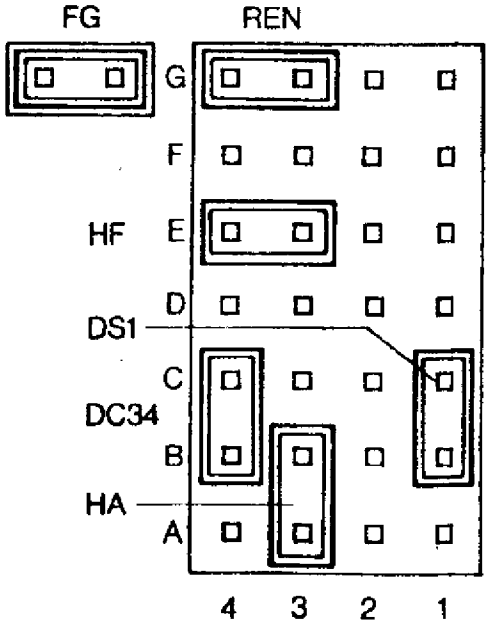
FD-235HF-3201
3217
3240
3291



DS1: Drive select = 1

HA: Inteligent mode
Sensing disk type

DC34: Disk change signal
at line = 34

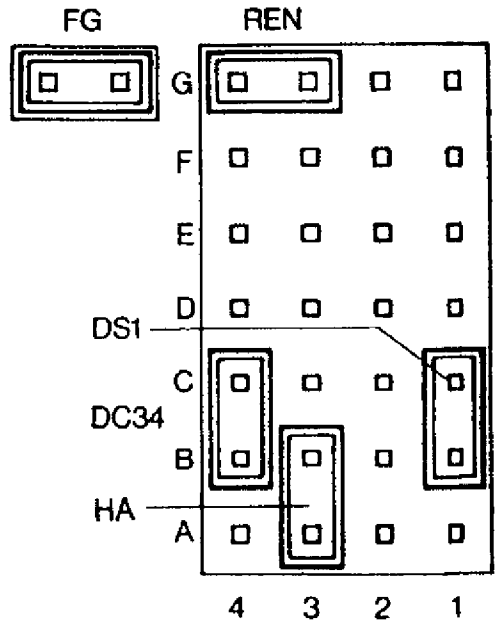
HF: 1,44M/720K, dual mode

REN: Auto recal to
TRACK00 on power up

FG: Frame Ground

FG, REN, HF, DC34 HA and
DS 1 must be shorted.

FD-235F-3100
3112
3405



DS1: Drive select #1

HA: 720 K Mode, Fixed

DC34: Disk change signal
at line #34

REN: Auto recal to
TRACK00 on power up

FG: Frame Ground

FG, REN, DS1, DC34 and
HAmust be shorted.

1. GENERAL

JUMPER	: DESCRIPTIONS	: NOTE
DS0 TO DS3	: DRIVE SELECT 0 TO 3	: Only one on at a time.

FG : Connect electrical ground to chassis.
ML : Activate MOTOR-ON in 2 selections.
: OFF-MOTOR ON signal
: ON - MOTOR ON + LED ON (Drive Selected)

IR : Turn-on condition of LED
: OFF- DRIVE SELECT
: ON-DRIVE SELECT * READY

ACD : Inhibit the auto-chucking at disk
: installation.
: OFF-AUTO-CHUCKING OPERATION EXECUTED
: ON-AUTO-CHUCKING IS INHIBITED

REN : Execute the auto-recalibration at power-on
: OFF-AUTO RECALIBRATION IS INHIBITED
: ON-AUTO-RECALIBRATION IS EXECUTED AT POWER-ON

HMK,NMK : Straps to select an output condition of
: the INDEX and READ DATA pulses.

Strap		Output condition of INDEX/READ DATA	
HMK	NMK	Name	
-	-	Full mask	Pulse detection * DRIVE SELECT * READY * Seek-complete * (Write operation)
ON	-	Half mask	Pulse detection * DRIVE SELECT * READY * (Write-operation)
-	ON	No mask	Pulse detection * DRIVE SELECT *MTR ON * (Write-operation)

DC,RY : Select output signals for terminal #2 ,#4,#34

Jumper setting				Output Signal		
RY34	DC34	DC2	DC4	PIN 2	PIN 4	PIN 34
ON	OFF	OFF	OFF	OPEN	OPEN	READY
OFF	ON	OFF	OFF	OPEN	OPEN	DISK CHANGE
OFF	OFF	ON	OFF	DISK CHANGE	OPEN	OPEN
OFF	OFF	OFF	ON	OPEN	DISK CHANGE	OPEN

II. FD-235F-3XXX 720KB Model

JUMPER	: DESCRIPTION	: NOTE
HA	: 1MB Mode fixed	: This strap : must be on- : state.

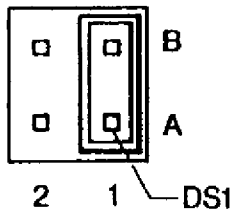
III. FD-235HF-3XXX 1.44MB & 720KB COMBINATION Density

HA,HI2,HO2,LHI, and LHO : Select density mode by either pin #2 or sensor

Strap setting					Signals			Density	
HOX	HI2	HA	LHI	LHO	Pin 2	Pin X	HD	HOST Key-in or software	FDD HD IN (HOST)
-	ON	-	-	-	HD IN	OPEN	HIGH	Key-in or software	Auto by sensor
-	ON	-	-	-	HD IN	OPEN	LOW		
-	-	ON	-	-	OPEN	OPEN	-	HD OUT from FDD	Auto by sensor
ON	-	*ON	-	-	OPEN	HD OUT	HIGH		
ON	-	*ON	ON	ON	OPEN	HD OUT	LOW	HD OUT or (Key-in)	HD IN from soft
ON	ON	-	-	-	HD IN	HD OUT	HIGH		
ON	ON	-	ON	ON	HD IN	HD OUT	LOW		

NOTES: 1."-" mark indicates the off-state of the strap.
2."X" of HOX and pin X means 2 or 4 corresponing to HO2, or HO4 strap.
3. " * ON " will activate the HD sensor which is incorporated in the drive. With these selections, the use of disk types is important.
a. When HD diskette with 2 window holes is used, the drive will operate in high density mode. (1.44MB)
b. When DSDD diskette is used, it will be in 720K mode.

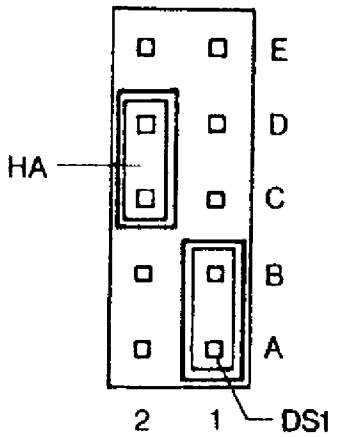
FD-235F-4112
4405



DS1: Drive Select 1

DS1 must be shorted.

FD-235HF-4201
4217
4240
4291



HA: Inteligent mode
Sensing disk type

DS1: Drive Select 1

DS1 and HA must be shorted

I. GENERAL

JUMPER	DESCRIPTIONS	NOTE
DO,D1	DRIVE SELECT signal 0 and 1	Use only one at a time.

II. FD-235HF-4XXX 1.44MB & 720KB COMBINATION

HA,HI,HO,LHI : Select density mode by either Signal interface pin #2 or Hi Density hole sensor.

METHOD	STRAP SETTING				PIN 2 DEF.	HD LEVEL	DENSITY DESIGNATION	
	HA	HI	HO	LHI			HOST	FDD
1A	-	ON	-	-	HD IN	HIGH	KEY-IN OR SOFT-WARE	HD IN FROM HOST
1B	-	ON	-	ON	HD IN	LOW		
2	ON	-	-	-	OPEN	-	KEY-IN OR SOFT-WARE	AUTOMATIC BY SENSOR
3	-	-	ON	-	HD OUT	HIGH	HD OUT FDD	AUTOMATIC BY SENSOR

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-52XX & 54XX	
Safety standard on label	UL & CSA	
Operation modes	High density mode, Write and read	Normal density mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 ~ 5.5V)	
Front bezel & flap		
Eject button		
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1k ± 5%, unremovable	
Customer selectable strap	2 selections	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 2. Other function setting 2.1 Automatic density setting by HD hole 2.2 LED turn-on condition: DRIVE SELECT 2.3 Motor rotating condition: MOTOR ON 2.4 Ready and seek-complete gate (full –mask) For INDEX and READ DATA output pulses 2.5 Disk Change on pin 34 2.6 Auto-chucking, auto-recalibration 2.7 FDD frame is electrically shorted on DC 0V.	
Interface connector	34 pin right angle header connector and power connector	
Other optional function	Not equipped	

FDD name	Front color	Parts Nos.	
		Font bezel Ass'y	Button
FD-235HF-5240	PC/AT	17968300-03	16788039-03
FD-235HF-5291	PS/2	17967696-04	16788039-04
FD-235HF-5429	Black	17967696-00	16788039-00

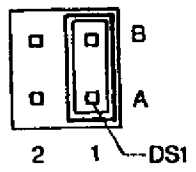
Jumper settings for models FD235HF-52XX & 54XX

Customer Selectable Straps

Function Summary of Straps

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap.

Strap	Function
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12



DS1: Drive Select 1

DS1 must be shorted.

DSO and DS1 Straps

(1) In the multiplex control, these straps designate the address of the FDD.
(2) By the combination with the DRIVE SELECT 0 and 1 signals, two addresses, can be designated.

TURN ON CONDITION OF INDICATOR AND SPINDLE MOTOR

Front Bezel Indicator

The indicator (LED) turns-on while the DRIVE SELECT signal is TRUE. However, the indicator keeps off until 3. 1msec has passed after the DRIVE SELECTION to avoid the polling operation of the DRIVE SELECT signal.

Spindle Motor

(1) The spindle motor rotates while the MOTOR ON signal is TRUE. However, the spindle motor does not rotate at any condition while no disk is installed.

(2) Auto-chucking operation is executed at each disk installation by rotating the spindle motor for 490msec, approx. (500msec, Max.).

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-62XX	
Safety standard on label	UL, CSA & IEC950 (CB)	
Operation modes	High density mode, Write and read	Normal density mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap		
Eject button		
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ± 5%, unremovable	
Customer selectable strap	2 selections, refer to item 11.1	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 2. Other function setting 2.1 Automatic density setting by HD hole 2.2 LED turn-on condition: DRIVE SELECT 2.3 Motor rotating condition: MOTOR ON 2.4 Ready and seek-complete gate (full –mask) For INDEX and READ DATA output pulses 2.5 Disk Change on pin 34 2.6 Auto-chucking, auto-recalibration 2.7 FDD frame is electrically shorted on DC 0V.	
Interface connector	34 pin right angle header connector and power connector	
Other optional function	Not equipped	

FDD name	Front color	Parts Nos.	
		Font bezel Ass'y	Button
FD-235HF-6240	PC/AT	17968300-03	16788039-03
FD-235HF-6291	PS/2	17967696-04	16788039-04

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-64XX	
Safety standard on label	UL, CSA & IEC950 (CB)	
Operation modes	High density mode, Write and read	Normal density mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap	Black	
Eject button	Black	
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ± 5%, unremovable	
Customer selectable strap	2 selections, refer to item 11.1	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 2. Other function setting 2.1 Automatic density setting by HD hole 2.2 LED turn-on condition: DRIVE SELECT 2.3 Motor rotating condition: MOTOR ON 2.4 Ready and seek-complete gate (full –mask) For INDEX and READ DATA output pulses 2.5 Disk Change on pin 34 2.6 Auto-chucking, auto-recalibration 2.7 FDD frame is electrically shorted on DC 0V.	
Interface connector	34 pin right angle header connector and power connector	
Other optional function	Not equipped	

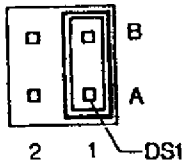
Jumper settings for models FD235HF-62XX & 64XX

Customer Selectable Straps

Function Summary of Straps

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap.

Strap	Function
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12



DS1: Drive Select 1

DS1 must be shorted.

DSO and DS1 Straps

(1) In the multiplex control, these straps designate the address of the FDD.
(2) By the combination with the DRIVE SELECT 0 and 1 signals, two addresses, can be designated.

TURN ON CONDITION OF INDICATOR AND SPINDLE MOTOR

Front Bezel Indicator

The indicator (LED) turns-on while the DRIVE SELECT signal is TRUE. However, the indicator keeps off until 3. 1msec has passed after the DRIVE SELECTION to avoid the polling operation of the DRIVE SELECT signal.

Spindle Motor

(1) The spindle motor rotates while the MOTOR ON signal is TRUE. However, the spindle motor does not rotate at any condition while no disk is installed.

(2) Auto-chucking operation is executed at each disk installation by rotating the spindle motor for 490msec, approx. (500msec, Max.).

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-6391	
Safety standard on label	UL, CSA & IEC950 (CB)	
Operation modes	2MB mode, Write and read	1MB mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	300rpm
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap	Beige (PS)	
Eject button	Beige (PS)	
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ± 5%, unremovable	
Customer selectable strap	10 selections4	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 1.2 DC34: DISK CHANGE on pin 34 1.3 HA: Automatic density setting by HD Hole 2. Other function setting 2.1 LED turn-on condition: DRIVE SELECT 2.2 Motor rotating condition: MOTOR ON 2.3 Ready and seek-complete gate (full-mask) for INDEX and READ Data output pulses. 2.4 Auto-chucking at disk installation 2.5 Auto-recalibration at power on	
Interface connector	34 pin right angle header connector and power connector	
Other optional function	Not equipped	

HA/H12/HO2 Straps

(1) Straps to select designating method of the density mode and to select a signal pin number.
(2) Table 21 shows the combination of the straps and selectable functions.

SEL. No.	Strap setting			Input	Output	Density designation	
	HO2	H12	HA	Pin 2	Pin 2	Host side	FDD
A	_	ON	_	HD IN	OPEN	Key-in or software	HD in from host
B	_	_	ON	OPEN	OPEN	Key-in or software	Automatic By sensor
C	ON	_	ON	OPEN	HD OUT	HD OUT from FDD	Automatic by sensor

Note: 1. "_" mark indicates the off-state of the strap.

RY34/DC34/DC2 Straps

(1) RY34 strap is used to output the READY signal on interface pin No. 34
(2) DC34/DC2 straps are used to output the DISK CHANGE signal on interface pin No. 34, 2.

IR Strap

IR strap is used to select a turn-on condition of the front bezel indicator (LED).

ACD and REN Straps

(1) ACD strap is used to inhibit the auto-chucking at disk installation.
 (a) When the ACD strap is off-state, the auto-chucking operation is executed. The spindle motor Automatically rotates for 490ms, approx. (500ms, Max.), and all of the interface signals are effective during the above auto-checking operation.
 (b) When the ACD strap is on-state, the auto-chucking operation is inhibited.
(2) REN strap is used to execute the auto-recalibration is inhibited.
 (a) When the REN strap is off-state, the auto-recalibration is inhibited.
 (b) When the REN strap is on-state, the auto-recalibration is executed at power-on.

FG Strap

FG strap is used to electrically connect the FDD frame to DC 0V.

RY34/DC34/DC2 Straps

(1) RY34 strap is used to output the READY signal on interface pin 34.
(2) DC34/DC2 straps are used to output the DISK CHANGE signal on interface pin No. 34, 2.

TURN ON CONDITION OF INDICATOR AND SPINDLE MOTOR

Front Bezel Indicator

The indicator (LED) turns-on while the DRIVE SELECT signal is true. However, the indicator keeps off until 3.1msec has passed after the DRIVE Selection to avoid the polling operation of the DRIVE SELECT Signal.

Spindle Motor

The spindle motor rotates while the MOTOR ON signal is TRUE. However the spindle motor does not rotate at any condition while no disk is installed.

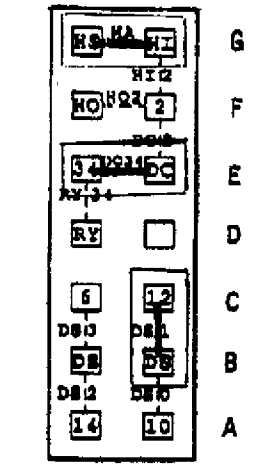
Auto-chucking operation is executed at each disk installation by rotating the spindle motor for 490msec, approx. (500msec, Max.) All the interface signals are valid while the auto-chucking operation is in progress.

CUSTOMER SELECTABLE STRAPS

FUNCTION SUMMARY OF STRAPS

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap.

Strap	FUNCTION
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12
DS2	DRIVE SELECT 2 input on pin 14
DS3	DRIVE SELECT 3 input on pin 6
*RY34	READY output on pin 34
*DC34	DISK CHANGE output on pin 34
*DC2	DISK CHANGE output on pin 2
*HA	Density set automatically
*HI2	Density set by HD IN on pin 2
*HO2	HD OUT output on pin 2



Strap post layout

Notes: 1. *Straps overlap with other strap posts. Insert a short bar according to your priority.

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-65XX	
Safety standard on label	UL, CSA & IEC950 (CB)	
Operation modes	2MB mode, Write and read	1MB mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	300rpm
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap		
Eject button		
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ± 5%, unremovable	
Customer selectable strap	14 selections	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 1.2 DC34: DISK CHANGE on pin 34 1.3 HA: Automatic density setting by HD Hole 1.4 REN: Auto-recalibration at power on 1.5 FG: Frame is electrically shorted to DC 0V 2. Other function setting 2.1 LED turn-on condition: DRIVE SELECT 2.2 Motor rotating condition: MOTOR ON 2.3 Ready and seek-complete gate (full-mask) for INDEX and READ DATA output pulses 2.4 Auto-chucking at disk installation (ACD strap OFF)	
Interface connector	34 pin right angle header connector	
Other optional function	Not equipped	

The parts numbers of the front bezel Ass'y and button differ depending on the color of the front panel.

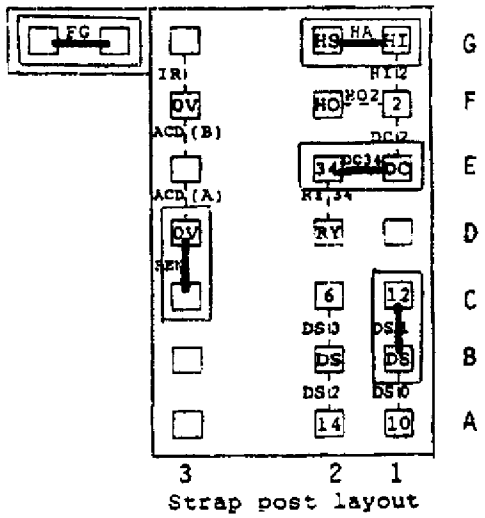
FDD Name	Front color	Parts Nos.	
		Front bezel Ass'y	Button
FD-235HF-6529	Black	17968300-00	16788039-00
FD-235HF-6540	PC/AT	17968300-03	16788039-03
FD-235HF-6591	PS/2	17967696-04	16788039-04

CUSTOMER SELECTABLE STRAPS

FUNCTION SUMMARY OF STRAPS

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap.

Strap	FUNCTION
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12
DS2	DRIVE SELECT 2 input on pin 14
DS3	DRIVE SELECT 3 input on pin 6
*RY34	READY output on pin 34
*DC34	DISK CHANGE output on pin 34
*DC2	DISK CHANGE output on pin 2
*HA	Density set automatically
*HI2	Density set by HD IN on pin 2
*HO2	HD OUT output on pin 2
*IR	LED on: DRIVE SELECT * Ready
*ACD	Disable for auto-chucking
*REN	Enable for auto-recalibration
FG	Short between FDD frame and DC 0V



Notes: 1. *Straps overlap with other strap posts. Insert a short bar according to your priority.
2. You may select one of the two short bar positons, (A) and (B), for ACD strap.

DS0/DS1 and DS2/DS3 Straps

(1) In the multiplex control, these straps designate the address of the FDD
(2) By the combination with the DRIVE SELECT 0 ~ 4 signals, four addresses, Max. can be designated.

HA/HI2/HO2 Straps

(1) Straps to select a designating method of the density mode and to select a signal pin number.
(2) Table 78 shows the combination of the straps and selectable functions.

Sel.	Strap Setting			Input	Output	HD	Density designation	
No.	HO2	HI2	HA	Pin 2	Pin 2	level	Host side	FDD
1	–	ON	–	HD IN	OPEN	HIG H	Key-in or software	HD IN From host
2	–	–	ON	OPEN	OPEN	–	Key-in or software	Automatic by sensor
3	ON	–	ON	OPEN	HD OUT	HIG H	HD OUT from FDD	Automatic by sensor

Notes: 1. "—" mark indicates the off-state of the strap

RY34/DC34/DC2 Straps

(1) RY34 strap is used to output the READY signal on interface pin No. 34.
(2) DC34/DC2 straps are used to output the disk change signal on interface pin No. 34, 2.

IR Strap

IR strap is used to select a turn-on condition of the front bezel indicator (LED).

ACD and REN Straps

(1) ACD strap is used to inhibit the auto-chucking at disk installation.
  (a) When the ACD strap is off-state, the auto-chucking operation is executed. The spindle motor automatically rotates for 490msec, approx. accordance during the above auto-chucking operation.
  (b) When the ACD strap is on-state, the auto-chucking operation is inhibited.
(2) REN strap is used to execute the auto-recalibration (heads move to track 00) at power-on.
  (a) When the REN strap is off-state, the auto-recalilbration is inhibited.
  (b) When the REN strap is on-state, the auto-recalibration is executed at power-on.

FG Strap

FG Strap is used to electrically connect the FDD frame to DC 0V.

TURN ON CONDITION OF INDICATOR AND SPINDLE MOTOR

Front Bezel Indicator

Two types of indicator (LED) turn-on condition are offered for selection using the IR strap. However, the indicator keeps off until 3.1ms has passed after the DRIVE Selection to avoid the polling operation of the DRIVE SELECT signal.

Strap IR	Turn-on condition of LED
-	DRIVE SELECT
ON	DRIVE SELECT * Ready state

Note: 1. "_" mark indicates the off-state of the strap and "*" mark indicates the AND condition.

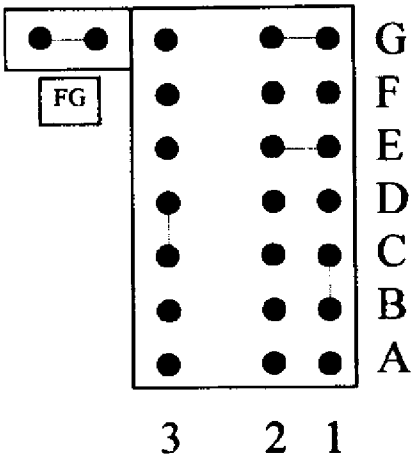
Spindle Motor

The spindle motor rotates while the MOTOR ON signal is TRUE. However, the spindle motor does not rotate at any condition while no disk is installed.

When the ACD strap is off-state, auto-chucking operation is executed at disk installation.

Model #: FD235HF-65xx & -75xx . Multi-function versions.

These models are equipped with a PCB board that has multi-function capability through jumper straps. However, the factory default jumper straps are configured so that these models are 100% interchangeable with the standard models. The jumper (strap) matrix is as follows:



Coordinate	Jumper Name	Jumper (Strap) Position Description.
A B 1	DS 0	Drive Select 0 input on line #10.
B C 1	DS 1	Drive Select 1 input on line #12. **
A B 2	DS 2	Drive Select 2 input on line #14.
B C 2	DS 3	Drive Select 3 input on line #6.
D E 2	*RY 34	Ready signal output on line #34.
E 1 2	*DC 34	Disk Change signal output on line #34. **
E F 1	*DC 2	Disk Change signal output on line #2.
G 1 2	*HA	Density set automatically with diskette type. **
F G 1	*HI 2	Density set by HD signal input on line #2.
F 1 2	*HO 2	HD signal output on line #2.
F G 3	IR	LED on when drive is selected and ready.
D E 3 or E F 3	*ACD	Disable auto- chucking.
C D 3	*REN	Enable Auto Head Recalibration with power up. **
	FG	Frame Ground. **

* These jumper (straps) overlap with other jumper (strap) posts.
** These jumper (straps) are set at the factory, default.

On all of the above mentioned models the factory jumper (strap) setting will allow you to configure your drive as either the "A" drive or the "B" drive with out needing to reconfigure the jumper (strap) settings. Simply connect the drive to the correct connector position on you floppy drive interface cable, as shown on the HARDWARE CONNECTION section.

For listing of common system level problems (i.e., DRIVE NOT READY, GENERAL FAILURE ERRORS & other) request DOC # 8500.

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

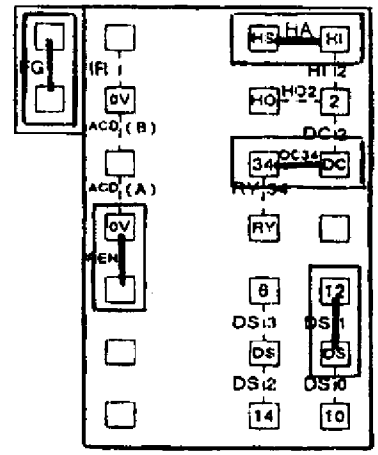
Model Name	FD-235HF-75XX	
Safety standard on label	UL, CSA & TUV	
Operation modes	2MB mode, Write and read	1MB mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	300rpm
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap	Black	
Eject button	Black	
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ+ 5%, unremovable	
Customer selectable strap	14 selections (DC0~3, RY34, DC34, DC2, HO2, H12, HA, REN, ACD, IR, FG)	
Function setting at Delivery	1. Strap setting 1.1 DS1: DRIVE SELECT 1 on pin 12 1.2 DC34: Disk Change on pin 34 1.3 HA: Automatic density setting for 2DD (1MB) disk or 2HD 2HD (2.0MB) disk. 1.4 REN: Auto-recalibration at power on 1.5 FG: Frame is electrically shorted to DC 0V. 2. Other interface setting 2.1 Pin2: Open 2.2 Pin4: Open 3. Other function setting 3.1 LED turn on condition: DRIVE SELECT 3.2 Motor rotating condition: MOTOR ON 3.3 Ready and seek-complete gate (full-mask) for INDEX and READ DATA output pulses. 3.4 Auto-chucking at disk installation (ACD strap OFF)	
Interface connector	34 pin right angle header connector and power connector	
Power connector	Equipped	
Other optional function	Not equipped	

CUSTOMER SELECTABLE STRAPS

FUNCTION SUMMARY OF STRAPS

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap.

STRAP	FUNCTION
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12
DS2	DRIVE SELECT 2 input on pin 14
DS3	DRIVE SELECT 3 input on pin 6
*RY34	READY output on pin 34
*DC34	DISK CHANGE output on pin 34
*DC2	DISK CHANGE output on pin 2
*HA	Density set automatically
*H12	Density set by HD IN on pin 2
*HO2	HD OUT output on pin 2
*IR	LED on: DRIVE SELECT *Ready
*ACD	Disable for auto-chucking
*REN	Enable for auto-recalibration
FG	Short between FDD frame and DC 0V



Strap post layout

NOTES: 1. *Straps overlap with other strap posts. Insert a short bar according to your priority.
2. You may select one of the tow short bar positions, (A) and (B), for ACD strap.

DS0/DS1 and DS2/DS3 Straps

In the multiplex control, these straps designate the address of the FDD.

By the combination with the DRIVE SELECT 0 – 4 signals, four addresses, Max. can be designated.

DS0/DS1 and DS2/DS3 Straps

(1) In the multiplex control, these straps designate the address of the FDD.
(2) By the combination with the DRIVE SELECT 0 ~ 4 signals, four addresses, Max can be designated.

HA/HI2/HO2 straps

(1) Straps to select a designating method of the density mode and to select a signal pin number

Sel. No.	Strap Setting			Input	Output	HD LEVEL	Density designation	
	HO2	HI2	HA	Pin 2	Pin 2		Host side	FDD
1	—	ON	—	HD IN	OPEN	HIGH	Key-in or software	HD IN from host
2	—	—	ON	OPEN	OPEN	—	Key-in or software	Automatic by sensor
3	ON	—	ON	OPEN	HD OUT	HIGH	HD OUT from FDD	Automatic by sensor

Notes: 1. "—" mark indicates the off-state of the strap.

TURN ON CONDITION OF INDICATOR AND SPINDLE MOTOR

Front Bezel Indicator

Two types of indicator (LED) turn-on condition are offered for selection using the IR strap. However, the indicator keeps off until 3.1msec has passed after the DRIVE SELECTion to avoid the polling operation of the DRIVE SELECT signal.

STRAP IR	Turn-on condition of LED
–	DRIVE SELECT
ON	DRIVE SELECT * Ready state

Notes: 1. " – " mark indicates the off-state of the strap and " * " mark indicates the AND condition.

Spindle Motor

(1) The spindle motor rotates while the MOTOR ON signal is TRUE. However, the spindle motor does not rotate at any condition while no disk is installed.

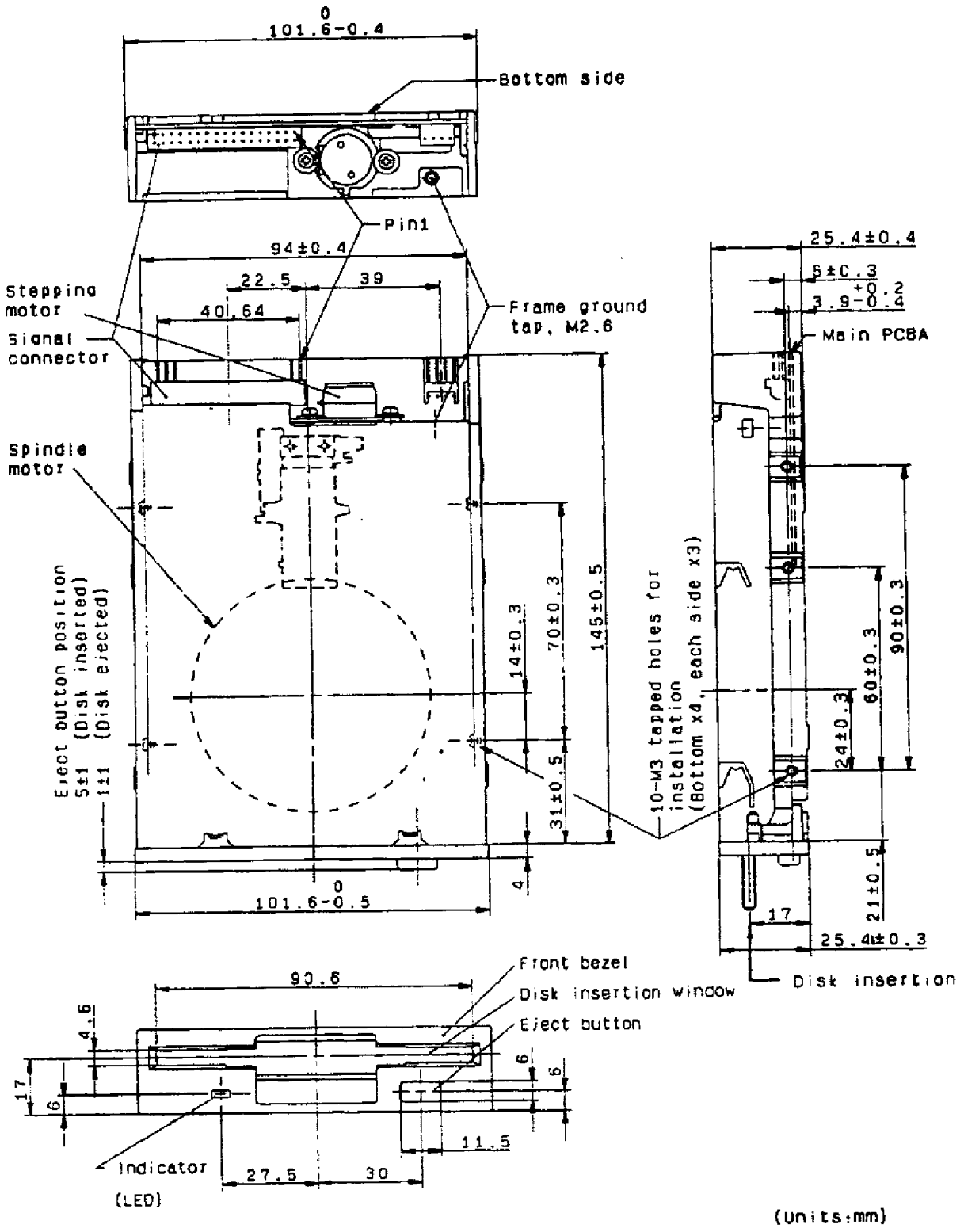
(2) When the ACD strap is off-state, auto-chucking operation is executed at disk installation..

This specification provides a description for the TEAC FD-235HF, double sided, dual density, 3.5 inch floppy disk drive. This table shows the outline of the floppy disk drive as well as the factory default jumper settings.

Model Name	FD-235HF-8240/8291/8429	
Safety standard on label	UL, CSA & TUV	
Operation modes	2MB mode, Write and read	1MB mode, Write and read
3.5" disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/sec	250 bits/sec
Disk rotational speed	300 rpm	300rpm
Track density	135tpi	
Track to track time	3msec	
Required power	+5v single (4.5 – 5.5V)	
Front bezel & flap	AT-Gray/PS/2 Beige/Black	
Eject button	AT-Gray/PS/2 Beige/Black	
LED indicator color	Green	
Signal output driver	Open collector TTL	
Input signal terminator	1kΩ+ 30%	
Function setting at Delivery	1. Interface setting 1.1 Pin 12: DRIVE SELECT 1 input 1.2 Pin 34: DISK CHANGE output 2. Other function setting 2.1 Automatic density setting for 2DD (1MB) disk or 2HD (2MB) disk. 2.2 LED turn on condition: DRIVE SELECT 2.3 Motor rotating condition: MOTOR ON 2.4 Ready and seek-complete gate (full-mask) for INDEX and READ Data output pulses. 2.5 Auto-chucking at disk installation 2.6 Auto-recalibration at power on 2.7 Frame is electrically shorted to DC 0V.	
Interface connector	34 pin right angle header connector	
Power connector	Equipped	
Other optional function	Not equipped	

PHYSICAL SPECIFICATION

Width	101.6mm [4.00 in], Nom.
Height	25.4mm [1.00 in], Nom.
Depth	145mm [5.71 in], Nom., excluding front bezel
Weight	345g [0.76lbs.], Nom., 360g [0.79 lbs.], Max.
External view	See fig. 1.
Cooling	Natural air cooling
Mounting	Mountings for the following directions are acceptable. (a) Front loading, mounted vertically. (b) Front loading, mounted horizontally with spindle motor down. (c) Mounting angle in items (a) and (b) should be less than 25 with front bezel up or down. Note: As to the other mounting directions than the above will be considered separately.
Installation	With installation holes on the frame of the FDD.
Material of flame	Aluminum die-cast
Material of front bezel	PPHOX (Complying with UL94-5V)



(Fig.1) FDD external view

ENVIRONMENTAL CONDITIONS

	Operating	Storage	Transportation
Ambient temperature	4~51.7°C [39~125 F]	-22~60°C [-8~140 F]	-40~65°C [-40~149 F]
Temperature gradient	20°C [36 F] or less per hour	30°C [54 F] or less per hour	30°C [54 F] or less per hour
Relative humidity	20~80% (no condensation) Max. wet bulb temperature shall be 29.4°C [85°F]	5~90% (no condensation) Max. wet bulb temperature shall be 40°C [104°F]	5~95% (no condensation) Max. wet bulb temperature shall be 45°C [113°F]
Vibration	14.7m/s [1.5G] or less (10~100hz, 1 octave/m sweep rate) 9.8m/s [1.0G] or less (100~200Hz, 1 octave/m sweep rate) 4.9m/s [0.5G] or less (200~600Hz, 1 octave/m sweep rate)		19.6m/s [2G} or less (10~100Hz, ¼ octave/m sweep rate)
Shock	Write & read: 49m/S [5G] (11ms, ½ sine wave) or less		686m/S [70G] (11ms, ½ sine wave) or less
	Read only: 98m/S [10G} (11ms, ½ sine wave)or less		
Altitude	-300m [-980feet]~ 5,000m[16,400feet]		
	Notes: The above requirements are applied for the FDD without shipping box. When a long period is required for transportation such as by ship, Storage environmental conditions should be applied.		

RELIABILITY

MTTF		30,000 power on hours or more (for typical operation duty)
MTTR		When failure, the FDD should be replaced in unit of the drive and not repaired in unit of parts or assemblies.
Design component life		5 Years
Disk life		3 X 10 passes/track or more
Disk insertion		1.5 X 10 times or more
Seek operation		1 X 10 random seeks or more
Preventive maintenance		Not required (for typical operation duty)
Error rate	Soft error	1 or less per 10 bits read A soft (recoverable) error means that it can be recovered correctly within three retries.
	Hard error	1 or less per 10 bits read A hard (unrecoverable) error means that it cannot be recovered Correctly within tree retries. However, it is recommended to be Followed by a recalibration to track 00 and four additional retries.
	Seek error	1 or less per 10 seeks
		A seek error means that it can seek to a target track within one Retry including a recalibration to track 00.
Safety standard		Approved by UL, CSA and TUV
Electro-static dischange test		15kV (150pF, 330)or more No hard error and/or no component damage occur when the test is applied to the operator access area. (front bezel area).

TEAC America, Inc

Memo

To: TEAC Customers

From: Data Storage Products Division

Re: FD-235-HF-A2XX & FD-235-HF-A4XX

Dear Customers:

Please be informed that the models mentioned above are fixed 1.44M drives. They are factory pre-configured and do not have a block of jumpers for configuration.

1. OUTLINE

This specification provides a description for the TEAC FD-235HF, dual density (2/1MB, 2-modes), 3.5-inch micro floppy disk drive (hereinafter referred to as FDD). Table 1-1 shows the outline of the FDD, and Table 1-2 shows the signal interface pin-assignment.

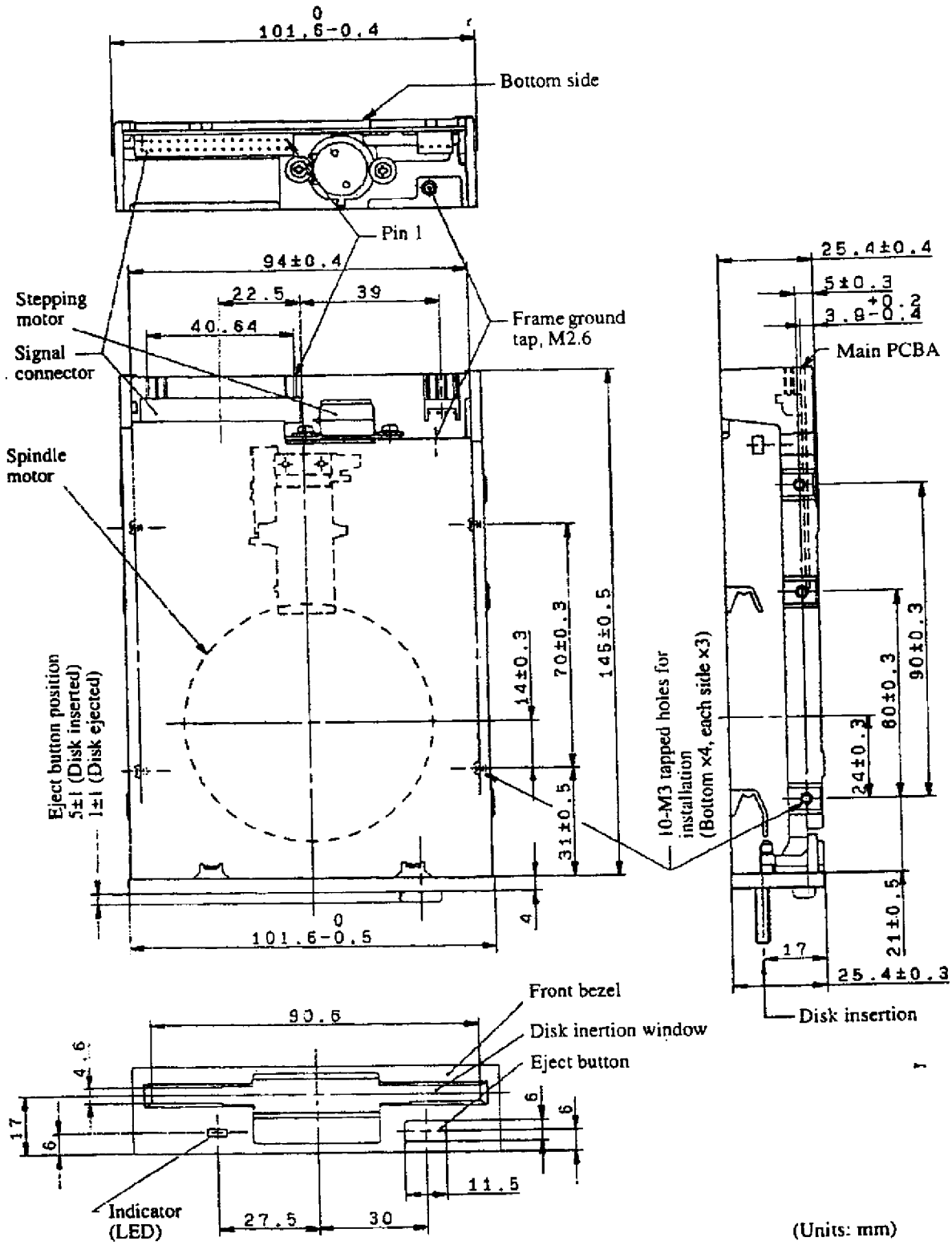
(Table 1-1) Specification outline

Model name	FD-235HF-A291	
Front bezel	Beige (PS)	
Eject button	Beige (PS)	
LED indicator	Green	
Safety standard	UL, CSA & TÜV	
Operation modes	2MB mode Write and read	1MB mode Write and read
3.5 inch disk used	High density (2HD)	Normal density (2DD)
Unformatted data capacity	2M bytes	1M bytes
Data transfer rate	500k bits/s	250k bits/s
Disk rotational speed	300rpm	300rpm
Track density	5.3track/mm (135tpi)	
Track to track time	3ms	
Required power	+5V single (4.5 ~ 5.5V)	
Signal output driver	Open collector TTL	
Input signal pull-up	1kΩ ±30%	
Function setting at delivery	1. Interface setting 1.1 Pin12: DRIVE SELECT 1 input 1.2 Pin34: DISK CHANGE output 2. Other function setting 2.1 Automatic density setting for 2DD (1MB) disk or 2HD (2MB) disk. 2.2 LED turn on condition: DRIVE SELECT 2.3 Motor rotating condition: MOTOR ON 2.4 Ready and seek-complete gate (full-mask) for INDEX and READ DATA output pulses. 2.5 Auto-chucking at disk installation 2.6 Auto-recalibration at power on 2.7 Frame is electrically shorted to DC 0V.	
Interface connector	34 pin right-angled header connector	
Power connector	Equipped	
Other optional function	Not equipped	

3. PHYSICAL SPECIFICATION

(Table 3-1) Physical specification

Width	101.6mm (4.00 in), Nom.
Height	25.4mm (1.00 in), Nom.
Depth	145mm (5.71 in), Nom., excluding front bezel
Weight	345g (0.76lbs), Nom., 360g (0.79 lbs), Max.
External view	See fig.3-1.
Cooling	Natural air cooling
Mounting	Mountings for the following directions are acceptable. (a) Front loading, mounted vertically. (b) Front loading, mounted horizontally with spindle motor down. (c) Mounting angle in items (a) and (b) should be less than 25° with front bezel up or down. Note: As to the other mounting directions than the above will be considered separately.
Installation	With installation holes on the frame of the FDD. Refer to Fig.3-1.
Material of flame	Aluminium die-cast
Material of front bezel	PPHOX (Complying with UL94-5V)



(Units: mm)

(Fig. 3-1) FDD external view

OUTLINE

This specification provides a description for the TEAC FD-235HF, dual density (2/1MB, 2-modes), 90mm (3.5-inch) micro floppy disk drive (hereinafter referred to as FDD). Table 1-1 shows the outline of the FDD, and Table 1-2 shows the signal interface pin-assignment.

(Table 1-1) Specification outline

Model name	FD-235HF-A529	FD-235HF-A540	FD-235HF-A591
Front bezel	Black	Beige (AT)	Beige (PS)
Eject button	Black	Beige (AT)	Beige (PS)
LED indicator	Green		
Safety standard	UL, CSA & TÜV		
Operation modes	2MB mode Write and read		1MB mode Write and read
90mm (3.5-inch) disk used	High density (2HD)		Normal density (2DD)
Unformatted data capacity	2M bytes		1M bytes
Data transfer rate	500k bits/s		250k bits/s
Disk rotational speed	300rpm		300rpm
Track density	5.3track/mm (135tpi)		
Track to track time	3ms		
Required power	+5V single (4.5 ~ 5.5V)		
Signal output driver	CMOS, 3-state		
Input signal pull-up	1kΩ ±30%, unremovable		
Customer selectable strap	14 selections (DC0 ~ 3, RY34, DC34, DC2, HO2, HI2, HA, REN, ACD, IR, FG) Refer to item 11.1		
Function setting at delivery	1. Strap setting 1.1 DS1 : DRIVE SELECT 1 on pin 12 1.2 DC34 : DISK CHANGE on pin 34 1.3 HA : Automatic density setting for 2DD (1MB) disk or 2HD (2MB) disk. 1.4 REN : Auto-recalibration at power on. 1.5 FG : Frame is electrically shorted to DC 0V. 2. Other interface setting 2.1 Pin2 : Open 2.2 Pin4 : Open 3. Other function setting 3.1 LED turn on condition: DRIVE SELECT 3.2 Motor rotating condition: MOTOR ON 3.3 Ready and seek-complete gate (full-mask) for INDEX and READ DATA output pulses. 3.4 Auto-chucking at disk installation		
Interface connector	34 pin right-angled header connector		
Power connector	Equipped		
Other optional function	Not equipped		

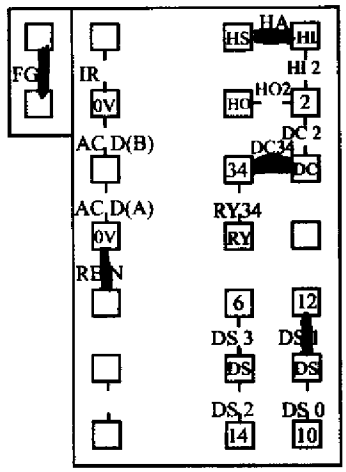
CUSTOMER SELECTABLE STRAPS

Function Summary of Straps

The FDD is equipped with the following selectable straps on the main PCBA. Insertion of a short bar onto the post pin is defined as the on-state of the strap. Refer to Table 1-1 in item 1. as to the strap setting at delivery and selectable straps.

(Table 11.1-1) Function summary straps

Strap	Function
DS0	DRIVE SELECT 0 input on pin 10
DS1	DRIVE SELECT 1 input on pin 12
DS2	DRIVE SELECT 2 input on pin 14
DS3	DRIVE SELECT 3 input on pin 6
*RY34	READY output on pin 34
*DC34	DISK CHANGE output on pin 34
*DC2	DISK CHANGE output on pin 2
*HA	Density set automatically
*HI2	Density set by HD IN on pin 2
*HO2	HD OUT output on pin 2
*IR	LED on: DRIVE SELECT * Ready
*ACD	Disable for auto-chucking
*REN	Enable for auto-recalibration
FG	Short between FDD frame and DC 0V



Strap post layout

Notes : 1. *straps overlap with other strap posts. Insert a short bar according to your priority.
2. You may select one of the two short bar positions, (A) and (B), for ACD strap.

DS0/DS1 and DS2/DS3 Straps

(1) In the multiplex control, these straps designate the address of the FDD.

(2) By the combination with the DRIVE SELECT 0 ~ 3 signals, four addresses, Max. can be designated. Refer to Fig. 8.2-1 and Table 11.1-1.

HA/HI2/HO2 Straps

(1) Straps to select a designating method of the density mode and to select a signal pin number.
(2) Table 11.3-1 shows the combination of the straps and selectable functions.
(3) Refer to Table 11.1-1 as to selection of signal pin number and overlapping with the other strap function.

(Table 11.3-1) Designating methods for density mode

Sel. No.	Strap setting			Input	Output	Density designation	
	HO2	HI2	HA	Pin 2	Pin 2	Host side	FDD
A	—	ON	—	HD IN	OPEN	Key-in or software	HD IN from host
B	—	—	ON	OPEN	OPEN	Key-in or software	Automatic by sensor
C	ON	—	ON	OPEN	HD OUT	HD OUT from FDD	Automatic by sensor

Notes : 1. "-" mark indicates the off-state of the strap.
2. Refer to Table 11.1-1 as to overlapping with the other strap functions.
3. Refer to item 8.3.14 as to the detailed signal functions.

RY34/DC34/DC2 Straps

(1) RY34 strap is used to output the READY signal on interface pin No.34.
(2) DC34/DC2 straps are used to output the DISK CHANGE signal on interface pin No.34, 2.
(3) Refer to Table 11.1-1 as to selection of signal pin number and overlapping with the other strap functions.

IR Strap

IR strap is used to select a turn-on condition of the front bezel indicator (LED). Refer to item 12.1 as to the detailed explanation.

ACD and REN Straps

(1) ACD strap is used to inhibit the auto-chucking at disk installation.
(a) When the ACD strap is off-state, the auto-chucking operation is executed. The spindle motor automatically rotates for 490ms, approx. (500ms, Max.), and all of the interface signals are effective in accordance with the explanation in item 8.3 during the above auto-chucking operation.
(b) When the ACD strap is on-state, the auto-chucking operation is inhibited.
(2) REN strap is used to execute the auto-recalibration (heads move to track 00) at power-on.
(a) When the REN strap is off-state, the auto-recalibration is inhibited.
(b) When the REN strap is on-state, the auto-recalibration is executed at power-on.

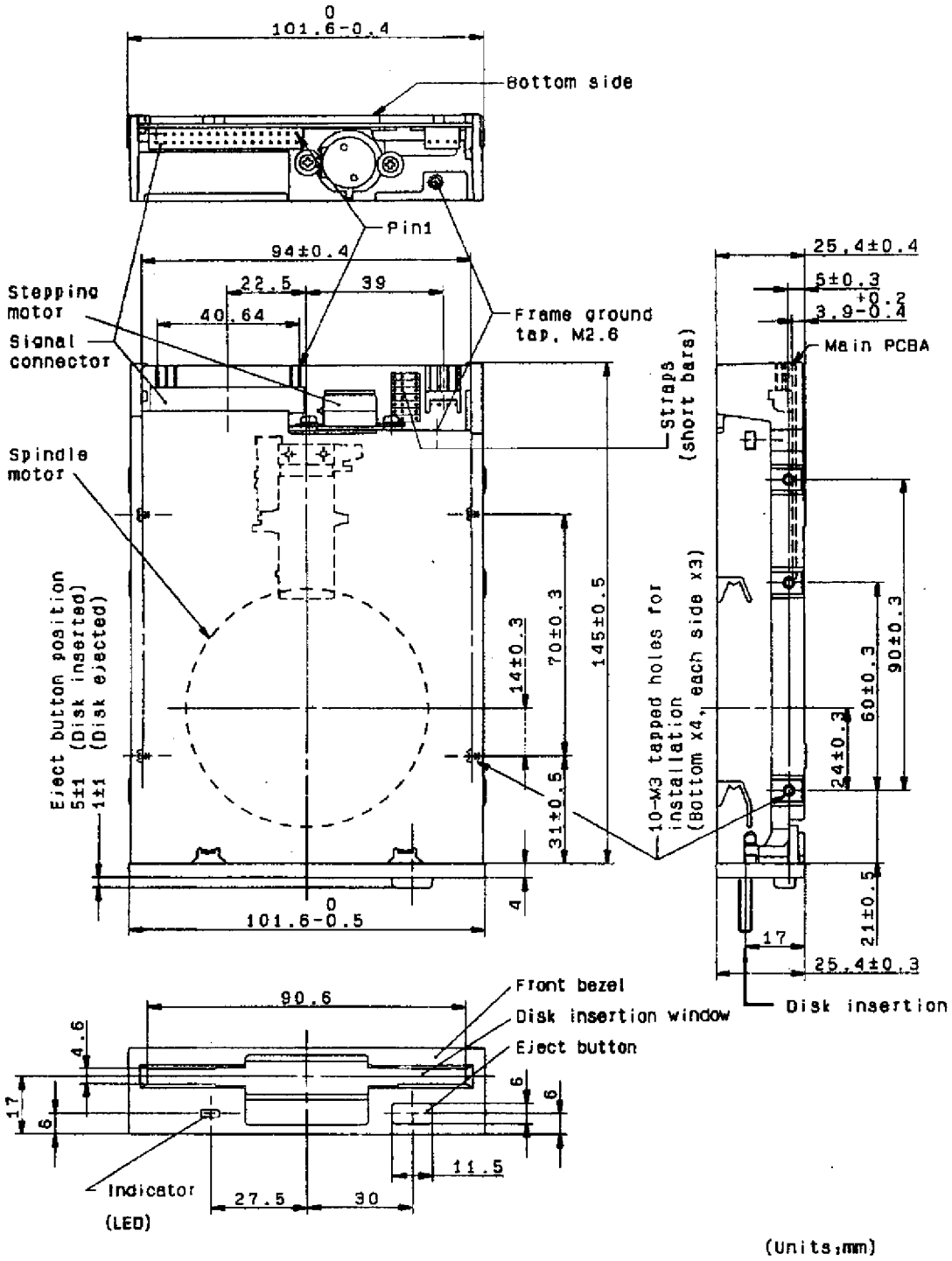
FG Strap

FG strap is used to electrically connect the FDD frame to DC 0V. Refer to item 10. as to the detailed explanation.

PHYSICAL SPECIFICATION

(Table 3-1) Physical specification

Width	101.6mm (4.00 in), Nom.
Height	25.4mm (1.00 in), Nom.
Depth	145mm (5.71 in), Nom., excluding front bezel
Weight	345g (0.76lbs), Nom., 360g (0.79 lbs), Max.
External view	See Fig. 3-1.
Cooling	Natural air cooling
Mounting	Mountings for the following directions are acceptable. (a) Front loading, mounted vertically. (b) Front loading, mounted horizontally with spindle motor down. (c) Mounting angle in items (a) and (b) should be less than 25° with front bezel up or down. Note: As to the other mounting directions than the above will be considered separately.
Installation	With installation holes on the frame of the FDD. Refer to Fig. 3-1.
Material of flame	Aluminium die-cast
Material of front bezel	PPHOX (Complying with UL94-5V)



(Fig. 3-1) FDD external view