

840524/G6as Strappning och nu gällande modifieringar av Jet-maskiner.

följande strappar ska finnas

Floppy TEAC 55B 5" DSO/DS1, HM, DS	gäller 2FD/maskin
" TEAC 55F " DSO/DS1, HM, SM, IU, PM	"
" TEAC 55G " DSO/DS1, HM, SM, IU, PM	"

OBS! Endast ett Terminatornät/maskin, ska sitta på den sista floppyn på bandkablaget.

Floppy mont. i winchestermaskin strappas DSO, resten enl. ovan.

På floppycontrollerkort till winchester strappas SS mot 51an.

Floppy TEAC med Skynet/Boschertkraft modifi. enl följande:

1. Skruv som sammanbinder floppycontrollerkort med floppy-chassie, monteras bort. Med en borr tas c:a 1 mm av folien runt hålet bort. Skruven dras dit med en nylonbricka som isolering. Gäller både floppy A: och B:.
2. I den ena av mont. vinklarna på floppyn, mont. taggbricka under en av skruvarna. Vid mont. av denna vinkel i bottenplåten läggs en liten och en stor taggbricka under en av skruvarna, samt färgen under taggbrickan skrapas bort. Gäller både floppy A: och B:.
3. På jordplan vid det screentryckta "P3" på moderkortet inlödes en strapp som anslutes till chassiejordstiftet på floppy DSO(A:). Gäller bara floppy A:.
4. På Skynetkraft demonteras C1.
På Boschertkraft " C5.

Punkt 1-4 gäller även floppy och kraft i winchester.

FLOPPY-DISK DRIVES

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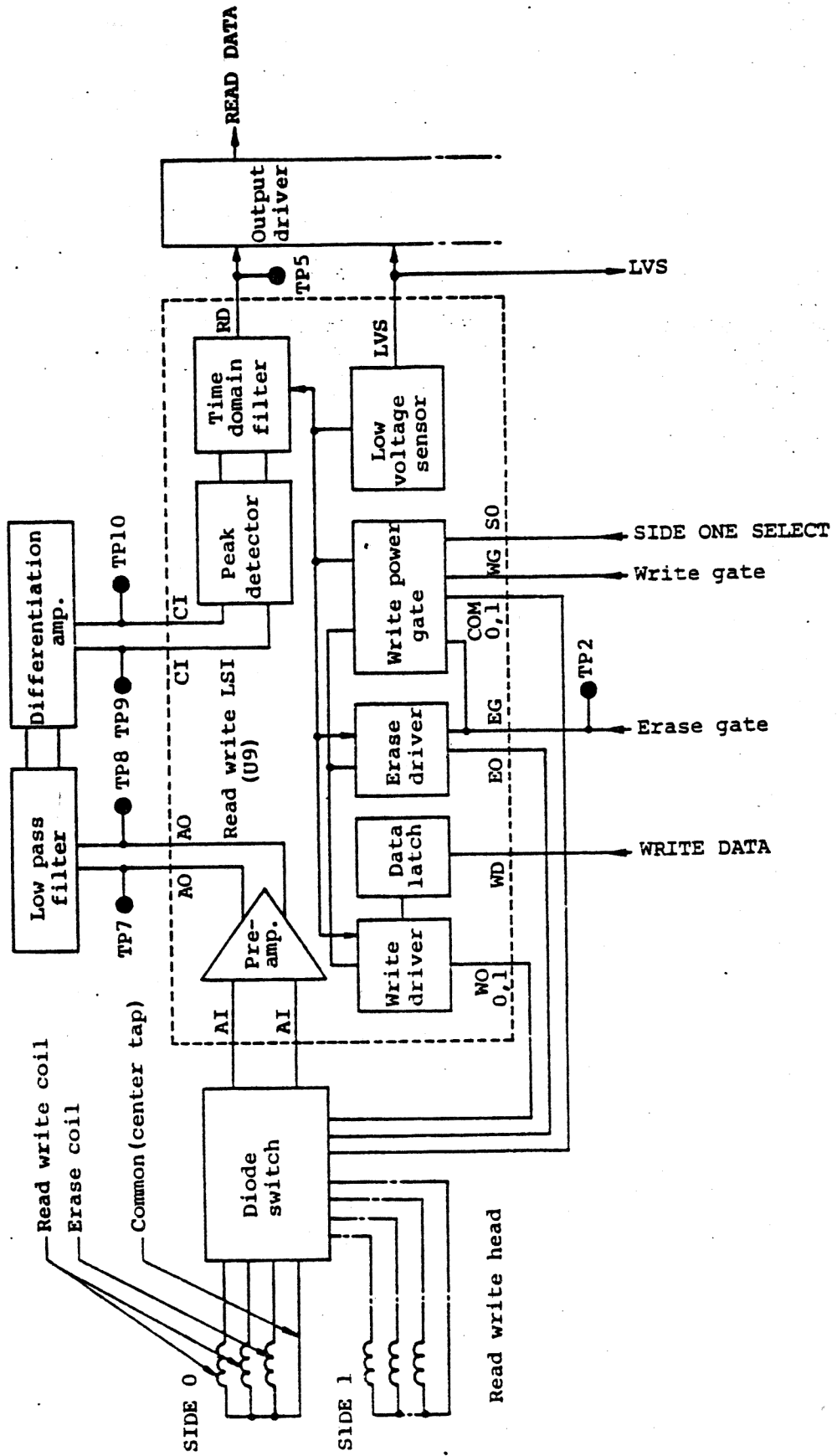
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ANSLUTNINGAR

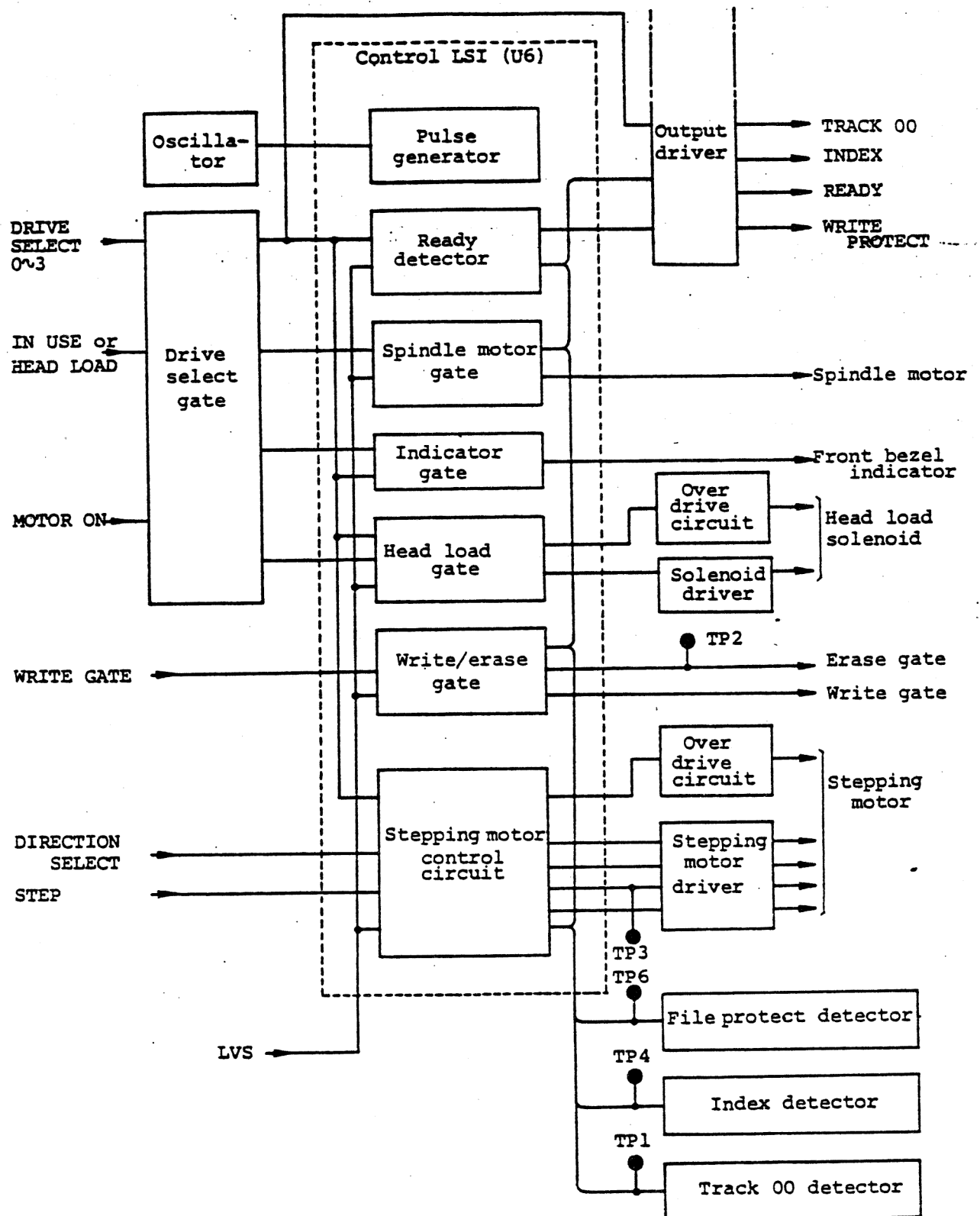
Spänningsmatningen till drivarna sker till den fyrpoliga kontakten. Spänningarna på kontakten ska vara:

Pol	Spänning
1	+ 12 V
2	GND
3	GND
4	+ 5 V

Fendkabeln skall anslutas med anslutning 1 mot "jacket" på drivern.



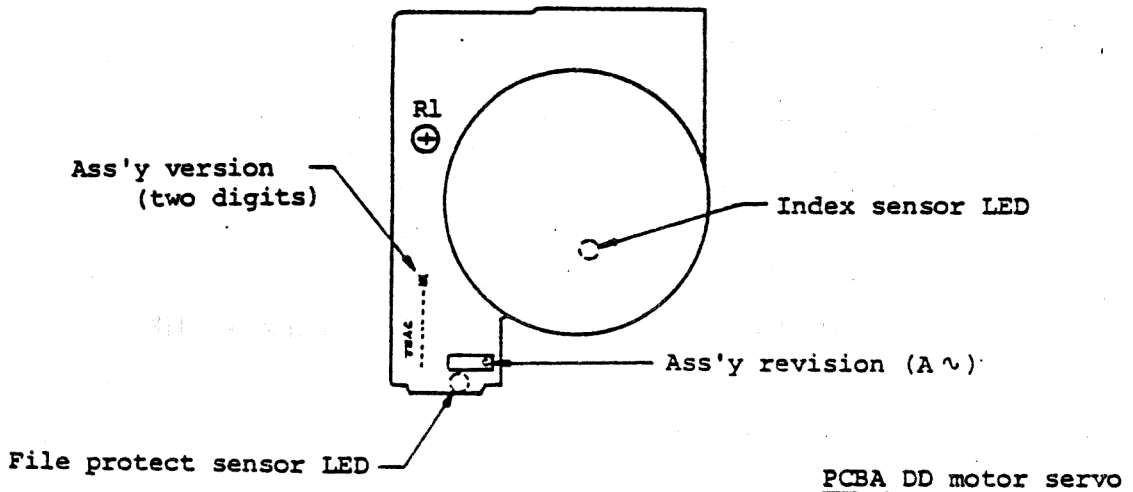
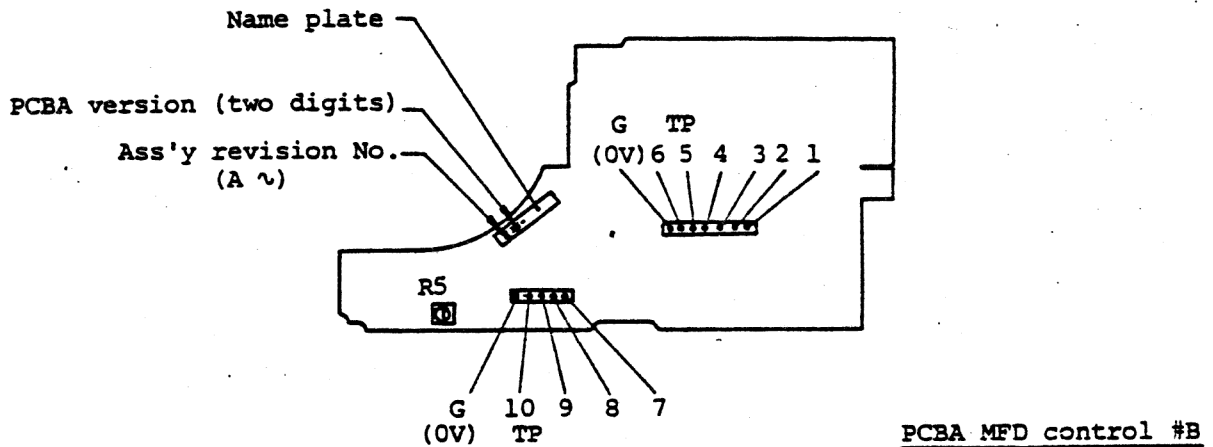
(Fig. 303) Read write circuit block diagram



(Fig.308) Control circuit block diagram

3-3. FUNCTION OF TEST POINTS AND VARIABLE RESISTORS

Fig.311 shows the mounting position of the test points and variable resistors.



- Notes: 1. Some versions or some revision numbers of the PCBA MFD control #B have not the variable resistor R5.
 2. Some types of DD motor Ass'y have not the variable resistor R1.

(Fig.311) Location of test points and variable resistors

3-3-1. Function of Test Points

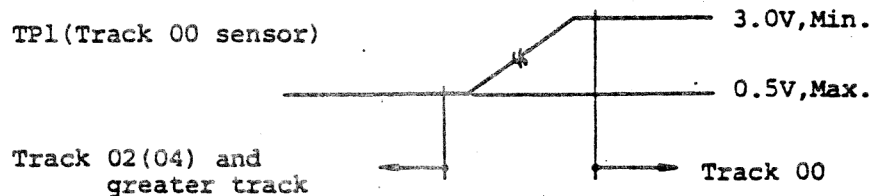
Twelve test points (two for ground) are equipped on the PCBA MFD control for the check and adjustment of the FDD.

(1) TP1 (Track 00 sensor)

Test point to observe the output of the track 00 detection photo-transistor.

The signal level at this TP is opposite to that of the TRACK 00 output signal. When the head is on track 00 or around track 00 position, TP1 becomes HIGH level.

The voltage of TP1 should be more than 3V at track 00 and less than 0.5V at track 02 (48tpi) or track 04 (96tpi).



(Fig.312) Typical waveform of TP1

Note: The TRACK 00 output signal goes TRUE (LOW level) only when the phase A coil of the stepping motor is energized and the direction latch is set to the step-out direction (refer to Fig.310). Therefore, the level change timing of the TRACK 00 signal is not consistent with that of the TP1 signal.

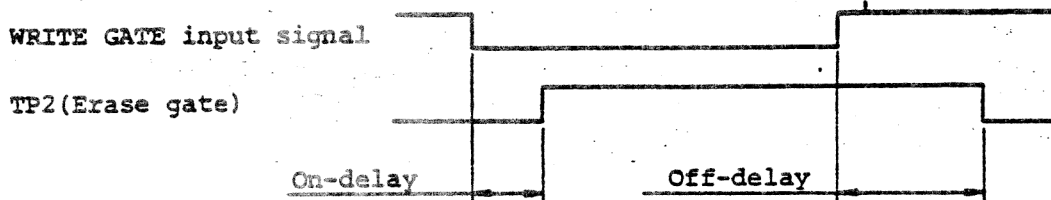
(2) TP2 (ERASE gate)

Test point to observe the output of the erase gate.

When TP2 is HIGH level, erase current flows through the erase head.

This TP is used for the check of the required delay time of the erase

gate signal against the WRITE GATE input signal.



(Fig.313) Typical waveform of TP2 .

Delay	FD-55A ~ F	FD-55G
On-delay	200 ~ 320 μ s	175 ~ 210 μ s
Off-delay	860 ~ 950 μ s	500 ~ 550 μ s

(Table 302) Erase gate delay

(3) TP3 (Phase B)

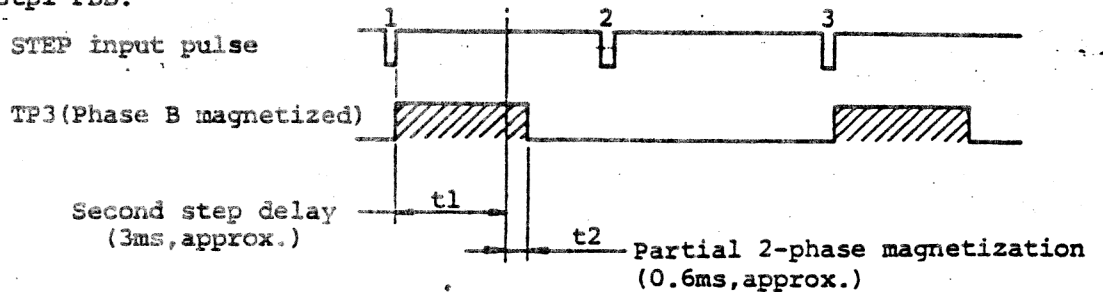
Test point to observe the phase B magnetized period of the stepping motor. For the 48tpi FDD, it is also used for observing the delay time of the second step pulse which is produced automatically in the FDD. It is also used for all the FDDs, as the observation point of the partial 2-phase magnetization timing of the stepping motor.

For the 48tpi FDD, the stepping motor rotates for 2 steps in response to one STEP input pulse. Therefore, TP3 goes high level for a specified time when a step-out command from an even track or a step-in command from an odd track is executed. Refer to Fig.310.

For the 96tpi FDD, the stepping motor rotates only for 1 step in response to one STEP input pulse by which one track space is moved. TP3 maintains HIGH level when the head is on the $1+4n$ ($n=0,1,2,---$) track (phase B magnetized) or for a specified time during step-in or

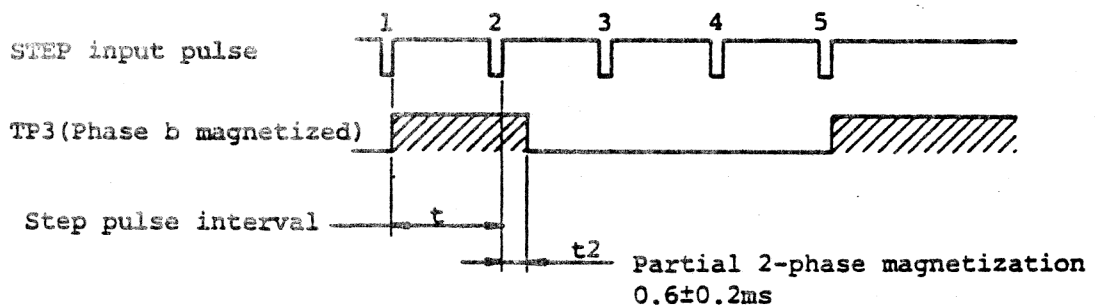
step-out operation from the above 1+4n track.

48tpi FDD:



$$t1+t2= 3.6\pm0.3ms$$

96tpi FDD:



$$t+t2=t+(0.6\pm0.2)ms$$

(Fig.311) Typical waveform of TP3

(4) TP4 (Index)

Test point to observe the output of the index detection photo-transistor after inverting the level by the Schmitt inverter.

The signal level at this TP is opposite to that of the INDEX output signal. When the index hole or sector hole (hard sector disk) is detected, HIGH going pulse is observed at TP4. The photo-transistor is mounted on the PCBA front OPT and the LED is mounted on the PCBA DD motor servo.

The test point is used for the following purposes.

- (a) Confirmation and adjustment of the disk rotational speed. Speed is adjusted by the variable resistor R1 on the PCBA DD motor servo.

Note: Some types of DD motor Ass'y have not the variable resistor R1 for rotation speed adjustment. In such a DD motor Ass'y, no adjustment is required and the rotation speed is determined by an oscillation frequency of the ceramic oscillator mounted on the PCBA DD motor servo.

- (b) Confirmation and adjustment of the index burst timing. Burst timing is adjusted by the fixing screws of the PCBA front OPT.

TP4 (Index)



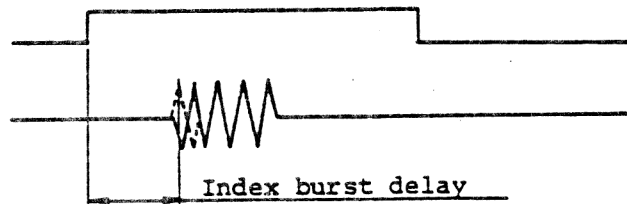
(Fig.315) Typical waveform of TP4 (Speed observation)

Items	FD-55A ~ F	FD-55G
Index interval	200±3ms	166.7±2.5ms
Pulse width	2 ~ 5.5ms	1 ~ 8ms
Burst delay	200±200µs	165±165µs

(Table 303) Index timing

TP4 (Index)

TP7 or 8
(Pre-amp. output)

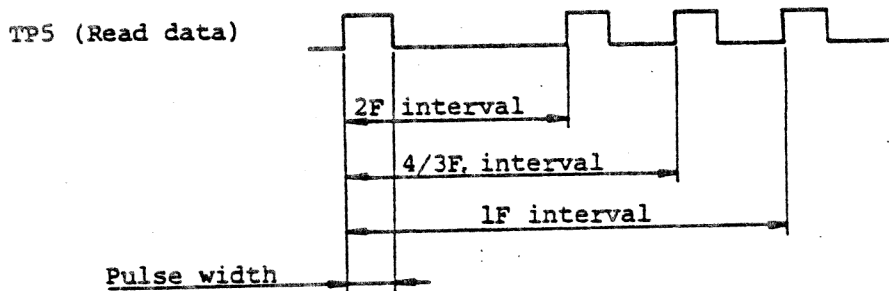


(Fig.316) Typical waveform of TP4 (Burst timing observation)

(5) TP5 (Read data)

Test point to observe the read data pulse.

The signal level at this TP is opposite to that of the READ DATA output signal.



(Fig.317) Typical waveform of TP5

Fig.317 shows the waveform at TP5 in normal data read operation.

In the FM method, 2F and 1F intervals are observed, while 2F, 4/3F, and 1F intervals are observed in the MFM method.

Items	FD-55A ~ F	FD-55G
2F interval	4 μ s, Nom.	2 μ s, Nom.
4/3F interval	6 μ s, Nom.	3 μ s, Nom.
1F interval	8 μ s, Nom.	4 μ s, Nom.
Pulse width	1 \pm 0.5 μ s	0.5 \pm 0.25 μ s

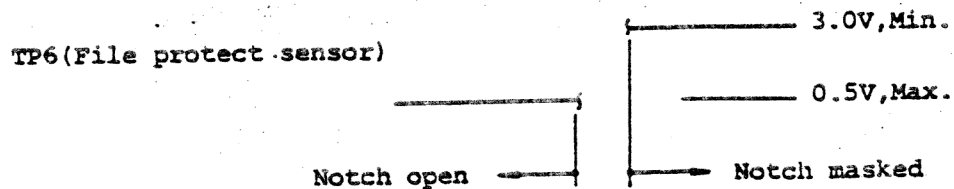
(Table 304) Read data pulse timing

(6) TP6 (File protect sensor)

Test points to observe the output of the file protect detection photo-transistor.

The signal level at this TP is opposite to that of the WRITE PROTECT output signal. When a disk with the masked write protect notch (write

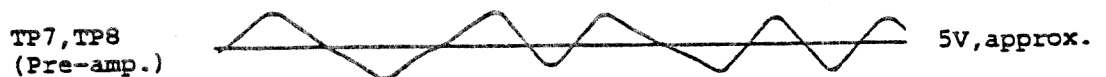
operation cannot be done] is installed, TP6 becomes HIGH level. The voltage of TP6 should be more than 3V at masked notch and less than 0.5V at open notch (write enable condition).



(Fig.318) Typical waveform of TP6

(7) TP7, TP8 (Pre-amplifier)

Test point to observe the read pre-amplifier output signals. The pre-amplifier has two outputs of the order of several dozen to several hundred mVp-p, and they differ in phase by 180° (opposite phase). Both outputs are observed at TP7 and TP8 respectively. For an accurate observation of the read waveforms, use two channels of an oscilloscope with one channel set to Invert mode and Add mode of both channels. Use G (0V) test point for the oscilloscope ground. TP7 and TP8 are used for checking various characteristics of the read/write head and also for the check and adjustment of the head seek mechanism such as track alignment.



(Fig.319) Typical waveform of TP7 and TP8

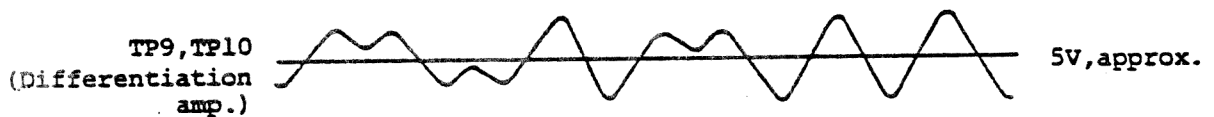
(8) TP9, TP10 (Differentiation amplifier)

Test points to observe the differentiation amplifier output signals. Like the pre-amplifier, the differentiation amplifier also has two outputs of the order of several hundred μ Vp-p to several to several Vp-p which differ in phase by 180°. Both outputs are observed at TP9 and TP10 respectively.

For an accurate observation of the waveforms, use two channels of the oscilloscope with one channel set to Invert mode and Add mode of both channels.

Use G (0V) test point for the oscilloscope ground.

TP9 and TP10 are used for checking the total operation of the read/write head and the read amplifier and for the check and adjustment of the head seek mechanism such as track alignment.



(Fig. 320) Typical waveform of TP9 and TP10

(9) TP G (0V) -- PCBA MFD control, PCBA read write amp.

TP G is equipped respectively for two test point blocks (TP1 ~ 6 and TP7 ~ 10). They are used as the ground terminals for measurement equipment. Be sure to use a small size clip to obtain a probe ground of the equipment.

3-3-2. Function of Variable Resistors

On the PCBA MFD control and the PCBA DD motor servo, maximum two variable resistors are mounted.

The PCBA MFD control of some PCBA versions and some revision numbers has not the variable resistor R5. Also some types of DD motor Ass'y have not the variable resistor R1 on the PCBA DD motor servo.

However, there is interchangeability in function and performance between these PCBAs with the variable resistor and without the variable resistor as far as they have the same parts number (8 digits) and the same version number (2 digits). It is not necessary to identify one from another as the spare parts.

The variable resistors are correctly adjusted before the shipment of the FDD and fundamentally they shall not be readjusted except for by a trained technicians.

(1) R1 on PCBA DD motor servo (Disk rotational speed adjustment)

Variable resistor for adjusting the rotational speed of the disk.

It is adjusted so that the index pulse interval at TP4 or at the INDEX output signal is $200\text{msec} \pm 3\text{msec}$ for FD-55A ~ F and $166.7\text{msec} \pm 2.5\text{msec}$ for FD-55G (see Fig.315).

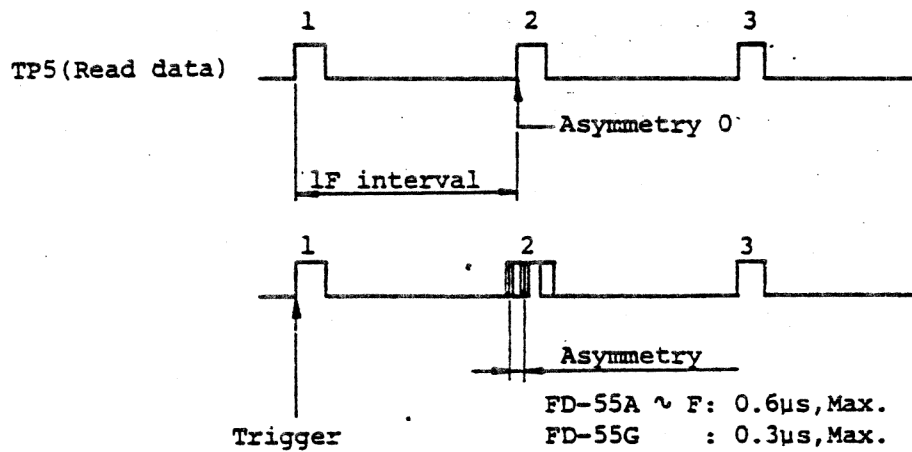
For the DD motor Ass'y without the variable resistor R1, the rotation speed of the motor is fixed by the ceramic oscillator in the servo circuit and no adjustment is required.

(2) R5 on PCBA MFD control (Read data asymmetry adjustment)

Variable resistor for adjusting the asymmetry of the read data pulse. Some PCBAs have this variable resistor and others have fixed resistor instead of it.

For a PCBA with the variable resistor, R5, write LF data and observe the pulse intervals at TP5 or at the READ DATA output signal during read operation. Then adjust the variable resistor so that the read

data asymmetry in Fig.321 takes the minimum value. For a double sided FDD, repeat this operation alternately for side 0 and side 1 heads to obtain the minimum asymmetry for both sides.



(Fig.321) Read data asymmetry

4-4-7. Check and Adjustment of Disk Rotation Speed

This item is only applied to the FDD which has a DD motor Ass'y with the variable resistor R1 for adjusting the rotational speed of the disk on the PCBA DD motor servo. Refer to Fig.311 as to the mounting position of the variable resistor R1.

For the DD motor Ass'y without the variable resistor, the rotation speed is fixed by the ceramic oscillator in the servo circuit and no adjustment is required.

(A) Equipment

- (1) Common screwdriver, small size
- (2) SKA or user's system
- (3) Frequency counter (not required when the SKA is used)
- (4) Work disk (soft sectored)

(B) Check and adjustment procedure

(1) General method

- (a) Connect the frequency counter to TP4 (Index) of the PCBA MFD control or to the INDEX interface signal line.
- (b) Start the spindle motor and install a work disk.
- (c) Set the head to track 00.
- (d) Execute the head loading.
- (e) Confirm that the pulse interval at TP4 is within the following range.
FD-55A ~ F: 200 ± 3 msec
FD-55G : 166.7 ± 2.5 msec

(f) If the value in item (e) is out of the specified range, adjust the variable resistor R1 on the PCBA DD motor servo to obtain the median value in the specified range in item (e).

(2) SKA method

- (a) Connect the SKA referring to item 4-2-4 and set the FD PWR switch to the PSA side.
- (b) Start the spindle motor by key "5". (MON indicator turns on).
- (c) Install a level disk.
- (d) Execute drive select by key "0". (DS0 indicator turns on).
- (e) Key in "CO" and confirm that the TRACK indication becomes "00".
(RECALIBRATE)
- (f) Key in "C1". (SEEK TMAX)
- (g) Key in "D8" (RESOLUTION)
The calibration value of the level disk should be set previously in the SKA.
- (h) Confirm that the DATA indicator (%) indicates the value within the following range.
Innermost track resolution: 55%, Min.
- (i) For a double sided FDD, depress key "4" and execute items (g) and (h) for side 0 head and side 1 head respectively. The side is changed alternately by a depression of "4" key. If side 1 is selected, SIDE 1 indicator of the SKA turns on.
- (j) If the value in item (h) or (k) is out of the specified range, refer to item (L) of "General method".
- (k) Eject the level disk.

4-4-13. Check and Adjustment of Track Alignment

(A) Equipment

- (1) Cross point screwdriver, M3
- (2) Alignment disk
- (3) Alignment adjustment jig or M3 screw of 15mm long
- (4) SKA or user's system
- (5) Oscilloscope
- (6) Hygrometer.
- (7) Locking paint

(B) Check and adjustment procedure

Note: Check and adjustment of track alignment should be done in an environment of general room temperature and humidity. Even if the environmental condition is within the specified operational condition, extremely high or low temperature, or extremely high or low humidity should be avoided. Check and adjustment should be done after two hours, Min. of storing in the above mentioned condition.

It is recommended that the orientation of the FDD for the track alignment check is the same as when the FDD is actually installed in the user's system.

(1) General method

- (a) Use two channels of an oscilloscope and connect them to TP9 and TP10 (Differentiation amp.) on the PCBA MFD control. Also connect the external trigger of the oscilloscope to TP4 (Index) and apply positive trigger.

Oscilloscope range 48tpi: AC mode, 0.5V, 20msec

 96tpi: AC mode, 0.2V, 20mséc

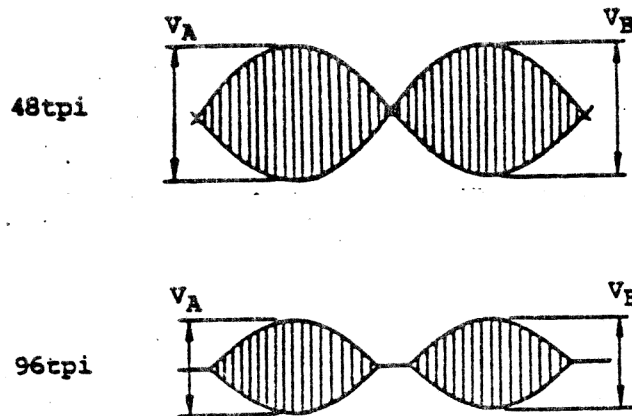
Set both channels, 1 and 2 to the above range. Set either of the channels to Invert mode and Add both channels.

- (b) Start the spindle motor and install an alignment disk.
- (c) Execute head loading.
- (d) Set the head to the following alignment check track.
 - 48tpi: track 16
 - 96tpi: track 32
- (e) Confirm that two lobe patterns as in Fig.430 can be observed (it is not necessary that the levels of VA and VB are equal).
If only one lobe pattern can be observed or if two lobes become one pattern, the head is not on the alignment check track.
In such event, execute step-out or step-in as mentioned below to obtain the most similar waveform to that in Fig.430.
 - 48tpi: 2 tracks
 - 96tpi: 4 tracks

Note: The above number of tracks to be stepped is required to make the alignment track position be fit with the magnetized condition of the basic magnetized phase "A" of the stepping motor. If the stepped track numbers are inassured, set it again from track 00 (TRACK 00 output signal becomes TRUE).

For a 48tpi FDD, the lobe pattern as in Fig.430 should be observed at the track of even number. For a 96tpi FDD, the lobe pattern should be observed at the track of multiple number of four (4).

- (f) After one or several step-outs from the check track, step in the head to the check track again and measure VA and VB at that time.
- (g) Calculate the true value of misalignment by substituting the value in item (f) and ALIGNMENT calibration value (see alignment disk label, attention to the side).



(Fig.430) Alignment check lobe pattern

$$\text{Misalignment (true value)} = \frac{V_A - V_B}{\text{Larger value in } V_A \text{ \& } V_B} \times 100$$

$$- \text{Calibration value} - (\text{Relative humidity} - 50) \times K$$

K is humidity compensation factor.

48tpi: K=0.26

96tpi: K=0.42

e.g. $V_A=0.58V$, $V_B=0.61V$, Calibration value=-6(%)

Relative humidity=65%, 96tpi:

$$\text{Misalignment (true value)} = \left\{ \frac{0.58 - 0.61}{0.61} \times 100 - (-6) \right\} - (65 - 50)$$

$$\times 0.42 = -5.2(\%)$$

If the calculated value is positive, the magnetic head is shifted inward from the reference position, while the head is shifted outward from the reference position when the value is negative.

(h) Conversely, measure V_A and V_B when the head is on the alignment check track by stepping-out after one or several step-ins.

(i) Calculate the true value of misalignment as described in item (g).

(j) Confirm that both of the calculated values in items (g) and (i) are within the following range.

True value of misalignment: 30%, Max.

(k) For a double sided FDD, execute items (d) through (j) for side 0 and side 1 heads respectively.

(L) If the value in item (j) or (k) is out of the specified range, adjust the track alignment according to the following procedure:

- i) Loosen two fixing screws of the stepping motor a little.
- ii) Insert the alignment adjustment jig or M3 screw from the back side of the FDD as shown in Fig.431.
- iii) Repeat step-in and step-out operations and adjust the misalignment to be the smallest on the alignment check track during both step-in and step-out operations by turning the jig or the screw (stepping motor moves little by little).

Note: When you adjust the alignment by observing the lobe pattern using the oscilloscope, pay attention to the calibration value on the alignment disk label and the ambient relative humidity.

① Calibration value + (Relative humidity - 50) x K \geq 0:

When the left side lobe pattern level, VA is assumed as "1", lobe pattern ratio should be so adjusted that the right side lobe pattern level VB takes the following value:

$$VB = 1 - \frac{\text{Calibration value} + (\text{Relative humidity} - 50) \times K}{100}$$

② Calibration value + (Relative humidity - 50) x K \leq 0:

When the right side lobe pattern level, VB is assumed as "1", lobe pattern ratio should be so adjusted that the left side lobe pattern level VA takes the following value.

$$VA = 1 - \frac{\text{Calibration value} + (\text{Relative humidity} - 50) \times K}{100}$$

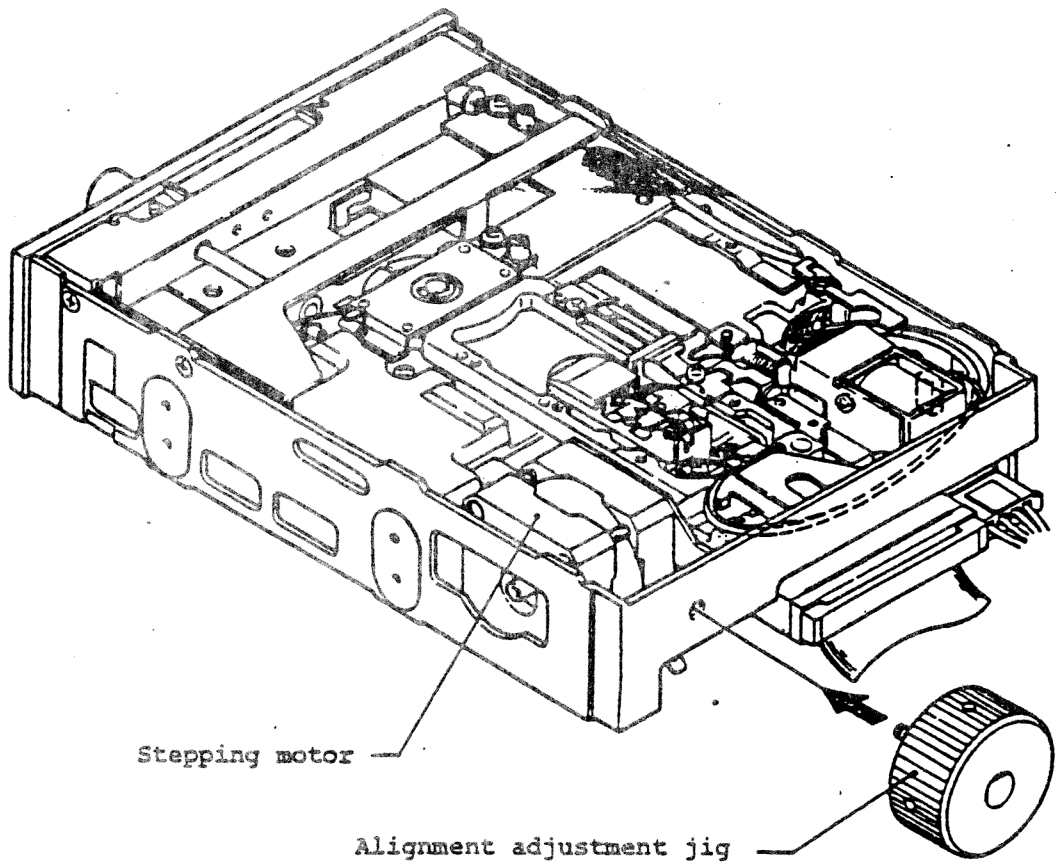
e.g. Calibration value = -6%, Relative humidity = 35%, 96tpi:

$$-6 + (35 - 50) \times 0.42 = -12.3 < 0$$

$$VA = 1 - \frac{-6 + (35 - 50) \times 0.42}{100} = 0.88$$

Therefore, the target value of VA when VB is assumed as "1" is 0.88.

- iv) For a double sided FDD, repeat the adjusting operation in item iii) alternately for side 0 and side 1 heads until the both misalignment take the smallest value.
 - v) Tighten the two fixing screws of the stepping motor little by little for adjusting the true value of misalignment after tightening the screws with the specified torque to be within $\pm 20\%$.
 - vi) Remove the alignment disk.
 - vii) Apply a drop of locking paint to the head of the stepping motor fixing screws.
 - viii) Check and adjust the track 00 sensor according to item 4-4-14.
 - ix) Check and adjust the track 00 stopper according to item 4-4-15.
- (m) Release the Invert and Add modes of the oscilloscope.



Stepping motor

Alignment adjustment jig

(Fig.431) Adjustment track alignment

4-4-14. Check and Adjustment of Track 00 Sensor

(A) Equipment

- (1) Cross point screwdriver, M3
- (2) Work disk
- (3) Alignment disk
- (4) SKA or user's system
- (5) Oscilloscope (or digital volt meter)
- (6) Locking paint

(B) Check and adjustment procedure

(1) General method.

- (a) Connect a digital volt meter or an oscilloscope to TP1 (Track 00 sensor) on the PCBA MPD control.
Oscilloscope range: DC mode, 1V
- (b) Start the spindle motor and install a work disk.
- (c) Execute head loading
- (d) Confirm that the voltage at TP1 is within the following range when the head is set to track 00.
Track 00 position TP1 voltage: 3V, Min.
- (e) Turn the power off of the FDD and then turn it on again. Confirm that the stop position of the head carriage did not change at power off and on. This item aims to confirm that the track 00 position matches the basic magnetized phase A of the stepping motor.
- (f) Make the head move to the following track.

48tpi: 02 track

96tpi: 04 track

- (g) Confirm that the voltage at TP1 is within the following range at the track position in item (f).

TP1 voltage at track 02 (48tpi) or track 04 (96tpi): 0.5V, Max.

- (h) If the value in item (d), (e), or (g) is out of the specified range, adjust the position of the track 00 sensor according to the following procedure.

i) Loosen the fixing screw of the track 00 stopper (see Fig.434) and shift the stopper in the step-out direction (make apart from the rear side of the head carriage).

ii) Connect the oscilloscope to TP9 or TP10 (Differentiation amp.) of the PCBA MFD control.

Oscilloscope range: AC mode, 0.2V, 20msec

iii) Install an alignment disk. The track alignment should be adjusted correctly according to item 4-4-13.

iv) Make the head move to the position where the lobe pattern as in Fig.430 can be observed.

v) Remove the alignment disk.

vi) Connect the digital voltmeter or the oscilloscope to TP1 (Track 00 sensor) on the PCBA MFD control.

Oscilloscope range: DC mode, 1V

vii) Step out the head for the following track space from the position where the normal lobe pattern is observed.

48tpi: 15 tracks (head will be on track 01)

96tpi: 30 tracks (head will be on track 02)

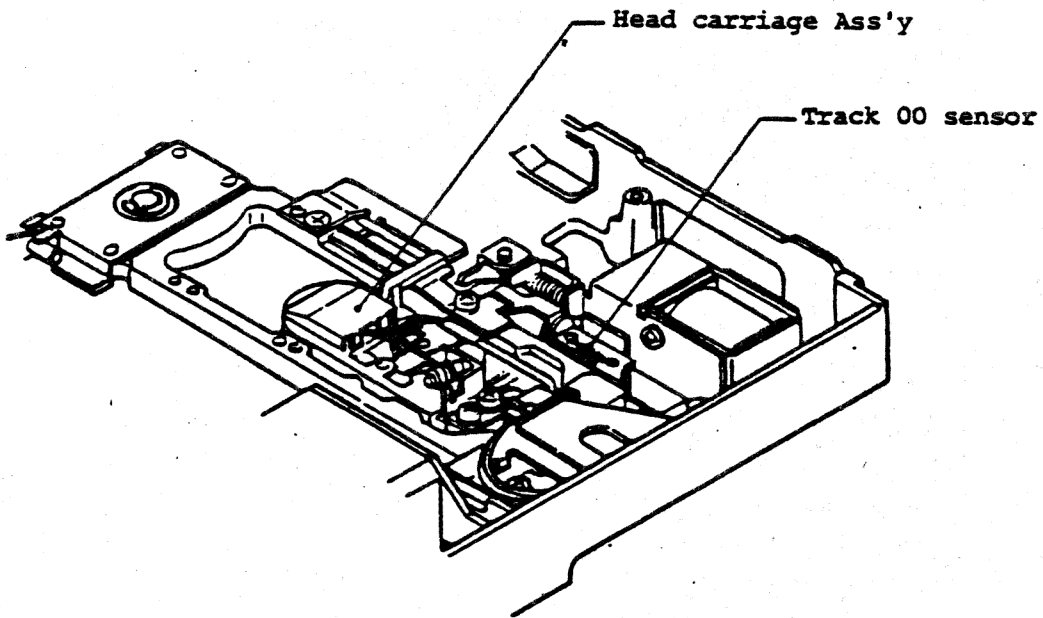
viii) Install a work disk.

ix) Loosen the fixing screws of the track 00 sensor (see Fig.432) and move the sensor a little so that the voltage at TP1 falls within the following range.

TP1 voltage at track 01 (48tpi), track 02 (96tpi):

0.5 ~ 3V (0.8 ~ 1.2V, approx. center)

- x) Confirm the items (d) through (g).
- xi) Adjust the track 00 sensor position so that the values in items (ix) and (x) satisfy the specification when the screw has been tightened with the specified torque.
- xii) Apply a drop of locking paint on the fixing screw head.
- xiii) Adjust the track 00 stopper according to item 4-4-15.



(Fig.432) Adjustment of track 00 sensor

4-4-15. Check and Adjustment of Track 00 Stopper

(A) Equipment

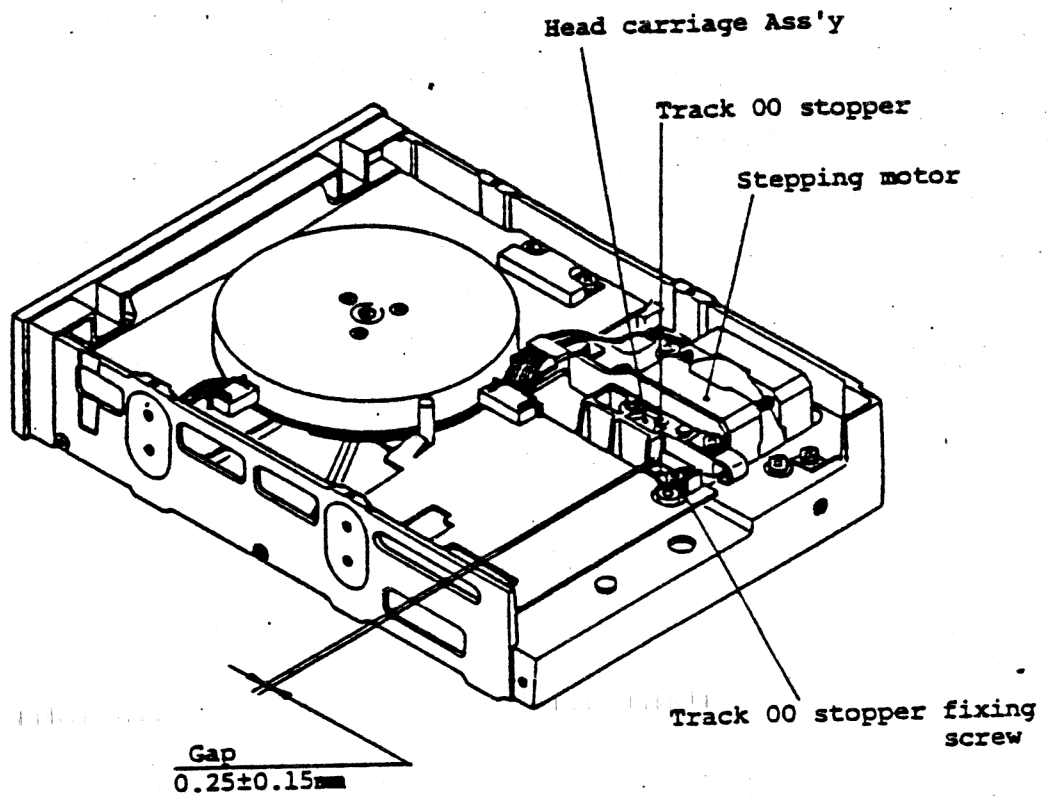
- (1) Cross point screwdriver, M3
- (2) SKA or user's system
- (3) Locking paint

(B) Check and adjustment procedure

(1) General method

- (a) Set the head to track 00.
- (b) Step out the head from the track 00 position.
- (c) Confirm that the head carriage does not move by the step-out command (head carriage rests on track 00).
- (d) Confirm that the gap between the head carriage and the extreme end of the track 00 stopper is 0.1 ~ 0.4mm. (See Fig.434).
- (e) Repeat step-in and step-out operations between track 00 and track 05. Confirm that no impact sound can be heard between the head carriage and the track 00 stopper.
- (f) Turn off the FDD power and depress the head carriage lightly against the track 00 stopper with fingers. (See Fig.434).
- (g) Confirm that the head carriage automatically returns to the initial position (track 00) when the power is turned on again.
- (h) If any one of the items (d), (e), and (g) is not satisfied, adjust the track 00 stopper position according to the following procedure.

- i) Set the head to track 00.
- ii) Loosen the fixing screw of the track 00 stopper. (See Fig.434).
- iii) Adjust the stopper position so that the gap between the stopper and the head carriage becomes 0.25mm, approx. And then tighten the screw with the specified torque.
- iv) Execute items (a) through (g).
- v) Apply a drop of locking paint on the fixing screw head.



(Fig.434) Adjustment of track 00 stopper

4-4-16. Check and Adjustment of Index Burst Timing

(A) Equipment

- (1) Cross point screwdriver, M3
- (2) Alignment disk
- (3) SKA or user's system
- (4) Oscilloscope (not required when the SKA is used)
- (5) Locking paint

(B) Check and adjustment procedure

(1) General method

- (a) Use two channels of the oscilloscope. Connect the 1st channel to TP4 (Index) on the PCBA MFD control and the 2nd channel to TP7 or TP8 (Pre-amp.). Apply positive trigger by TP4.

Oscilloscope range

The 1st channel: DC mode, 2V, 50 μ sec

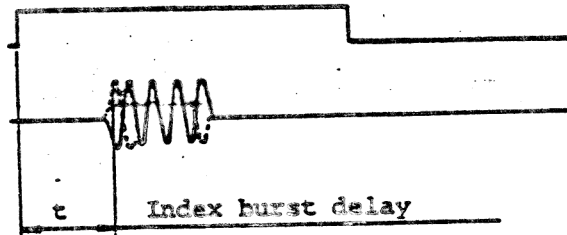
The 2nd channel 48tpi: AC mode, 1V, 50 μ sec

96tpi: AC mode, 0.5V, 50 μ sec

- (b) Start the spindle motor and install an alignment disk.
- (c) Execute head loading.
- (d) Set the head to the following track.
48tpi: Track 01
96tpi: Track 02
- (e) Measure "t" in Fig.435.
- (f) Substitute the following equation with the measured value in item (e) and INDEX TIMING calibration value (see alignment disk label).

TP4 (Index)

TP7 or TP8



(Fig.435) Index burst timing

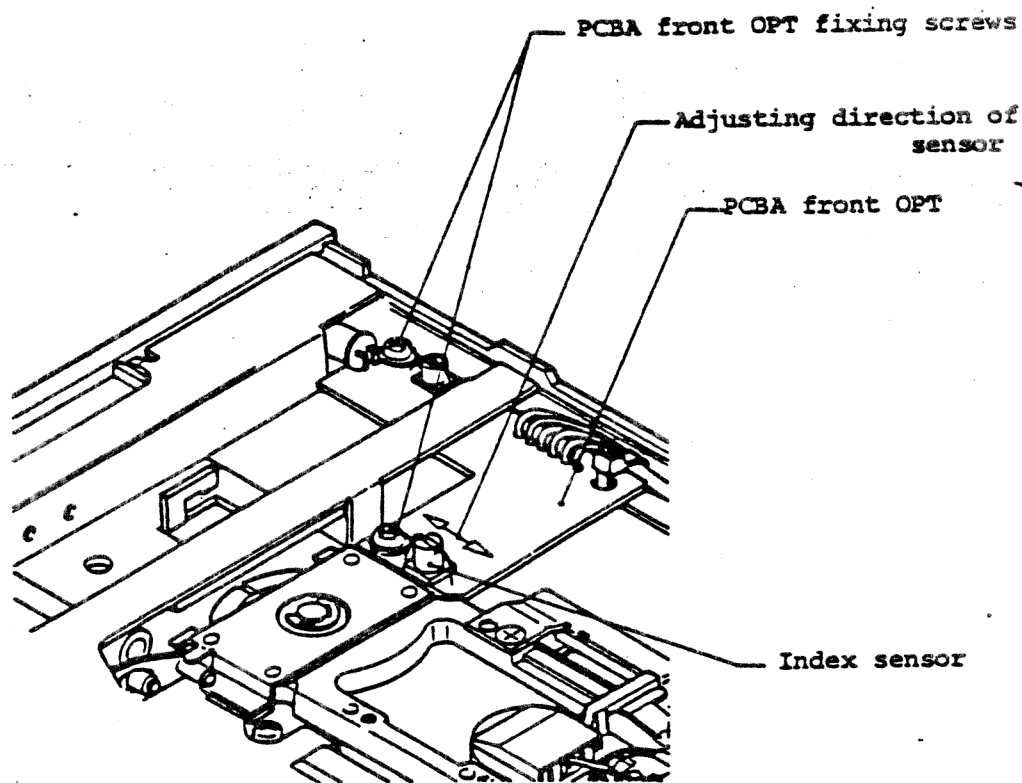
Index burst timing (true value) = Measured value - Calibration value(us)

- (g) Confirm that the true value of the index burst timing is within the following range.

FD-55A ~ F: $200 \pm 200 \mu\text{sec}$

FD-55G : $165 \pm 165 \mu\text{sec}$

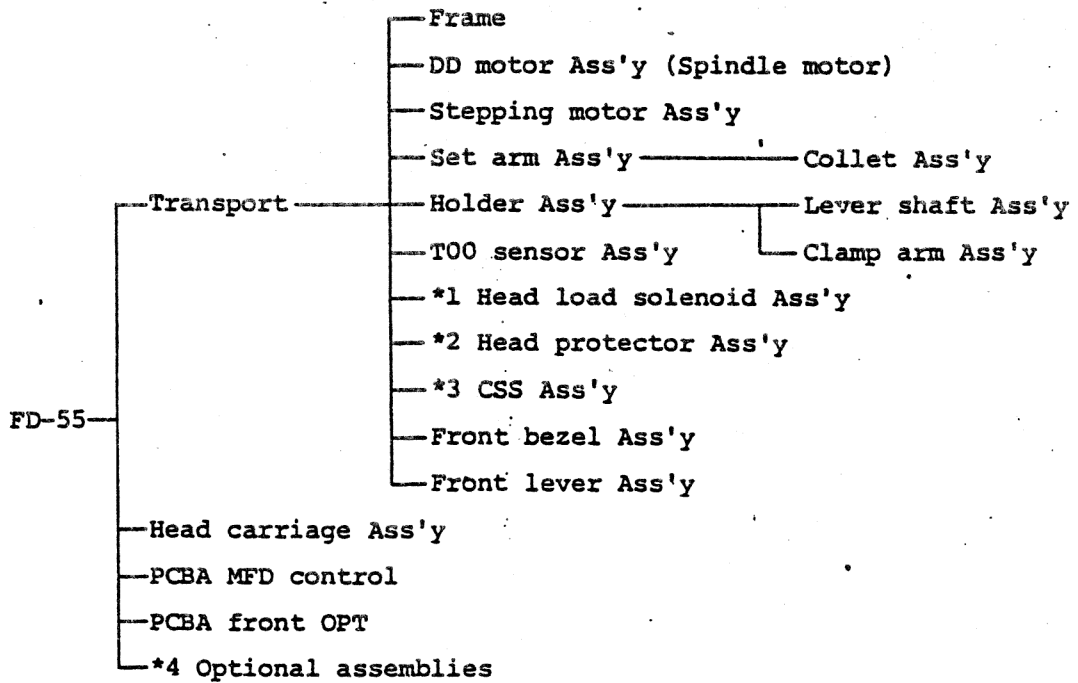
- (h) If the value in item (g) is out of the specified range, adjust the index sensor Ass'y position according to the following procedure.
- i) Loosen the fixing screws (see Fig.436) of the PCBA front OPT and adjust its position to make the true value of the index burst timing fall in the specified range in item (g).
 - ii) Repeat the adjustment so that the true value of the index burst timing falls in the range of item (g) when the fixing screw has been tightened with the specified torque.
 - iii) Apply a drop of locking paint on the fixing screw head.
- (i) Remove the alignment disk.



(Fig.436) Adjustment of index sensor

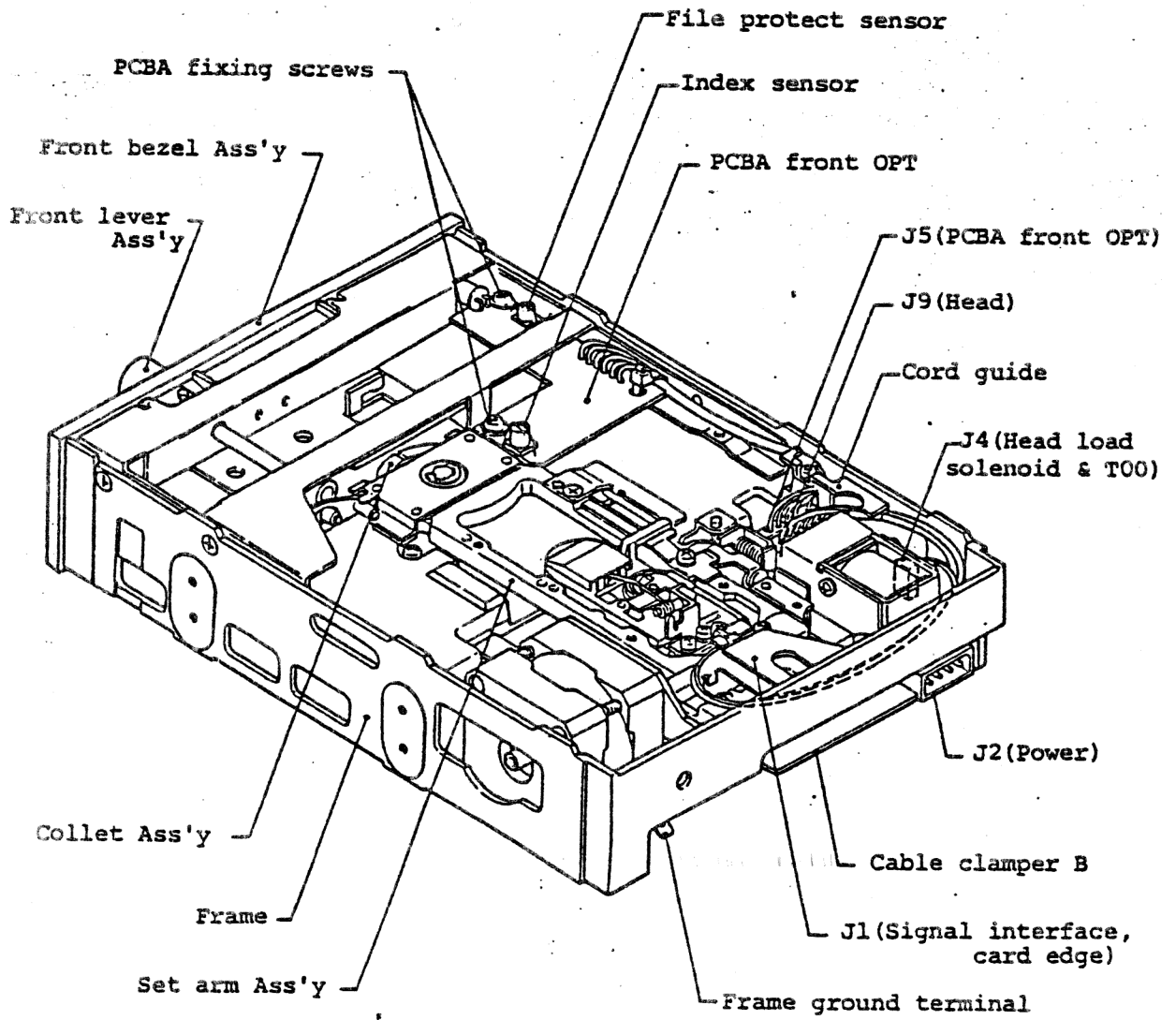
5-1. CONFIGURATION

Following shows the configuration of the main parts of FD-55 (L). (Refer to Fig.501 ~ Fig.505). Refer to items 5-2 and 5-3 as to detailed break-downs.

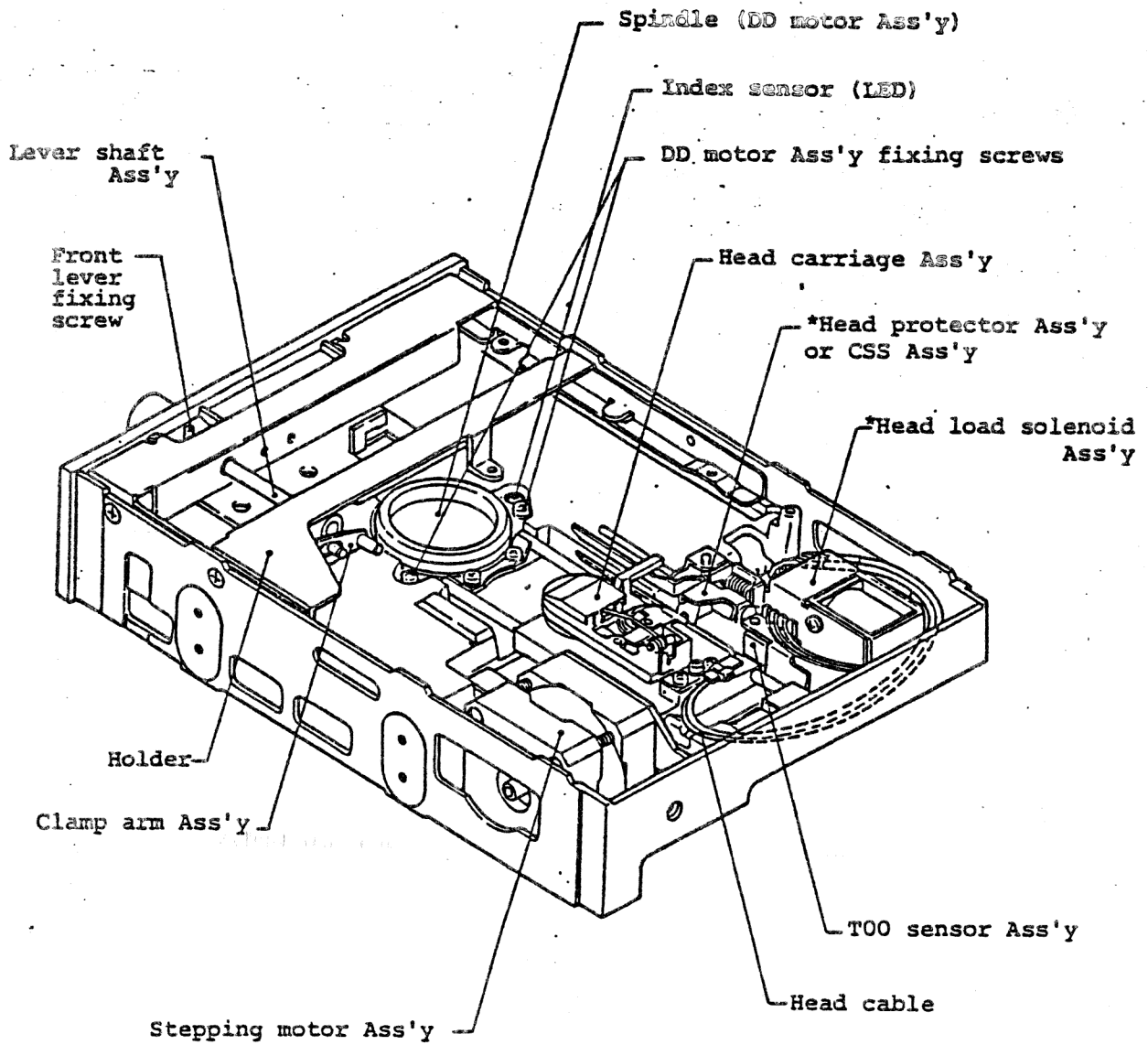


- Notes: *1: Applied only for models with head load solenoid (single and double sided).
 *2: Applied only for double sided models with the head load solenoid.
 *3: Applied only for double sided CSS models.
 *4: Refer to separate materials (SECTION 6).

(Table 501) Main parts configuration of FD-55(L)

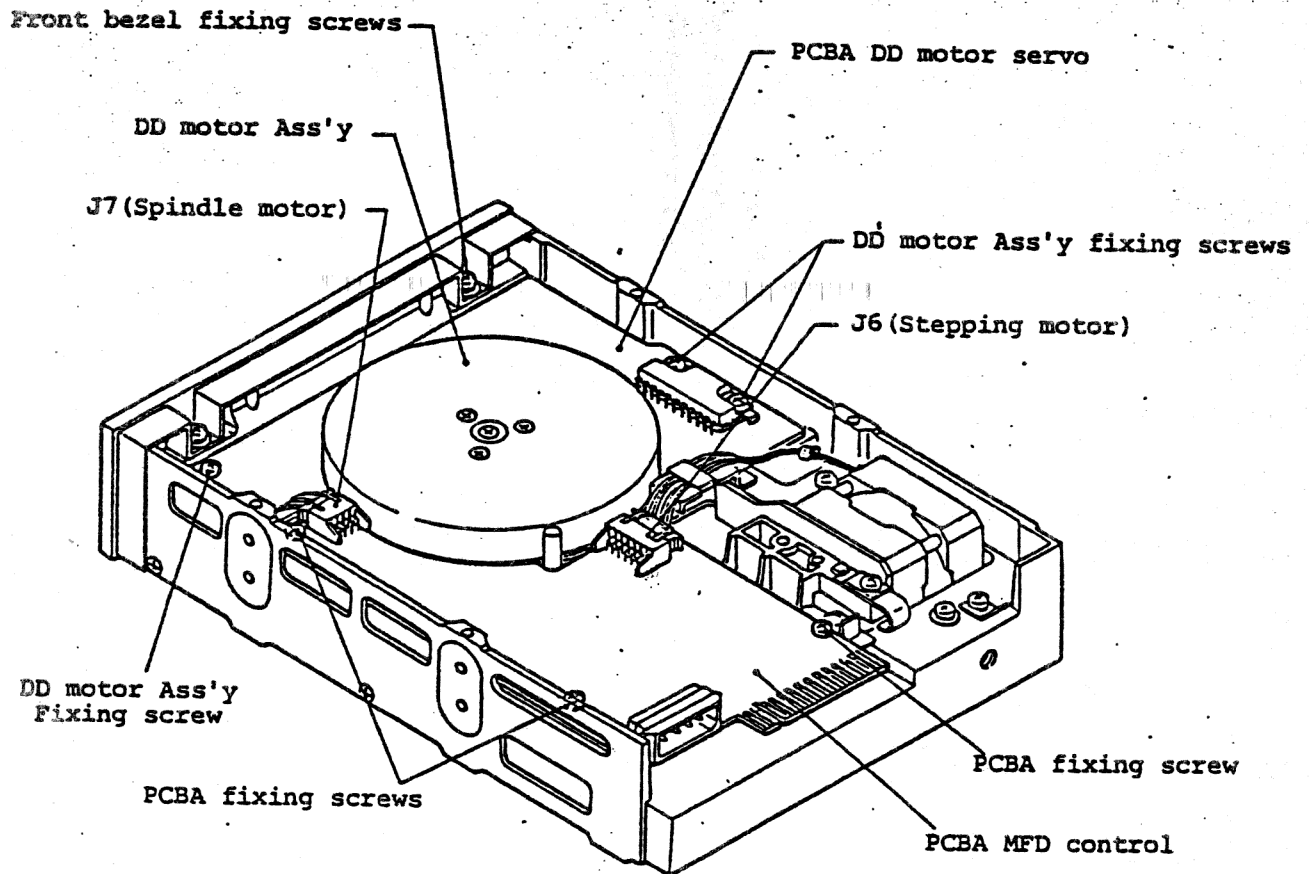


(Fig.501) External view (No.1)

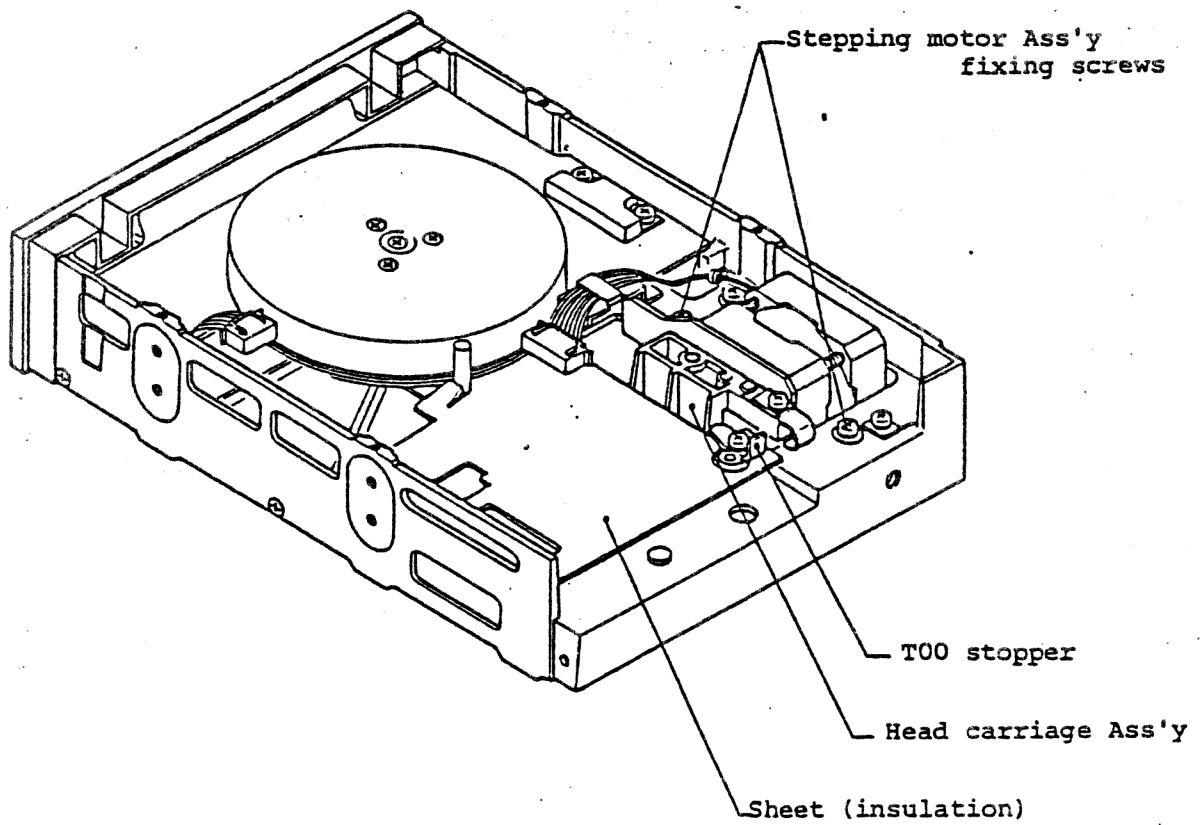


Note: Refer to Table 501 as to the assemblies with asterisks.

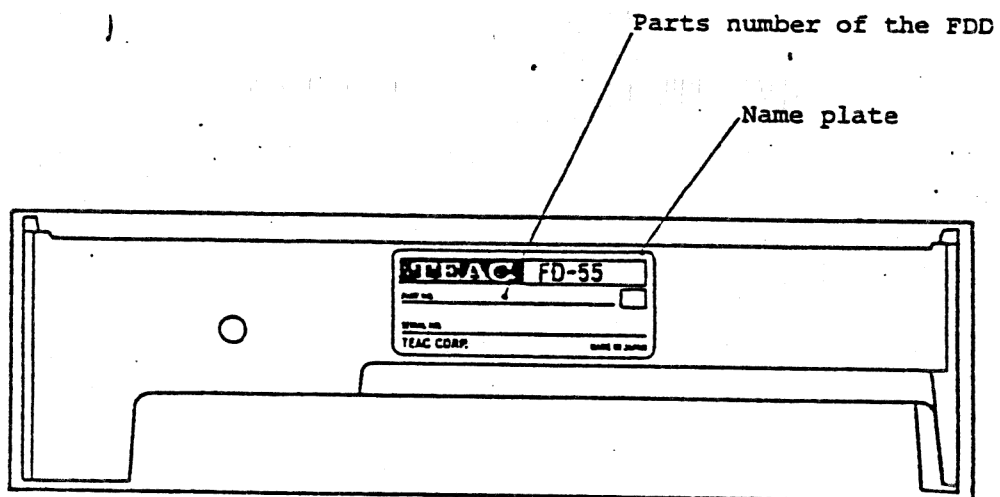
(Table 502) External view (No.2)



(Fig.503) External view (No.3)



(Fig.504) External view (No.4)



(Fig.505) External view (No.5)

5-2. MECHANICAL BREAK-DOWN AND PARTS LIST

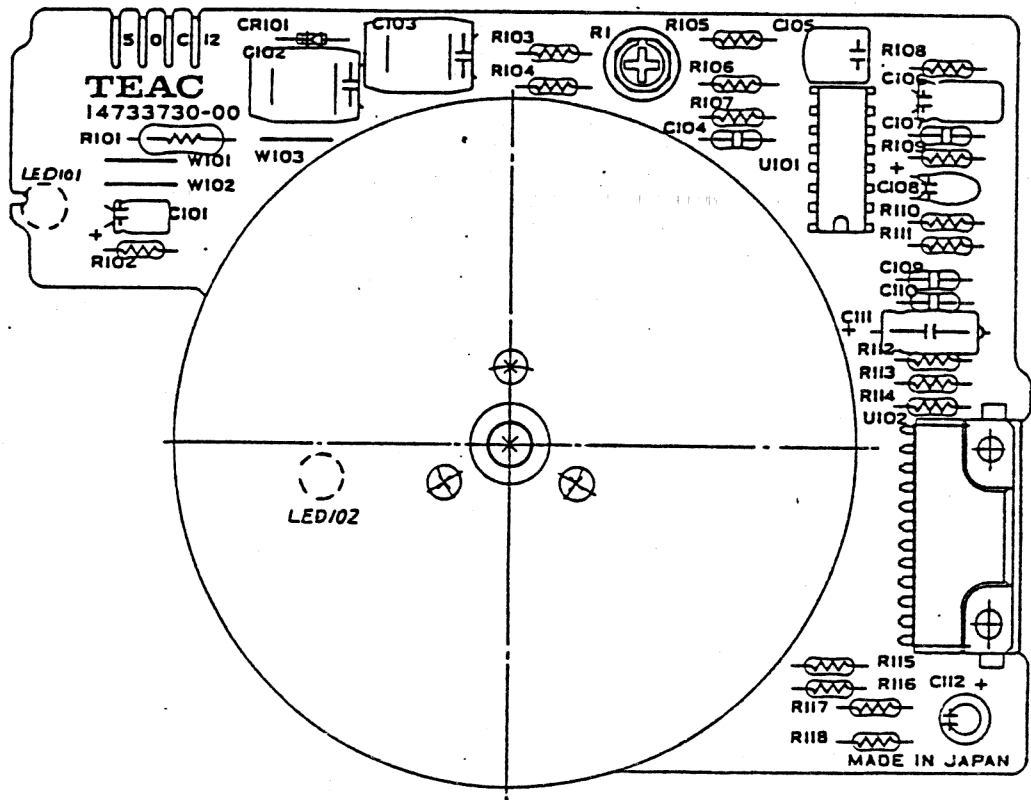
5-2-1. FDD (Refer to Fig.506)

Nos.	Parts Nos.	Parts name	Q'ty	Description
1	16152803-00	Frame Ass'y	1	
2	16802602-00	Cord guide	1	
3	16787121-00	Sheet	1	
4	16802437-00	Stopper, T00	1	
5	14733730-00	DD motor Ass'y	*1	FD-55(L) A ~ F, Note 3
	14733730-10	DD motor Ass'y		FD-55(L) A,B
	14733730-50	DD motor Ass'y		FD-55(L) G
6	16786981-00	Spacer, IC	1	
7	17966790-00	Set arm sub Ass'y	*1	FD-55(L) A,E
	17966790-01	Set arm sub Ass'y		FD-55(L) B,F,G
8	16786984-00	Felt pad	1	
9A	16786984-00	Felt pad	1	
9B	16786634-00	Pad	1	Note 4
10	17966793-00	Collet Ass'y	1	
11	16385123-00	Spring, pressure	1	
12	16802440-00	Plate	1	
13	16786997-00	Pad, disk	1	
14	16802550-00	Shift lever	*1	Note 6
	16802592-00	Shift lever		FD-55(L) B,F,G:CSS
15	16802594-00	Cable clasper B	1	
16	17966806-00	Head protector Ass'y	1	Note 5
17	16792288-00	Holder	1	
18	16786990-00	Cushion, holder	1	
19	17966801-00	Lever shaft Ass'y	1	Note 7
20	17966802-00	Clamp arm Ass'y	1	
21	16389017-00	Spring, lever	1	
22	17966805-00	T00 sensor Ass'y	1	
23	17966859-01	Head load solenoid Ass'y	1	Note 8

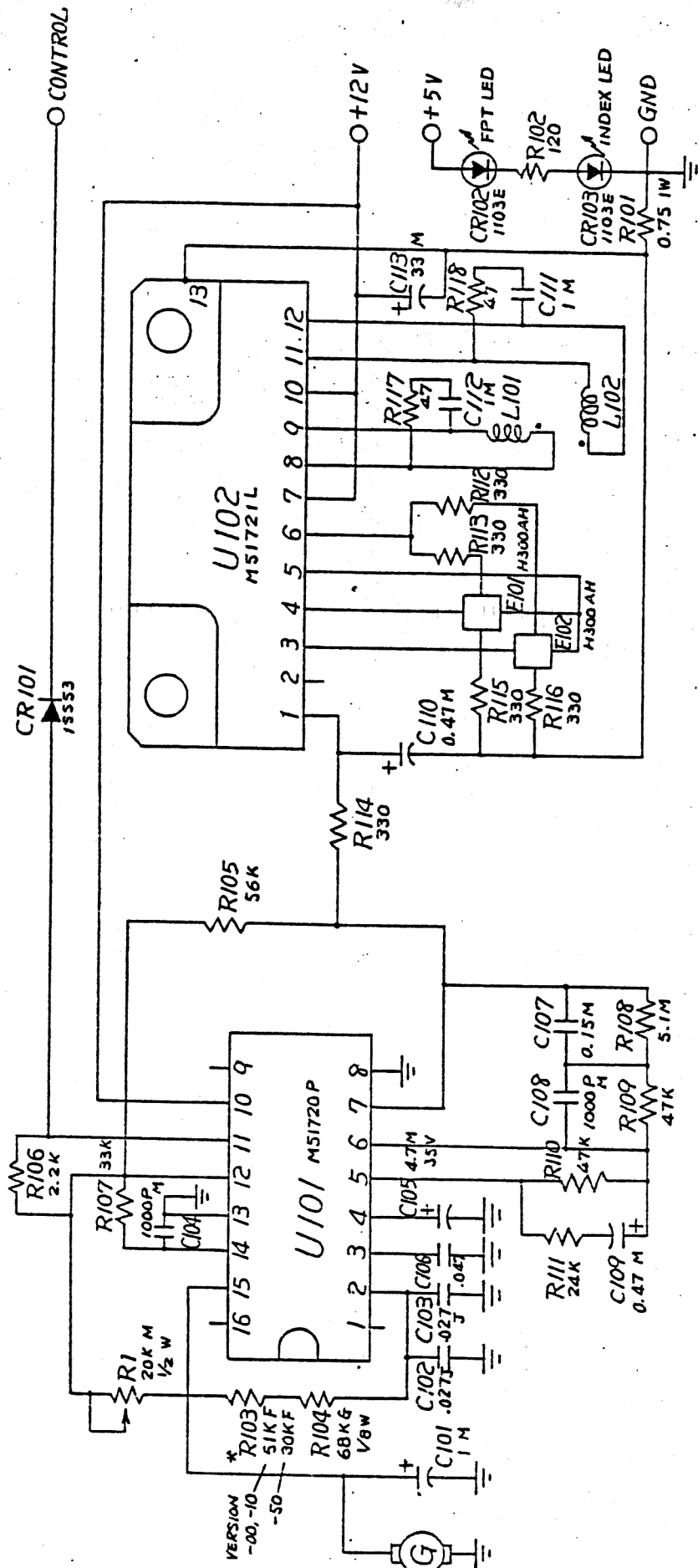
(Table 502) Parts list of the FDD (1/2)

Nos.	Parts Nos.	Parts name	Q'ty	Description
24	17966940-00	Head carriage Ass'y	*1	FD-55(L) A,Note 9
	17966941-00	Head carriage Ass'y		FD-55(L) B,Note 9
	17966942-00	Head carriage Ass'y		FD-55(L) E,Note 9
	17966944-00	Head carriage Ass'y		FD-55(L) F,Note 9
	17966943-00	Head carriage Ass'y		FD-55(L) G,Note 9
25	16392009-00	Spring guide A	1	
26	16392010-00	Spring guide B	1	
27	14769070-00	Stepping motor Ass'y	*1	FD-55(L) A ~ G,Note 3
	14769070-50	Stepping motor Ass'y		FD-55(L) A,B
28	16792265-00	Steel belt A	1	
29	16392008-00	Spring, belt	1	
30	16496492-00	Washer, plate	1	
31	16802434-00	Cable guide	1	
32	16766580-00	Cable holder	1	
33	13189135	Terminal (Faston)	1	
34	15532001-XX	PCBA MFD control #B	1	Note 10
35	15531990-XX	PCBA front OPT	1	Note 10
36	17966807-50	Front bezel Ass'y	1	Note 11
37	17966808-50	Front lever Ass'y	1	Note 11
38	16389024-00	Arm spring	1	FD-55(L) B,F,G
39	17966900-00	CSS Ass'y	1	Note 8

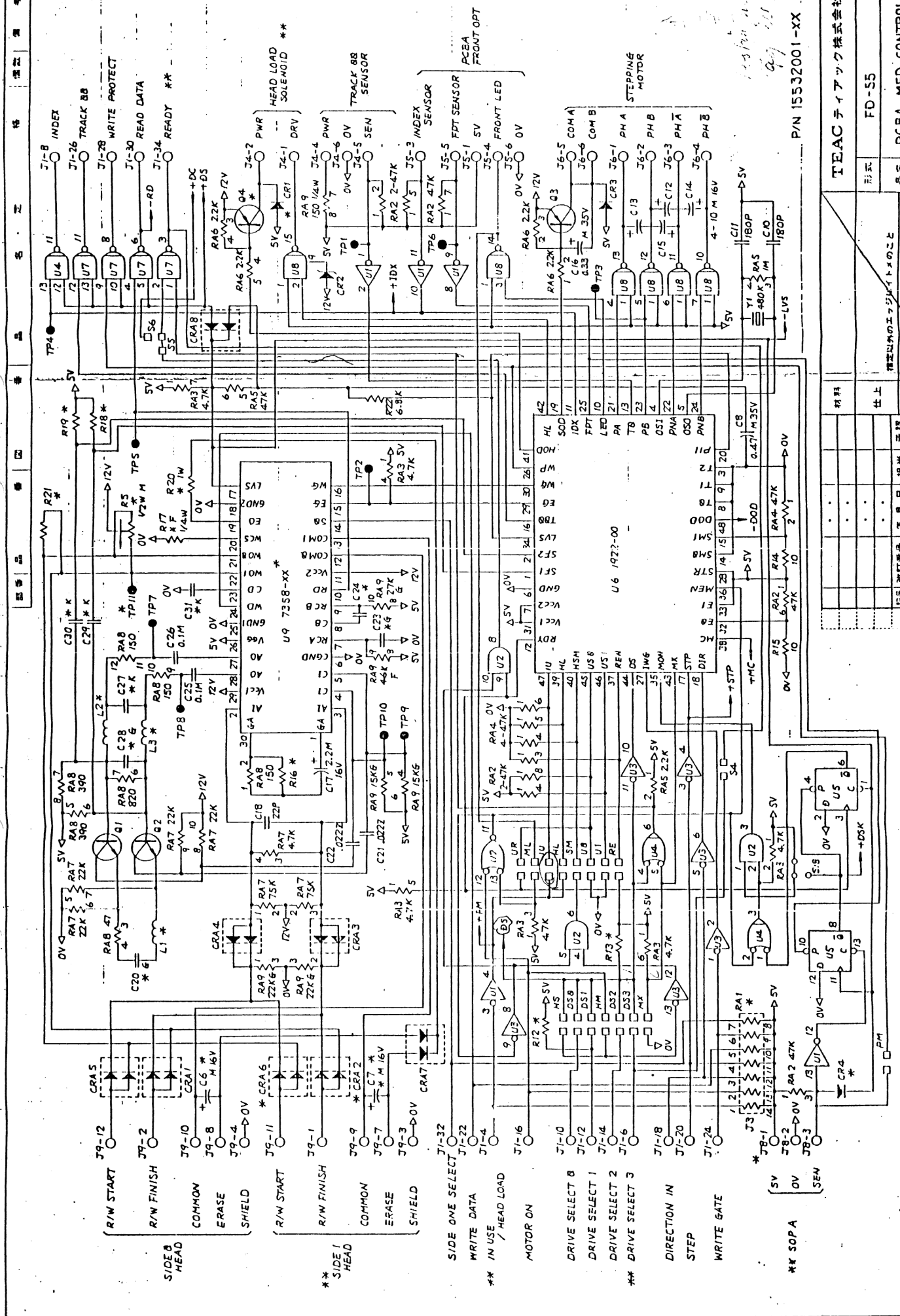
(Table 502) Parts list of the FDD (2/2)



PCBA DD MOTOR SERVO, PARTS LOCATION



PCBA DD MOTOR SERVO, SCHEMATIC



P/N 15532001-XX

形式	FD-S5
品名	PCBA MFD CONTROL
図号	SCHEMATIC
図番	
材料	
仕上	
記号改訂番号	年月日 担当者
承認	尺度
検印	処理
設計	第三方法
	管理 (S-E)

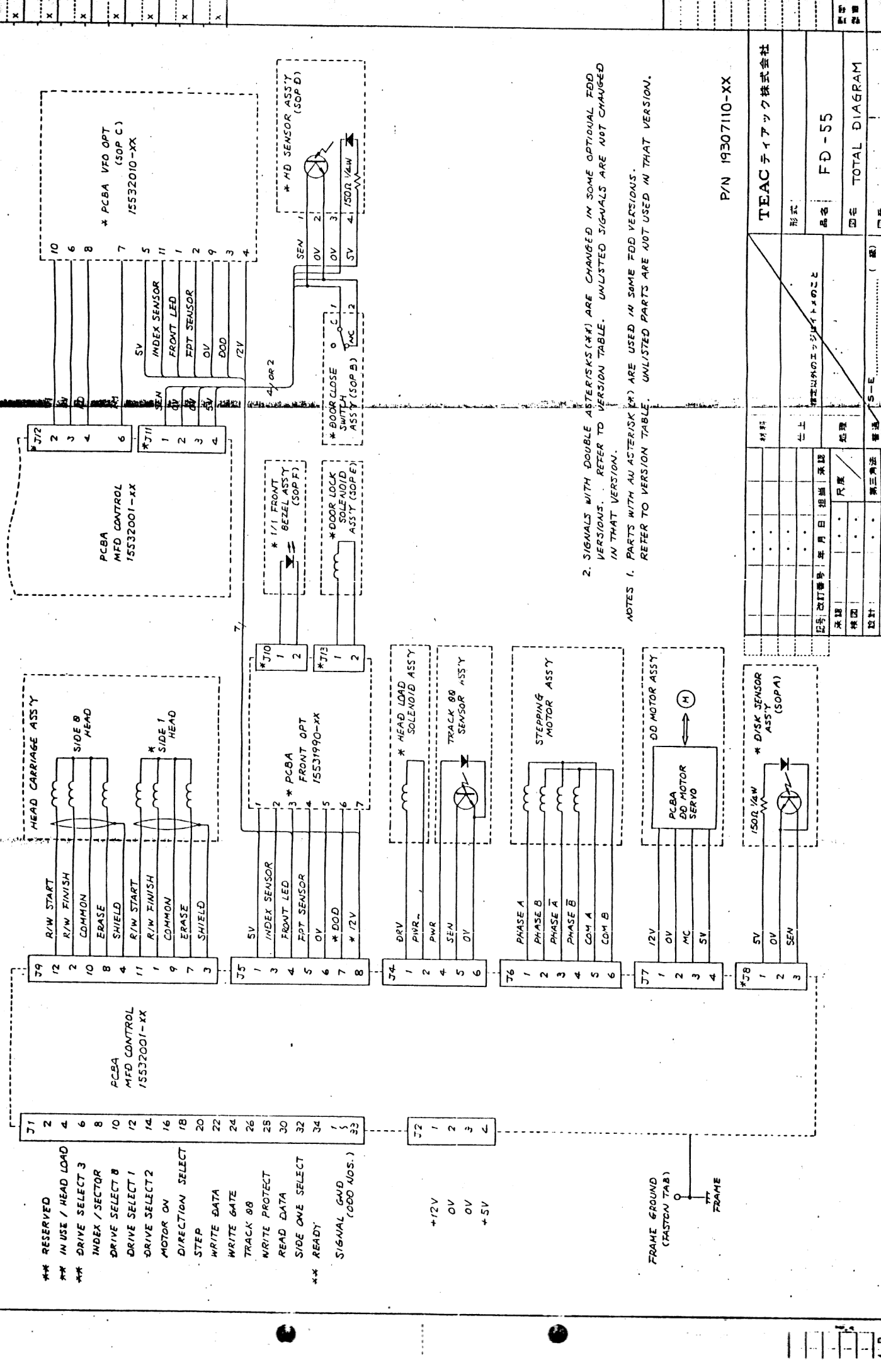
標準以外のエレクトロニクスのごと	
TEAC ティアック株式会社	

** SIDE 1 HEAD

** IN USE / HEAD LOAD

** DRIVE SELECT 3

** SOPA



- ** RESERVED
- ** IN USE / HEAD LOAD
- ** DRIVE SELECT 3
- ** DRIVE / SECTOR
- INDEX SELECT B
- DRIVE SELECT 1
- DRIVE SELECT 2
- MOTOR ON
- DIRECTION SELECT
- STEP
- WRITE DATA
- WRITE GATE
- TRACK 00
- WRITE PROTECT
- READ DATA
- SIDE ONE SELECT
- ** READY
- SIGNAL GND (1000 NOS.)

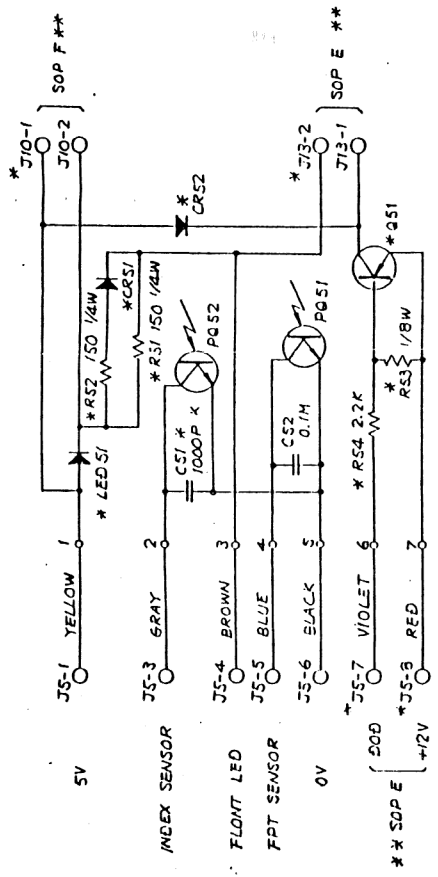
2. SIGNALS WITH DOUBLE ASTERISKS (**) ARE CHANGED IN SOME OPTIONAL FDD VERSIONS. REFER TO VERSION TABLE. UNLISTED SIGNALS ARE NOT CHANGED IN THAT VERSION.

NOTES 1. PARTS WITH AN ASTERISK (*) ARE USED IN SOME FDD VERSIONS. REFER TO VERSION TABLE. UNLISTED PARTS ARE NOT USED IN THAT VERSION.

P/N 19307110-XX

材料	
仕上	
記号改訂番号	年月日 担当 承認
承認	尺度
検計	第三角法
製図	単位 mm
形式	TEAC ティック株式会社
品名	FD-55
図名	TOTAL DIAGRAM
図番	S-E

PCBA VERSIONS	MAIN SPEC	* PARTS
-00	STD	LED S1 (RED), RS1, CS2, JS (SP)
-01	GREEN LED	LED S1 (GREEN), RS1, CS2, JS (SP)
-02	1/1 SIZE	RS1, CS2, JS (SP), J10
-03	DOOR LOCK	LED S1 (RED), RS1, CS1, CR52, RS2, RS3, RS4, CS2, J13, JS (CHANGE TO 8P)



5. SIGNALS WITH DOUBLE ASTERISKS (***) ARE USED IN SOME OPTIONAL FDD VERSIONS. REFER TO FD-55 TOTAL DIAGRAM AND ITS VERSION TABLE.
4. POLARIZING KEY POSITION FOR CONNECTOR JS IS 12.
3. CAPACITOR (C) VALUES ARE IN MICROFARADS, 50V OR HIGHER, ±5% (T). UNLESS OTHERWISE SPECIFIED.
2. RESISTOR (R) VALUES ARE IN OHMS, 1/8W OR GREATER, ±5% (T). UNLESS OTHERWISE SPECIFIED.
1. PARTS WITH AN ASTERISK (*) ARE DIFFERENT IN EACH PCBA VERSION. REFER TO VERSION TABLE. UNLISTED PARTS ARE NOT USED IN THAT VERSION.

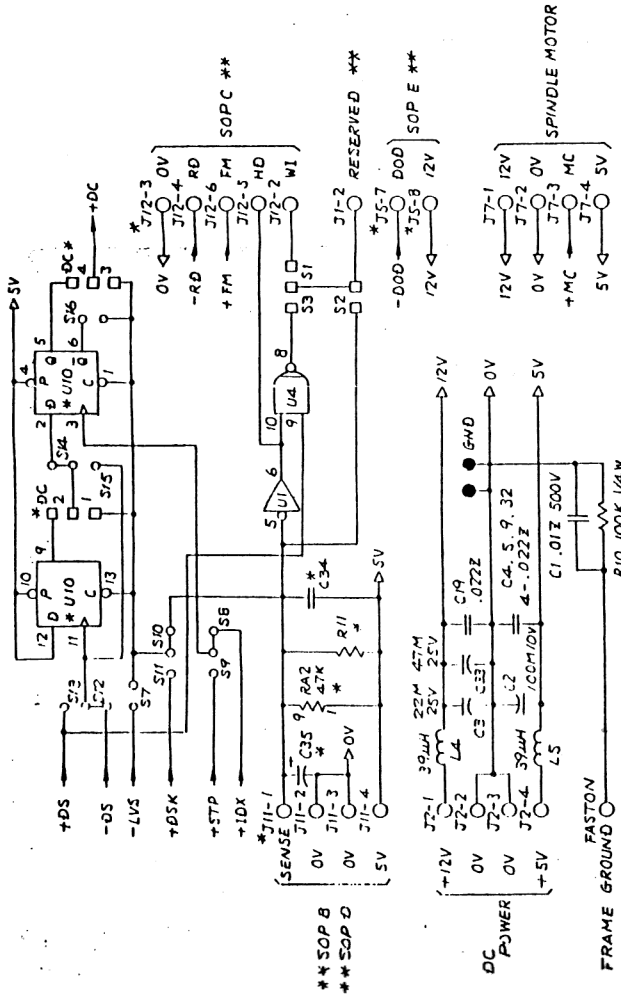
P/N 15531990-XX

材料		TEAC ティアック株式会社
仕上		形式: FD-55
加工		品名: PCBA FRONT OPT
記号	年月日	担当者
承認	承認	図番: SCHEMATIC
検計	検計	
製図	製図	

PCBA VERSIONS	MAIN SPEC.	PARTS	名 稱	品 種	機 種	規 格	料 理	使 用
-00	48P4 S. SIDE A STD.	94. CR1. RA1 (330), R13 (330), R14 (10), R17 (1.24K), R20 (120), R21 (2.2K), RS (20K) C6 (4.7), C20 (100P), C23 (100P), C24 (56P), C27 (1000P), C28 (2200P), C31 (2200P) L1~L3 (330μH), U9 (735B-00)						X
-01	48P4 D. SIDE B STD.	04. CR1. CRA2. CRA6. RA1 (330), R13 (330), R14 (10), R17 (1.24K), R20 (120), R21 (2.2K) C6 (4.7), C20 (1500P), C23 (100P), C24 (56P), C27 (1000P), C28 (2200P), C31 (2200P) L1~L3 (330μH), U9 (735B-00)						X
-02	48P4 D. SIDE E STD.	04. CR1. RA1 (330), R13 (330), R16 (10), R17 (1.69K), R20 (240), R21 (4.7K), RS (20K) C6 (4.7), C20 (1500P), C23 (100P), C24 (56P), C27 (1000P), C28 (2200P), C31 (2200P) L1~L3 (330μH), U9 (735B-00)						X
-03	48P4 D. SIDE F STD.	04. CR1. CRA2. CRA6. RA1 (330), R13 (330), R16 (10), R17 (1.69K), R20 (240), R21 (4.7K) C6 (4.7), C20 (1500P), C23 (100P), C24 (56P), C27 (1000P), C28 (2200P), C31 (2200P) L1~L3 (330μH), U9 (735B-00)						X
-04	48P4 D. SIDE G STD.	04. CR1. CRA2. CRA6. RA1 (330), R13 (330), R15 (10), R16 (10), R17 (2.68), R18 (19.47K) R20 (150), R21 (2.2K), RS (20K), C6 (4.7), C20 (1500P), C23 (27P), C24 (24P), C27 (470P) C28 (560P), C29 (C30 2200P), C31 (1200P), L1 (120μH), L2 L3 (150μH), U9 (735B-01)						X
-05	48P4 D. SIDE H STD.	RA1 (1K), R13 (470). THE OTHERS ARE THE SAME AS -00.						X
-06	48P4 D. SIDE I STD.	RA1 (1K), R12 (1K), R13 (470). THE OTHERS ARE THE SAME AS -01.						X
-07	F. ANR	C12~C15 (CHANGE TO 33K (6V)). THE OTHERS ARE THE SAME AS -03.						X
-08	J. DL	J5 (CHANGE TO 8P). THE OTHERS ARE THE SAME AS -01.						X
-09	F. DL	J5 (CHANGE TO 8P). THE OTHERS ARE THE SAME AS -03.						X
-10	J. DL	J5 (CHANGE TO 8P). THE OTHERS ARE THE SAME AS -04.						X
-11	B. DC	J11. 5S CUT. S6 JUMPER. J10. R11 (1K), C35 (4.7M (6V)). STRAP POST DC1~4 THE OTHERS ARE THE SAME AS -01.						X
-12	F. DC	J11. 5S CUT. S6 JUMPER. J10. R11 (1K), C35 (4.7M (6V)). STRAP POST DC1~4 THE OTHERS ARE THE SAME AS -03.						X
-13	F. R0Y6	S4 JUMPER. THE OTHERS ARE THE SAME AS -03.						X
-14	A. VIO MASTER	J1 JUMPER. C24 (8P), J12 (6P). THE OTHERS ARE THE SAME AS -00.						X
-15	B. VIO MASTER	J1 JUMPER. C24 (8P), J12 (6P). THE OTHERS ARE THE SAME AS -01.						X
-16	E. VIO MASTER	J1 JUMPER. C24 (8P), J12 (6P). THE OTHERS ARE THE SAME AS -02.						X
-17	F. VIO MASTER	J1 JUMPER. C24 (8P), J12 (6P). THE OTHERS ARE THE SAME AS -03.						X
-18	G. VIO MASTER	J1 JUMPER. C24 (8P), J12 (6P). THE OTHERS ARE THE SAME AS -04.						X
-19	REF	RA1 (1K), R12 (1K), R13 (470), C28 (3300P), C29 (1000P), C30 (1000P) THE OTHERS ARE THE SAME AS -03.						X

VERSION TABLE

P/N 15532001-X



7. SIGNALS WITH DOUBLE ASTERISKS (**) ARE USED OR CHANGED IN SOME OPTIONAL FDD VERSIONS. REFER TO FD-55 TOTAL DIAGRAM AND ITS VERSION TABLE.

6. POLARIZING KEY POSITIONS FOR CONNECTOR (D) ARE:
J1: BETWEEN PIN 4 AND 6 J4: PIN 3 J5: PIN 2 J9: PIN 6 J12: PIN 1

5. REFER TO SHORT BAR SELECTION TABLE (MS ~ MX, UR ~ RE, PM) AS TO THE SHIPPING POSITIONS AND THEIR FUNCTIONS.

4. TOLERANCE SYMBOLS FOR R, RA, AND C ARE:
F: ±1% G: ±2% J: ±5% K: ±10% M: ±20% Z: +80-20%

3. CAPACITOR (C) VALUES ARE IN MICROFARADS, 50V OR HIGHER, ±5%(J), UNLESS OTHERWISE SPECIFIED.

2. RESISTOR (R) AND RESISTOR ARRAY (RA) VALUES ARE IN OHMS, 1/8W OR GREATER, ±5%(J), UNLESS OTHERWISE SPECIFIED.

NOTES: 1. PARTS WITH AN ASTERISK (*) ARE DIFFERENT IN EACH PCBA VERSION. REFER TO VERSION TABLE. UNLISTED PARTS ARE NOT USED IN THAT VERSION.

記号		材料	仕上	処理	検査
記号	改訂番号	年月日	担当	承認	
承認			尺度		
検閲					
設計					
		標準以外のエッジパットの存在			標準 JIS-E

TEAC ティアック株式会社	
形式	FD-55
品名	PCBA MFD CONTROL
図名	図名
図番	SCHEMATIC