DOT MATRIX PRINTER

SP700R Series

[9 Wire Print Head]

Technical Manual

< FIRST EDITION >

INTRODUCTION

This manual describes the thermal printer SP700R 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 : May 2007**

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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. Adjusting the Print Head and Platen Gap

1-1. Measuring the Print Head and Platen Gap

1. See sections 2 and 3 for details on how to remove the tear bar.

2. Insert a thickness gauge [3] between the print head [1] and platen [2] to measure the gap.

3. Measure the left, right and center of the platen (in the printing region). The standard for the gap is between 0.40 and 0.45mm.
   If the gap is not at the standard value, see page 1-2 to adjust the gap.
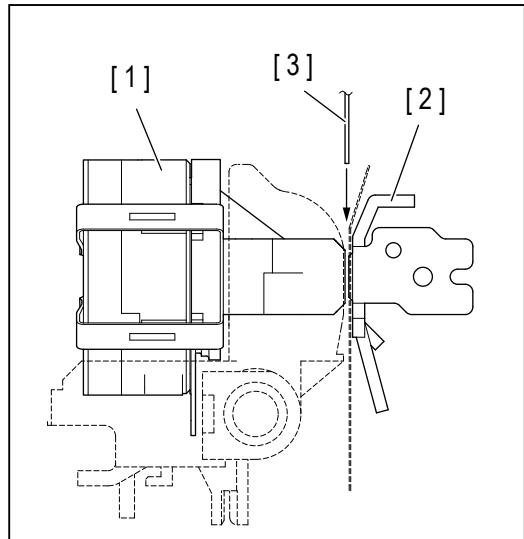
Fig. 1-1 Measuring the Gap

1-2. Adjusting the Print Head and Platen

1. To adjust the left side gap, remove the adjustment bushing [4] screw in the left side frame and move the adjustment bushing [4] up and down.
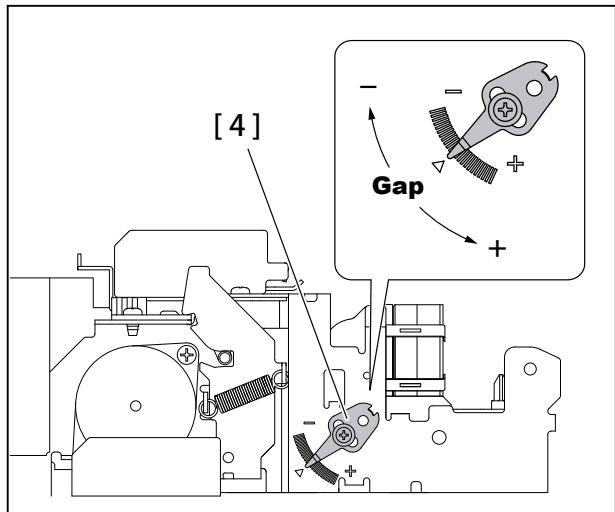
Fig. 1-2 Adjusting the Gap (Left)

2. To adjust the right side gap, remove the adjustment bushing [5] screw in the right side frame and move the adjustment bushing [5] up and down.

3. Measure the gap as described in 1-1 above.

4. If the measurement value is not with 0.4 to 0.45, repeat steps 1 and 2.

5. If the adjustment is within that range, tighten the screws you loosened or removed.
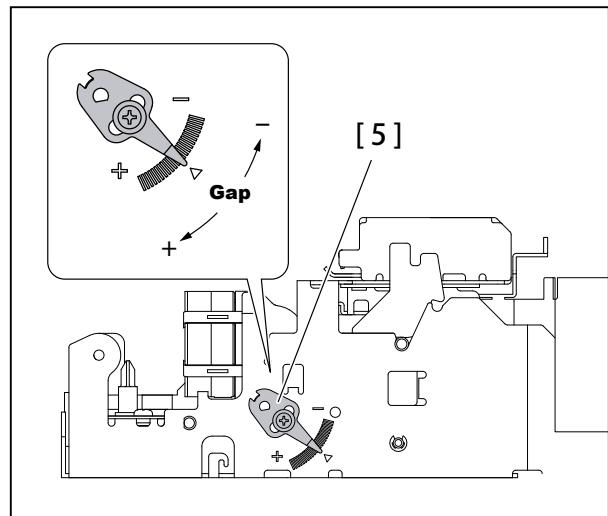
Fig. 1-3 Adjusting the Gap (Right)

2. Adjusting the Belt Tension

1. See sections 2 and 3 for details on how to remove the tear bar.

2. See sections 2 and 4 for details on how to remove the ribbon base.

3. Reciprocatingly move the carriage unit [1] two or three times to warm up the belt [2].

4. Move the carriage unit to the left side.

5. Touch the measurement probe of the tension gauge [4] to the position [3] marked with a triangle (Δ) on the frame to measure the tension of the timing belt.

6. The standard for the timing belt tension is between 0.40 and 0.44N. If the measured value is not at the standard value, loosen the screw [6] fastening the tension plate [5] to adjust the tension of the belt.

7. When the belt has been adjusted to the predetermined tension, tighten the screw [6].

8. If the belt tension cannot be adjusted to the predetermined value, replace the timing belt with a new one and readjust it.

9. Refer to the first section to measure and adjust the print head and platen gap.

10. Attach the tear bar, and see section 3 to adjust the paper feed path.

11. Install the ribbon base.
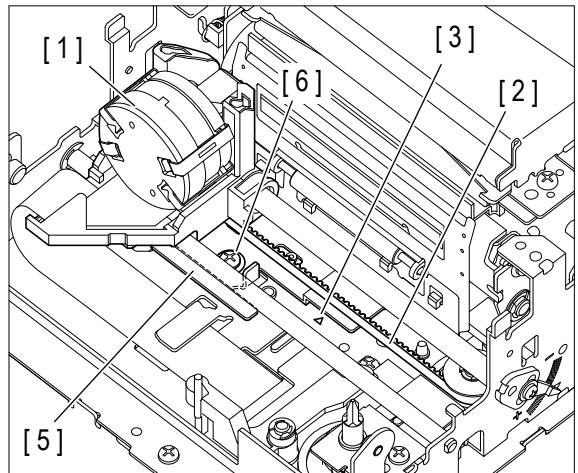
Fig. 2-1 Adjusting the Belt Tension
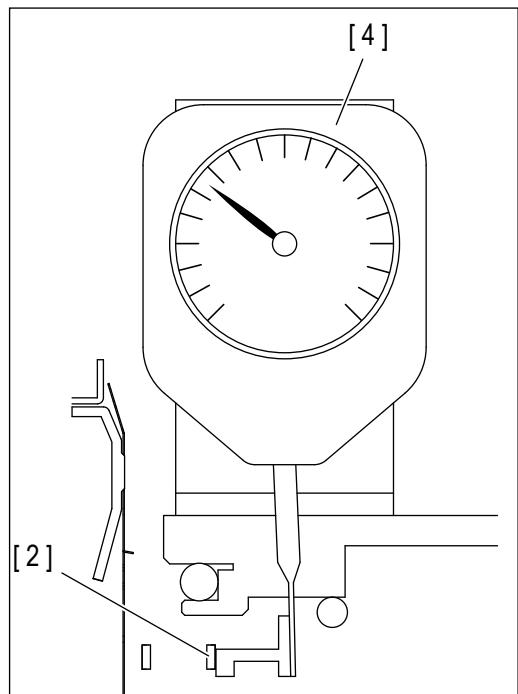

Fig. 2-2 Measuring the Belt Tension

3. Adjusting the Paper Feed Path

1. Insert a thickness gauge [3] between the tear bar base [1] and cutter guide [2] to measure the gap.
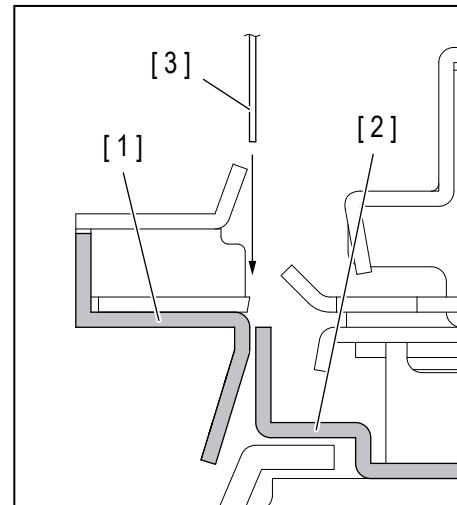

Fig. 3-1 Measuring the Gap

2. The standard value for the gap is 0.3 to 0.5 mm. If the adjustment is within that range, tighten the screws [4] you loosened or removed.
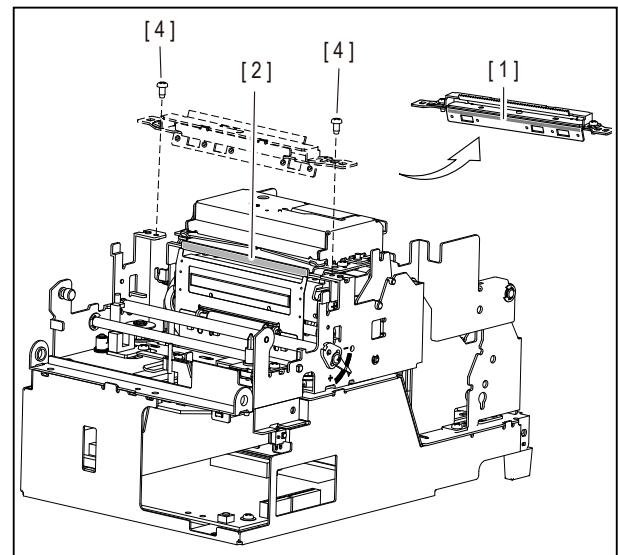
Fig. 3-2 Where to Measure the Gap

4. Adjusting the Printing Dot Mis-positioning

To adjust the amount of discrepancy of the dots in uni-directional and reciprocal directions, in 1/8 dot increments.
The procedures are explained below.

1. Set paper in the printer.

2. Turn on the power while pressing the FEED switch.

3. After the buzzer beeps twice, release the FEED switch.
    This enters the printing position adjustment mode.

4. When the printing position adjustment mode is entered, a starting message is printed in one line.
    ("Position Adjusting Mode")

5. Next, the printing position adjustment pattern shown below is printed.
    The line that has an asterisk (*) is the current printer setting.

```
Dot Alignment Adjust Mode


1:
 2 - 4 Sec --> Backward
 4 -   Sec --> Forward
2: Lv.51
} } } } } } } } } } } } } } } } } } } }
3: Lv.52
} } } } } } } } } } } } } } } } } } } }
4: Lv.53
} } } } } } } } } } } } } } } } } } } }
5: Lv.54
| | | | } } } } } } } } } } } } } } } }
6: Lv.55
| | | | | | | | | | | | | | | | | | | |
7: Lv.56
| | | | | | | | | | | | | | | | | | | |
*  8: Lv.57
| | | | | | | | | | | | | | | | | | | |
9: Lv.58
| | | | | | | | | | | | | | | | | | | |
10: Lv.59
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11: Lv.60
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12: Lv.61
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13: Lv.62
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14: Lv.63
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16: Lv.65
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17: Lv.66
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18: Lv.67
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19: Lv.68
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20: Lv.69
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21: Lv.70
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22: Lv.71
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23: Lv.72
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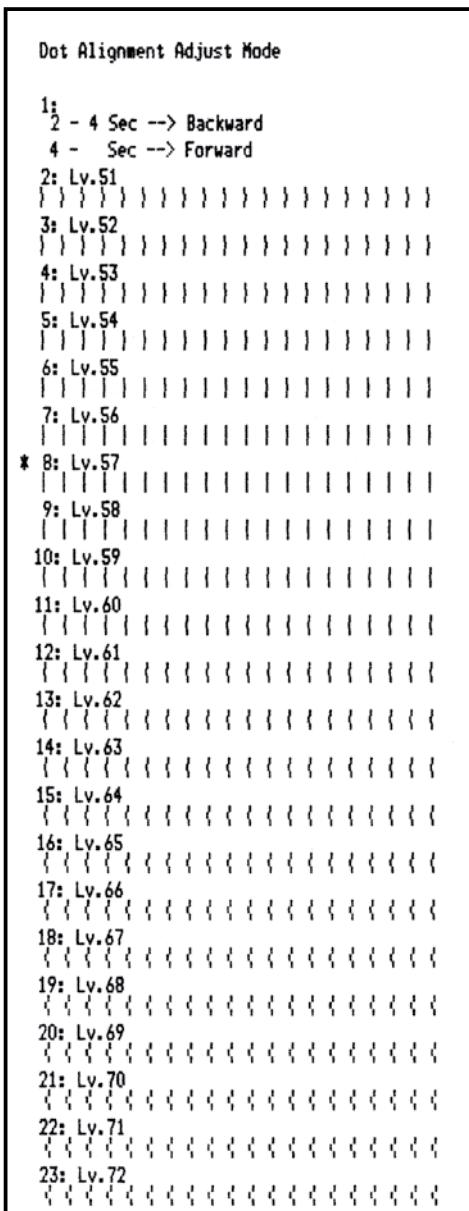
6. To adjust, select the adjustment pattern with the smallest amount of discrepancy in the dots in coming and going directions by looking at the print results. To do so, count from the top line to the line of the desired pattern, and press the FEED switch for that number of times. When doing so, when you get to the number of times that corresponds to the desired line number, continue to press the FEED switch (approximately 2 seconds) until the buzzer rings for a long time to set the new value.

    < For example, to set the eighth line from the top, press the FEED switch seven times, and on the eighth time, hold down the FEED switch (for approx. 2 seconds) until the switch buzzer rings. >

    If you press the FEED switch up to 23 times, which is the switch setting range, the buzzer will ring once. If you go beyond that the buzzer will issue a warning by repeatedly ringing.

7. If you do not see a pattern in the adjustment patterns that you can use, you can use the Backward or Forward operations below to change the settings of the dot correction and reprint the pattern, then retry the operations from #3. above.

    Backward:

    Hold down the FEED switch for two to four seconds. The buzzer will ring and an adjustment pattern corrected more to the left than the outward pass, and more to the right than return pass than the currently printed pattern.

    Forward:

    Hold down the FEED switch for more than four seconds. The buzzer will ring twice and an adjustment pattern corrected more to the right than the outward pass, and more to the left than return pass than the currently printed pattern.

8. After making the setting, the printer will then write that new setting to the non-volatile memory.Below that, the printer will print the set dot adjustment pattern and the message "Setting Completed."

    Note: The printer will write the setting to the non-volatile memory between the time the long buzzer has rung when you have determined the setting and printing of the message has started. If you turn the power off during that time, the dot adjustment setting and all memory switch settings will be initialized. Absolutely do not turn the power off.
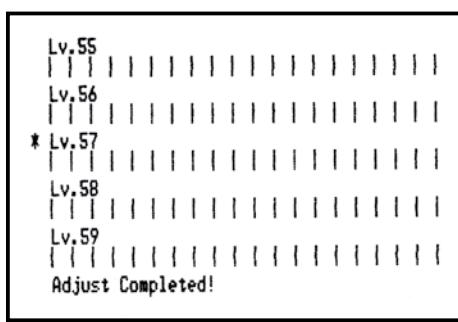

9. The buzzer will ring once, for a long time, and the printer will automatically be reset.

    This ends the printing position adjustment mode.

5. Adjusting the Black Mark Sensor

1. Check that the printer power is off. Unplug the power cord from the outlet.

2. Turn the printer over as shown in the drawing (vertical layout) and remove the screw to remove the DIP switch cover on the bottom of the printer. You will not be able to make the correct adjustments if the printer is turned on its side. Always set the printer as shown in the drawing (the vertical layout).

⚠*CAUTION*

>   *The printer will be unstable and could fall when it is placed upright.Therefore, secure the printer by placing your hand on the printer before performing this operation.*
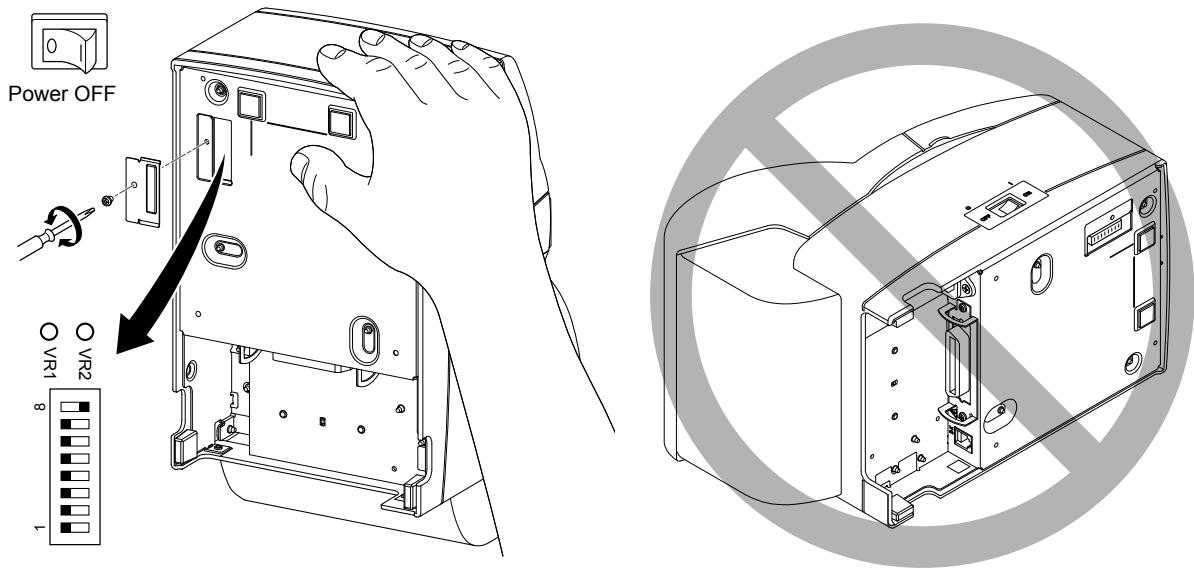
3. The volume <VR2> is turned to make the adjustments, so check the position of the volume. Have a small, regular screwdriver ready to insert into the hole.

4. Set ordinary roll paper that is not for black marks.

5. Plug in the power cord, and turn the printer on while pressing the FEED switch.

6. After the buzzer beeps four times, release the FEED switch.
    The printer will enter the black mark sensor adjustment mode.

7. Use the regular screwdriver to turn the volume <VR2>. Adjust this to the position where both the ERROR lamp (red) and the POWER lamp (green) both light.

8. Turn the power switch off.

This ends 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. Rear Cover Unit

1. Turn the power switch ① off and unplug the power plug from the AC outlet.

2. Pull the open lever ② toward yourself to open the rear cover.

3. Removal
    - 2 screws ③
    - Rear cover unit ④
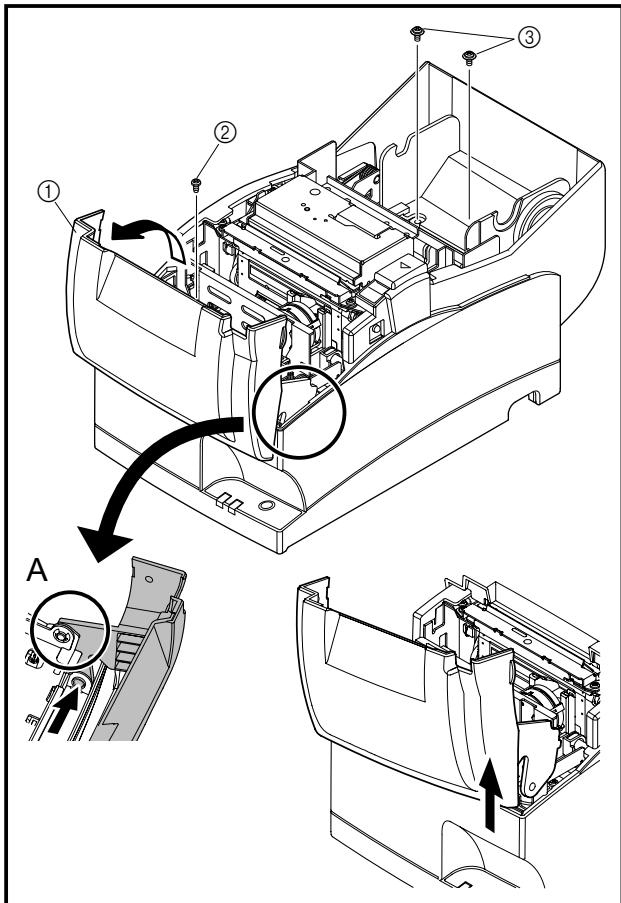
2. Front Cover and Case Unit

1. Turn the power off and unplug the power plug from the AC outlet.

2. Open the front cover ①

3. Removal
    - Screw ②
    - 2 screws ③

    There is a little play in the printer mechanism by first removing the screws fastening the case unit. This will make it easier to remove the front cover ①.

    - Front cover ①

    Remove the front cover with the procedures below.

    (1) Widen the A portion on the right side of the front cover ① to remove from the front cover from the mechanism.

    (2) Lift the right side removed from the mechanism.
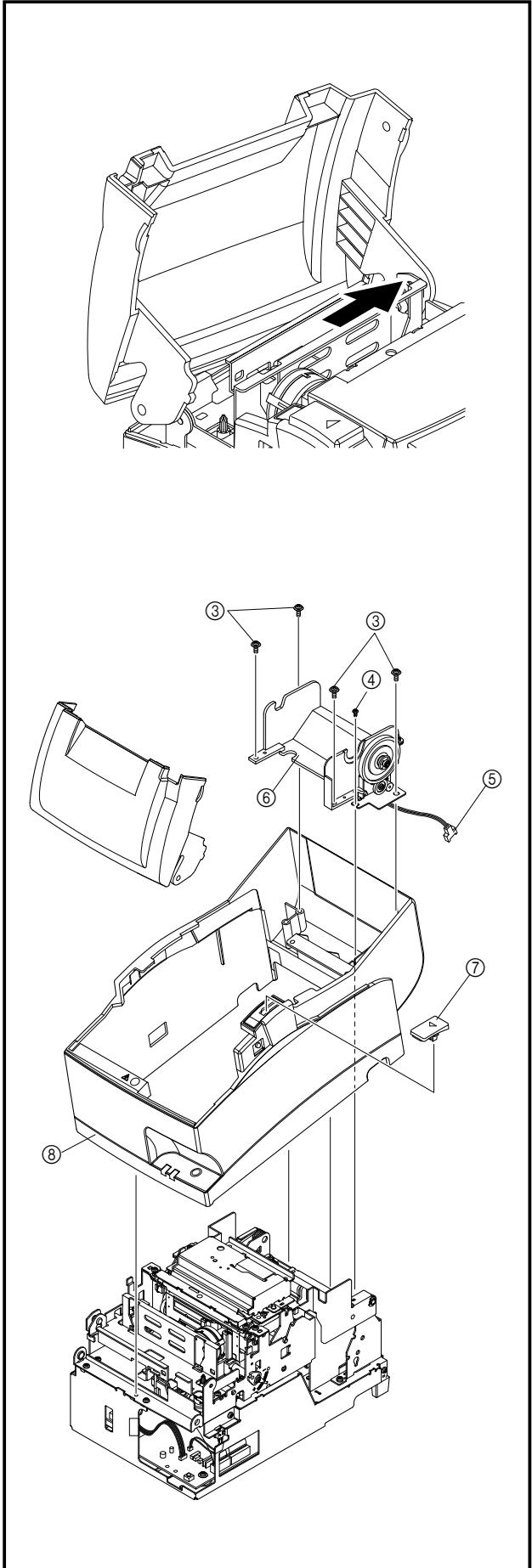
(3) With the same procedure on the other side of the front cover ①, remove by widening the A portion.

- 4 screws ③
- Screw ④
- Connector ⑤
- Paper winder ⑥
- Open lever ⑦
- Case unit ⑧

At this time, widen the case that is near the power switch and avoid touching the switch. This can be easily removed by lift the backside at an angle.

3. Tear Bar

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 2, remove the case unit.

3. Removal
   - 2 screws ①
   - Tear bar ②
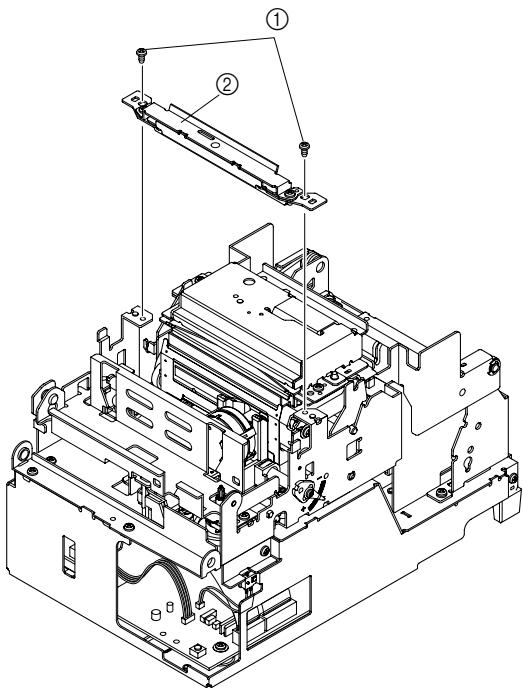
4. Ribbon Base

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 2, remove the case unit.

3. Removal
   - Stop ring ①
   - Spring ②
   - Ribbon base ③
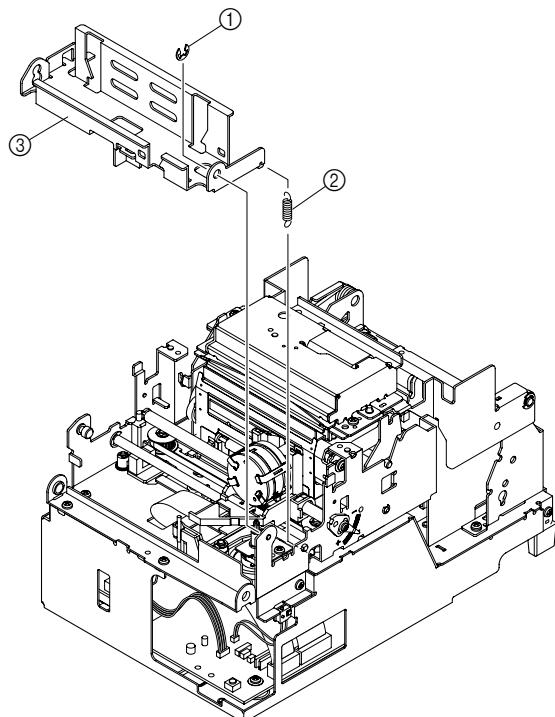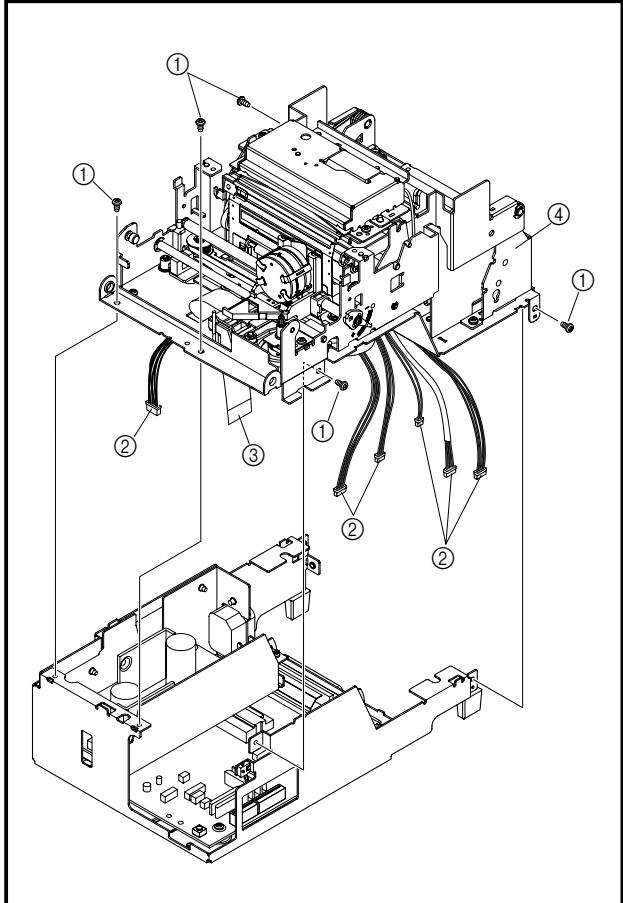
5. Printer Mechanism

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 2, remove the case unit.

3. Removal
   - 5 screws ①
   - Connectors ②
   - FL cable ③
   - Printer mechanism ④
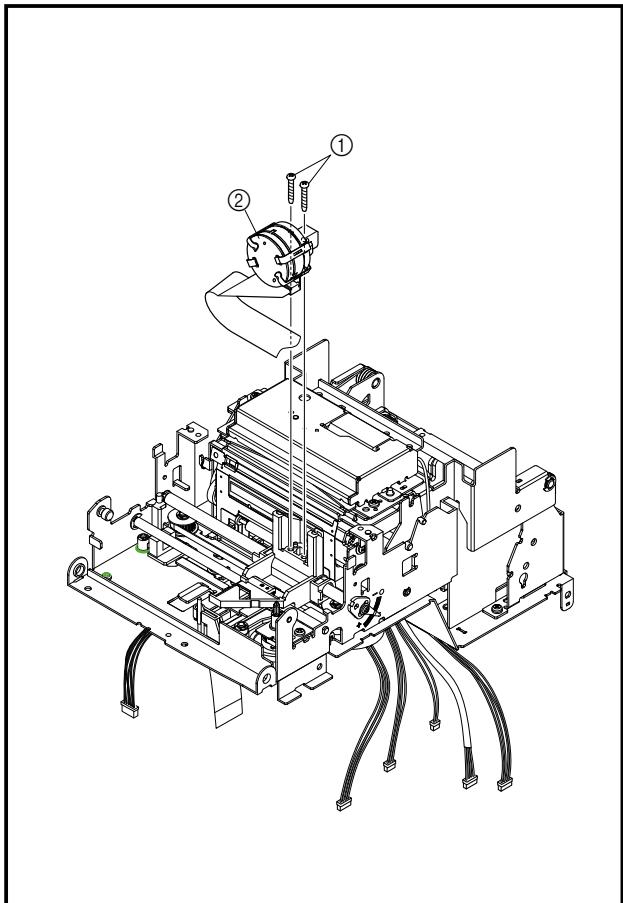
6. Print Head

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 5, remove the printer mechanism.

3. Removal
   - 2 screws ①
   - Print head ②
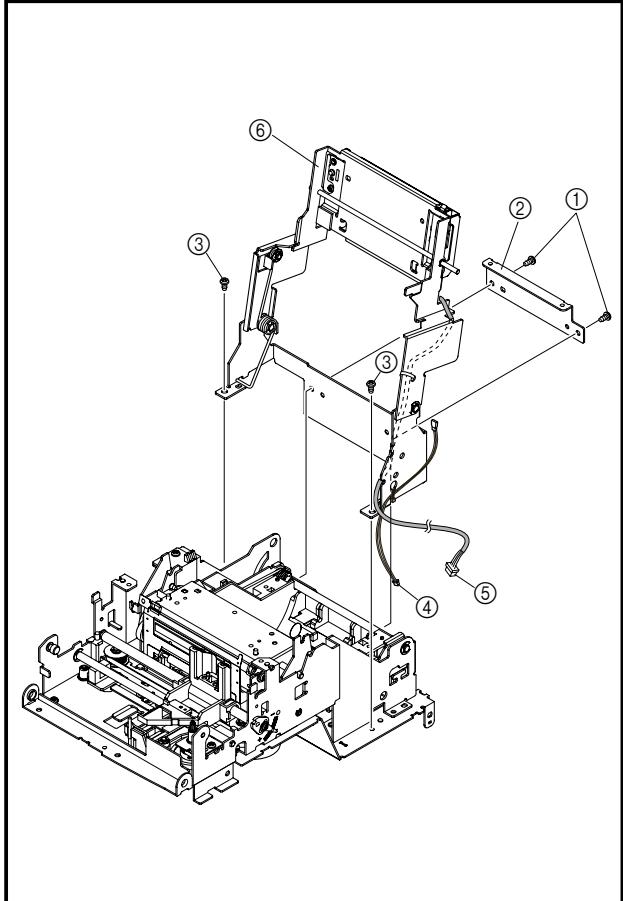
7. PW Arm Frame Unit

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 5, remove the printer mechanism.

3. Removal
   - 2 screws ①
   - PW case angle ②
   - 2 screws ③
   - Connector ④
   - Connector ⑤ (Auto cutter model only)
   - PW arm frame unit ⑥
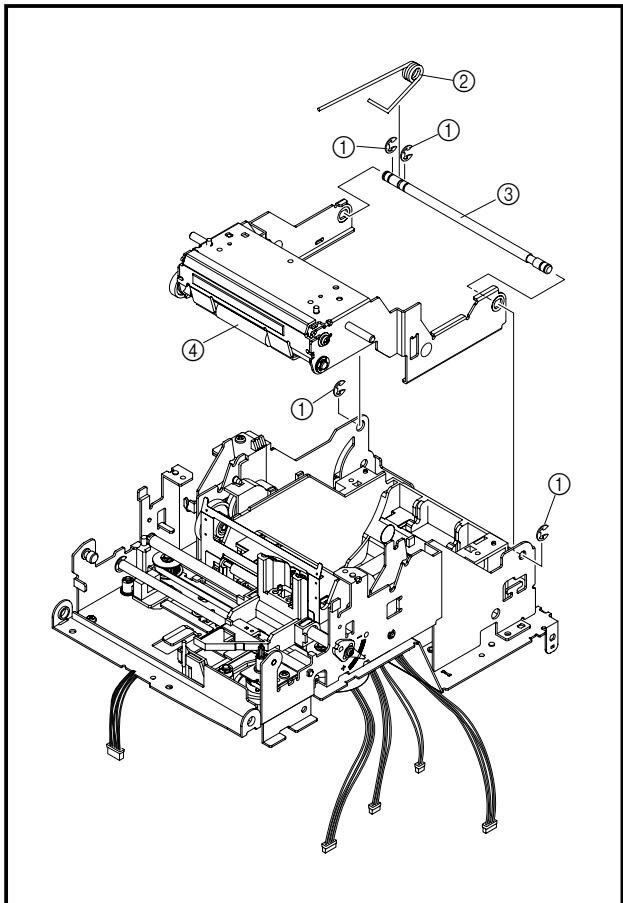
8. Platen Arm Unit

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 7, remove the PW arm frame unit.

3. Removal
   - Four stop rings ①
   - Platen holder spring C ②
   - Platen arm shaft ③
   - Platen arm unit ④

9. CR Motor

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 5, remove the printer mechanism.

3. Removal
   - 2 screws ①
   - CR motor ②
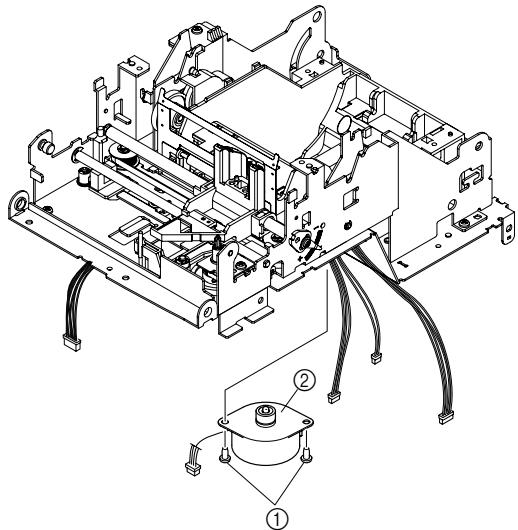
10. PF Moter

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 8, remove the platen arm unit.

3. Removal
   - 3 screws ①
   - Paper guide A ②
   - 5 screws ③
   - Fastener ④
   - Main chassis ⑤
   - Screw ⑥
   - Paper feed gear cover ⑦
   - Screw ⑧
   - PF motor ⑨
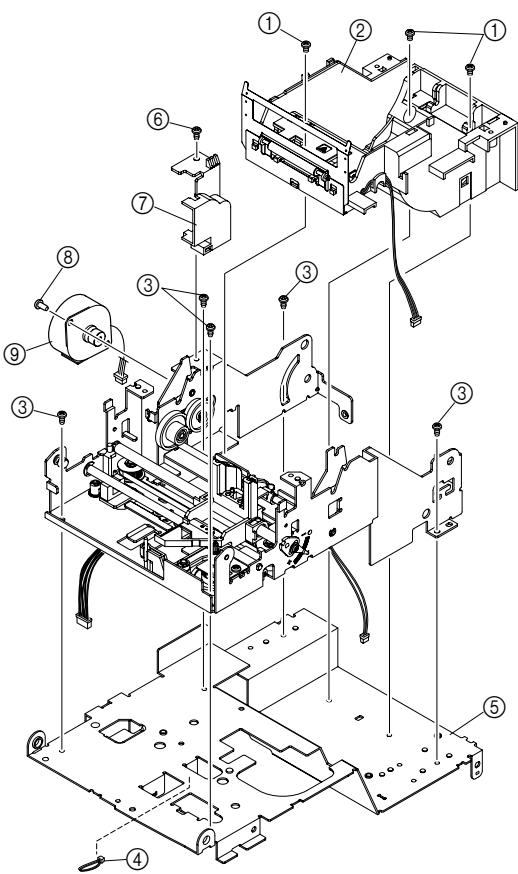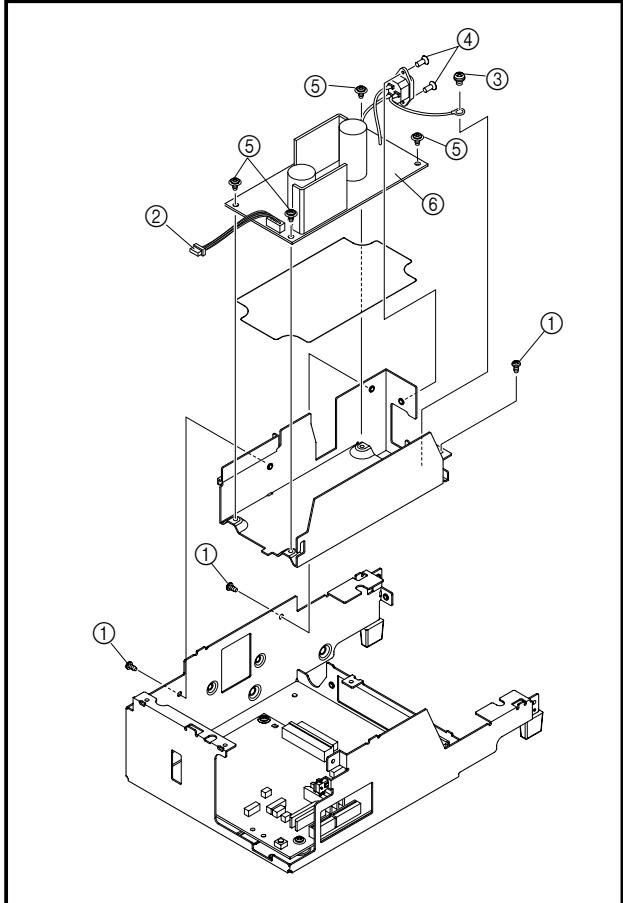
11. Power Unit

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 5, remove the printer mechanism.

3. Removal
   - 3 screws ①
   - Connector ②
   - Screw ③
   - 2 screws ④
   - 4 screws ⑤
   - Power Unit ⑥
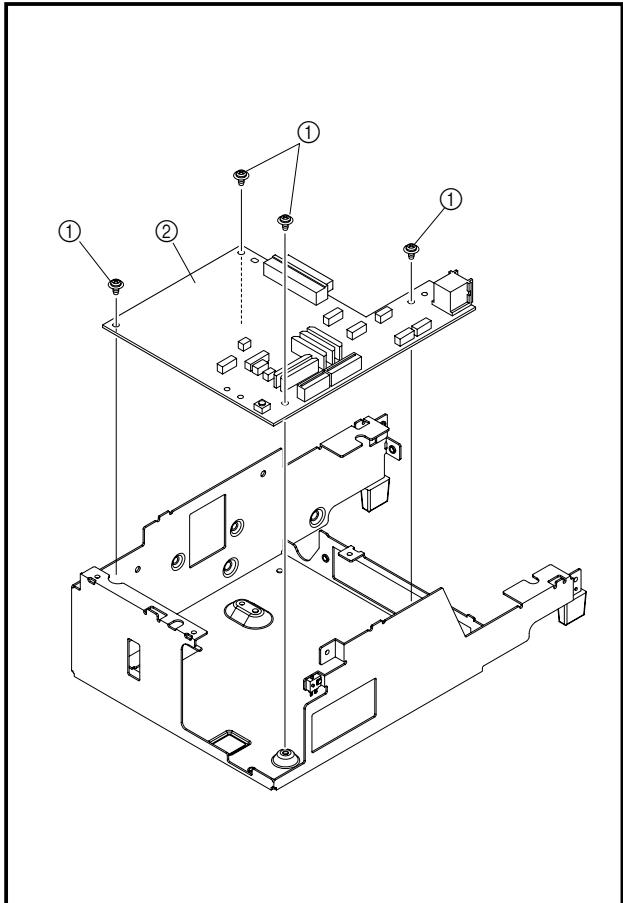
12. Main Logic Board

1. Turn the power off and unplug the power plug from the AC outlet.

2. With the procedures of 9, remove the power unit.

3. Removal
   - 4 screws ①
   - Main logic board ②

CHAPTER 3
MAINTENANCE AND LUBRICATION

3

1. Maintenance

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

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 perating 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.

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

Refer to Fig. 3-1,3-2

NO.	Lubricating Point	Grease/Oil
①	Rubbing surfaces of TM pulley, Pulley cap and Pulley shaft B	EM-30L
②	Rubbing surfaces of Paper guide A and Holder roller	EM-30L
③	Rubbing surfaces of Holder roller and Holder roller spring	EM-30L
④	Rubbing surfaces of Slide roller shaft and Slide roller (PLATEN ARM UNIT)	EM-30L
⑤	Rubbing surfaces of Slide roller and Platen holder spring (PLATEN ARM UNIT)	EM-30L
⑥	Rubbing surfaces of Lock shaft and Open hook (PLATEN ARM UNIT)	EM-30L
⑦	Rubbing surfaces of Slide roller shaft and Slide roller (PW ARM FRAME UNIT)	EM-30L
⑧	Rubbing surfaces of Slide roller and Platen holder spring (PW ARM FRAME UNIT)	EM-30L
⑨	Rubbing surfaces of Lock shaft and Open hook (PW ARM FRAME UNIT)	EM-30L
⑩	Rubbing surfaces of PW arm and PW arm shaft	EM-30L
⑪	Rubbing surfaces of PW arm and PW arm frame	EM-30L
⑫	Rubbing surfaces of Idler pulley, Pulley cap and Pulley shaft	EM-30L
⑬	Rubbing surfaces of Ribbon shaft and Ribbon gear	EM-30L
⑭	Rubbing surfaces of Ribbon shaft and Frame	EM-30L
⑮	Rubbing surfaces of Ribbon shaft and Back stop spring	EM-30L
⑯	Rubbing surfaces of Ribbon gear and Frame	EM-30L
⑰	Rubbing surfaces of Ribbon shaft and Carriage gear cover	EM-30L
⑱	Rubbing surfaces of CR gear shaft and Gear $14 \times 51 \times 0.5$	EM-30L
⑲	Rubbing surfaces of PF gear shaft A and Gear$22 \times 46 \times 0.5$	EM-30L
⑳	Rubbing surfaces of PF gear shaft B and Gear$32 \times 39 \times 0.5$	EM-30L
㉑	Rubbing surfaces of Carriage, Rear slider and Rear stay	EM-30L
㉒	Rubbing surfaces of Carriage and Carriage stay	Mobil 1

㉓	Rubbing surfaces of Cutter Frame B unit and Guide pin	EM-30L
㉔	Rubbing surfaces of Cutter frame B unit and Drive knife	EM-30L
㉕	Rubbing surfaces of Guide and Cutter frame B	EM-30L
㉖	Rubbing surfaces of Link and Wheel pin	EM-30L
㉗	Rubbing surfaces of Link and Link shaft	EM-30L
㉘	Rubbing surfaces of Link and Wave washer	EM-30L
㉙	Rubbing surfaces of Link and Drive pin	EM-30L
㉚	Rubbing surfaces of Worm gear and Worm Wheel	EM-30L
㉛	Rubbing surfaces of Wheel shaft and Worm wheel	EM-30L
㉜	Rubbing surfaces of Worm wheel and Cut washer 4.1 × 6.5 × 0.5	EM-30L

Note : ㉓㉔㉕㉖㉗㉘㉙㉚㉛ and ㉜ are only for SP742R.

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. 3-1.

NO.	Locking Point	Locking Agent
ⓐ	Joining pointing of Timing belt and Carriage	ThreeBond 1400B
ⓑ	Joining pointing of Platen arm assy and Screw-head	ThreeBond 1400B
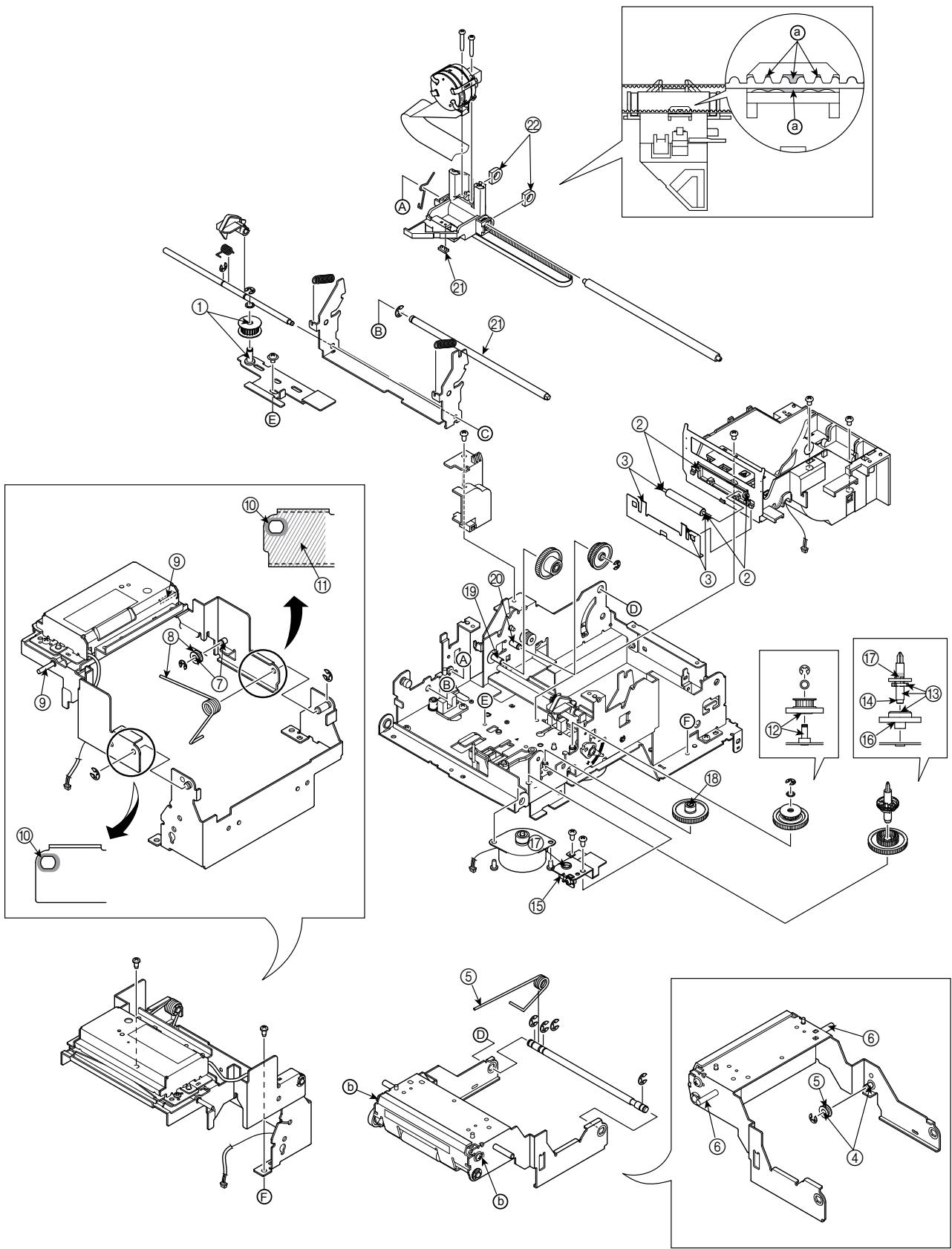
Fig.3-1. Lubrication and screw sealing Position
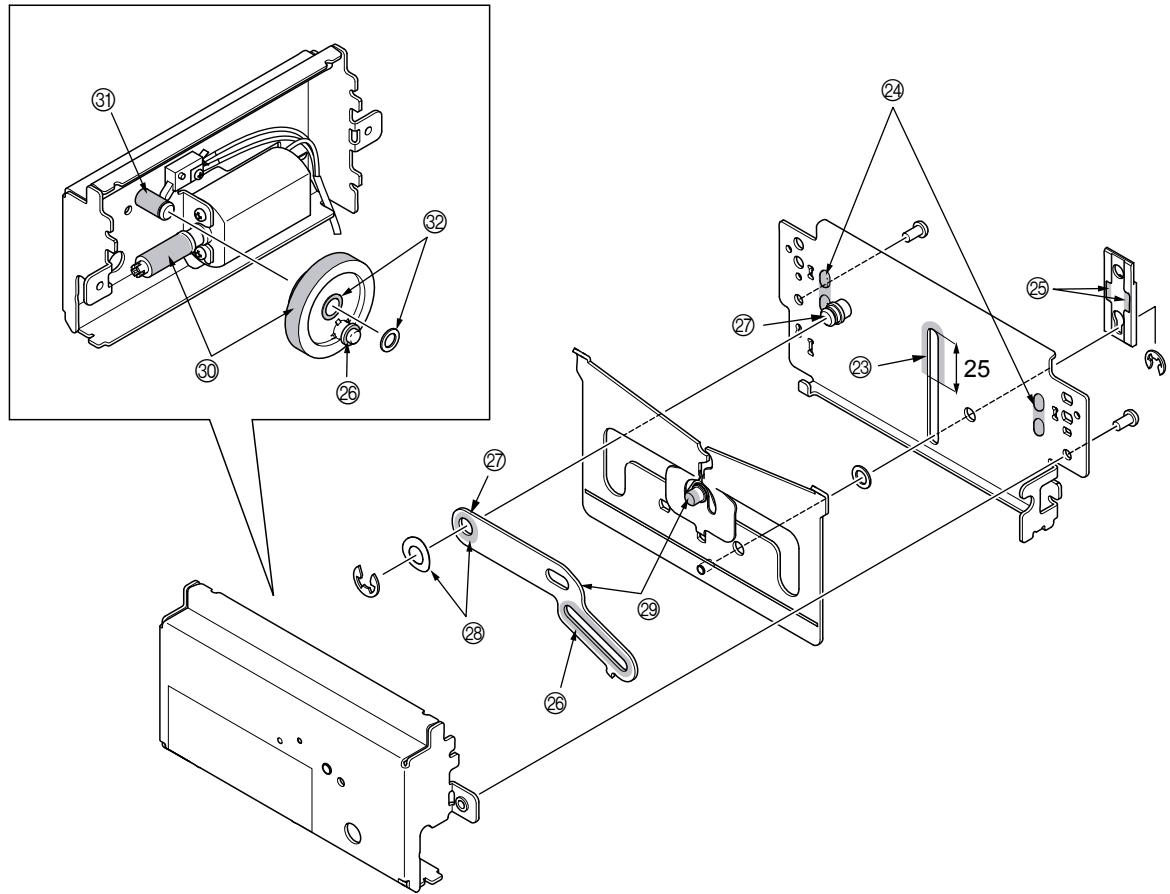
Fig.3-2. Lubricated Area (In Cutter unit)

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) PARTS NO.
Parts numbers must be notified when ordering replacement parts. Parts described as "NPN" have no parts number and are not in stock, 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
Where 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.

4

1. Printer Assembly

1-1.Disassembly Drawing
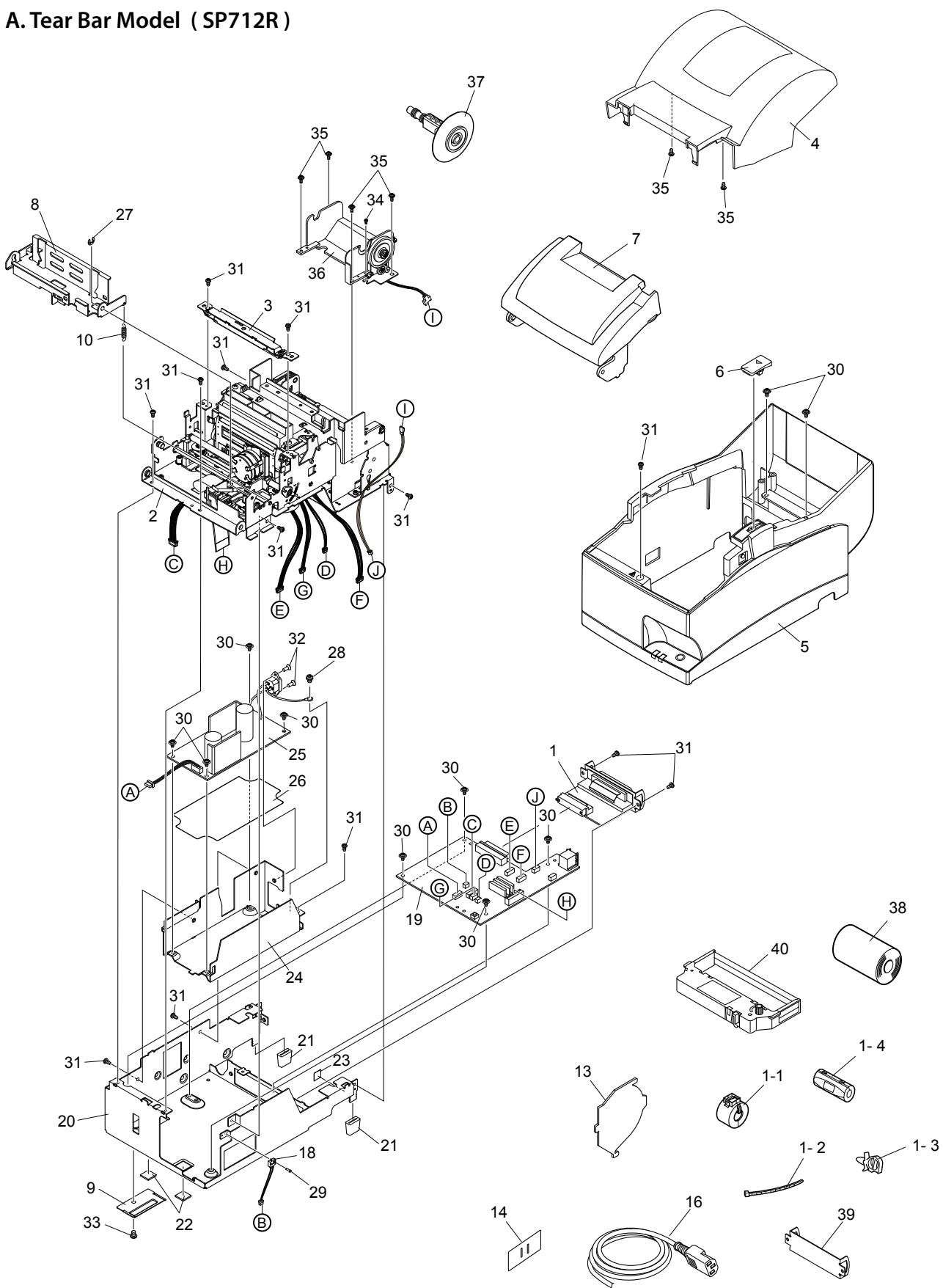
A. Tear Bar Model（SP712R）
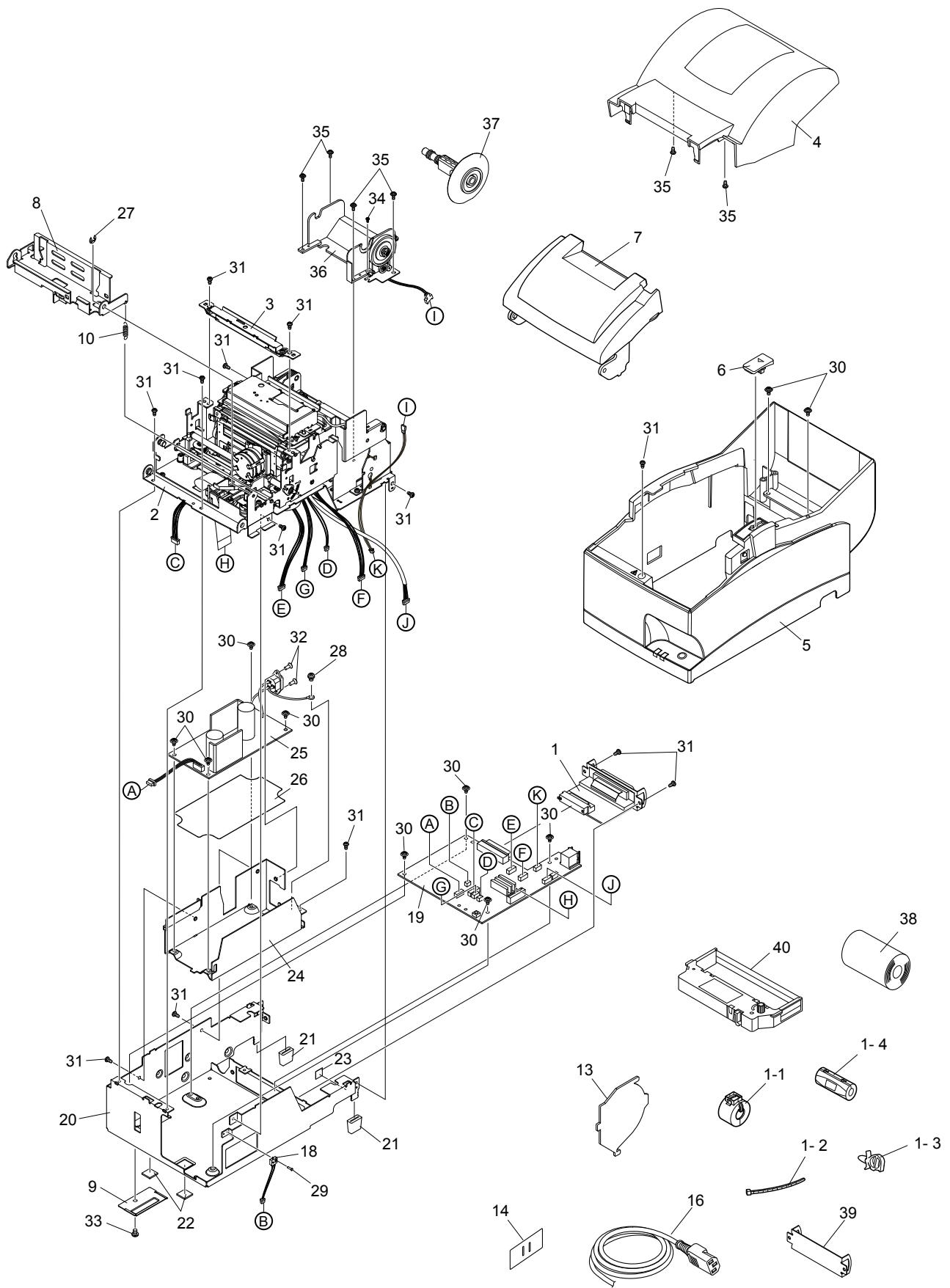
1-2. Parts List

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
1		39607400	INTERFACE BOARD IFBD-HD04	1	OPTION:RS-232C 25PIN	O
		39607411	INTERFACE BOARD IFBD-HC04	1	OPTION: PARALLEL	O
		39607601	INTERFACE BOARD IFBD-HE06	1	OPTION: ETHERNET	O
		39607610	INTERFACE BOARD IFBD-HU06	1	OPTION: USB	O
		39607620	INTERFACE BOARD IFBD-HW06	1	OPTION: WIRELESS LAN	O
		39607630	INTERFACE BOARD IFBD-HW06-EU	1	OPTION: WIRELESS LAN	O
1-1		NPN	FERRITE CORE K5BRC24X14X11	1	PARALLEL / ETHERNET	
1-2		04991204	FASTENER T18S	1	PARALLEL / ETHERNET	S
1-3		04991902	MINI CORD CLAMP ES-6U	1	USB IF	S
1-4		NPN	FERRITE CORE USB-4	1	USB IF	
2		37348040	MECHANISM UNIT SP712R	1	SP712R	S
		37348050	MECHANISM UNIT SP742R	1	SP742R	S
3		37344000	TEAR BAR UNIT SP7	1	SP712R	S
		37344010	TEAR BAR UNIT SP74	1	SP742R	S
4		37330220	REAR COVER UNIT SP7R	1	WHITE	S
		37330230	REAR COVER UNIT SP7RGRY	1	GRAY	S
5		37330020	CASE UNIT SP7R	1	WHITE :EXCEPT FOR CH	S
		37330030	CASE UNIT SP7RGRY	1	GRAY :EXCEPT FOR CH	S
		37330060	CASE UNIT SP7RCH	1	WHITE :FOR CH	S
		37330070	CASE UNIT SP7RGRY CH	1	GRAY :FOR CH	S
6		33400320	OPEN LEVER SP7	1	WHITE	S
		33400340	OPEN LEVER SP7GRY	1	GRAY	S
7		33022210	FRONT COVER SP7	1	WHITE	S
		33022270	FRONT COVER SP7GRY	1	GRAY	S
8		32980090	RIBBON BASE SP7	1		S
9		32025140	DIP SWITCH COVER SP5	1		S
10		30510540	SPRING E050-040-0158	1		S
11		30083220	G SEAL 10X10	1	EXCEPT FOR CH	S
		30083330	CH-10 SEAL 10X10	1	FOR CH	S
12		30083130	CCC LABEL	1	FOR CH	
13		33914040	ROLL PAPER GUIDE SP7	1		S
14		30030011	SWITCH BLIND TSP6	1	WHITE	S
		30030021	SWITCH BLIND TSP6GRY	1	GRAY	S
16		09110183	CORD SET CH INLET S-10A 1.8M	1	FOR CH	S
		09110204	CORD SET UK INLET S-5A 1.8M	1	FOR HK, UK	S
18		37347200	FRONT OPEN SWITCH UNIT SP7	1		S
19		37337000	MAIN LOGIC BOARD UNIT F SP7	1	EXCEPT FOR HK	S
		37337030	MAIN LOGIC BOARD UNIT F SP7TW	1	FOR HK	S
20		32010610	BOARD CHASSIS SP7	1		S
21		30991360	RUBBER FOOT SP7	2		S
22		30991230	RUBBER FOOT 12X12 TSP7	2		S
23		30085290	CAUTION SEAL MODULAR TSP1	1		S
24		NPN	POWER CHASSIS SP7	1		
25		NPN	POWER SUPPLY SP7	1		
26		NPN	INSULATION SHEET SP7	1		
27		04020016	STOP RING SE4.0	1		S
28		01914036	SCREW TR 4-5 WS	1		S
29		00816604	SCREW TR 1.6-6	1		S
30		01903101	SCREW TAT 3-6 CT-FL	10		S
31		00930609	SCREW TAT 3-6 CT	13		S
32		00530804	SCREW TD 3-8 CT	2		S
33		00930403	SCREW TAT 3-4 CT	1		S
34		00926503	SCREW TAT 2.6-5 CT	1		S
35		01953013	SCREW TAT 3-8 BT-FL	6		S

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
36		37348200	PAPER WINDER UNIT SP7R	1		S
37		33391000	WINDING SHAFT PW5	1		S
38		30971000	ROLL PAPER 76X35D	1		S
39		32025190	INTERFACE COVER SP7	1		S
40		30980720	INK RIBBON CARTRIDGE RC700BR	1	RED/BLACK	O
		30980730	INK RIBBON CARTRIDGE RC700B	1	BLACK	O
-		30980610	SUB-CASSETTE RIBBON SR700BR	1	OPTION: RED/BLACK	O
		30980620	SUB-CASSETTE RIBBON SR700B	1	OPTION: BLACK	O
		39590070	NEAR-END DETECTOR SP700	1	OPTION	O
		39590080	BLACK MARK DETECTOR B SP700	1	OPTION	O
		39590090	BLACK MARK DETECTOR C SP700	1	OPTION	O
		39594000	BU01-24-A	1	OPTION: BUZZER	O

2. Printer Mechanism

2-1. Disassembly Drawing

A. Tear Bar Model（SP712R）
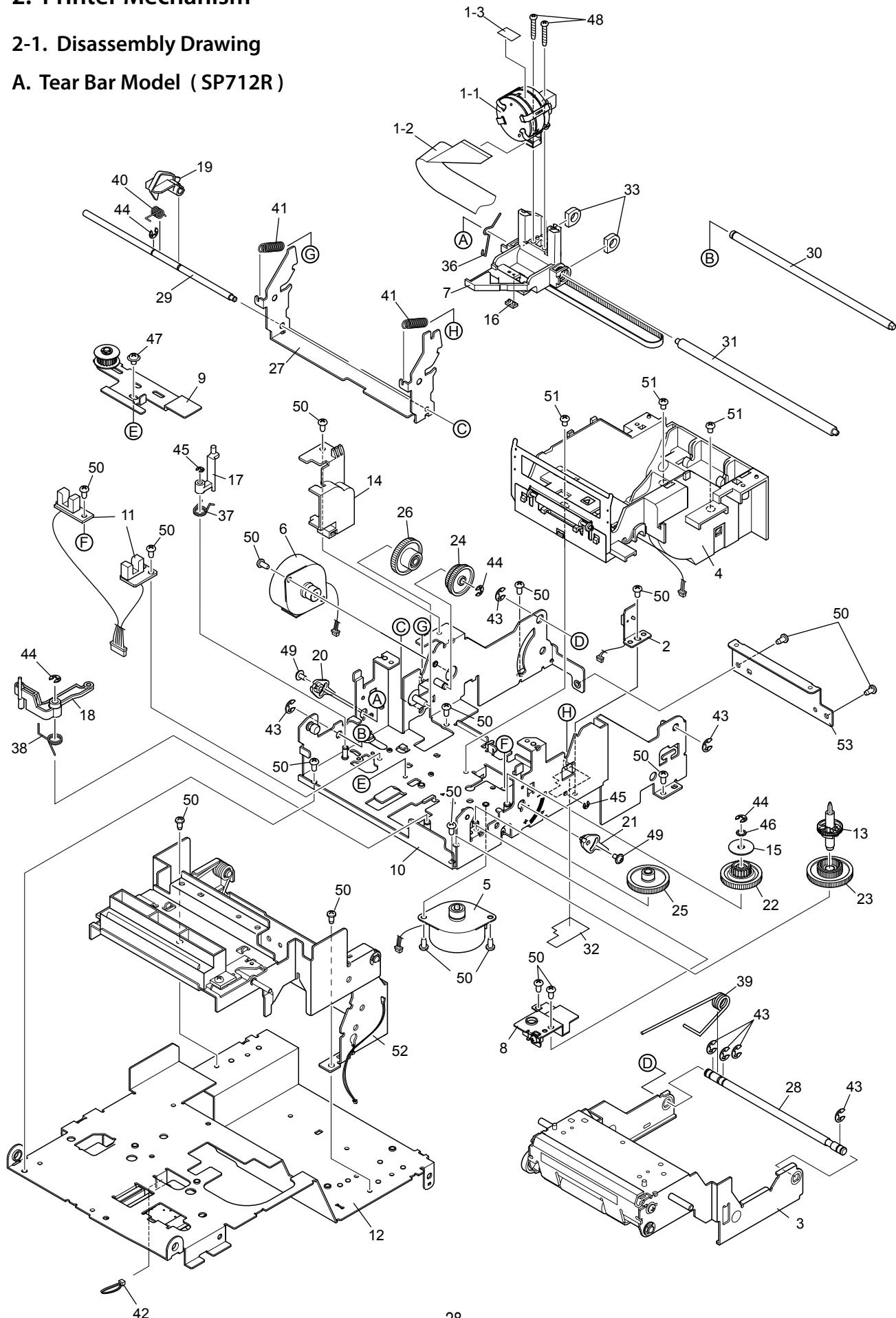
B. Auto Cutter Model（SP742R）
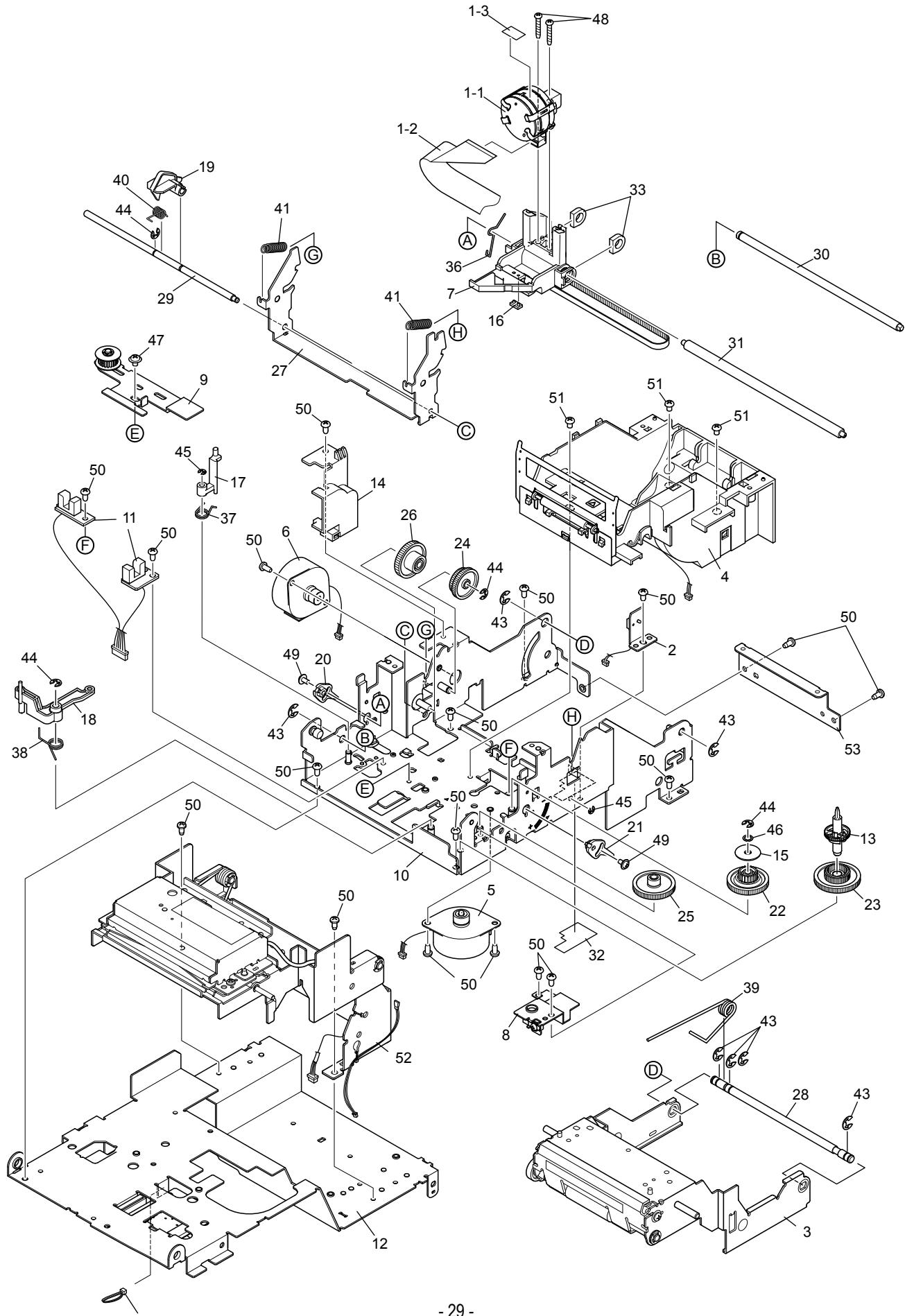
2-2. Parts List

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
1		89138020	PRINT HEAD DP1401R	1		S
1-1		89138910	PRINT HEAD UNIT DP140S	1		S
1-2		NPN	HEAD CABLE UNIT 140R	1		
1-3		NPN	CAUTION SEAL 140S	1		
2		37347210	REAR OPEN SWITCH UNIT SP7	1		S
3		NPN	PLATEN ARM UNIT SP7R	1		
4		37343000	PAPER GUIDE A UNIT SP7	1		S
5		37342010	CARRIAGE MOTOR UNIT SP7	1		S
6		37342000	PAPER FEED MOTOR UNIT SP7	1		S
7		37341200	CARRIAGE UNIT SP7	1		S
8		NPN	CARRIAGE GEAR COVER UNIT SP7	1		
9		37340300	TENSION LEVER UNIT SP7	1		S
10		NPN	FRAME UNIT SP7	1		
11		37337310	PE DETECTOR UNIT SP7	1		S
12			MAIN CHASSIS SP7	1		
13		33980050	RIBBON SHAFT SP7	1		S
14		NPN	PAPER FEED GEAR COVER SP7	1		
15		51904101	PULLEY CAP SP7	1		
16		33900300	REAR SLIDER MP5III	1		S
17		33400310	RIBBON LEVER B SP7	1		S
18		33400300	RIBBON LEVER A SP7	1		S
19		33400290	PAPER DETECT LEVER SP7	1		S
20		33210560	ADJUSTING BUSHING L SP7	1		S
21		33210550	ADJUSTING BUSHING R SP7	1		S
22		33121010	IDLER PULLEY SP7	1		S
23		33102460	RIBBON GEAR SP7	1		S
24		33102450	GEAR 32X39X0.5 SP7	1		S
25		33102440	GEAR 14X51X0.5 SP7	1		S
26		33102380	GEAR 22X46X0.5 TSP1	1		S
27		NPN	OPEN HOOK SP7	1		
28		NPN	PLATEN ARM SHAFT SP7	1		
29		NPN	LEVER SHAFT SP7	1		
30		NPN	REAR STAY SP7	1		
31		31360260	CARRIAGE STAY SP7	1		S
32		30991400	PW PROTECT SHEET SP7	1		S
33		30990090	FELT SP7	2		S
36		30531330	GROUND SPRING SP7	1		S
37		30531320	RIBBON LEVER SPRING B SP7	1		S
38		30531310	RIBBON LEVER SPRING A SP7	1		S
40		30531280	LEVER SPRING SP7	1		S
41		30510550	SPRING E055-070-0237	2		S
42		04991204	FASTENER T18S	1		S
43		04020016	STOP RING SE4.0	6		S
44		04020015	STOP RING SE3.0	4		S
45		04020010	STOP RING SE2.0	2		S
46		02304050	POLY-SLIDER WP4X0.5	1		S
47		01903030	SCREW TR 3-4 FL	1		S
48		01902649	SCREW TAT 2.6-16 BT	2		S
49		01902633	SCREW TR 2.6-5 FL	2		S
50		00930609	SCREW TAT 3-6 CT	18		S
51		00630404	SCREW TR 3-4	3		S
52		37340400	PW ARM FRAME UNIT SP7R	1	SP712R	S
		37340410	PW ARM FRAME UNIT SP74R	1	SP742R	S
53		NPN	PW CASE ANGLE SP7	1		
54		30531360	PLATEN HOLDER SPRING C SP7	1		S

3. Sub-Assembly

3-1. Platen Arm Unit

3-
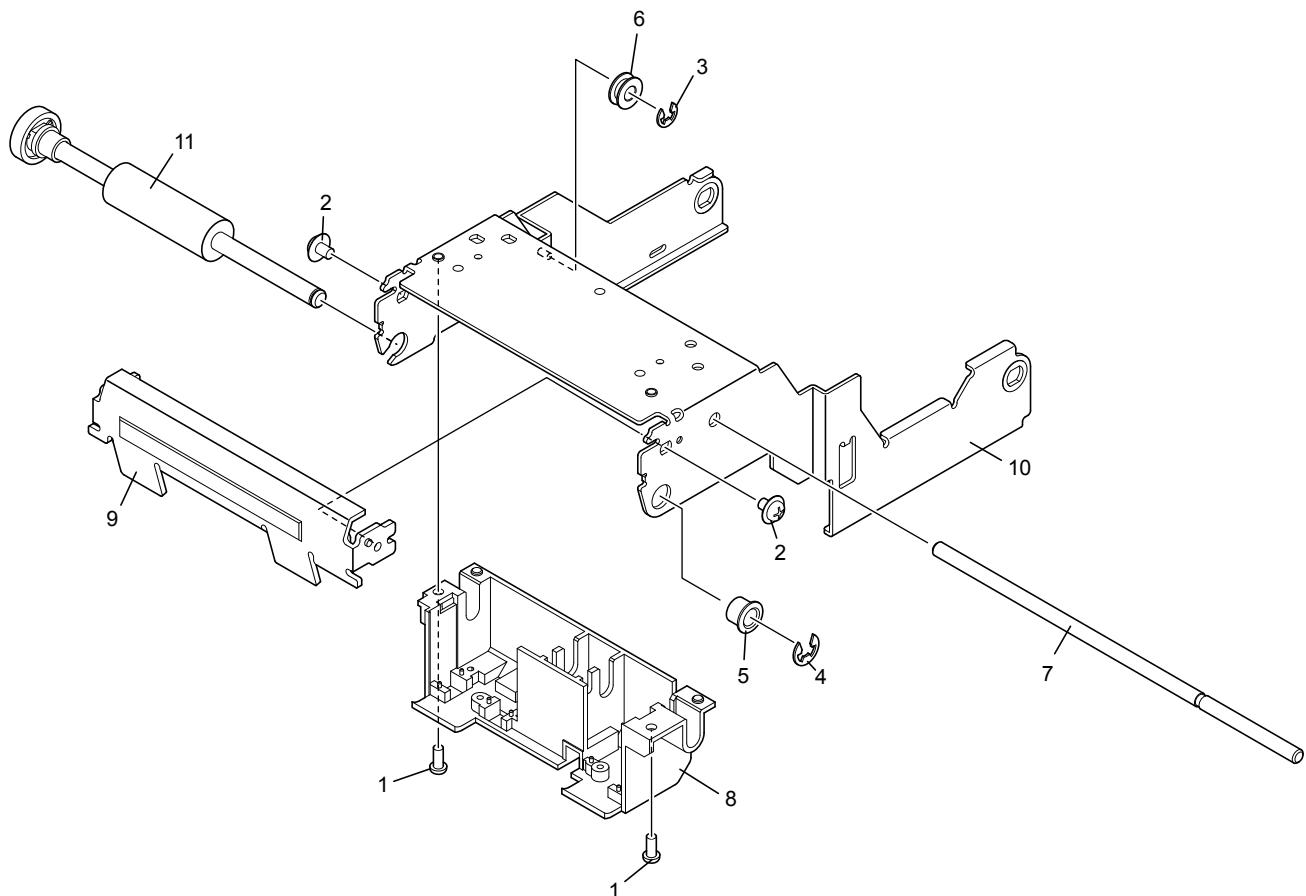
DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
3-1		00926503	SCREW TAT 2.6-5 CT	2		S
3-2		01903030	SCREW TR 3-4 FL	2		S
3-3		04020015	STOP RING SE3.0	1		S
3-4		04020016	STOP RING SE4.0	1		S
3-5		30211050	PF ROLLER BEARING TMP6	1		S
3-6		NPN	SLIDE ROLLER SP7	1		
3-7		NPN	LOCK SHAFT SP7	1		
3-8		NPN	PAPER GUIDE C SP7	1		
3-9		37343500	PLATEN ASSY SP7	1		S
3-10		37344700	PLATEN ARM ASSY SP7	1		S
3-11		37346600	PAPER FEED ROLLER ASSY SP7	1		S

3-2. PW Arm Frame Unit

A. Tear Bar Model（SP712R）

52-
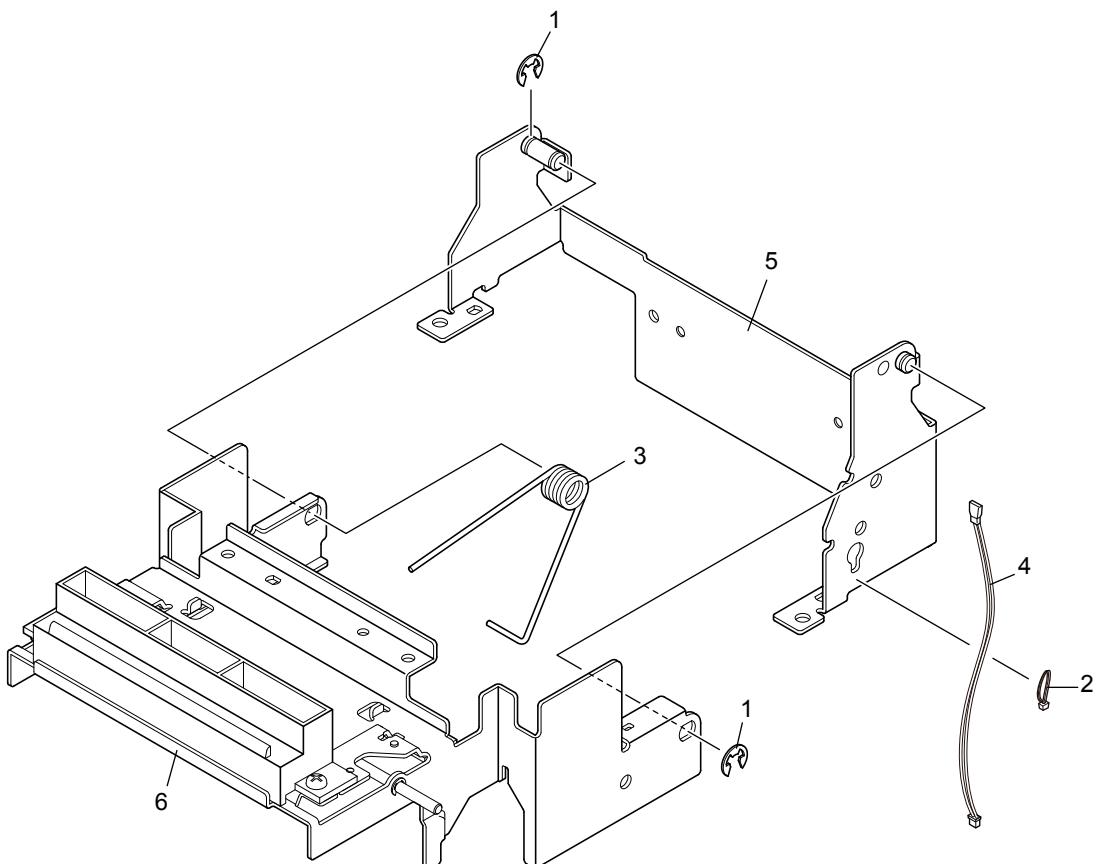
DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
52-1		04020016	STOP RING SE4.0	2		S
52-2		04991204	FASTENER T18S	1		S
52-3		30531340	PW HOLDER SPRING A SP7	1		S
52-4		30720220	CABLE UNIT 3X310CC SP7	1		S
52-5		NPN	PW ARM FRAME ASSY SP7R	1		
52-6		37344300	PW ARM UNIT SP7R	1		S

B. Auto Cutter Model（SP742R）

52-
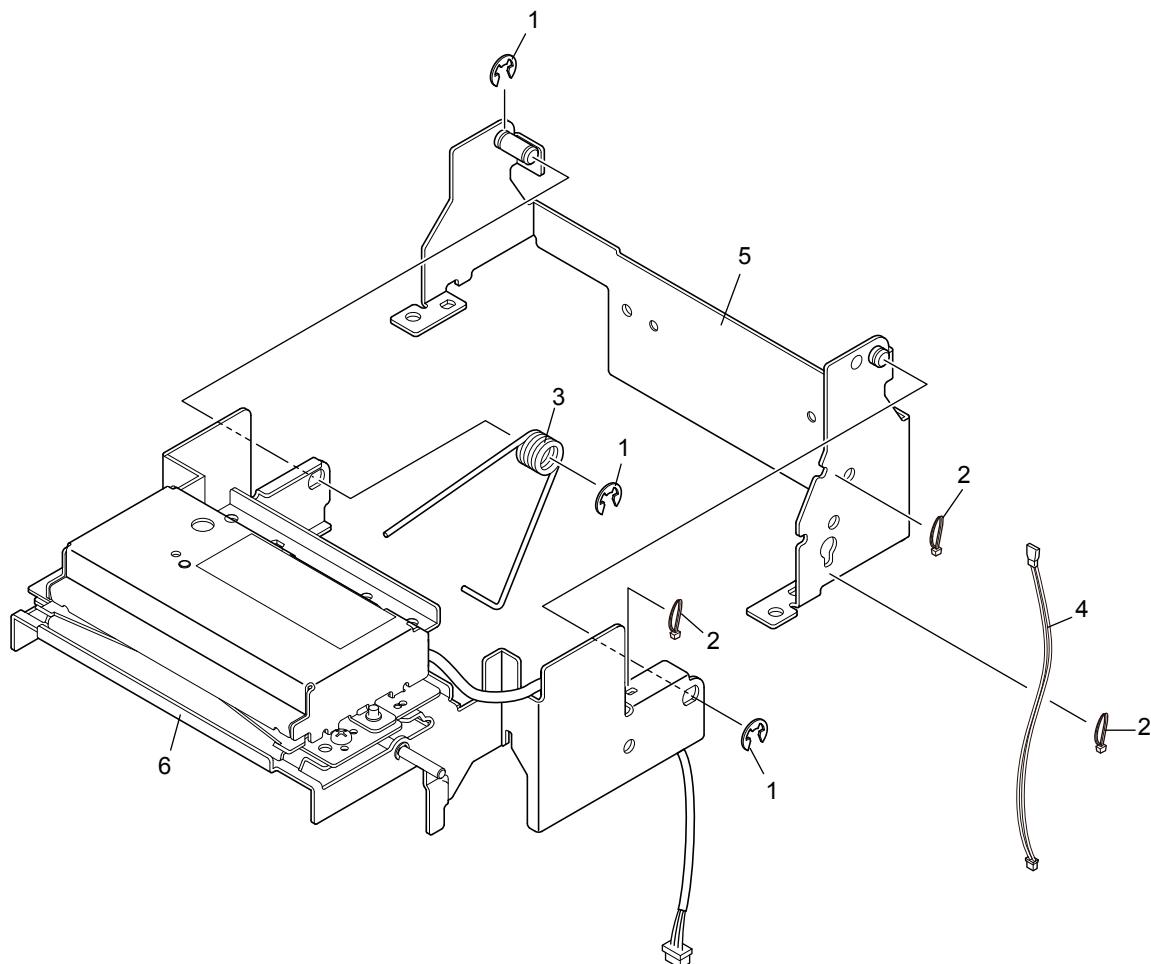
DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
52-1		04020016	STOP RING SE4.0	3		S
52-2		04991204	FASTENER T18S	3		S
52-3		30531350	PW HOLDER SPRING B SP7	1		S
52-4		30720220	CABLE UNIT 3X310CC SP7	1		S
52-5		NPN	PW ARM FRAME ASSY SP7R	1		
52-6		37344310	PW ARM UNIT SP74R	1		S

3-3. PW Arm Unit

A. Tear Bar Model（SP712R）

52-6-
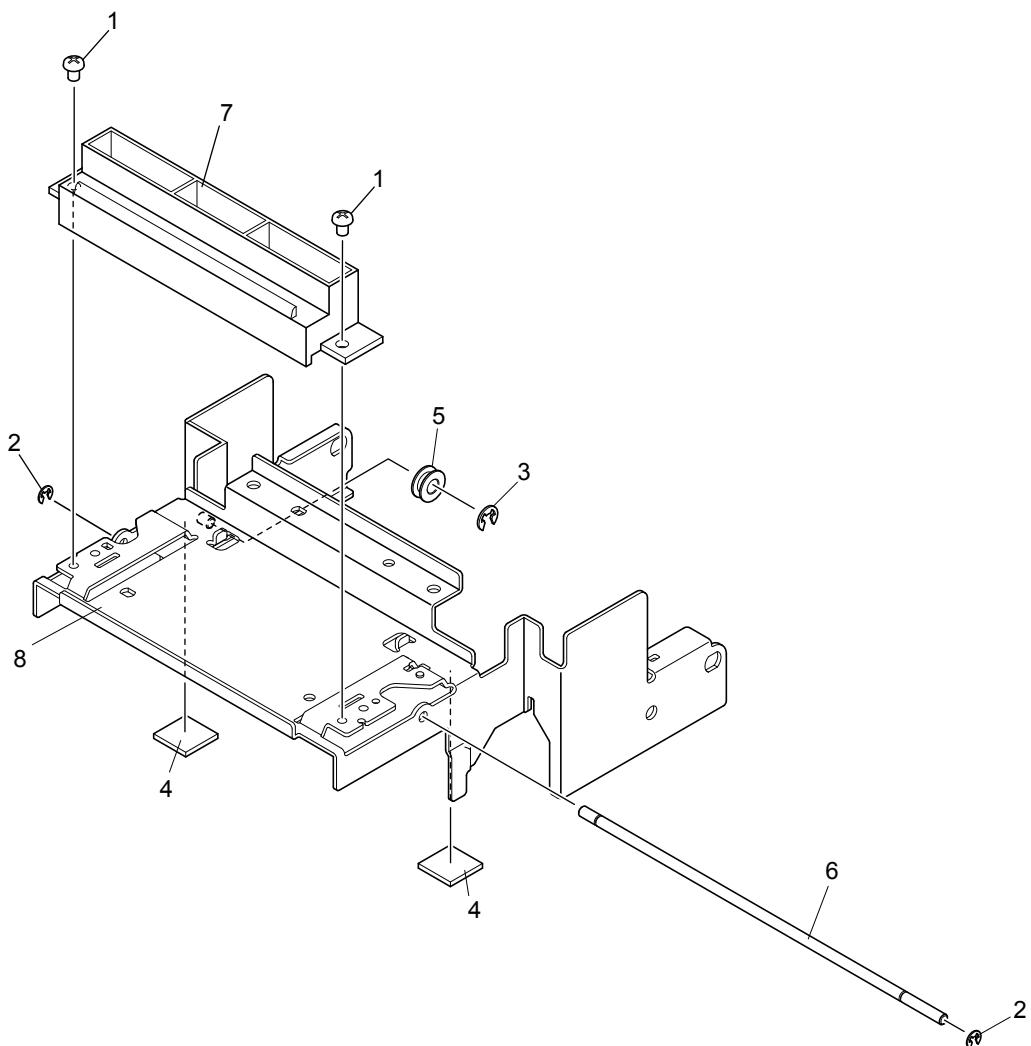
DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
52-6-1		00630404	SCREW TR 3-4	2		S
52-6-2		04020010	STOP RING SE2.0	2		S
52-6-3		04020015	STOP RING SE3.0	1		S
52-6-4		30991230	RUBBER FOOT 12X12 TSP7	2		S
52-6-5		NPN	SLIDE ROLLER SP7	1		
52-6-6		NPN	PW LOCK SHAFT SP7	1		
52-6-7		33914070	PW GUIDE SP7	1		S
52-6-8		37344800	PW ARM ASSY SP7R	1		S

B. Auto Cutter Model（SP742R）

52-6-
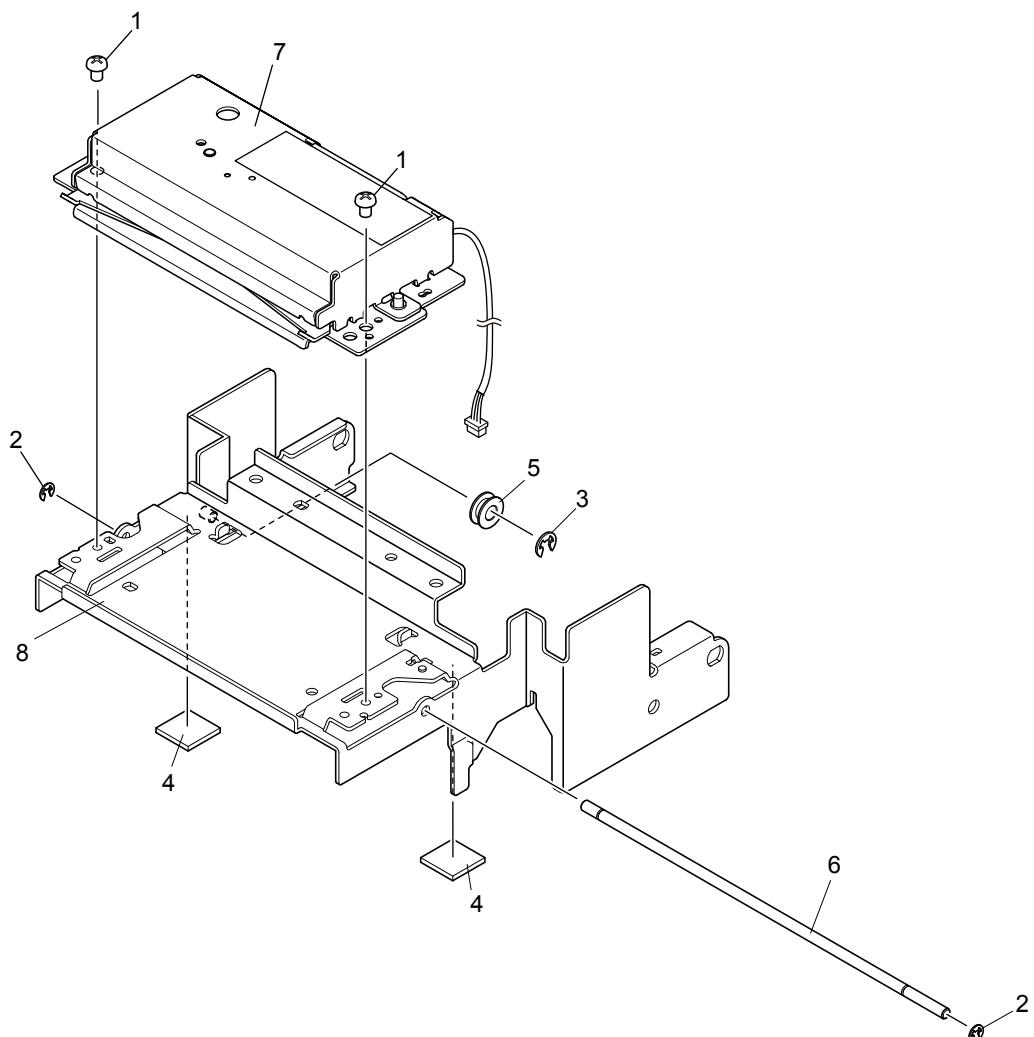
DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
52-6-1		00630404	SCREW TR 3-4	2		S
52-6-2		04020010	STOP RING SE2.0	2		S
52-6-3		04020015	STOP RING SE3.0	1		S
52-6-4		30991230	RUBBER FOOT 12X12 TSP7	2		S
52-6-5		NPN	SLIDE ROLLER SP7	1		
52-6-6		NPN	PW LOCK SHAFT SP7	1		
52-6-7		37342101	CUTTER UNIT SP7	1		S
52-6-8		37344800	PW ARM ASSY SP7R	1		S

4. Block Diagram

InterfaceBoard
RS232C I/F
PARALLEL I/F
USB I/F
LAN I/F
Wifi I/F
  or
ETC.

Host Computer

Main Logic Board

Printer Mechanism

CPU

FLASH ROM
16Mbit

Gate Array

Head Driver — Printer Head
PF Motor Driver — PF Motor
CR Motor Driver — CR Motor
Cutter Motor Driver — (Cutter Motor)
Paper Winder Motor Driver — Paper Winder Motor
Cover Open Sensor 1 — Cover Open Sensor 1
Cover Open Sensor 2 — Cover Open Sensor 2
PE Sensor — PE Sensor
BM Sensor — BM Sensor
HP Sensor — HP Sensor
NE Sensor (OP) — NE Sensor (OP)

DIP Switch
LF Switch
LED

Buzzer Unit (OP)
or
Peripheral Unit

Peripheral Unit
Driver/Sensor

+ 24V
+ 5V
Regulator + 3.3V

Power Supply
Unit

※ OP : Option

- 36 -

5. Main Logic Board

5-1. Circuit Diagram
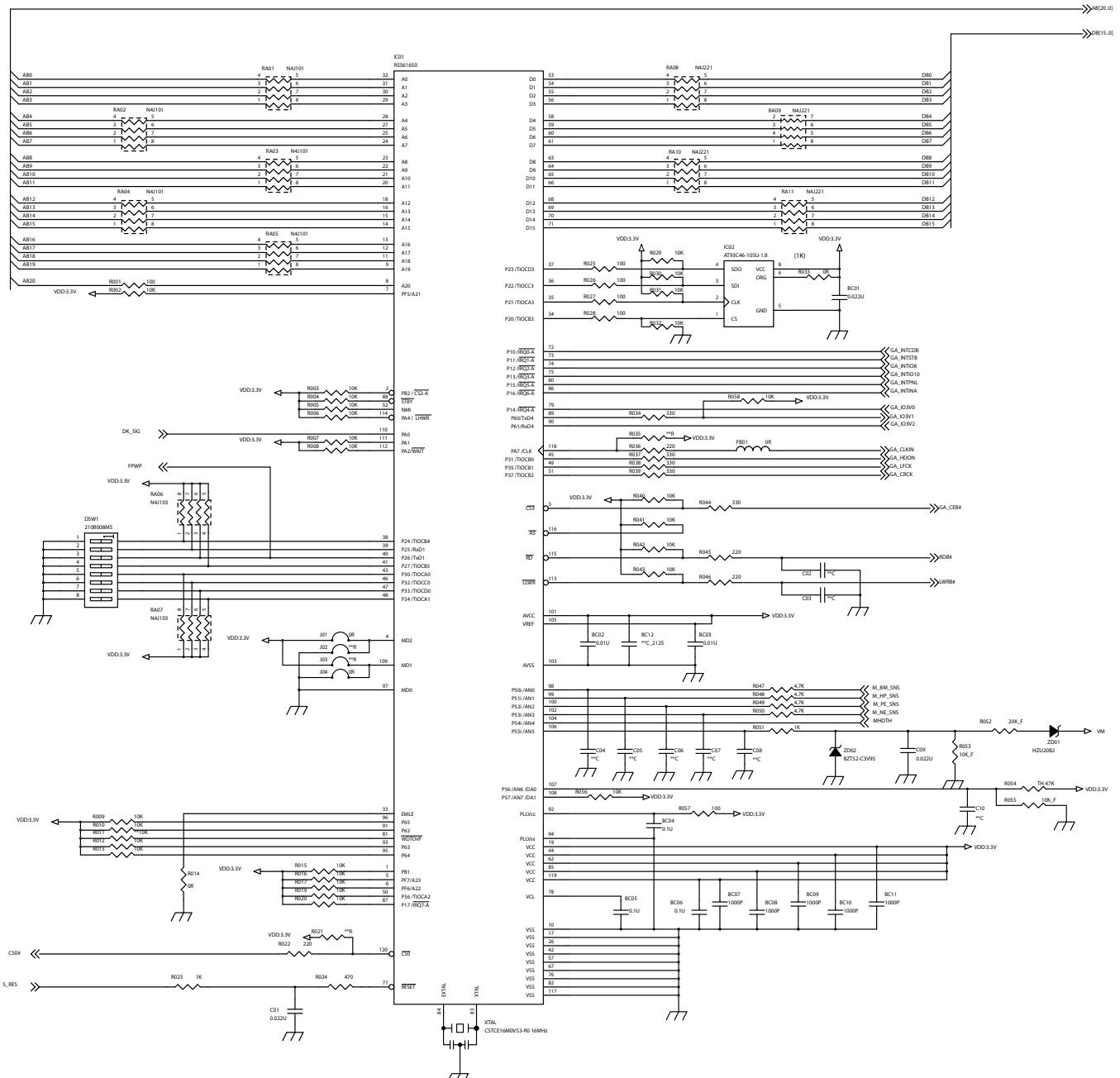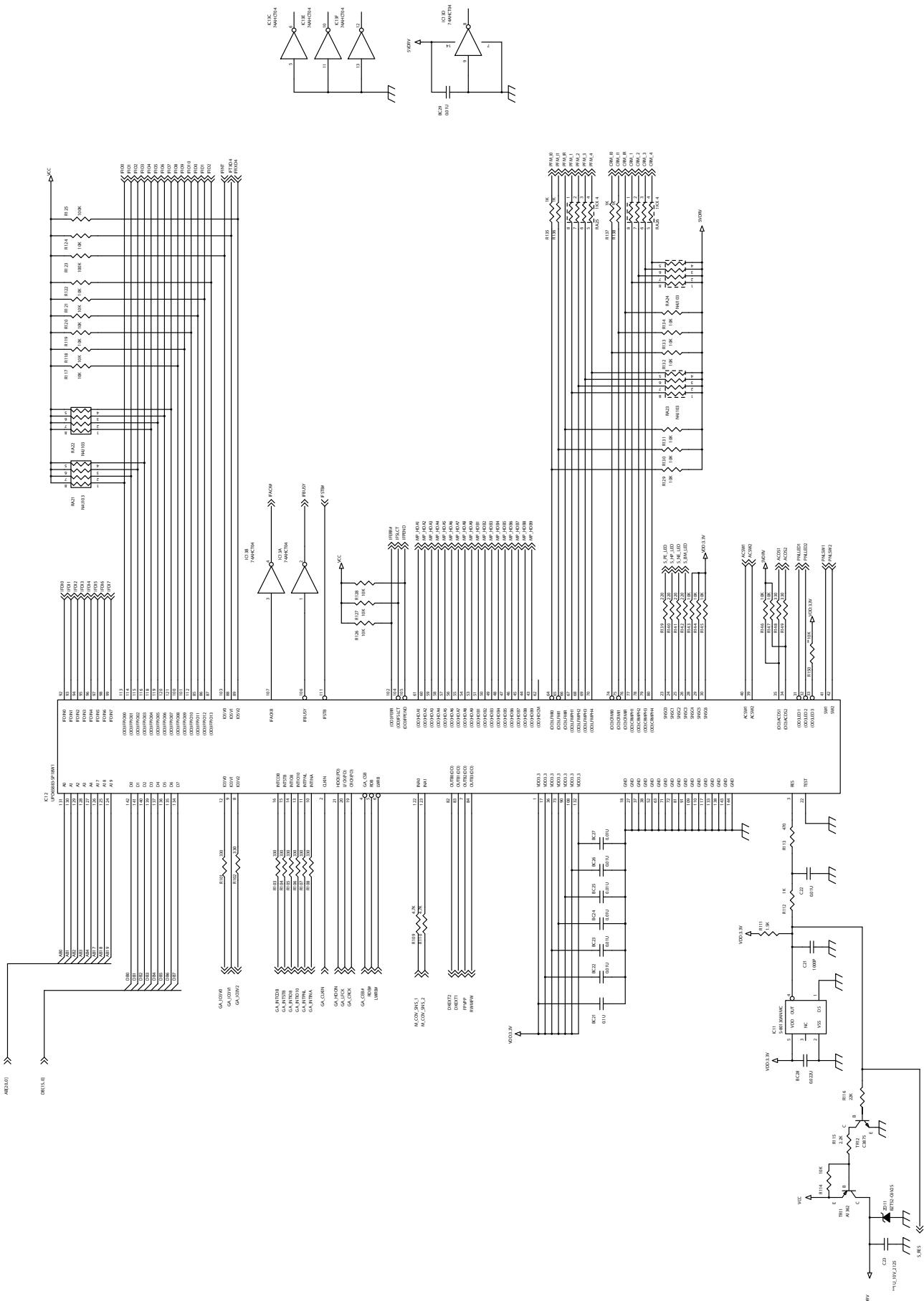
Main Logic Board   1/5

Main Logic Board   2/5

- 38 -
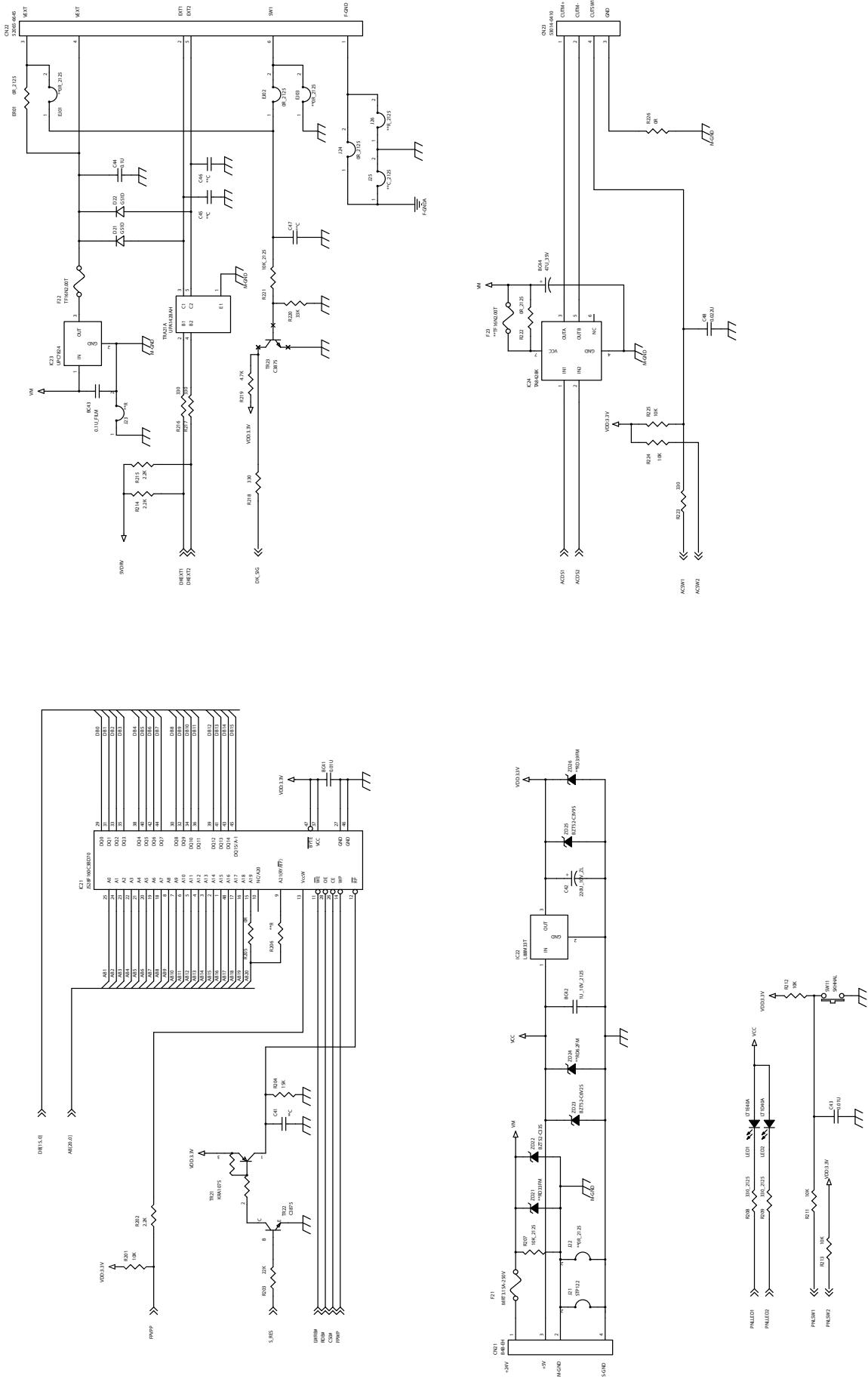
Main Logic Board   3/5
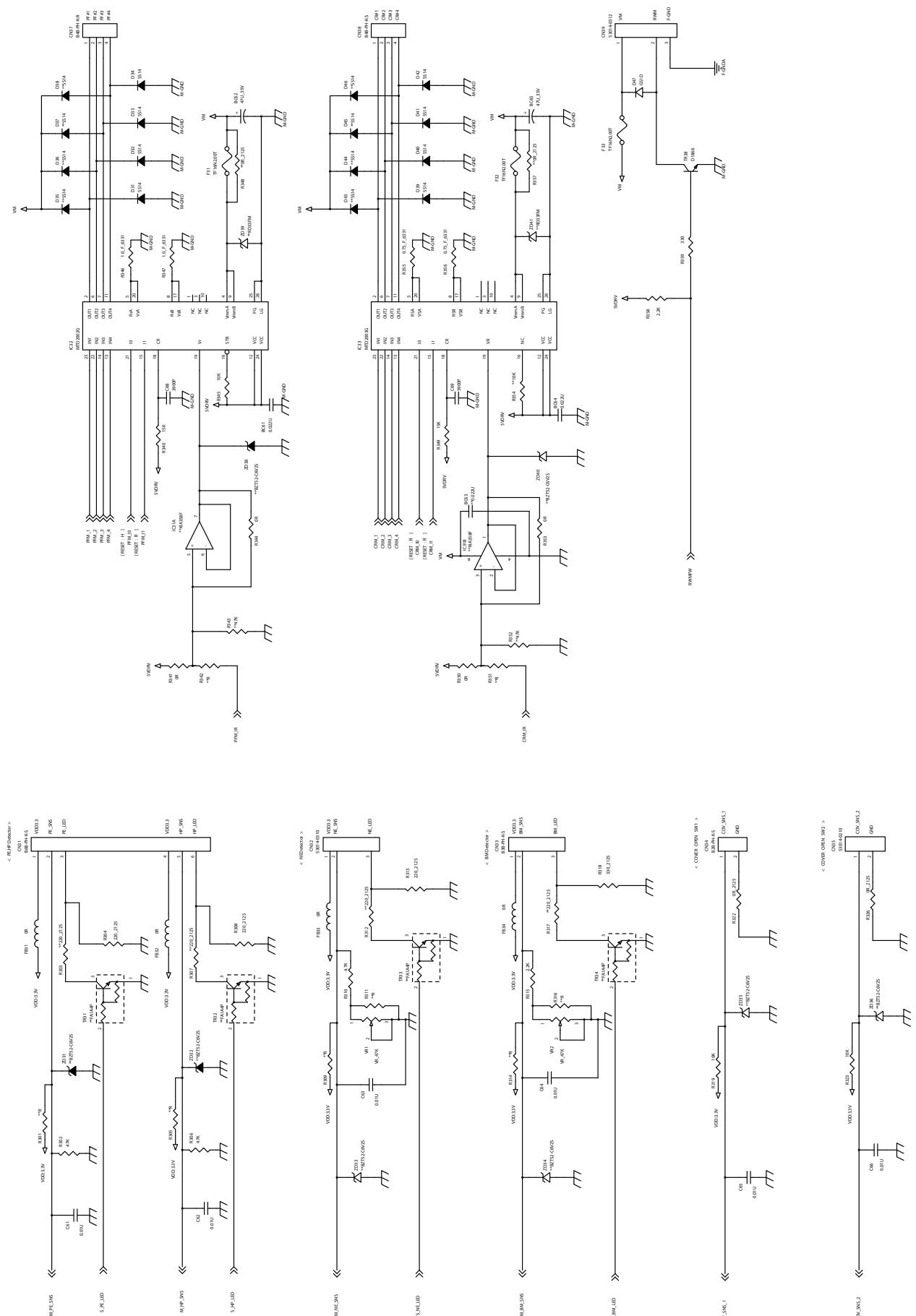
Main Logic Board   4/5

- 40 -
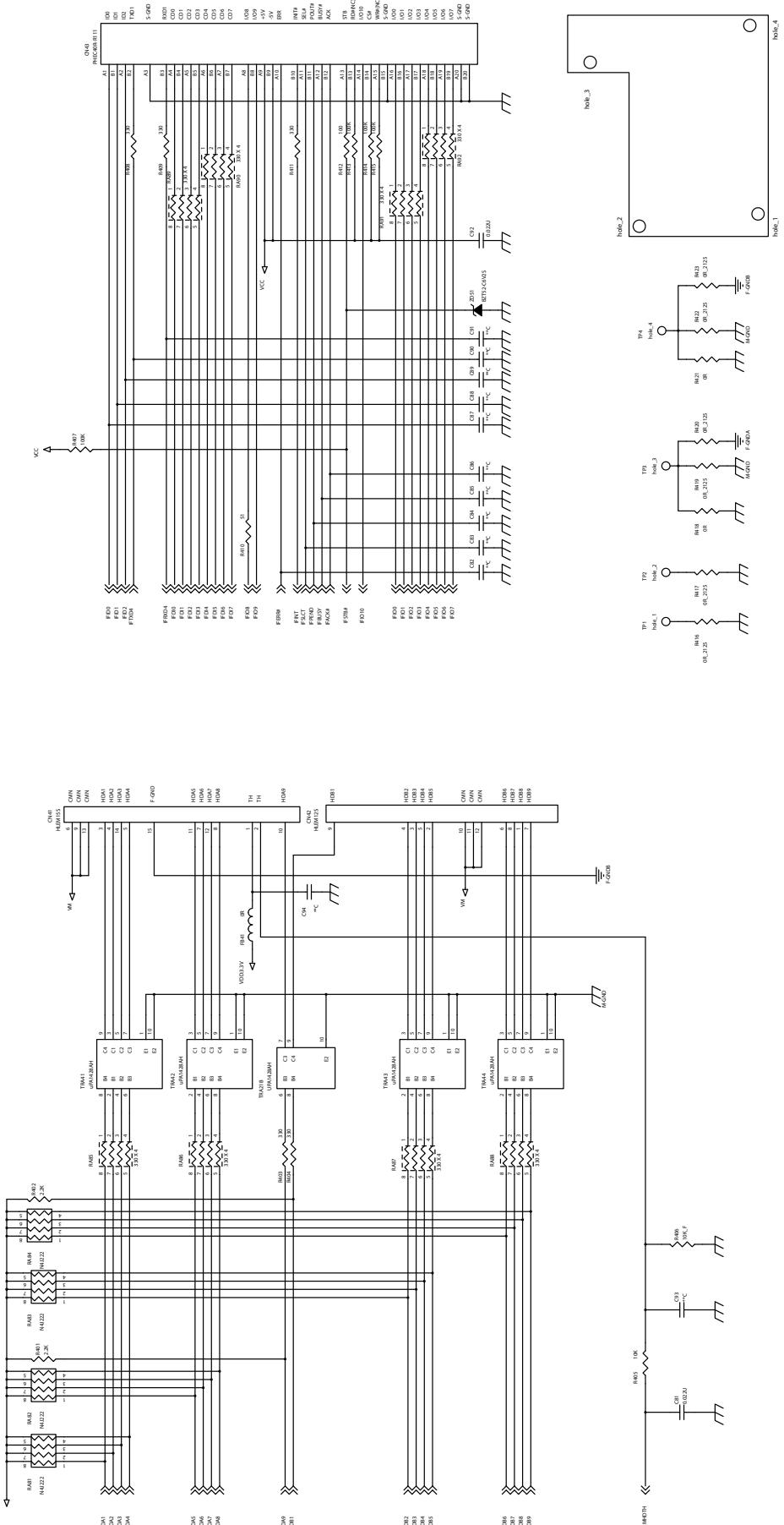
Main Logic Board   5/5

PCB MAIN SP700
30756130-3
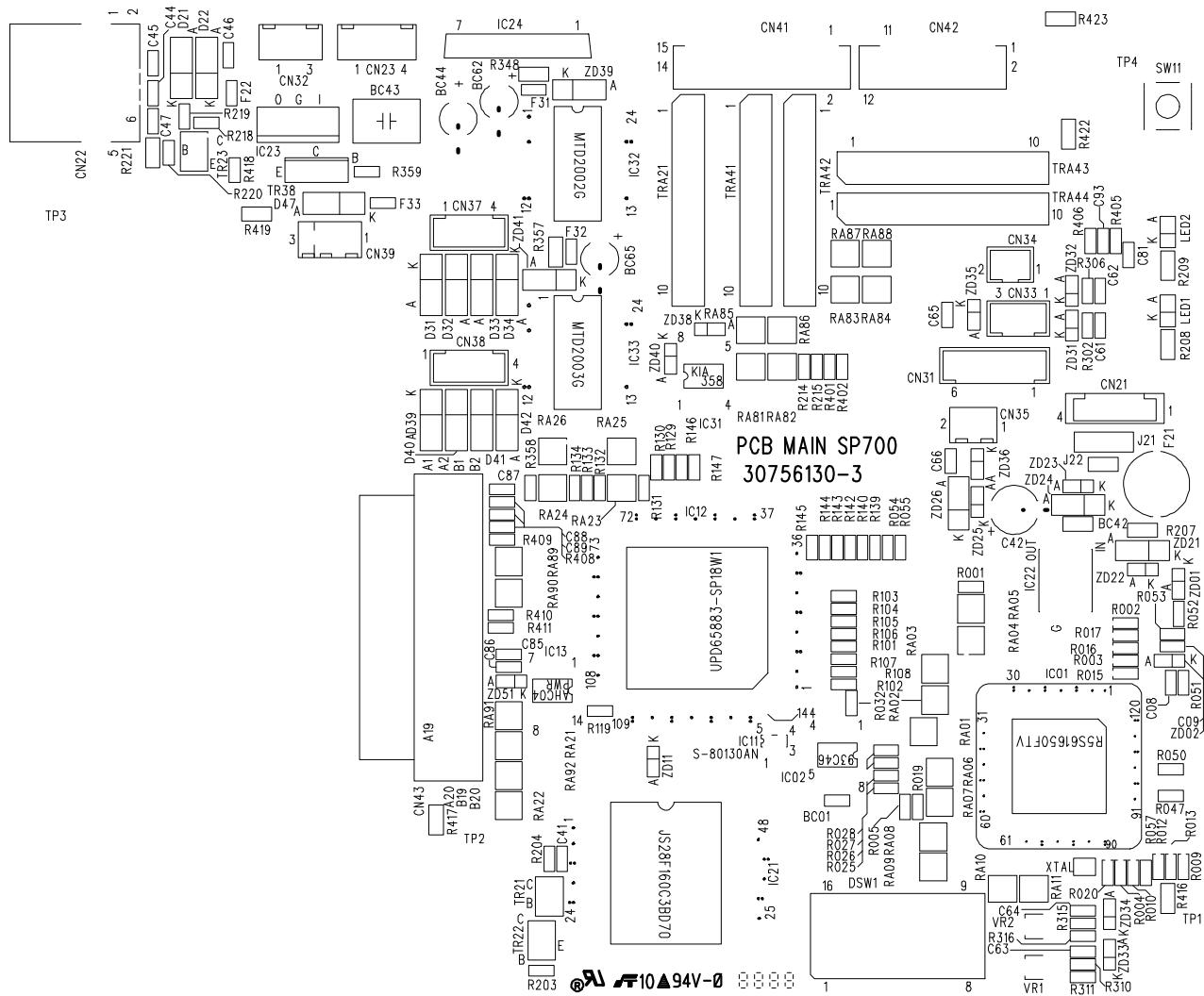
5-3. Parts List

| DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
BC01		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC02-03		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	2		
BC04-06		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	3		
BC07-11		NPN	CERA.CAPA.CHIP1608 1000PF 50V	5		
BC21		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
BC22-27		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	6		
BC28		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC29		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
BC41		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
BC42		NPN	CERA. CAPA. CHIP 1UF 10V	1		
BC43		NPN	FILM CAPA. 0.1UF 50V	1		
BC44		NPN	CHEM. CAPA. 47UF 35V	1		
BC61		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC62		NPN	CHEM. CAPA. 47UF 35V	1		
BC64		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC65		NPN	CHEM. CAPA. 47UF 35V	1		
C01		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C09		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C21		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C22		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C42		NPN	CHEM. CAPA. 220UF 10V	1		
C43		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	1		
C44		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C48		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C61-66		NPN	CERA.CAPA.CHIP1608 0.01UF 50V	6		
C68-69		NPN	CERA.CAPA.CHIP1608 3900PF 50V	2		
C81		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C92		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
CN21		NPN	CONNECTOR B4B-EH	1		
CN22		NPN	CONNECTOR 52830-6612	1		
CN23		NPN	CONNECTOR 53014-0410	1		
CN31		NPN	CONNECTOR B6B-PH-K-S(LF)(SN)	1		
CN32		NPN	CONNECTOR 53014-0310	1		
CN33		NPN	CONNECTOR B3B-PH-K-S	1		
CN34		NPN	CONNECTOR B2B-PH-K-S	1		
CN35		NPN	CONNECTOR 53014-0210	1		
CN37		NPN	CONNECTOR B4B-PH-K-R	1		
CN38		NPN	CONNECTOR B4B-PH-K-S	1		
CN39		NPN	CONNECTOR 53014-0312	1		
CN41		NPN	CONNECTOR HLEM15S-1	1		
CN42		NPN	CONNECTOR HLEM12S-1	1		
CN43		NPN	CONNECTOR PHEC40R-R111LF	1		
D21-22		NPN	DIODE CHIP GS1D*	2		
D31-34		NPN	SCHOTTKY DIODE CHIP SS14*	4		
D39-42		NPN	SCHOTTKY DIODE CHIP SS14*	4		
D47		NPN	DIODE CHIP GS1D*	1		
DSW1		NPN	DIP SWITCH 210B008MS	1		
EJ02		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
ER01		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
F21		NPN	FUSE MRT3.15A-250V*	1		
F22		NPN	CHIP FUSE TF16SN200TTD*	1		
F31-33		NPN	CHIP FUSE TF16SN200TTD*	3		
FB01		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
FB31-34		NPN	CHIP RESISTOR 0 OHM 1/16W	4		
FB41		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
IC01		NPN	CPU R5S61650AN50FPV	1		

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
IC02		NPN	EEPROM AT93C46-10SI27	1		
IC11		NPN	IC-RESET S-80130AN*	1		
IC12		NPN	GATE ARRAY UPD65883-SP18W1	1		
IC13		NPN	CMOS SN74AHCT04PWR*EL	1		
IC21		NPN	FLASH MEMORY JS28F160C3BD70*	1	S7 *.* :EXCEPT HK	
		NPN	FLASH MEMORY JS28F160C3BD70*	1	S7 T1 *.* :FOR HK	
IC22		NPN	IC-REG L88M33T*TL	1		
IC23		NPN	IC-REG UPC7824	1		
IC24		NPN	IC-MOTOR TA8428K	1		
IC32		NPN	IC-MOTOR MTD2002G*	1		
IC33		NPN	IC-MOTOR MTD2003G-3072*	1		
J01		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J04		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
J21		NPN	JUMPER WIRE STP122	1		
J24		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
LED1		NPN	LED CHIP LT1E40A*	1		
LED2		NPN	LED CHIP LT1D40A*	1		
R001		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R002-005		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R006-008		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R009-010		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R012-013		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R015-017		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R019-020		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R022		NPN	CHIP RES1608 220 OHM 1/16W 5%	1		
R023		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R024		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R025-028		NPN	CHIP RESISTOR 100 OHM 1/16W	4		
R029-031		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R032		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R034		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R036		NPN	CHIP RES1608 220 OHM 1/16W 5%	1		
R037-39		NPN	CHIP RESISTOR 330 OHM 1/16W	3		
R040-043		NPN	CHIP RESISTOR 10 K-OHM 1/16W	4		
R044		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R045-46		NPN	CHIP RES1608 220 OHM 1/16W 5%	2		
R047		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R048-050		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	3		
R051		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R052		NPN	CHIP RESISTOR 20 K-OHM 1/16W	1		
R053		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R054		NPN	CHIP THERMISTOR TBPS1R473J*	1		
R055		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R056		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R057		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R058		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R101-108		NPN	CHIP RESISTOR 330 OHM 1/16W	8		
R109-110		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R111		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R112		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R113		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R114		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R115		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R116		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R117-122		NPN	CHIP RESISTOR 10 K-OHM 1/16W	6		
R123		NPN	CHIP RESISTOR 100 K-OHM 1/16W	1		

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
R124		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R125		NPN	CHIP RESISTOR 100 K-OHM 1/16W	1		
R126-134		NPN	CHIP RESISTOR 10 K-OHM 1/16W	9		
R135-136		NPN	CHIP RESISTOR 1 K-OHM 1/16W	2		
R137-138		NPN	CHIP RESISTOR 1 K-OHM 1/16W	2		
R139-142		NPN	CHIP RES1608 220 OHM 1/16W 5%	4		
R143-147		NPN	CHIP RESISTOR 10 K-OHM 1/16W	5		
R148-149		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R201		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R202		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R203		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R204		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R205		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R207		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		
R208-209		NPN	CHIP RESISTOR 330 OHM 1/10W	2		
R211-213		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R214-215		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	2		
R216-218		NPN	CHIP RESISTOR 330 OHM 1/16W	3		
R219		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R220		NPN	CHIP RESISTOR 33 K-OHM 1/16W	1		
R221		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		
R222		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
R223		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R224-225		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R226		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R302		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R304		NPN	CHIP RESISTOR 220 OHM 1/10W	1		
R306		NPN	CHIP RESISTOR 47 K-OHM 1/16W	1		
R308		NPN	CHIP RESISTOR 220 OHM 1/10W	1		
R310		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R313		NPN	CHIP RESISTOR 220 OHM 1/10W	1		
R315		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R318		NPN	CHIP RESISTOR 330 OHM 1/10W	1		
R319		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R322		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
R323		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R326		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
R340		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R341		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R344		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R345		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R346-347		NPN	CHIP RESISTOR 1.0 OHM 1W	2		
R349		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R350		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R353		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R355-356		NPN	CHIP RES6331 0.75 OHM 1W 1%	2		
R358		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R359		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
R401-402		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	2		
R403-404		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R405		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R406		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R407		NPN	CHIP RESISTOR 100 K-OHM 1/16W	1		
R408-409		NPN	CHIP RESISTOR 330 OHM 1/16W	2		
R410		NPN	CHIP RESISTOR 51 OHM 1/16W	1		
R411		NPN	CHIP RESISTOR 330 OHM 1/16W	1		

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
R412		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R413-415		NPN	CHIP RESISTOR 100 K-OHM 1/16W	3		
R416-417		NPN	CHIP RESISTOR 0 OHM 1/10W	2		
R418		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R419		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
R420		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
R421		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R422-423		NPN	CHIP RESISTOR 0 OHM 1/10W	2		
RA01-05		NPN	RESIS. ARRAY CHIP MNR14J101*	5		
RA06-07		NPN	RESIS. ARRAY CHIP MNR14J103*	2		
RA08-11		NPN	RESIS. ARRAY CHIP MNR14J221*	4		
RA21-24		NPN	RESIS. ARRAY CHIP MNR14J103*	4		
RA25-26		NPN	RESIS. ARRAY CHIP MNR14J102*	2		
RA81-84		NPN	RESIS. ARRAY CHIP CN1J4K222J*	4		
RA85-92		NPN	RESIS. ARRAY CHIP MNR14J331*	8		
RO14		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
RO33		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
SW11		NPN	PUSH SWITCH SKHHAL	1		
TR11		NPN	CHIP TRANSISTOR 2SA1362GR*85L	1		
TR12		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR21		NPN	DIGITAL TRANSISTOR KRA107S	1		
TR22-23		NPN	CHIP TRANSISTOR KTC3875S-G*AL	2		
TR38		NPN	TRANSISTOR 2SD1866TV2*	1		
TRA21		NPN	TRANSISTOR ARRAY UPA1428AH	1		
TRA41-44		NPN	TRANSISTOR ARRAY UPA1428AH	4		
VR1-2		NPN	RP CHIP RESISTOR EVM3S-47K	2		
XTAL		NPN	CERA. OSC CHIP CSTCE16M0V53*	1		
ZD01		NPN	ZENER DIODE CHIP HZU20B2TRF	1		
ZD02		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD11		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
ZD22		NPN	ZENER DIODE CHIP BZT52-C33S*	1		
ZD23		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
ZD25		NPN	ZENER DIODE CHIP BZT52-C3V9S*	1		
ZD51		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
-		NPN	S/N SEAL KEI-802	1		
		NPN	FLASH MEMORY SEAL KEI-801	1		

6. Serial Interface Board（25 pin）

6-1. Circuit Diagram

6-2. Parts List

DRWG. NO.	REV.	PARTS NO.	PATRS NAME	Q'TY	REMARKS	RANK
C1		NPN	CHEM. CAPA. 1UF 50V	1		
C2		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C3-6		NPN	CHEM. CAPA. 1UF 50V	4		
C7-8		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
C9		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
CN1		NPN	CONNECTOR PHEC40P-R111LF	1		
CN2		NPN	CONNECTOR DBLD-J25SAF-21L9-1	1		
D1-2		NPN	DIODE CHIP BAT54S*	2		
D3		NPN	DIODE CHIP MC2836	1		
D4-5					NOT MOUNTED	
DSW1		NPN	DIP SWITCH 210B008MS	1		
IC1		08200208	IC-I/F ST232ECWR*	1		S
IC2		NPN	IC-LIN UPC393G2*T1	1		
L1-7		NPN	CHIP BEADS IND. BK1608HS601*	7		
L8		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
L9					NOT MOUNTED	
R1-2		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R3-4		NPN	CHIP RESISTOR 100 OHM 1/16W	2		
R5-6		NPN	CHIP RESISTOR 10 K-OHM 1/10W	2		
R7		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R8		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R9		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		
R10		NPN	CHIP RESISTOR 100 K-OHM 1/16W	1		
R11-12		NPN	CHIP RESISTOR 10 K-OHM 1/16W	2		
R13		NPN	CHIP RESISTOR 100 K-OHM 1/16W	1		
R14-15		NPN	CHIP RESISTOR 100 OHM 1/16W	2		
R16		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R17		NPN	CHIP RESISTOR 10 K-OHM 1/10W	1		
R18		NPN	CHIP RES1608 2.7 KOHM 1/16W 5%	1		
R19-20		NPN	CHIP RESISTOR 10 K-OHM 1/10W	2		
R21		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R22		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R23		NPN	CHIP RESISTOR 33 K-OHM 1/10W	1		
R24		NPN	CHIP RESISTOR 3.3 K-OHM 1/10W	1		
RA1		NPN	RESIS. ARRAY 10 K-OHM 1/8W 8EL	1		
TR1		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		
TR2		NPN	CHIP TRANSISTOR 2SA1179M6-STR	1		
TR3		NPN	DIGITAL TRANSISTOR FN1A4P	1		
TR4		NPN	DIGITAL TRANSISTOR FA1A4P	1		
TR5		NPN	DIGITAL TRANSISTOR FN1A4P	1		
TR6		NPN	DIGITAL TRANSISTOR FA1A4P	1		

7. Parallel Interface Board

7-1. Circuit Diagram

7-2. Parts List

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
BC1-3		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	3		
C1					NOT MOUNTED	
C2		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C3-4					NOT MOUNTED	
C5		NPN	CHEM. CAPA. 1UF 50V	1		
CN1		NPN	CONNECTOR PHEC40P-R111LF	1		
CN2		NPN	CONNECTOR 57RE-40360-830BD29A	1		
IC1		08211042	TTL IC 74LS374NSR*EL	1		S
IC2		NPN	TTL IC 74ALS32FP*EL	1		
IC3		08210126	TTL IC 74LS05FP*EL	1		S
L1-2		NPN	CHIP RESISTOR 0 OHM 1/16W	2		
L3-6		09990754	CHIP BEADS IND. BK1608HS601*	4		S
L7		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
L8-10		NPN	CHIP BEADS IND. BK2125HS470*	3		
R1		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R2-9		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	8		
R10		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R11		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R12		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R13		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R14		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R15		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R16		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R17					NOT MOUNTED	
R18		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R19-20		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R21		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R22		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R23		NPN	CHIP RES1608 3.9 KOHM 1/16W 5%	1		
R24		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R25		NPN	CHIP RESISTOR 330 OHM 1/16W	1		
RA1		NPN	RESIS. ARRAY 4.7K-OHM 1/8W 8EL	1		
RA2		NPN	RESIS. ARRAY 1.8K-OHM 1/8W 5EL	1		
TR1		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		

8. USB Interface Board

8-1. Circuit Diagram

The part marked with two asterisks (**) is not mounted.
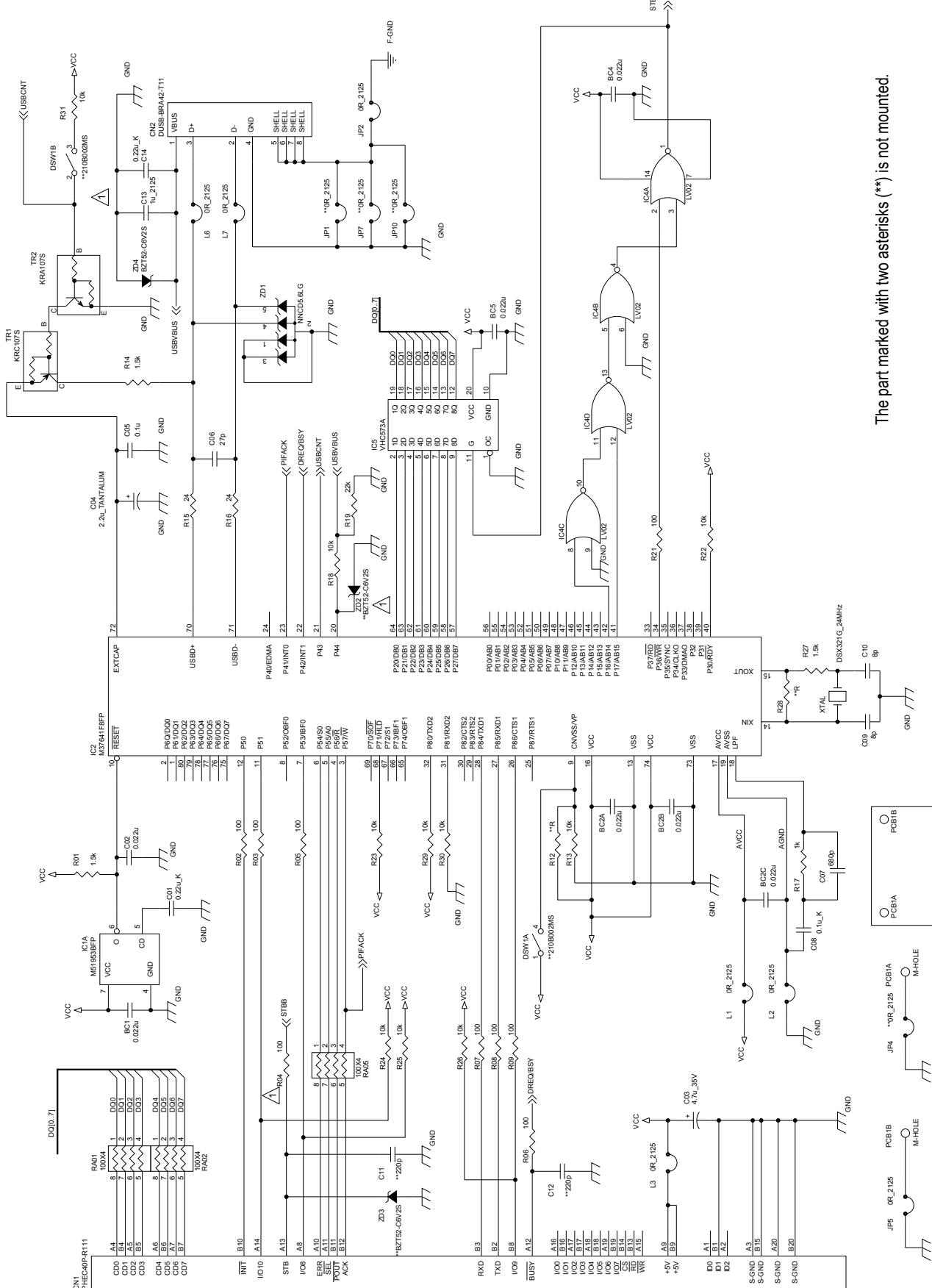
8-2. Component Layout
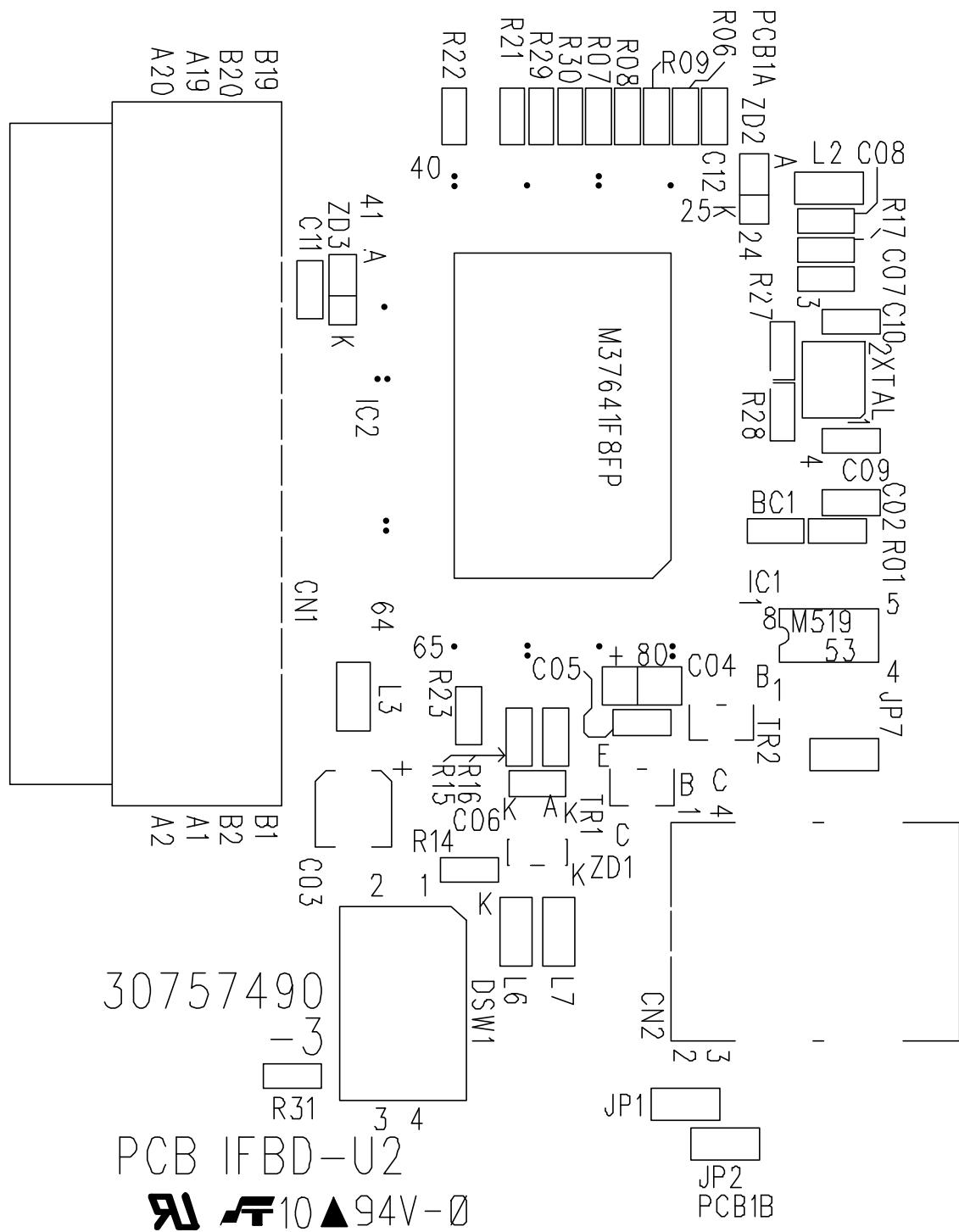
8-3. Parts List

DRWG.NO	REV.	PARTS NO	PARTS NAME	Q'TY	REMARKS	RANK
BC1		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC2A		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC2B		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC2C		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
BC4-5		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	2		
C01		NPN	CERA.CAPA.CHIP1608 0.22UF 10V	1		
C02		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C03		NPN	CHEM. CAPA. CHIP 4.7UF 35V	1		
C04		NPN	TANTALUM CAPA. CHIP 2.2UF 16V	1		
C05		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C06		NPN	CERA.CAPA.CHIP1608 27PF 50V	1		
C07		NPN	CERA.CAPA.CHIP1608 680PF 50V	1		
C08		NPN	CERA.CAPA.CHIP1608 0.1UF 16V	1		
C09-10		NPN	CERA.CAPA.CHIP1608 8PF 50V	2		
C13		NPN	CERA. CAPA. CHIP 1UF 10V	1		
C14		NPN	CERA.CAPA.CHIP1608 0.22UF 10V	1		
CN1		NPN	CONNECTOR PHEC40P-R111LF	1		
CN2		NPN	CONNECTOR DUSB-BRA42-T11	1		
IC1		NPN	IC-RESET M51953BFP*E2	1		
IC2		NPN	CPU M37641F8FP	1		
IC4		NPN	CMOS 74LV02AFP*EL	1		
IC5		NPN	CMOS 74VHC573F*EL	1		
		NPN	FLASH MEMORY SEAL KEI-801	1		
JP2		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
JP5		NPN	CHIP RESISTOR 0 OHM 1/10W	1		
L1-3		NPN	CHIP RESISTOR 0 OHM 1/10W	3		
L6-7		NPN	CHIP RESISTOR 0 OHM 1/10W	2		
R01		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R02-09		NPN	CHIP RESISTOR 100 OHM 1/16W	8		
R13		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R14		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R15-16		NPN	CHIP RES1608 24 OHM 1/16W 5%	2		
R17		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R18		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R19		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R21		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R22-26		NPN	CHIP RESISTOR 10 K-OHM 1/16W	5		
R27		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R29-31		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
RA01		NPN	RESIS. ARRAY CHIP MNR14J101*	1		
RA02		NPN	RESIS. ARRAY CHIP MNR14J101*	1		
RA05		NPN	RESIS. ARRAY CHIP MNR14J101*	1		
TR1		NPN	DIGITAL TRANSISTOR KRA107S	1		
TR2		NPN	DIGITAL TRANSISTOR KRC107S	1		
XTAL		NPN	CRYSTAL CHIP DSX321G 24MHZ	1		
ZD1		NPN	ZENER DIODE CHIP NNCD5.6LG*T1	1		
ZD4		NPN	ZENER DIODE CHIP BZT52-C6V2S*	1		
-		NPN	BAR CODE LABEL LBP-80141	1		

9. Ethernet Interface Board

9-1. Circuit Diagram
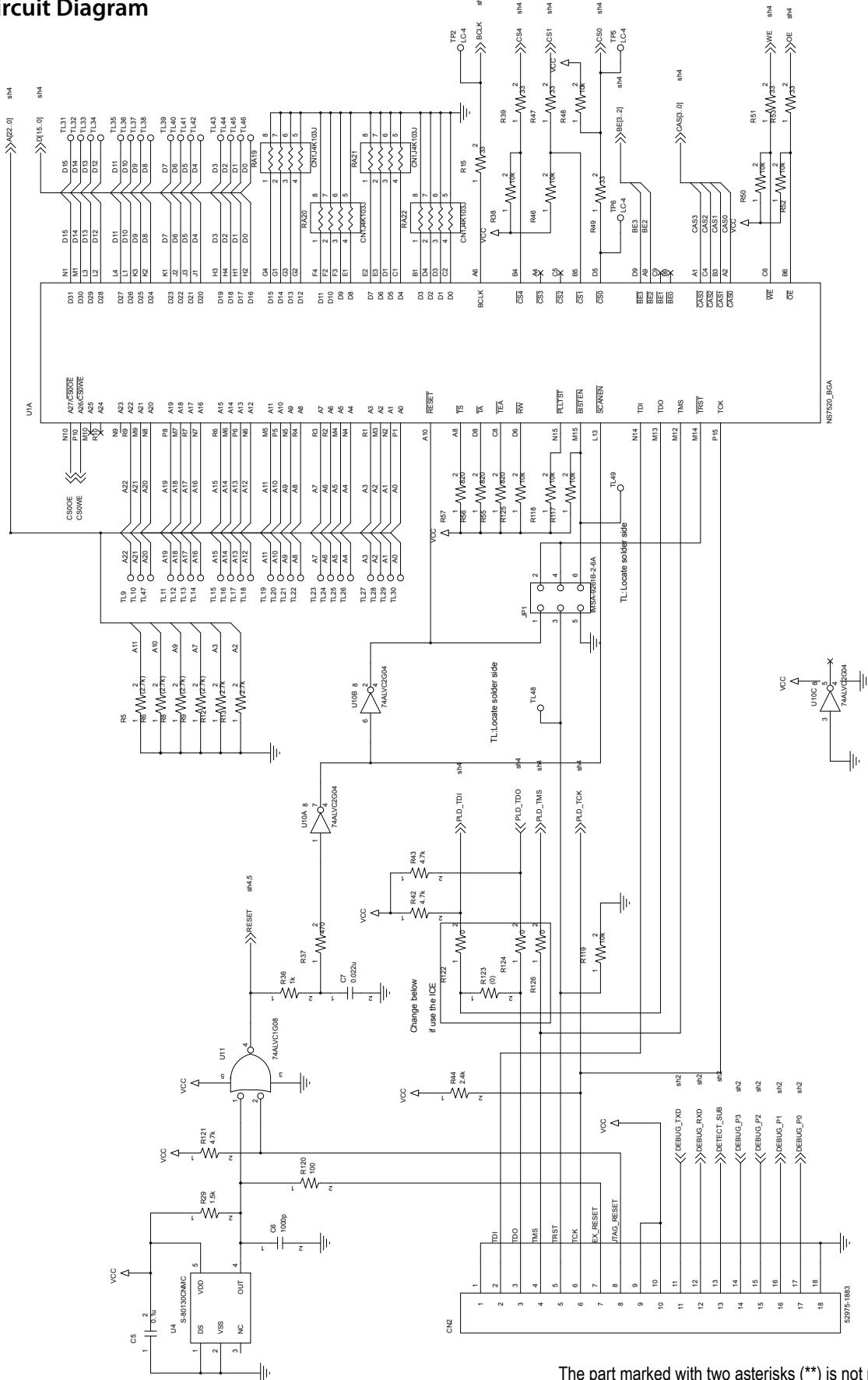
The part marked with two asterisks (**) is not mounted.

Ethernet Interface Board (1/5)
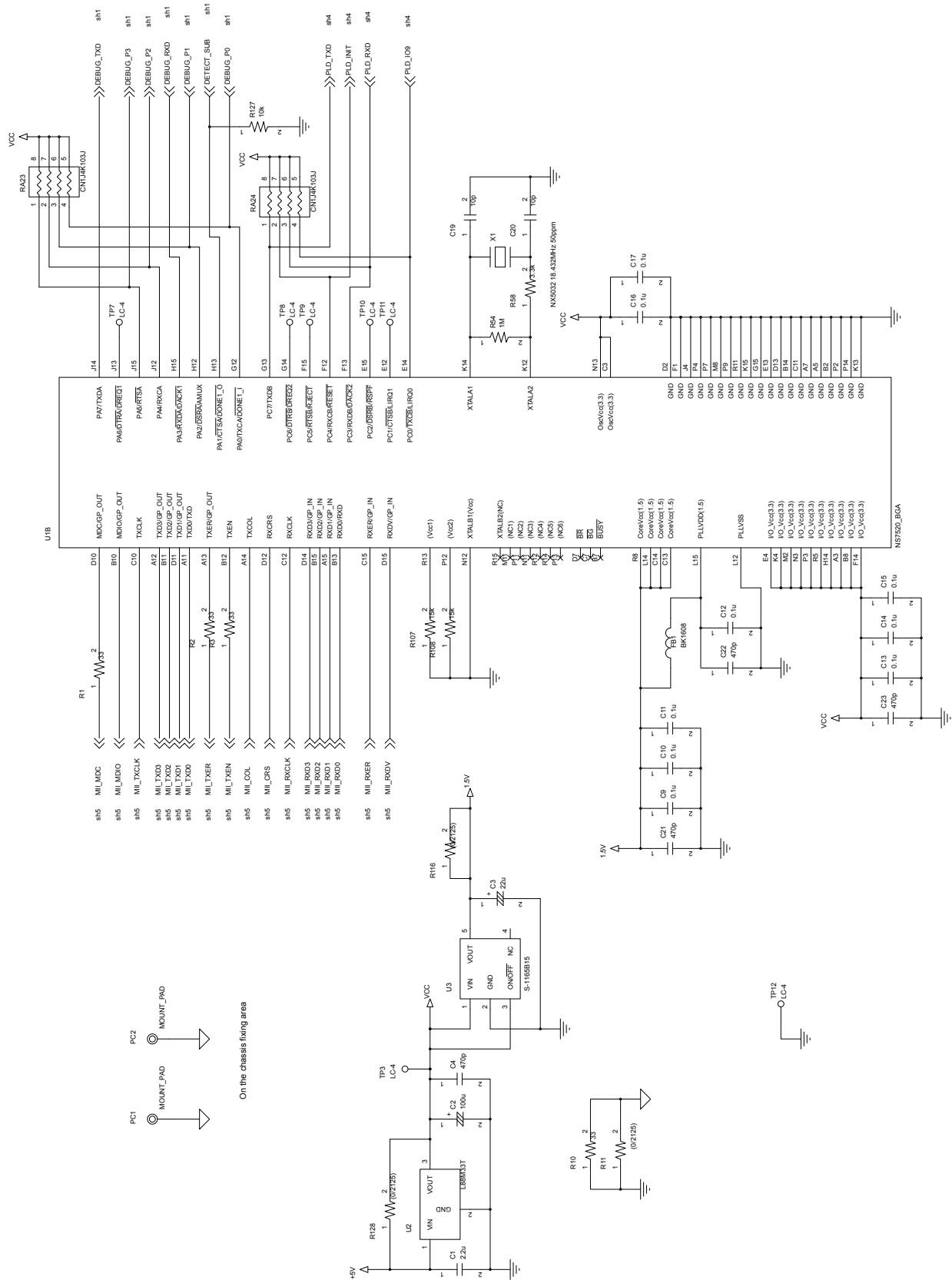
The part marked with two asterisks (**) is not mounted.

Ethernet Interface Board (2/5)

The part marked with two asterisks (**) is not mounted.

Ethernet Interface Board (3/5)
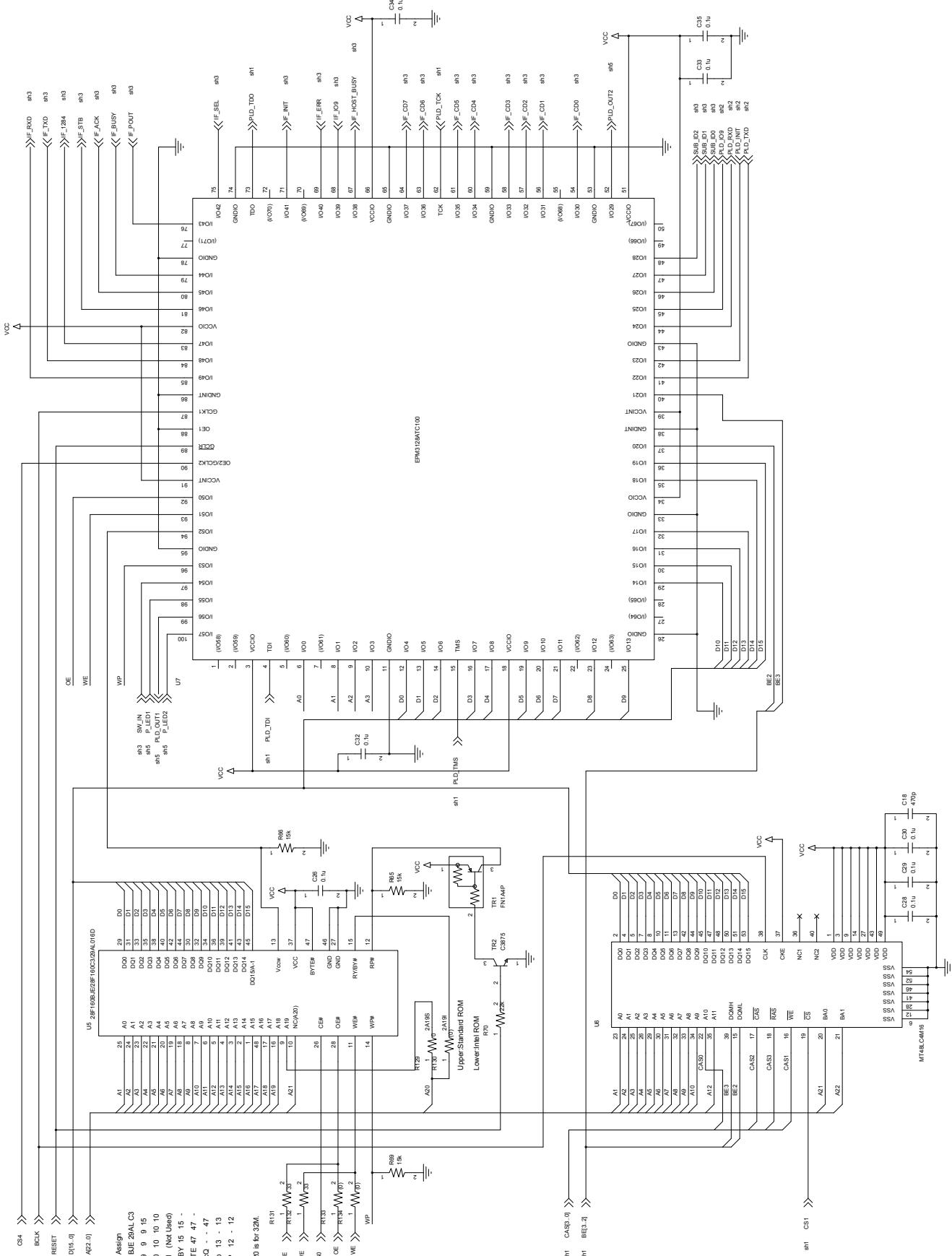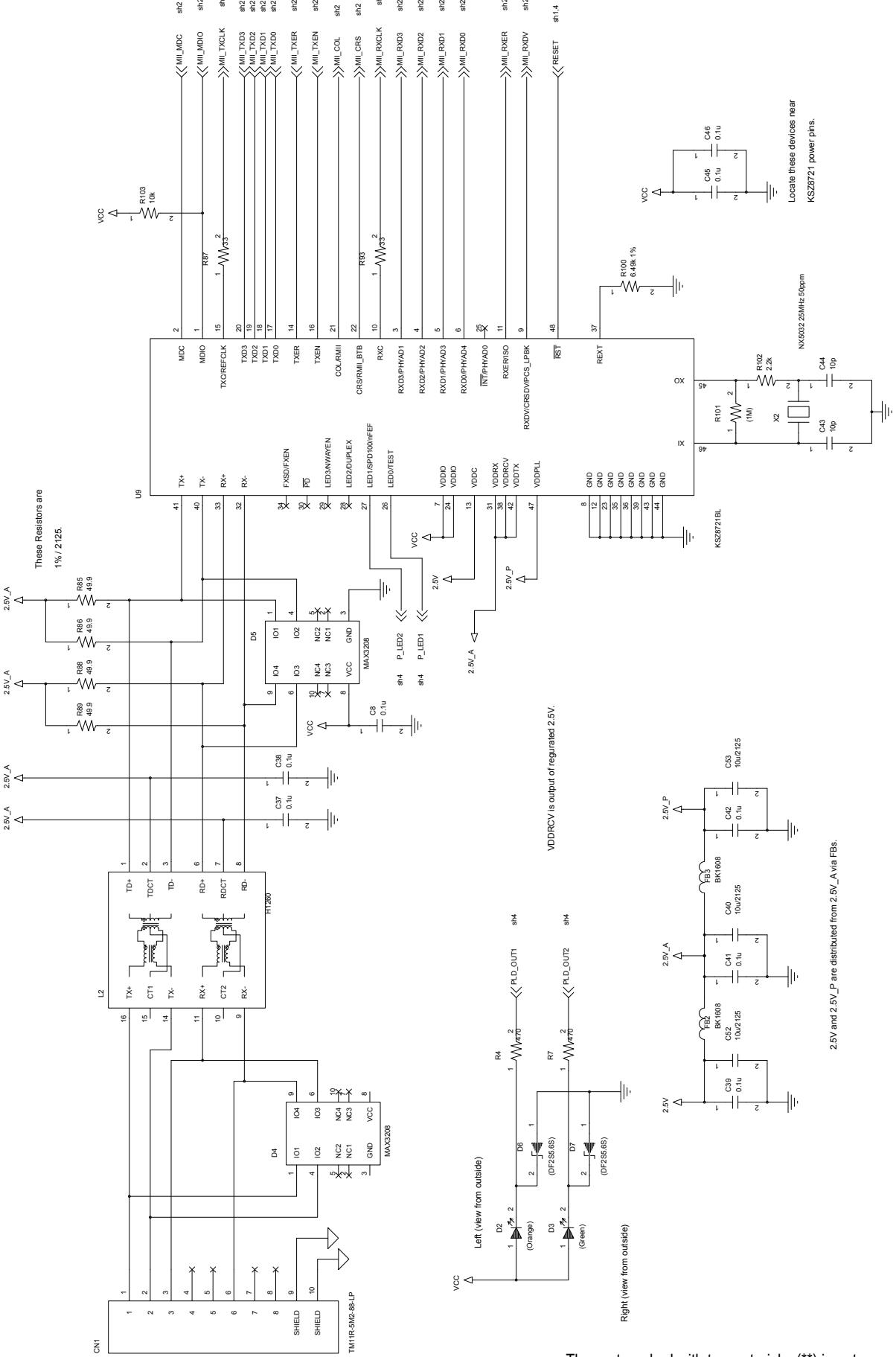
The part marked with two asterisks (**) is not mounted.

Ethernet Interface Board (4/5)
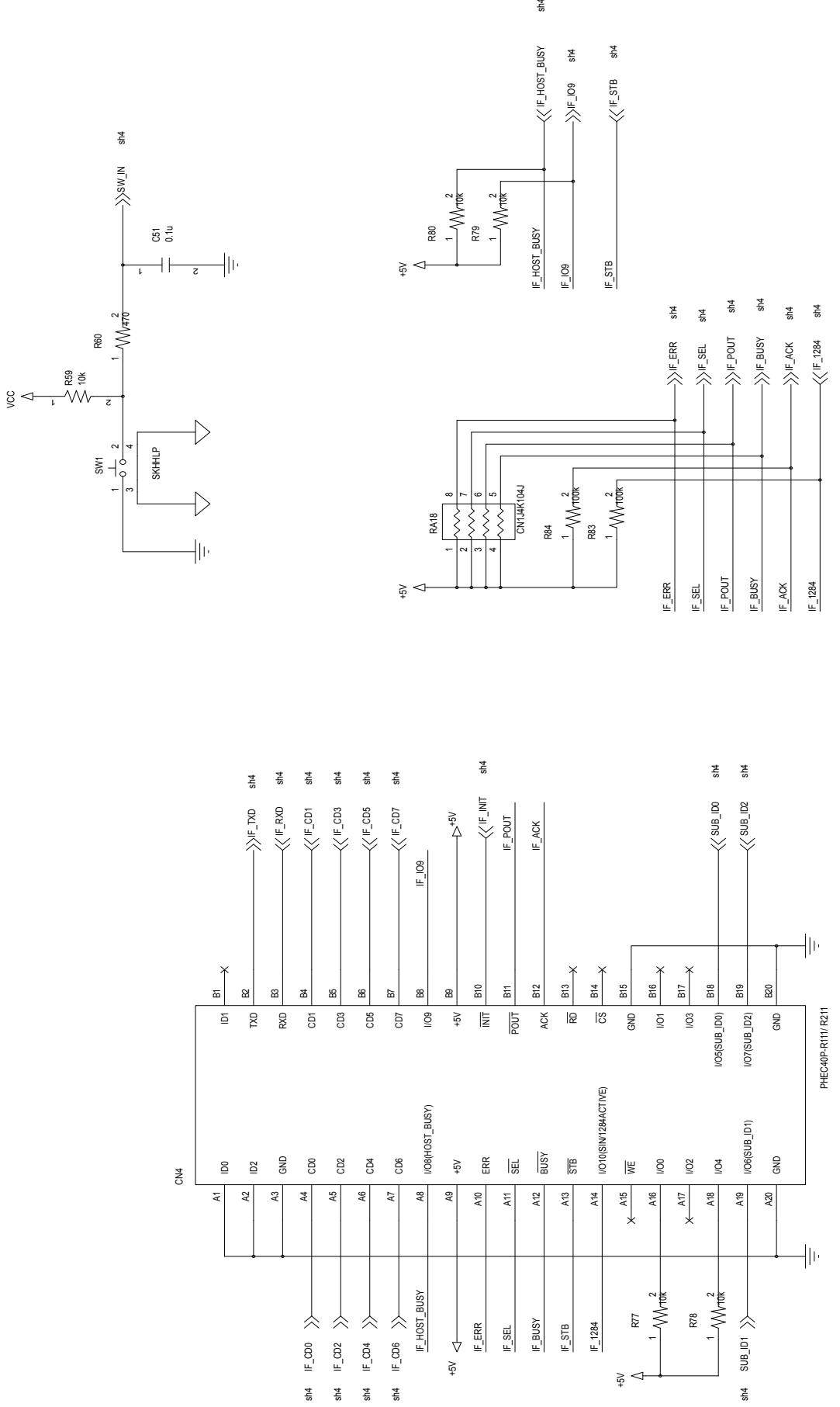
The part marked with two asterisks (**) is not mounted.

Ethernet Interface Board (5/5)

9-2. Component Layout
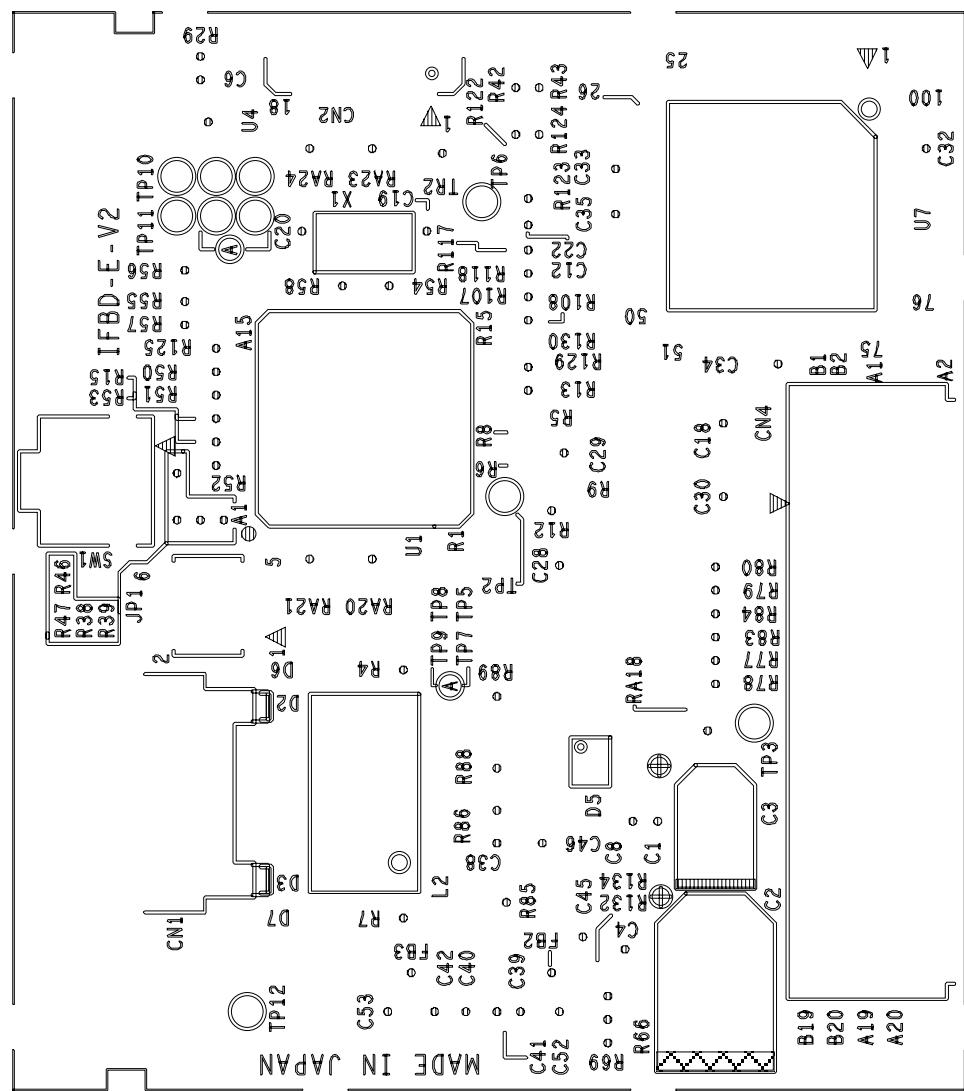
9-3. Parts List

DRWG. NO.	REV	PARTS NO	PARTS NAME	Q'TY	REMARKS	RANK
C1		NPN	CERA.CAPA.CHIP1608 2.2UF 6.3V	1		
C2		NPN	CHEM.CAPA.CHIP 100UF 6.3V	1		
C3		NPN	CHEM.CAPA.CHIP 22UF 6.3V	1		
C4		NPN	CERA.CAPA.CHIP1608 470PF 50V	1		
C5		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C6		NPN	CERA.CAPA.CHIP1608 1000PF 50V	1		
C7		NPN	CERA.CAPA.CHIP1608 0.022UF 50V	1		
C8-17		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	10		
C18		NPN	CERA.CAPA.CHIP1608 470PF 50V	1		
C19-20		NPN	CERA.CAPA.CHIP 10PF 25V	2		
C21-23		NPN	CERA.CAPA.CHIP1608 470PF 50V	3		
C24-C25					NOT USED	
C26		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C27					NOT USED	
C28-30		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	3		
C31					NOT USED	
C32-35		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	4		
C36					NOT USED	
C37-39		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	3		
C40		NPN	CERA.CAPA.CHIP 10UF 6.3V	1		
C41-42		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	2		
C43-44		NPN	CERA.CAPA.CHIP 10PF 25V	2		
C45-46		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	2		
C47-C50					NOT USED	
C51		NPN	CERA.CAPA.CHIP1608 0.1UF 25V	1		
C52-53		NPN	CERA.CAPA.CHIP 10UF 25V	2		
C54					NOT USED	
RA1-RA17					NOT USED	
RA18		NPN	RESIS. ARRAY CHIP CN1JK104J	1		
RA19-24		NPN	RESIS. ARRAY CHIP MNR14J103*	6		
R1-3		NPN	CHIP RES1608 33 OHM 1/16W 5%	3		
R4		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R5-6					NOT MOUNTED	
R7		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R8-9					NOT MOUNTED	
R10		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R11					NOT MOUNTED	
R12-13		NPN	CHIP RES1608 2.7 KOHM 1/16W 5%	2		
R14					NOT USED	
R15		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R16-R28					NOT USED	
R29		NPN	CHIP RES1608 1.5 KOHM 1/16W 5%	1		
R30-R35					NOT USED	
R36		NPN	CHIP RESISTOR 1 K-OHM 1/16W	1		
R37		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R38		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R39		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R40-41					NOT USED	
R42-43		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	2		
R44		NPN	CHIP RESISTOR 2.4 K-OHM 1/16W	1		
R45					NOT USED	
R46		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R47		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R48		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R49		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R50		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	Q'TY	REMARKS	RANK
R51		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R52		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R53		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R54		NPN	CHIP RESISTORE 100 K-OHM 1/16W	1		
R55-57		NPN	CHIP RESISTORE 820 OHM 1/16W	3		
R58		NPN	CHIP RESISTOR 3.3 K-OHM 1/16W	1		
R59		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R60		NPN	CHIP RESISTOR 470 OHM 1/16W	1		
R61-R64					NOT USED	
R65-66		NPN	CHIP RESISTOR 15 K-OHM 1/16W	2		
R67-68					NOT USED	
R69		NPN	CHIP RESISTOR 15 K-OHM 1/16W	1		
R70		NPN	CHIP RESISTOR 22 K-OHM 1/16W	1		
R71-R76					NOT USED	
R77		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R78		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R79		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R80		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R81-R82					NOT USED	
R83-84		NPN	CHIP RESISTOR 100 K-OHM 1/16W	2		
R85-86		NPN	CHIP RESISTOR 49.9 OHM 1/10W	2		
R87		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R88-89		NPN	CHIP RESISTOR 49.9 OHM 1/10W	2		
R90-R92					NOT USED	
R93		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R94-R99					NOT USED	
R100		NPN	CHIP RESIS 6.49 K-OHM 1/16W 1%	1		
R101					NOT MOUNTED	
R102		NPN	CHIP RESISTOR 2.2 K-OHM 1/16W	1		
R103		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R104-R106					NOT USED	
R107-108		NPN	CHIP RESISTOR 15 K-OHM 1/16W	2		
R109-115					NOT USED	
R116					NOT MOUNTED	
R117-119		NPN	CHIP RESISTOR 10 K-OHM 1/16W	3		
R120		NPN	CHIP RESISTOR 100 OHM 1/16W	1		
R121		NPN	CHIP RESISTOR 4.7 K-OHM 1/16W	1		
R122		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R123					NOT MOUNTED	
R124		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R125		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R126		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R127		NPN	CHIP RESISTOR 10 K-OHM 1/16W	1		
R128					NOT MOUNTED	
R129		NPN	CHIP RESISTOR 0 OHM 1/16W	1		
R130					NOT MOUNTED	
R131		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R132		NPN	CHIP RES1608 33 OHM 1/16W 5%	1		
R133-134					NOT MOUNTED	
D1					NOT USED	
D2		NPN	LED CHIP LT1D40A*	1		
D3		NPN	LED CHIP LT1E40A*	1		
D4-5		NPN	DIODE ARRAY MAX3208EAUB	2		
D6-7					NOT MOUNTED	
TR1		NPN	DIGITAL TRANSISTOR FN1A4P	1		
TR2		NPN	CHIP TRANSISTOR KTC3875S-G*AL	1		

DRWG. NO.	REV.	PARTS NO.	PARTS NAME	1		
U1		NPN	CPU NS7520B-1-C36	1		
U2		NPN	IC-REG L88M33T*TL	1		
U3		NPN	IC-REG S-1165B15*	1		
U4		NPN	IC-RESET S-80130CN*	1		
U5		NPN	FLASH MEMORY 29AL016D90TFI010	1		
U6		NPN	SDRAM MT48LC4M16A2P	1		
U7		NPN	CPLD EPM3128ATC100	1		
U8					NOT USED	
U9		NPN	PHY KSZ8721BL	1		
U10		NPN	CMOS 74ALVC2G04USE*	1		
U11		NPN	CMOS 74ALVC1G08*	1		
SW1		NPN	PUSH SWITCH SKHHLP	1		
CN1		NPN	CONNECTOR TM11R-5M2-88-LP	1		
CN2		NPN	CONNECTOR 52975-1883	1		
CN3					NOT USED	
CN4		NPN	CONNECTOR PHEC40P-R111LF	1		
X1		NPN	CRYSTAL NX5032 18.432MHZ	1		
X2		NPN	CRYSTAL NX5032 25.000MHZ	1		
JP1		NPN	CONNECTOR IMSA-9261B-2-06Y912	1		
JP1		NPN	CONNECTOR IMSA9215H-GF	1		
FB1-3		NPN	CHIP BEADS IND. BK1608HS601*	3		
L1					NOT USED	
L2		NPN	PULSE FORMER H1260NLT	1		
L3-L5					NOT USED	
TP1-12					NOT USED	

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