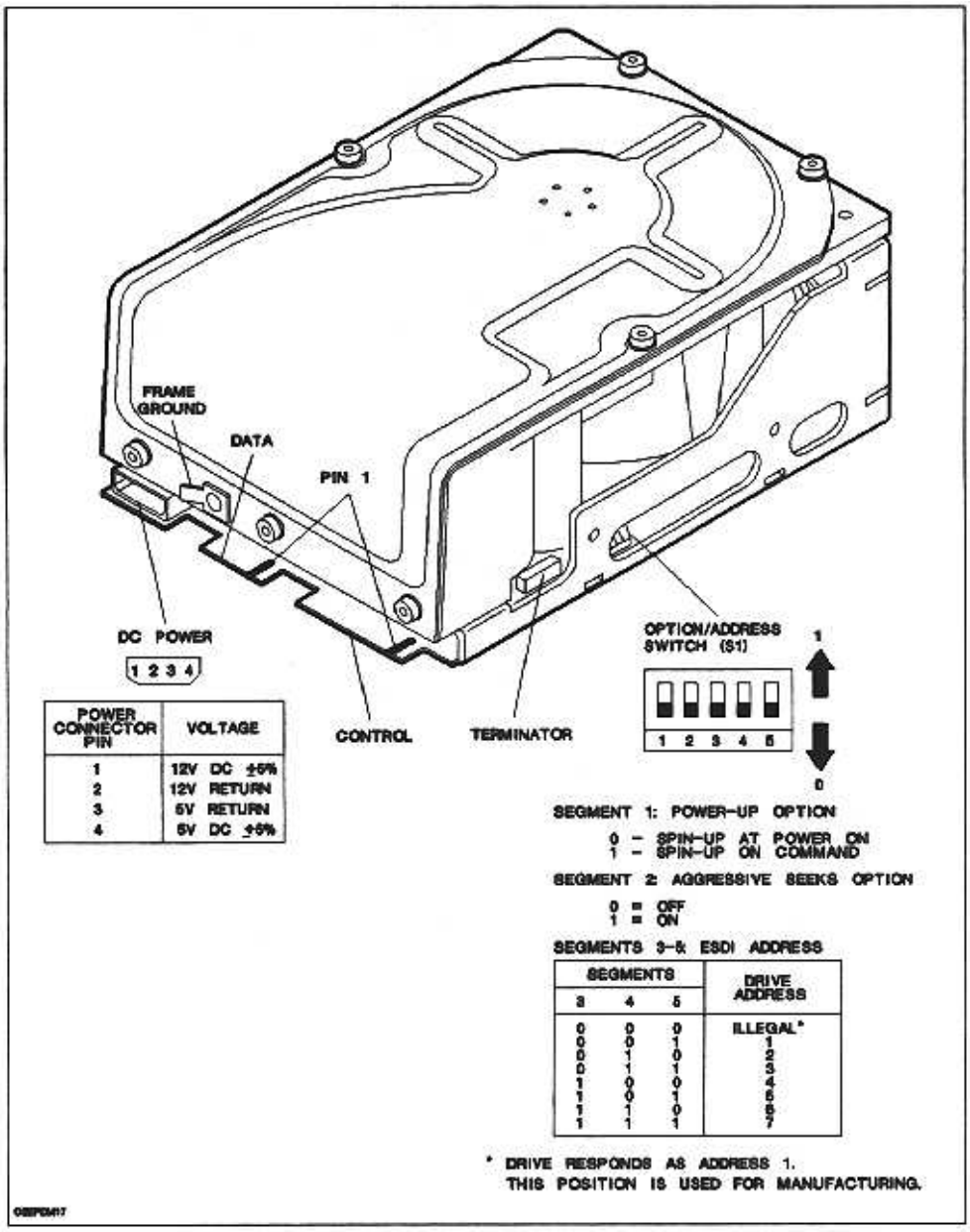
Hewlett-Packard 97544/48 ESDI

9754X Jumper Settings



POWER CONNECTOR PIN	VOLTAGE
1	12V DC ±5%
2	12V RETURN
3	5V RETURN
4	5V DC ±5%

SEGMENTS 3	4	5	DRIVE ADDRESS
0	0	0	ILLEGAL*
0	0	1	1
0	1	0	2
0	1	1	3
1	0	0	4
1	0	1	5
1	1	0	6
1	1	1	7

Technical Specifications

- Disk Drive Capacities
- Operating Specifications
- Environmental Requirements

Disk Drive Capacity

HP 97544E/48E Disk Drive Capacity

These numbers are for comparison only. Capacities are calculated using a 512 byte sector. When other sector sizes are used, formatted capacity will change. Unformatted capacities are given in parenthesis ( ).

	Unformatted Capacities		**Formatted Capacities**	
	HP 97544E	**HP 97548E**	**HP 97544E**	**HP 97548E**
Data Surfaces:	8	16	8	16
Tracks Per: Surface[1]	1,457	1,457	1,457	1,457
Sectors Per: Track[2]			57	57
Data Bytes Per:				
Sector			512	512
Track	(34,143)	(34,143)	29,184	29,184
Surface	(49,746,351)	(49,746,351)	42,521,088	42,521,088
Drive	(397,970,808)	(795,941,616)	340,168,704	680,337,408

Operating Specifications

HP 97544E/48E Operating Specifications

Note: The HP 97544E/48E disk drives must be operated within the Disk Drive Environmental Requirements in order for them to function property.

Interface Industry Standard ESDI

Seek Times

Track to Track Seek	3.5 milliseconds (typical)
Random Average Seek:	17 milliseconds (typical)
Maximum Seek:	32 milliseconds (typical)
Incremental Head Switch	2.0 milliseconds (typical)

Notes:

Seek time is defined as the time from when the last bit of the seek command is transferred over the interface until the time when the command complete line goes active. (Includes seek settle time.)

Typical seek time represents the mean value of a representative sample of drives measured under normal conditions of temperature, voltage and horizontal orientation.

Track to track seek time is the mean value of all seek times measured by performing all possible single track seeks.

A seek that involves a physical move to a new cylinder and a head switch does not incur an extra head switch settle time because the head switch is embedded into the physical move time.

Random average seek time is the time to do all possible seeks divided by, the number of random seeks possible.

Head switch time is defined as the time from when the head select lines change state to when the command complete line goes active. (Include head switch settle time.)

Incremental head switch time is the mean value of head switch time measured by performing head switches from head n to n+1 for all possible n. A head switch from the last head to head zero in the same cylinder is also considered an incremental head switch.

Spin-up Time

From Power-On to Ready for Access

Typical	17 seconds
Maximum	21 seconds
Disk Rotating Speed	4002 rpm +/- 0.5%
Rotational Latency (Average time)	7.5 milliseconds +/-0.5%

Data Transfer Rates

Single sector burst transfer:	2.5 megabytes (20 megabits) per second
Single track sustained transfers:	1.9 megabytes (15.57 megabits) per second
Continuous transfer:	1.6 megabytes (12.96 megabits) per second
Maximum Defects	50 defects per surface, but not to exceed:
for 4 disks	200 defects per drive
for 8 disks	400 defects per drive

Recoverable Data Error Rate

Less than ten (10) errors in 1011 bits transferred when the disk drive is operated within the specified environmental limits.

Unrecoverable Data Error Rate

Less than ten (10) errors in 1013 bits transferred when the disk drive is operated within the specified environmental limits.

Seek Error Rate

Less than ten (10) seek errors in 107 seeks when the drive is operated within the specified environmental limits.

Recording Density	801.9 flux reversals/mm (20,68/in.) on innermost track
Track Density	65.6 tracks per mm (1667 tracks per inch)
Coding System	2-7 Run Length Limited (RLL) Code

Electromagnetic Emissions

The HP 97544E/48E disk drives has been characterized for radiated and conducted interference from 10 kHz to 1 GHz as individual "components" (incomplete in nature). Data is available upon request.

End user system emissions are highly dependent upon the characteristics of the system in which the product is is installed. A complete test and evaluation program should be performed on the end use application.

Acoustical noise: Less than 50 dbA sound pressure level while performing random address seek.

Safety

This product will be evaluated as a component (incomplete in nature) to:

IEC	950
UL	478, 5th Edition
CSA	C22.2 No. 220
TUV	DIN IEC 950/VDE 0806/8.81

Physical Characteristics

Unit Weight	3.6 kg (7.5 lbs)
Shipping Weight (Single-Unit Package)	4.5 kg (10 lbs)
Shipping Weight (Four-Unit Package)	14.8 kg (33 lbs)

Dimemsions[1]

Length	204 mm (8.00 in.)
Width	146 mm (5.75 in.)
Height	83 mm (3.25 in.)

[1] Excluding front bezel.

Environmental Requirements

The environmental requirements for proper operation of the HP 97544E/48E.

Input Power

Voltages	+5 V, + 12 V
Regulation	±5%

Ripple and Noise:

+5 V	< 100 mVp-p
+12 V	< 150 mVp-p

Ambient Air Temperature

Operating	0°C to 50°C (32°F to 122°F)
Non-operating	-40°C to 65°C (-40°F to 149°F)

(Maximum rate of change shall not exceed 20°C (36°F) per hour.)

Relative Humidity

Operating	8% to 80% with wet bulb limit of 28°C
Non-operating (storage and shipping)	5% to 80%

(Excludes all conditions which can cause condensation in or on the disk drive.)

Altitude

Operating	305 m (1,00 ft) below see level to 3,046m (10,000 ft) above sea level.
Non-operating	305 m (1,000 ft) below sea level to 15,240m (50,000 ft) above sea level

Tilt

The disk drive will meet all performance specifications when within 15° of horizontal on any of the major mounting axes.

Shock

Operating:

No change in performance	2.0 g (peak), 11 milliseconds, half sine
No loss of data	5.0 g (peak), 11 milliseconds, half sine

Non-operating:

Half sine	30 g peak, 11 milliseconds
Trapezoidal	25 g peak, 26 milliseconds

Swept Sine Vibration

Operating:

No loss in performance or data	0.25 g (peak), 5 to 500 Hz
No loss of data	0.5 g (peak), 5 to 500 Hz

Non-operating:

No damage to mechanism	0.5 g (peak), 5 to 500 Hz

Random Vibration

Operating: Power spectral density of 0.0001g2/Hz from 5 to 350 HZ, decreasing by 6 db/octave from 350 to 500Hz (approximately .021grms)in any translational direction. Non-operating: Power spectral density of 0.015g2/Hz from 5 to 100 HZ, decreasing by 6 db/octave from 100 to 137Hz then constant from 137 to 350 Hz, and decreasing by 6 db/octave from 350 to 500Hz (approximately 2.09grms)in any translational direction.

Electromagnetic Susceptibility

Radiated	<3V/m from 14 kHz to 200 MHz
Conducted	
+5 V	< 200 mVp-p from 100 kHz to 250 MHz
+12 V	< 400 mVp-p from 100 kHz to 250 MHz
Magnetic	< 4 gauss, 47.5 to 198 Hz

Electrostatic Discharge

Current regulations do not specify or require Electrostatic Discharge (ESD) testing.

These products have been characterized as individual "components" (incomplete in nature) with a company-imposed set of operational and non-operational standardized tests.

ESD susceptibility is highly dependent upon the characteristics of the system in which the product is installed. A complete test and evaluation program should be performed on the end use application. Avoid ESD damage by using proper grounding procedures whenever the drive is handled.