TEAC®

3" Compact
Floppy Disk Drive

FD-30A

- Plug-compatible with industry standard 5-1/4" floppy disk drives
- New TEAC LSI technology for reduced power consumption and improved reliability
- Contact Start-Stop (CSS) mechanism
- Brushless DC direct-drive motor
- Simplified head positioning mechanism

BOTH DRIVE AND DISK

Ideal where compact size is essential

With the increasing demand for smaller personal computers and peripherals, more and more manufacturers are turning to even more compact floppy disk drives. From our long experience in the design and production of 5-1/4" floppy disk drives, TEAC has now perfected a 3" drive that sets the industry standard for reliability and performance.

The data capacity of the FD-30A is the same 250 KBytes per side, 500 KBytes per disk as our 5-1/4" floppy disk drives, with 40 tracks per side and a track density of 100 tpi. There are no problems with compatibility. All connections, track format, and data transfer rate are the same as with standard 5-1/4" disk drives. So whether you're expanding an existing system or creating an entirely new compact personal computer system, the FD-30A is the ideal way to meet your needs for floppy disk storage.

Full Compatibility

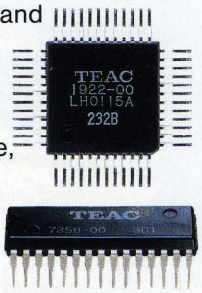
The FD-30A is identical to TEAC's FD-55A 5-1/4" floppy disk drive in every way except size. Capacity, format, disk rotation speed and transfer rate are exactly the same as are connections and interfacing. The only difference is in the higher recording density needed because of the disk's smaller size. This compatibility means that these drives are completely interchangeable, using the same support circuitry.

Low Power Consumption and Heat Generation

TEAC floppy disk drives have an established reputation for low power consumption; the FD-30A continues this tradition with its newly designed motors and circuitry which consume less power than ever. With this reduced power consumption and the decreased heat generation that it makes possible, system design is that much easier.

Two Custom-Designed LSI ICs

TEAC designed two new LSI ICs, one for use in the read/write circuit and the other for use in the logic circuit. These ICs make it possible to reduce the size of the circuitry to match the compact overall dimensions of the mechanism. The analog IC in the read/write circuit includes the read amplifier, waveform shaper, write data input latch and write and erase drivers. The digital IC performs full-logic control over all operations of the drive, control of I/O signals, control of the head positioning stepper motor and control of the spindle motor.

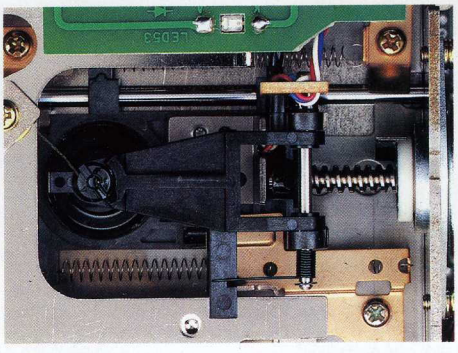


LED/Photo Sensor System

There are no mechanical sensors in the FD-30A. All write protect, index and track 00 sensing functions are done by LED/photo-sensor systems. By use of these optoelectronic systems, precision and reliability are both significantly higher.

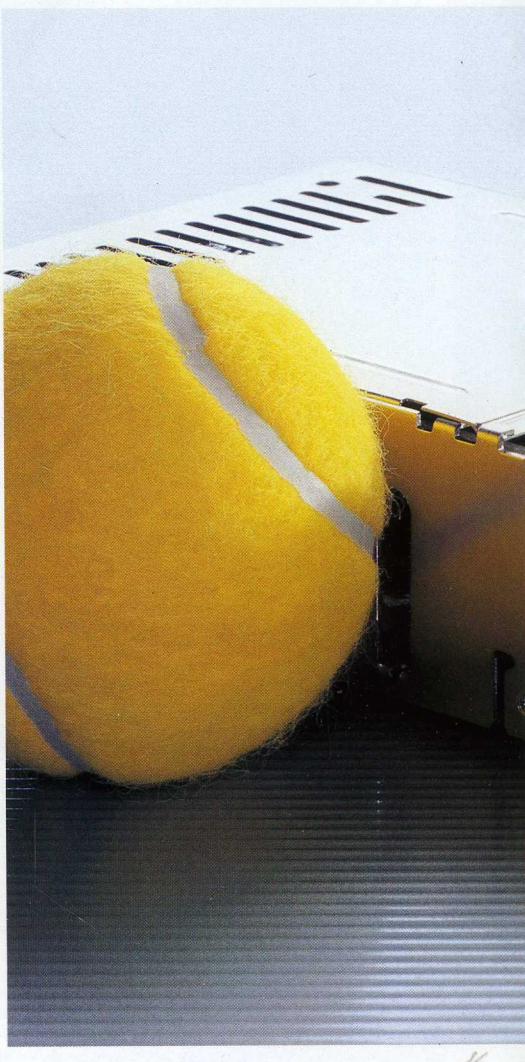
Simple Head Positioning Mechanism

A linear lead screw is used for head positioning. This mechanism is very simple and does not consume power as do systems using head positioning solenoids; its operation is quiet.

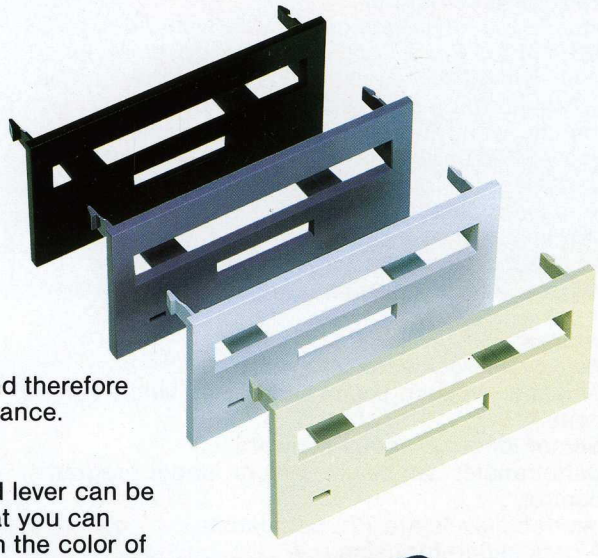


Contact Start-Stop Mechanism

When a disk is inserted into the drive, the head is loaded; with this system, a head load solenoid is not needed. The motor is started when the drive select signal is received. This eliminates head loading noise during operation and reduces media wear because the motor runs only when it is needed. Another result is that less noise is generated and the power consumption is reduced.



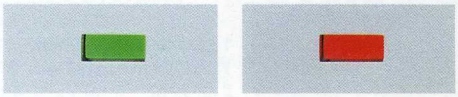
SMALLER THAN EVER



Brushless DC Direct-Drive Motor
The brushless motor which is used to drive the spindle has an extremely long service life, over 8,000 hours; its small size contributes to the overall compact dimensions of the FD-30A. As the brushes used in conventional motors have been eliminated, there is no interference due to electrical discharge noise. And because the direct-drive system is used, there is no belt which has to be replaced periodically, and therefore greatly reduced maintenance.

Four Colors Available
The front panel and lever can be one of four colors so that you can match the disk drive with the color of the main body of the computer. The standard color is ivory; light gray, dark gray and black are available on request.

Ultra-compact 3" Floppy Disk
The 3" floppy disk used in the FD-30A is stored in a hard case, not the soft sleeves used by other floppy disks. This makes it much easier to handle as there's no danger of damaging it by bending the case.
At the center of the disk, the hole uses a reinforced plastic hub that makes loading more positive and reduces the disk's susceptibility to damage.
Both sides of the disk can be used, with detection slots provided. With the FD-30A, when side A is being used, a green LED lights and when side B is being used, a red LED lights.
Separate write protect switches are provided for side A and side B. The system of switches rather than detachable seals is much more dependable. When a side is write-protected, a red marker can be seen through its indication hole.



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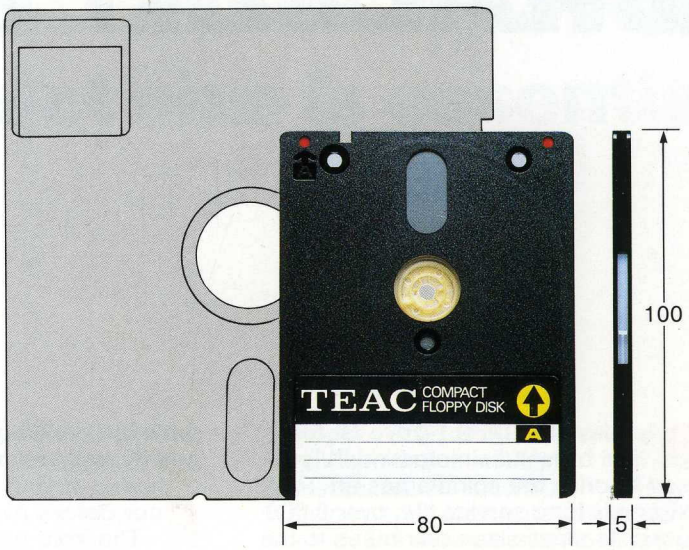
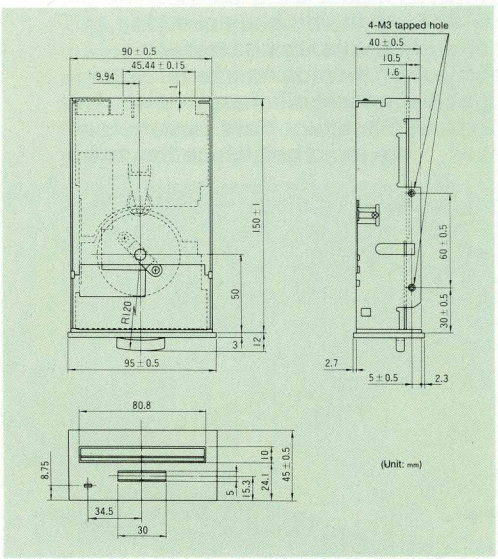
Floppy Disk Controller
Because the FD-30A is compatible with the 5-1/4" FD-55A, the FC-55 Floppy Disk Controller designed for use with FD-55 series floppy disk drives can be used to interface between the FD-30A and the computer with which it is being used. Either double-density MFM or single-density FM recording can be done and up to four drives can be daisy-chain connected to a single controller. With the FC-55 controller, interface design becomes very simple with direct connection between the FC-55 and microprocessor bus line being possible.

Features
- Automatic track seek and verify.
- Single or chained sector reads and writes can be done.
- Sector length is set by software.
- Data transfer can be via DMA or under program control.
- Interface levels are TTL compatible.
- A data separator using a VFO is built in.
- A write precompensation circuit is provided.
- IBM sector format compatible.



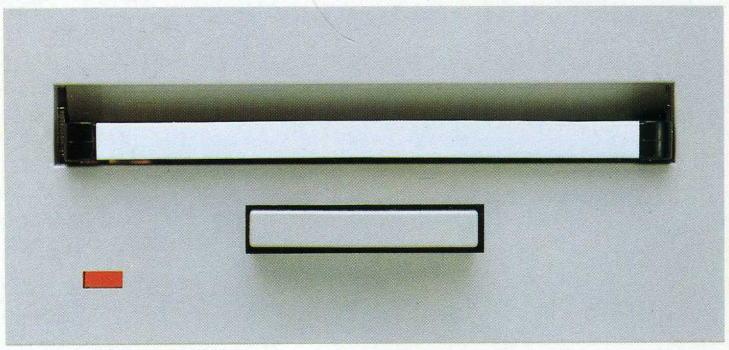


FD-30A SPECIFICATIONS

Recording Method:
FM (single density),
MFM (double density)
Disk Rotational Speed: 300 rpm
Motor Starting Time: 400 ms
Index: 1
MTBF: more than 8,000 hours
Error Rates:
Software Errors: 1 per 10^9 bits (up to 2 retries)
Hardware Errors: 1 per 10^{12} bits
Seek Errors: 1 per 10^6 seeks
Temperature
Operating: 4 ~ 46°C
Transportation: -40° ~ 65°C
Storage: -22° ~ 60°C

Relative Humidity
Operating: 20 ~ 80 % (noncondensing)
Max. Wet Bulb Temperature: 29°C
Transportation: 5 ~ 95 % (noncondensing)
Max. Wet Bulb Temperature: 45°C
Storage: 10 ~ 90 % (noncondensing)
Max. Wet Bulb Temperature: 40°C
Power Requirements: DC +12 V/DC +5V
Power Consumption: Operating: 3.8 W
Waiting: 1.85 W
Dimensions (W x H x D): 90 x 40 x 150 mm (3-1/2" x 1-5/8" x 5-7/8")
Weight: less than 750 g (1lb. 10 oz.)

			FM	MFM
Transfer Rate (K bits/sec)			125	250
Capacity (K bytes)	Unformatted	Per Track	3.125	6.25
		Per Disk	125	250
	Formatted (16 sectors/track)	Per Sector	0.128	0.256
		Per Track	2.048	4.096
		Per Disk	81.92	163.84
Inside Track Recording Density (bpi)			4473	8946
Inside Track Flux Density (frpi)			8946	
Surface			1	
Track Density (tpi)			100	
Tracks/Disk			40	
Track Radius (mm)		Outside	32.500	
		Inside	22.594	
Average Access Time (ms)			171	
Track Access Time (ms)			12	
Settling Time (ms)			15	



(Actual size)

Features and specifications are subject to change without notice.

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