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Technical Support Document number 1000a

Peripherals: floppy disk drive head cleaning program manual

The procedure for carrying out the head cleaning program is given below; in this case for a QX-10 floppy disk drive, although a similar process is followed for other disk drives.

Turn on the power switch of the floppy disk drive, or in the case of the QX-10, press the reset switch. Insert the head cleaning program diskette into drive A. The following messages should appear on the screen:

```
59k CP/M vers 2.2 3.0 9/24 13:00
```

```
***** EPSON *****
```

```
----- HEAD CLEANING PROGRAM -----
```

```
QX-10 FDD HEAD CLEANING START ??
```

```
Y: START
```

```
I: INITIALISE
```

If using the head cleaning diskette and the system diskette for the first time, press 'I' or 'i' when using a new cleaning diskette and press 'Y' or 'y' when using an old cleaning diskette. However, if you are using the head cleaning diskette and the system diskette continuously, press 'Y' or 'y'. Do not put a write protect tab on the system diskette.

Whether you press 'Y', 'y', 'I', or 'i', the following message will appear:

```
CHANGE CLEANING DISKETTE (DRIVE A or B)  
CLEANING HEAD ? (Key in drive A or B exit E)
```

Insert the head cleaning diskette into the drive and press the drive name. For example,

```
CLEANING HEAD ? (Key in drive A or B exit E) A
```

The two lines of the final message will reappear after the cleaning program has run its course; this should take approximately 30 seconds.

Now press 'E' or 'e', so that the head cleaning program can be completed. After pressing 'E' or 'e', the following message should appear:

```
HEAD CLEANING END !!
```

You can then press any key after changing the system diskette. However, wait for about five minutes before changing the system disk, because there will still be a residue of alcohol on the read/write head. The initial message in the disk cleaning program should now be on the screen, since the head cleaning operation is complete. The cleaning time is then written to the system diskette.

Do not use the cleaning diskette more than 15 times.

Technical Support Document number 1001a

Peripherals: PX-8 utility disk programs on PF-10 and TF-20 disk drives

A PX-8 CP/M utility disk and user's manual is now available. There are nine utility commands which are not on the CP/M utility ROM which comes with the PX-8. Some of the duplicated commands may be slightly more up to date than those in the ROM, although their basic functions are the same. The duplicated commands are not explained in the 'PX-8 disk utilities user's manual'; the 'PX-8 user's manual' must be consulted.

The utilities available on the disk are:

ASM, CONFIG, COPYDISK, CTRLP, DDT, DEXSUB, DUMP, ED, FILINK, LOAD, PIP, STAT, SUBMIT, TERM and XSUB.

The utilities described in the 'PX-8 disk utilities user's manual' are:

ASM, COPYDISK, CTRLP, DDT, DEXSUB, DUMP, ED and LOAD.

In particular, COPYDISK allows you to format and copy both nonEpson and Epson disks. (Epson disks are preformatted.) DDT (dynamic debugging tool) can be used to examine memory and to write and debug your own short machine code programs.

Technical Support Document number 800a

Peripherals: CX-21 acoustic coupler specifications

Number of communication channels:

One channel

Communication system:

Full/half duplex selectable (full duplex only for the CX-21D)

Modem signalling system:

Frequency shift keying (FSK) modulation system

Modulation/demodulation speed:

300 baud or less, will work with 75/75

Communication speed:

300 bits per second maximum

DC input signal voltage:

+/- (3 to 15) volts

Control signal voltage (output):

+/- 6 volts

DC input and output load resistance:

3000 to 7000 ohms

Line signal frequency:

Group	Input voltage [V]	Line frequency [Hz]	Mark/space
Low	- 3 to - 15	Fz 980	mark
	+ 3 to + 15	FA 1180	space
High	- 3 to - 15	Fz 1650	mark
	+ 3 to + 15	FA 1850	space

Modulation distortion:

Group	Deviation of $(FA + Fz)/2$ [Hz]	Condition
Low	1080 +/- 8	300 bits per second into SD, by 1:1 coding
High	1750 +/- 8	

Technical Support Document number 800a

Transmission acoustic output:

Shown below when measured in a cavity of 15
cubic centimetres under the coupled condition:
3.4 kHz or below 1 Newton per square metre or less
3.4 kHz or above 0.02 Newton per square metre or less

Power supply: Battery drive; dc 4.8 V driven for 4 hours approximately
(NiCd battery Epson C20RB);
ac drive; ac 115 V +/- 10%, 220/240 V +/- 10%

Power consumption:

0.8 W

Temperature: During operation: 5 to 40 degrees Celsius;
out of operation: -20 to 50 degrees Celsius

Relative humidity:

During operation: 10-90% (no dew condensation);
out of operation: 5-95% (no dew condensation)

Noise level: Ambient noise during operation; 85 phonons maximum

Dimensions: 42 mm (height) (excludes gum foot) x 297 mm (width)
x 95 mm (depth)

Weight: 700 g (excluding battery)

Technical Support Document number 801a

Peripherals: PF-10 portable floppy disk drive specifications

General information

The PF-10 is a portable single floppy disk drive which uses 3.5 inch double sided micro floppy diskettes. It is battery operated and comes with a 6 V adaptor for recharging. It weighs 1.5 kg and was designed primarily to interface with the PX-8 computer.

Time between charges:

90 minutes with normal intermittent use

Storage capacity:

360 kbytes with 40 tracks per side, 9 sectors per track and 512 bytes per sector

Connection to the PX-8

This is achieved via the SERIAL IN port at the back of the PF-10 using the Epson number 726 DIN plug cable. An extra SERIAL OUT connector at the back of the PF-10 is used to connect to the SERIAL IN port of a second disk drive to create a dual drive system. This is known as daisy chaining.

Notes

Before using two disk drives daisy chained together, the DIP switches must be properly set to ensure that the two drives are not both designated to be the same D: or F: drive. Whichever one is set to be drive D:, the other must be set to be drive F:. This is accomplished by opening the battery compartment, removing the batteries and altering the setting of DIP switch 3. When this DIP switch is set to OFF the drive is set to F: and when it is set to ON the drive is set to D:.

If drive F: is being requested by the computer whilst the D: drive is the first drive in the daisy chain and has its power turned off, then the result of this CP/M operation will be a BDOS error.

Technical Support Document number 801a

Specifications

Memory capacity

Memory capacity per drive: 360 kbytes
Number of tracks per drive: 80 tracks (40 tracks x 2 sides)
Number of sectors per track: 9 sectors per track

Memory density: 8650 BPI (MFM system)

Transmission rate: 38.4 kbits per second (high speed serial)

Track density: 67.5 tracks per inch

Average rotation wait time: 100 milliseconds

Access time

Between tracks: 6 milliseconds

Average shifting between tracks: 97 milliseconds

Settling time: 15 milliseconds

Head positioning system: Stepping motor

Main shaft motor: Direct drive system

Startup time: 1.0 seconds

Number of revolutions: 300 revolutions per minute

Power supply

Battery: NiCd battery pack, or dry batteries (LR14, SUM-2 x 4)

NiCd battery discharge life: 90 minutes continuously after the battery is fully charged. (Operating: one read/write access per 2 minutes. Temperature: 20 degrees Celsius)

External dimensions

Width: 120 mm

Depth: 213 mm

Height: 59.5 mm

Weight: 1.5 kg

Environmental conditions

Temperatures: Operating range 5 to 35 degrees Celsius;
nonoperating range: -20 to 60 degrees Celsius

Humidity: Operating range 20-80% noncondensing;
nonoperating range 10-80% noncondensing

Allowable vibrations: Operating: 0.25 G, 55 Hz;

nonoperating: 1 G, 55 Hz

Allowable shocks: Operating: 1 G, 1 ms or less;

nonoperating: 2 G, 1 ms or less

Technical Support Document number 802a

Peripherals: TF-20 intelligent disk drive specifications

General information

The TF-20 is a dual 5 1/4 inch double sided double density floppy disk drive system designed for use with both the HX-20 portable computer and the PX-8 portable computer. The TF-20 (referred to as terminal floppy) drive system is composed of two streamline disk drives integrated into a single case and power supply unit. They connect to both the HX-20 and the PX-8 via the high speed serial interface.

HX-20 disk BASIC

To load disk BASIC into the HX-20 from the TF-20, set DIP switch 4 on the HX-20 to ON. When the TF-20 is connected to the HX-20 and disk BASIC is booted (loaded into memory), HX-20 BASIC is enhanced with many additional commands used in disk drive operation. The additions to ROM BASIC include commands which handle random access files, disk system functions and additional BASIC programming structures such as (WHILE...WEND).

PX-8 CP/M system disk

To use the PX-8 with the TF-20, simply place the PX-8 system disk into the left hand drive of the TF-20. It will automatically boot up and it will then be possible to obtain access to all the CP/M utilities on the disk from the PX-8.

Hardware configuration

The TF-20 disk drive incorporates a Z80 central processing unit (CPU), 64k of memory and various input/output devices. These resident devices reduce the workload of the HX-20 by controlling file manipulation and handling the input/output routines between the HX-20 and the TF-20. The 64k in the TF-20 also reduces the amount of memory space needed in the HX-20 for the drives and disk BASIC to operate.

Technical Support Document number 802a

Specifications

Memory capacity

Memory capacity per unit: 656 kbytes
Memory capacity per drive: 328 kbytes
Number of tracks per drive: 80 tracks (40 tracks x 2 sides)
Number of sectors per track: 16 sectors per track
Memory capacity per sector: 256 bytes

Access time

Intertrack access time: 15 milliseconds
Communication with HX-20: 38.4 kbytes per second

HX-20 connection cable: Cable number 707

PX-8 connection cable: Cable number 723

Power supply

Voltage: Ac 115, 220, or 240 volts
Frequency: 49.5 to 60.5 Hz
Power consumption: 40 W maximum

Dimensions

Width: 120 mm
Depth: 350 mm
Height: 165 mm

Weight: 6 kg

Ambient conditions

Temperature: Operating: 5 to 30 degrees Celsius;
nonoperating: -30 to 65 degrees Celsius

Relative humidity: Operating: 20-80% noncondensing;
nonoperating: 5-85% noncondensing

Insulation resistance/strength

Insulation resistance: 10 M minimum between ac power supply and case (by dc 500 V megger)

Insulation strength: Can withstand 1 kV (rms), 50/60 Hz applied between ac power supply and case for 1 minute or longer

Shock resistance: Operating: 1 G for 1 ms maximum;

Vibration resistance: Operating: 0.25 G, 5-55 Hz;
nonoperating: 1 G, 5-55 Hz

Technical Support Document number 881a

Peripherals: TF-15 intelligent disk drive specifications

General information

The TF-15 is a dual 5 1/4 inch double sided double density floppy disk drive system designed for use with the PX-8 portable computer. The TF-15 (referred to as terminal floppy) drive system is composed of two streamline disk drives integrated into a single case and power supply unit. They connect to the PX-8 via the high speed serial interface.

PX-8 CP/M system disk

To use the PX-8 with the TF-15, simply connect the two units with cable number 726. One end of the cable is connected to the serial interface connector of the PX-8 and the other end is connected to the serial IN connector of the TF-15. It should then be possible to obtain access to all programs on disks placed in the TF-15 from the PX-8.

Hardware configuration

The TF-15 disk drive incorporates a Z80 central processing unit (CPU), 8k of ROM, 2k of RAM and various input/output devices.

Specifications

Memory capacity

Memory capacity per unit:	640 kbytes
Memory capacity per drive:	320 kbytes
Number of tracks per drive:	80 tracks (40 tracks x 2 sides)
Number of sectors per track:	16 sectors per track
Memory capacity per sector:	256 bytes

Memory density: 5876 BPI (MFM system)

Transmission rate: 38,400 bits per second
(high speed serial)

Track density: 48 tracks per inch

Average rotation wait time: 100 milliseconds

Access time

Between tracks: 6 milliseconds

Average shifting between tracks: 97 milliseconds

Settling time: 15 milliseconds

PX-8 connection cable: Cable number 726

Head positioning system: Stepping motor

Main shaft motor: Direct drive system

Startup time: 0.5 seconds or less

Number of revolutions: 300 revolutions per minute

Technical Support Document number 881a

Dimensions and weight

Width:	120 mm
Depth:	350 mm
Height:	165 mm
Weight:	7 kg

Environmental conditions

Temperature:	Operating: 5 to 35 degrees Celsius; nonoperating: -30 to 65 degrees Celsius
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Humidity:	Operating: 20-80% noncondensing; nonoperating: 10-80% noncondensing
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Allowable shocks:	Operating: 1 G for 1 ms maximum; nonoperating: 2 G for 1 ms maximum
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Allowable vibrations:	Operating: 0.25 G, 5-55 Hz; nonoperating: 1 G, 5-55 Hz
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