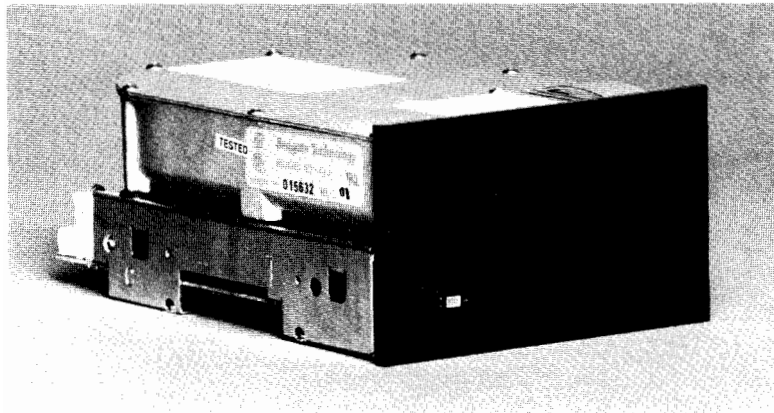


5 1/4-inch WINCHESTER DISC DRIVE MECHANISM



TOPIC	PAGE
Introduction	1-1
Specifications	1-1
Configuration	1-3
Troubleshooting	1-6
Adjustments	1-7
Replaceable Parts	1-8
Diagrams	1-9

Part No. 5957-6558
For use with binder No. 9282-0683

Printed in USA
September, 1985

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

INTRODUCTION

The 5 1/4-inch Winchester drive is a random-access disc drive with multiple heads that utilize Winchester technology. The storage capacity varies with the number of platters installed in the unit, and the application for which the unit is intended. This drive is used in a variety of products including the following: HP 9133A, HP 9134A, B, V, XV, D and H ; and HP 9153A.

SPECIFICATIONS

Average access time	60 ms (within volume)
Maximum access time	170 ms
	146 ms (A version only)
	500 ms (A version only- across 4 volumes)
Data transfer rate	50 Kbytes/s
Rotational speed	3600 RPM $\pm$ 1%
Operating temperature	10 to 40 C (50 to 104 F)
Operating humidity	Refer to Figure 1
Operating altitude	0 to 4,600 m (0 to 15,000 ft)
Shock	18 G(.75 - 1.75 inch vert. drop) (1.9 - 3.8 cm)

Reference

5 1/4-inch Winchester
Disc Drive Mechanism

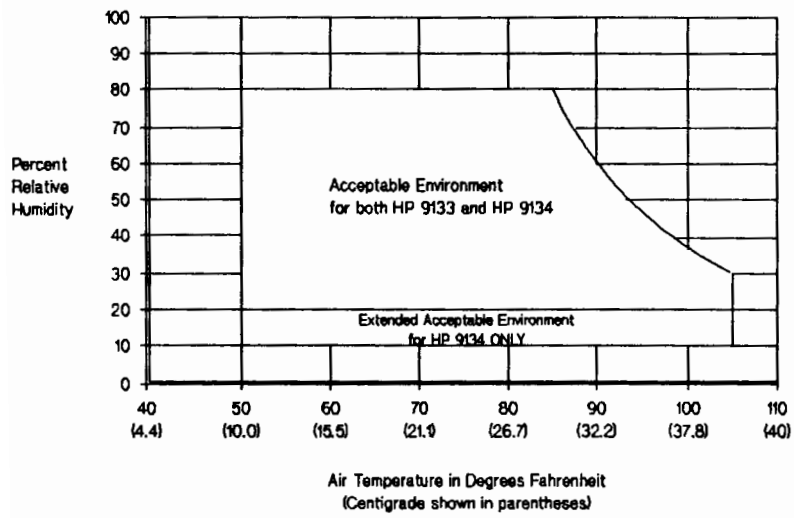


Figure 1. Temperature and Humidity Range.

CONFIGURATION

EXTERNAL CONFIGURATION/SWITCHES

The Winchester Drive Electronics PCA has two items to check prior to installation in a host unit. These items are:

1. Resistor Terminator Pack
2. 14 Pin Dual-in-Line Shunt

Both items are located near the J1 connector.

The 20 Mbyte drive assembly (09133-69106) has two jumpers which must be installed for proper operation. Refer to Figure 2 for location and position of these jumpers.

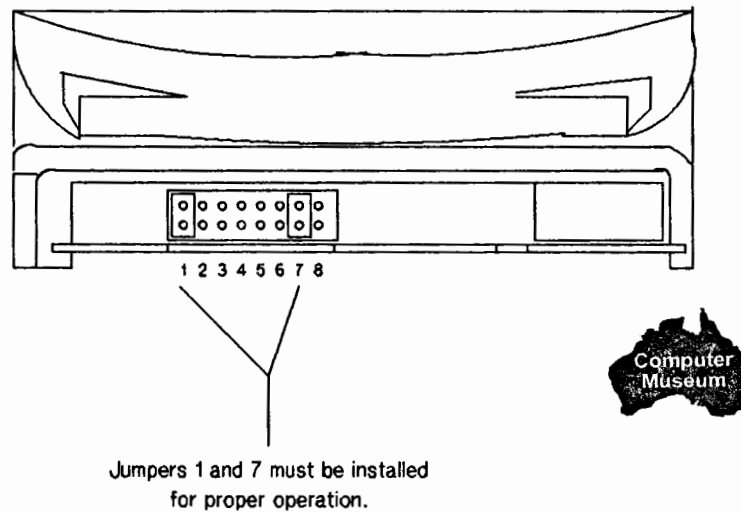


Figure 2. 20 Mbyte Jumper Location.

CONFIGURATION MATRIX

	Products	Products	Products
	9133A	9133A	9133B
	9134A	9134A	9134B
	9135A	9135A	
Serial Number	<=1445 (33A)	>1445 (33A)	All
Range Using	<=3085 (34A)	>3085 (34A)	
last 4 digits	<=4165 (35A)	>4165 (35A)	
Winchester Drive	09135-69600	09133-69100	09133-69102
Winchester Logic Board	09135-69502	09133-69103	09133-69101

Single-Volume Configuration

	OPTION #10		
Controller	09135-69501	09133-69514	09133-69514
Processor	88134-85500	N/A	N/A
ROM	88134-85501	N/A	N/A
Jumpers: 10M	N/A	No	Yes
ONE	N/A	Yes	Yes
4XX	N/A	Yes	Yes

Four-Volume Configuration

	STANDARD OPTION		No four Volume option available
Controller	09135-69515	09133-69514	
Processor	09135-85500	N/A	
ROM	09135-85501	N/A	
Jumpers: 10M	N/A	No	
ONE	N/A	No	
4XX	N/A	Yes	

Reference

5 1/4-inch Winchester
Disc Drive Mechanism

CONFIGURATION MATRIX (continued)

	Products	Products
	9133V	9133XV 9134XV
Serial Number Range Using last Four digits	All	All
Winchester Drive	09133-69100	09133-69104
Winchester Logic Board	09133-69103	09133-69105

Single-Volume Configuration

	STANDARD OPTION	
Controller	09133-69508	09133-69508
Jumpers: (C)	No	Yes
(B)	Yes	No
(A)	Yes	Yes

Four-Volume Configuration

	OPTION #004	OPTION # 10
Controller	09133-69508	09133-69508
Jumpers: (C)	No	Yes
(B)	No	Yes
(A)	Yes	Yes

TROUBLESHOOTING**INTERPRETATION OF ERRORS**

Errors For 09133-69514 and 09133-69508 Controllers

Decimal Code	Description	Possible problem area
220	Jumper on logic board set incorrectly.	1)Check drive elect. jumper configuration for unit number 2)Drive Electronics PCA
222	Faulty HP-IB chip	1)Controller PCA
223	Faulty I/O ports or LED	1)Controller PCA
224,254,253	Faulty drive	1)Drive 2)Drive Electronics PCA 3)Motor speed
225,227,229, 232,241,246	Faulty controller chip	1)Controller PCA
226	Track 0 not detected	1)Drive
228,245,248, 249	No Error	
230	Controller RAM failure	1)Controller PCA
231,242	Sector spare failure	1)Controller PCA
243	Write failure	1)Controller jumper configuration 2)Controller PCA
244,247	Host error/ Faulty HP-IB chip	1)Host 2)Controller PCA
250,251,255	Data error	1)Controller PCA 2)Drive Electronics PCA 3)Drive
252	Jumper on Controller PCA set incorrectly	1)Controller jumper configuration 2)Controller PCA

Errors of 69510,69515,69501 Controllers

Hex code	Description	Possible problem area
02,03,06,07,08 0B	Sector/seek error	1)Drive 2)Drive Electronics PCA
01,29,0C,24	Faulty controller processor	1)Controller PCA
04	Track 00 not found	1)Drive 2)Drive Electronics PCA
0A	Drive fault	1)Drive 2)Drive Electronics 3)Motor speed
20,21,22,23	Alternate sector	1)Drive Electronics PCA
30	Module timeout (during selftest)	1)Controller configuration 2)Controller PCA
09	Host error/ HP-IB error	1)Controller PCA 2)Host
0D	Uncorrectable ECC error	1)Drive 2)Drive Electronics PCA 3)Controller PCA
11 Thru 1B	Correctable ECC error	

**ADJUSTMENTS****INDEX SENSOR ADJUSTMENT**

1. Remove all power and dismount drive assembly from mainframe.
2. Remove the Winchester Drive Electronics PCA.
3. Carefully place the drive unit bottom side up with the

spindle motor hub exposed.

4. Adjust, as required, the Hall Effect sensor for .030-inch clearance from the hub tab.
5. Re-assemble the drive.

BRAKE ADJUSTMENT (09135-69600 DRIVES ONLY)

NOTE

Brake adjustment may effect Index adjustment.

1. Remove all power and dismount drive assembly from mainframe.
2. Remove Winchester Drive Electronics PCA.
3. Carefully place the drive unit bottom side up with the spindle motor hub exposed.
4. Check the clearance between the brake pad and drive hub for a clearance of .010-inch.
5. Re-assemble the drive.

ORDER OF ADJUSTMENTS

The Brake adjustment should be done first, but only if needed.

REPLACEABLE PARTS

ASSEMBLIES REPLACED MOST OFTEN

<u>Part Number</u>	<u>Description</u>
09133-69100	5 Mbyte Drive assy
09133-69103	5 Mbyte Drive Electronics PCA
09133-69104	15 Mbyte Drive Assembly
09133-69105	15 Mbyte Drive Electronics PCA
09133-69106	20 Mbyte Drive Assembly

Reference

5 1/4-inch Winchester
Disc Drive Mechanism

DIAGRAMS

The following diagrams are included for use in troubleshooting.

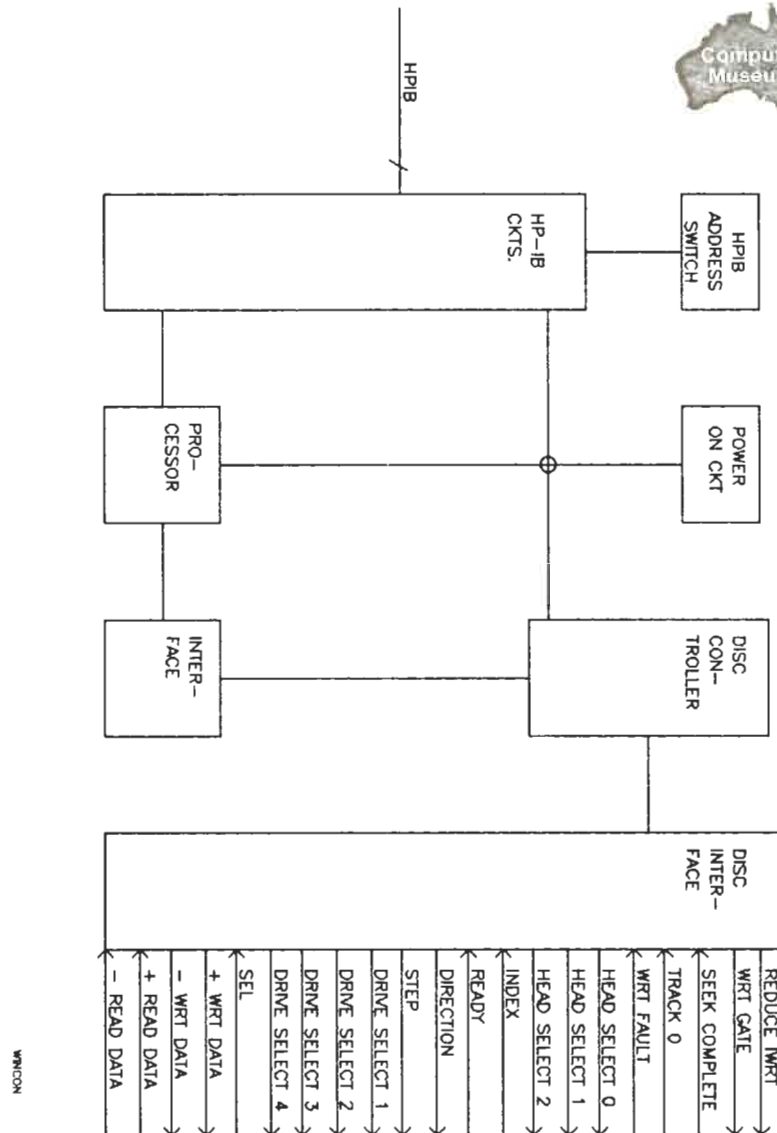
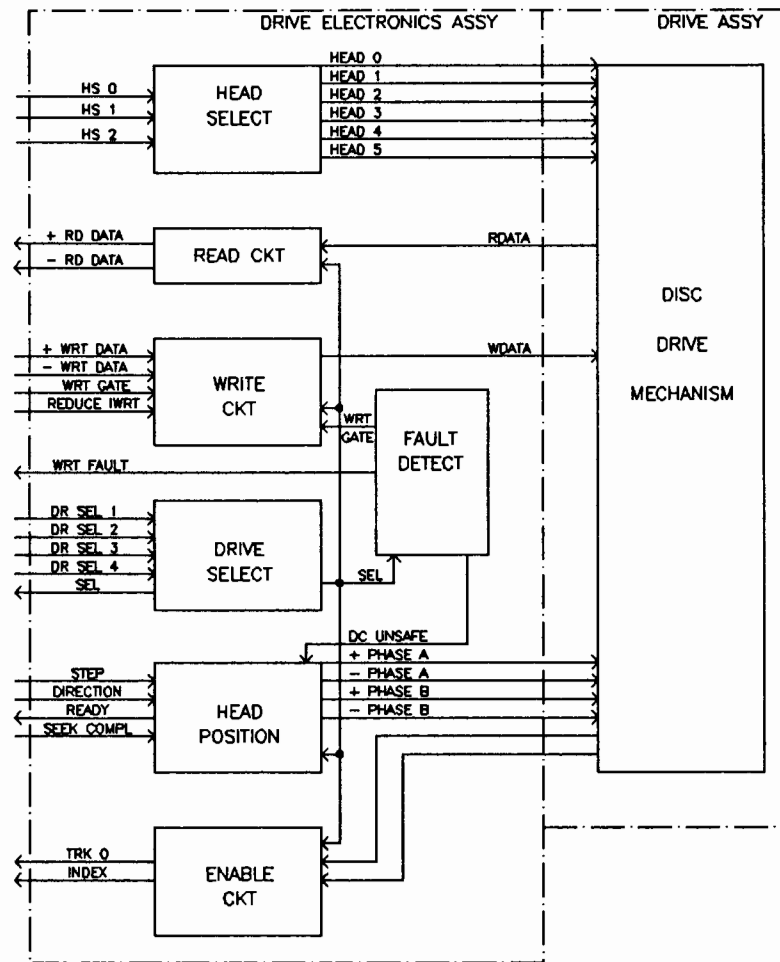


Figure 3. Winchester Controller Block Diagram.



WINFILED



Figure 4. Winchester Drive and Electronics.

DRIVE ELECTRONICS PCA (P/N 09135-69502)

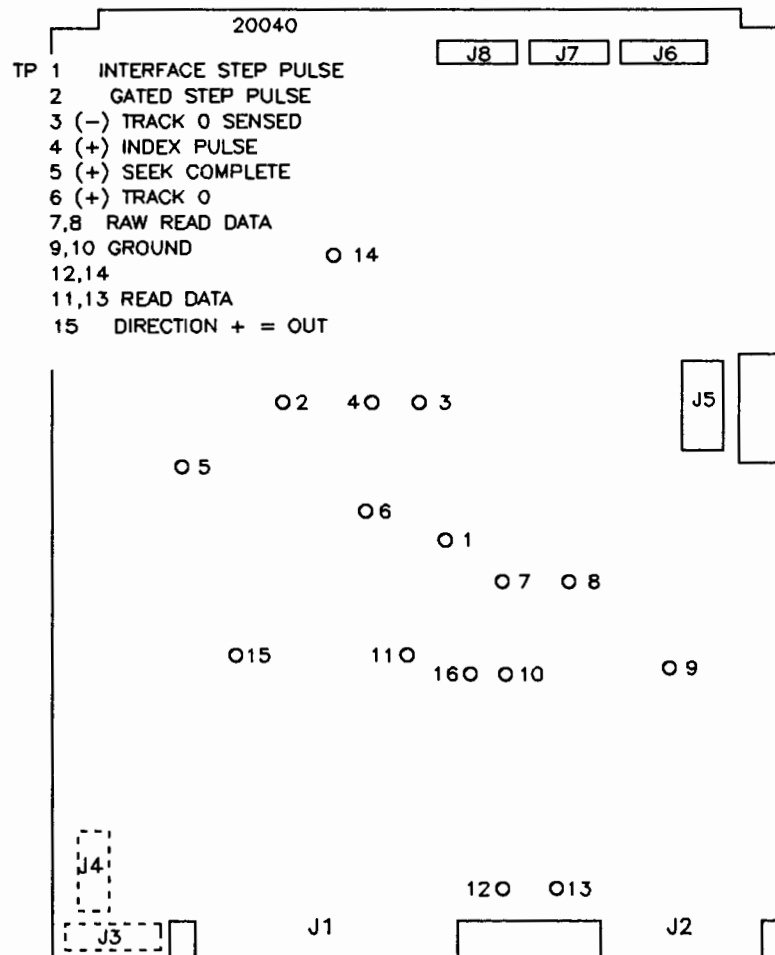


Figure 5. Drive Electronics PCA 20040.

DRIVE ELECTRONICS PCA (P/N 09133-69103)

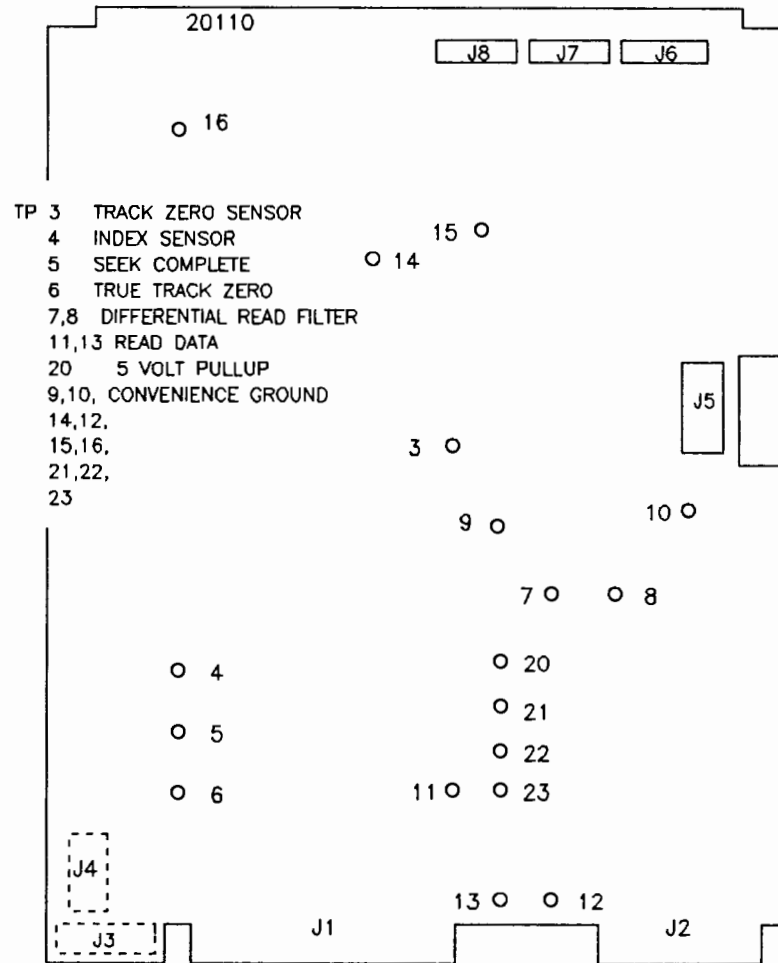


Figure 6. Drive Electronics PCA 20110.

DRIVE ELECTRONICS PCA (P/N 09133-69101 OR 09133-69103)

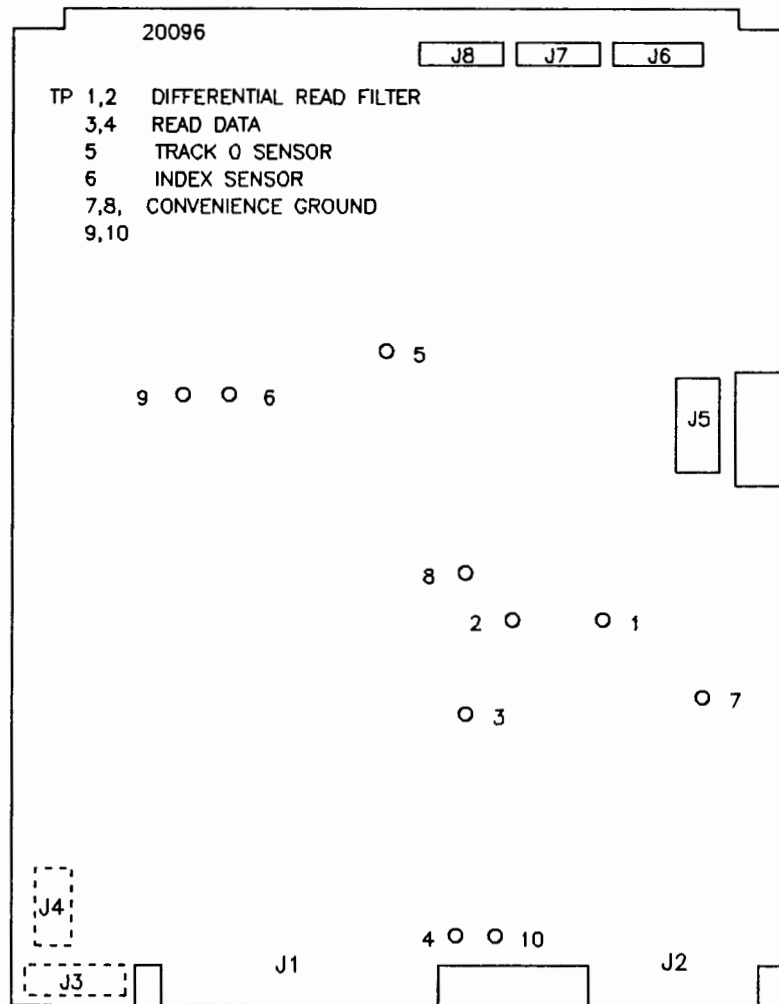


Figure 7. Drive Electronics PCA 20096.

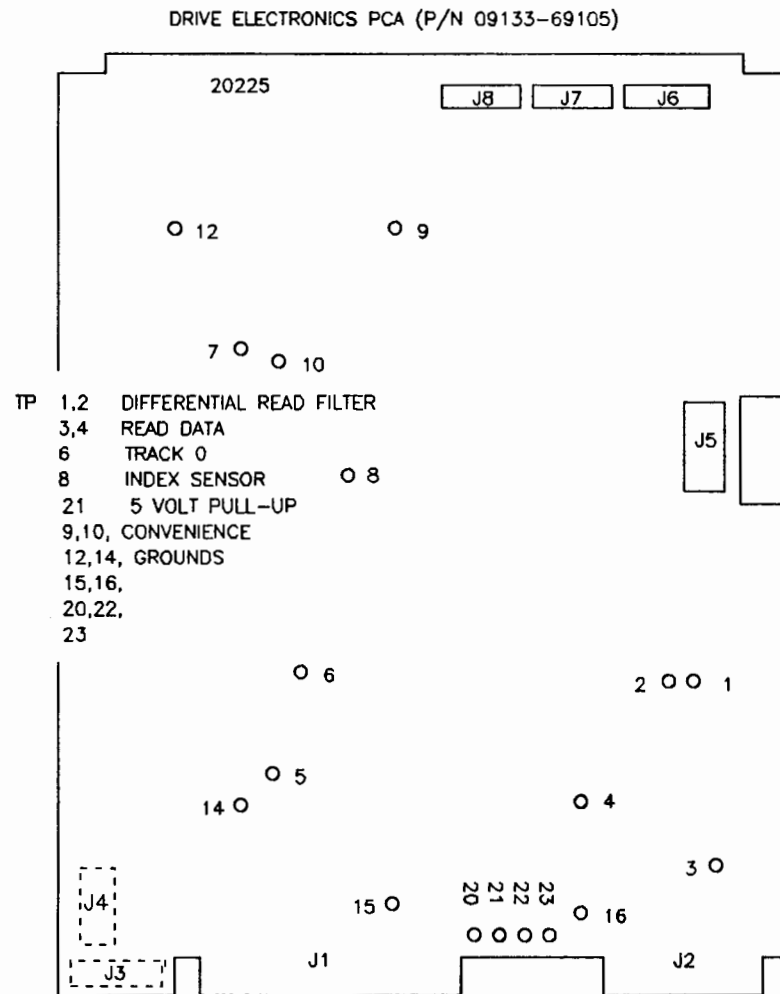


Figure 8. Drive Electronics PCA 20225.