RCSL No: 44-RT1992

Edition: May 1981

Author: -

Title:

TWO-SIDED 5.25 INCH FLOPPY DISK DRIVE YD-274
Maintenance Manual

RCSL 42-i1592

A/S REGNECENTRALEN
af 1979

Keywords: RC700, RC702, Floppy Disk Drive, FDD709, FDD710.

Abstract: This manual is produced by Y-E DATA INC. JAPAN and it may be distributed according to an agreement between Y-E DATA INC. and RC Computer.
RC Computer uses the technical numbers FDD709 and FDD710 for the floppy disk drive.

Printed by A/S Regnecentralen af 1979, Copenhagen

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TWO-SIDED 5.25 INCH FLOPPY DISK DRIVE

YD-274

MAINTENANCE MANUAL

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FDC-520025 Rev. A

JUNE 30, 1980

YD-274 MAINTENANCE MANUAL

TABLE OF CONTENTS

1 GENERAL

This manual contains the instructions required to maintain the two-sided 5.25 inch floppy disk drive YD-274. This manual provides detailed information for maintenance check, parts replacement, and adjustment to aid the customers engineer.

2 MAINTENANCE TOOLS AND TEST EQUIPMENT

The tables below list the maintenance tools, maintenance supplies, test equipment, and exerciser for the YD-274.

2.1 MAINTENANCE TOOLS LIST

Tools	YE DATA Part Number
Screwdriver, Phillips (M3)	141034-01
Screwdriver, Slot	141035-01
Cutter	141039-01
Long-nose pliers	141040-01
Tweezers	141042-01
Screwdriver, torque* (with hex wrench, 1.5)	141036-01
Tr00 stopper adjustment gauge*	141037-02
Spindle pulley - motor pulley center adjustment gauge	141038-01
CE disk	141082-01

* to be used at maintenance level 2

YD-274 Tool kit (including the tools listed above except CE disk)	P/N 141041-01

2.2 MAINTENANCE SUPPLIES

Supplies	YE DATA Part Number
Cable clamp	031005-01
Cleaning kit Applicator Gauze Head cleaning fluid (Isopropyl alcohol) Lubricant (Idemitsu oil "Apollo first oil")	141046-01

2.3 TEST EQUIPMENT

Test equipment
Circuit tester
Electronic counter
Oscilloscope*

* to be used at maintenance level 2

2.4 EXERCISER

Equipment	YE DATA Part Number
Exerciser	YD-264

3 PREVENTIVE MAINTENANCE

3.1 GENERAL

Under normal circumstances preventive maintenance every two years is required on the YD-274. This contains visual check and cleaning. If severely dirty environments are encountered, the time between maintenance checks should be shortened accordingly.

3.2 VISUAL CHECK

Visual inspection is the first step in any maintenance operation. Always look for corrosion, dirt, wear, binds, and loose connections. Noticing these items may save downtime later.

3.3 CLEANING

Cleaning of the YD-274 should be done carefully. Lightly clean dirt with a gauze or applicator moistened with isopropyl alcohol.

CAUTION: The carriage assembly is a factory-adjusted and tested assembly. Do not try to adjust or repair this internal component.

Preventive maintenance items

Parts	Observe	Procedure
Main frame Head Connector Sensor and others	Dirt on head, connector, sensor, etc.	Clean
	Loose screws	Tighten screws
Drive belt	Dirt	Clean
	Frayed or weakened area	Change new belt

4 CHECK, REPLACEMENT & ADJUSTMENT

This chapter contains the detailed maintenance procedure on the assemblies (level 1 & level 2) listed below.

Level 1: Neither special training nor special tools are required.

Level 2: Some training and special tools are required.

Level 1

4.1 BELT

4.2 PWB

4.3 INDEX LAMP ASSEMBLY

4.4 MEDIA GUIDE L ASSEMBLY (WITH WRITE PROTECT SENSOR & LAMP)

4.5 IN USE LED ASSEMBLY

4.6 DRIVE MOTOR ASSEMBLY (WITH MOTOR CONTROL PWB)

Level 2

4.7 INDEX SENSOR ASSEMBLY

4.8 TROO SWITCH ASSEMBLY

4.9 TROO STOPPER

4.10 HEAD LOAD SOLENOID ASSEMBLY

4.11 CARRIER ASSEMBLY

4.12 FRONT DOOR ASSEMBLY

4.13 FRONT BEZEL ASSEMBLY

4.14 STEPPER

4.15 CARRIAGE ASSEMBLY

NOTE: Refer to Chapter 5 PARTS/ASSEMBLIES LOCATIONS and Chapter 6 TEST POINTS/CONNECTOR PIN ASSIGNMENTS.

4.1 BELT (Physical Locations 2 in Chapter 5)

4.1.1 SERVICE CHECK

1. Check dust and dirt on the belt. Check frayed, scratched or weakened area on the surface of belt.

4.1.2 REMOVAL AND REPLACEMENT

1. Remove the belt at the spindle pulley while rotating the pulley slowly by your fingers.
2. Replace a new belt at the motor pulley first and then at the spindle pulley while rotating the pulley.

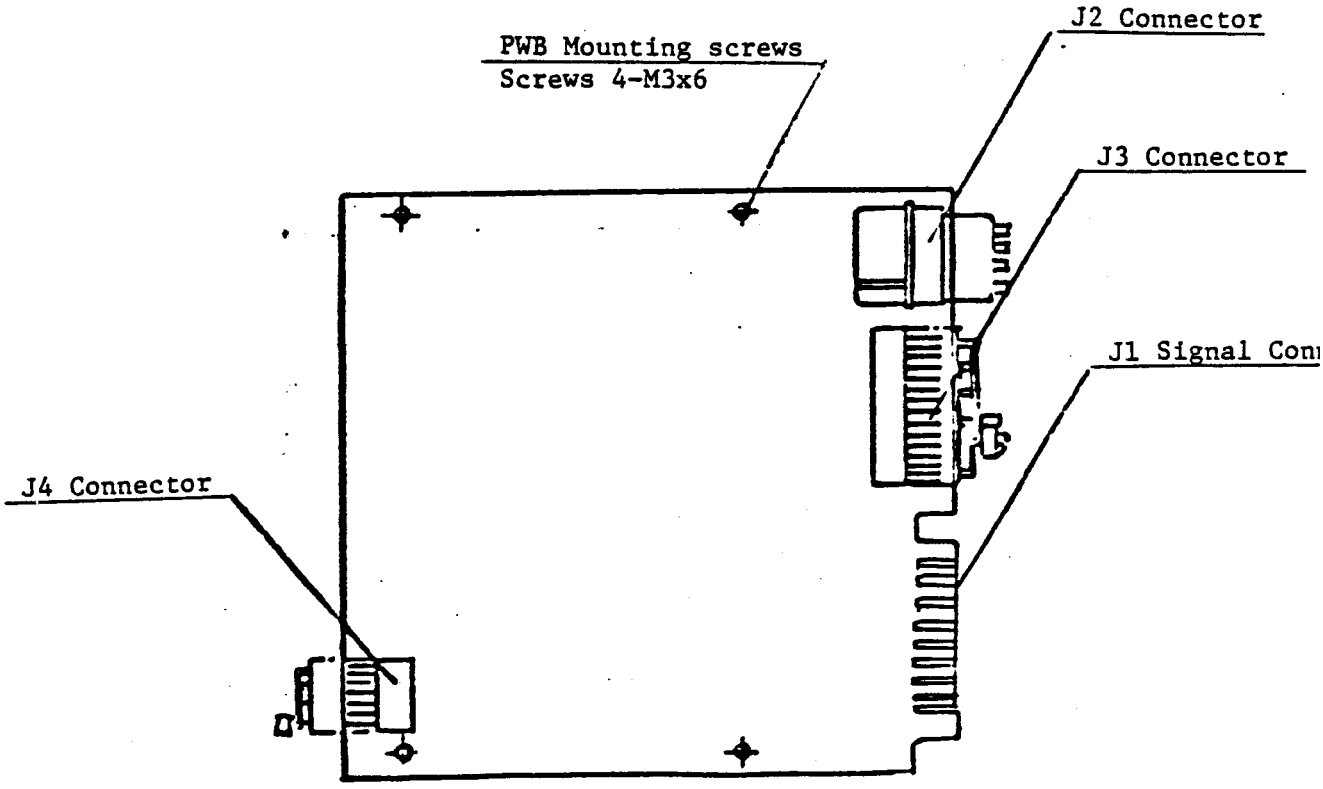
CAUTION: Do not scratch the belt by the flange of motor pulley when removal and replacement.

NOTE: The new belt has no side.

4.2 PWB (Physical Locations 1 in Chapter 5)

4.2.1 PWB REMOVAL AND REPLACEMENT

1. Disconnect four connectors (J1, J2, J3, J4) from PWB.
2. Remove mounting screws.
3. Remove PWB.
4. Reverse the procedure for replacement.



4.3 INDEX LAMP ASSEMBLY (Physical Locations 3 in Chapter 5)

4.3.1 SERVICE CHECK

1. Turn on power.
2. Verify voltage of 1.0 to 1.7 V between "J3-B11" and "G"(GND) on PWB.

4.3.2 REMOVAL AND REPLACEMENT

1. Remove PWB. (See 4.2)
2. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

3. Remove two lamp leads from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A11, RED to J3-B11)

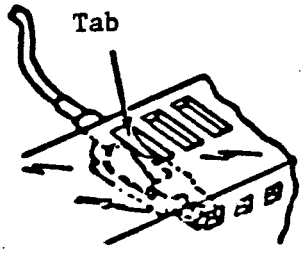


Fig. 4.3.1

4. Cut the index lamp cable clamp.
5. Open the front door.

6. Remove lamp leads from guidance groove on carrier and index lamp assembly with fingers and tweezers.

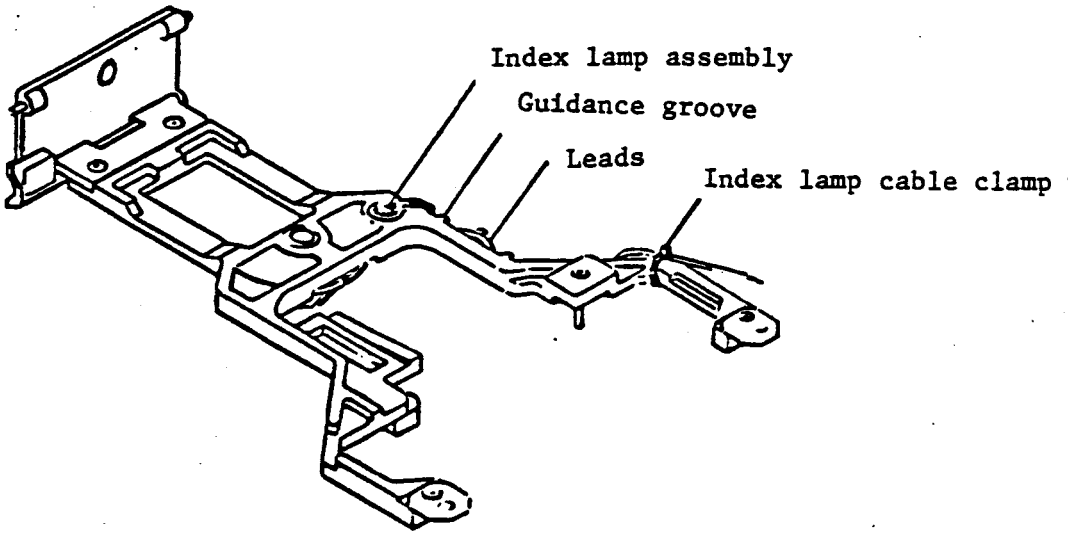


Fig. 4.3.2

7. Reverse the procedure for replacement.

NOTE: When installing the assembly, insert the LED after the LED holder.

8. Service check. (See 4.3.1)

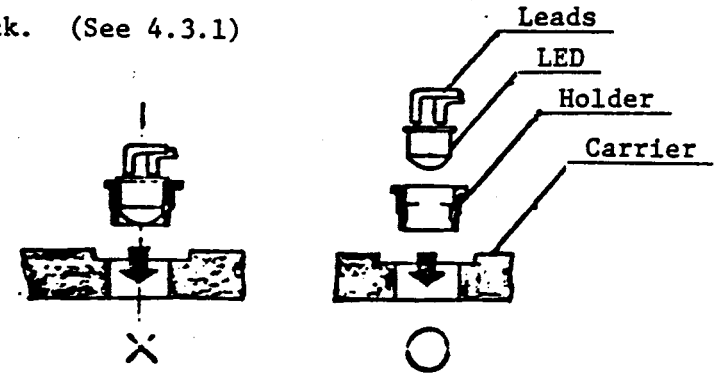


Fig. 4.3.3

4.4 MEDIA GUIDE L ASSEMBLY (WITH WRITE PROTECT SENSOR & LAMP) (Physical Locations 3 in Chapter 5)

4.4.1 SERVICE CHECK

1. Turn on power.
2. Verify the followings without a diskette.
   a) Write protect lamp
      Voltage of 1.0 to 1.7 V between "J3-B13" and "G"(GND) on PWB.
   b) Write protect sensor
      Voltage of 0 to 0.5 V between "J3-B14" and "G"(GND) on PWB.
3. Insert a write-protect diskette (a diskette with a write-protect seal on the write-protect notch), close the door and verify the following.
   a) Write protect sensor
      Voltage of 2.5 to 5.25 V between "J3-B14" and "G"(GND) on PWB.

4.4.2 REMOVAL AND REPLACEMENT

1. Remove PWB. (See 4.2)
2. Open the front door.
3. Remove four leads of write protect assembly from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A13, YELLOW to J3-B13, BLACK to J3-A14, ORANGE to J3 B14)

NOTE: Remove leads with the lead clamp and lead stopper slightly open. (See physical locations 3 in chapter 5.)

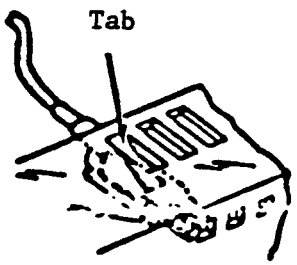


Fig. 4.4.1

4. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

5. Remove the media guide L assembly mounting screws and the media guide L assembly.
6. Reverse the procedure for replacement.

   NOTE: When installing the media guide L assembly, push it against the main frame stop.

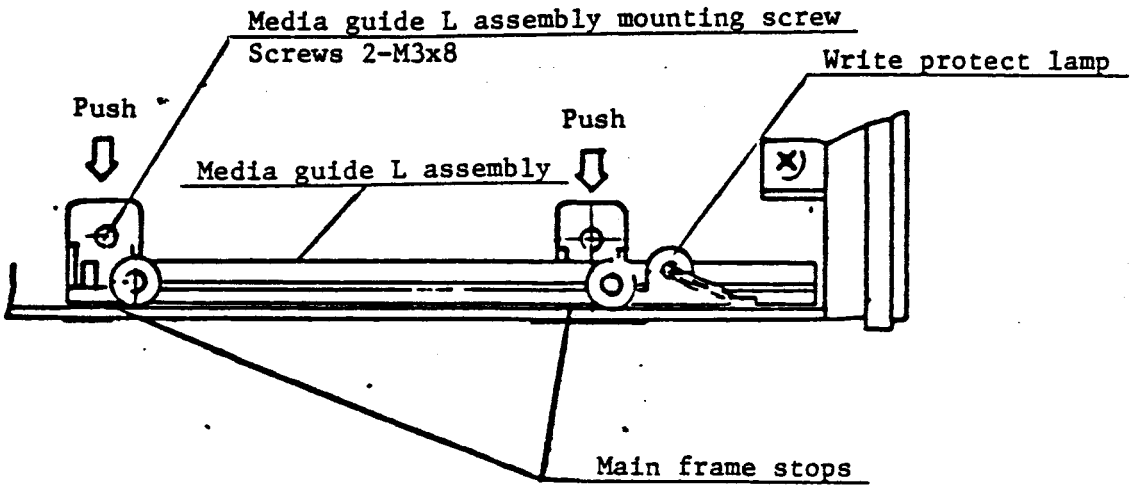


Fig. 4.4.2

7. Service check. (See 4.4.1.)

4.5 IN USE LED (Physical Locations 5 in Chapter 5)

4.5.1 SERVICE CHECK

1. Turn on power.
2. Set the DRIVE SELECT 0 on the interface "LOW level" and insert a short plug onto the short pin DS0.
3. Check the LED lamp lighted.

NOTE: The voltage between "J3-B10" and "G"(GND) reads 1 to 2 V when LED on.

4.5.2 REMOVAL AND REPLACEMENT

1. Remove PWB. (See 4.2.)
2. Open the front door.
3. Remove two leads of in use LED from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A10, RED to J3-B10)

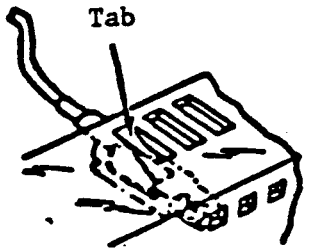


Fig. 4.5.1

4. Cut the J3 cable clamp.

CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

5. Remove the front bezel.

6. Remove the holder 2 by tweezers in the direction shown below. Take the LED holder out in front.
7. Take the LED out of LED holder.
8. Reverse the procedure for replacement.
9. Service check. (See 4.5.1.)

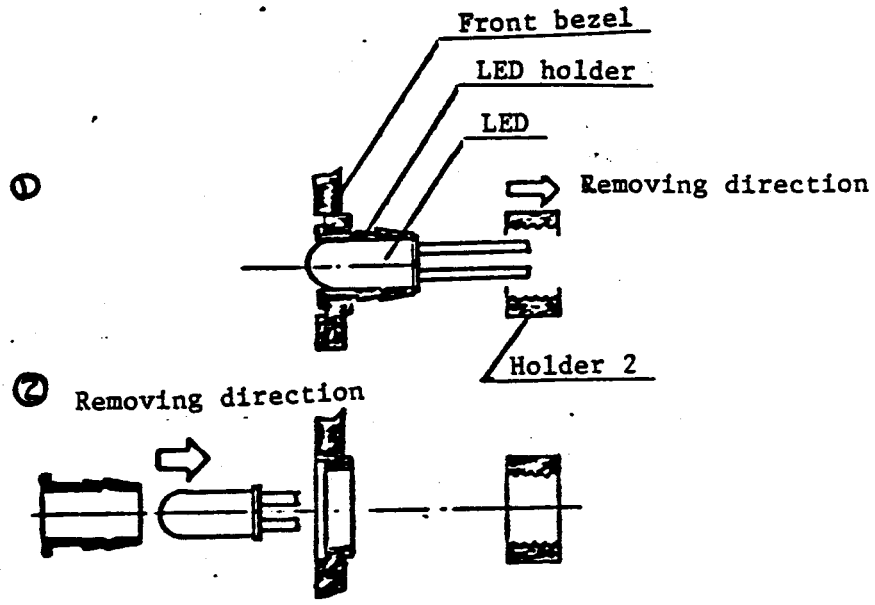


Fig. 4.5.2

4.6 DRIVE MOTOR ASSEMBLY (Physical Locations 2 & 3 in Chapter 5)

4.6.1 SERVICE CHECK

1. Turn on power.
2. Rotate the motor with the interface signal MOTOR ON "LOW level".
3. Insert a diskette and close the door.
4. Load the head.
5. Check the dark lines on the spindle pulley appear motionless. For 50 HZ fluorescent lighting use the inside ring of lines for 60 HZ observe the outside ring.

NOTE: When the dark lines appear to move one line a second, rotating speed error is

1% at 50 HZ

or 0.8% at 60 HZ.

When using a frequency counter, check the index pulse period (TP3 on PWB) for reading of 197 to 203 m sec.

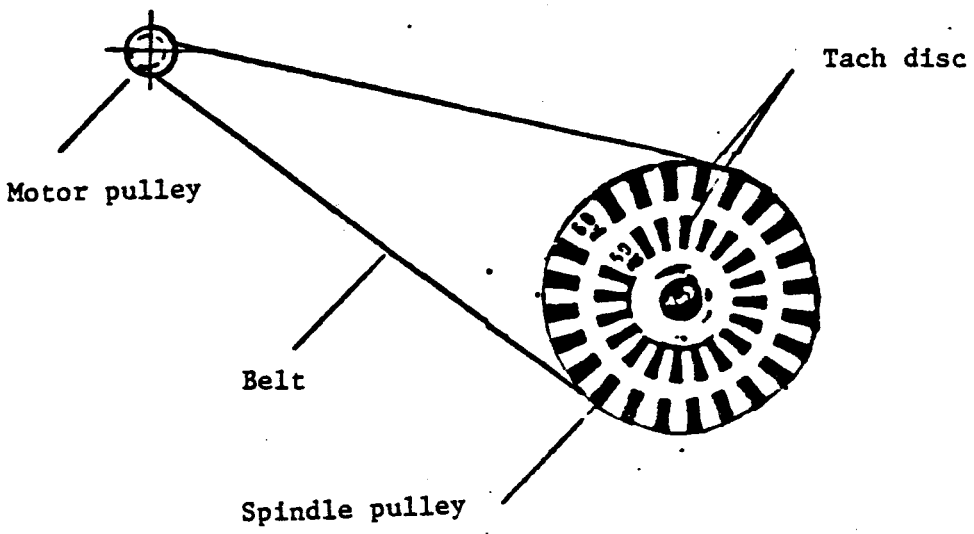


Fig. 4.6.1

4.6.2 REMOVAL AND REPLACEMENT

1. Remove the belt. (See 4.1.)
2. Cut the J3 cable clamp and motor cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

3. Remove three leads from J3 connector by pushing down on tabs with tweezers. (BLUE to J3-A1, RED to J3-B1, BLACK to J3-B2)

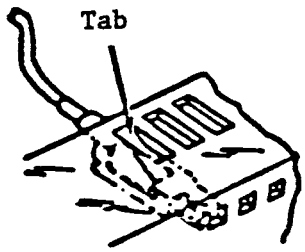


Fig. 4.6.2

4. Remove the motor control PWB mounting screws.

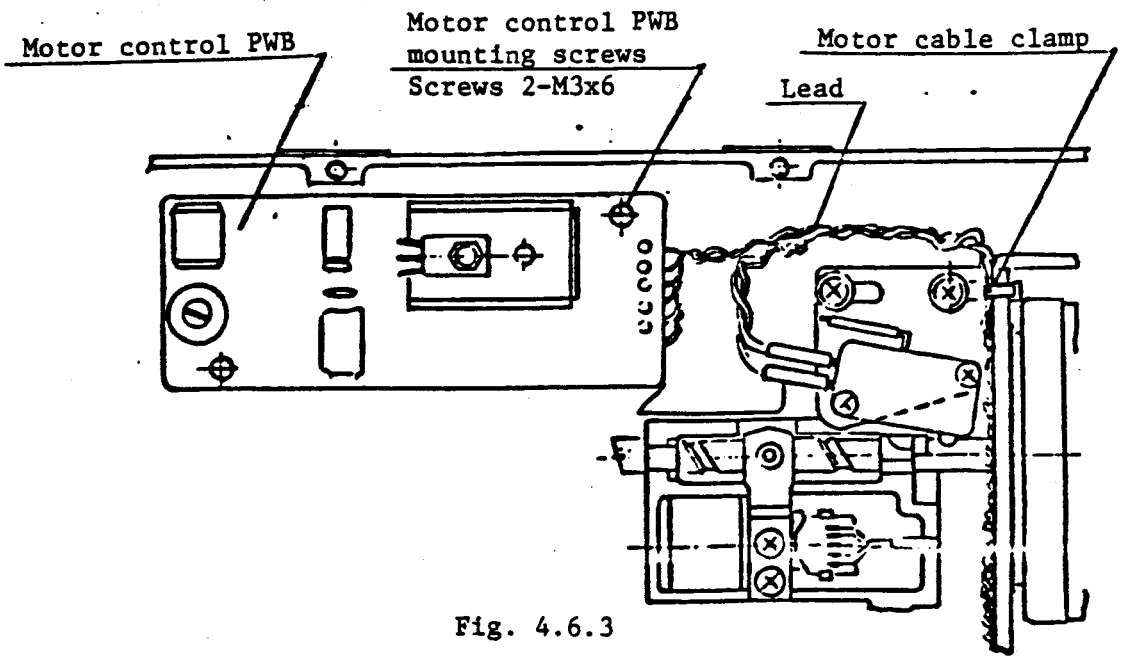


Fig. 4.6.3

5. Remove the drive motor and motor control PWB from the main frame by removing the drive motor mounting screws.
6. Reverse the procedure for replacement.

NOTE: Replace the drive motor by applying the spindle pulley - motor pulley center adjustment gauge (P/N 141038-01).

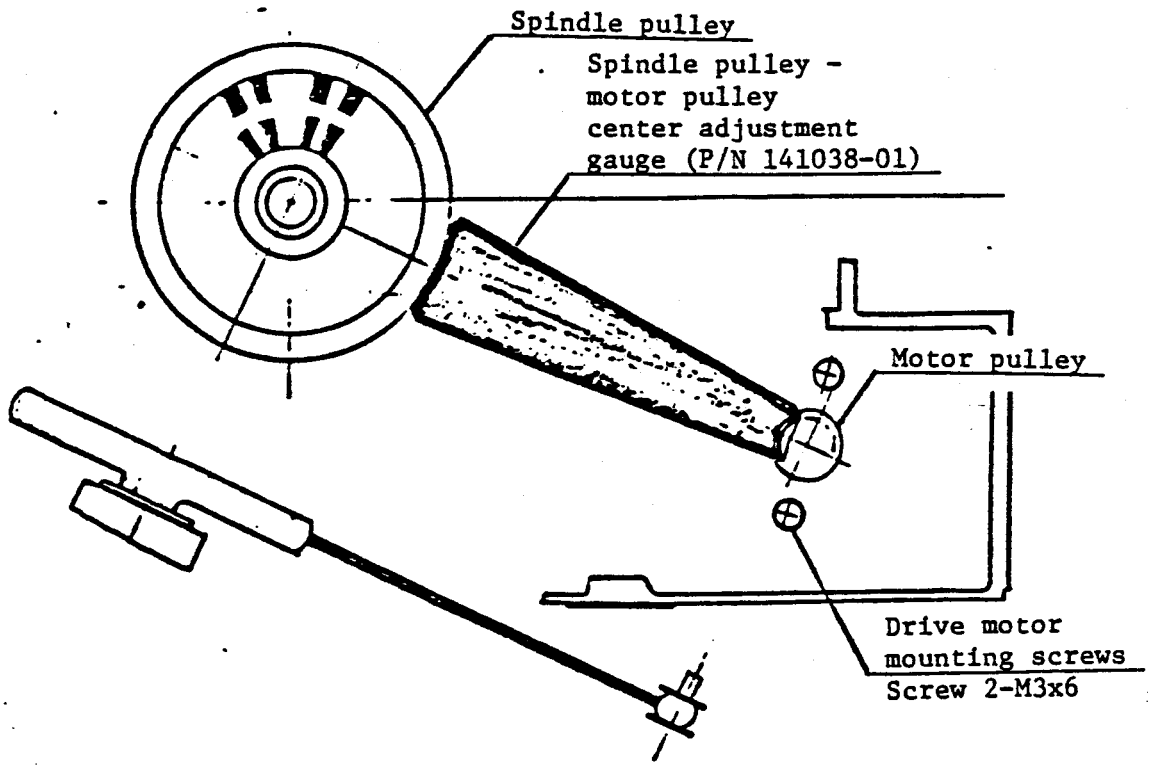


Fig. 4.6.4

7. Service check. (See 4.6.1.)

4.6.3 ADJUSTMENT

1. After service check in 4.6.1, turn the pot located on the motor control PWB with a slot screwdriver until the dark lines on the spindle pulley appear completely motionless.

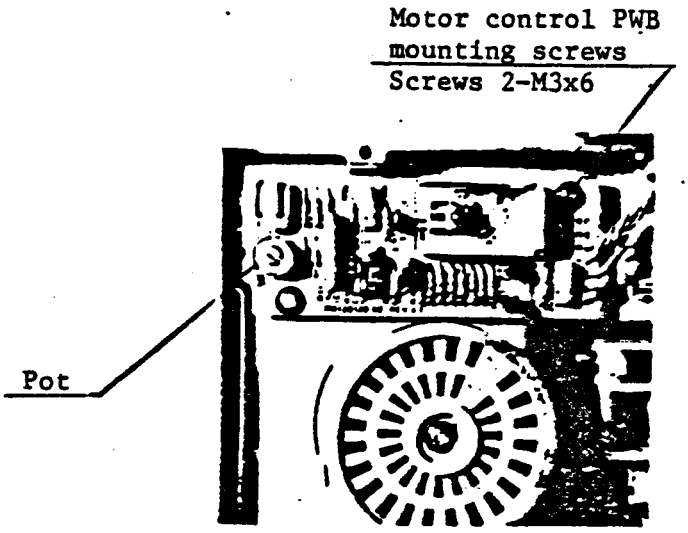


Fig. 4.6.5

NOTE: When using a frequency counter, check the index pulse period (TP3 on PWB) for reading of 197 to 203 m sec.

4.7 INDEX SENSOR ASSEMBLY (Physical Locations 4 in Chapter 5)

4.7.1 SERVICE CHECK

1. Turn on power.
2. Verify the voltage of 0 to 0.5 V when door closed without a diskette and 2.5 V to 5.25 V when a diskette inserted backward and door closed, between "J3-B12" and "G"(GND) test points on PWB.
3. Do 4.7.3 adjustment when service check of index timing needed.

4.7.2 REMOVAL AND REPLACEMENT

1. Remove the PWB. (See 4.2.)
2. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

3. Remove two leads of index sensor assembly from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A12, BLUE to J3-B12)

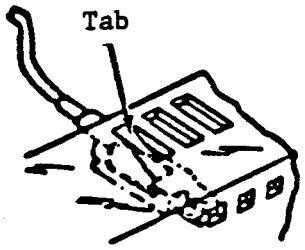


Fig. 4.7.1

NOTE: Remove leads with the lead clamp slightly open.

4. Open the front door.
5. Remove the index sensor assembly by removing its mounting screws.

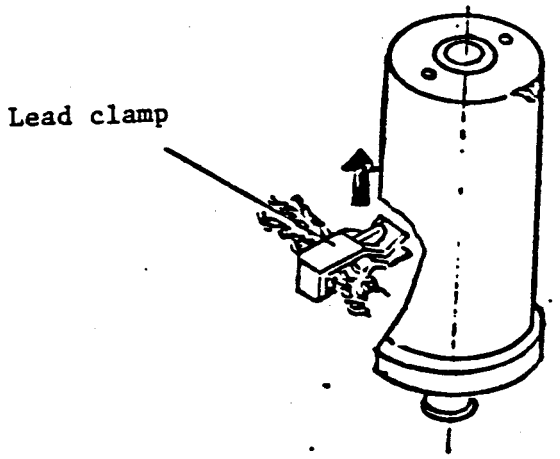


Fig. 4.7.2

6. Reverse the procedure for replacement.
7. Do 4.7.3 service check for replacement.

4.7.3 ADJUSTMENT (INDEX SENSOR)

1. Loosen the mounting screws of the sensor by 1/4 turn.
2. Turn power on.
3. Connect test points "TP1A", "TB1B" and "TP3" with an oscilloscope, one probe (CH1) to "TP1A", another (CH2) to "TB1B" and external trigger to "TP3".
   Set the oscilloscope as follows.

INPUT COUPLING MODE	AC
VERT MODE	ADD
INVERT	ON
TIME/DIV	0.1 msec
VOLTS/DIV (CH1, CH2)	100 mV

4. Insert a CE disk and close the door.
5. (Adjustment) After loading the head and moving the carriage to TR01, observe the timing between the leading edge of index signal (TP3) and the burst signal (TP1A, TP1B) of read output (SIDE 0). This should be 300 to 500 μsec.

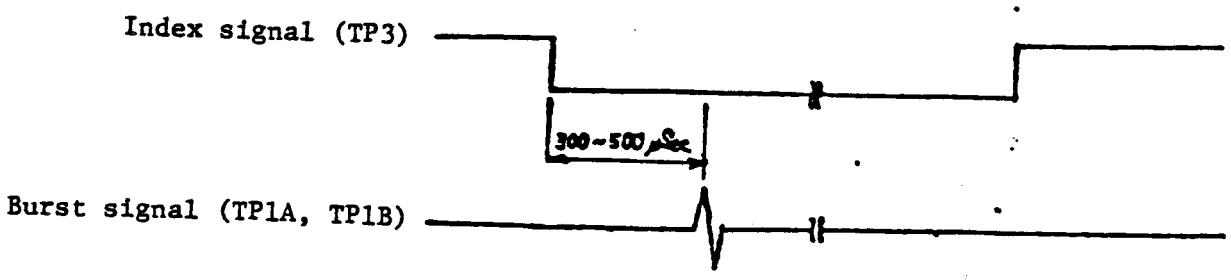


Fig. 4.7.3

To adjust this, move the index sensor with a phillips screwdriver as shown in fig. 4.7.4.

6. (Service check). Verify the burst signal for 0 to 800 µsec on SIDE 0 and 1 of track 01 and 34. If the time is not within tolerance, continue on with the adjustment in the above 5 and 6.

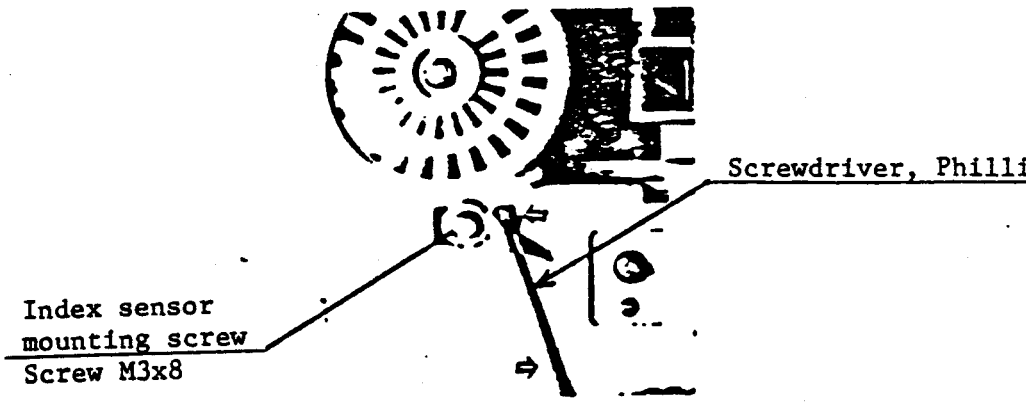


Fig. 4.7.4

NOTE: Movement of index sensor assembly in the direction shown in fig. 4.7.4 delays the start of burst signal from the leading edge of index signal.

4.8 TR00 SWITCH ASSEMBLY (Physical Locations 2 in Chapter 5)

4.8.1 SERVICE CHECK (1): TR00 SWITCH (MICROSWITCH) CHECK

1. Turn on power.
2. Push down on the button of TR00 switch (microswitch) with a finger.
3. Verify the voltages between "J3-A8"(NC) and "G"(GND) and between "J3-A9"(NO) and "G"(GND) on PWB for 3 to 5.25 V and 0 to 0.1 V respectively.
4. Release the finger from pressing the button.
5. Verify the voltages between "J3-A8"(NC) and "G"(GND) and between "J3-A9"(NO) and "G"(GND) on PWB for 0 to 0.1 V and 3 to 5.25 V respectively.

SERVICE CHECK (2): TR00 SWITCH POSITION CHECK

1. Turn on power.
2. Move the carriage until the track 00 signal goes low (0 to 0.4 V) by feeding pulses to STEP signal with the DIRECTION signal high.
3. Verify the carriage to hit the TR00 stopper by one step outward from track 00.
4. Verify the carriage to return inward (TR00) and the TR00 signal (J1-26) to go low (0 to 0.4 V) by another step pulse to move outward.
5. Verify the TR00 signal to go high (2.4 to 5.25 V) by stepping the carriage by one to position at track 01 and to remain high (2.4 to 5.25 V) by stepping one more to position at track 02.
6. If service checks 3, 4 & 5 are not good, adjust the TR00 switch assembly (See 4.8.3.).

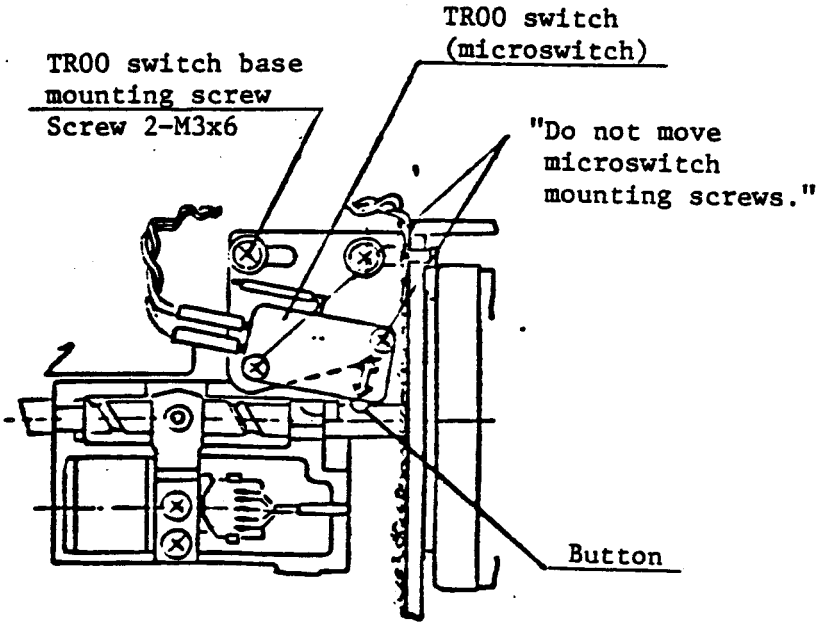


Fig. 4.8.1

4.8.2 REMOVAL AND REPLACEMENT

1. Remove J3 connector from PWB.
2. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

3. Remove three leads of TR00 switch from J3 connector by pushing down on tabs with tweezers. (YELLOW to J3-A8, GREEN to J3-A9, WHITE to J3-B9)

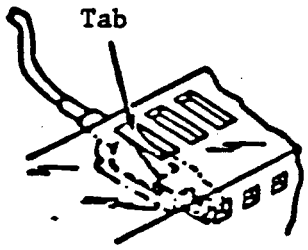


Fig. 4.8.2

4. Remove the TR00 switch assembly by removing TR00 switch base mounting screws.

   CAUTION: Do not remove microswitch mounting screws. (See fig. 4.8.1.)

5. Reverse the procedure for replacement.
6. Adjustment (See 4.8.3.)

4.8.3 ADJUSTMENT

CAUTION: Adjust the carriage positioning before this if there is carriage positioning error. (See 4.15.3.)

1. Loosen two mounting screws of TR00 switch base and move the TR00 switch assembly innermost.
2. Turn on power.
3. Connect "TP1A", "TP1B" and "TP3" on PWB with an oscilloscope, one probe (CH1) to "TP1A", the other (CH2) to "TP1B" and the external trigger to "TP3".
   Set the oscilloscope as follows.

INPUT COUPLING MODE	AC
VERT MODE	ADD
INVERT	ON
TIME/DIV	20 msec
VOLTS/DIV (CH1, CH2)	50 mV

4. Insert a CE disk and close the door.
5. Move the carriage inward by 10 steps.
6. Load the head and move the carriage outward until TR00 read output of CE disk appears.
7. Verify the voltages between "J3-A8"(NC) and "G"(GND) and between "J3-A9"(NO) and "G"(GND) on PWB for 3 to 5.25 V and 0 to 0.1 V respectively when the TR00 switch is activated while moving slowly the TR00 switch assembly inward.
8. Move the carriage inward by one step (TR01) and verify the voltages between "J3-A8"(NC) and "G"(GND) and between "J3-A9"(NO) and "G"(GND) on PWB for 0 to 0.1 V and 3 to 5.25 V respectively.
9. Check the switch on at track 00 and off at track 01. If not, repeat 7 to 9.
10. Make the TR00 stopper service check (4.9.1).

4.9 TR00 STOPPER (See figures 4.9.1 and 4.9.2.)

CAUTION: When there is error in carriage positioning and TR00 switch actuating position, adjust them before this.

4.9.1 SERVICE CHECK

1. Turn on power.
2. Move the carriage until the TR00 signal goes low (0 to 0.4 V) by feeding pulses to the STEP signal with the DIRECTION signal high.
3. Verify the carriage to hit the TR00 stopper by one step outward from track 00.
4. Verify the carriage to return inward (TR00) and the TR00 signal (J1-26) to go low (0 to 0.4 V) by another step outward.

4.9.2 ADJUSTMENT

1. Turn on power.
2. Move the carriage to track 00.
3. Move the drive motor leads so the TR00 stopper adjustment gauge can go into.
4. Push the TR00 stopper adjustment gauge (P/N 141037-01) in while slightly loosening the TR00 stopper mounting screw.
5. Tighten the TR00 stopper mounting screw by the torque screwdriver (P/N 141036-01) set at 4 kg-cm.
6. Service check. (See 4.9.1.)

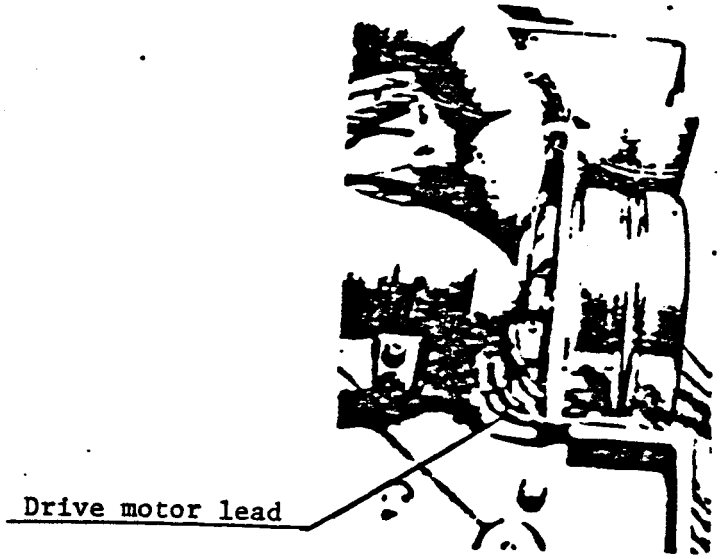


Fig. 4.9.1

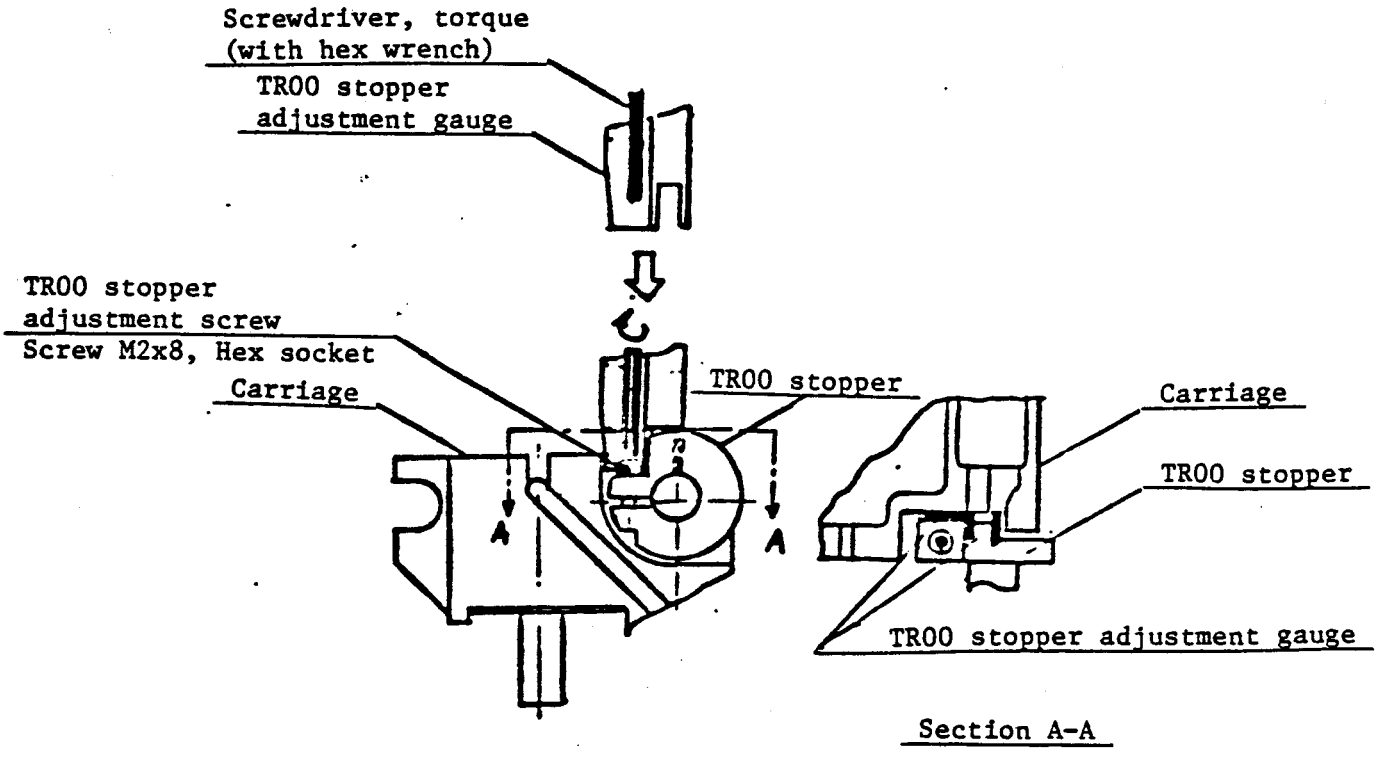


Fig. 4.9.2

4.10 HEAD LOAD SOLENOID

4.10.1 SERVICE CHECK

1. Check the pad under the bail for any damage through the opening for diskette in the front bezel.
2. Turn on power.
3. Insert a diskette and close the door.
4. Load the head.
5. Verify there is a gap between the bail and the carriage arm tab throughout carriage travel.
6. Turn off power.
7. Remove the diskette and close the door.
8. Look for a clearance of 0.3 to 0.7 mm between head surfaces. Visually check this clearance through the diskette opening in the front bezel. Perform adjustment in 4.10.3 if necessary.

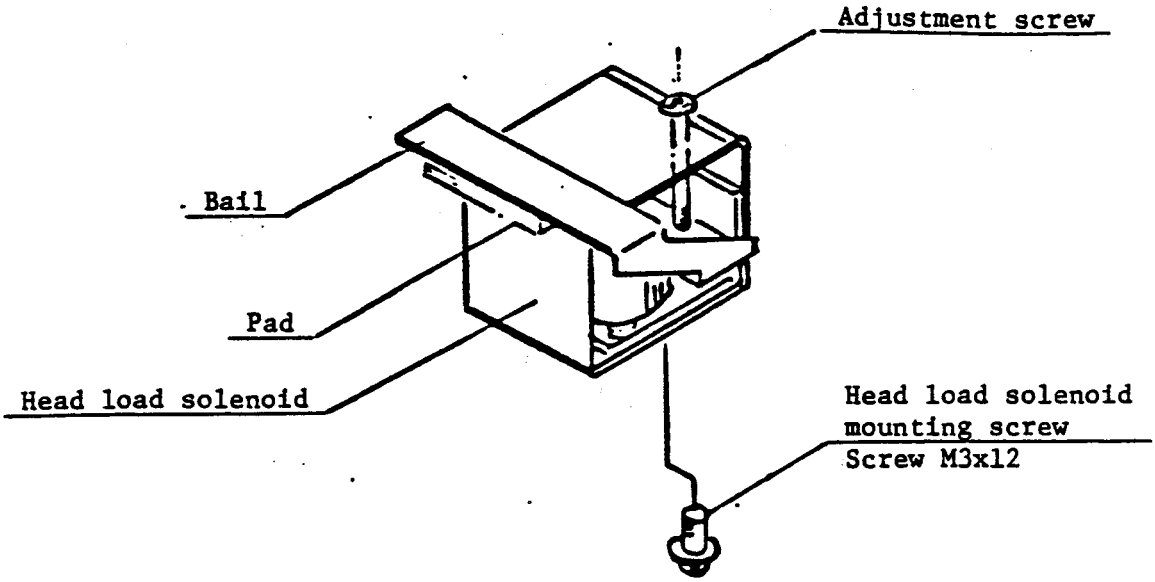


Fig. 4.10.1

4.10.2 REMOVAL AND REPLACEMENT

1. Remove the PWB. (See 4.2.)
2. Remove the carrier by removing the carrier assembly

   NOTE: Keep carrier leads as they are.

3. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

4. Remove two leads of head load solenoid from J3 connector by pushing down on tabs with tweezers. (GREEN to J3-A4, WHITE to J3-B4)

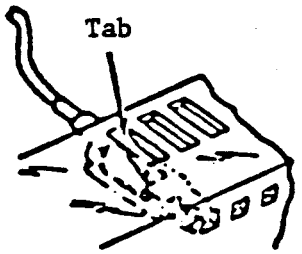


Fig. 4.10.2

5. Remove the media guide L assembly by removing its mounting screw.

   NOTE: Do not remove leads of media guide L assembly.

6. Insert a piece of clean paper between the head surfaces.
7. Remove head load solenoid mounting screws on the back side of frame and slightly lift the carriage arm tab by a finger. Remove the head load solenoid while turning it as shown in fig. 4.10.3.
8. Reverse the above procedure for replacement.

   CAUTION: Ensure that the bail is under the carriage arm tab.

9. Perform adjustment. (See 4.10.3.)

4.10.3 ADJUSTMENT

1. Adjust the gap between heads for 0.3 to 0.7 mm by turning the adjustment screw on the carrier. A clockwise turning of adjustment screw decreases the gap between heads and a counterclockwise turning increases it.
2. Do service check. (See 4.10.1.)

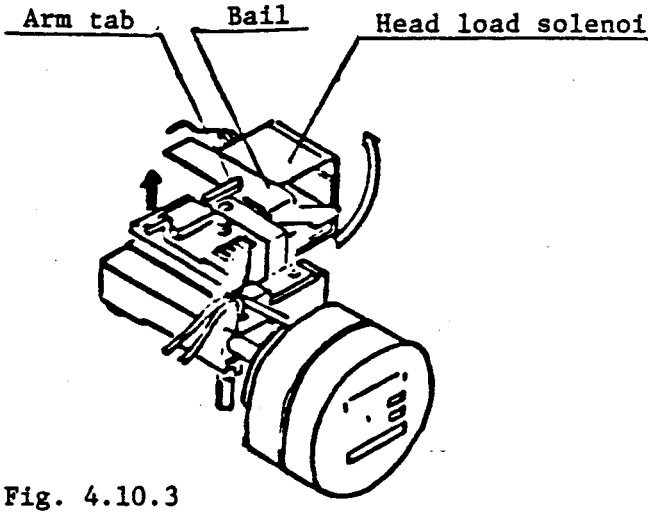


Fig. 4.10.3

4.11 CARRIER ASSEMBLY (Physical Locations 3 in Chapter 5)

4.11.1 REMOVAL AND REPLACEMENT

1. Remove the PWB. (See 4.2.)
2. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.

3. Remove two leads of index lamp from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A11, WHITE to J3-B11)

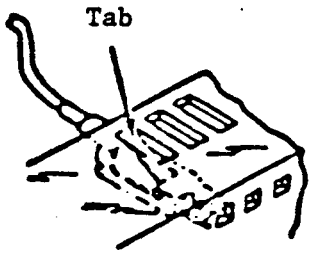


Fig. 4.11.1

4. Remove the head cable while slightly opening its clamp.
5. Remove the carrier assembly by removing its mounting screw.

   CAUTION: Remove the carrier gently to avoid stress against head arm tab.

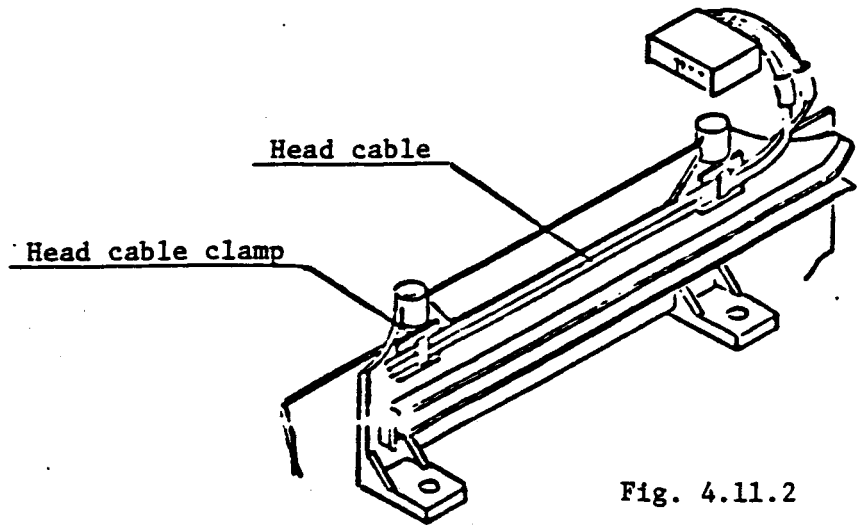


Fig. 4.11.2

6. When replacing, put front door pins into front bezel guide grooves.
7. Mount the carrier temporarily by carrier mounting screws.
8. Close the door, position and fix the carrier so that the gap between front bezel and front door be uniform.

CAUTION: Be sure the carrier is under the head arm tab.

9. Insert leads while lifting the tab of J3 connector.
10. Dress the J3 cable clamp.
11. Adjust the bail of head load solenoid. (See 4.10.3.)

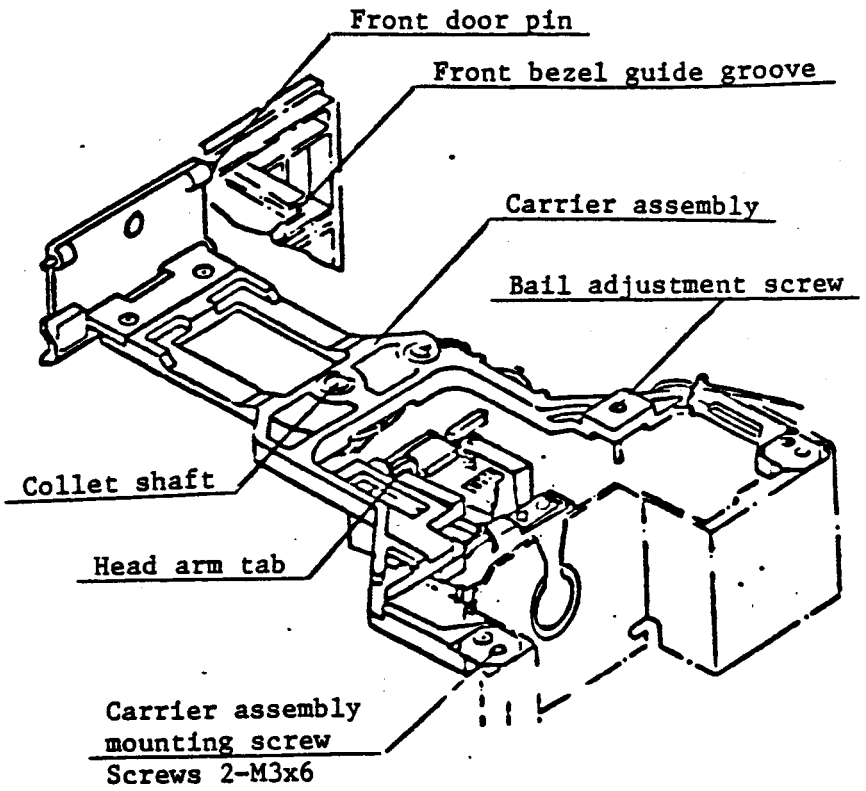


Fig. 4.11.3

4.12 FRONT DOOR ASSEMBLY

4.12.1 REMOVAL AND REPLACEMENT

1. Remove the PWB. (See 4.2.)
2. Close the door.
3. Remove front door mounting screws while holding down on the carrier upside with fingers and pull out the front door assembly toward the backside of door.

   CAUTION: Do not lift the carrier by a finger to avoid stress against the head arm.

4. For replacement put the front door assembly into the front bezel guide grooves from the back- and upside of front bezel while holding down on the carrier upside with fingers.
5. Remount front door assembly mounting screws.
6. Remount the PWB. (See 4.2.)

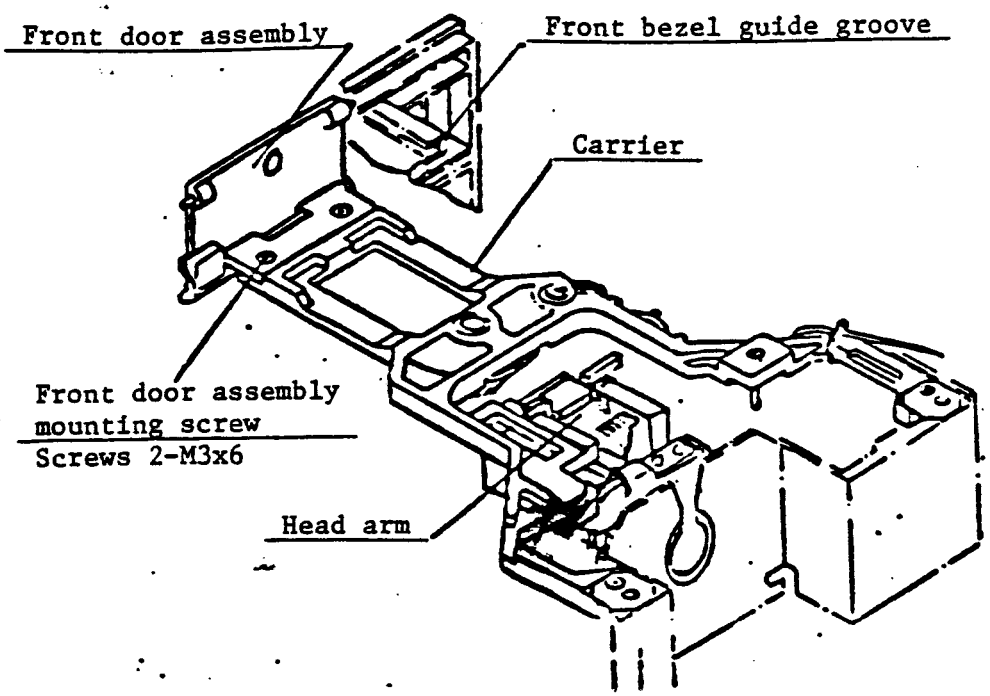


Fig. 4.12.1

4.13 FRONT BEZEL ASSEMBLY (Physical Locations 4 in Chapter 5)

4.13.1 REMOVAL AND REPLACEMENT

1. Remove the PWB. Reference section 4.2.
2. Open the front door.
3. Remove two leads of in use LED from J3 connector by pushing down on tabs with tweezers. (BLACK to J3-A10, RED to J3-B10)

   NOTE: Remove leads with the lead clamp and lead stopper slightly open.

4. Remove the front bezel mounting screws and pull out the front bezel assembly in front.
5. Reverse the above procedure for replacement.

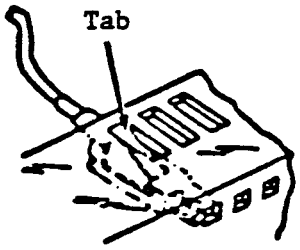


Fig. 4.13.1

NOTE: When installing the front bezel assembly, push it against the main frame and the main frame stopper.

CAUTION: Do not lift the carrier by fingers to avoid stress against the head arm.

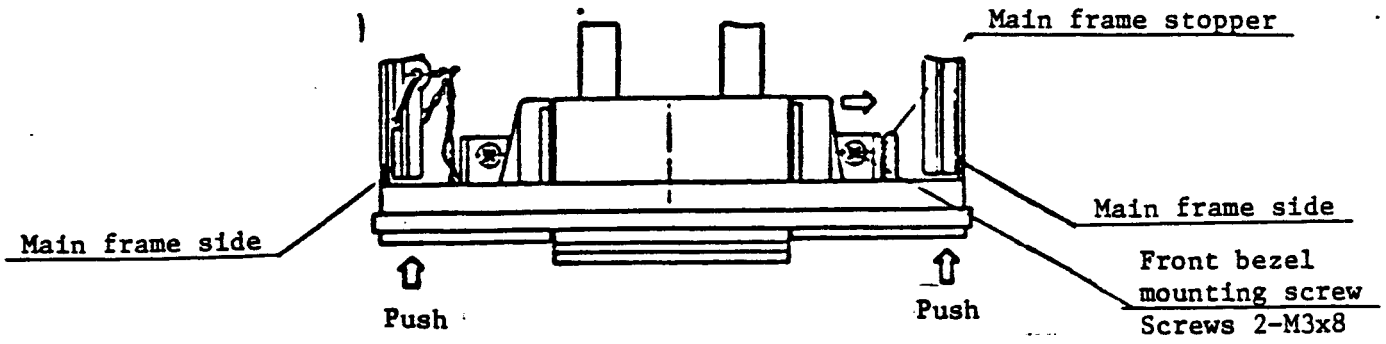


Fig. 4.13.1

4.14 STEPPER (Physical Locations 3 in Chapter 5)

4.14.1 SERVICE CHECK

1. Turn on power.
2. Verify carriage seek to be correct by applying DIRECTION and STEP signals.

4.14.2 REMOVAL AND REPLACEMENT

1. Remove the PWB. Reference section 4.2.
2. Bring the carriage assembly as close to the frame as possible by turning the TR00 stopper.
3. Remove the head cable of carriage assembly with the head cable clamp of door guide R slightly open.
4. Cut the J3 cable clamp.

   CAUTION: Avoid damage to the lead covering when cutting the cable clamp.
5. Remove six leads of stepper from J3 connector by pushing down on tabs with tweezers.
   (BLACK to J3-A5, YELLOW to J3-A6, BROWN to J3-A7, RED to J3-B5, RED to J3-B6, ORANGE to J3-B7)

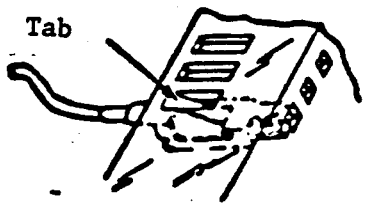


Fig. 4.14.1

6. Remove the ball spring set (retainer, filter, leaf spring and ball) by removing leaf spring mounting screws.

   CAUTION: Do not lose the ball.
7. Loosen the stepper mounting screws until the stepper turns easily.
8. Pull out the stepper while turning it and holding the carriage assembly by hand.
9. Remove TR00 stopper from stepper shaft by loosening the hex socket setscrew of TR00 stopper.
10. Reverse the above procedure for replacement.

    CAUTION: Give a few drops of lubricant (Apollo first oil) to the groove and surface of stepper shaft and the felt.

11. Adjust carriage assembly positioning. (Reference section 4.15.3.)
12. Adjust TR00 stopper.

4.14.3 ADJUSTMENT

1. Adjust carriage assembly positioning. (Reference section 4.15.3.)

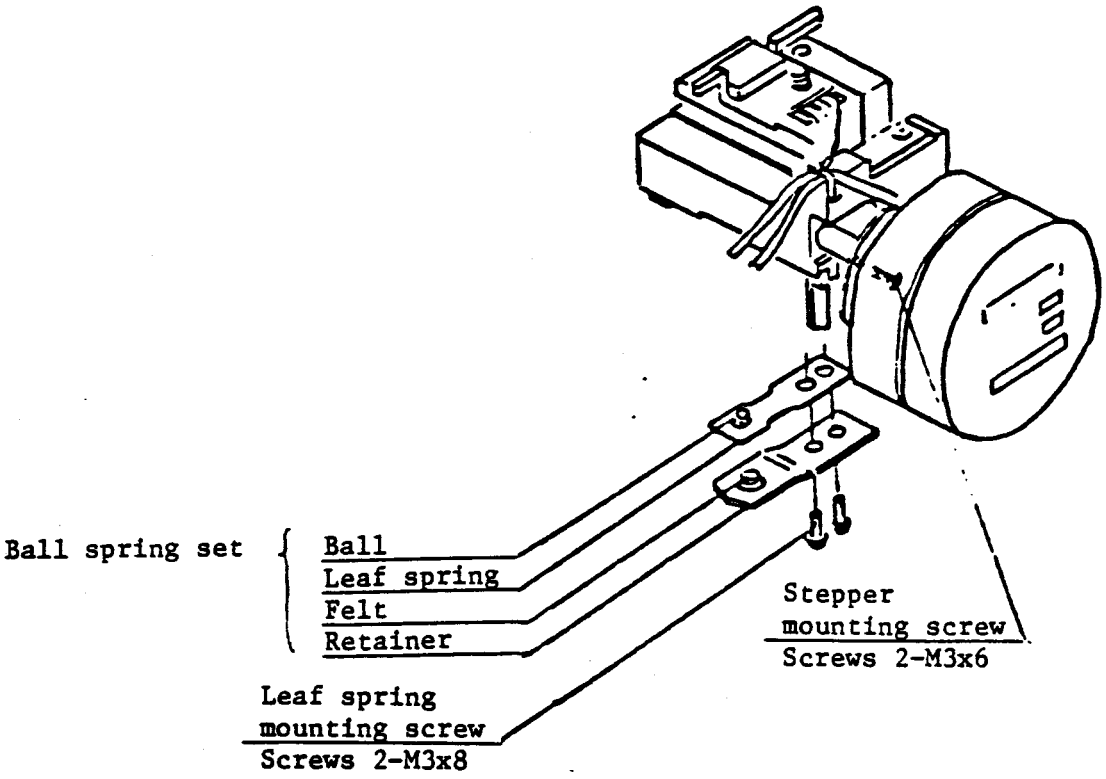


Fig. 4.14.2

4.15 CARRIAGE ASSEMBLY (Physical Locations 4 in Chapter 5)

CAUTION: The carriage assembly is factory-adjusted and tested. Do not, for any reason, try to disassemble or adjust this internal component.

4.15.1 POSITIONING SERVICE CHECK

1. Turn on power.
2. Connect oscilloscope to "TP1A", "TP1B" and "TP3", one probe (CH1) to "TP1A", the other (CH2) to "TP1B" and the external trigger to "TP3".
   Set the oscilloscope as follows.

INPUT COUPLING MODE	AC
VERT MODE	ADD
INVERT	ON
TIME/DIV	20 msec
VOLTS/DIV (CH1, CH2)	50 mV

3. Insert a CE disk and close the door.
4. Load the head and step outward until TR00 signal (J1-9) goes low (0 to 0.4 V).
5. Step the carriage from track 00 to track 16 and observe read output on oscilloscope as shown in figure 4.15.1.

When B is larger than A,

$A/B > 0.6$

When A is larger than B,

$B/A > 0.6$

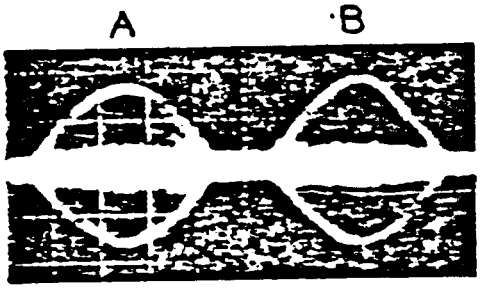


Fig. 4.15.1

6. Step the carriage from track 34 to 16 and verify read output is as in step 6.

4.15.2 REMOVAL AND REPLACEMENT

1. Remove the PWB. (Reference section 4.2.)
2. Remove the carrier assembly. (Reference section 4.11.)
3. Remove the stepper. (Reference section 4.14.)
4. Pull out the carriage assembly.
5. Reverse the above procedure for replacement.

CAUTION: Give a few drops of lubricant to the stepper shaft and move the carriage throughout travel one or two times.
Lubricant: Apollo first oil

4.15.3 POSITIONING

1. Adjust the clearance between head surfaces for 0.3 to 0.7 mm. (Reference section 4.10.3.)
2. Connect oscilloscope to "TP1A", "TP1B" and "TP3" on PWB, one probe (CH1) to "TP1A", the other (CH2) to "TP1B" and the external trigger to "TP3".
   Set the oscilloscope as follows.

INPUT COUPLING MODE	AC
VERT MODE	ADD
INVERT	ON
TIME/DIV	20 msec
VOLTS/DIV (CH1, CH2)	50 mV

3. Insert a CE disk and close the door.
4. Load the head and look for a track around track 16 to have the positioning signal as shown in figure 4.15.3.
5. Press the button of TR00 switch assembly microswitch. Proceed to step 7 if TR00 signal (J1-26) goes low (0 to 0.4 V).
6. If TR00 signal does not go low, move one step inward and turn the stepper clockwise until the positioning signal appears when the relative locations of stepper flange and stepper mounting screws are as in figure 4.15.2 (a). Move one step outward and turn the stepper counterclockwise until the positioning signal appears when as in figure 4.14.2 (b).

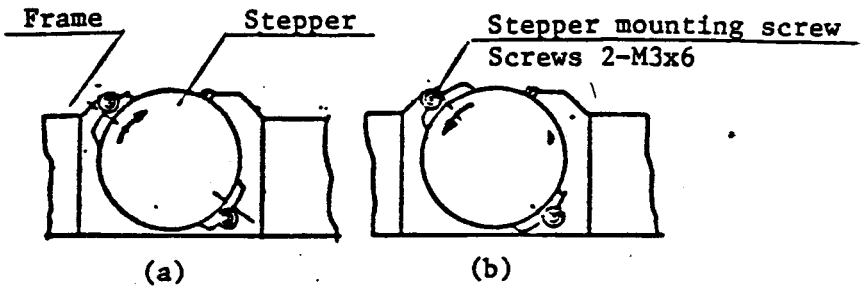


Fig. 4.15.2

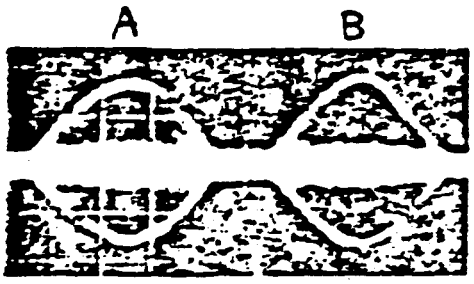
7. Rotate the stepper until A/B or B/A of SIDE 0 read output is within 1.0 to 0.9 and tighten the stepper mounting screws.
8. Step the carriage from track 17 to 16 and verify A/B or B/A of read output for 1.0 to 0.6. Repeat step 7 if out of 1.0 to 0.6.

When B is larger than A

$A/B > 0.6$

When A is larger than B

$B/A > 0.6$

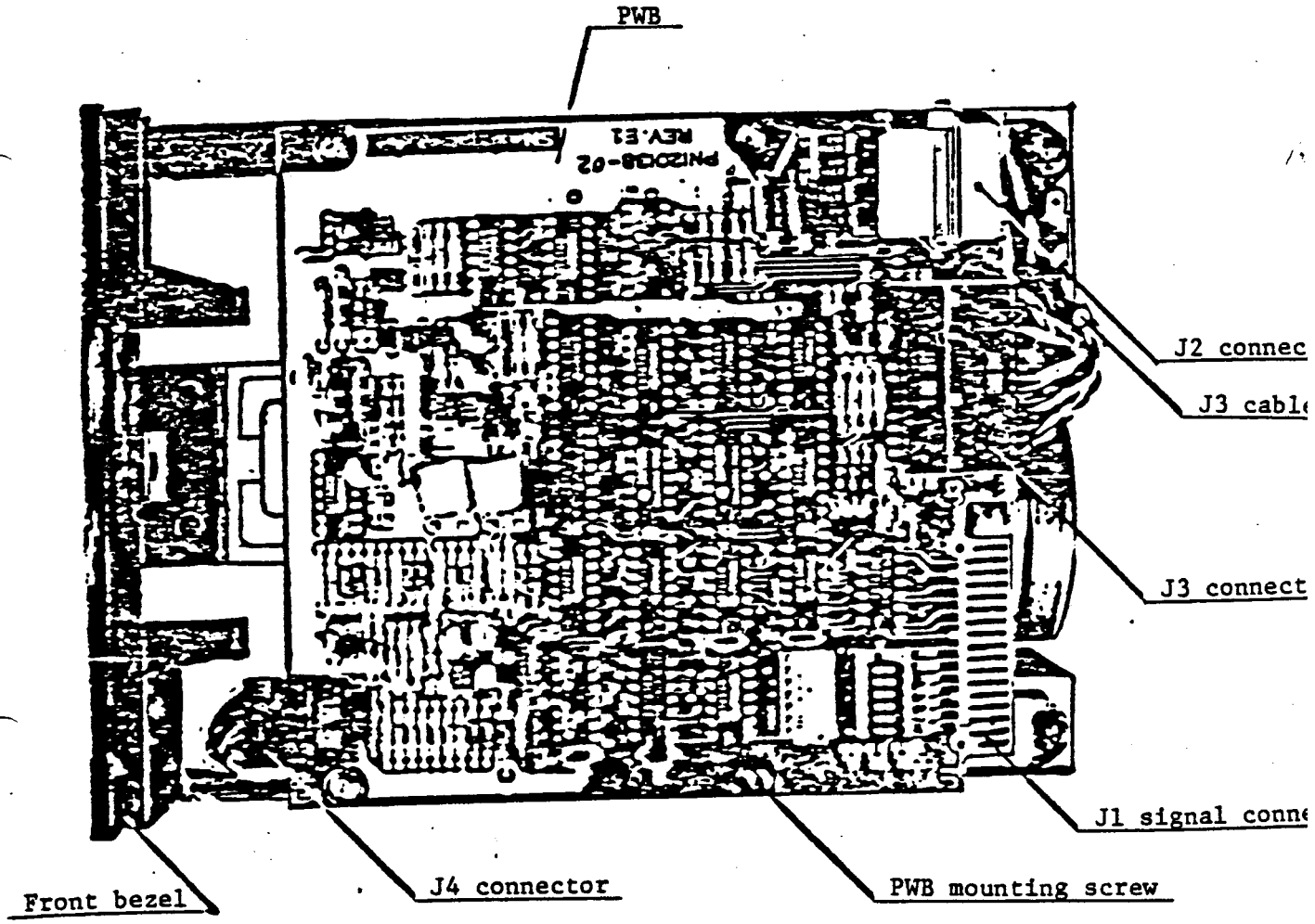


Positioning signal

Fig. 4.15.3

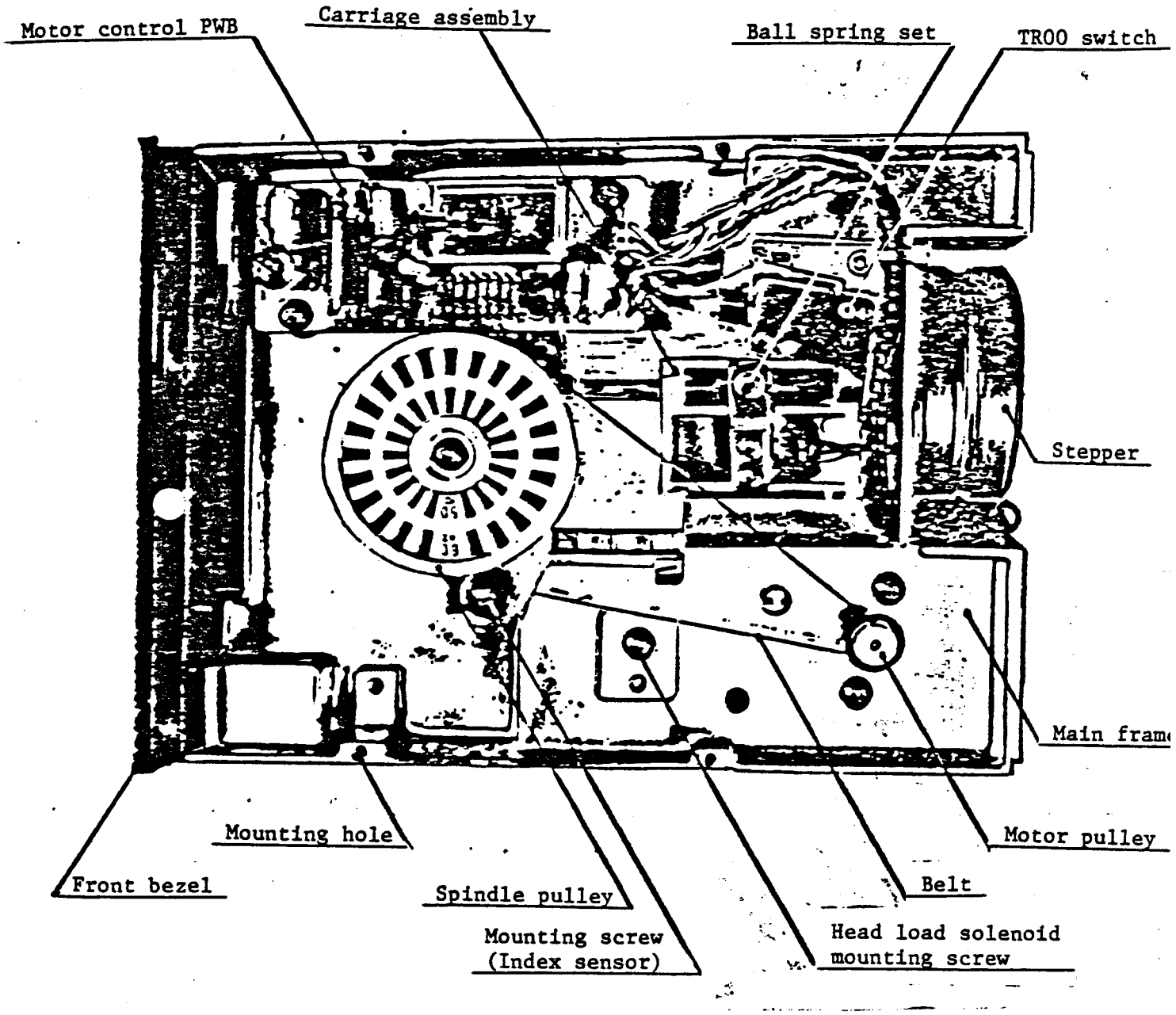
9. Perform TR00 switch assembly adjustment. (Reference section 4.8.3.)
10. Perform TR00 stopper adjustment. (Reference section 4.9.2.)

5. PARTS/ASSEMBLIES LOCATIONS



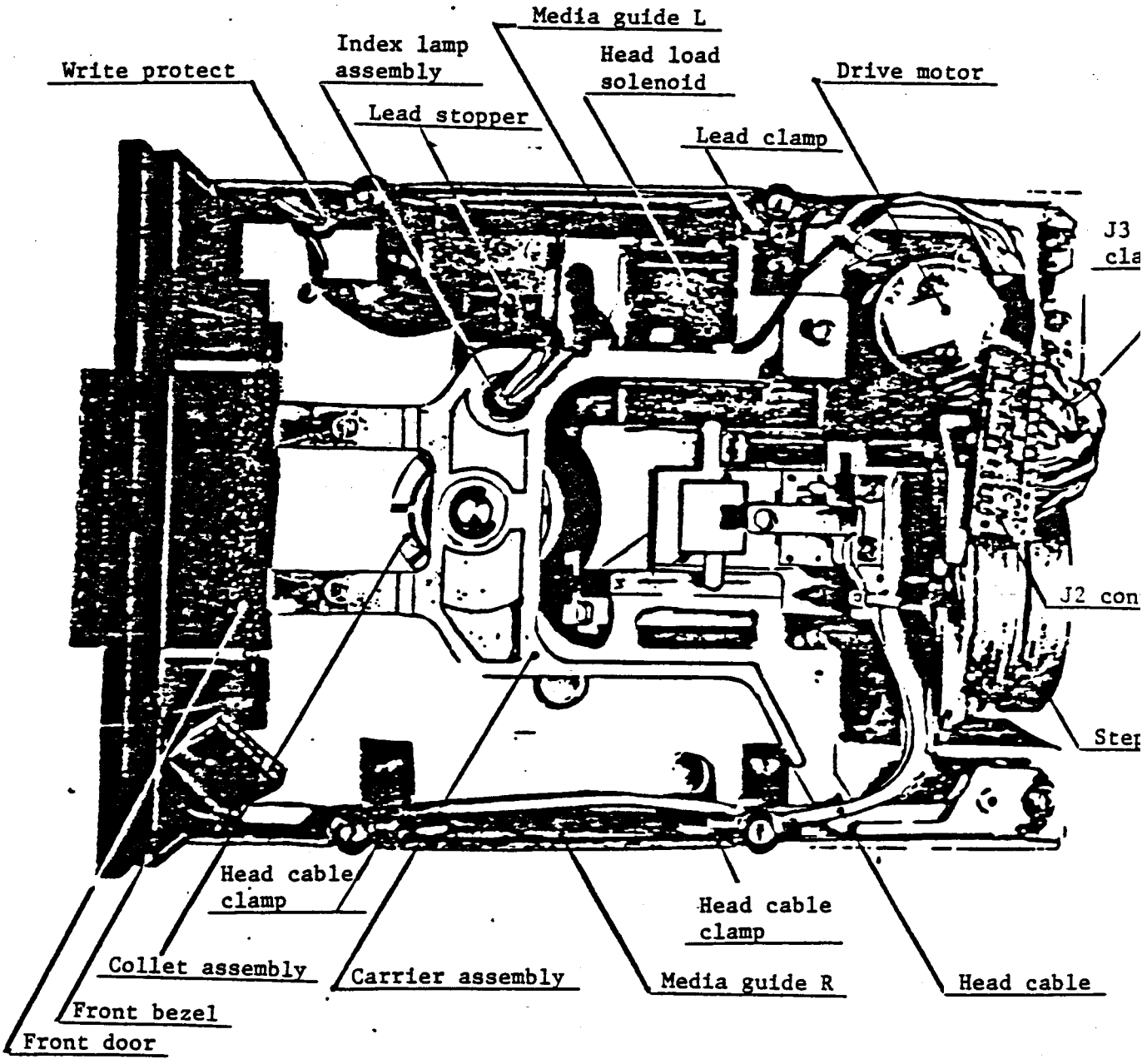
- Top view of YD-274 -

(Physical locations 1)



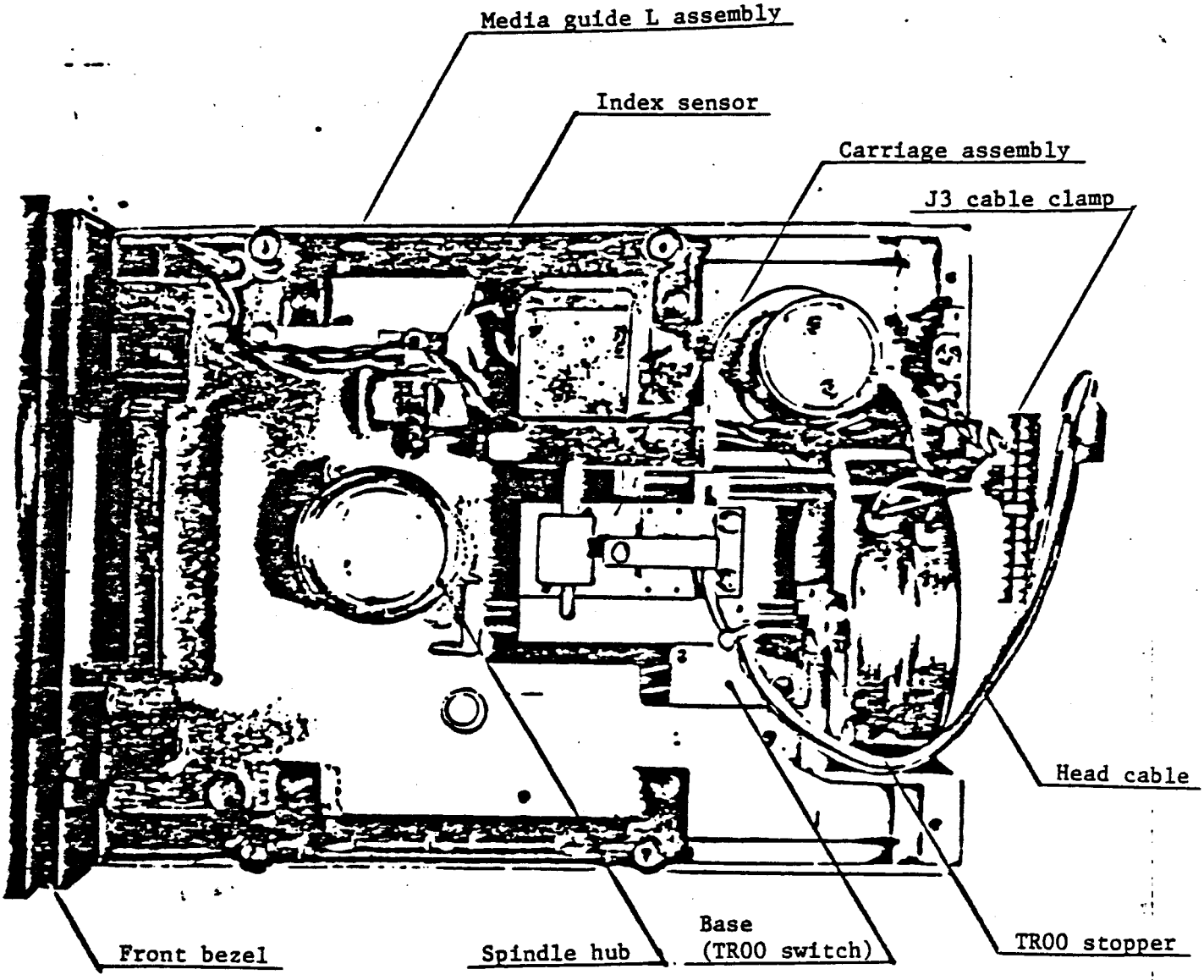
- Bottom view of YD-274 -

(Physical locations 2)



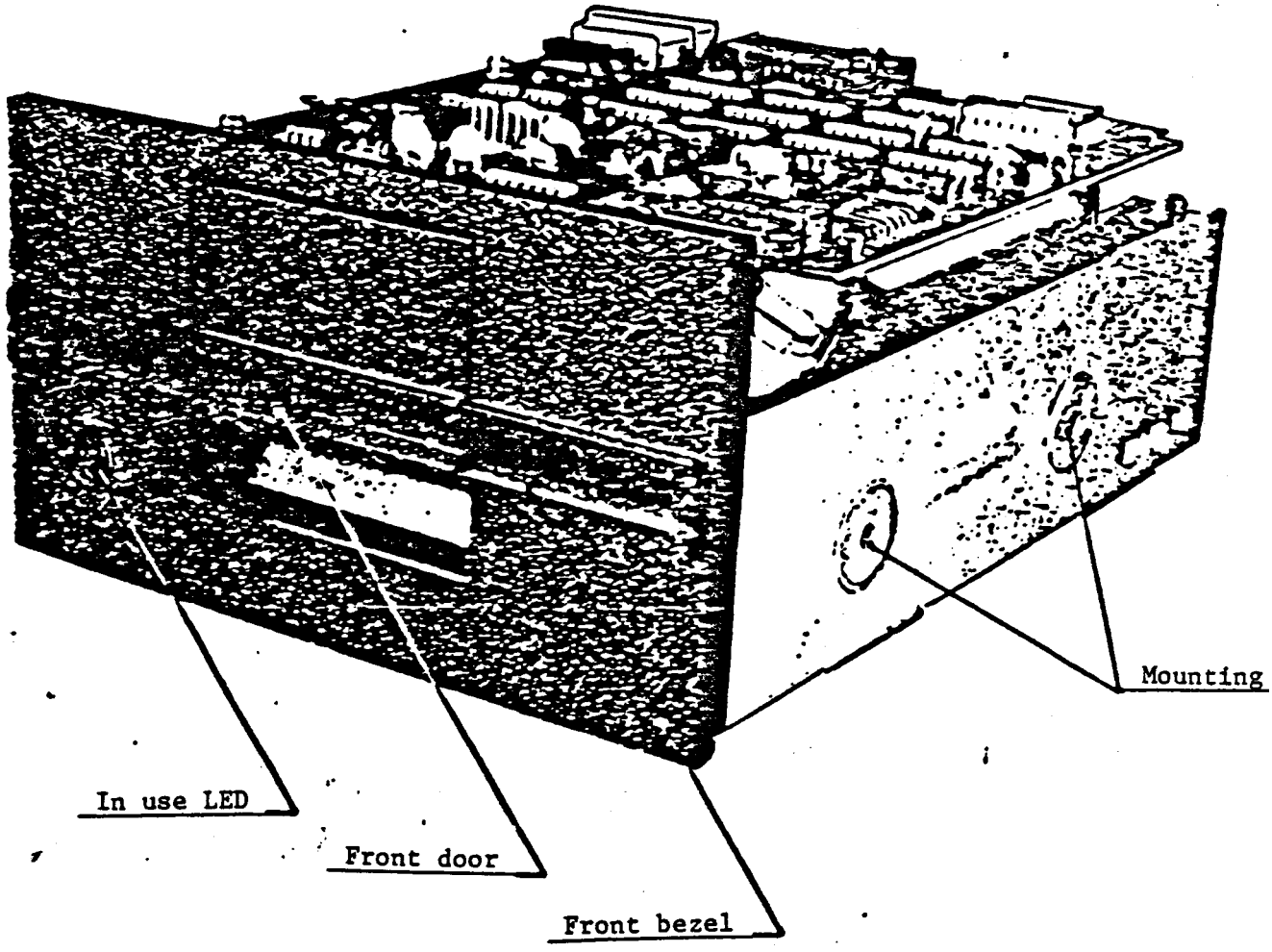
- Top view of YD-274 with PWB removed -

(Physical locations 3)



- Top view of YD-274 with PWB removed -

(Physical locations 4)

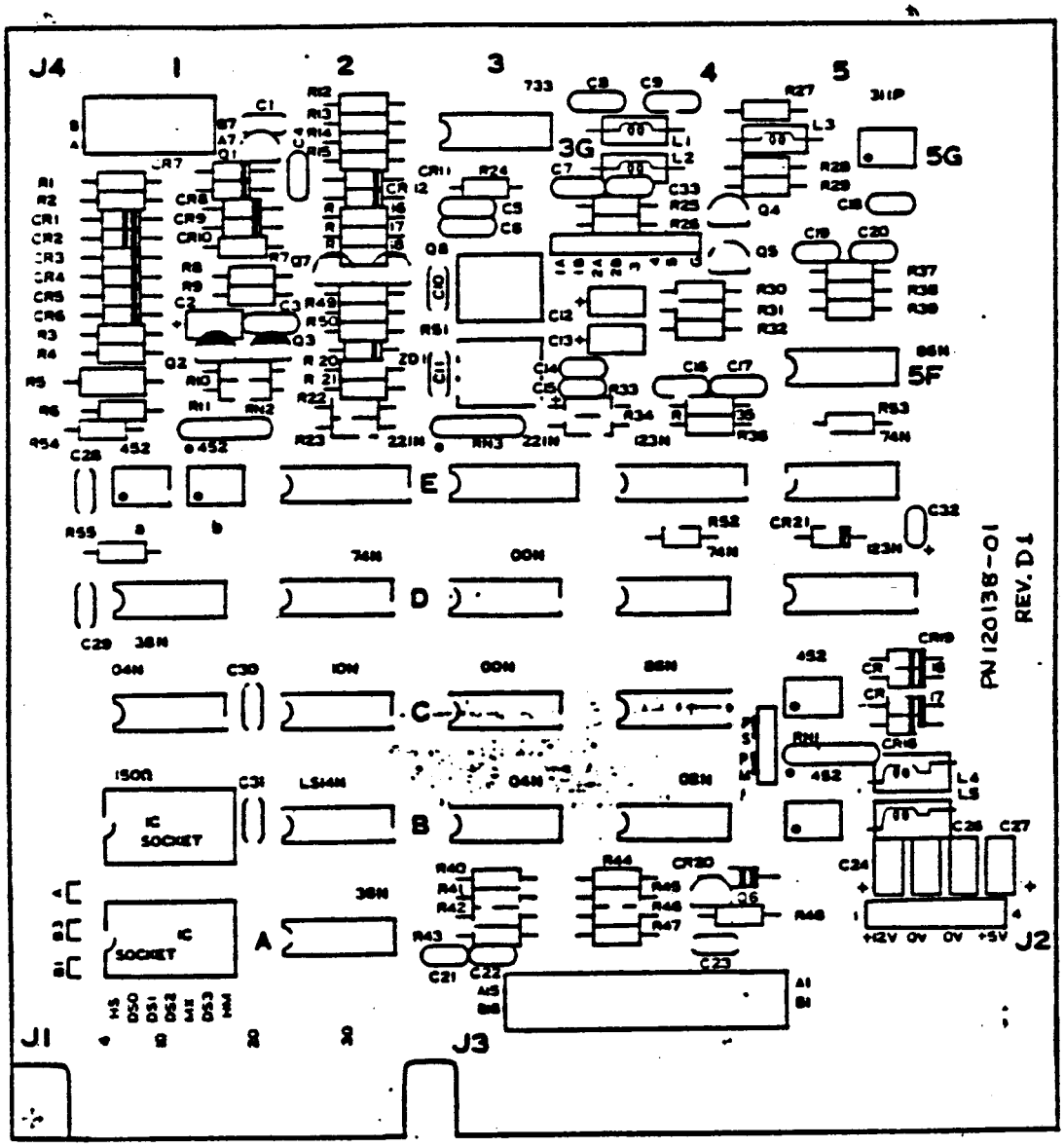


- Front view of YD-274 -

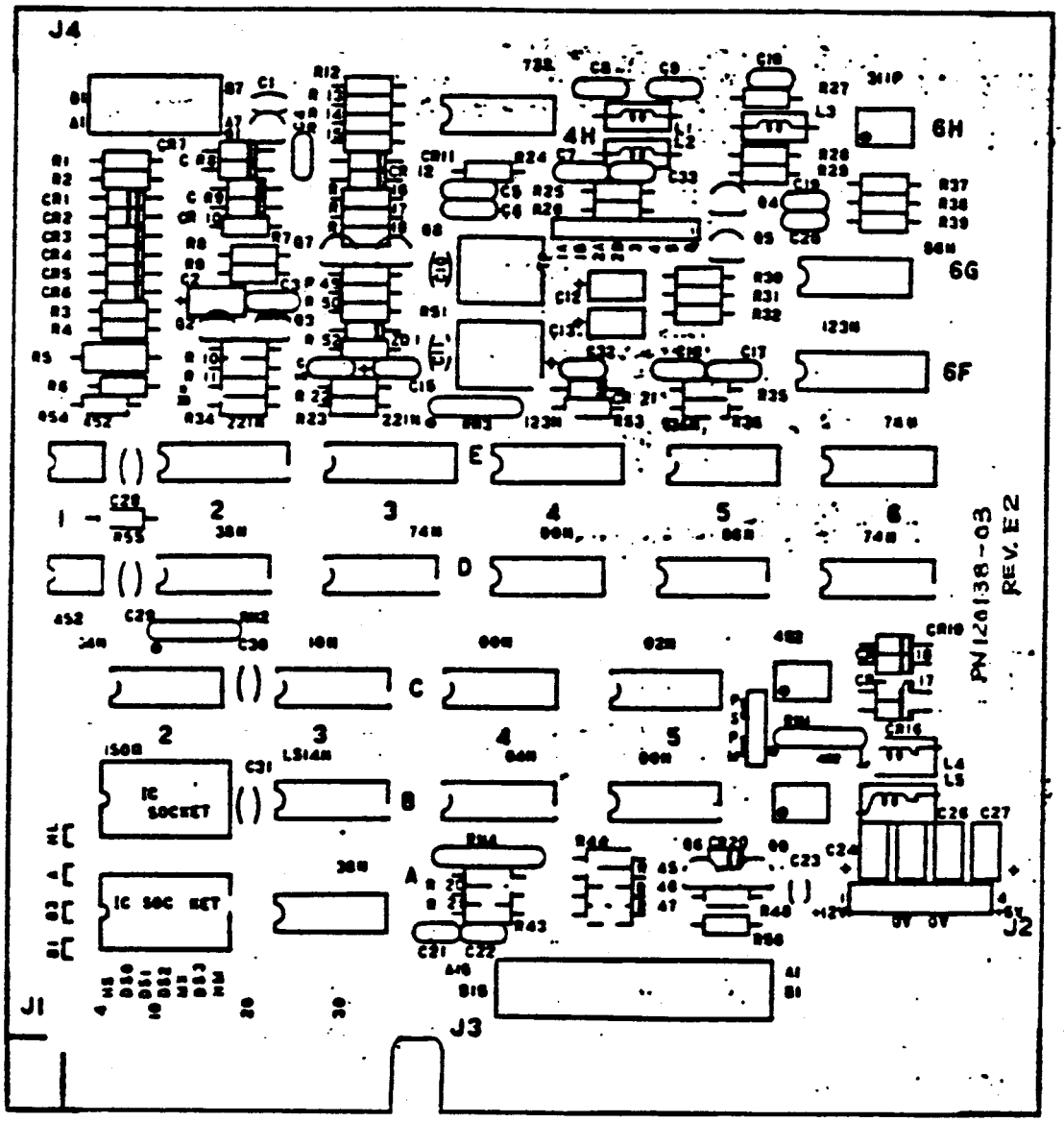
(Physical locations 5)

6. TEST POINTS/CONNECTOR PIN ASSIGNMENTS

PWB for Model 1301 P/N 120138-01



PWB for Model 1303 and 1304 P/N 120138-03



INTERFACE - J1

Pin No.	Signal Name
1	RETURN
2	---
3	RETURN
4	RESERVED
5	RETURN
6	DRIVE SELECT 3
7	RETURN
8	INDEX
9	RETURN
10	DRIVE SELECT 0
11	RETURN
12	DRIVE SELECT 1
13	RETURN
14	DRIVE SELECT 2
15	RETURN
16	MOTOR ON
17	RETURN
18	DIRECTION SELECT
19	RETURN
20	STEP
21	RETURN
22	WRITE DATA
23	RETURN
24	WRITE GATE
25	RETURN
26	TRACK 00
27	RETURN
28	WRITE PROTECT
29	RETURN
30	READ DATA
31	RETURN
32	SIDE ONE SELECT
33	RETURN
34	RESERVED

TRANSDUCER - J3

Pin No.	Signal Name	color
A1	MOTOR ON	blue
B1	+12V (DRIVE MOTOR)	red
A2	FRAME GROUND	brown
B2	+12V RETURN (DRIVE MOTOR)	black
A3		
B3		
A4	HEAD LOAD	green
B4	Head load +12VDC	white
A5	STEPPER A	black
B5	+12V (STEPPER)	red
A6	STEPPER B	yellow
B6	+12V (STEPPER)	red
A7	STEPPER C	brown
B7	STEPPER D	orange
A8	TR00 SWITCH(NORMAL CLOSE)	yellow
B8	KEY	
A9	TR00 SWITCH(NORMAL OPEN)	green
B9	TR00 SWITCH RETURN	white
A10	IN USE LED RETURN	black
B10	+ IN USE LED	red
A11	INDEX LED RETURN	black
B11	+ INDEX LED	white
A12	INDEX PTX RETURN	black
B12	+ INDEX PTX	blue
A13	W/P LED RETURN	black
B13	+ W/P LED	yellow
A14	W/P PTX RETURN	black
B14	+ W/P PTX	orange
A15		
B15		

HEAD - J4

Pin No.	Signal Name	color
A1	SHIELD (HEAD0)	
B1	SHIELD (HEAD1)	
A2		
B2	KEY	
A3	ERASE (HEAD0)	red
B3	ERASE (HEAD1)	red
A4	W/R ERASE RETURN (HEAD0)	green
B4	W/R ERASE RETURN (HEAD1)	green
A5	W/R (HEAD0)	black
B5	W/R (HEAD1)	black
A6		
B6		
A7	W/R (HEAD0)	white
B7	W/R (HEAD1)	white

DC - J2

Pin No.	Signal Name
1	+12VDC
2	+12V RETURN
3	+5V RETURN
4	+5V DC

TEST POINTS

Pin No.	Signal Name
1A	PRE AMP 1A
1B	PRE AMP 1B
2A	PRE AMP 2A
2B	PRE AMP 2B
3	INDEX
4	ERASE
5	TRACK 00
9	GROUND

7. RECOMMENDED SPARE PARTS LIST

Maintenance Level 1

P/N	Part Description
140622-01	Belt
120138-01	PWB (Model 1301)
120138-03	PWB (Model 1303 and 1304)
140630-01	Index Lamp Assembly
120151-01	Media Guide L Assembly (with Write Protect Sensor & Lamp)
140640-01	In Use LED Assembly
130246-01	Drive Motor Assembly (with Motor Control PWB)

Maintenance Level 2

P/N	Part Description
140623-01	Index Sensor Assembly
140621-01	TR00 Switch Assembly
130250-01	Head Load Solenoid Assembly
120145-02	Carrier Assembly
130252-01	Front Door Assembly
130253-01	Front Bezel Assembly
130247-01	Stepper
120200-01	Carriage Assembly

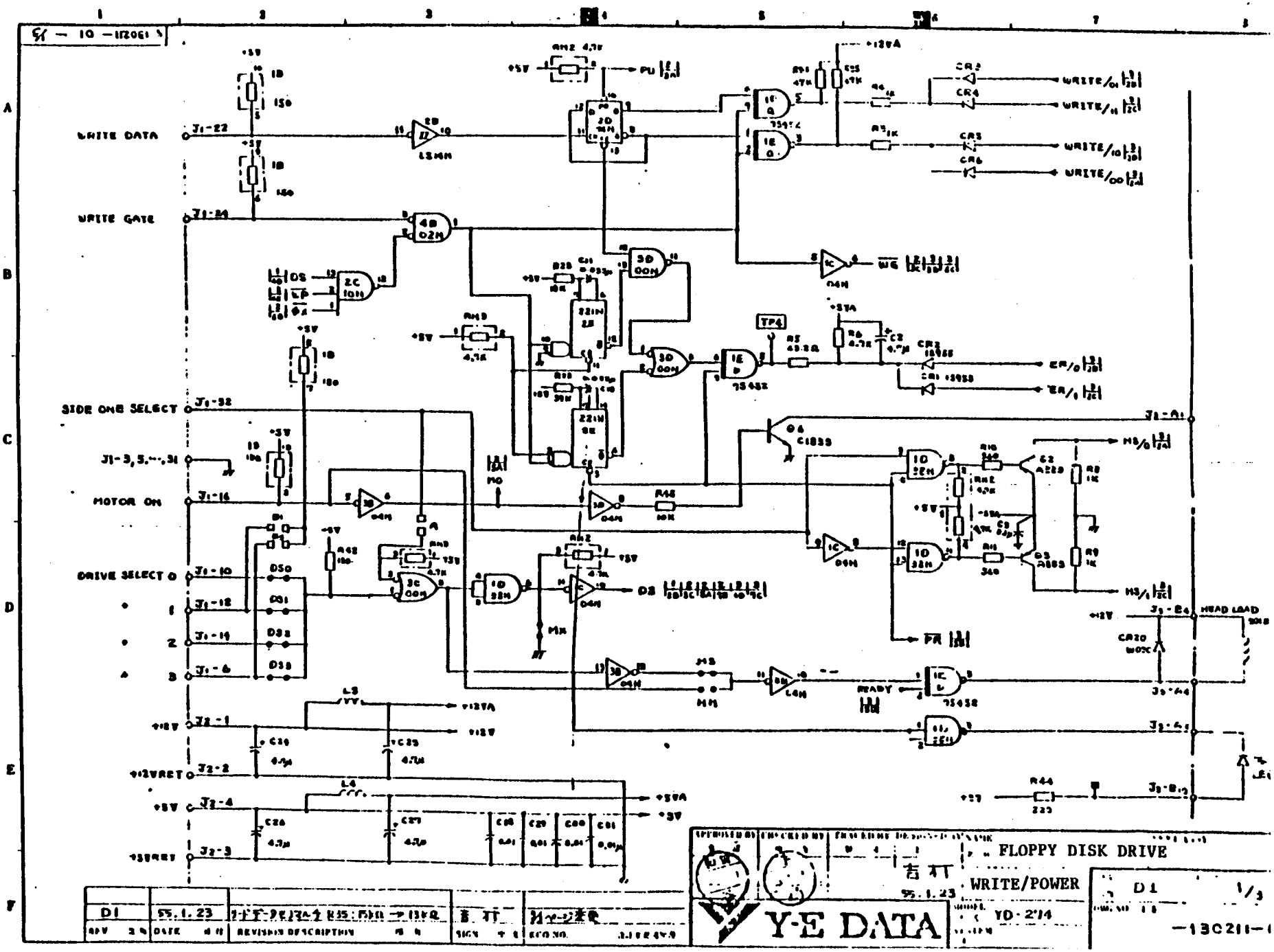
8. Schematics

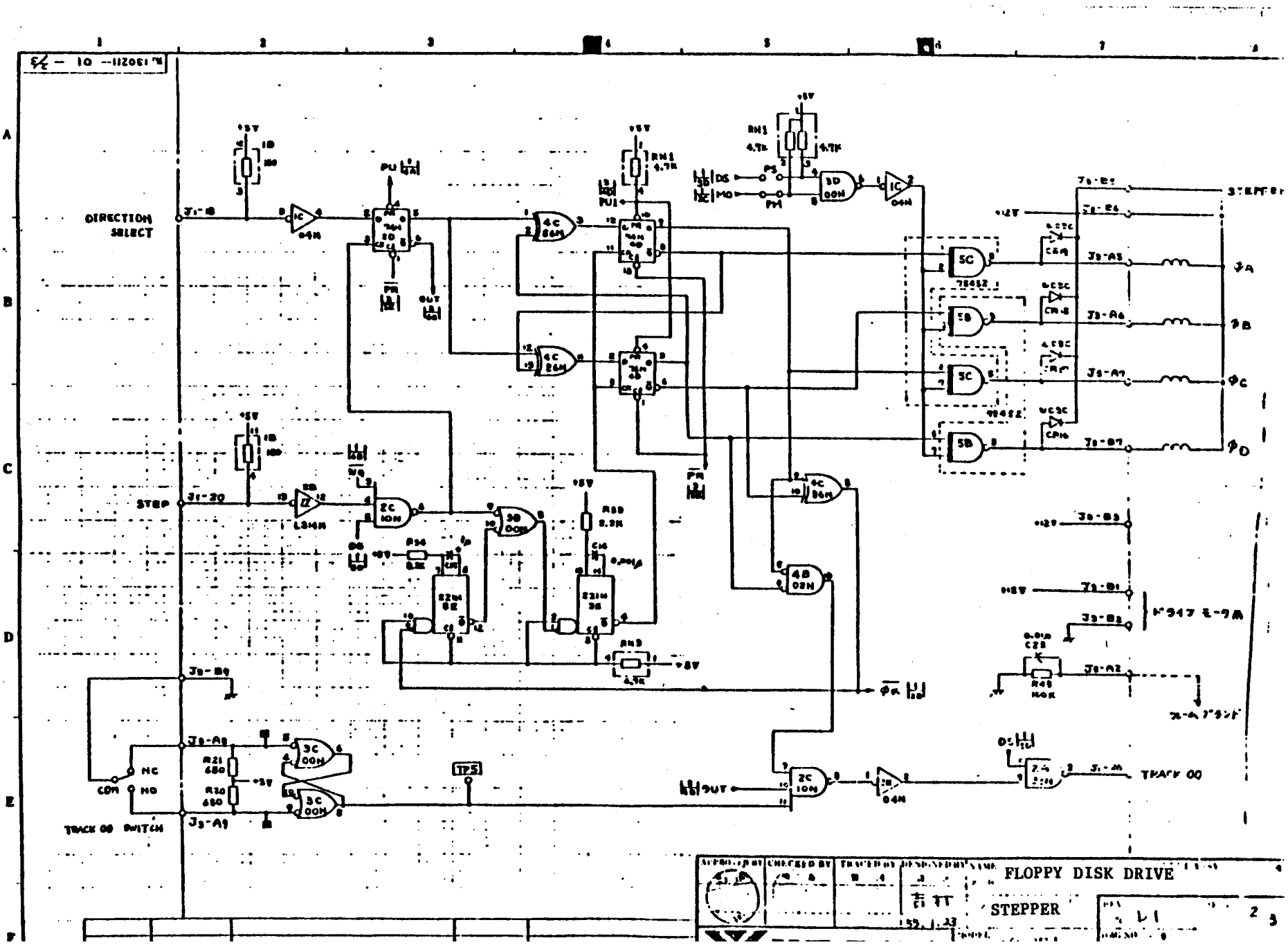
1. Revision of schematics is controlled under revision code and the revision code is printed on the PWB and the schematics.

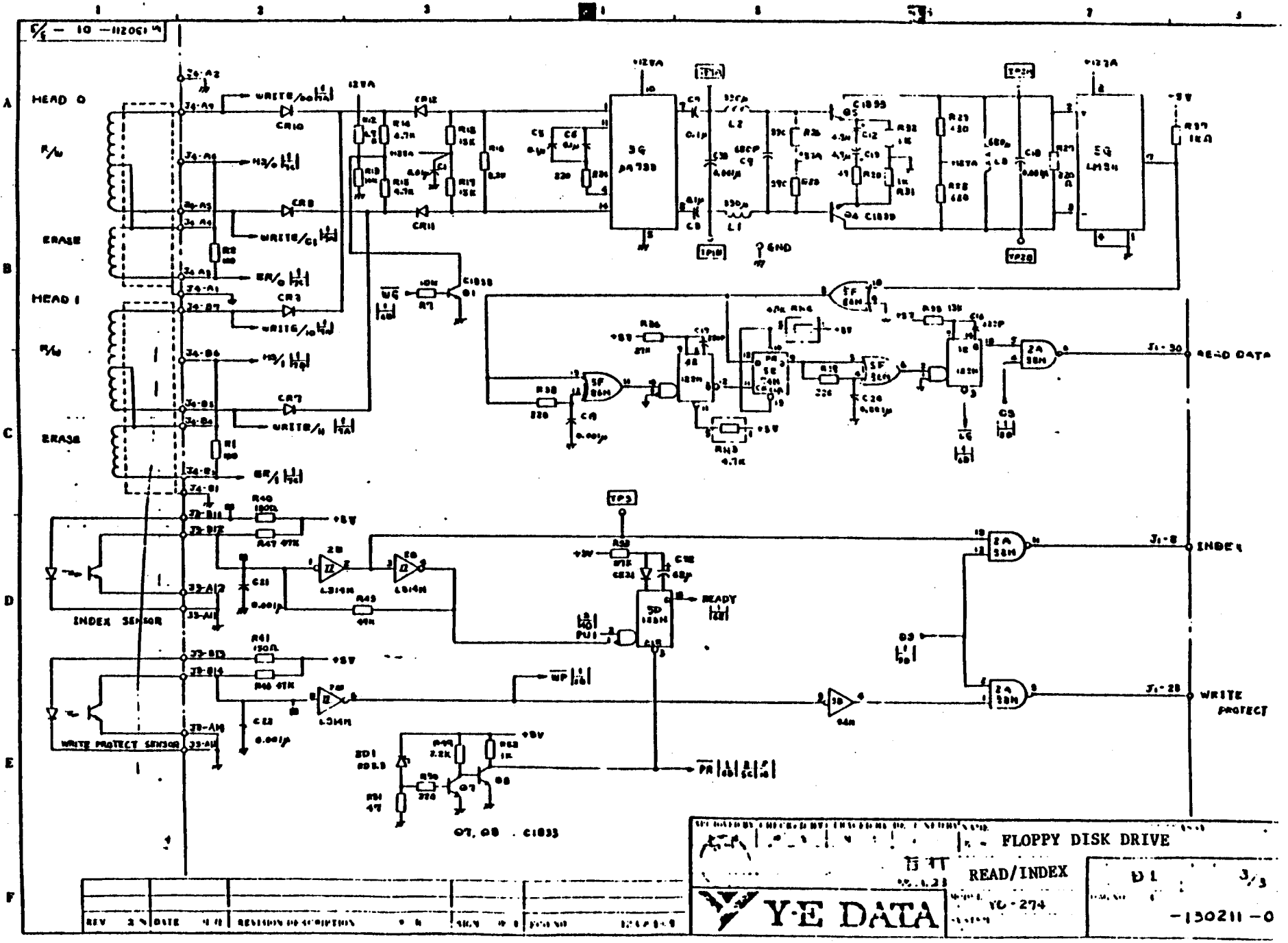
2. The revision code of attached schematics is as follows.

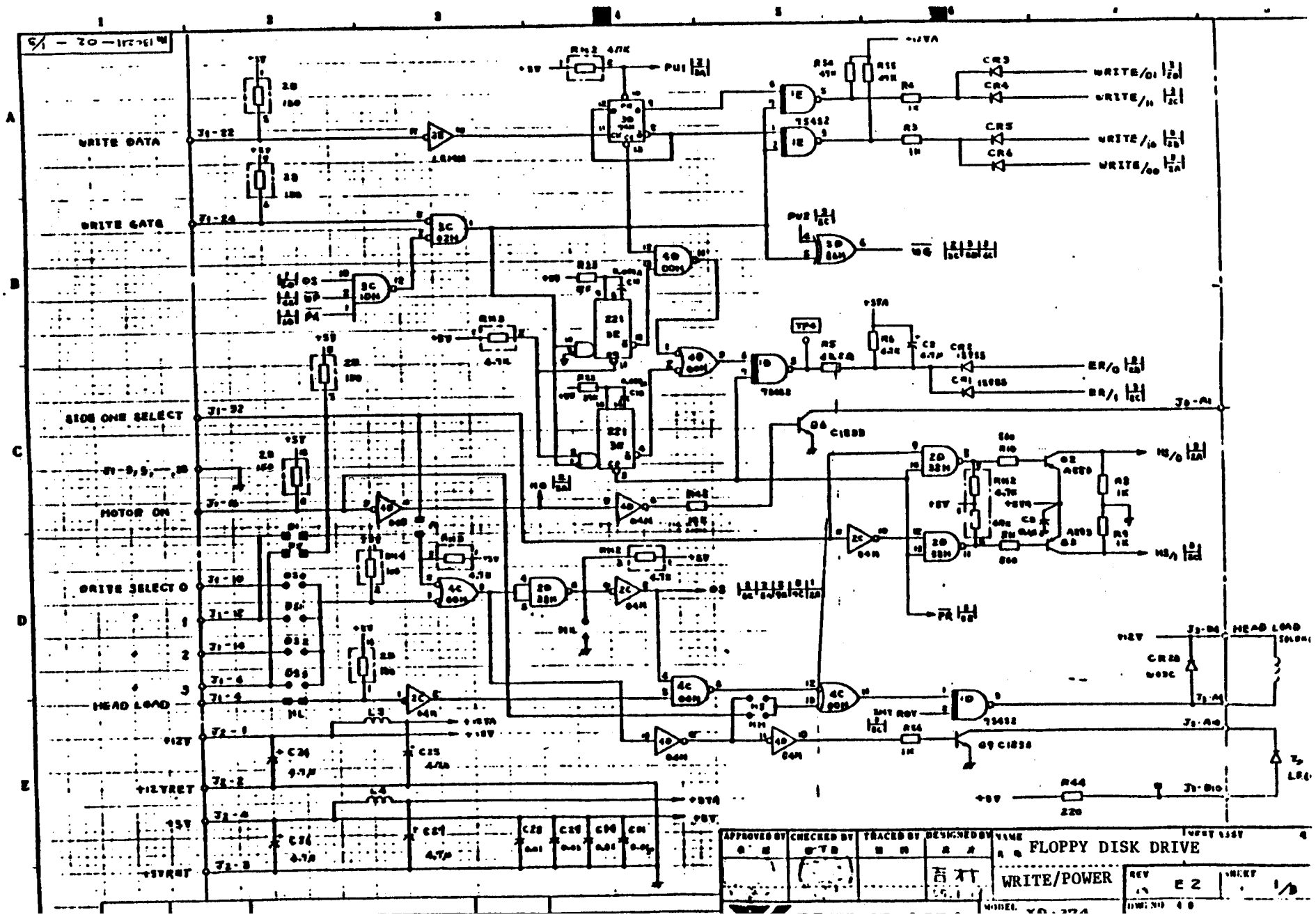
Model	P/N	Drawing Rev.
1301	PWB 120138-01	130211-01 Rev. D1
	Motor Control PWB 130330-02	130330-02 Rev. B
1304	PWB 120138-03	130211-02 Rev. E2
	Motor Control PWB 130330-02	130330-02 Rev. B

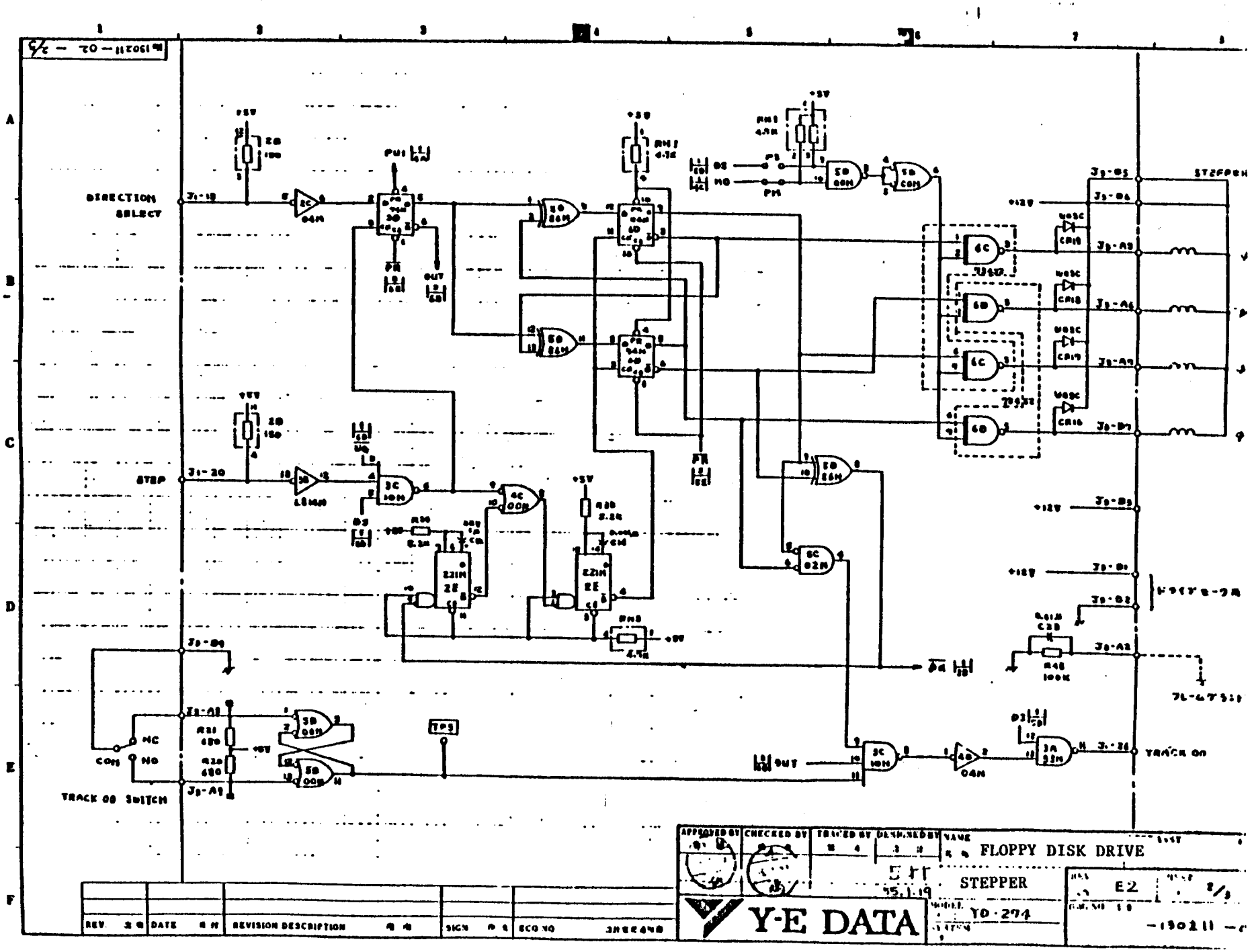
3. For actual maintenance, use the schematics with the same revision as of the specific drive to be maintained.

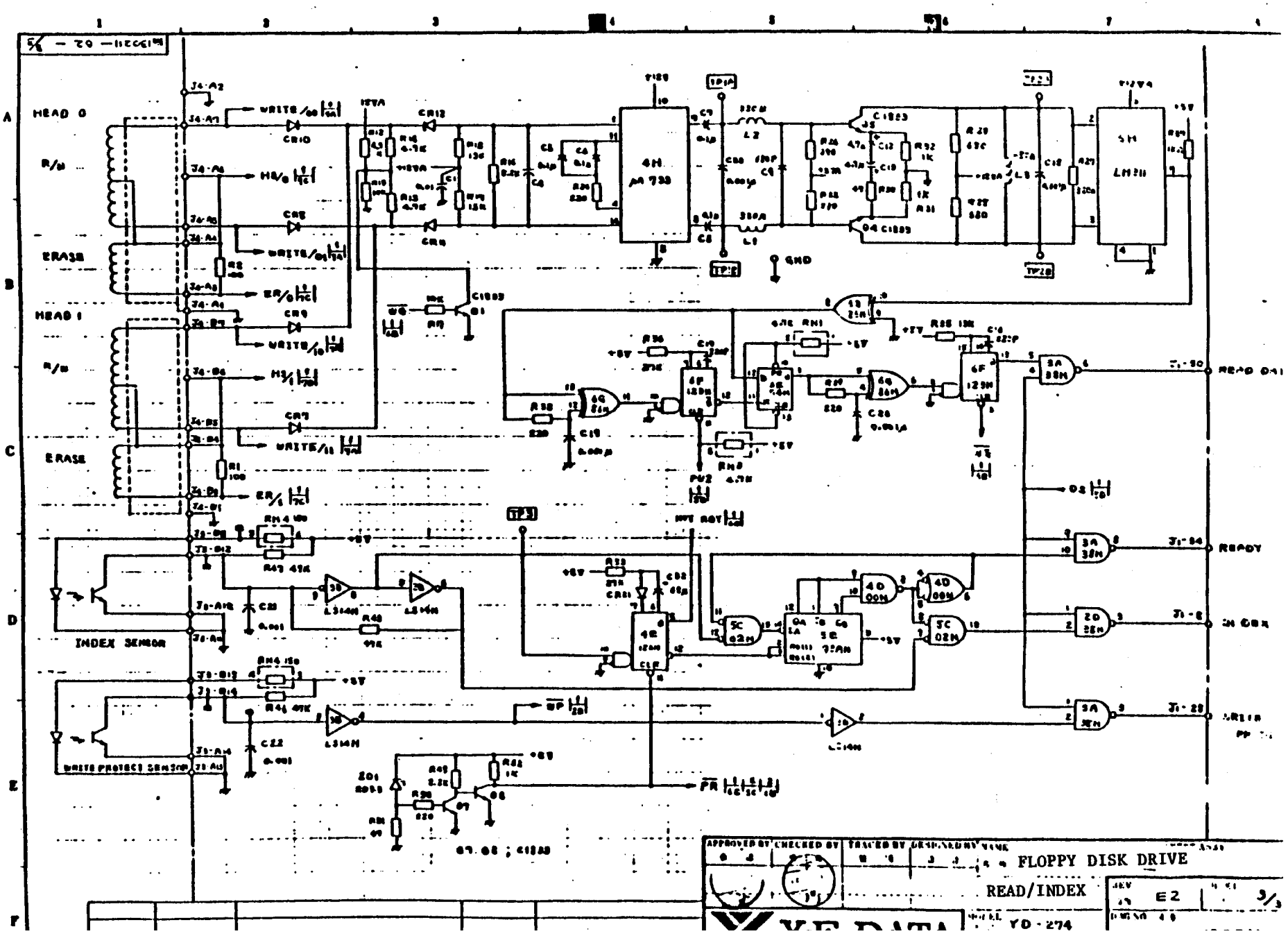

WRITE DATA
WRITE GATE
SIDE ONE SELECT
MOTOR ON
DRIVE SELECT 0
1
2
3
+5V
+12V
+12VRET
+5VRET
WRITE/01
WRITE/11
WRITE/10
WRITE/00
WE
ER/0
ER/1
HS/0
HS/1
HEAD LOAD
READY
FLOPPY DISK DRIVE
WRITE/POWER
YD-214
Y-E DATA

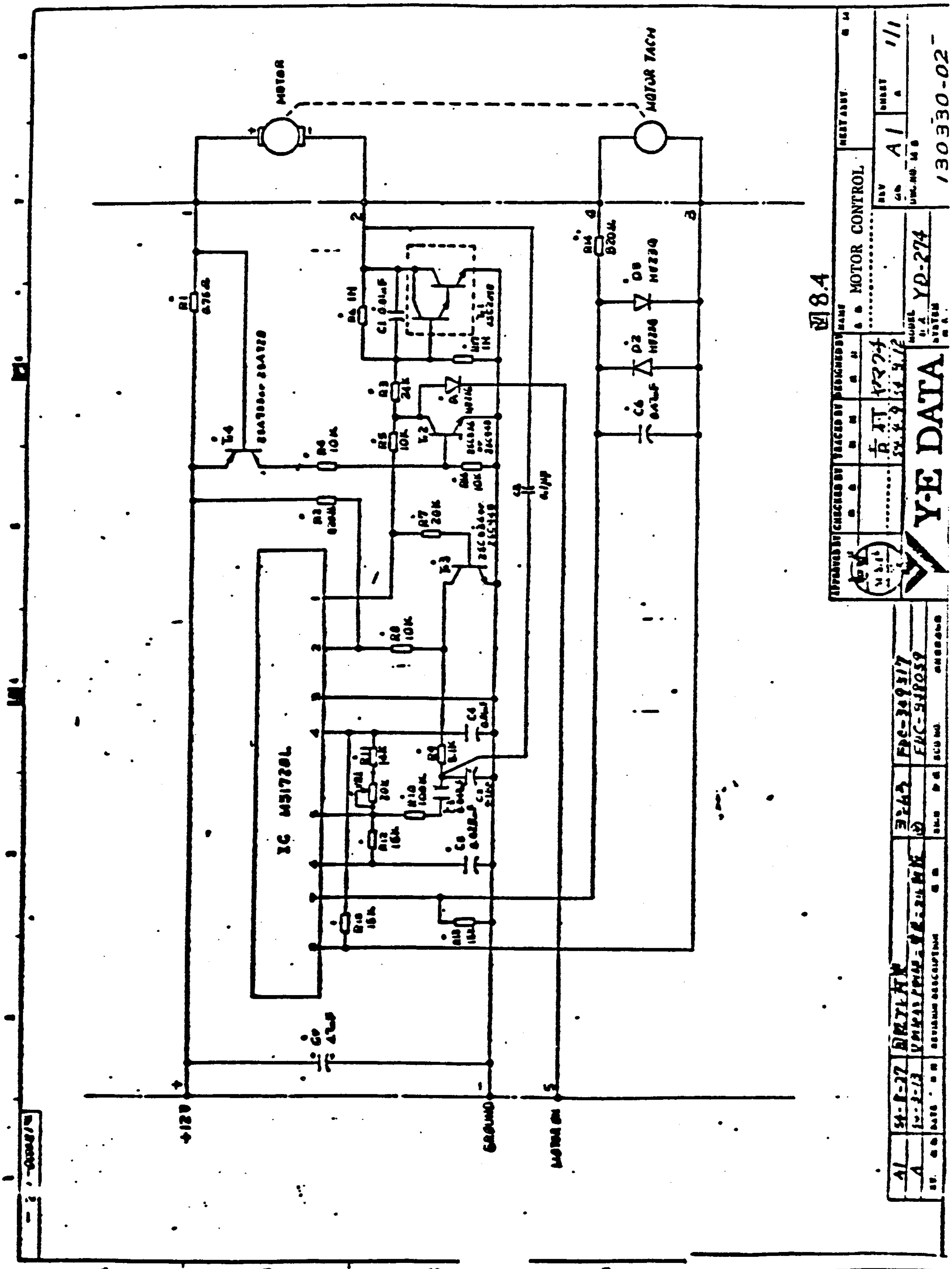

DIRECTION SELECT
STEP
TRACK 00 SWITCH
TPS
TRACK 00
STEPPER
FLOPPY DISK DRIVE


HEAD 0
R/W
ERASE
HEAD 1
R/W
ERASE
INDEX SENSOR
WRITE PROTECT SENSOR
READ DATA
INDEX
WRITE PROTECT
READY
Q7, Q8 : C1833
FLOPPY DISK DRIVE
READ/INDEX
Y-E DATA
D1
3/3
-130211-0


WRITE DATA
WRITE GATE
SIDE ONE SELECT
MOTOR ON
WRITE SELECT 0
1
2
3
HEAD LOAD
+12V
+12VRET
+5V
+5VRET
WRITE/01
WRITE/11
WRITE/10
WRITE/00
WG
ER/0
ER/1
HS/0
HS/1
PR
HEAD LOAD SOLENOID
FLOPPY DISK DRIVE
WRITE/POWER
REV E 2
SHEET 1/3

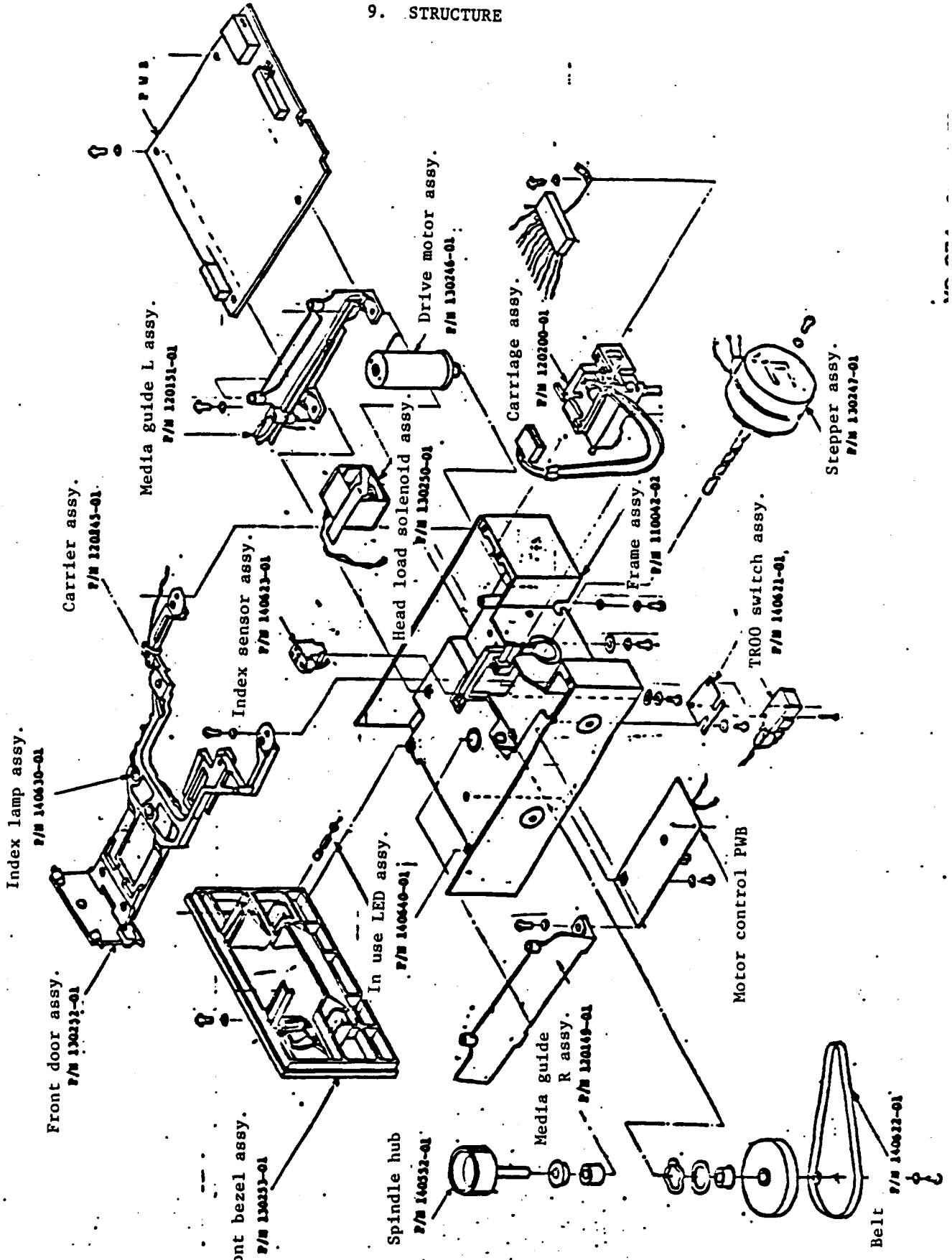

DIRECTION SELECT
STEP
TRACK 00 SWITCH
STEPPER
FLOPPY DISK DRIVE
STEPPER
TD-274
Y-E DATA
E2


HEAD 0
R/W
ERASE
HEAD 1
R/W
ERASE
INDEX SENSOR
WRITE PROTECT SENSOR
GND
READ DATA
READY
INDEX
WRITE
FLOPPY DISK DRIVE
READ/INDEX
YD-274



MOTOR
MOTOR TACH
IC M51720L
+12V
GROUND
MOTOR ON
図8.4
MOTOR CONTROL
Y-E DATA
YD-274
130330-02

適用機種


Media guide L assy.
P/N 120131-01
Drive motor assy.
P/N 130246-01
Carriage assy.
P/N 120200-01
Stepper assy.
P/N 130247-01
Carrier assy.
P/N 120145-01
Index sensor assy.
P/N 140633-01
Head load solenoid assy.
P/N 130250-01
Frame assy.
P/N 110043-02
TR00 switch assy.
P/N 140621-01
Index lamp assy.
P/N 140630-01
In use LED assy.
P/N 140640-01
Motor control PWB
Front door assy.
P/N 130232-01
Media guide
R assy.
P/N 120146-01
Front bezel assy.
P/N 130233-01
Spindle hub
P/N 140632-01
Belt
P/N 140622-01

RETURN LETTER

Title: TWO-SIDED 5.25 INCH FLOPPY DISK DRIVE YD-274, Maintenance Manual RCSL No.: 44-RT1992

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42-i 1288

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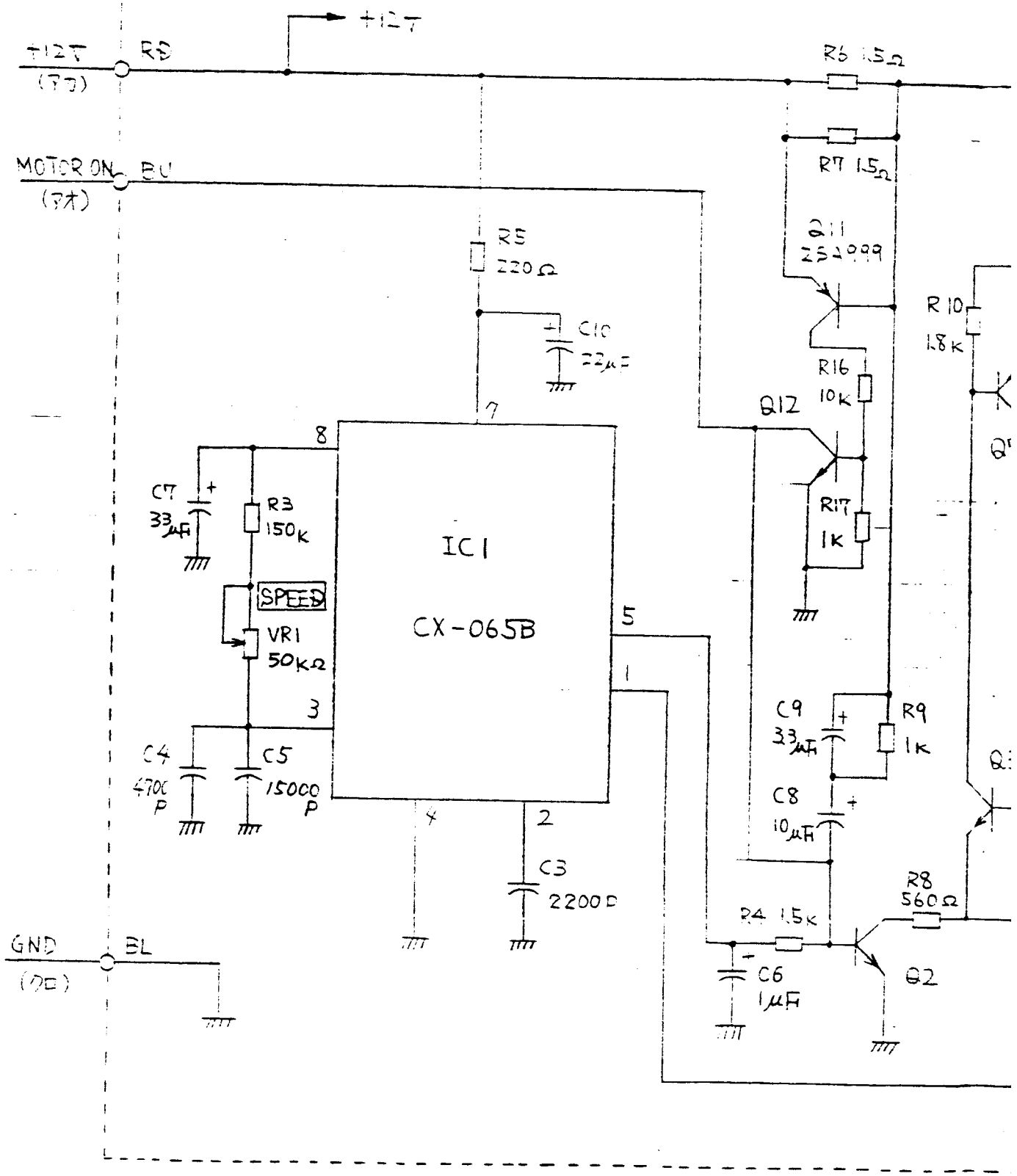
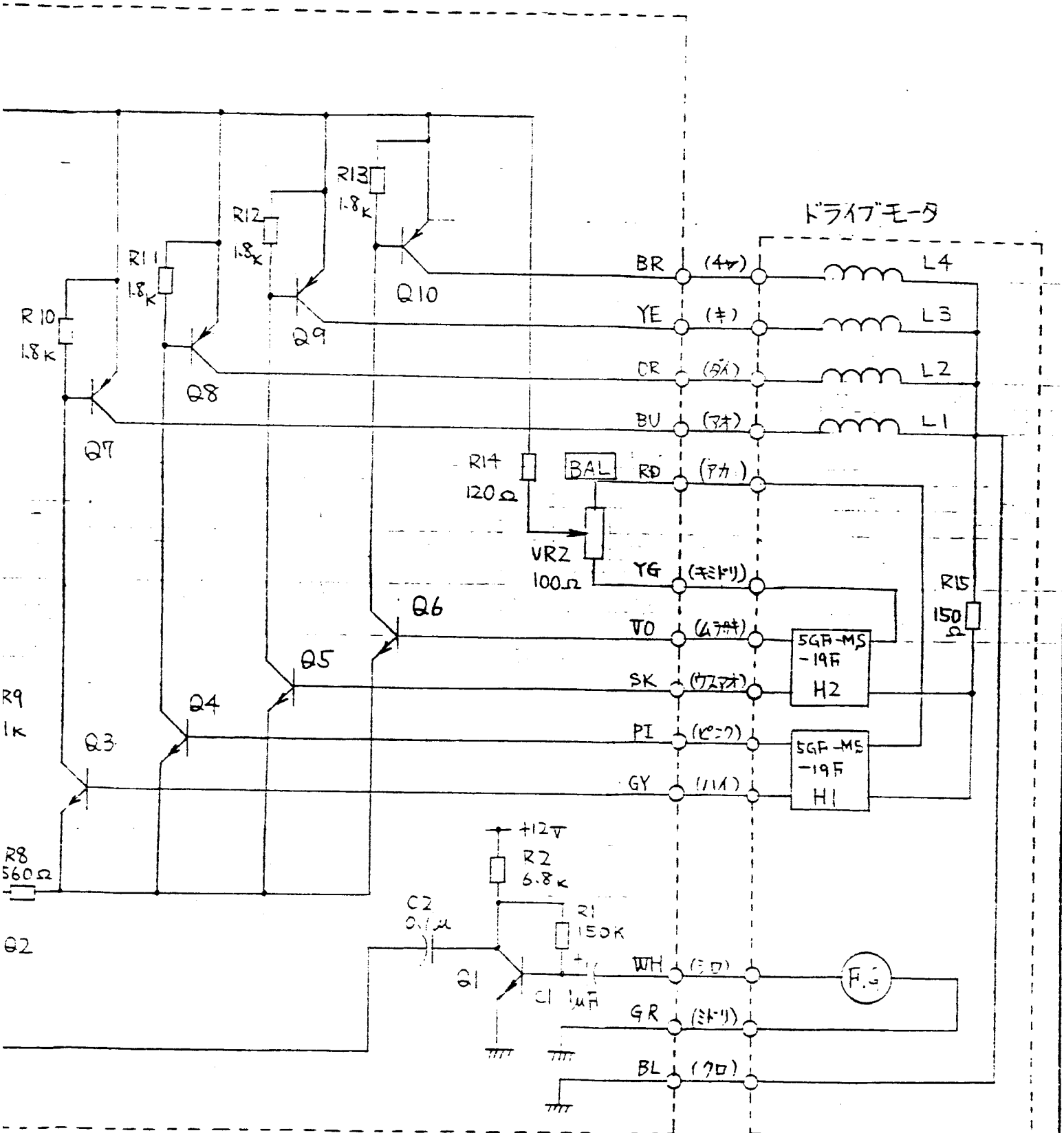


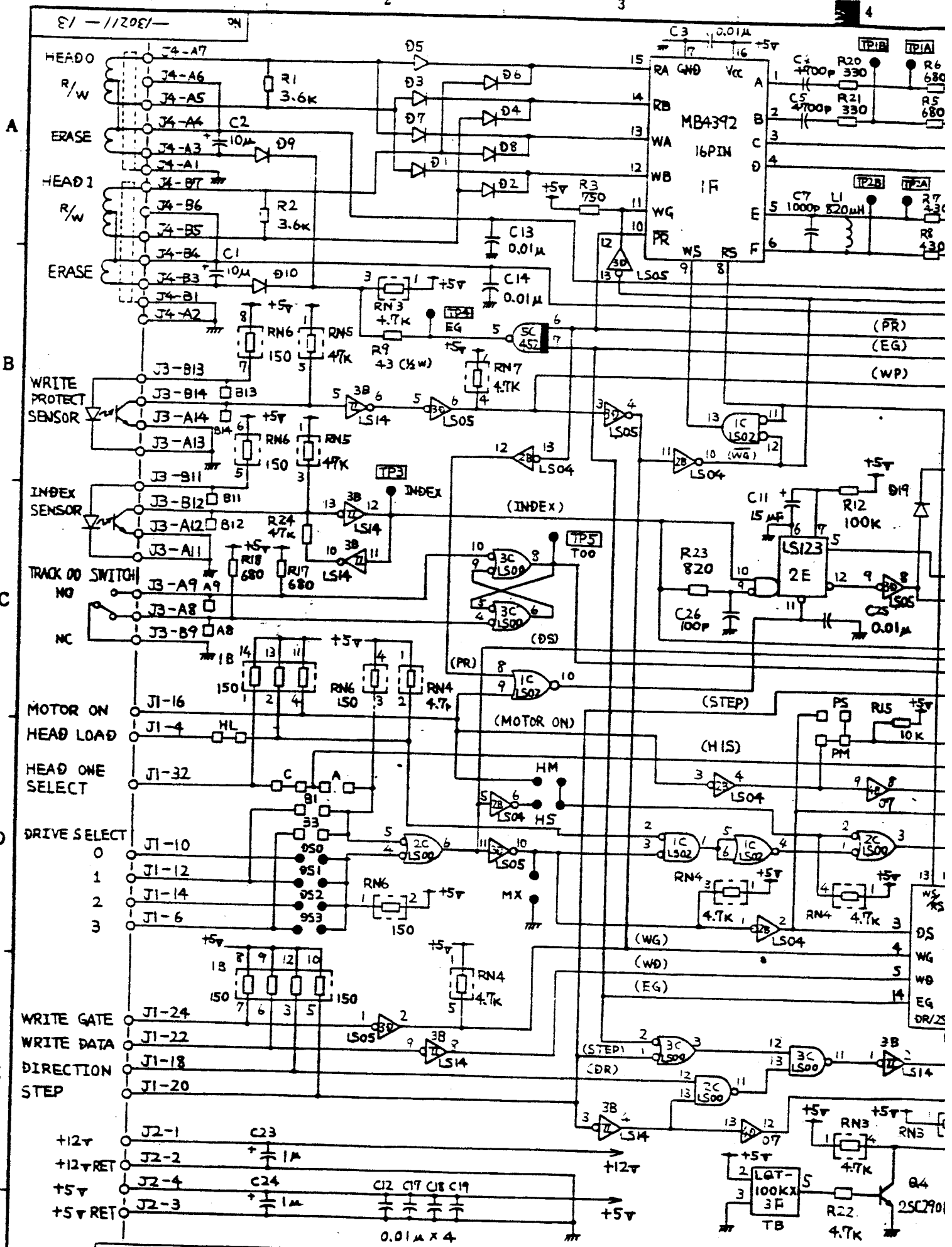
Q1～Q6, Q12 → 2SC2320 又は 2SC945

Q7～Q10 → 2SA1020 又は 2SB564

REV	DATE	REVISION DESCRIPTION	SIGN	ECO NO.
B1	56.4.3	VR1 30KΩ → 50KΩ	ウエノ	
B	56.1.12	結合: WH/RE → YG, WH/BL → GR (回路変更)	井上	



APPROVED BY	CHECKED BY	TRACED BY	DESIGNED BY	NAME	NEXT ASSY.
和田 55.12.19 谷	吉 55.12.19 村	ミヤシ 55.12.19		フロッピーディスク装置 モーターコントロール基板 (コパルエレクトラ製) 回路図	PN 141295-01
				REV. B1	SHEET 1/1
Y-E DATA				MODEL YD-274	DWG.NO. 130574-01
				SYSTEM	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ERASE
HEAD 1
R/W
ERASE
WRITE PROTECT SENSOR
INDEX SENSOR
TRACK 00 SWITCH
NO
NC
MOTOR ON
HEAD LOAD
HEAD ONE SELECT
DRIVE SELECT
0
1
2
3
WRITE GATE
WRITE DATA
DIRECTION
STEP
+12V
+12V RET
+5V
+5V RET
MB4392
16PIN
IF
(PR)
(EG)
(WP)
(INDEX)
(DS)
(MOTOR ON)
(STEP)
(HIS)
(WG)
(WD)
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DATE
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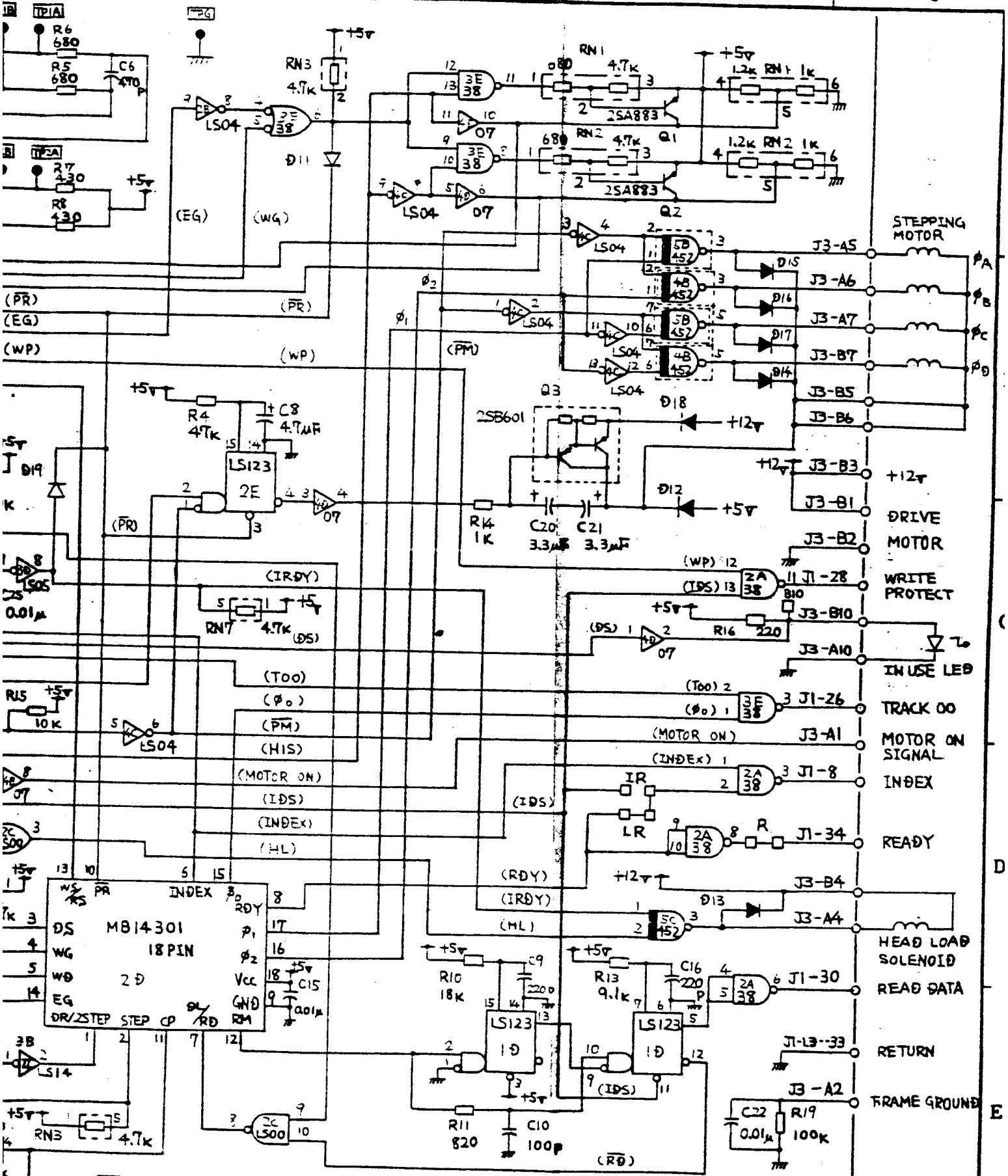
SIGN
ECO NO.



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NEXT ASSY.: PN 120138-13

REV.: G

SHEET: 1/1

MODEL: YD-274

SYSTEM:

DWG.NO.: -130211-13

Y-E DATA