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Title:

Adjustment of RC702 Flexible Disc Drive Maintenance Manual

RCSL 42-I1905

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Keywords:

Mini diskette drive, maxi diskette drive.

Abstract:

This manual contains a description of the adjustment of the diskette drives.

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1. INTRODUCTION 1.

This manual describes the adjustment procedure for the flexible disc drive to the RC702 system. The slang phrase for the flexible disc drive is a diskette drive and hereafter the latter name will be used.

In the RC702 system you have the possibility of using a 5 1/4" drive (mini diskettes) and an 8" drive (maxi diskettes). This document treats both types.

2. DISKETTES 2.

2.1 Loading and Program Selection 2.1

Two diskettes are needed to adjust a diskette drive. One system diskette for the 5 1/4" (RCSL No 44-RT2018) and a standard ID-COMAL for the 8" (RCSL No 44-RT2019). The second is a CE diskette for the considered drive. Part No 67 102 for the 5 1/4" diskette drive and part No 64 100 for the 8".

The system is always loaded from the drive 0, the condition of which must be so good that a read from it can be made without big difficulties. The adjustment program "LOGON" is loaded and started automatically by RESET and the following text is seen on the screen:

```
DRIVENUMBER TO ADJUST (0/1/2/3)?
```

This question is to be answered with a 0, 1, 2 or 3 and a CARRIAGE RETURN. If an illegal code is given, it is necessary to restart the program, because the program does not test if it is a legal code or not.

After the heads of the selected drive have found track '00' the following text appears on the screen:

```
IS IT A MAXI (8") OR A MINI (5 1/4") (MAX/MIN)?
```

To make the system work properly the answer must be "MAX" or "MIN".

When the answer is given, the screen is turned off and now the following menu appears on the screen:

```
1 ADJUSTMENT OF TRACK XX WITH HEAD '0'
2 ADJUSTMENT OF TRACK XX WITH HEAD '1'
3 ADJUSTMENT OF TRACK '00' SENSOR
4 ADJUSTMENT OF INDEX SENSOR IN TRACK XX
5 ADJUSTMENT OF INDEX SENSOR IN TRACK XX
```

The wanted adjustment can now be selected by typing the number (a carriage return is not necessary).

If a change in the drive number or in the diskette type (5 1/4" <-> 8") is wanted, the system and program must be reloaded by RESET.

check track 00 sensor for. 2.2

2.2 Adjustment of the Heads 2.2

When the adjustment is carried out, the CE diskette must be placed in the diskette drive. Normally there will be a signal in track 40 on 8" diskettes to adjust the heads, on 5 1/4" diskettes it is in track 16. If some other tracks are used on the actual diskettes, the variable "TRACK" must be changed in the program before starting (statement 1010 for the 5 1/4" and statement 1060 for the 8").

Remark!

First the function '1' is going to be selected to adjust head '0'. The oscilloscope must be connected as written in the manufacturer's manual. See the supplement.

The two parts of the position's signal must be adjusted to be as equal as possible.

Herafter the function '2' should be selected to adjust the head '1', also here it should be controlled that the two parts of the signal are equal. These two adjustments are dependent on each other, which means, that when the head '1' is adjusted, the head '0' is changed.

If the adjustment is not homogeneous enough for the head '0' and '1', this homogeneity may be achieved by re-adjusting the two heads. It may be necessary with several adjustments and controls.

Note: Never try to adjust the mutual positions of the heads. If it is impossible to make the heads good enough simultanously, fulfilling the manufacturer's specifications with respect to the relation between the A and the B signal, the

heads must be replaced. The head must also be replaced if the output signal is too low.

2.3 Adjustment of the Track '00' Sensor 2.3

The track '00' sensor must change level halfway between track '0' and '1' for the 5 1/4" and halfway between track '1' and '2' for the 8" diskette.

The oscilloscope is connected to the testpoint and the function '3' in the menu is selected.

The carriage will now step forwards and backwards between 0 and 1 (if it is an 8" it is between 1 and 2). The track '00' sensor must now be adjusted to a dutycycle of 50/50.

2.4 Adjustment of the Index Sensor 2.4

Normally burst signals are recorded beside the indexhole. These burst signals are used when the index sensor is going to be adjusted.

The adjustments take place by measuring the time from the index-pulse appears to the burst is read by the head.

These pulses are recorded on track '1' and '34' on the 5 1/4" and on track '1' and '76' on the 8" diskette as the CE diskette.

If the burst signals on the actual CE diskette are recorded on some other tracks, it must be changed in the program before this is started. For the 5 1/4" diskette the variables 'IND' and 'IND2' in statement 1010 must be changed. For the 8" it is in statement '1060'. The variable 'IND' is the outermost track and 'IND2' is the innermost track.

3. ADJUSTMENT OF THE MINI DISKETTE DRIVE (5 1/4") 3.

3.1 Adjustment of the Speed of Rotation 3.1

The first thing to be adjusted is the speed of rotation. The drive is set on its left side, seen from the front, and the heads are loaded for example by choosing function '1'. The velocity is controlled by the tachometer on the balance wheel and is adjusted by the potentiometer on the motor controlboard. If the black lines move one linewidth per second, the velocity deviation is 1% by the frequency 50 Hz.

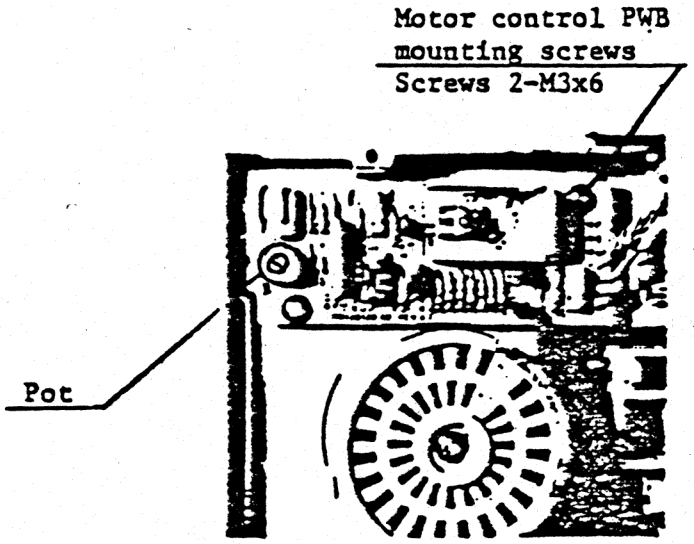


Figure 1: Motor control board, bottom view.

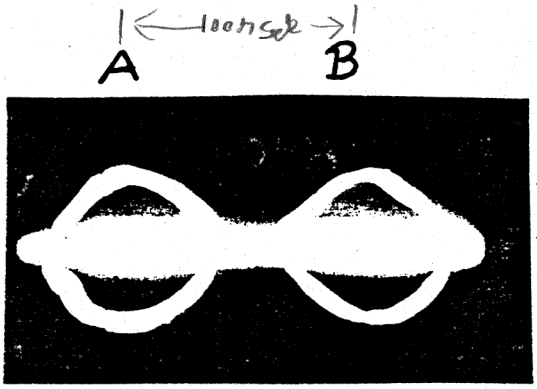
3.2 Adjustment of the Heads 3.2

When adjusting the heads, channel 1 on the oscilloscope is connected to the testpoint TP1A, channel 2 to the testpoint TP1B and the external trigger to the testpoint TP3. It is important that the ground connection is connected from both of the probes on channel 1 and channel 2.

cilloscope is set as follows:

f the channels in	AC mode
rtical function in	ADD mode
	ON
iv	20 msec.
iv (ch1, ch2)	50 mV

cture of the oscilloscope should look like this:



is larger than A,
> 0.8

is larger than B,
> 0.8

2: Oscilloscope picture of positioning signal.

re can be a slight difference in the adjustment depending whether the head comes from the inner or the outer side of the it is necessary to make the adjustment for both possibil- When the number 0 or 1 from the menu is chosen, the head from the outer side. To make the head come from the inner t is necessary to choose the number 5 from the menu first en immediately after choose number 0 or 1.

ust the head position, the two screws keeping the stepper re loosened, and the motor is carefully turned until the gnals A and B are equal.

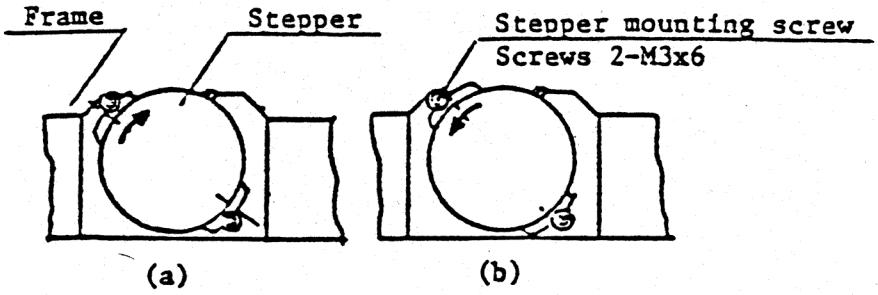


Figure 3: Stepper motor.

3.3 Adjustment of the Indexpulse

3.3

When adjusting the indexpulse, the oscilloscope is connected in the same way as when adjusting of the heads. The setting of the oscilloscope is as follows:

Both the channels in	AC mode
The vertical function in	ADD mode
Invert	ON
Time/div	0.1 msec.
Volt/div (ch1, ch2)	100 mV

The indexsensor is moved until the burst signal is displaced from 300 µsec. to 500 µsec. maintenance manual side 20-21

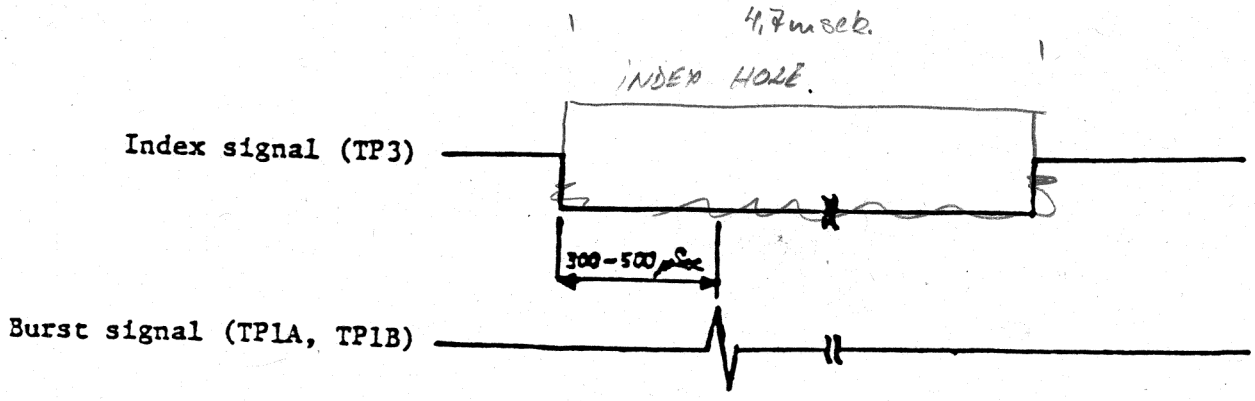


Figure 4: Index timing signal.

3.4 Adjustment of the Track '00' Sensor 3.4

When adjusting the track '00' sensor only channel 1 is used. The channel is connected to the testpoint TP5.

The setting of the oscilloscope is as follows:

The channel 1	DC mode
The vertical function	CH1 mode
Invert	OFF
Time/div	**
Volt/div	1 V

The time/div is set to be uncalibrated in such a way that one pulse is exactly 10 squares long.

After this, the track '00' sensor is loosened and is moved until the fraction between the time when the signal is high and the time when signal is low is 1:1. Then the sensor is tightened again.

When the adjustment is finished, the loosened screws are tightened and the adjustments are controlled again.

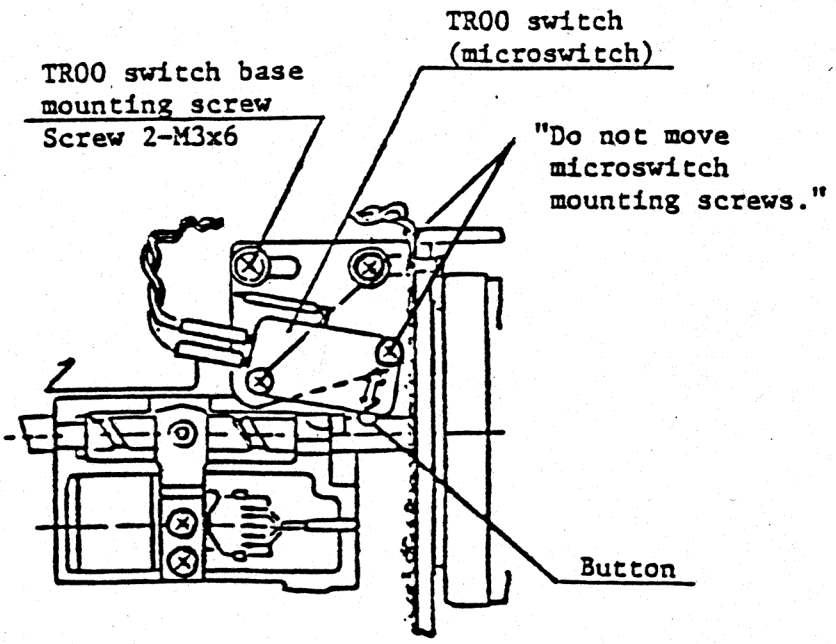


Figure 5: Track '00' switch, bottom view.

4. ADJUSTMENT OF THE MAXI DISKETTE DRIVE (8") 4.

4.1 Adjustment of the Heads 4.1

When adjusting the heads, channel 1 on the oscilloscope is connected to the testpoint TP1A, channel 2 to the testpoint TP1B and the external trigger to the index signal on the connector J1, pin 20.

It is important that the ground connections are connected to the probes of both channel 1 and channel 2.

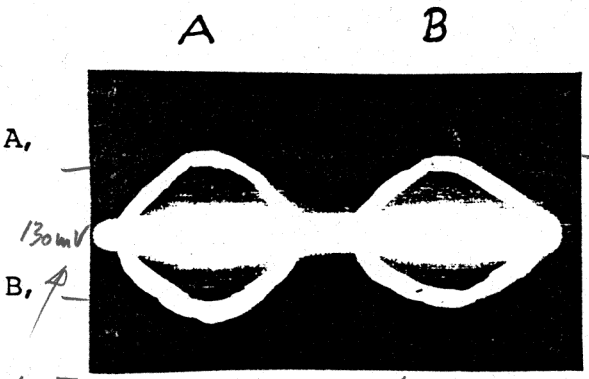
The oscilloscope is set as follows:

Both the channels in	AC mode
The vertical function in	ADD mode
Invert	ON
Time/div	20 msec.
Volt/div (ch1, ch2)	50 mV

The picture of the oscilloscope should look like this:

When B is larger than A,
A/B > 0.8

When A is larger than B,
B/A > 0.8



mät TB2B+A med x10 probe. (1,3V)

Figure 6: Oscilloscope picture of positioning signal.

When adjusting the head position, the two screws which squeeze the steelbelt, are loosened and now the head is carefully displaced until the two signals are equal. Note that it is probably half a millimeter the heads should be moved.

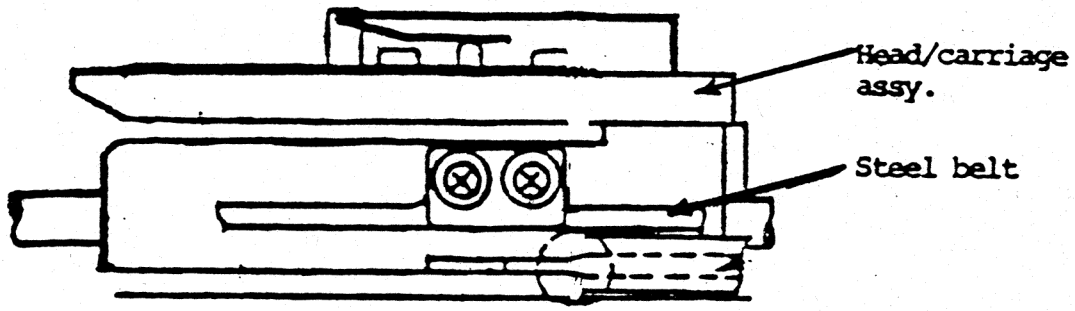


Figure 7: Adjustment of head on the steelbelt.

4.2 Adjustment of the Indexpulse

4.2

When adjusting the indexpulse, the oscilloscope is connected in the same way as when adjusting the heads. The oscilloscope is set as follows:

Both the channels in	AC mode
The vertical function in	ADD mode
Invert	ON
Time/div	0.1 msec.
Volt/div (ch1, ch2)	100 mV

The indexsensor is moved until the burst signal is displaced between 0 and 1000 µsec.

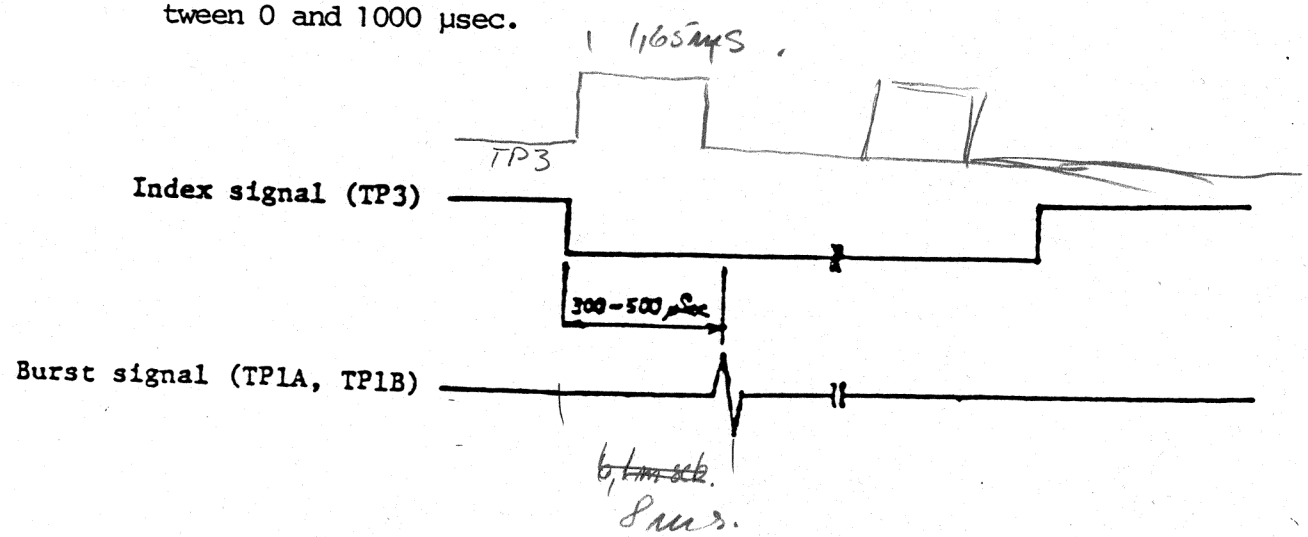


Figure 8: Index timing signal.

4.3 Adjustment of the Track '00' Sensor 4.3

When adjusting the track '00' sensor only channel 1 is used. Channel 1 is connected to the operational amplifier LM339N on pin 1.

The setting of the oscilloscope is as follows:

The channel 1 in	DC mode
The vertical function in	CH1 mode
Invert	OFF
Time/div	**
Volt/div	1 V

Time/div is set to be uncalibrated, in such a way that one pulse is exactly 10 squares long.

After this the track '00' sensor is loosened and moved until the fraction between the time the signal is high, and the time the signal is low is 1:1.

When the adjustment is finished, all the loosened screws must be tightened and the adjustments should be controlled again.