

TJ2-4861A

5.25 INCH FLEXIBLE DISK DRIVE
MODEL M4853
MAINTENANCE MANUAL

mitsubishi electric co., ltd.

4. OPERATING INFORMATION

4.1 Environment

There is no problem in operating under normal office conditions but when operating out of following conditions, Drive may not work properly or Diskette may get damaged.

1 Temperature/Humidity Range

	<u>During Operation</u>	<u>During Non-operation</u>
Temperature Range	+5°C - +43°C	-20°C - +51°C
Humidity Range	20% - 80% RH (DEW LESS)	5% - 95% RH (DEW LESS)

(Maximum wet bulb temp 29.4°C)

During Transportation

Temperature Range -40°C - +62°C for maximum period of 72 hours
Humidity Range 1% - 95% RH with no condensation for maximum period of 72 hours

2 Dust

Be extra careful of dust entering unit because it may cause damage to head or diskette media.

4.2 Diskette Handling (Be extra careful of the following)

- 1 Keep diskette media away from any appliance which may generate magnetic field. (i.e. radio, tv, motor/dynamo and other electrical appliances.)
- 2 Do not bring any ferro magnetic materials near the diskette..
- 3 Do not bend media under any condition.
- 4 Return the diskette to storage envelope when transporting and storing it.
- 5 Do not touch or attempt to clean the disk media surface with alcohol.
- 6 Do not expose diskette to head, dust or sunlight.
- 7 Do not write anywhere except on the medial label and only use a soft felt tip pen.

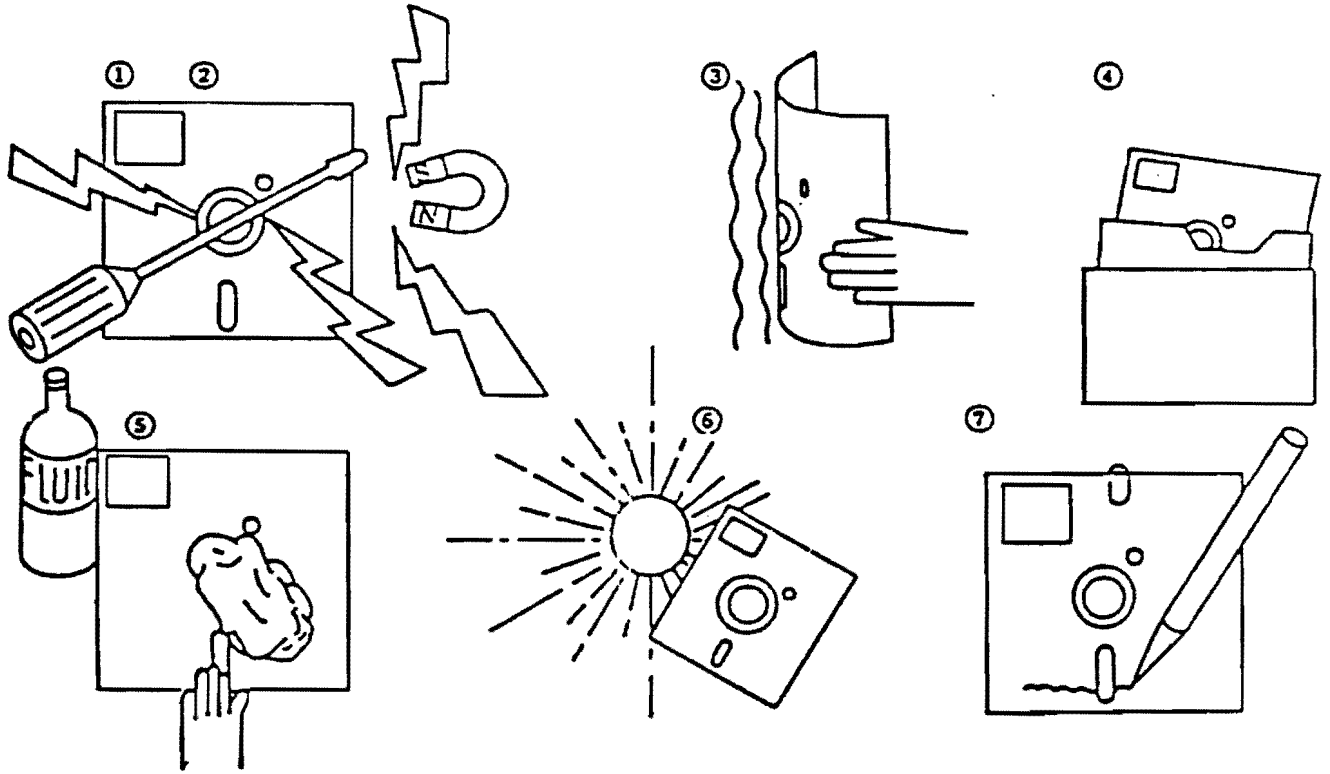


FIGURE 2

5. REGULAR MAINTENANCE

"Unit life can be affected by damaged parts as a result of dusty environment or excessive operation". So maintenance by such methods as visual inspection, cleaning/change of damaged parts and regular functional checks will keep the unit in good condition and enable the discovery of any problem at an early stage.

Time span between maintenance is calculated at an actual operation rate of 8 hours a day so in case of a greater rate, differences modification is needed. When operating at a normal environment condition, perform maintenance once a year.

5.1 Caution

- 1 During maintenance, be careful of dust entering unit, and damaging head.
- 2 Make sure power switch is off first when starting maintenance.
- 3 When put off/on Printed Circuit Board (P.C.B.) Assy, make sure power switch is "off" to protect semiconductors and ICs.
- 4 Do not touch Disk media surface or head directly and do not bring any ferro magnetic materials near it.
- 5 When using this unit for Read data only (when using CE disk), be careful of write mode mishandling to protect data.
- 6 Do not touch steel belt and do not adjust related mechanism.
- 7 Avoid static shock or excessive force to head carriage assembly because it has been carefully adjusted. Do no readjust any screws except where specified in this manual.

5.2 Head Cleaning on Field Applications

Head cleaning is recommended at user's sites, especially when used in severe environments, because the heads may accumulate dust in the air and magnetic coating material of the disk, causing chance of error increase and/or scratch on the disk surface.

Recommended schedules and procedures are as follows:

1) Cleaning Schedules

- (1) Periodical cleaning using wet type cleaning disk.
 - i. Once a month for normal usage in normal environments.
 - ii. Should be increased to about once a week when used in severe environments such as dusty area, high humidity, high and low extreme temperatures. Low temperature such as 5 to 10°C (41 to 50°F) under high humidity is most severe for diskettes.
 - iii. Higher frequency for brand new drives would be recommended, for about once a week. Better matching between head and medium would be produced by a long time use, as experienced.
- (2) When frequent errors are detected. (Wet or dry type may be used.)
- (3) When scratch(es) are found on the medium surface. (Wet or dry type may be used.)

2) Recommended Head Cleaning Material

(1) Wet type

Innovative Computer Products*, Head Cleaning Kit (or equivalent).

*18360 Oxnard Street, Tarzana, California 91356
(213) 996-4911/TWX 910-493-5964

(2) Dry type

To be supplied by Mitsubishi representatives. No substitutions would be allowable unless accepted by factory test.

5.3 Check and Adjustments

5.3.1 Diskette rotational cycle adjustments

1) Equipment

CE Tester (Disk Exerciser)

Scratch Diskette

Universal Counter

VR Adjustment Driver (Pot Trimmer)

2) Adjustment procedure

2)-1 Connect CE Tester to Drive then turn-on power switch.

2)-2 Load diskette then turn-on motor with drive select.

2)-3 Make sure HLMG ON. (Head Loaded)

2)-4 Seek to TK00.

2)-5 Connect universal counter to +INDEX (interface signal) and measure rotational cycle rate.

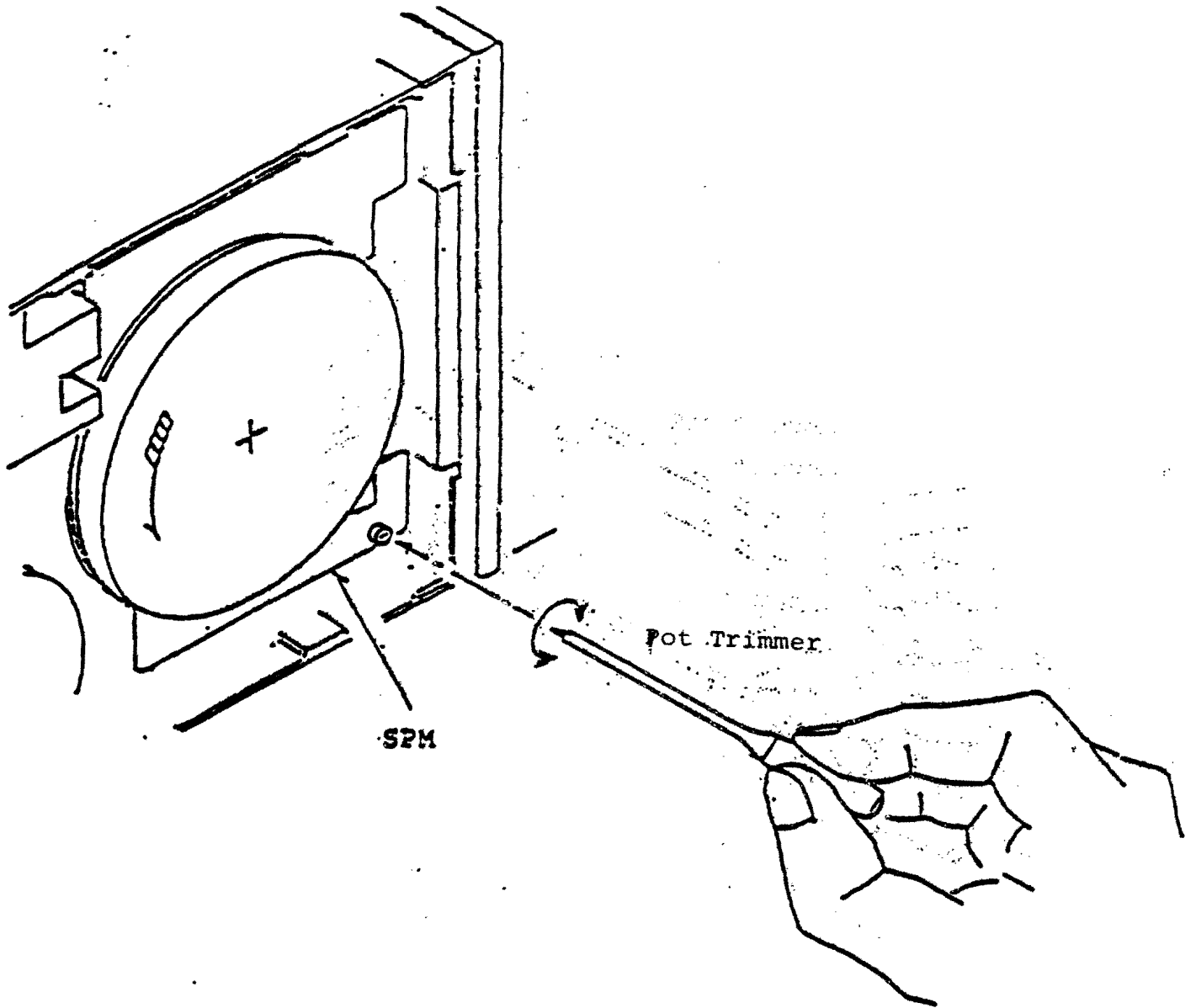
2)-6 Adjust counter reading until it comes within specifications using SPM VR (see Figure 4).

2)-7 After this adjustment, Lock VR with white paint.

3) Test specification

3)-1 Check: $\pm 1.6\%$ (196.8 - 203.2ms)

3)-2 Adjust: $\pm 1.0\%$ (198.0 - 202.0ms)



198.0 - 202.0

+INDEX

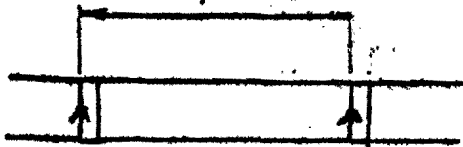


FIGURE 4

5.3.2 TK00 sensor position adjustment

1) Equipment

CE Tester (Disk Exerciser)
Scratch Diskette
No. 1 plus screw driver
Oscilloscope

2) Adjustment procedure

2)-1 Connect CE Tester to Drive then turn-on power switch and load diskette.

2)-2 Turn-on motor and select drive.

2)-3 Repeat seek between TK00 and 02 (see Figure 5).

2)-4 Observe waveform (TK00) at TPB1 using oscilloscope.

trigger	CH1--step (DC, +)	TPD15
signal	CH2--TK00 (DC)	TPE1

2)-5 Loosen screw and adjust time until it comes to within 3-4ms by moving TK00 in the direction of the arrow (see figure).

3) Note:

3)-1 Set step rate at 3ms using CE tester.

3)-2 Make sure there are 2 pulses on step signals.

5.3.3 TK00 Sensor Check (Alternate Procedure--recommended)

Connect disk exerciser to drive
Turn on motor and Select drive
Insert Diskette
Recalibrate (Seek) to TK00
Connect oscilloscope probe channel 1/DC to TPB1
Trigger Mode Auto
Source CH1
2 volts/Div
± 1msec./Div
TPB1 should be high at TK00
Step out to TK02
TPB1 should be low

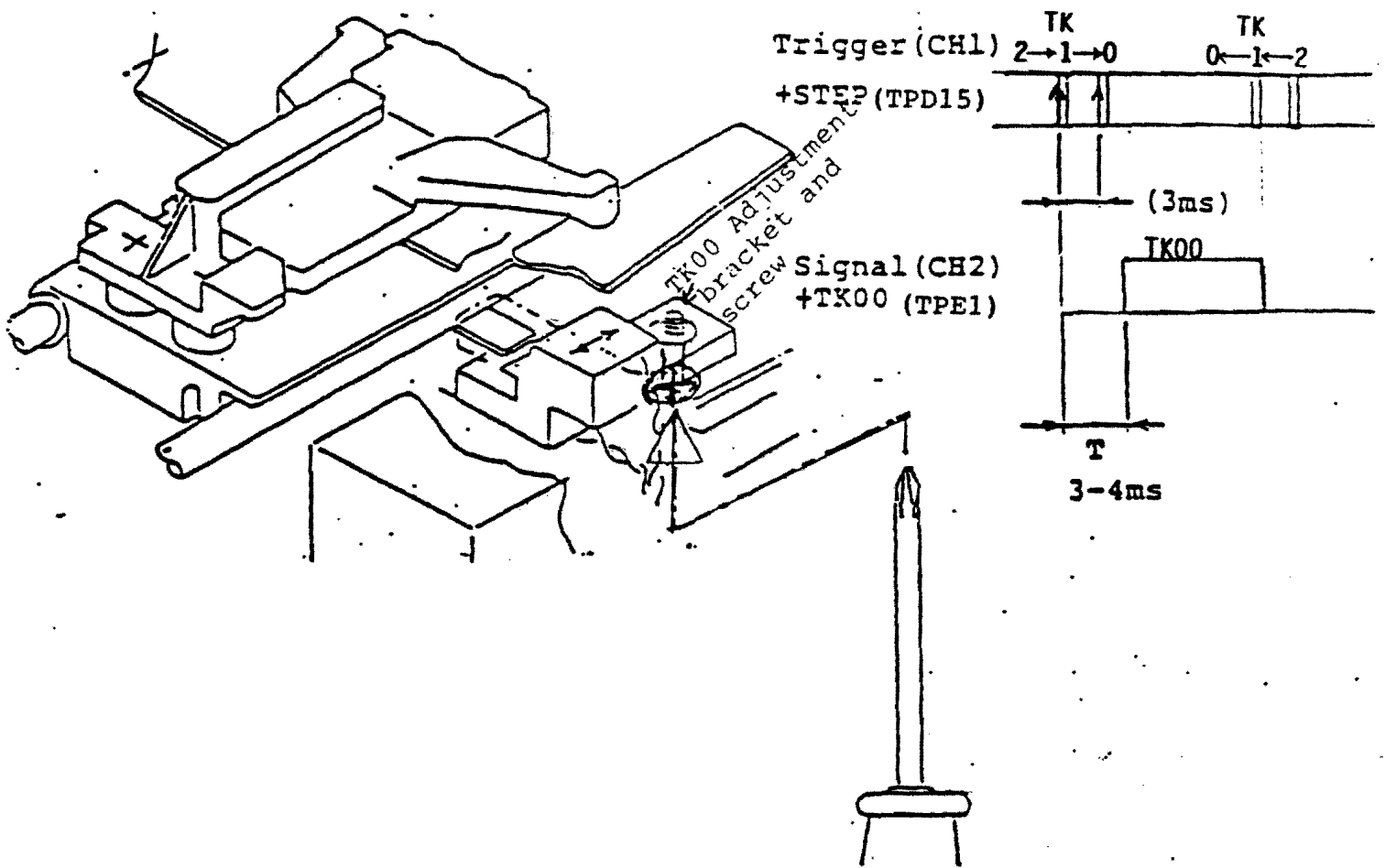


FIGURE 5

5.3.3 INDEX sensor position adjustment

1) Equipment

CE Tester

CE diskette (DYMEK 502-1D STANDARD DISKETTE)

No. 1 plus screw driver

Oscilloscope

2) Check procedure

2)-1 Connect CE Tester to Drive (set power off).

2)-2 Turn-on power switch and motor on.

2)-3 Select drive and load CE diskette (close clamp door slowly).

2)-4 Read timing of each waveform at TPB9 + TPB10 under read mode/TK02, using oscilloscope. (See figure.)

Trigger: EXT - +INDEX (DC, +) (TPD14)

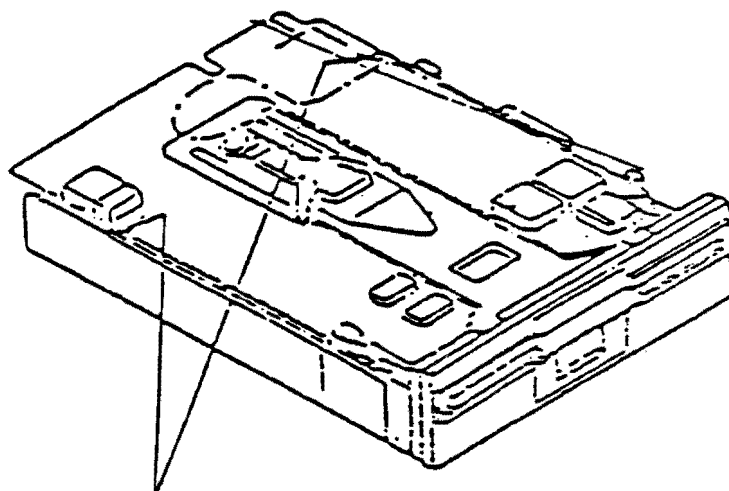
Signal: CH1 - TPB9 (AC) Add 100mV/Div
CH2 - TPB10 (AC,INV) Add 50µs/Div

2)-5 Specification

Check:	200±200 µs at TK02	Side 0
	200±300 µs at TK02	Side 1
Adjust:	200±100 µs at TK02	Side 0
	200±200 µs at TK02	Side 1

*Check = make sure reading falls within this spec.

Adjust = if reading is out of "check" spec., adjust to within spec. indicated here.



PCA set screw

Trigger
+INDEX

(TPD14)

Signal
(TPB9+10)

(burst
waveform)

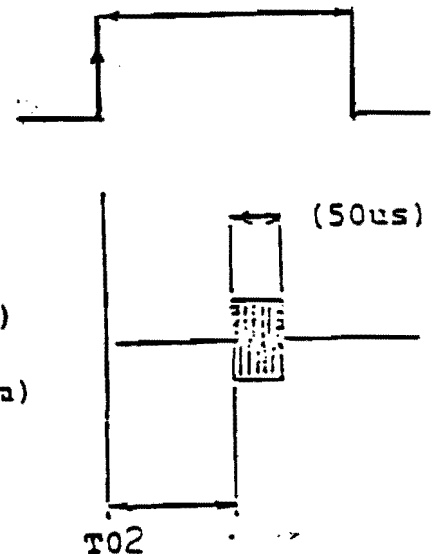


FIGURE 6

5.3.4 Head alignment adjustment

1) Equipment

CE Tester

CE Diskette (DYMEK 502-1D STANDARD DISKETTE)

No. 1 screw driver

Oscilloscope

Hex wrench (1.5mm dia.)

2) Adjustment procedure

2)-1 Connect CE Tester to Drive (set power off).

2)-2 Turn-on power switch and motor on.

2)-3 Select drive and load CE diskette (close clamp door slowly).

2)-4 Seek TK00 to TK32 then read amplitude of each waveform (positioning waveform) at TPA1 + TPA2 under read mode (see Figure 7).

Trigger: EXT - +INDEX (DC, +) (TPD14)

Signal: CH1 - TPB9 (AC) Add 100mV/Div
CH2 - TPB10 (AC, INV) 20 ms/Div

Specification:

when A>B B/A > 60%
A<B A/B > 60%

2)-6 Seek both directions TK00→TK32 and TK79→TK32, loosen both set screws, then adjust STM until signal comes within spec. Tighten screw.

3) Note: Adjust under following conditions

Temperature: 23°C ±2°C exposed over 2 hours

Humidity: 50% ±5%

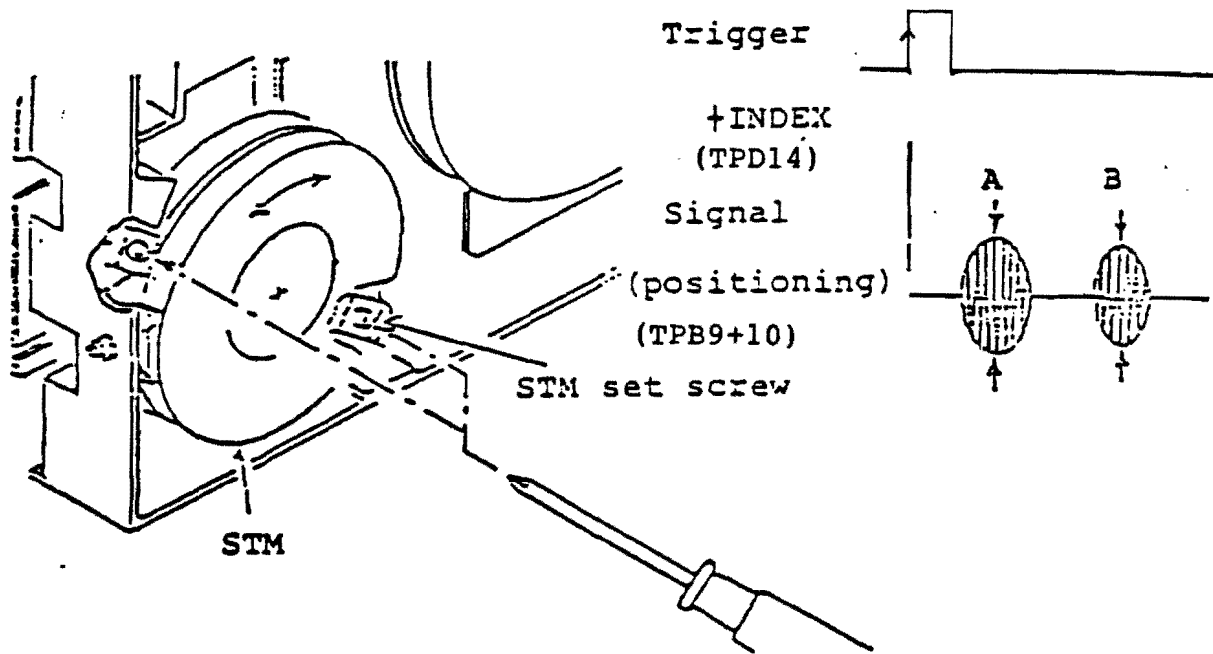


FIGURE 7

5.3.5 Head Azimuth

1) Equipment

CE Tester
 CE Diskette
 Oscilloscope

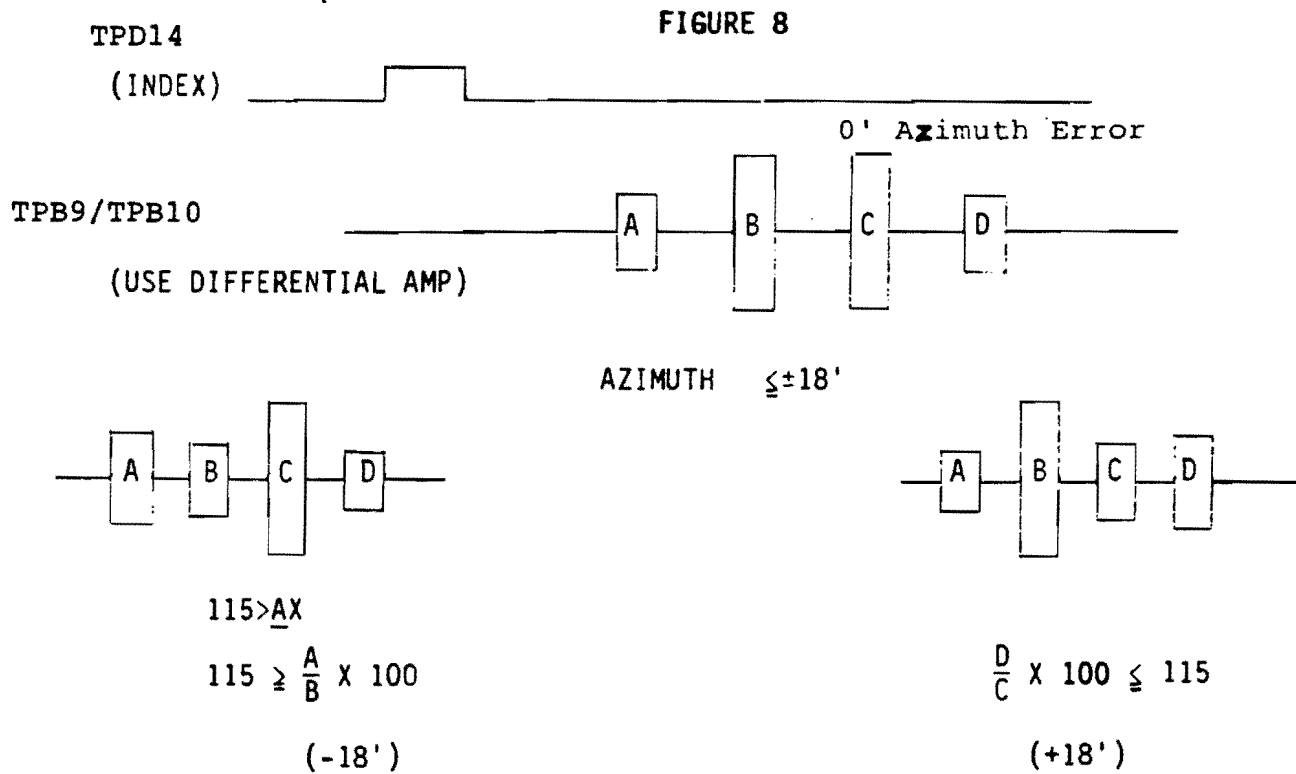
2) Check procedure

- 2)-1 Connect CE Tester to Drive then turn-on power switch.
- 2)-2 Turn on motor.
- 2)-3 Select drive and load CE diskette.
- 2)-4 Seek to TK68.
- 2)-5 Read azimuth waveform using oscilloscope.

Trigger: EXT - +INDEX (DC +) (TPD14)

Signal: CH1 - TPB9 (AC) Add 100mV/Div
 CH2 - TPB10 (AC,INV) Add ± 1ms/Div

- 2)-6 Acceptable when adjusted waveform within following range

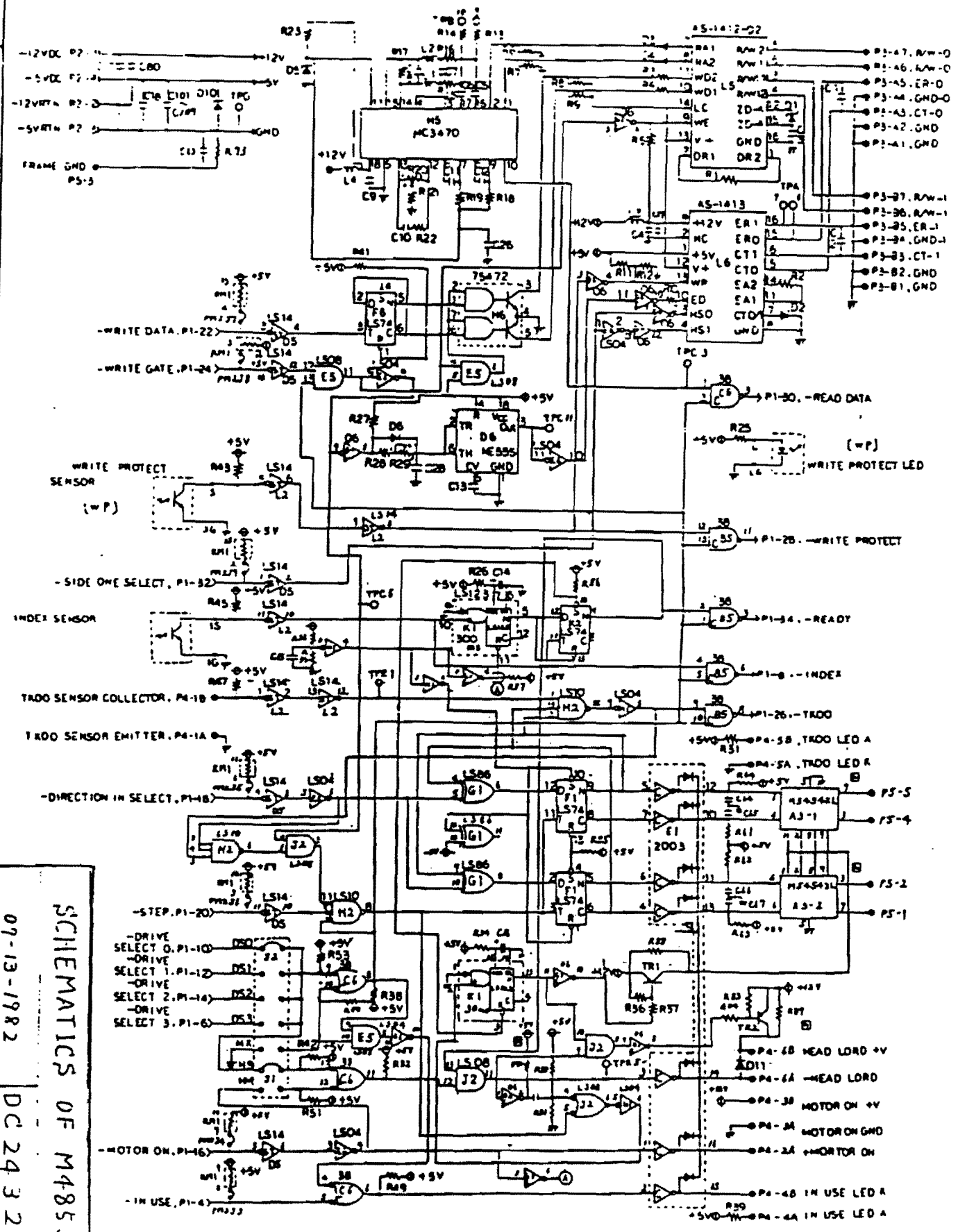


Note: A=B: -12min
 C=D: +12min

Specification= ±18min

NOTE

The head's azimuth is not adjustable. It is suggested that the drive be sent to an authorized repair center or a new head assembly be installed. In the latter case, all previous adjustments should be made again.



SCHEMATICS OF M4853

07-13-1982 DC 243292

- DRIVE SELECT 0, P1-10
- ORIVE SELECT 1, P1-12
- ORIVE SELECT 2, P1-14
- ORIVE SELECT 3, P1-6
- STEP, P1-20
- MOTOR ON, P1-16
- IN USE, P1-4

- P5-5
- P5-4
- P5-2
- P5-1

- P4-58 HEAD LOAD +V
- P4-6A HEAD LOAD
- P4-38 MOTOR ON +V
- P4-24 MOTOR ON GND
- P4-48 IN USE LED A
- P4-4A IN USE LED A

- P1-30, -READ DATA
- P1-28, -WRITE PROTECT
- P1-26, -TAPO
- P1-25, -INDEX
- P1-24, -READY

- P1-47, R/W-0
- P1-46, R/W-1
- P3-45, ER-0
- P3-44, GND-0
- P3-43, CT-0
- P3-42, GND
- P2-41, GND
- P3-37, R/W-1
- P3-36, R/W-1
- P3-35, ER-1
- P3-34, GND-1
- P3-33, CT-1
- P3-32, GND
- P3-31, GND