DOT MATRIX PRINTER

SP500 Series

TECHNICAL MANUAL

[SECOND EDITION]

NOTICE

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INTRODUCTION

This manual describes the thermal printer SP500 series.
It is designed for use as a reference for periodic inspections and maintenance procedures to be executed by service personnel. It is not intended for the general user. Users of this manual should have a basic knowledge and understanding of the English language.

- This manual is divided into the following sections:
  - Chapter 1 Adjustments
  - Chapter 2 Parts Replacement
  - Chapter 3 Maintenance and Lubrication
  - Chapter 4 Parts List

- First edition: Dec. 2002

  Second edition: Jan. 2003 Add the new black mark detector

CHAPTER 1
ADJUSTMENTS

1

This printer has undergone various adjustments so that it will attain a given standard of performance.
In this chapter, a brief explanation is given of the methods for making adjustments.
Follow the instructions when performing maintenance inspections or when replacing parts to correct malfunctions.

1. Adjustment of the Gap Between the Print Head and the Platen

1-1. Measuring the Gap Between the Print Head and the Platen

1. Remove the ribbon base as described in chapter 2.

2. Remove the ribbon separator [1] as described in chapter 2.

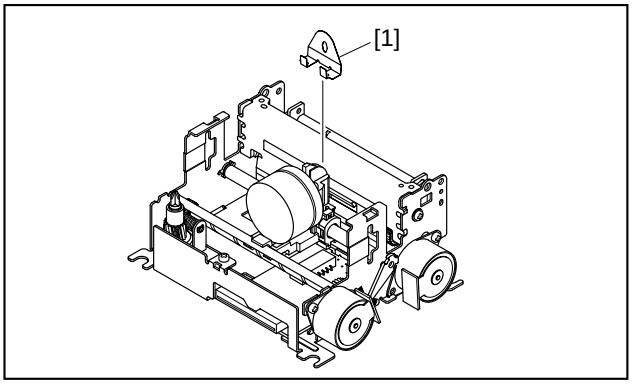


Fig. 1-1 Removing the Ribbon Separator

2. Insert a thickness gauge [2] between the print head [3] and the platen [4] and measure the gap.

3. Measure the thickness at positions Left and Right. 0.45 to 0.50 mm are the reference values for the gap. If the gaps at these positions along the platen are not within this range, adjust the gap using the procedures described in section 1-2.

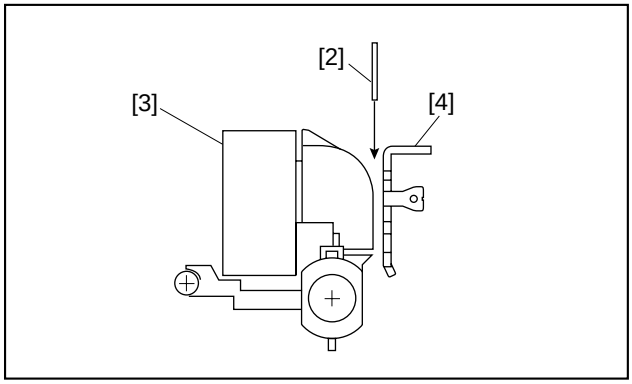


Fig. 1-2 Gap Measurement

1-2. Adjusting the Gap Between Print Head and the Platen

1. Raise and lower the adjusting bushing [5] on the left side to adjust the left head gap.
2. Raise and lower the adjusting bushing [6] on the right side to adjust the right head gap.

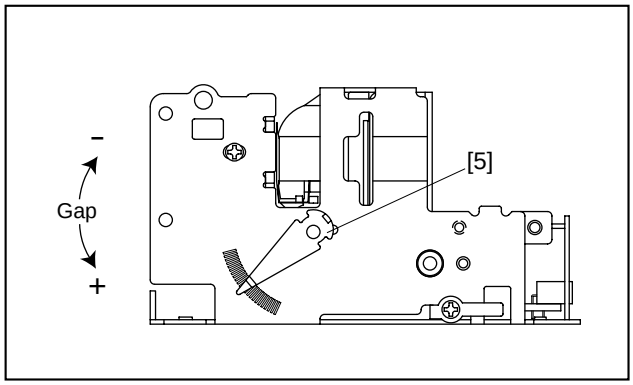


Fig. 1-3 Gap Adjustment

3. Check the gap at all measuring positions in section 1-1.
4. If the gap is not between 0.45 and 0.50 mm at step3, repeat steps 1 through 2.
5. Install the ribbon holder [1].

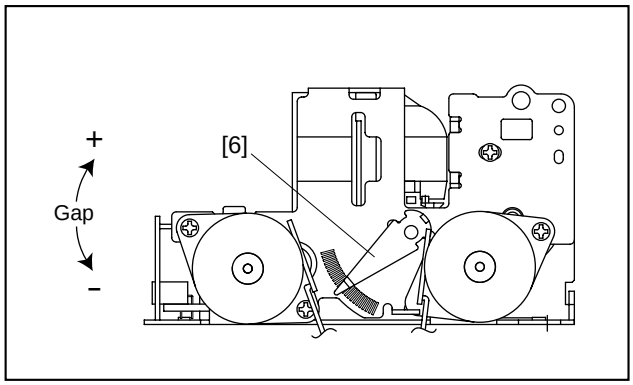


Fig. 1-4 Gap Adjustment

2. Adjustment of the Dot Aligment

1. Set the roll paper.
2. Press the FEED switch on the printer's control panel while turning the power switch ON.
3. Enter the Adjusting the dot alignment mode by releasing the FEED switch after the buzzer sounds twice.
4. After entering the adjusting the dot alignment mode, a printout of the adjustment patterns similar to the printout below will be printed. The asterisk indicates the current adjustment pattern.

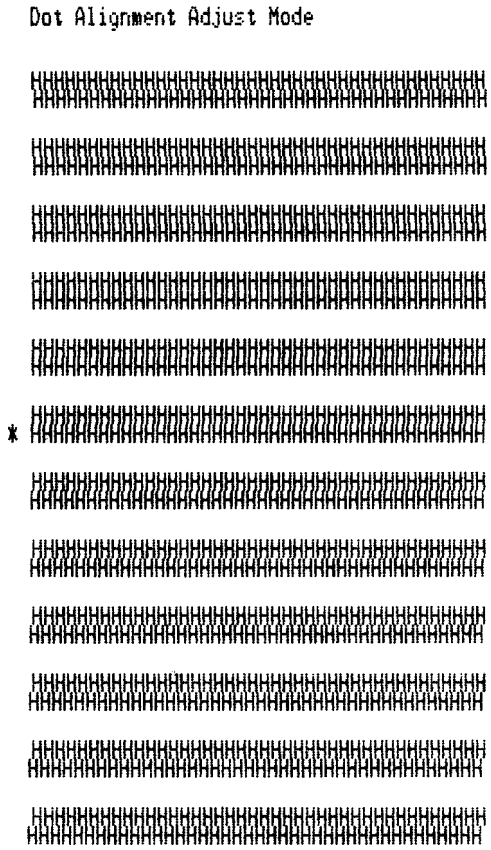


Fig. 1-5 Dot Alignment Adjustment Sample 1

5. To adjust, use the FEED switch to select the adjustment pattern from the printout with the smallest gap between the first printing pass and the return printing pass. Press the FEED switch once to specify the first adjustment pattern, twice to specify the second adjustment pattern, and so on up to seven times to specify the seventh adjustment pattern. Press and hold the FEED switch the last time you press the switch.
   (For example, if you want to select the fourth adjustment pattern, press the FEED switch three times. Then, press and hold the FEED switch until the long buzzer sounds.)
   There are only seven adjustment patterns. The buzzer will sound each time the FEED switch is pressed. However, if you press the FEED switch more than seven times, a warning alert will sound.
   After setting the adjustment pattern, a printout with the selected adjustment pattern highlighted and the message “Adjust Completed!” will be printed.

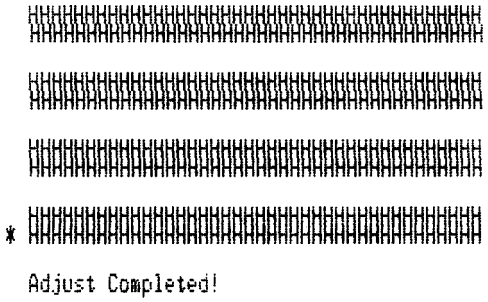


Fig. 1-6 Dot Alignment Adjustment Sample 2

6. After the printout is printed, the printer settings will be entered into the nonvolatile memory of the printer. When the settings are entered into memory, the long buzzer sounds once more, and the dot alignment mode is complete.

Note: While the long buzzer is sounding, the printer settings are entered into the nonvolatile memory. Do not turn the power off. If the power is turned off while the printer settings are being entered into the nonvolatile memory, all of the memory switch settings will be reset.

3. Adjustment of the Black Mark Sensor Alignment

1. Turn the printer off and unplug the power cord.
2. Remove the screws. Then, remove the DIP switch cover on the bottom of the printer.

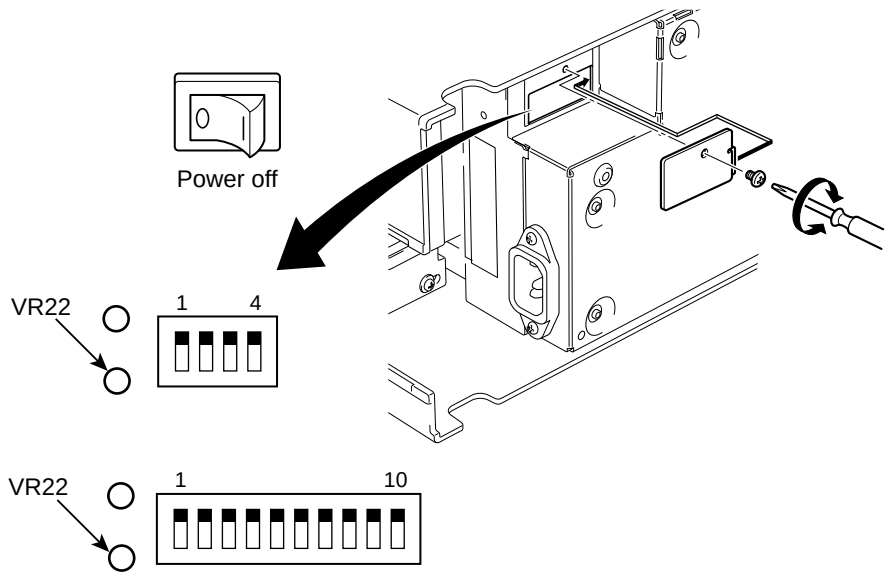


Fig. 1-7 Adjustment Volume

3. Since it is adjusted by rotating the volume VR22, check the position of the volume. Prepare a small slotted screwdriver that will fit in the hole.
4. Set the roll paper not for black mark.
5. Press the FEED switch on the printer's control panel while turning the power switch ON.
6. Enter the black mark sensor adjustment mode by releasing the FEED switch after the buzzer sounds four times.
7. Rotate the volume VR22 using micro screwdriver, to adjust it to a position whereat both the ERROR (red LED) and the POWER (green LED) lamps light.
8. Turn the power OFF.

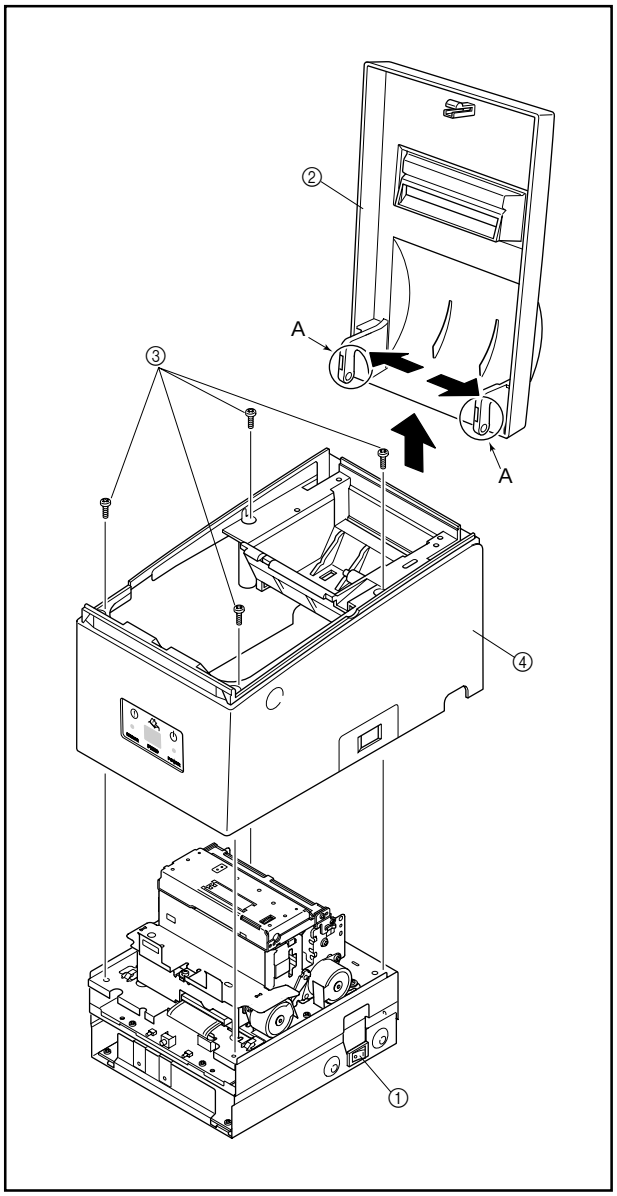
This completes the black mark sensor adjustment.

CHAPTER 2
PARTS REPLACEMENT

2

This chapter explains disassembly and reassembly of the printer. Note the following precautions during disassembly and reassembly.

1. Disconnect the printer power cord plug from the wall outlet before servicing it.
2. Assembly is the reverse of disassembly unless otherwise specified.
3. After reassembly, coat the screw heads with locking sealant.
4. Lubrication information is not provided in this chapter. Refer to item 2 of chapter 3.



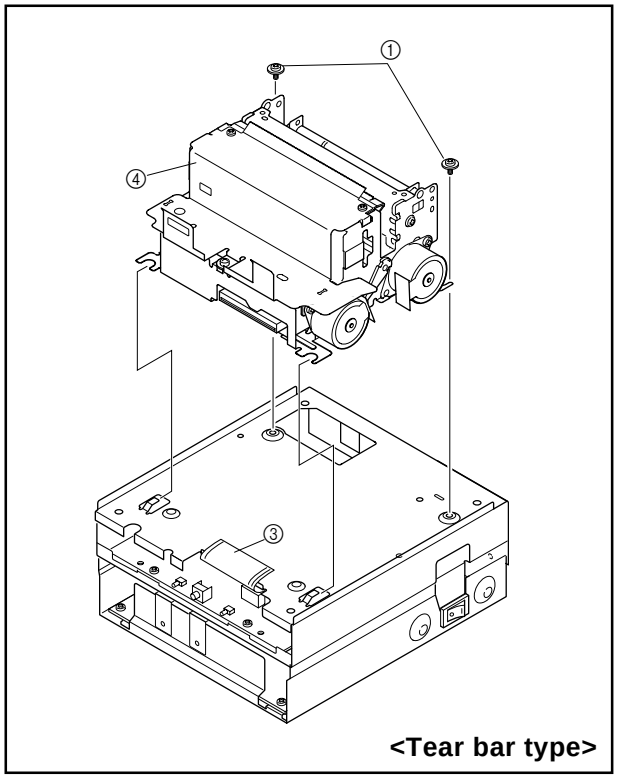
1. Case Unit

(1) Turn off the power switch ①, disconnect the power cord from the wall outlet.

(2) Lift up the front of printer cover ② and open printer cover.

(3) Spread to the outside at points A (left / right) of printer cover ② and remove printer cover.

(4) Remove
- Four screws ③
- Case unit ④
  Lift the case unit ④.
  At this time, avoid the power switch ①.



<Tear bar type>

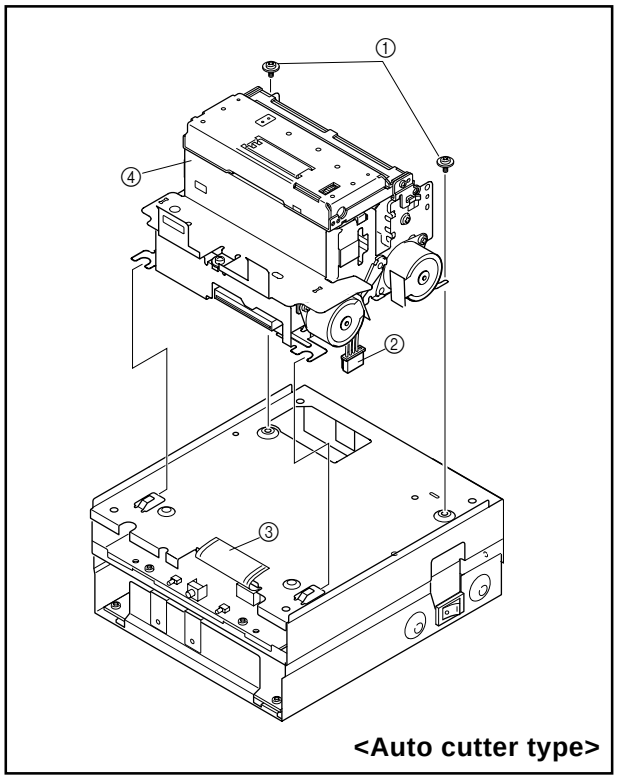
2. Printer Mechanism

2-1. Tear bar type

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the case unit according to the procedure described in item 1.

(3) Remove
- Two screws ①
- Flat cable ③
- Printer mechanism ④



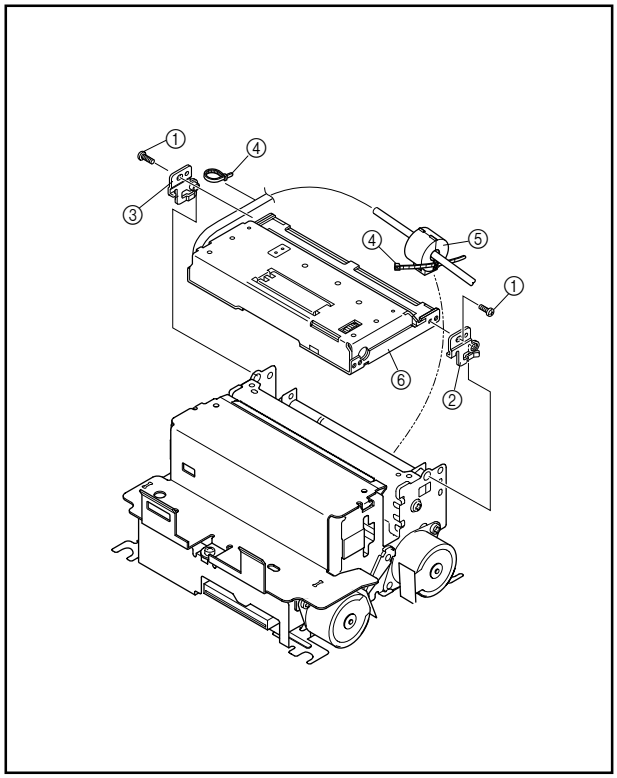
<Auto cutter type>

2-2. Auto cutter type

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the case unit according to the procedure described in item 1.

(3) Remove
- Two screws ①
- Connector ②
- Flat cable ③
- Printer mechanism ④

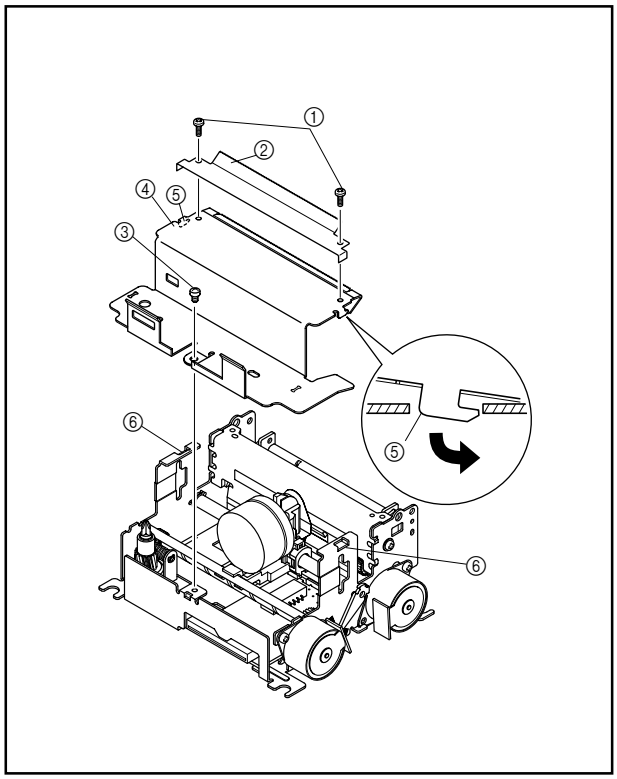


3. Auto Cutter Unit (Auto cutter type only)

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the printer mechanism according to the procedure described in item 2.

(3) Remove
- Two screws ①
- Cutter holder plate R ②
- Cutter holder plate L ③
- Two fasteners ④
- Ferrite core ⑤
- Auto cutter unit ⑥



4. Ribbon base

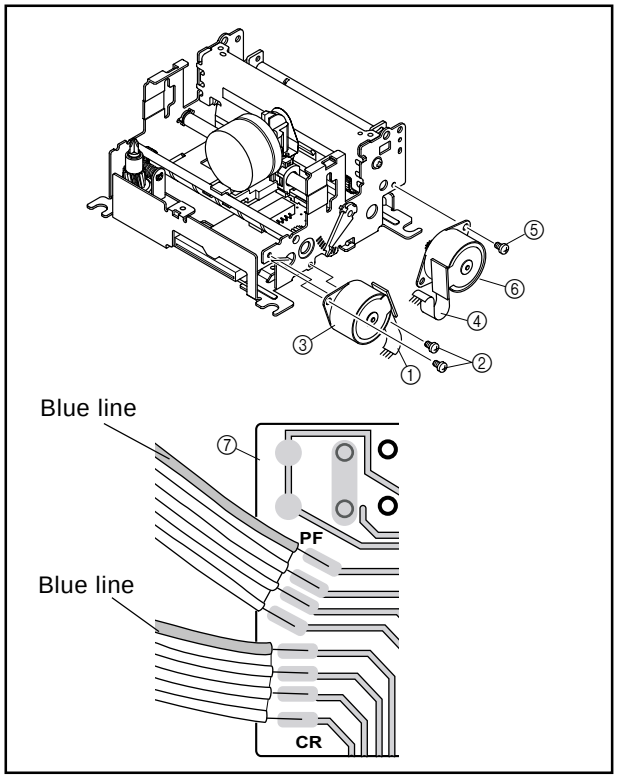
(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the printer mechanism according to the procedure described in item 2.

(3) Open the auto cutter unit. (Auto cutter type only)

(4) Remove
- Two screws ① (Tear bar type only)
- Tear bar ② (Tear bar type only)
- Screw ③
- Ribbon base ④

Caution in reassembly:
Insert two hooks ⑤ of the ribbon base into the two square holes ⑥ of the frame unit.

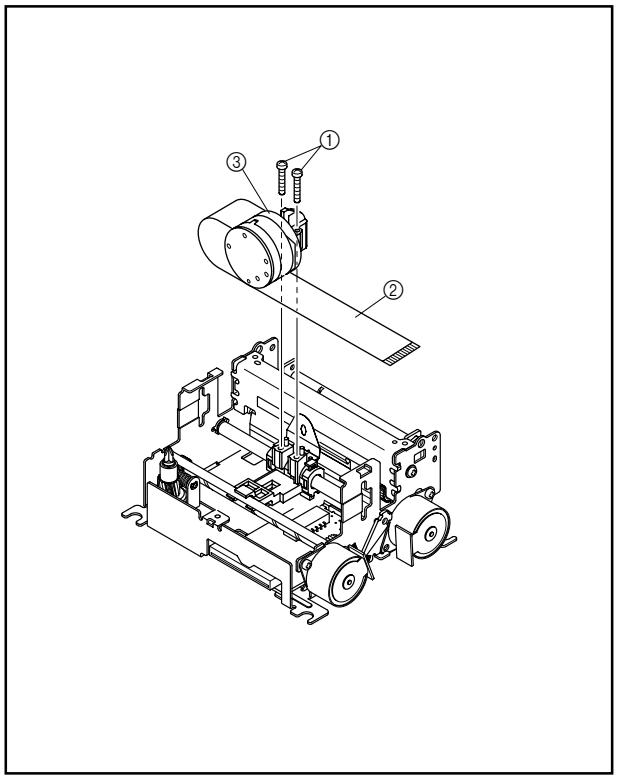


5. Motor Unit

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the ribbon base according to the procedure described in item 4.

(3) Remove
- Flat cable ①
  Remove the four lead wires by using a soldering iron. These leads are soldered on the terminal board ⑦.
- Two screws ②
- Carriage motor unit ③
- Flat cable ④
  Remove the four lead wires by using a soldering iron. These leads are soldered on the terminal board ⑦.
- Screw ⑤
- Paper feed motor unit ⑥



6. Print Head

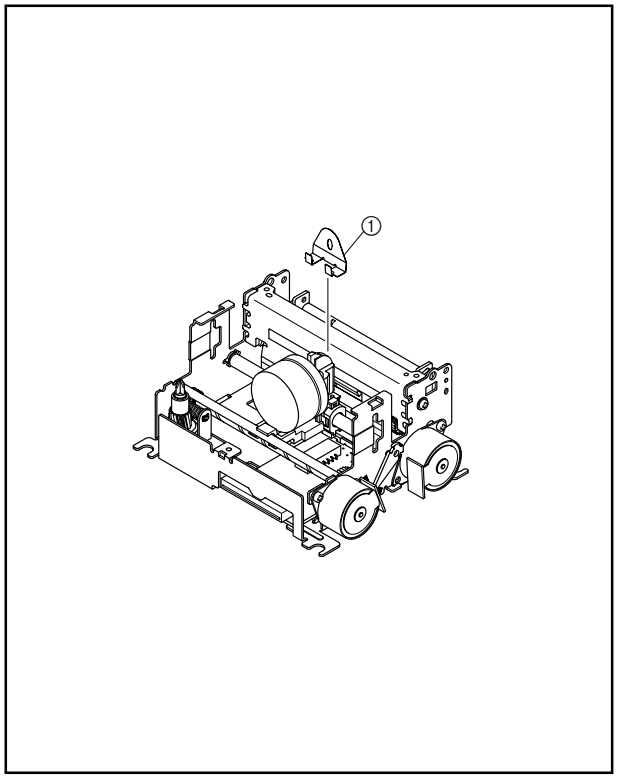
(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the ribbon base according to the procedure described in item 4.

(3) Remove
- Two screws ①
- Flat cable ②
- Print head ③

(4) After reassembly, adjust the gap between print head and the platen. (Refer to the chapter 1)

WARNING
The print head becomes hot after printing so wait for it to cool before removing it.



7. Ribbon Separator

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the ribbon base according to the procedure described in item 4.

(3) Remove

- Ribbon separator ①

  Use a tweezers for precision instruments.

  a) The A portion ② on the left and right ribbon separator (see Fig. 2-7-1 and Figure 2-7-2) is inserted in the print head ③ corner B portion ④ so use the tweezers to bend it approximately 5 degrees, then remove and lift the ribbon separator directly upward from the print head.

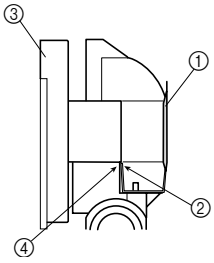


Fig. 2-7-1

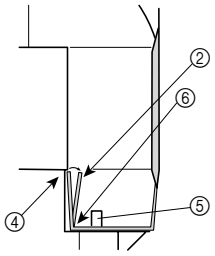


Fig 2-7-2

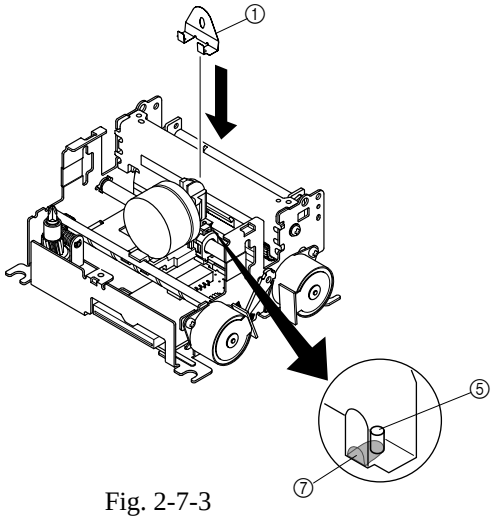


Fig. 2-7-3

b) In the joining portion of the carriage boss ⑤ and the ribbon separator hole a screw-lock ⑦ (blue color) is glued. When removing the ribbon separator, it is fixed to the ribbon separator and does not remain on the carriage, and only remains in rare cases. In such cases, it will be in the way when a new ribbon separator is set, so use the tweezers to remove screw-lock that remains near the carriage boss.

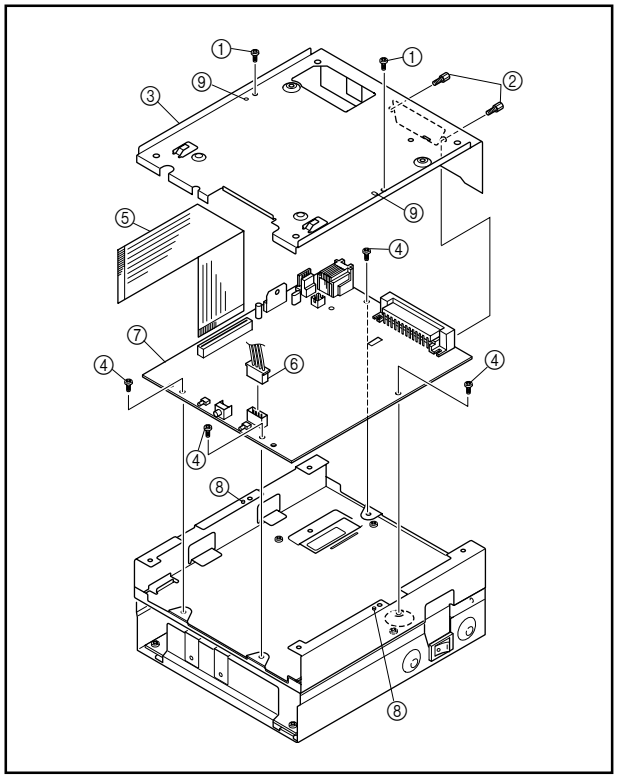
Reassembly

a) Insert the two holes on the ribbon separator onto the two carriage bosses.

b) Use the tweezers to set the A portion on the left and right of the ribbon separator to fit into the corner of the print head and push near the C portion ⑥ (Fig. 2-7-2) until you hear a click.

c) Apply a small amount of screw-lock to the joining portion of the carriage boss and ribbon separator hole.

See Fig. 2-7-3 for the amount to dispense.
Screw-lock model number: ThreeBond 1400B



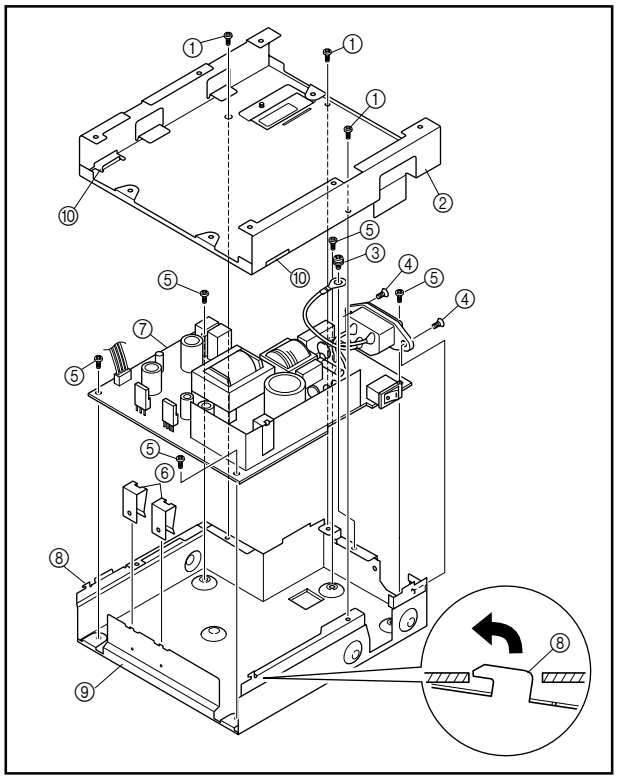
8. Main Logic Board Unit

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

(2) Remove the printer mechanism according to the procedure described in item 2.

(3) Remove
- Two screws ①
- Two screws ②
- Mechanism base ③
- Four screws ④
- Flat cable ⑤
- Connector ⑥
- Main logic board ⑦

Caution in reassembly:
Set the mechanism base ③ on the main chassis unit so that the two bosses ⑧ of the main shassis enter the two holes ⑨ of the mechanism base.



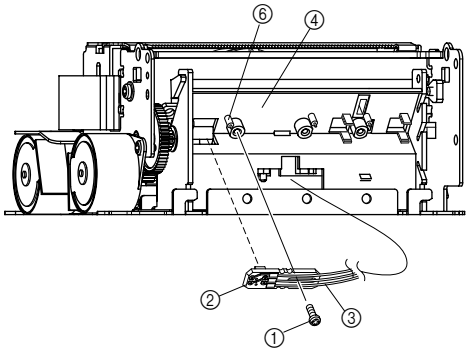
9. Power Supply Board Unit

(1) Turn off the power switch, disconnect the power cord from the wall outlet.

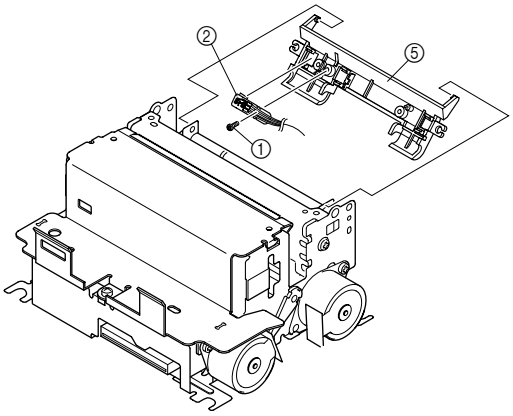
(2) Remove the main logic board unit according to the procedure described in item 8.

(3) Remove
- Three screws ①
- Main chassis ②
- Screw ③
- Two screws ④
- Five screws ⑤
- Two TR chips ⑥
- Power supply board unit ⑦

Caution in reassembly:
Insert two hooks ⑧ of the power schassis ⑨ into the two square holes ⑩ of the main chassis.



<Position 1 (Default)>



<Position 4>

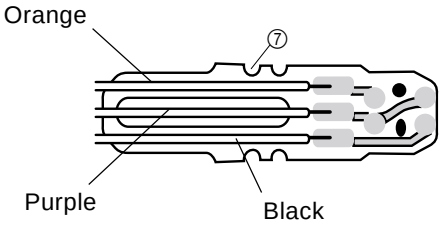
10. Black Mark Detector Board Assembly

(1) Turn off the power switch and disconnect the power cord from the wall outlet.

(2) Remove the printer mechanism according to the procedure described in item 2.

(3) Remove
- Screw ①
- Black mark detector board assembly ②
- Three lead wires ③

  Remove the three lead wires by using a soldering iron. These leads are soldered to the black mark detector board assembly ②.



Notes for reassembly:

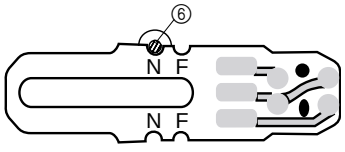
When shipped, the black mark detector is mounted in a position to detect the left edge of 76 mm paper and black marks on the printing side of the paper, but it can also be mounted in five other locations.

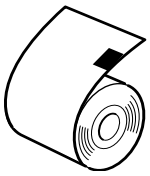
To detect 57.5 mm wide recording paper and black marks in different positions, move the detector to the corresponding position.

At position 4, the detector can detect the right edge of 76 mm wide paper and black marks on the reverse side of the paper.

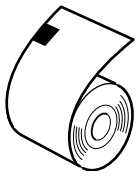
Place the board assembly ② on the paper guide A ④ or the paper guide B ⑤ so that the boss ⑥ is aligned with the board hole ⑦, and then tighten the screw ① .

There are two positioning holes to align to the boss. They are the N and F holes. F is for position 4 only. All others use hole N. (See the page below.)

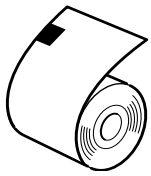




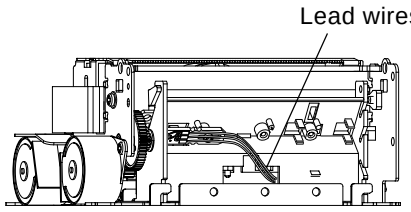
Right edge of 76mm paper
Printing side
Hole N



Left edge of 58mm paper
Printing side
Hole N



Left edge of 76mm paper
Printing side
Hole N



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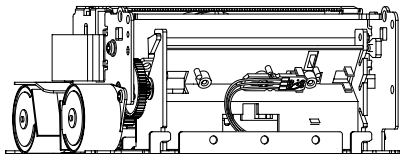
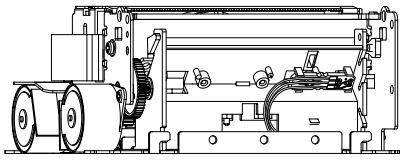
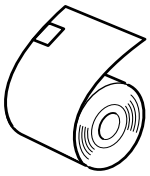


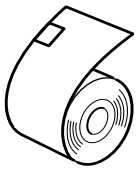
Position 2



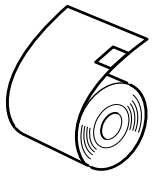
Position 3



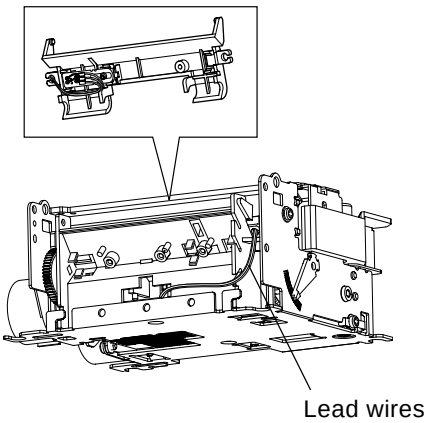
Left edge of 76mm paper
Reverse side
Hole F



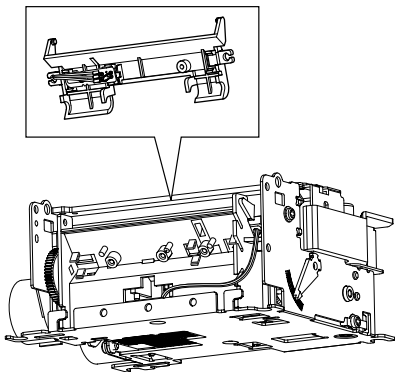
Left edge of 58mm paper
Reverse side
Hole N



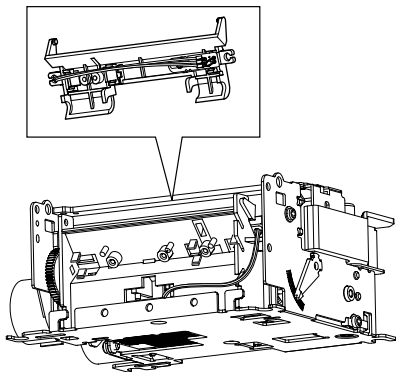
Right edge of 76mm paper
Reverse side
Hole N



Position 4



Position 5



Position 6

CHAPTER 3
MAINTENANCE AND LUBRICATION

1. Maintenance

In order to maintain the optimum performance of this printer and to prevent trouble, maintenance must be carried out according to the following items.

1-1. Cleaning

(1) Removal of dirt

Wipe off dirt with a soft cloth soaked in alcohol or benzine.

Note: Do not use thinner, trichlene or ketone solvents because they may damage plastic parts. Also during cleaning, be careful not to moisten or damage electronic parts, wiring, or mechanical parts.

(2) Removal of dust, pile, etc.

Vacuum cleaning (with an electric cleaner) is preferred. Remove all dust, etc., inside the printer.

Note: After cleaning, check the oil level. If it is not adequate due to cleaning, replenish it.

1-2. Checks

Checks must be carried out at two levels: “a daily check” which the operator can easily carry out during operation, and a “periodic check” which an expert should carry out.

(1) Daily check

When the printer is used on a daily basis, check that the printer is used properly. Make sure that the printer is operating under the best conditions.

- Is the cartridge ribbon set at the right position?
- Is there any foreign matter inside the printer? (Remove if any.)
- Is the print head getting excessively dirty?

(2) Periodic check

After 6 months or printing 1 million lines, the periodic check and lubrication must be carried out.

- Check for deformation of springs.
- Check the gap between the platen and the print head.
- Remove dust, dirt, etc., around the detectors.

1-3. Preventing Paper Jams and Removing Jammed Paper

(1) Preventing Paper Jams

Do not touch the paper while feeding or when printing.

Holding down or pulling on paper while feeding or when printing is the cause of paper jams and mis-line feeds.

(2) Removing Jammed Paper

Remove jammed paper using the following procedures.

- Cut the paper from the paper roll near the paper insertion inlet.
- Gently pull out the paper near the discharge outlet, lifting it upward to remove the jammed paper.

Note 1: When removing the paper, always pull the paper in the forward direction. Pulling it reverse (pulling the paper near the paper insertion inlet) will tear the paper inside of the printer or damage the printer.

Note 2: When removing paper, handling the paper carefully so that it is not torn. If the paper does get torn when removing it, do not leave any paper scraps or pieces of paper inside of the printer.

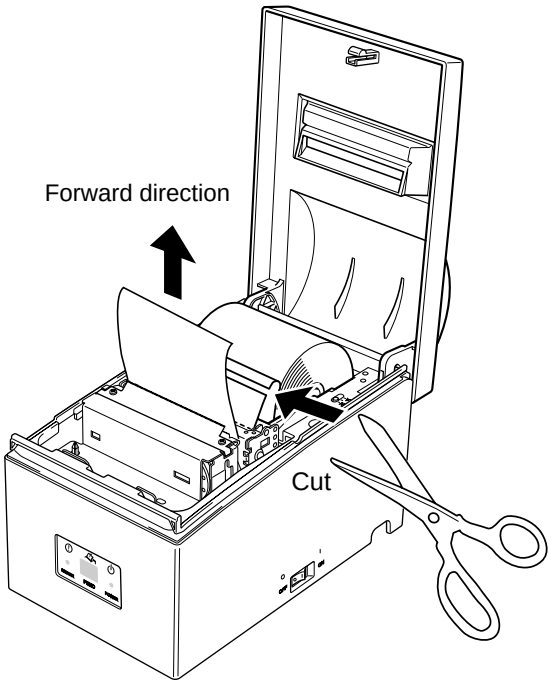


Fig. 3-1 Removing Jammed paper

2. Lubrication

Lubrication is very important to maintain optimum performance and to prevent trouble.

2-1. Lubricant

The type of lubricant greatly affects the performance and durability of the printer, especially in a low temperature environment. We recommend use of the grease and lubrication oils listed below for this printer.

Type of oil	Product name	Maker
Grease	Molykote EM-30L	Dow Corning Corporation
Lubricant	Mobil 1	Mobil Oil Co., Ltd.

2-2. Lubricating Method

When lubrication is carried out in assembly and disassembly, wash parts well to remove dust and dirt before lubrication. Lubrication must be carried out regularly once every 6 months or after 1 million lines have been printed. Lubrication is necessary irrespective of the regular lubrication whenever lubricant becomes deficient after cleaning or whenever parts have been disassembled or replaced.

2-3. Lubricated Areas

NO.	Lubricating Point	Grease/Oil
①	Rubbing surfaces of Carriage unit and Carriage guide	EM-30L
②	Rubbing surfaces of Ribbon shaft unit and Ribbon base	EM-30L
③	Rubbing surfaces of Ribbon shaft unit and Worm gear	EM-30L
④	Rubbing surfaces of Ribbon shaft unit and Back stop spring	EM-30L
⑤	Rubbing surfaces of Ribbon shaft unit and Frame	EM-30L
⑥	Rubbing surfaces of Worm gear and Frame	EM-30L
⑦	Drive shaft grooves	EM-30L
⑧	Rubbing surfaces of Gear $16 \times 53 \times 0.4$ and Frame	EM-30L
⑨	Rubbing surfaces of Worm wheel and Ribbon shaft	EM-30L
⑩	Rubbing surfaces of Paper feed roller and Paper guide B	EM-30L
⑪	Rubbing surfaces of Paper feed roller and Paper guide A	EM-30L
⑫	Rubbing surfaces of Paper guide A and gear $16 \times 53 \times 0.4$	EM-30L
⑬	Rubbing surfaces of Holder roller and Holder roller spring	EM-30L
⑭	Rubbing surfaces of Carriage unit and Carriage stay	Mobil 1

3. Screw Locking

Screw sealant is applied to parts so that the screws in the printer will not come loose from vibration during shipment. When carrying out replacement of parts, apply sealant to the following screws, in accordance with Fig. 3-3.

NO.	Locking Point	Locking Agent
ⓐ	Joining pointing of Screw-head and Print head	ThreeBond 1400B
ⓑ	Joining pointing of Carriage boss and Ribbon separator hole	ThreeBond 1400B
ⓒ	Joining pointing of Adjusting bushing and Frame L	ThreeBond 1400B
ⓓ	Joining pointing of Adjusting bushing and Frame R	ThreeBond 1400B

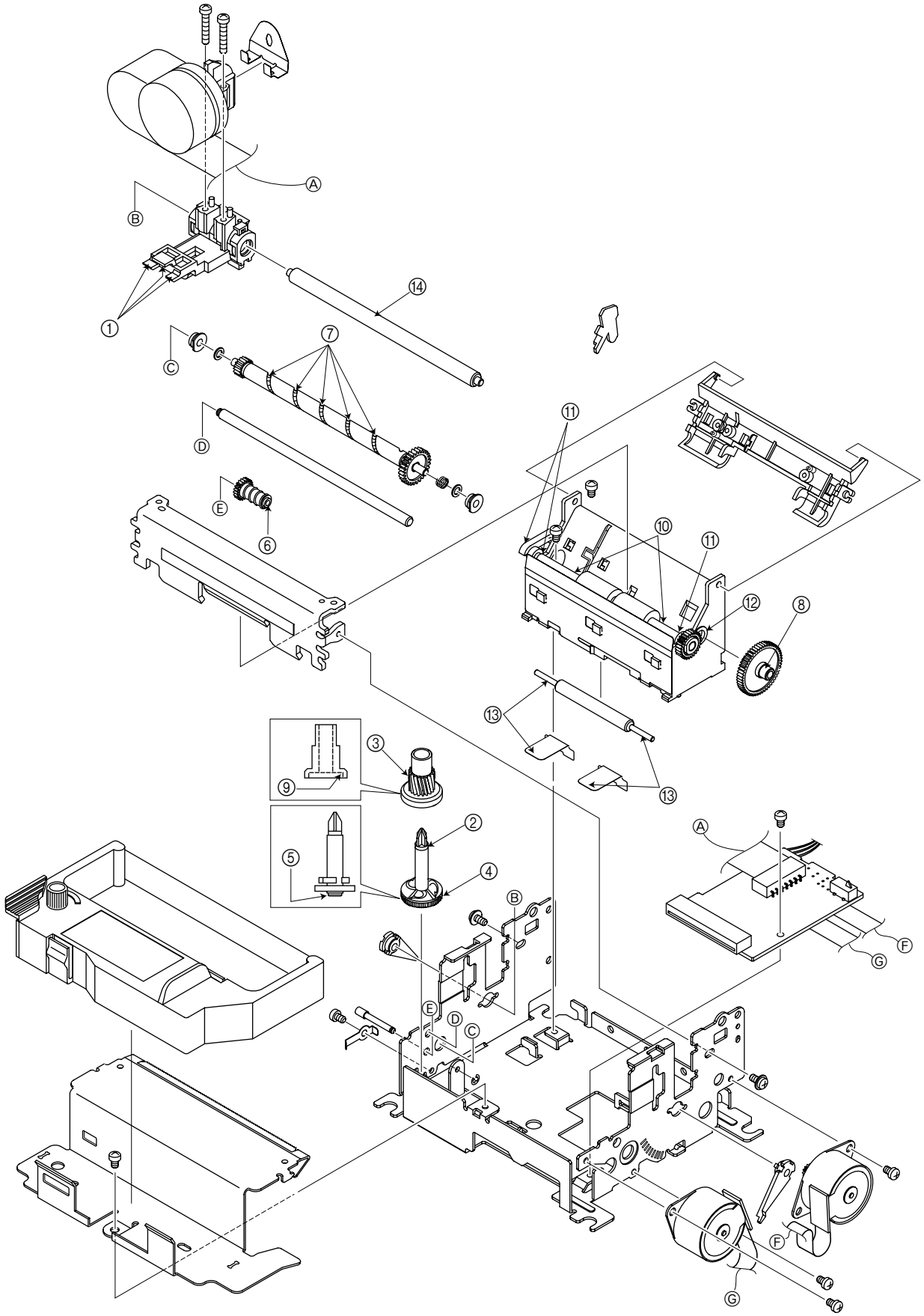


Fig. 3-2 Lubricated Areas

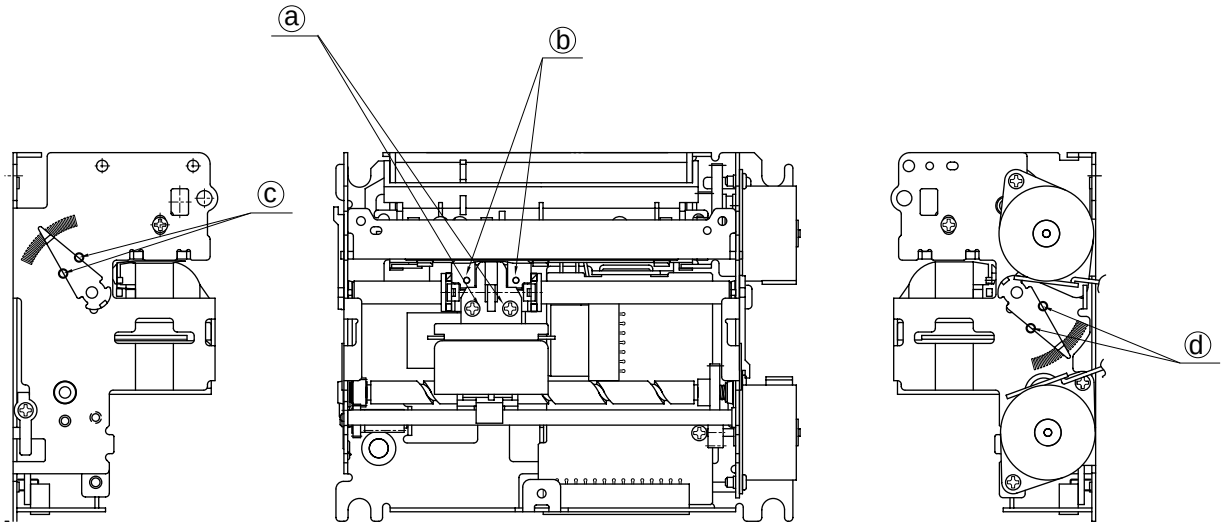


Fig. 3-3 Screw Locking

CHAPTER 4
PARTS LIST

HOW TO USE PARTS LIST

(1) DRWG. NO.
This column shows the drawing number of the illustration.

(2) REVISED EDITION MARK
This column shows a revision number.
Part that have been added in the revised edition are indicated with "#".
Part that have been abolished in the revised edition are indicated with "*".
#1 : First edition → Second edition
*1 : First edition → Second editon

(3) PART NO.
Parts numbers must be notified when ordering replacement parts. Parts described as "NPN" have no parts number and are not in stock, i.e., unavailable.

(4) PARTS NAME
Parts names must be notified when ordering replacement parts.

(5) Q'TY
This column shows the number of the part used as indicated in the figure.

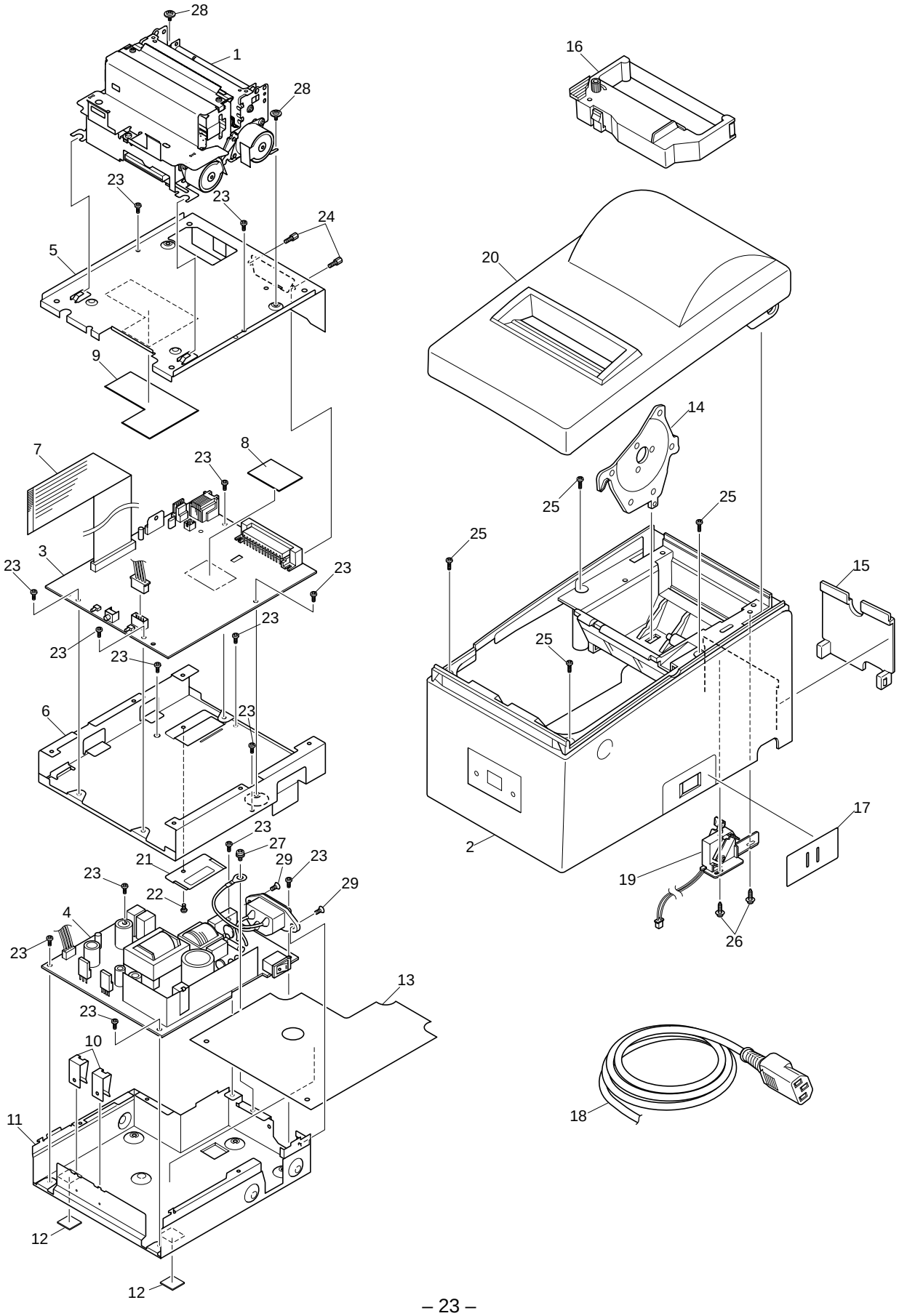
(6) REMARKS
When differences in specifications exist depending on location/destination.

(7) RANK
Parts marked "S" in the rank column can be ordered. Other parts, as a rule, cannot be supplied even if ordered.
Parts marked "O" are optional parts.

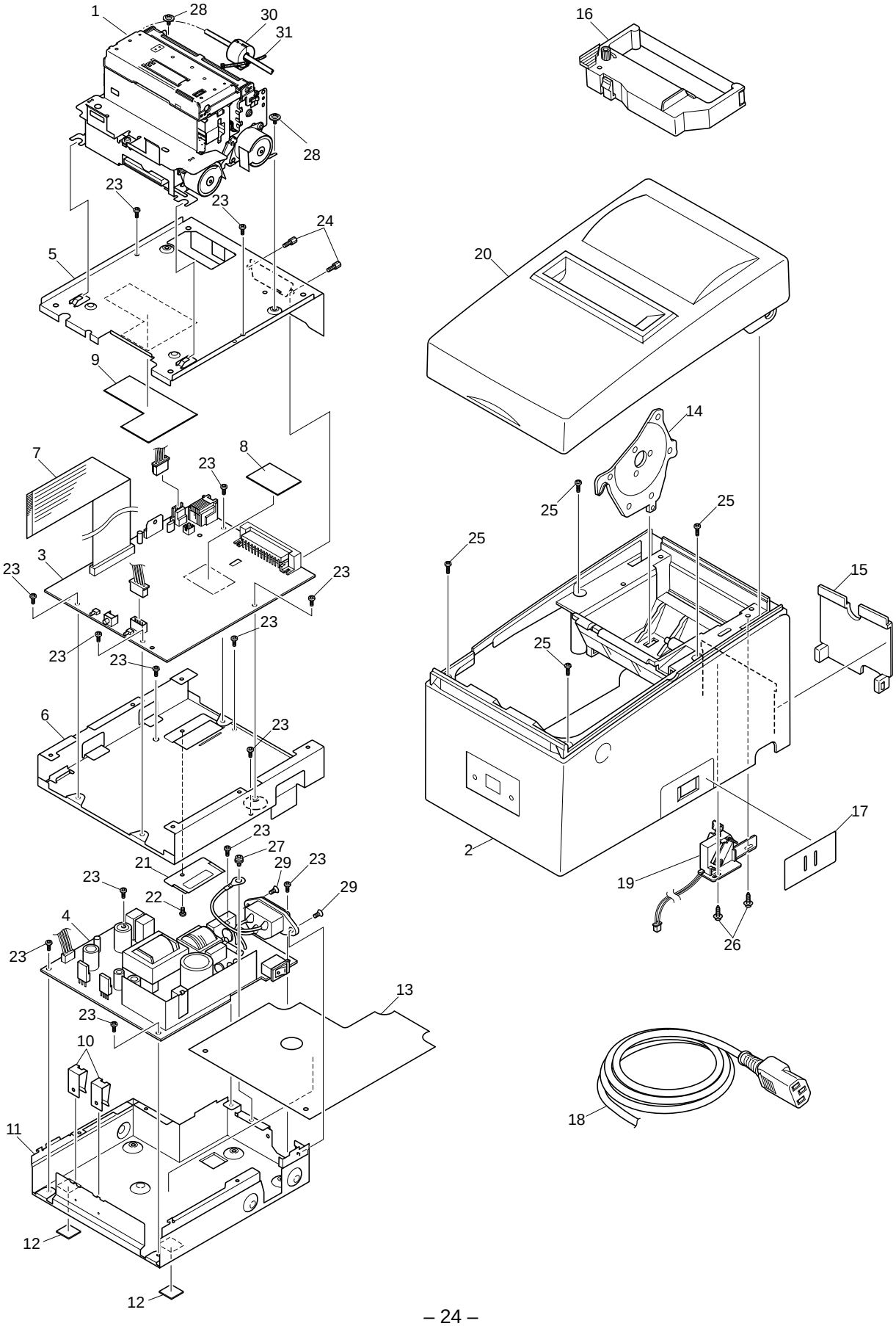
1. Printer Assembly

1-1. Disassembly Drawing

A. Tear Bar Type



B. Auto Cutter Type



1-2. Parts List

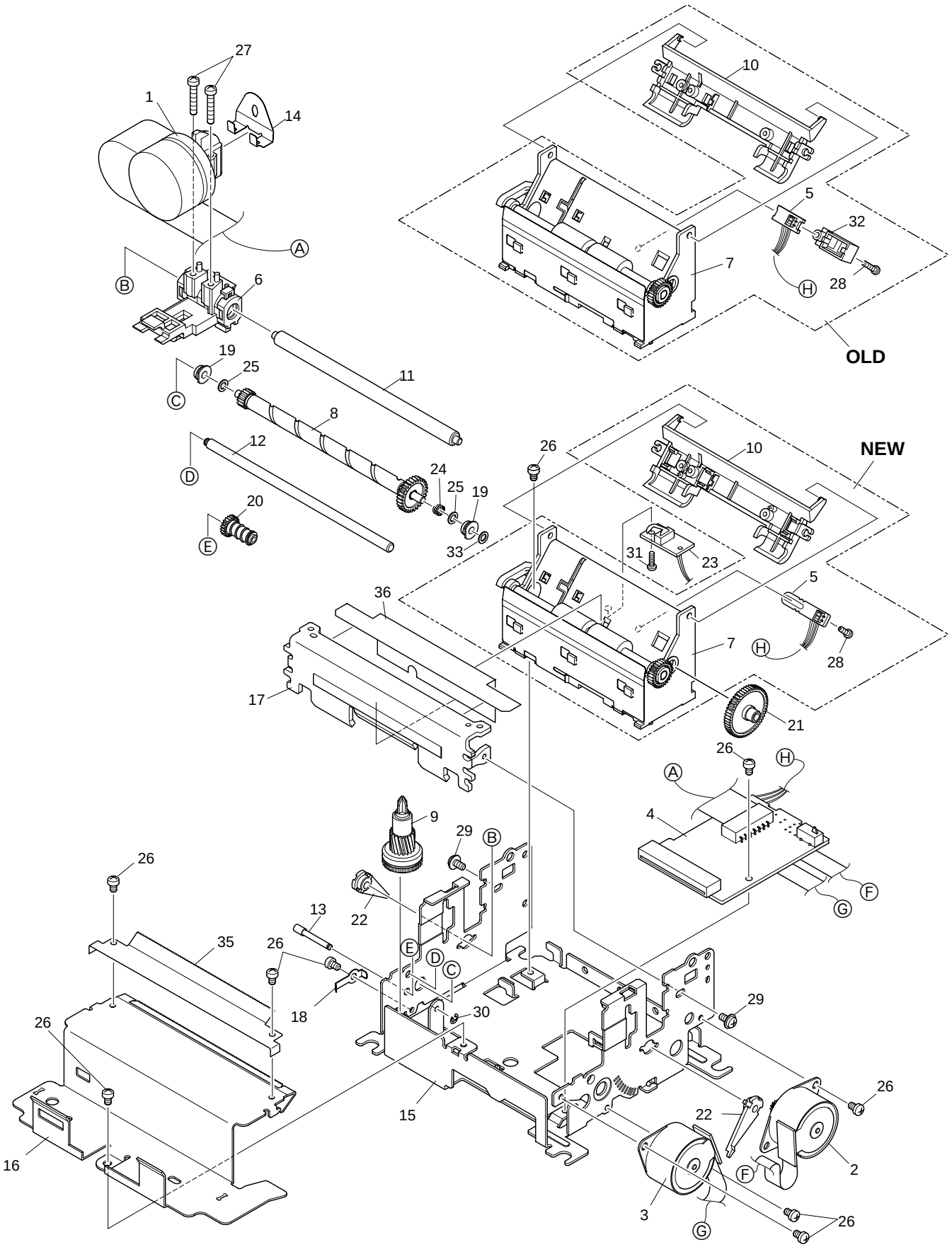
Printer Assembly

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
1	*1	38050000	MP512MC-24	1	OLD TYPE:TEAR BAR	
	#1	38050001	MP512MC-24	1	NEW TYPE:TEAR BAR	S
	*1	38053000	MP542MC-24	1	OLD TYPE:AUTO CUTTER	
	#1	38053001	MP542MC-24	1	NEW TYPE:AUTO CUTTER	S
2		37320000	CASE UNIT SP5	1	EXCEPT FOR CH,WHITE	S
		37320020	CASE UNIT SP5GRY	1	EXCEPT FOR CH,GRAY	S
		37320010	CASE UNIT SP5CH	1	FOR CH,WHITE	S
		37320030	CASE UNIT SP5GRY CH	1	FOR CH,GRAY	S
3		37327010	MAIN LOGIC BOARD UNIT SP5C	1	PARALLEL IF	S
		37327020	MAIN LOGIC BOARD UNIT SP5D	1	SERIAL IF	S
4		37329000	POWER SUPPLY BD UNIT SP5	1		S
5		NPN	MECHANISM BASE SP5	1	PARALLEL IF	
		NPN	MECHANISM BASE S SP5	1	SERIAL IF	
6		NPN	MAIN CHASSIS SP5	1		
7		30722050	FLAT CABLE 28X160 SP5	1		S
8		30093020	SHIELD SHEET SP5	1	PARALLEL IF ONLY	S
9		NPN	FFC SPACER SP5	1		
10		NPN	TR CLIP SP5	2		
11		32010300	POWER CHASSIS SP5	1		S
12		30991230	RUBBER FOOT 12X12 TSP7	2		S
13		NPN	INSULATION SHEET SP5	1		
14		33910520	ROLL PAPER GUIDE SP5	1		S
15		33020670	REAR COVER SP5	1	WHITE	S
		33020780	REAR COVER SP5GRY	1	GRAY	S
16		30980012	INK RIBBON CARTRIDGE RC200P	1	PERPLE	O
		30980112	INK RIBBON CARTRIDGE RC200B	1	BLACK	O
17		NPN	SWITCH BLIND TSP6	1	WHITE	
		NPN	SWITCH BLIND TSP6GRY	1	GRAY	
18		09110156	CORD SET US INLET S-10A 1.8M	1	FOR US	S
		09110157	CORD SET EC INLET S-10A 1.8M	1	FOR EU	S
		09110153	CORD SET UK INLET S-5A 1.8M	1	FOR UK	S
		09110154	CORD SET AS INLET S10A 1.8M	1	FOR AS	S
		09110183	CORD SET CH INLET S-10A 1.8M	1	FOR CH	S
19		37322000	NE SWITCH UNIT SP5	1	OPTION	O
20		33020650	PRINTER COVER SP51	1	TEAR BAR :WHITE	S
		33020760	PRINTER COVER SP51GRY	1	TEAR BAR :GRAY	S
		33020660	PRINTER COVER SP54	1	AUTO CUTTER:WHITE	S
		33020770	PRINTER COVER SP54GRY	1	AUTO CUTTER:GRAY	S
21		NPN	DIP SWITCH COVER SP5	1		
22		00930403	SCREW TAT 3-4 CT	1		S
23		01903064	SCREW TAT 3-5 CT	14		S
24		00630804	SCREW TR 3-8	2	PARALELL IF	S
		04991401	SCREW DBLC-J25SAF	2	SERIAL IF	S
25		00930800	SCREW TAT 3-8 CT	4		S
26		01903038	SCREW TAT 3-10 PT-FL	2		S
27		01914036	SCREW TR 4-5 WS	1		S
28		01925007	MECHANISM HOLDER SCREW SP5	2		S
29		00530804	SCREW TD 3-8 CT	2		S
30		09990762	FERRITE CORE K5BRC16X16X8-M	1	AUTO CUTTER ONLY	S
31		04991204	FASTENER T18S	1	AUTO CUTTER ONLY	S

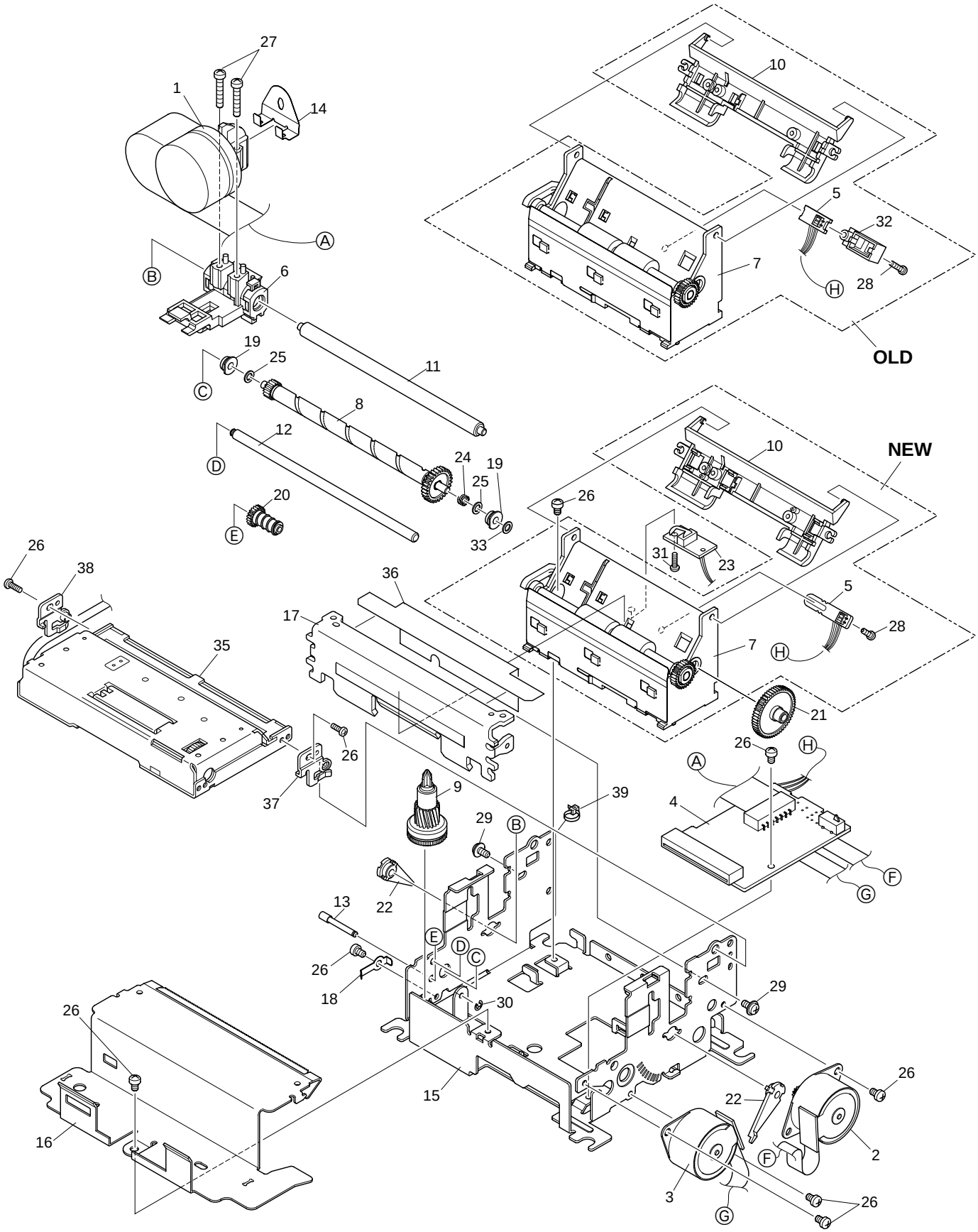
2. Printer Mechanism

2-1. Disassembly Drawing

A. Tear Bar Type



B. Auto Cutter Type



2-2. Parts List

Printer Mechanism (Tear Bar Type)

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
1		89130220	PRINT HEAD DP8901R	1		S
2		37012020	PAPER FEED MOTOR UNIT MP5	1		S
3		37012030	CARRIAGE MOTOR UNIT MP5	1		S
4		NPN	TERMINAL BOARD ASSY MP5	1		
5		37017800	BLK MARK DETECTOR BD ASSY MP5	1	OLD TYPE *1	S
		37012410	BLACK MARK DETECTOR B UNIT MP5	1	NEW TYPE *1	S
6		37011100	CARRIAGE UNIT MP5	1		S
7	*1	NPN	PAPER GUIDE A UNIT MP5	1	OLD TYPE *1	
	#1	37013021	PAPER GUIDE A UNIT MP5	1	NEW TYPE *1	S
8		37011020	DRIVE SHAFT UNIT MP5	1		S
9		37019000	RIBBON SHAFT UNIT MP5	1		S
10	*1	NPN	PAPER GUIDE B MP5	1	OLD TYPE *1	
	#1	33910412	PAPER GUIDE B MP5	1	NEW TYPE *1	S
11		NPN	CARRIAGE STAY MP5	1		
12		NPN	CARRIAGE GUIDE STAY MP5	1		
13		NPN	WORM GEAR SHAFT MP5	1		
14		32981230	RIBBON SEPARATOR MP5	1		S
15		NPN	FRAME MP5	1		
16		NPN	RIBBON BASE MP5	1		
17		NPN	PLATEN MP5	1		
18		NPN	BACK STOP SPRING MP5	1		
19		33215030	DRIVE SHAFT BEARING MP5	2		S
20		33140050	WORM GEAR MP5	1		S
21		33102180	GEAR 16X53X0.4 MP5	1		S
22		33210511	ADJUSTING BUSHING MP5	2		S
23		37012500	PE SWITCH ASSY MP5	1		S
24		30520300	SPRING C039-035-0043	1		S
25		02303050	POLY-SLIDER WP3X0.5	2		S
26		00926403	SCREW TAT 2.6-4 CT	9		S
27		01902612	SCREW TAT 2.6-16 PT	2		S
28		00920903	SCREW TAT 2-9 PT	1	OLD TYPE *1	S
		01902041	SCREW TAT 2-5 PT-FL	1	NEW TYPE *1	S
29		01902633	SCREW TR 2.6-5 FL	2		S
30		04020002	STOP RING SE1.5	1		S
31		01902615	SCREW TAT 2.6-6 PT	1		S
32		NPN	DETECTOR HOLDER MP5	1	OLD TYPE ONLY *1	
33		02302830	POLY-SLIDER WP2.8X0.30	1		S
34		01902615	SCREW TAT 2.6-6 PT	1		S
35		32970060	TEAR BAR MP5	1		S
36		30990300	BLIND COVER MP5	1		S

*1:

New type parts cannot be mounted on old type parts, nor can old type parts be mounted on new type parts. Always replace with parts of the same type.

Drawing numbers 7 and 10 are old type parts and cannot be supplied even if ordered. Also, drawing number 32 that uses only old type parts cannot be supplied even if ordered. Therefore, to replace even just one of these parts, replace with all new type parts.
For example, if the old type parts in drawing number 7 are broken, replace not only drawing number 7, but also drawing numbers 5, 10 and 28 with new type parts.

To determine whether those parts are old or new type ones, check the serial numbers (12 digits) on the label fixed to the bottom of the printer.

If the serial numbers are the numbers below, they are old type parts. All others are new type parts.

xxxx212xxxxx

xxxx301xxxxx

x represents numbers from 0 to 9.

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
1		89130220	PRINT HEAD DP8901R	1		S
2		37012020	PAPER FEED MOTOR UNIT MP5	1		S
3		37012030	CARRIAGE MOTOR UNIT MP5	1		S
4		NPN	TERMINAL BOARD ASSY MP5	1		
5		37017800	BLK MARK DETECTOR BD ASSY MP5	1	OLD TYPE *1	S
		37012410	BLACK MARK DETECTOR B UNIT MP5	1	NEW TYPE *1	S
6		37011100	CARRIAGE UNIT MP5	1		S
7	*1	NPN	PAPER GUIDE A UNIT MP5	1	OLD TYPE *1	
	#1	37013021	PAPER GUIDE A UNIT MP5	1	NEW TYPE *1	S
8		37011020	DRIVE SHAFT UNIT MP5	1		S
9		37019000	RIBBON SHAFT UNIT MP5	1		S
10	*1	NPN	PAPER GUIDE B MP5	1	OLD TYPE *1	
	#1	33910412	PAPER GUIDE B MP5	1	NEW TYPE *1	S
11		NPN	CARRIAGE STAY MP5	1		
12		NPN	CARRIAGE GUIDE STAY MP5	1		
13		NPN	WORM GEAR SHAFT MP5	1		
14		32981230	RIBBON SEPARATOR MP5	1		S
15		NPN	FRAME MP5	1		
16		NPN	RIBBON BASE MP5	1		
17		NPN	PLATEN MP5	1		
18		NPN	BACK STOP SPRING MP5	1		
19		33215030	DRIVE SHAFT BEARING MP5	2		S
20		33140050	WORM GEAR MP5	1		S
21		33102180	GEAR 16X53X0.4 MP5	1		S
22		33210511	ADJUSTING BUSHING MP5	2		S
23		37012500	PE SWITCH ASSY MP5	1		S
24		30520300	SPRING C039-035-0043	1		S
25		02303050	POLY-SLIDER WP3X0.5	2		S
26		00926403	SCREW TAT 2.6-4 CT	9		S
27		01902612	SCREW TAT 2.6-16 PT	2		S
28		00920903	SCREW TAT 2-9 PT	1	OLD TYPE *1	S
		01902041	SCREW TAT 2-5 PT-FL	1	NEW TYPE *1	S
29		01902633	SCREW TR 2.6-5 FL	2		S
30		04020002	STOP RING SE1.5	1		S
31		01902615	SCREW TAT 2.6-6 PT	1		S
32		NPN	DETECTOR HOLDER MP5	1	OLD TYPE ONLY *1	
33		02302830	POLY-SLIDER WP2.8X0.30	1		S
34		01902615	SCREW TAT 2.6-6 PT	1		S
35		37018020	AUTO CUTTER UNIT MP54	1		S
36		30990300	BLIND COVER MP5	1		S
37		NPN	CUTTER HOLDER PLATE R MP54	1		
38		NPN	CUTTER HOLDER PLATE L MP54	1		
39		04991204	FASTENER T18S	1		S

*1:

New type parts cannot be mounted on old type parts, nor can old type parts be mounted on new type parts. Always replace with parts of the same type.

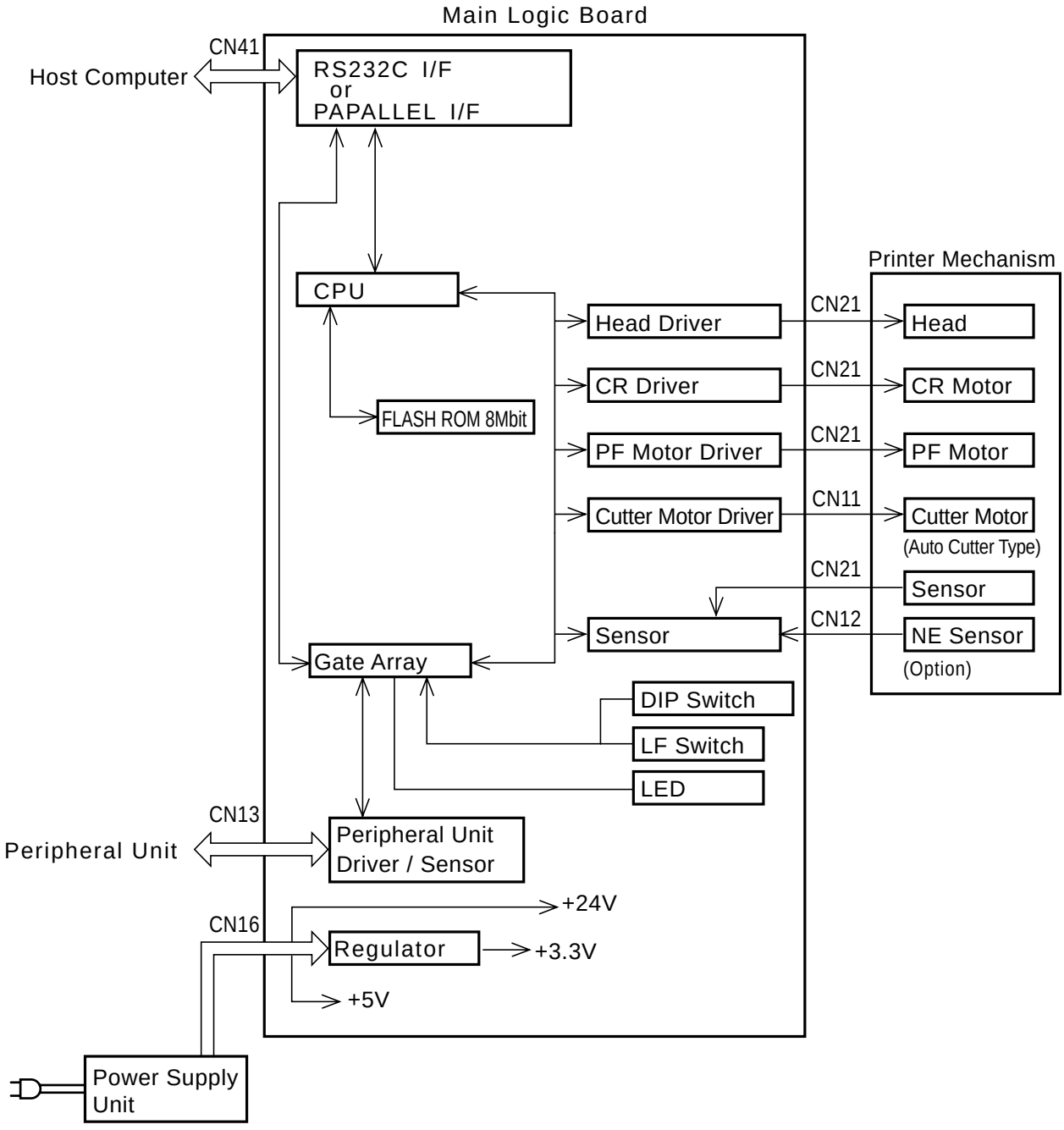
Drawing numbers 7 and 10 are old type parts and cannot be supplied even if ordered. Also, drawing number 32 that uses only old type parts cannot be supplied even if ordered. Therefore, to replace even just one of these parts, replace with all new type parts. For example, if the old type parts in drawing number 7 are broken, replace not only drawing number 7, but also drawing numbers 5, 10 and 28 with new type parts.
To determine whether those parts are old or new type ones, check the serial numbers (12 digits) on the label fixed to the bottom of the printer.

If the serial numbers are the numbers below, they are old type parts. All others are new type parts.

xxxx212xxxxx
xxxx301xxxxx

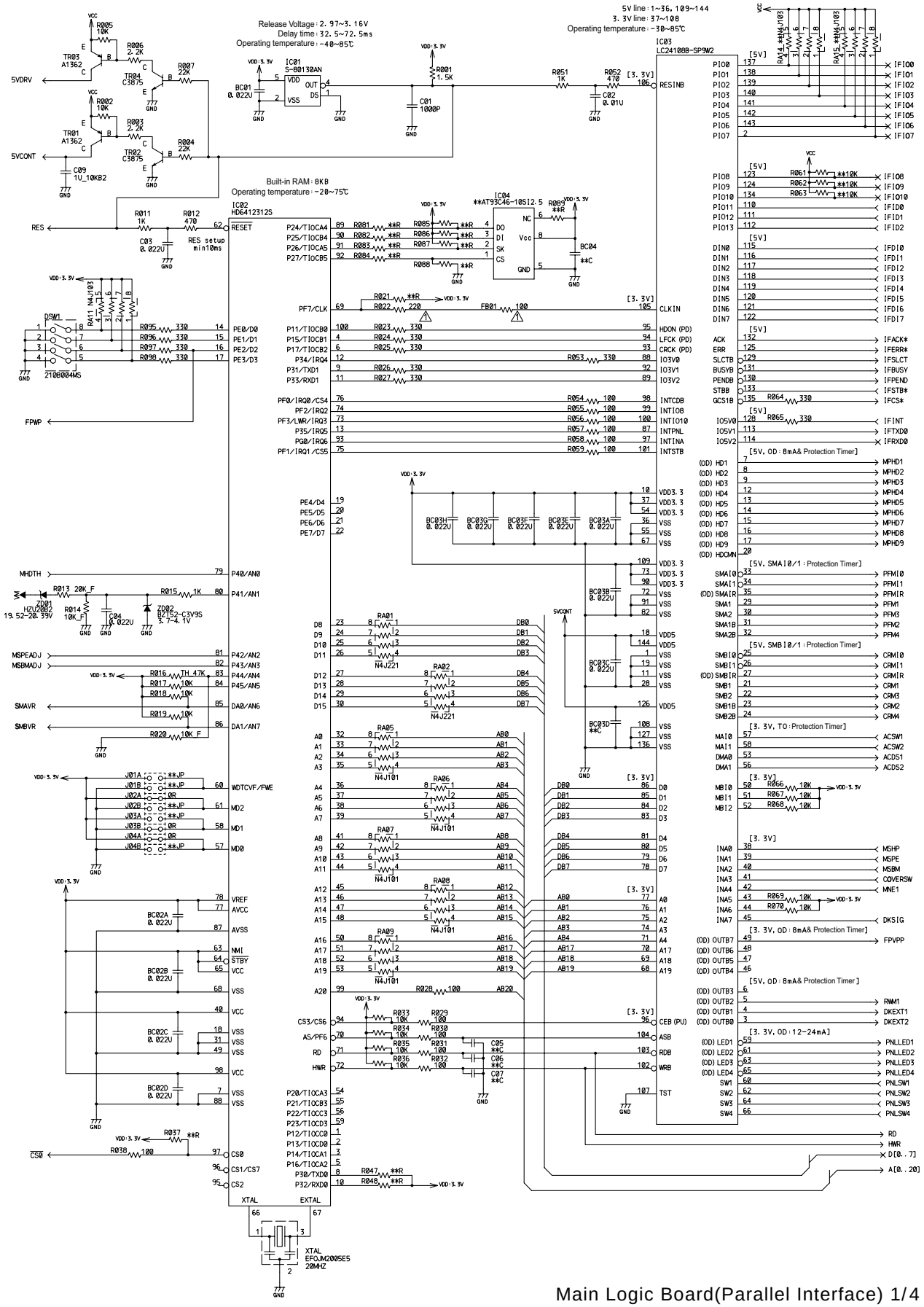
x represents numbers from 0 to 9.

3. Block Diagram

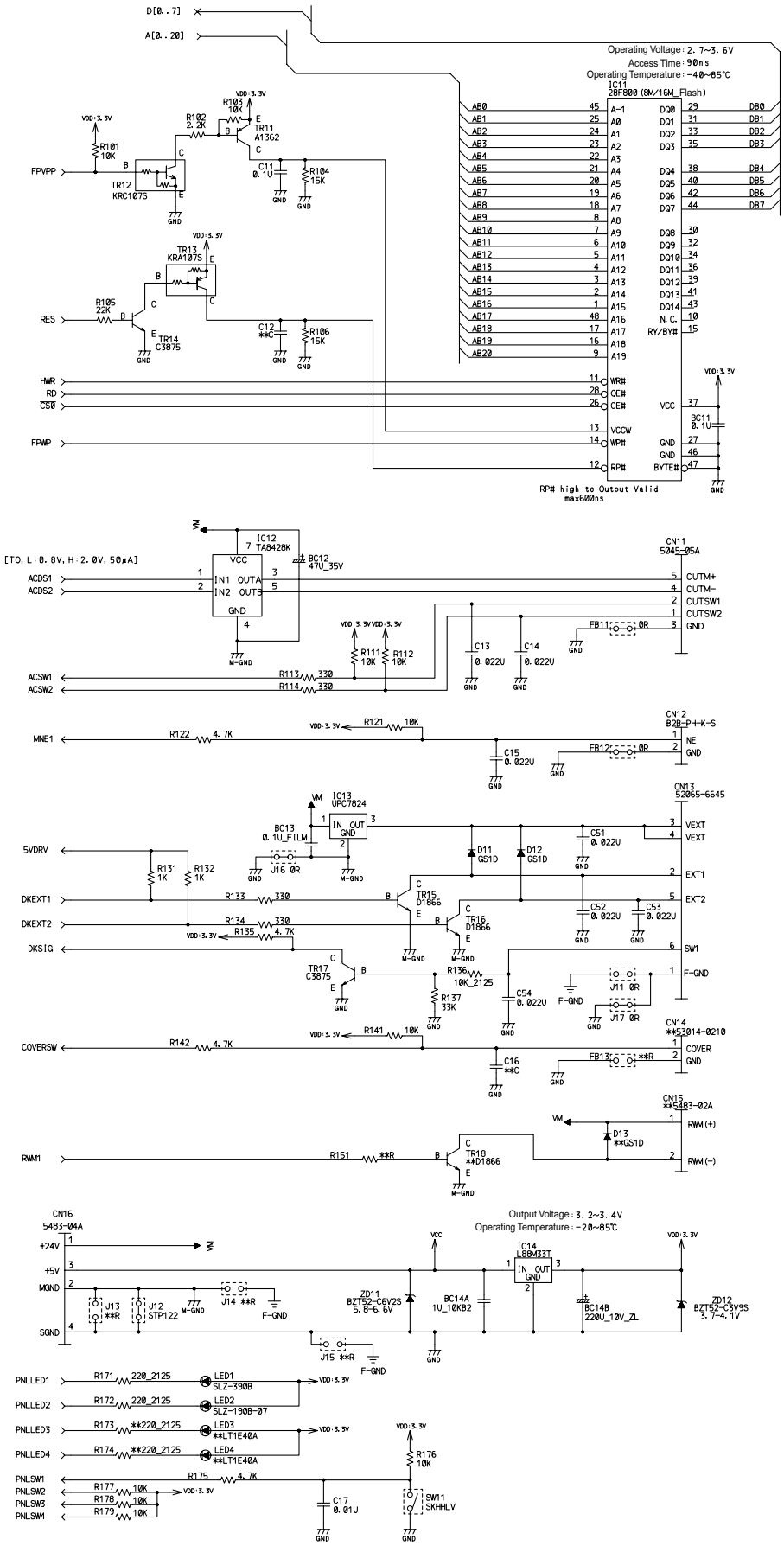


4. Main Logic Board (Parallel Interface)

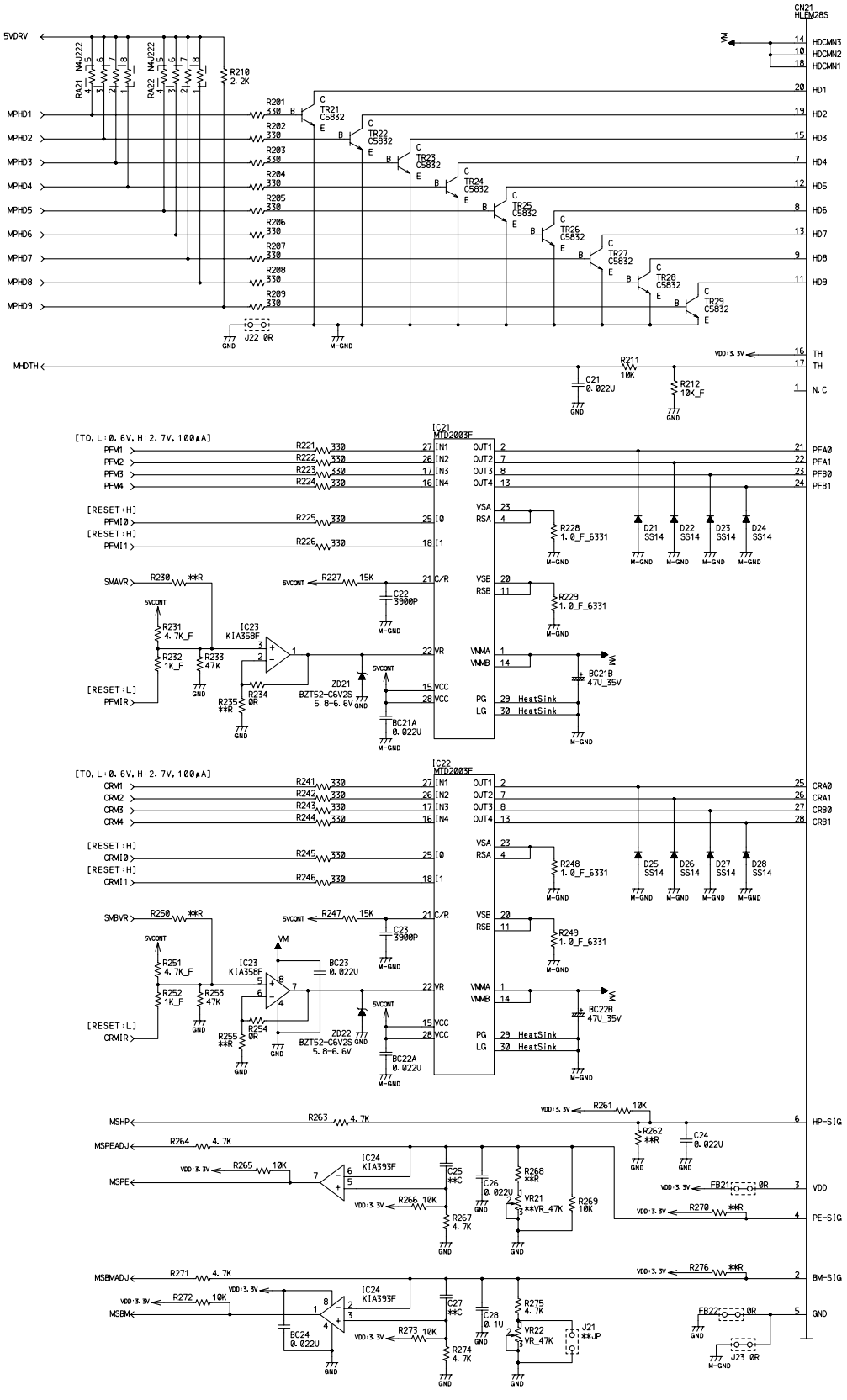
4-1. Circuit Diagram



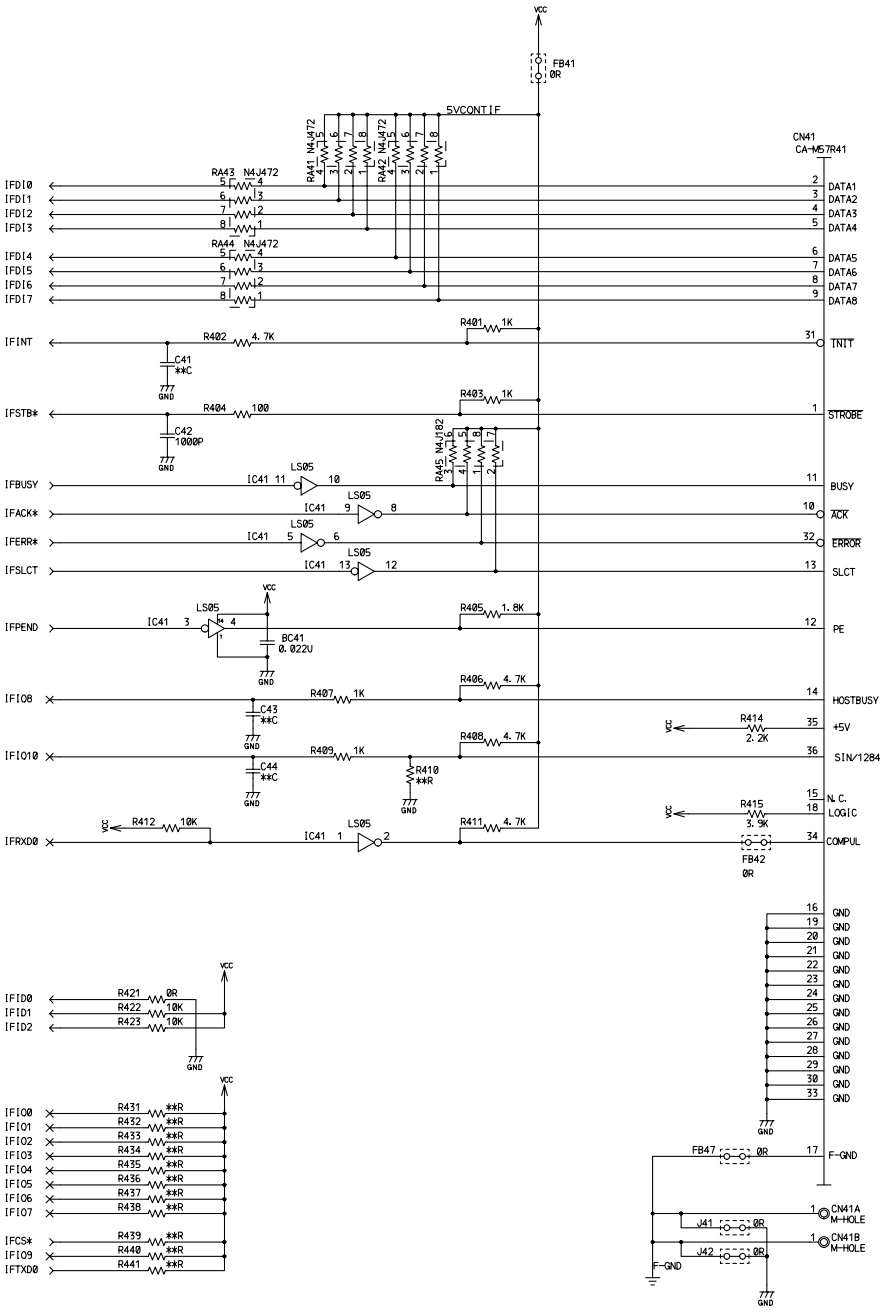
Main Logic Board(Parallel Interface) 1/4



Main Logic Board(Parallel Interface) 2/4



Main Logic Board(Parallel Interface) 3/4



Main Logic Board(Parallel Interface) 4/4

4-2. Parts List

Main Logic Board (Parallel Interface)

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
BC01		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02B		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02C		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02D		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03B		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03C		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03E		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03F		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03G		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03H		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC11		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
BC12		NPN	CHEM. CAPA. 47UF 35V	1		
BC13		NPN	FILM CAPA. 0.1UF 50V	1		
BC14A		NPN	CERA. CAPA. CHIP 1UF 10V	1		
BC14B		NPN	CHEM. CAPA. 220UF 10V	1		
BC21A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC21B		NPN	CHEM. CAPA. 47UF 35V	1		
BC22A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC22B		NPN	CHEM. CAPA. 47UF 35V	1		
BC23-24		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
BC41		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C01		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C02		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C03-04		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
C09		NPN	CERA. CAPA. CHIP 1UF 10V	1		
C11		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C13-15		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	3		
C17		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C21		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C22-23		NPN	CERA.CAPA.CHIP1608 3900PF 50V	2		
C24		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C26		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C28		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C42		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C51-54		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	4		
CN11		NPN	CONNECTOR 5045-05A	1		
CN12		NPN	CONNECTOR B2B-PH-K-S	1		
CN13		NPN	CONNECTOR 52065-6645	1		
CN16		NPN	CONNECTOR 5483-04A	1		
CN21		NPN	CONNECTOR HLEM28S-1	1		
CN41		NPN	CONNECTOR CA-M57R41-2754C	1		
D11-12		NPN	DIODE CHIP GS1D*	2		
D21-28		NPN	SCHOTTKY DIODE CHIP SS14*	8		
DSW1		NPN	DIP SWITCH 210B004MS	1		
FB01		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
FB11-12		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
FB21-22		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
FB41-42		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
FB47		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
IC01		NPN	IC-RESET S-80130AN*	1		
IC02		NPN	CPU HD6412312SVTE25	1		
IC03		NPN	GATE ARRAY LC24108B-SP9W2	1		
IC11		NPN	FLASH MEMORY 28F800BJHE-90	1	S5.**	
		NPN	FLASH MEMORY SEAL KEI-801	1		

Main Logic Board (Parallel Interface)

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
IC12		NPN	IC-MOTOR TA8428K	1		
IC13		NPN	IC-REG UPC7824	1		
IC14		NPN	IC-REG L88M33T*TL	1		
IC21-22		NPN	IC-MOTOR MTD2003F-4072	2		
IC23		NPN	IC-LIN KIA358F*EL	1		
IC24		NPN	IC-LIN KIA393F*EL	1		
IC41		NPN	TTL IC 74LS05FP*EL	1		
J02A		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J03B		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J04A		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J11		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J12		NPN	JUMPER WIRE STP122	1		
J16-17		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
J22-23		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
J41-42		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
LED1		NPN	LED SLZ-390B	1		
LED2		NPN	LED SLZ-190B-07	1		
R001		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R002		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R003		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R004		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R005		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R006		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R007		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R011		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R012		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R013		NPN	CHIP RESISTOR 20 K-OHM 1/16W	1		
R014		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R015		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R016		NPN	CHIP THERMISTOR TBPS1R473J*	1		
R017-019		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R020		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R022		NPN	CHIP RES1608 220 OHM 1/16W 5%	1		
R023-027		NPN	CHIP RESISTOR 330 OHM 1/16W	5		
R028-032		NPN	CHIP RESISTOR 100 OHM 1/16W	5		
R033-036		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R038		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R051		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R052		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R053		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R054-059		NPN	CHIP RESISTOR 100 OHM 1/16W	6		
R064-065		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R066-070		NPN	CHIP RESISTOR 10 K-OHM 1/16W	5		
R095-098		NPN	CHIP RESISTOR 330 OHM 1/16W	4		
R101		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R102		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R103		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R104		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R105		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R106		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R111-112		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R113-114		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R121		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R122		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R131-132		NPN	CHIP RESISTOR 1 K-OHM 1/16W	2		
R133-134		NPN	CHIP RESISTOR 330 OHM 1/16W	2		

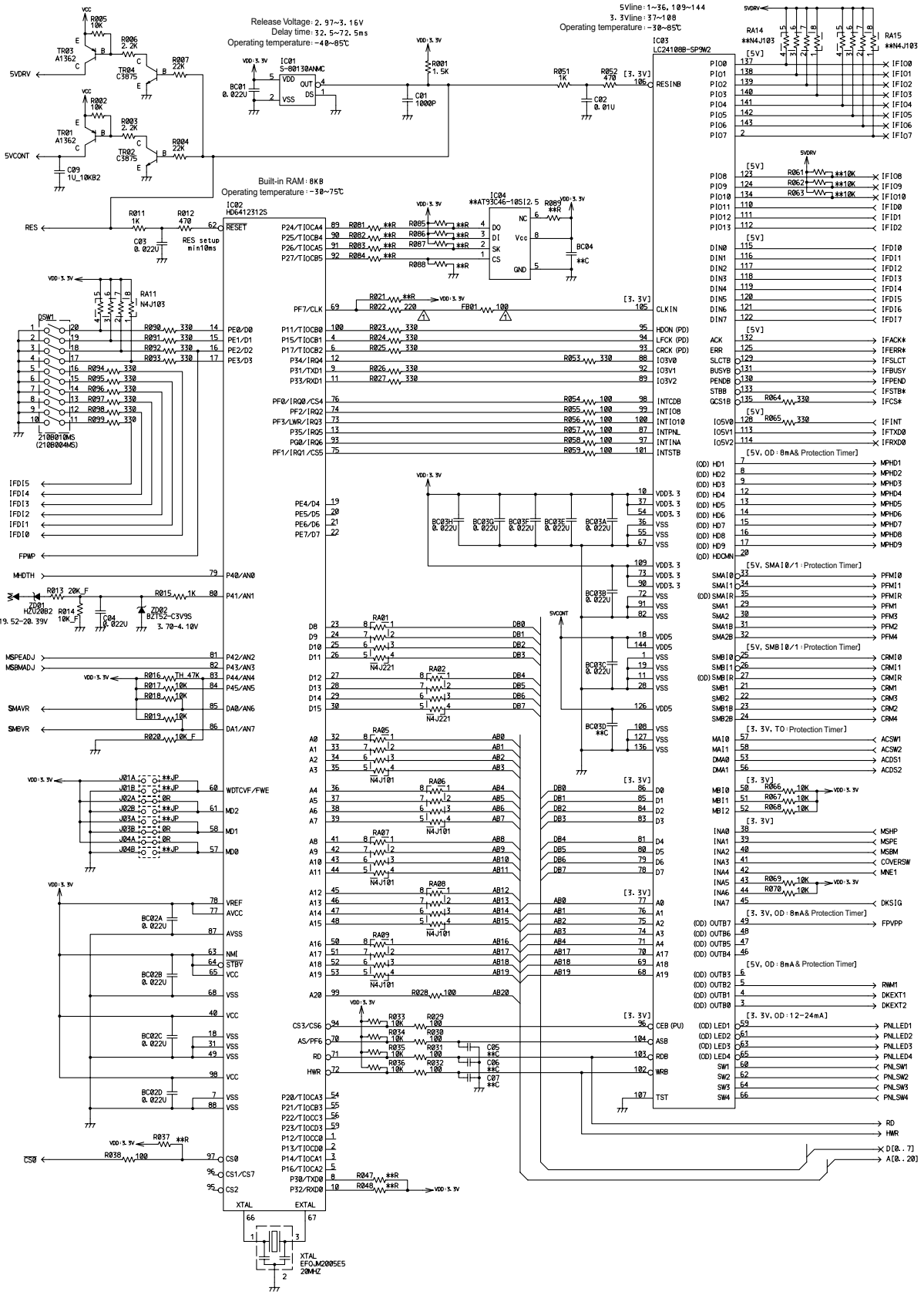
DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
R135		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R136		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		
R137		NPN	CHIP RESISTOR 33 K-OHM 1/16W	1		
R141		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R142		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R171-172		NPN	CHIP RESISTOR 220 OHM 1/10W	2		
R175		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R176-179		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R201-209		NPN	CHIP RESISTOR 330 OHM 1/16W	9		
R210		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R211		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R212		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R221-226		NPN	CHIP RESISTOR 330 OHM 1/16W	6		
R227		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R228-229		NPN	CHIP RESISTOR 1.0 OHM 1W	2		
R231		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R232		NPN	CHIP RES1608 1 KOHM 1/16W 1%	1		
R233		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R234		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R241-246		NPN	CHIP RESISTOR 330 OHM 1/16W	6		
R247		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R248-249		NPN	CHIP RESISTOR 1.0 OHM 1W	2		
R251		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R252		NPN	CHIP RES1608 1 KOHM 1/16W 1%	1		
R253		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R254		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R261		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R263-264		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R265-266		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R267		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R269		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R271		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R272-273		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R274-275		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R401		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R402		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R403		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R404		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R405		NPN	CHIP RES1608 1.8 KOHM 1/16W 5%	1		
R406		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R407		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R408		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R409		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R411		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R412		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R414		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R415		NPN	CHIP RES1608 3.9 KOHM 1/16W 5%	1		
R421		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R422-423		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
RA01-02		NPN	RESIS. ARRAY CHIP MNR14J221*	2		
RA05-09		NPN	RESIS. ARRAY CHIP MNR14J101*	5		
RA11		NPN	RESIS. ARRAY CHIP MNR14J103*	1		
RA21-22		NPN	RESIS. ARRAY CHIP CN1J4K222J*	2		
RA41-44		NPN	RESIS. ARRAY CHIP CN1J4K472J*	4		
RA45		NPN	RESIS. ARRAY CHIP CN1J4K182J*	1		
SW11		NPN	PUSH SWITCH SKHHLV	1		

Main Logic Board (Parallel Interface)

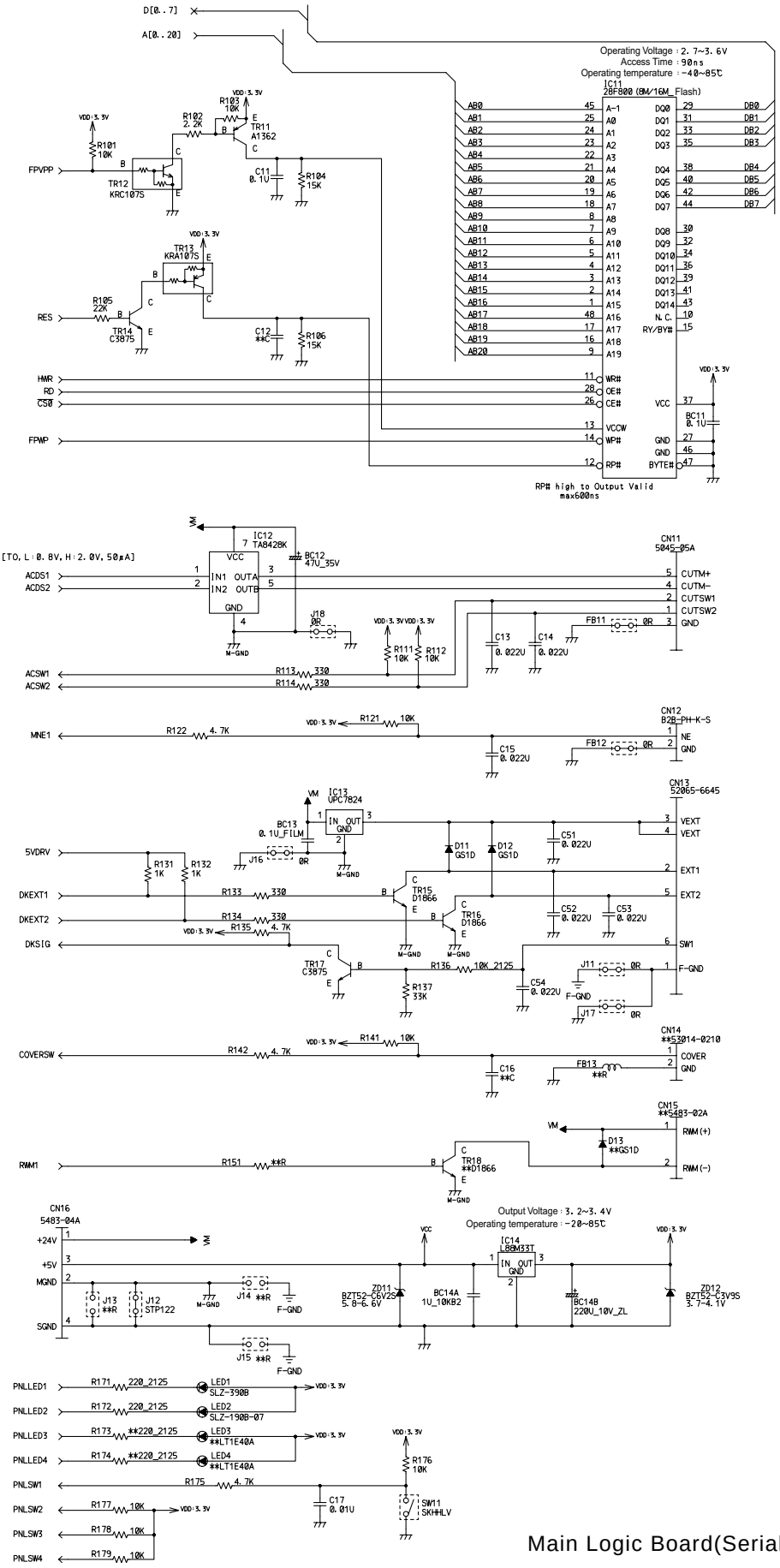
DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
TR01		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR02		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR03		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR04		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR11		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR12		NPN	DIGITAL TRANSISTOR KRC107S	1		
TR13		NPN	DIGITAL TRANSISTOR KRA107S	1		
TR14		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR15-16		NPN	TRANSISTOR 2SD1866TV2*	2		
TR17		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR21-29		NPN	CHIP TRANSISTOR 2SC5832*	9		
VR22		NPN	RP CHIP RESISTOR EVM3S-47K	1		
XTAL		NPN	CERA. OSC CHIP EFOJM2005E5*	1		
ZD01		NPN	ZENER DIODE CHIP HZU20B2TRF	1		
ZD02		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD11		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
ZD12		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD21-22		NPN	ZENER DIODE CHIP BZT52-C6V2S*	2		

5. Main Logic Board (Serial Interface)

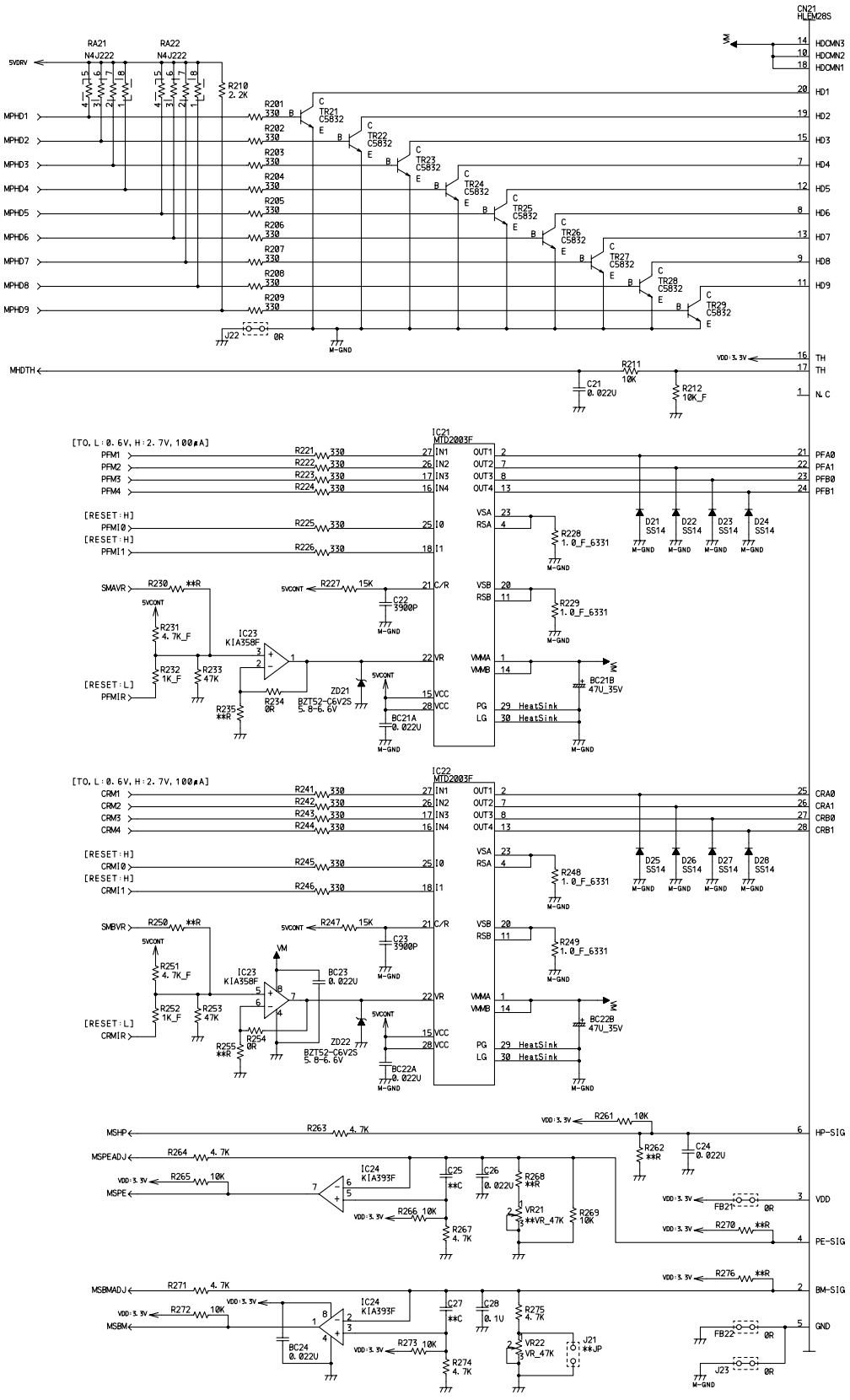
5-1. Circuit Diagram



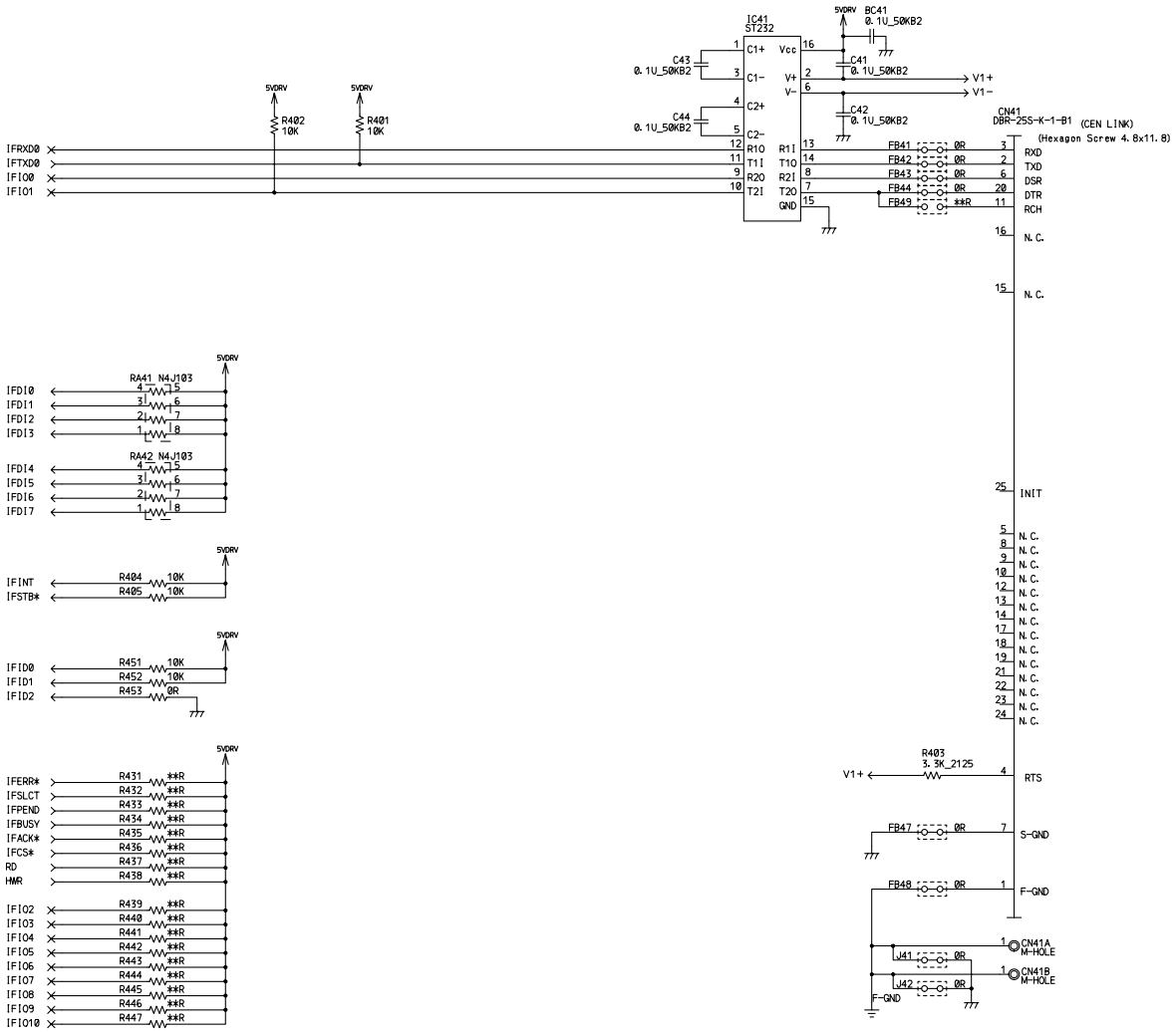
Main Logic Board(Serial Interface) 1/4



Main Logic Board(Serial Interface) 2/4



Main Logic Board(Serial Interface) 3/4



Main Logic Board(Serial Interface) 4/4

5-2. Parts List

Main Logic Board (Serial Interface)

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
BC01		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02B		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02C		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02D		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03B		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03C		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03E		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03F		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03G		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC03H		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC11		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
BC12		NPN	CHEM. CAPA. 47UF 35V	1		
BC13		NPN	FILM CAPA. 0.1UF 50V	1		
BC14A		NPN	CERA. CAPA. CHIP 1UF 10V	1		
BC14B		NPN	CHEM. CAPA. 220UF 10V	1		
BC21A-22A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
BC21B-22B		NPN	CHEM. CAPA. 47UF 35V	2		
BC23-24		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
BC41		NPN	CERA. CAPA. CHIP 0.1UF 50V	1		
C01		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C02		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C03-04		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
C09		NPN	CERA. CAPA. CHIP 1UF 10V	1		
C11		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C13-15		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	3		
C17		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C21		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C22-23		NPN	CERA.CAPA.CHIP1608 3900PF 50V	2		
C24		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C26		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C28		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C41-44		NPN	CERA. CAPA. CHIP 0.1UF 50V	4		
C51-54		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	4		
CN11		NPN	CONNECTOR 5045-05A	1		
CN12		NPN	CONNECTOR B2B-PH-K-S	1		
CN13		NPN	CONNECTOR 52065-6645	1		
CN16		NPN	CONNECTOR 5483-04A	1		
CN21		NPN	CONNECTOR HLEM28S-1	1		
CN41		NPN	CONNECTOR DBLD-J25SAF-21L9-1	1		
D11-12		NPN	DIODE CHIP GS1D*	2		
D21-28		NPN	SCHOTTKY DIODE CHIP SS14*	8		
DSW1		NPN	DIP SWITCH 210B010MS-F	1		
FB01		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
FB11-12		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
FB21-22		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
FB41-44		NPN	CHIP RESISTOR 0 OHM 1/16W	4		
FB47-48		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
IC01		NPN	IC-RESET S-80130AN*	1		
IC02		NPN	CPU HD6412312SVTE25	1		
IC03		NPN	GATE ARRAY LC24108B-SP9W2	1		
IC11		NPN	FLASH MEMORY 28F800BJHE-90	1	S5.**	
		NPN	FLASH MEMORY SEAL KEI-801	1		
IC12		NPN	IC-MOTOR TA8428K	1		
IC13		NPN	IC-REG UPC7824	1		

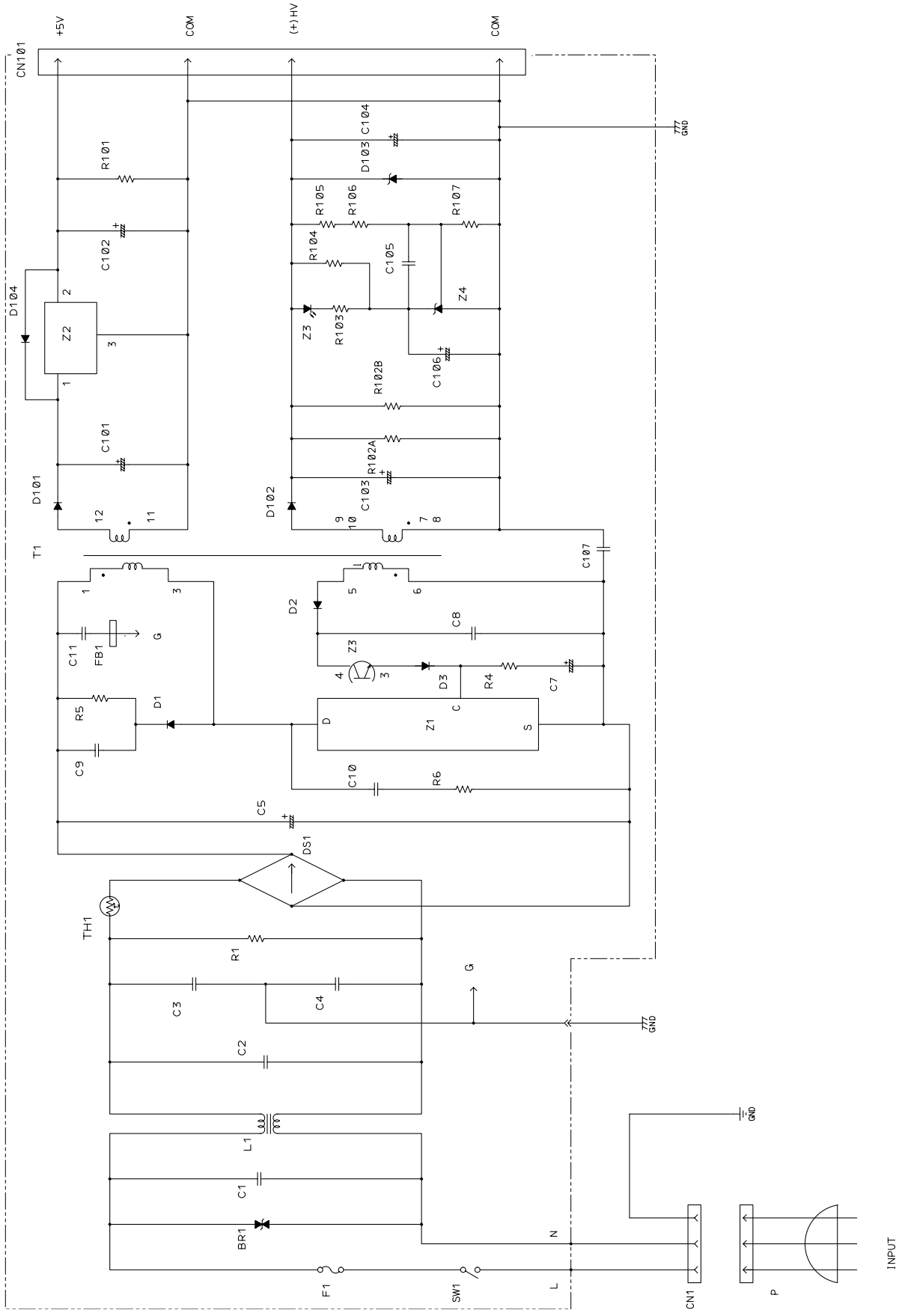
DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
IC14		NPN	IC-REG L88M33T*TL	1		
IC21-22		NPN	IC-MOTOR MTD2003F-4072	2		
IC23		NPN	IC-LIN KIA358F*EL	1		
IC24		NPN	IC-LIN KIA393F*EL	1		
IC41		NPN	IC-I/F ST232CDR*	1		
J02A		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J03B		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J04A		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J11		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J12		NPN	JUMPER WIRE STP122	1		
J16-18		NPN	CHIP RESISTOR 0 OHM 1/16W	3		
J22-23		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
J41-42		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
LED1		NPN	LED SLZ-390B	1		
LED2		NPN	LED SLZ-190B-07	1		
R001		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R002		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R003		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R004		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R005		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R006		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R007		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R011		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R012		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R013		NPN	CHIP RESISTOR 20 K-OHM 1/16W	1		
R014		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R015		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R016		NPN	CHIP THERMISTOR TBPS1R473J*	1		
R017-019		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R020		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R022		NPN	CHIP RES1608 220 OHM 1/16W 5%	1		
R023-027		NPN	CHIP RESISTOR 330 OHM 1/16W	5		
R028-032		NPN	CHIP RESISTOR 100 OHM 1/16W	5		
R033-036		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R038		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R051		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R052		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R053		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R054-059		NPN	CHIP RESISTOR 100 OHM 1/16W	6		
R064-065		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R066-070		NPN	CHIP RESISTOR 10 K-OHM 1/16W	5		
R090-099		NPN	CHIP RESISTOR 330 OHM 1/16W	10		
R101		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R102		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R103		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R104		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R105		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R106		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R111-112		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R113-114		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R121		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R122		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R131-132		NPN	CHIP RESISTOR 1 K-OHM 1/16W	2		
R133-134		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R135		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R136		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
R137		NPN	CHIP RESISTOR 33 K-OHM 1/16W	1		
R141		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R142		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R171-172		NPN	CHIP RESISTOR 220 OHM 1/10W	2		
R175		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R176-179		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R201-209		NPN	CHIP RESISTOR 330 OHM 1/16W	9		
R210		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R211		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R212		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R221-226		NPN	CHIP RESISTOR 330 OHM 1/16W	6		
R227		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R228-229		NPN	CHIP RESISTOR 1.0 OHM 1W	2		
R231		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R232		NPN	CHIP RES1608 1 KOHM 1/16W 1%	1		
R233		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R234		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R241-246		NPN	CHIP RESISTOR 330 OHM 1/16W	6		
R247		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R248-249		NPN	CHIP RESISTOR 1.0 OHM 1W	2		
R251		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R252		NPN	CHIP RES1608 1 KOHM 1/16W 1%	1		
R253		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R254		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R261		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R263-264		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R265-266		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R267		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R269		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R271		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R272-273		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R274-275		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R401-402		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R403		NPN	CHIP RESISTOR 3.3 K-OHM 1/10W	1		
R404-405		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R451-452		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R453		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
RA01-02		NPN	RESIS. ARRAY CHIP MNR14J221*	2		
RA05-09		NPN	RESIS. ARRAY CHIP MNR14J101*	5		
RA11		NPN	RESIS. ARRAY CHIP MNR14J103*	1		
RA21-22		NPN	RESIS. ARRAY CHIP CN1J4K222J*	2		
RA41-42		NPN	RESIS. ARRAY CHIP MNR14J103*	2		
SW11		NPN	PUSH SWITCH SKHHLV	1		
TR01		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR02		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR03		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR04		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR11		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR12		NPN	DIGITAL TRANSISTOR KRC107S	1		
TR13		NPN	DIGITAL TRANSISTOR KRA107S	1		
TR14		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR15-16		NPN	TRANSISTOR 2SD1866TV2*	2		
TR17		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR21-29		NPN	CHIP TRANSISTOR 2SC5832*	9		
VR22		NPN	RP CHIP RESISTOR EVM3S-47K	1		
XTAL		NPN	CERA. OSC CHIP EFOJM2005E5*	1		

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
ZD01		NPN	ZENER DIODE CHIP HZU20B2TRF	1		
ZD02		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD11		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
ZD12		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD21-22		NPN	ZENER DIODE CHIP BZT52-C6V2S*	2		

6. Power Supply Unit

6-1. Circuit Diagram



6-2. Parts List

Power Supply Unit

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
BR1		NPN	VARISTOR ERZVEAV511*	1		
C1		NPN	FILM CAPA. 0.22UF 250V	1		
C2		NPN	FILM CAPA. 0.1UF 250V	1		
C3-4		NPN	CERA. CAPA. 2200PF 250V	2		
C5		NPN	CHEM. CAPA. 120UF 400V	1		
C7		NPN	CHEM. CAPA. 10UF 16V	1		
C8		NPN	FILM CAPA. 0.1UF 50V	1		
C9		NPN	FILM CAPA. 0.01UF 630V	1		
C10		NPN	CERA. CAPA. 220PF 1KV	1		
C11		NPN	CERA. CAPA. 680PF 250V	1		
C101		NPN	CHEM. CAPA. 1000UF 16V	1		
C102		NPN	CHEM. CAPA. 470UF 10V	1		
C103		NPN	CHEM. CAPA. 1000UF 35V	1		
C104		NPN	CHEM. CAPA. 2200UF 35V	1		
C105		NPN	FILM CAPA. 0.1UF 50V	1		
C106		NPN	CHEM. CAPA. 10UF 16V	1		
C107		NPN	CERA. CAPA. 2200PF 250V	1		
CN1		NPN	INLET SS-7B-VDER-4.8	1		
CN101		NPN	CABLE UNIT 4X135CC SP5	1		
D1		NPN	FAST DIODE RU1P	1		
D2		NPN	DIODE 1S2076A*A	1		
D3		NPN	FAST DIODE RU1P	1		
D101		NPN	SCHOTTKY DIODE SB140	1		
D102		NPN	FAST DIODE FMX-12S	1		
D103		NPN	ZENER DIODE MA1300*A	1		
D104		NPN	DIODE 1S2076A*A	1		
DS1		NPN	DIODE STACK KBP155G	1		
F1		NPN	FUSE 215-2.5A-250V	1		
		NPN	FUSE HOLDER EYF52BCY	2		
FB1		NPN	BEADS INDUCTOR RH035047AT-Y7	1		
G		NPN	WIRE 18UL1015G/Y80T	1		
J1-9		NPN	JUMPER WIRE STP122	9		
J2		NPN	INSULATION TUBE IRRAX F2-1.0	1		
		NPN	JUMPER WIRE STP122	1		
L1		NPN	NOISE FILTER HFZ24H05	1		
R1		NPN	RD RESISTOR 680 K-OHM 1/4W 5%	1		
R4		NPN	RD RESISTOR 8.2 OHM 1/4W 5%	1		
R5		NPN	RN RESISTOR 30 K-OHM 3W 5%	1		
R6		NPN	RN RESISTOR 22 OHM 1W 5%	1		
R101		NPN	RD RESISTOR 470 OHM 1/4W 5%	1		
R102A-B		NPN	CEMENT RESISTOR 1.0 K-OHM 3W5%	2		
R103		NPN	RD RESISTOR 510 OHM 1/4W 5%	1		
R104		NPN	RD RESISTOR 620 OHM 1/4W 5%	1		
R105		NPN	RD RESISTOR 6.2 K-OHM 1/4W 1%	1		
R106		NPN	RD RESISTOR 82 K-OHM 1/4W 1%	1		
R107		NPN	RD RESISTOR 10 K-OHM 1/4W 1%	1		
SW1		NPN	SEESAW SWITCH SF-W1P1A03BB	1		
T1		NPN	CONVERTER TRANSFORMER SP500	1		
TH1		NPN	THERMISTOR SCK10162LI	1		
Z1		NPN	IC-REG MIP0226SY	1		
		NPN	INSULATION TUBE 12X23X0.45T	1		
Z2		NPN	IC-REG PQ05RD11	1		
Z3		NPN	OPTCOUPLER ON3171-R	1		
Z4		NPN	IC-REG KA431Z*	1		
-		NPN	FASTENER T18S	1		
		NPN	WIRE 22UL1015WHT100	1		

DRWG.NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
-		NPN	WIRE 22UL1015BRN100	1		
		NPN	RADIATION PLATE SP5	1		
		NPN	TR CLIP SP5	1		
		NPN	HEAT-SHRINK TUBE F2-5.0	1		
		NPN	S/N SEAL KEI-802	1		

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