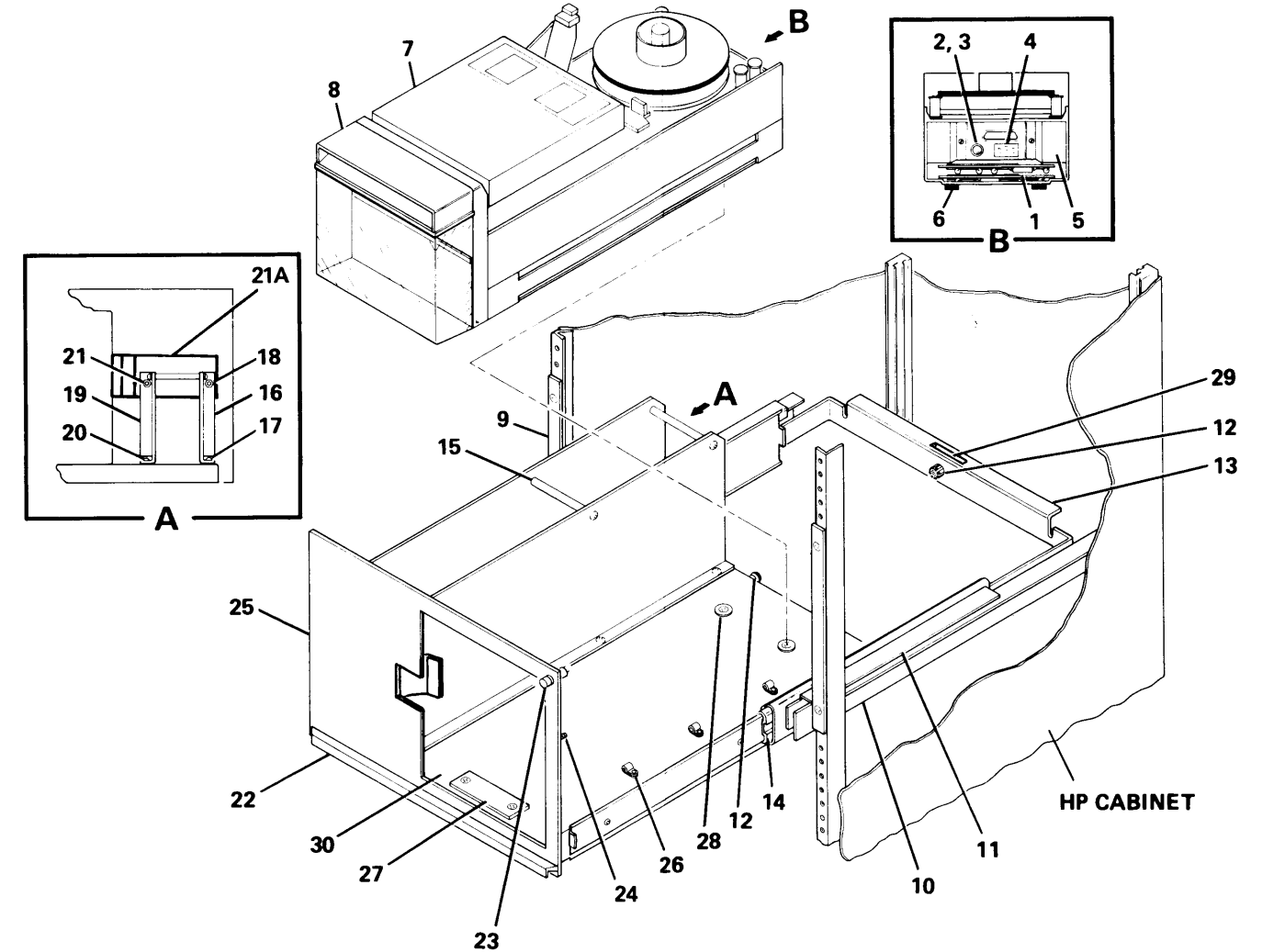
FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
6-1-1	2895B	TAPE PUNCH, Hewlett-Packard	28480	2895B	1
	02895-60005	* Logic Inverter PCA (see table 5-4)	28480	02895-60005	1
2†	0950-1313	* Tape Punch, Facit 4070, Modified	28480	0950-1313	1
	2110-0381	* * Fuse, 3A, 250V, SB(F2) (115-volt operation, serial prefix 1201)	71400	MDA-3	1
2†	2110-0303	* * Fuse, 2A, 250V, SB(F2) (115 or 230-volt operation, serial prefix 1231 and on; 230-volt operation only, serial prefix 1201)	71400	MDX-2A	1
3†	1400-0084	* * Fuseholder (XF2)	75915	342014	1
4†	No Number	* * Connector, 6A, 250V (J3)	††	10.987.101.00	1
5†	No Number	* * Rear Panel	††	No Facit No.	1
6†	No Number	* * Foot, Rubber (includes attaching parts)	††	R-109	4
7†	No Number	* * Tape Punch Assembly	††	4070	1
8†	02895-60004	* * Chad Box (with magnetic catch)	28480	02895-60004	1
9	02895-20005	* Filler Plate (Light gray)	28480	02895-20005	2
	02895-20007	* Filler Plate (moss gray) (Attaching Parts)	28480	02895-20007	2
	2680-0105	* Screw, Machine, PH, No. 10-32, 5/8 in.	00000	OBD	2
	3050-0007	* Washer, Cup, Metal, No. 10	00000	OBD	2
	3050-0248	* Washer, Cup, Filler, Plastic No. 10	00000	OBD	2
		-----x-----			
10	02895-00008	* Bracket, long (25 in.) (for HP 2940 Cabinet, shown in fig. 6-1) (Attaching Parts)	28480	02895-00008	2
	2940-0103	* Bolt, Hexagon Head, 1/4-20, 1/2 in.	00000	OBD	2
	7101-0171	* Channel Plate	09097	5033-1	2
	0590-0789	* Channel Nut	96195	P4006-1420	2
	2510-0107	* Screw, Machine, PH, No. 8-32, 1/2 in.	00000	OBD	2
	2190-0073	* Washer, Lock, split, No. 8	00000	OBD	2
	3050-0226	* Washer, Flat, No. 8, 1/2 in. OD	00000	OBD	2
		-----x-----			
11	02895-00007	* Bracket, Slide (Attaching Parts)	28480	02895-00007	2
	2510-0107	* Screw, Machine, PH, No. 8-32, 1/2 in.	00000	OBD	4
	2580-0004	* Nut, Assembled Washer, No. 8-32	00000	OBD	4
	3050-0001	* Washer, Flat, No. 8, 3/8 in. OD	00000	OBD	4
	2190-0073	* Washer, Lock, split, No. 8	00000	OBD	4
	-----x-----				
12	1390-0107	* Latch Set (Attaching Parts)	28480	1390-0107	1
	2360-0202	* Screw, Machine, FH, No. 6-32, 5/8 in.	00000	OBD	1
	2420-0001	* Nut, Assembled Washer, No. 6-32	00000	OBD	1
	2200-0144	* Screw, Machine, FH, No. 4-40, 3/8 in.	00000	OBD	1
	2260-0009	* Nut, Assembled Washer, No. 4-40	00000	OBD	1
	3050-0222	* Washer, Flat, No. 4, 5/16 in. OD	00000	OBD	1
	-----x-----				
13	02895-00013	* Bracket, Latch	28480	02895-00013	1
14	1490-0966	* Slide Assembly (Attaching Parts)	28480	1490-0966	2
	2510-0107	* Screw, Machine, PH, No. 8-32, 1/2 in.	00000	OBD	4
	2580-0004	* Nut, Assembled Washer, No. 8-32	00000	OBD	4
	3050-0001	* Washer, Flat, No. 8, 3/8 in. OD	00000	OBD	4
	2190-0073	* Washer, Lock, split, No. 8	00000	OBD	4
	-----x-----				
15	0380-0909	* Spacer (Attaching Parts)	28480	0380-0909	2
	2360-0117	* Screw, Machine, PH, No. 6-32, 3/8 in.	00000	OBD	2
		-----x-----			

† Denotes parts modified by Facit to meet Hewlett-Packard requirements.

†† Facit AB, Solna, Sweden

Table 6-1. HP 2895B Tape Punch Replaceable Parts (Continued)

FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
6-1-16	02895-00005	* Bracket, Left, Tape Holder (light gray)	28480	02895-00005	1
	02895-00012	* Bracket, Left, Tape Holder (moss gray) (Attaching Parts)	28480	02895-00012	1
17	2360-0117	* Screw, Machine, PH, No. 6-32, 3/8 in.	00000	OBD	3
18	2420-0001	* Nut, Assembled Washer, No. 6-32 -----x-----	00000	OBD	1
19	02895-00004	* Bracket, Right, Tape Holder (light gray)	28480	02895-00004	1
	02895-00011	* Bracket, Right, Tape Holder (moss gray) (Attaching Parts)	28480	02895-00011	1
20	2360-0117	* Screw, Machine, PH, No. 6-32, 3/8 in.	00000	OBD	3
21	2420-0001	* Nut, Assembled Washer, No. 6-32 -----x-----	00000	OBD	1
21A	02895-00017	* Guide, Tape (moss gray) (for 02895-00020 Front Panel only)	28480	02895-00017	1
22	02895-20004	* Handle (Attaching Parts)	28480	02895-20004	1
	2360-0121	* Screw, Machine, PH, No. 6-32, 1/2 in. -----x-----	00000	OBD	3
23	1450-0738	* Lamp, 6V (Attaching Parts)	28480	1450-0738	1
	1450-0148	* Retainer, Lamp -----x-----	28480	1450-0148	1
24	1400-0082	* Cable Clamp (Attaching Parts)	00000	OBD	1
	2420-0001	* Nut, Assembled Washer, ext-tooth, No. 6-32	00000	OBD	1
	3050-0227	* Washer, Flat, No. 6 -----x-----	00000	OBD	1
25	02895-00015	* Panel, Front (light gray)	28480	02895-00015	1
	02895-00020	* Panel, Front (moss gray)	28480	02895-00020	1
26	1400-0082	* Cable Clamp (Attaching Parts)	00000	OBD	3
	2360-0121	* Screw, Machine, PH, No. 6-32, 1/2 in.	00000	OBD	1
	3050-0227	* Washer, Flat, No. 6 -----x-----	00000	OBD	1
27	02895-20002	* Plate, Locator (light gray)	28480	02895-20002	1
	02895-20006	* Plate, Locator (moss gray) (Attaching Parts)	28480	02895-20006	1
	2360-0200	* Screw, Machine, FH, No. 6-32, 1/2 in. -----x-----	00000	OBD	2
28	02895-20001	* Pad, Locator (Attaching Parts)	28480	02895-20001	2
	2360-0200	* Screw, Machine, FH, No. 6-32, 1/2 in. -----x-----	00000	OBD	2
29	4320-0002	* Grommet -----x-----	28480	4320-0002	1
30	02895-00003	* Drawer (light gray)	28480	02895-00003	1
	02895-00010	* Drawer (moss gray)	28480	02895-00010	1
	8120-1348	Cable, Power (not shown in fig. 6-1)	28480	8120-1348	1
31	02895-90008	Operating and Service Manual	28480	02895-90008	1



2157-9B

Figure 6-1. HP 2895B Tape Punch Exploded View

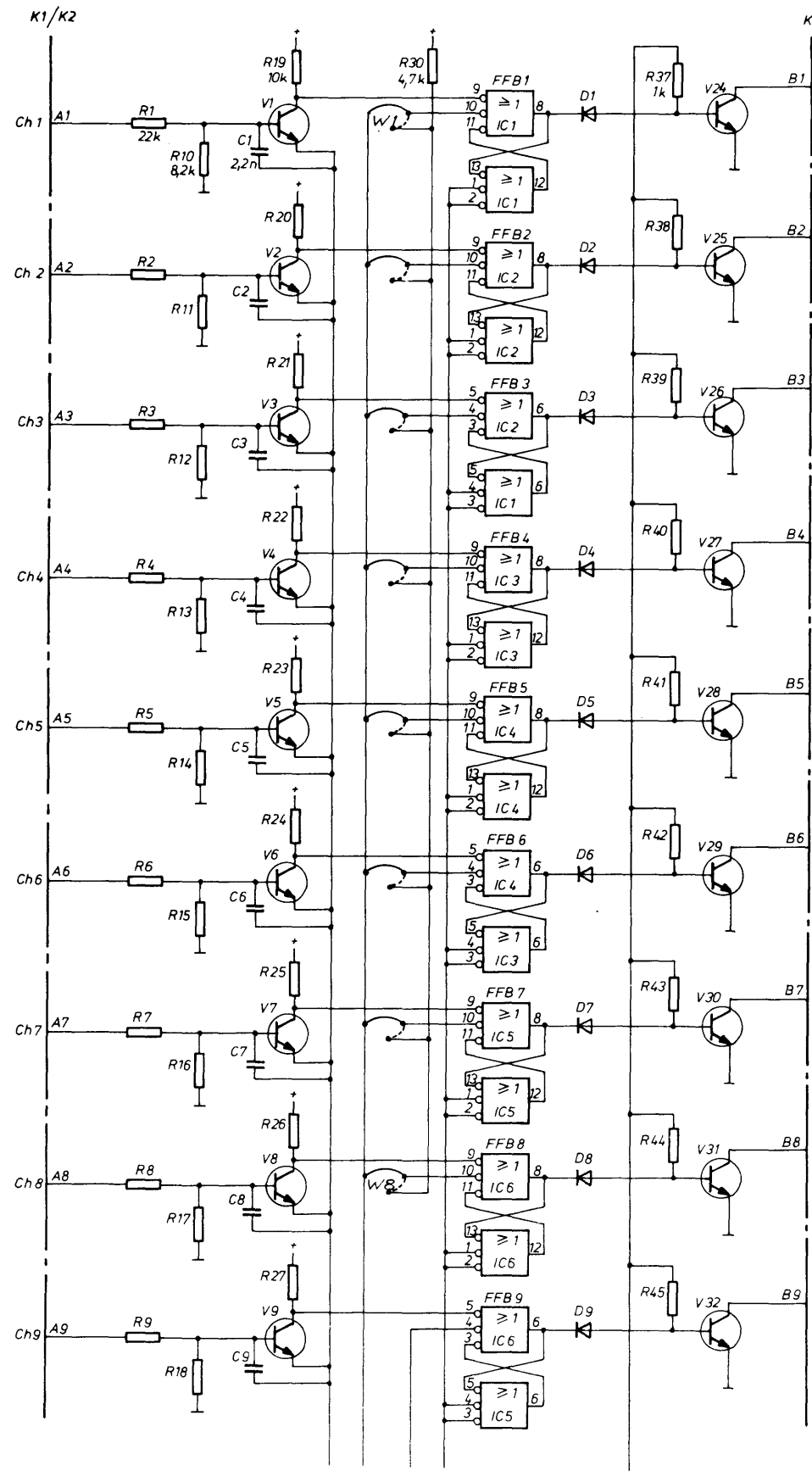
Table 6-3. Facit-to-Hewlett-Packard Part Number Cross Reference Listing (Continued)

FACIT PART NO.	DESCRIPTION	HP PART NO.
15,028,620,00	Coil	1535-0203
15,028,630,00	Filter circuit board complete	1535-0181
15,028,660,00	Stator with windings	1535-0835
15,031,290,00	Rubber mounting	1535-0120
15,032,920,00	Reversing buffer arm	1535-0087
15,033,000,00	Brake bracket	1535-0156
15,033,070,00	Brake shoe	1535-0159
15,033,190,00	Spacer sleeve	1535-0102
15,033,620,00	Spacer	1535-0833
15,033,670,00	Bracket	1535-0105
15,033,680,00	Washer	1535-0154
15,033,930,00	Brake assembly complete	1535-0155
15,034,620,00	Sealing screw	1535-0828
15,034,700,00	Rubber chad chute adapter	1535-0774
15,034,710,00	Insulator plate	1535-0171
15,034,780,00	Pin	1535-0815
15,034,790,00	Shaft	1535-0240
15,035,740,00	Motor brake	1535-0844
15,035,750,00	Brake housing	1535-0839
15,035,770,00	Brake spring	1535-0840
15,035,780,00	Rubber pad	1535-0841
15,036,060,00	Rubber washer	1535-0813
15,036,330,00	Rubber ring	1535-0151
15,037,550,00	Screw	1535-0076
15,037,570,00	Washer	1535-0113
15,038,680,00	Plate	1535-0095
15,038,690,00	Tape tearer	1535-0093
15,038,720,20	Control circuit PCA	1150-0449
15,038,740,00	Torsion spring	1535-0094
15,038,910,00	Rubber shim	1535-0101
15,038,940,00	Rubber ring	1535-0140
15,039,020,00	Bridging board	1535-0172
15,039,490,00	Ring	1535-0239
15,039,790,00	Pinch roller with shaft and bearings	1535-0802
15,039,920,00	Spacer sleeve, 3.1 mm	1535-0801
15,053,410,00	Punch pin driver shaft	1535-0822
15,953,410,80	Pin	1535-0126
15,953,411,10	Pin	1535-0160
15,953,450,00	Helical expander spring	1535-0143
15,953,830,20	Ball bearing	1535-0238
15,954,350,00	O-ring	1535-0808
15,954,350,20	O-ring	1535-0254
15,955,030,00	Selector switch	1535-0255
15,955,420,00	Switch	1535-0245
15,955,480,00	Special screw	1535-0179
15,955,540,00	Magnet	1535-0108
15,955,580,00	Motor	1535-0232
15,955,620,00	Magnet	1535-0165
15,955,740,90	Washer	1535-0191
15,957,330,00	Dry reed relay	1535-0167
15,958,160,00	25-pin male connector	1535-0212
15,958,180,00	Signal connector	1535-0178
15,958,200,00	Connector catch	1535-0213
15,958,240,00	Connector casing with screws for angular cable mounting	1535-0214
15,958,420,00	2-button/2-lamp assembly	1535-0258
15,958,440,00	2-button/1-lamp assembly	1535-0257

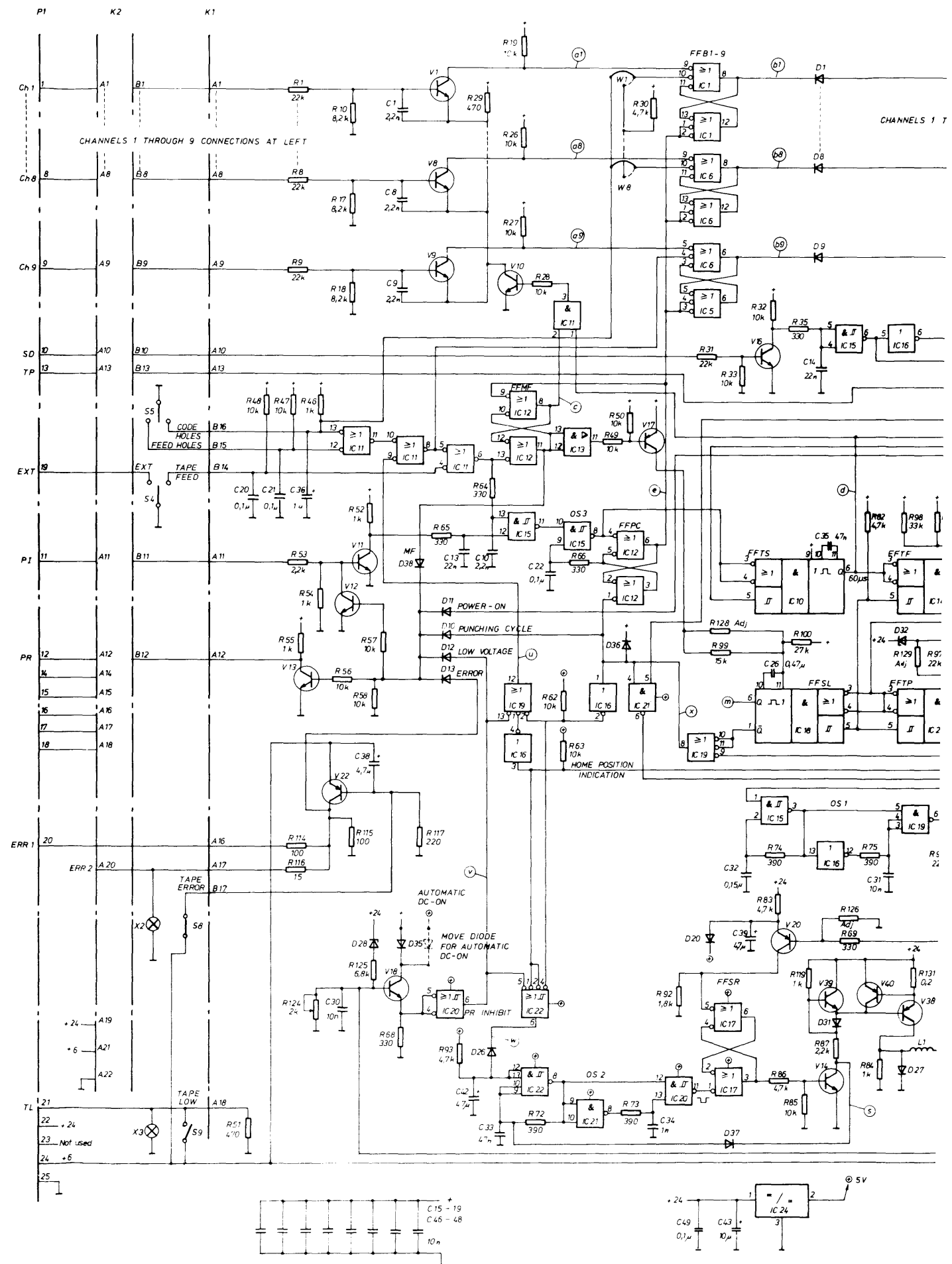
Table 6-4. Numerical Listing of the Replaceable Parts for the Hewlett-Packard Additions and Modifications to the Facit Tape Punch

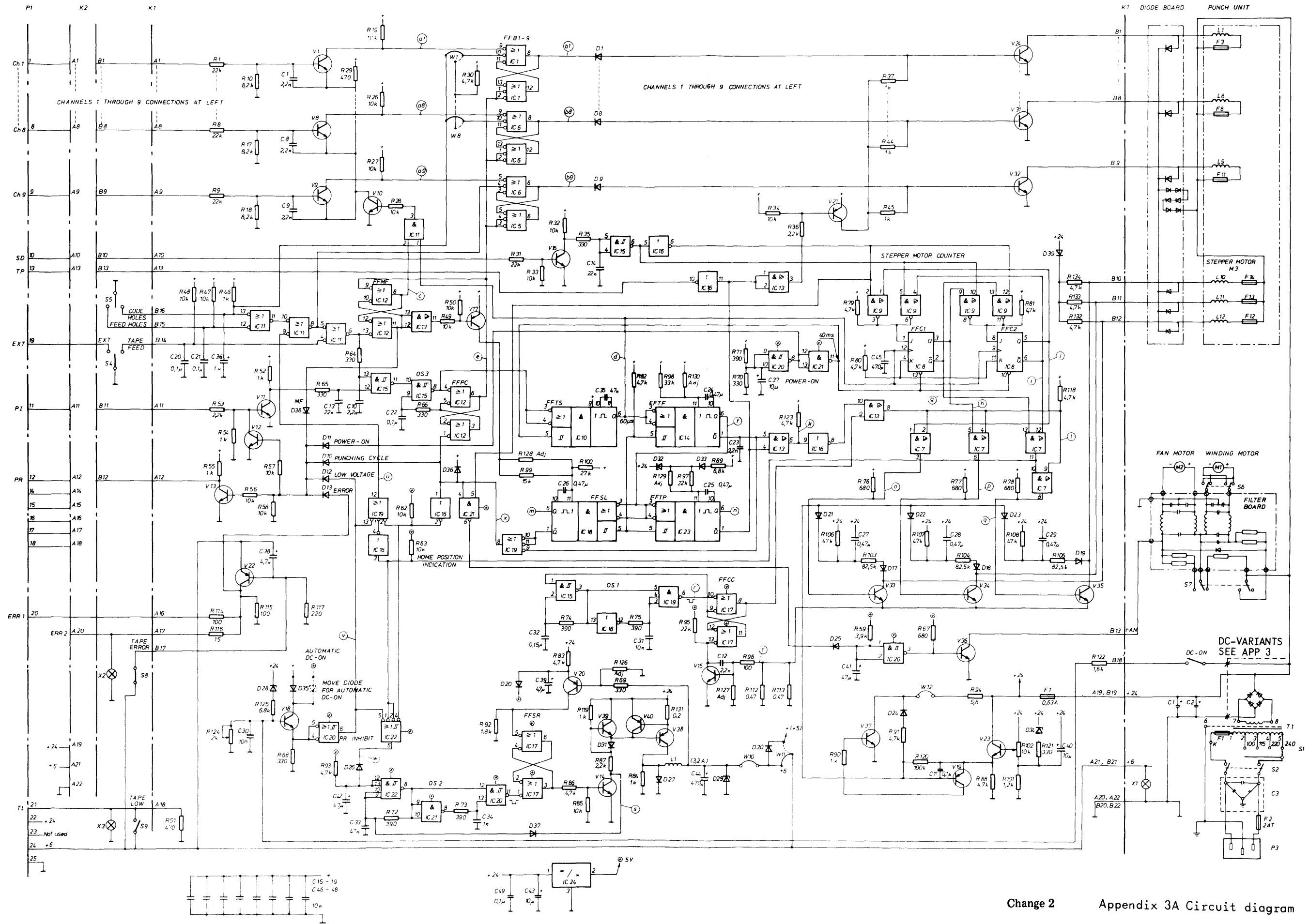
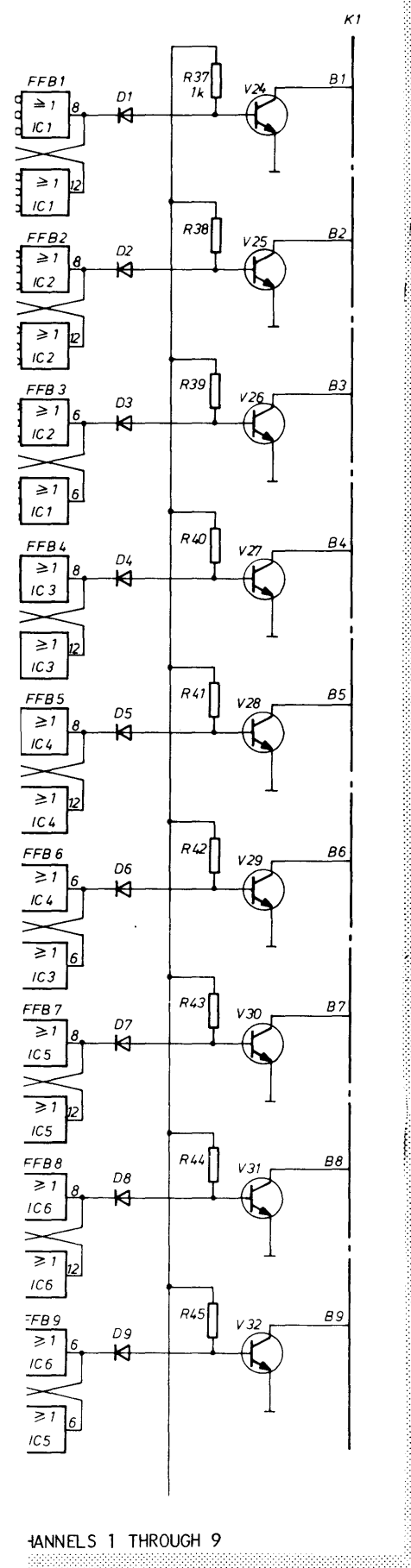
HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	TQ
0380-0909	Spacer	28480	0380-0909	2
0590-0789	Channel nut	96195	P4006-1420	4
0698-0084	Resistor, Fxd, Flm, 2.15k, 1%, 1/8W	28480	0698-0084	9
0698-3155	Resistor, Fxd, Flm, 4.64k, 1%, 1/8W	28480	0698-3155	12
0757-0199	Resistor, Fxd, Flm, 21.5k, 1%, 1/8W	28480	0757-0199	9
0950-1313	Tape Punch, Facit, 4070, Modified	28480	0950-1313	1
1390-0107	Latch Set	28480	1390-0107	1
1400-0082	Cable Clamp	00000	OBD	4
†1400-0084	Fuseholder	79515	342014	1
1450-0148	Retainer, Lamp	28480	1450-0148	1
1450-0738	Lamp, 6V	28480	1450-0738	1
1490-0966	Slide Assembly	28480	1490-0966	2
1854-0215	Transistor, Si, NPN	80131	2N3094	13
1901-0040	Diode, Si, 30 mA, 30 WV	07263	FDG1088	10
†2110-0381	Fuse, 3A, 250V, SB(F2) (115-volt operation, serial prefix 1201)	71400	MDA-3	1
†2110-0303	Fuse, 2A, 250V, SB(F2) (115 or 230-volt operation, serial prefix 1231 and on; 230-volt operation only, serial prefix 1201)	71400	MDX-2A	1
2190-0073	Washer, Lock, split, No. 8	00000	OBD	20
2200-0144	Screw, Machine, FH, No. 4-40, 5/8 in.	00000	OBD	1
2260-0009	Nut, Assembled Washer, No. 4-40	00000	OBD	1
2360-0117	Screw, Machine, PH, No. 6-32, 3/8 in.	00000	OBD	10
2360-0121	Screw, Machine, PH, No. 6-32, 1/2 in.	00000	OBD	6
2360-0200	Screw, Machine, FH, No. 6-32, 1/2 in.	00000	OBD	4
2360-0202	Screw, Machine, PH, No. 6-32, 5/8 in.	00000	OBD	1
2420-0001	Nut, Assembled Washer, No. 6-32	00000	OBD	4
2510-0107	Screw, Machine, PH, No. 8-32, 1/2 in.	00000	OBD	20
2580-0004	Nut, Assembled Washer, No. 8-32	00000	OBD	16
2680-0105	Screw, Machine, FH, No. 10-32, 5/8 in.	00000	OBD	4
2940-0103	Bolt, Hexagon Head, 1/4-20, 1/2 in.	00000	OBD	4
3050-0001	Washer, Flat, No. 8, 3/8 in. OD	00000	OBD	16
3050-0007	Washer, Cup, Metal, No. 10	00000	OBD	4
3050-0222	Washer, Flat, No. 4, 5/16 in. OD	00000	OBD	1
3050-0226	Washer, Flat, No. 10	00000	OBD	4
3050-0227	Washer, Flat, No. 6	00000	OBD	4
3050-0248	Washer, Cup, Filler, Plastic, No. 10	00000	OBD	4
4320-0002	Grommet	28480	4320-0002	1
7101-0171	Channel Plate	09097	5033-1	4
8120-1348	Cable, Power	28480	8120-1348	1
02895-00015	Panel, Front (light gray)	28480	02895-00015	1
02895-00003	Drawer (light gray)	28480	02895-00003	1
02895-00004	Bracket, Right, Tape Holder (light gray)	28480	02895-00004	1
02895-00005	Bracket, Left, Tape Holder (light gray)	28480	02895-00005	1
02895-00007	Bracket, Slide	28480	02895-00007	2
02895-00008	Bracket, Long (25 in.)	28480	02895-00008	2
02895-00010	Drawer (moss gray)	28480	02895-00010	1
02895-00011	Bracket, Right, Tape Holder (moss gray)	28480	02895-00011	1
02895-00012	Bracket, Left, Tape Holder (moss gray)	28480	02895-00012	1
02895-00013	Bracket, Latch	28480	02895-00013	1
02895-00017	Guide, Tape (moss gray)	28480	02895-00017	1
02895-00020	Panel, Front (moss gray)	28480	02895-00020	1
02895-20001	Pad, Locator	28480	02895-20001	2
02895-20002	Plate, Locator (light gray)	28480	02895-20002	1
02895-20004	Handle	28480	02895-20004	1
02895-20005	Filler Plate (light gray)	28480	02895-20005	2
02895-20006	Plate, Locator (moss gray)	28480	02895-20006	1
02895-20007	Filler Plate (moss gray)	28480	02895-20007	2
02895-60006	Rack Mounting Assembly (light gray)	28480	02895-60006	1
02895-60008	Rack Mounting Assembly (moss gray)	28480	02895-60008	1
†02895-60004	Chad Box (with magnetic catch)	28480	02895-60004	1
02895-60005	Logic Inverter PCA	28480	02895-60005	1
†No Number	Rear Panel	-	No Facit No.	1
†No Number	Connector, 6A, 250V	-	10.987.101.00	1

† Denotes parts modified by Facit to meet Hewlett-Packard requirements.



DATA CHANNELS 1 THROUGH 9



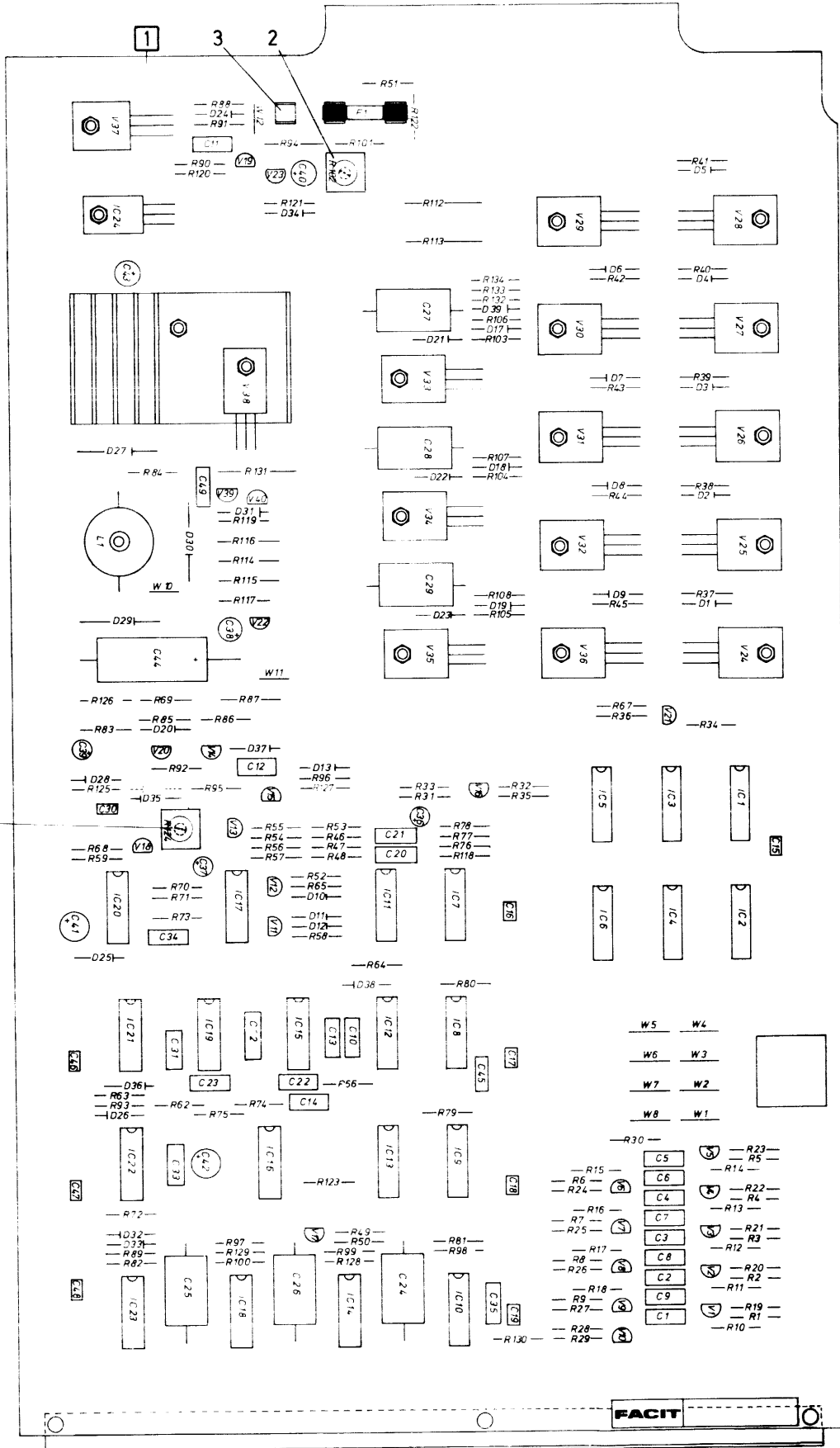


FACIT 4070

R64,68,126,136,141,204,205 To be tested

11.592.203.30	4.7k	11.592.204.40	39k	11.592.205.50	330k
11.592.203.40	5.6k	11.592.204.50	47k	11.592.205.60	390k
11.592.203.50	6.8k	11.592.204.60	56k	11.592.205.70	470k
11.592.203.60	8.2k	11.592.204.70	68k	11.592.205.80	560k
11.592.203.70	10k	11.592.204.80	82k	11.592.205.90	680k
11.592.203.80	12k	11.592.204.90	100k	11.592.206.00	820k
11.592.203.90	15k	11.592.205.00	120k	11.592.206.10	1M
11.592.204.00	18k	11.592.205.10	150k	11.592.206.20	1.2M
11.592.204.10	22k	11.592.205.20	180k	11.592.206.30	1.5M
11.592.204.20	27k	11.592.205.30	220k	11.592.206.40	1.8M
11.592.204.30	33k	11.592.205.40	270k	11.592.206.50	2.2M

CONTROL CIRCUIT BOARD - TTL



CONTROL CIRCUIT BOARD - TTL

Component designation	Part No.	Description
IC1-6,19	1159 20 10-00/0	IC SN7410N
IC7,13	1063 60 03-50/0	IC SN7409N
IC8	1063 60 42-50/8	IC SN74107N
IC9	1596 03 80-00/2	IC SN7403N
IC10,14,18,23	1159 34 60-00/6	IC SN74121N
IC11	1063 60 02-50/2	IC SN7408N
IC12	1063 60 08-50/9	IC SN7437N
IC15,20	1063 60 79-50/0	IC SN74132N
IC16	1159 34 50-00/7	IC SN7404N
IC17	1063 60 08-10/3	IC SN74LS00N
IC21	1159 20 00-00/1	IC SN7400N
IC22	1159 34 70-00/5	IC SN7413N
IC24	1063 60 10-10/9	IC A78M05C
V1-16,18	1063 40 01-10/0	Trans BC238B
V17,19-21,40	1063 40 00-10/2	Trans BC308B
V22	1063 40 13-10/5	Trans BC328
V23,39	1063 40 10-10/1	Trans BC337
V24-37	1063 40 07-10/7	Trans BD267
V38	1063 40 16-10/8	Trans BD266
D1-3,17-19,24,31,33,35,37-39	1159 19 10-00/2	Diode IN4148
D20-23	1159 24 80-00/5	Diode IN4448
D25,26,36	1159 10 40-00/8	Diode AAZ17
D27	1159 18 40-00/1	Diode NS3001
D28	1063 20 42-10/2	Diode BZX55 8.2V 0.4W
D29	1159 48 80-00/4	Diode BZY92 6.8V 1W
D30	1159 09 90-00/5	Diode IN5401
D32	1063 20 35-10/0	Diode BZX55 5.1V 0.4W
D34	1063 20 35-10/0	Diode BZX55 5.1V 0.4W
C1-10,12	1062 22 03-10/6	Cap 2.2n 63V
C11,20-22,49	1062 22 13-10/5	Cap 0.1μ 63V
C13,14	1062 22 09-10/3	Cap 22n 63V
C15-19,30,46-48	1062 10 85-10/8	Cap 10n 50V
C23,34	1062 22 01-10/0	Cap 1n 63V
C24-29	1159 47 60-60/2	Cap 0.47μ 100V
C31	1062 22 07-10/7	Cap 10n 63V
C32	1062 22 14-10/3	Cap 0.15μ 63V
C33,35	1062 22 11-10/9	Cap 47n 63V
C36	1062 32 60-10/5	Cap 1μ 35V
C37,40	1062 30 25-10/2	Cap 10μ 16V
C38,39	1062 30 05-10/4	Cap 4.7μ 10V
C41,42	1062 31 09-10/4	Cap 47μ 6.3V
C43	1062 32 66-10/2	Cap 10μ 35V
C44	1596 05 60-40/5	Cap 470μ 10V
C45	1062 10 33-10/8	Cap 470p 63V
R1-9,31,95	1159 22 04-10/8	Res 22k 1/4W 5%
R10-18	1159 22 03-60/5	Res 8.2k 1/4W 5%
R19-28,32-34,47-50,56-58,62-63,85	1159 22 03-70/4	Res 10k 1/4W 5%
R29,51	1159 22 02-10/2	Res 470 1/4W 5%
R30,79-83,86,91,93,118,123,88,132-134	1159 22 03-30/8	Res 4.7k 1/4W 5%
R35,64-66,68-70,121	1159 22 01-90/6	Res 330 1/4W 5%

Component designation	Part No.	Description
R36,53,87	1159 22 02-90/4	Res 2.2k 1/4W 5%
R37-46,52	1159 22 02-50/8	Res 1k 1/4W 5%
54,55,84,90,119		
R71-75	1159 22 02-00/3	Res 390 1/4W 5%
R67,76-78	1159 22 02-30/0	Res 680 1/4W 5%
R89,125	1159 22 03-50/6	Res 6.8k 1/4W 5%
R92,122	1159 22 02-80/5	Res 1.8k 1/4W 5%
R94	1061 20 09-10/9	Res 5.6 1/2W 10%
R96	1159 22 01-30/1	Res 100 1/4W 5%
R97	1159 22 04-10/8	Res 22k 1/4W 5%
R98	1159 22 04-30/6	Res 33k 1/4W 5%
R99	1159 22 03-90/2	Res 15k 1/4W 5%
R100	1159 22 04-20/7	Res 27k 1/4W 5%
R101	1159 22 02-60/7	Res 1.2k 1/4W 5%
R102	1061 40 60-50/6	Res 10k 1/2W 20%
R103-105	1061 12 88-10/0	Res 82.5k 1/4W 1%
R106-108	1061 12 76-10/5	Res 47k 1/4W 1%
R112,113	1061 11 55-50/7	Res 0.47 0.7W 5%
R114,115	1159 17 31-30/9	Res 100 1/2W 5%
R116	1159 17 30-30/1	Res 15 1/2W 5%
R117	1159 22 01-70/8	Res 220 1/4W 5%
R120	1150 22 04-90/0	Res 100k 1/4W 5%
R124	1061 40 58-50/0	Res 2k 0.5W 20%
R131	1595 92 21-90/2	Res 0.2 4W 10%
1	1149 36 30-00/5	Circuit board compl.
2	1064 10 32-50/2	Core
3	1595 82 60-00/0	Fuse holder
F1	8369 16 05-10/5	Fuse 0.64A (Fast) Amer.
F1	1159 12 21-20/2	Fuse 630mA (Fast action)
L1	1149 32 80-00/9	Coil

Resistors to be tested out

Part No.	R126	R127	R128	R129	R130
1159 22 02-80/5	1.8k	x			
1159 22 02-90/4	2.2k	x			
1159 22 03-00/1	2.7k	x			
1159 22 03-10/0	3.3k	x			
1159 22 01-50/0	150		x		
1159 22 01-60/9	180		x		
1159 22 01-70/8	220		x		
1159 22 01-80/7	270		x		
1159 22 01-90/6	330		x		
1159 22 04-10/8	22k			x	
1159 22 04-20/7	27k			x	
1159 22 04-30/6	33k			x	
1159 22 04-40/5	39k			x	
1159 22 04-50/4	47k			x	x
1159 22 04-60/3	56k			x	x
1159 22 04-70/2	68k			x	x
1159 22 04-80/1	82k			x	x
1159 22 04-90/0	100k			x	x
1159 22 05-00/6	120k			x	x
1159 22 05-10/5	150k			x	x
1159 22 05-20/4	180k			x	x
1159 22 05-30/3	220k			x	x
1159 22 05-40/2	270k			x	x
1159 22 05-50/1	330k			x	x
1159 22 05-60/0	390k			x	x
1159 22 05-70/9	470k			x	x
1159 22 05-80/8	560k			x	x
1159 22 05-90/7	680k			x	x
1159 22 06-00/4	820k			x	x

