Canon

PRINTER

MODEL CMP-10

- SERVICE GUIDE
- PARTS CATALOG

CONTENTS

1. SPECIFICATION

1.1 Specification 1

(1)	Print system	:	Impact-type
(2)	Print speed	:	2.8 lines/sec. approx.
(3)	Paper feed speed	:	11.1 lines/sec. approx.
(4)	Print-out digits	:	12 digits
(5)	Character size	:	1.7(W) x 2.7(H)mm
(6)	Character spacing	:	Digit - 4.00 $\pm$0.3mm Line - 5.40 $\pm$0.3mm
(7)	Input data	:	5-bit-phase shift-parallel input
(8)	Weight	:	0.45Kg
(9)	Dimension	:	105(W) x 115(D) x 80(H)mm
(10)	Operating Environment	:	Temperature +5~+45°C
(11)	Reliability	:	1,000,000 line MCBF
(12)	Ink Roller(CP-10)	:	Color - Purple Dimension - 20 x 68mm w/o case Lifetime - 500,000 lines MCBF
(13)	Roll Paper (MP-57)	:	Plain paper Width -58 $^{+0}_{-1}$mm Diameter - 86ømm max.

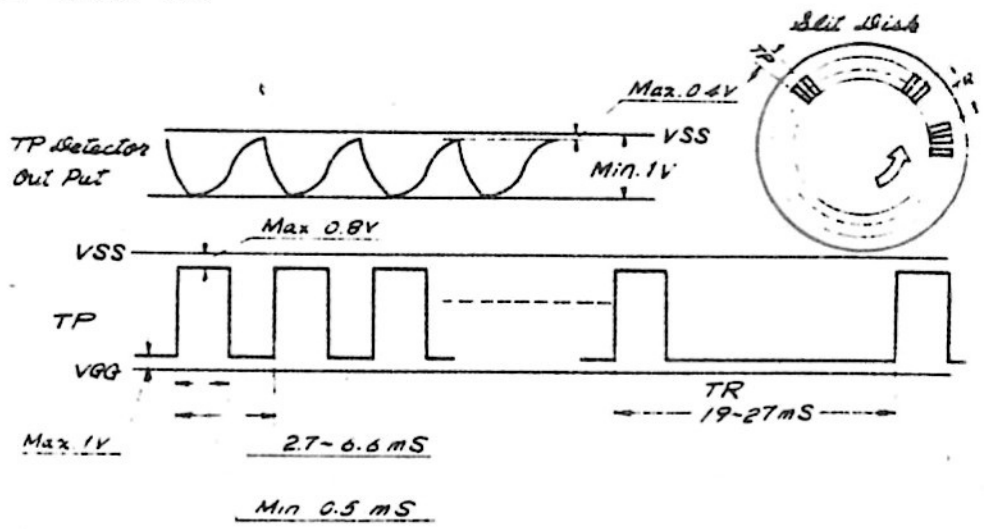
1.2 Specification 2

(1)	Motor	:	Voltage 14$\pm$1.4VDC Current 0.115A (max. 0.8A) Start time less than 100msec.
(2)	Print & Feed Solenoid	:	Voltage 20$\pm$2VDC Current 1.15A Resistance 18.6$\pm$0.5ohm (25°C)

(3) Detector (TP & TR signals)

The detector consists of a LED and a phototransistor unit which generates the TP signals (n=0~60) corresponding to the characters and the blank of the print wheel.
Of the sixty-one TP signals, TP60 has a longer low level time than the other TP signals (n=0~59) which is used for the reset signal TR.

Signal TP and TR



TP0	59.....	2.7	6.6mS
TP60(TR)	.....	19	27mS

Fig. 1

Relation with print signal (D1 D13)

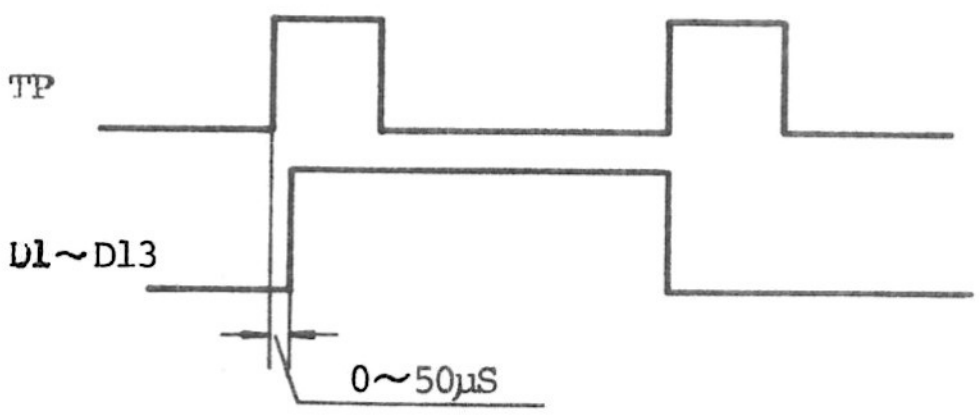


Fig. 2

(4) Supply Voltage

VSS: 0V
VGG: -14V±10%
VPP: -20V±10%

2. OPERATION PROCEDURE

2.1 Print Mechanism

This printer differs to the drum-type printer because an electromagnet is embedded in the hammer head of the hammer unit which activates the hammer when it is energized.

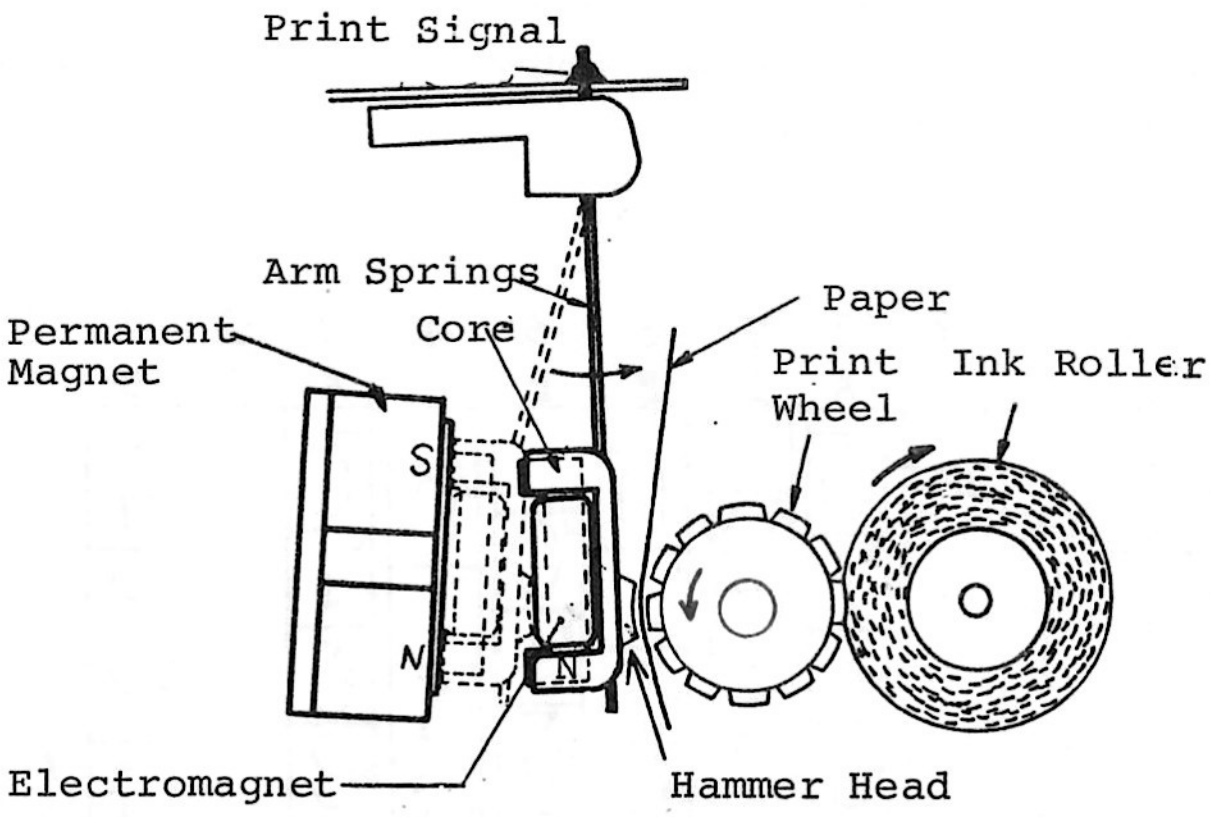


Fig. 3 Print Mechanism

The N pole of the electromagnet core is embedded in the upper portion of the hammer head which is affixed onto two arm springs with the S pole embedded in the lower portion. When there is no print signal (D1 ~ D13), the two permanent bar magnets with the opposite poles facing the hammer heads and attracts them which creates a tension on the arm springs. Thus, when a print signal (D1 ~ D13) appears, the electro-magnet core is activated with the N and S pole of the core being repelled by the permanent magnets and with the force of the tension on the arm springs, the hammer head strikes the print wheel.

2.2 Character Layout of Print Wheel

It differs to that of the drum-type because all of the same characters are not in a single straight line nor printed simultaneously. In other words, the 13 digits or columns are divided into 5 groups with A groups having 3 digits, B groups 3 digits, C groups 2 digits, D groups 3 digits and E groups having 2 digits as shown in Fig. 4 and the characters of each groups to be printed out are struck simultaneously.

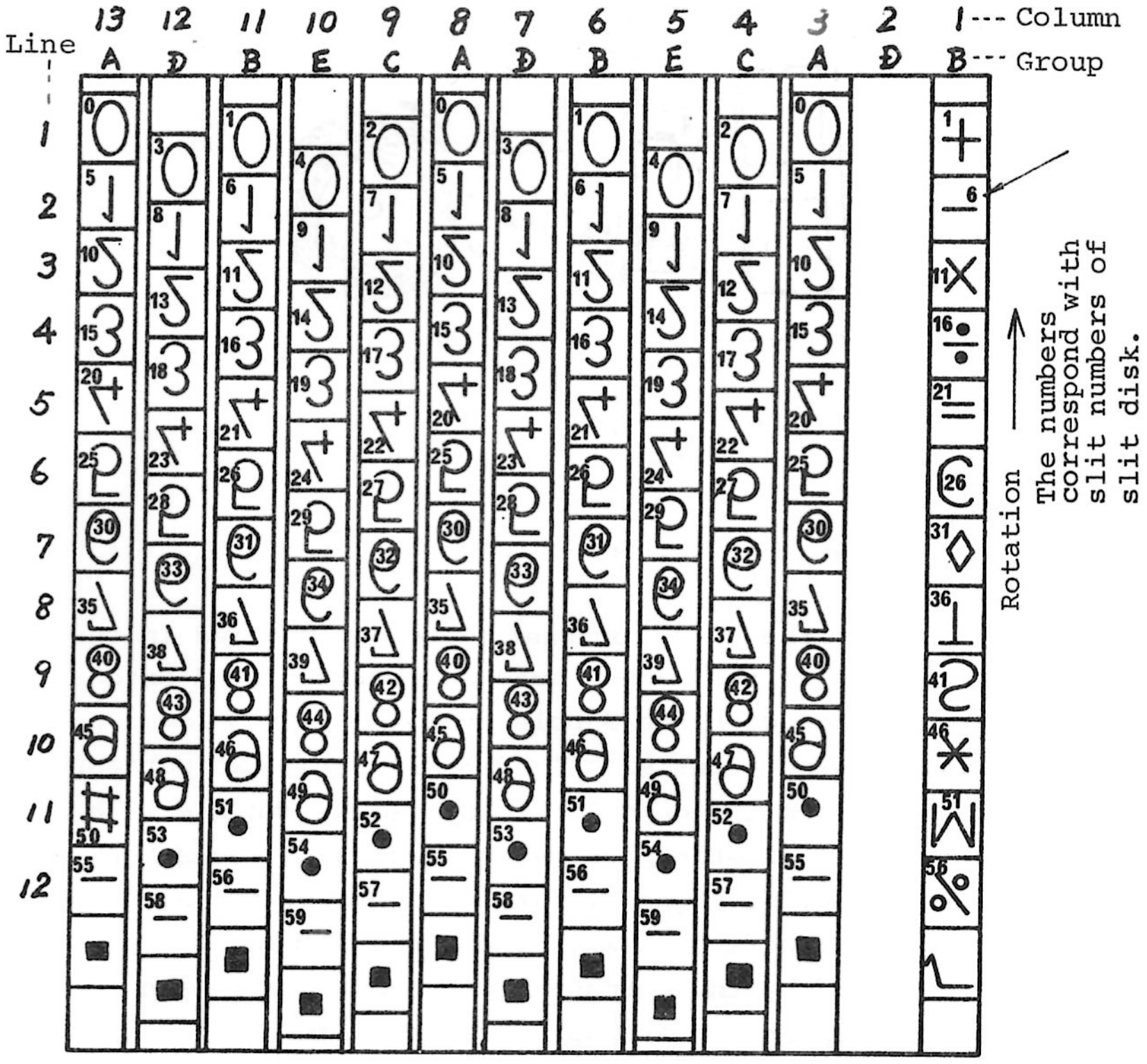
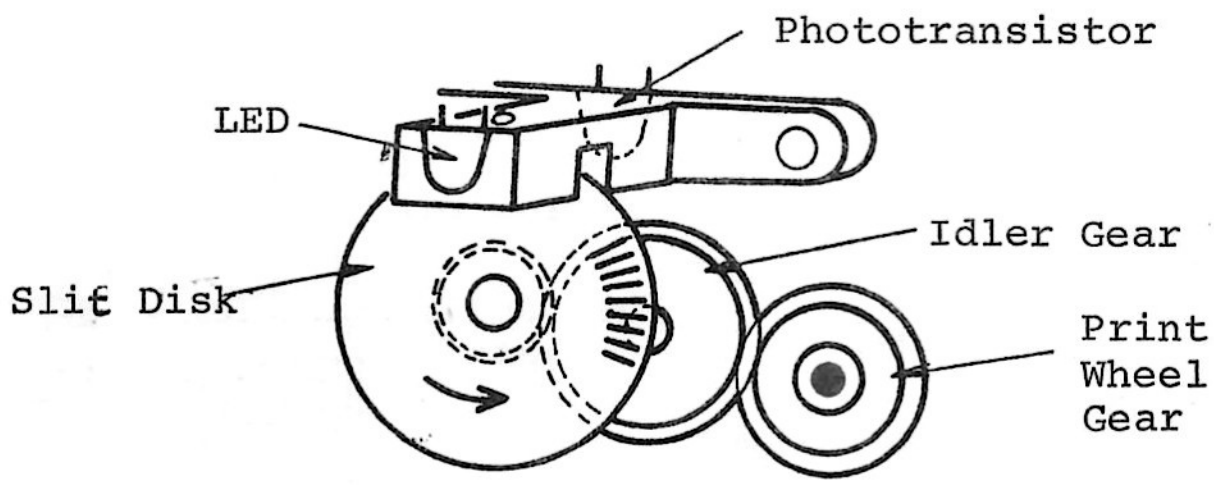


Fig. 4 Character Layout

2.3 TP Detector

The TP signal is generated when the phototransistor receives the light of the LED that passing through the slit of the slit disk.



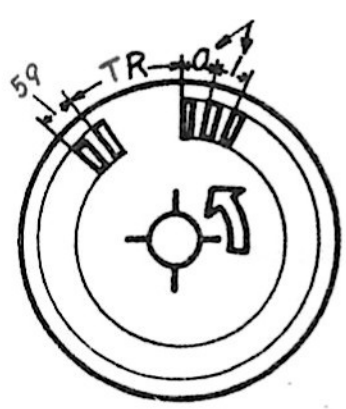
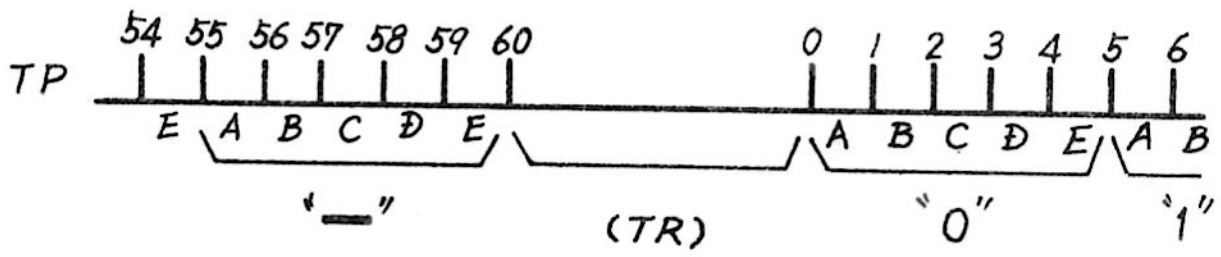


Fig. 5 TP Detector



Sixty-one signals are generated in one revolution of the slit disk because it has sixty-one slits.
Of these signals, sixty signals TP0～59 correspond to certain groups of characters of the print wheel.
However, one signal TP60 having a longer low level than the others is to detect the character 0 of A group of print wheel. (TR signal)

2.4 Paper Feed Mechanism

The clutch system for advancing the paper is based on a clutch spring fitting tightly onto the hub of a free-wheeling feed gear with (a) end of the clutch spring inserted in the groove of the ratchet and (b) end in that of the collar.

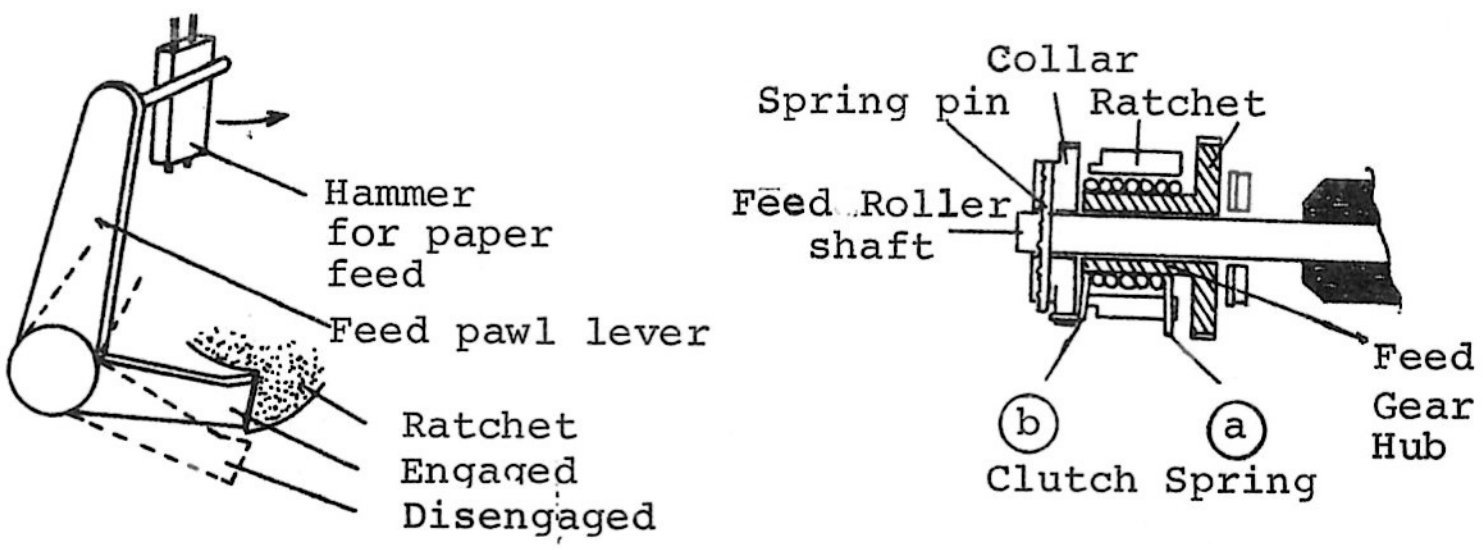


Fig. 6 Paper Feed Mechanism

When the feed pawl is engaged with the ratchet cog, the clutch spring end (a) is held back with no spring tension on the feed gear hub; thus, the feed gear rotates freely on the feed roller shaft.

However, when the hammer for paper feed (15th-digit) is activated, it press against the arm of feed pawl lever to disengage it from the ratchet; thus, the clutch spring tightens around the hub of the constantly rotating feed gear to transmit its force to feed roller to advance the paper one space as end (b) of the clutch spring is attached to the collar of feed roller shaft.

2.5 Motor Drive Circuit

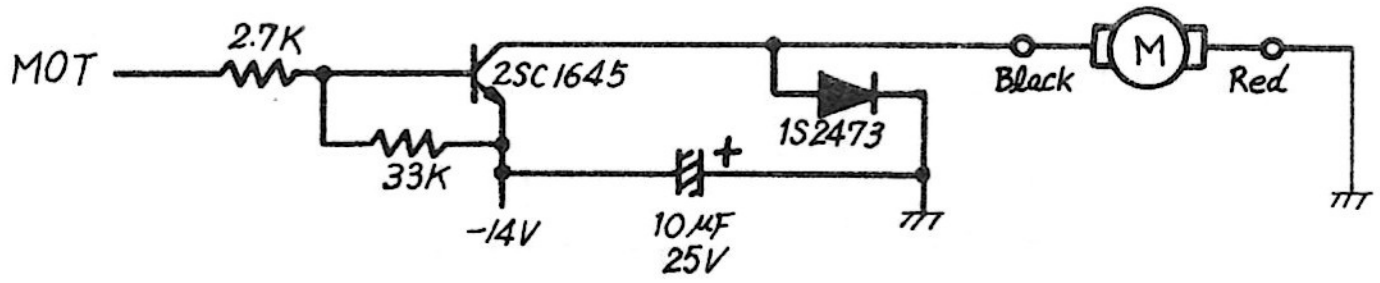


Fig. 7

2.6 Hammer Head Drive Circuit

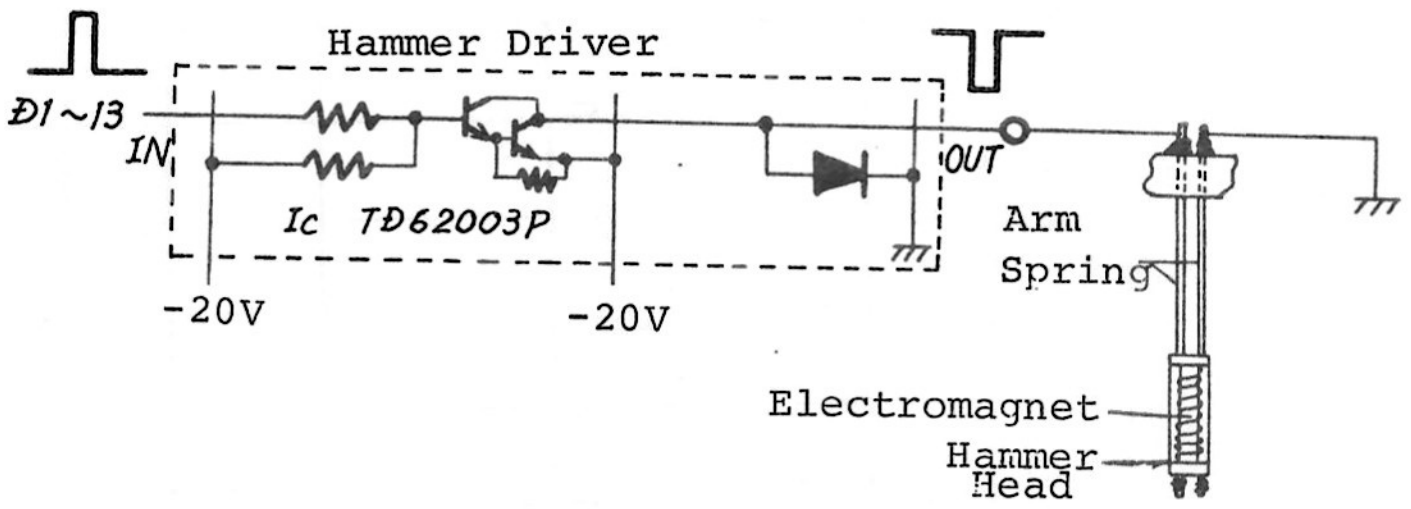
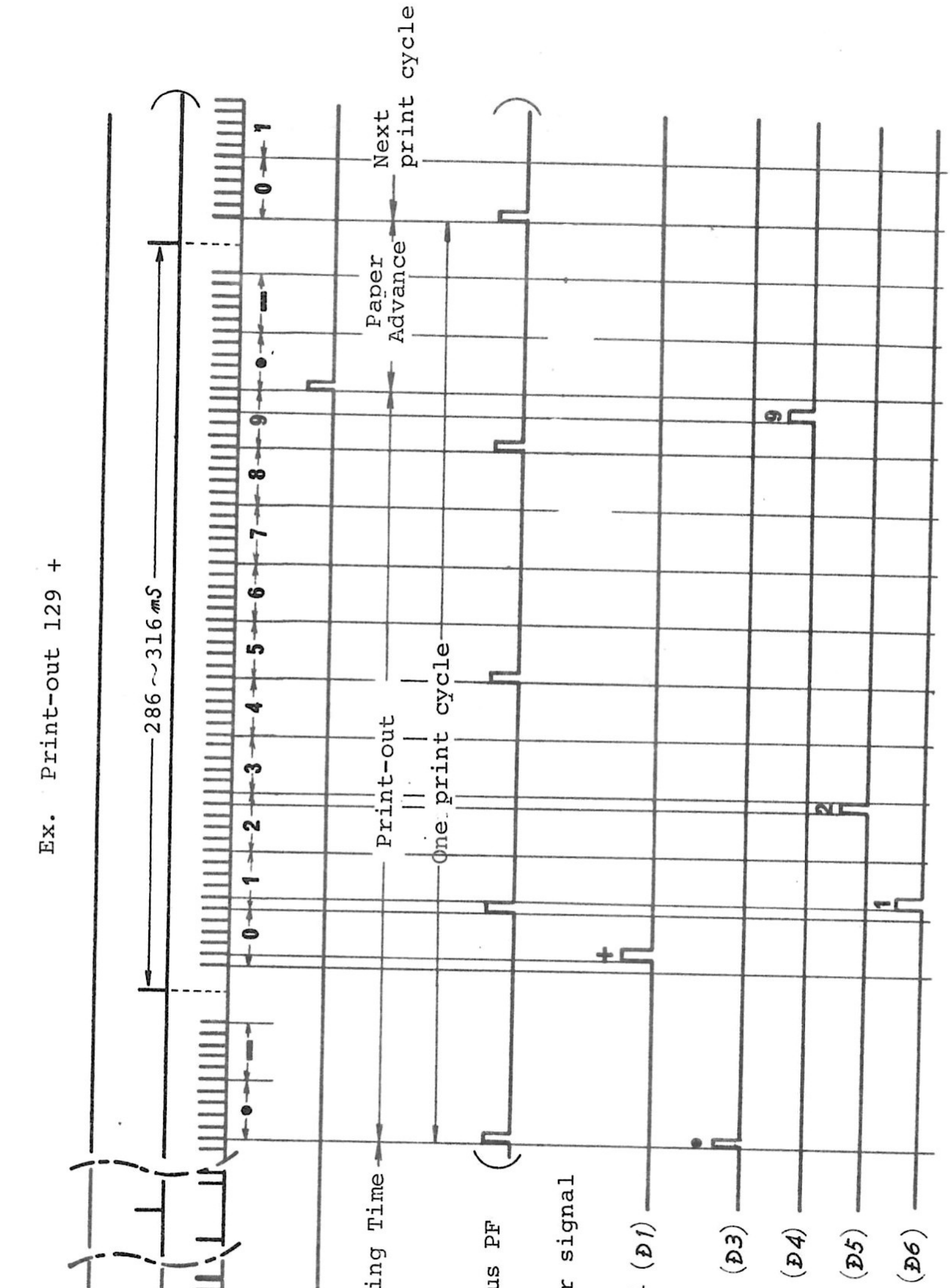


Fig. 8

2.7 Timing Chart



3. REPLACEMENT OF MAIN PARTS

The number in parenthesis after the parts correspond to the Key No. in the exploded view.

3.1 Print Wheel

[Disassembly]

(1) Loosen two setscrew (42) of print wheel gear (1).
(2) Remove print wheel gear (1).
(3) Remove retaining washer (62) and take out bushing (32).
(4) Remove retaining screw for right-side bushing (31).
(5) Take off print wheel (16).

[Assembly]

(1) Attach print wheel and bushings.
(apply agrease to bushings).
(2) Install print wheel gear and temporarily tighten setscrews.

[Adjustment]

(1) Remove slit disk lid (29) and rotate motor gear until TP0 slit aligns with center of screw and shaft.

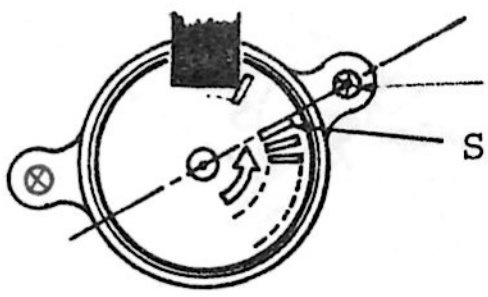


Fig. 9

(2) Loosen setscrews (42) and turn the print wheel until the center between 0 and 1 of the 13th digit is facing upwards while holding the print wheel gear in position.

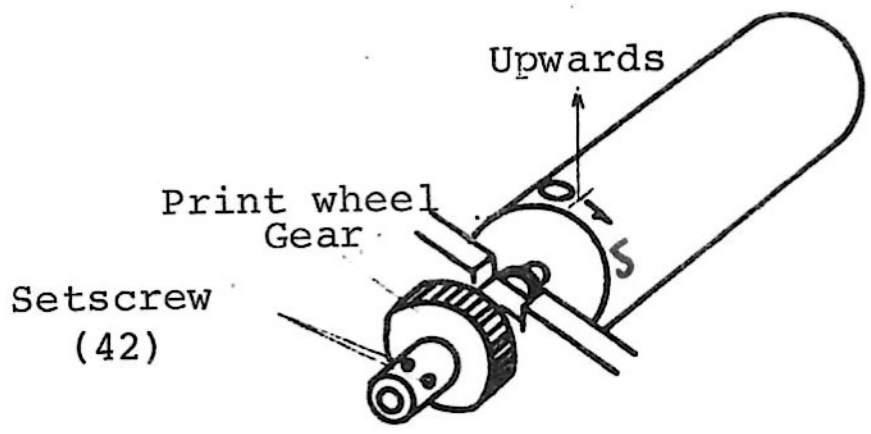


Fig. 10

(3) Temporarily tighten setscrews, then make a few prints.

(4) Print-out

A) If lower part of characters is not printed, loosen setscrews and slightly turn print wheel in direction of arrow in Fig. 11

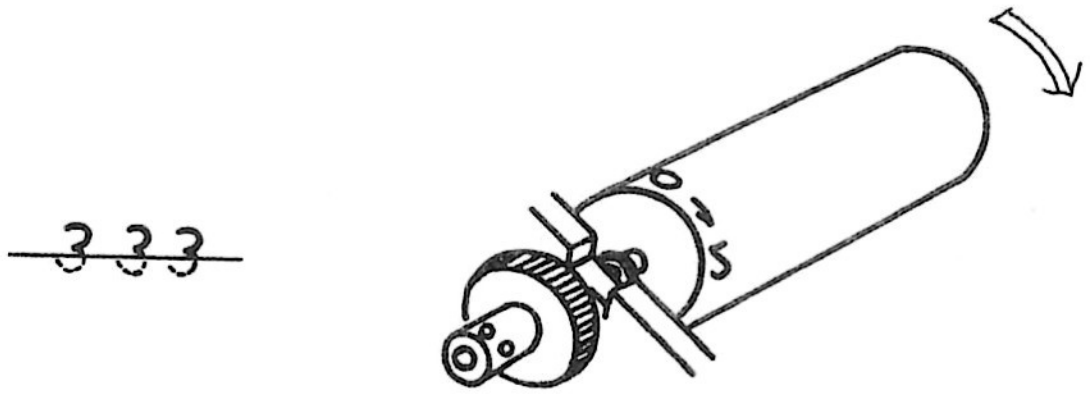


Fig. 11

B) If upper part of characters is not printed, loosen setscrews and slightly turn print wheel in direction of arrow in Fig. 12.

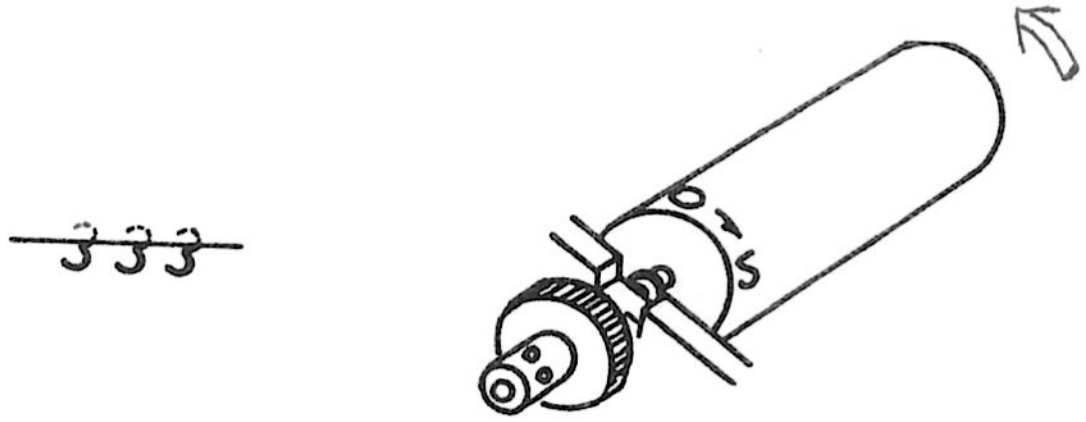


Fig. 12

(5) When proper print-out is obtain, tighten setscrews.

3.2 Motor Unit

[Disassembly]

(1) Remove lower paper guide (19).
(2) Disconnect motor lead wires to PCB.
(3) Remove idler gear (22).
(4) Remove two screws for motor.
(5) Remove motor unit (5).

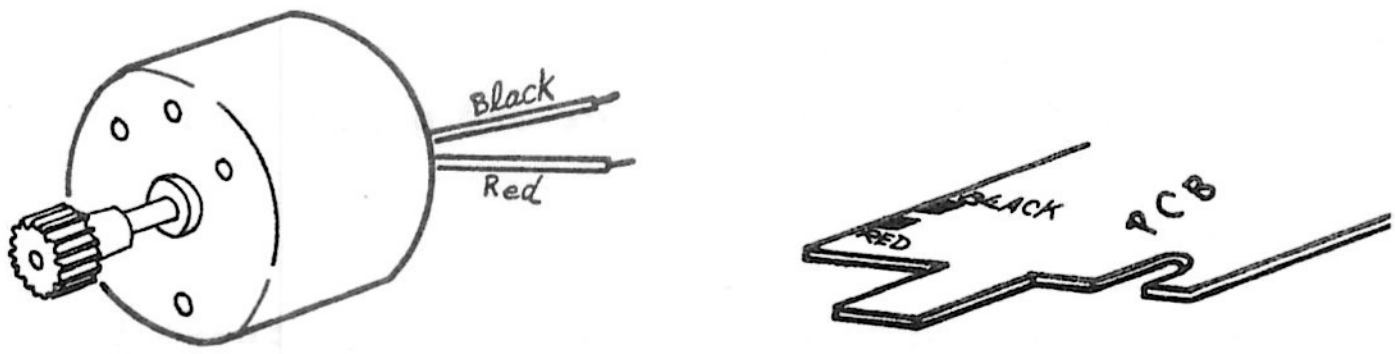


Fig. 13

[Assembly]

(1) Temporarily attach motor unit and connect lead wires to PCB.
(2) Attach idler gear.
(3) Tighten screw for motor unit after confirming motor rotates smoothly.
(4) Switch power on and confirm TP signals.
(5) Attach lower paper guide.

TP Signal

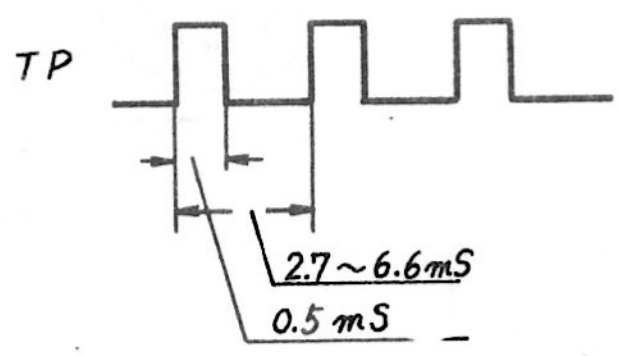


Fig. 14

3.3 Feed Roller Unit

[Disassembly]

(1) Remove idler gear 1 (22).
(2) Remove lid (29) for slit disk (37).
(3) Remove slit disk (37), slit disk cover (28) and detector gear (23).
(4) Remove idler gear 2 (21).
(5) Remove paper feed lever (30).
(6) Pull out spring pin (43) and take out clutch unit (25, 20, 9, 24).
(7) Remove retaining washer and paper feed roller (17).

[Assembly]

(1) Attach paper feed roller. (apply grease to bushing)
(2) Attach clutch unit to paper feed roller shaft. (apply grease to shaft)
(3) Attach paper feed lever.
(4) Attach idler gear 2 (21). (apply grease to bushing)
(5) Attach detector gear (apply grease to bushing), then slit disk cover, slit disk and lid.
(6) Attach idler gear 1 (22). (apply grease to bushing)

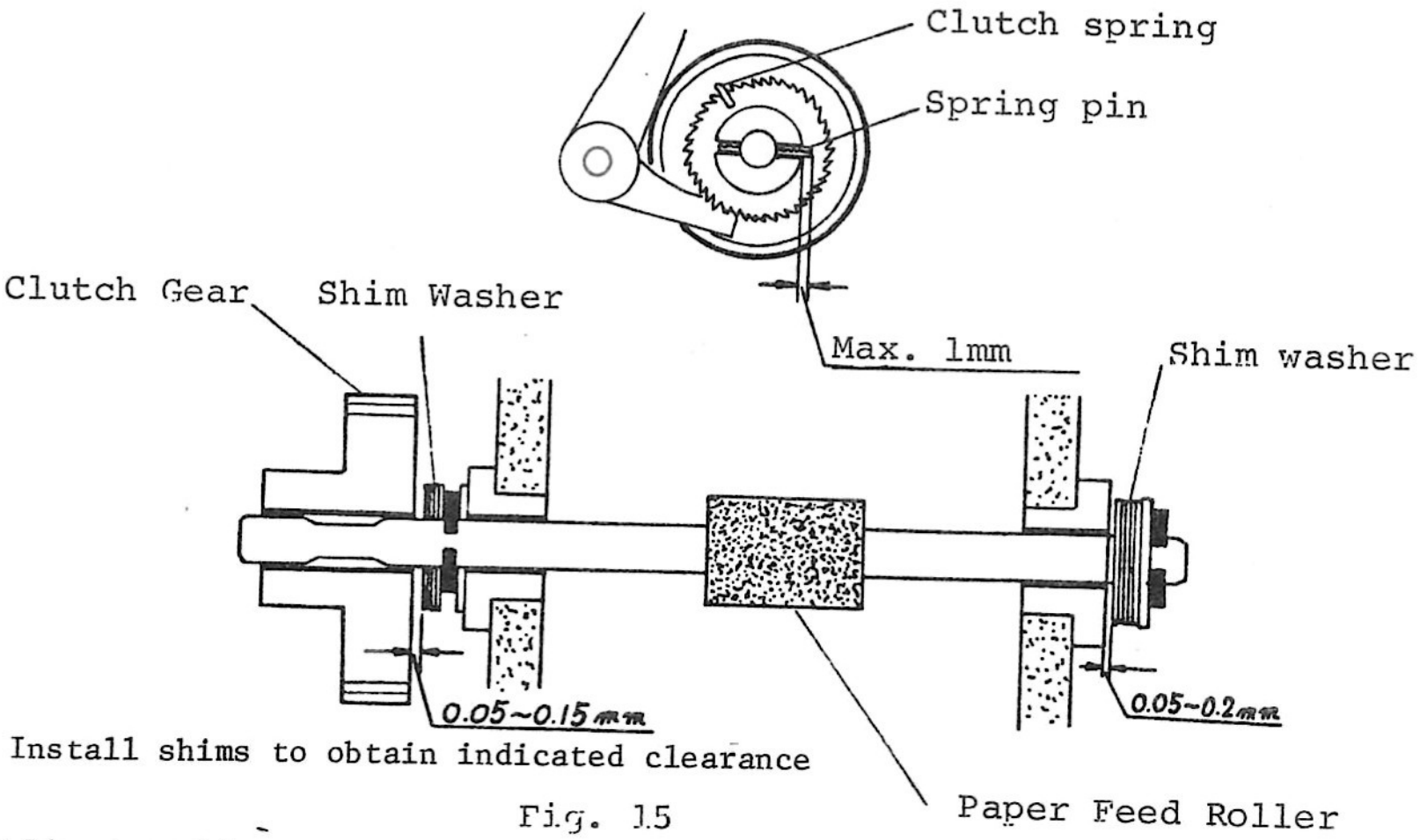


Fig. 15

[Adjustment]
Refer 3-1

3.4 Hammer Unit

[Disassembly]

(1) Remove paper guides (18, 19).

(2) Remove five retaining screws, two for detector (65), two for hammer unit and one for PCB. (Fig. 16)

(3) Disconnect leads of hammer unit from PCB using desoldering tool.

(4) Remove PCB and take off hammer unit.

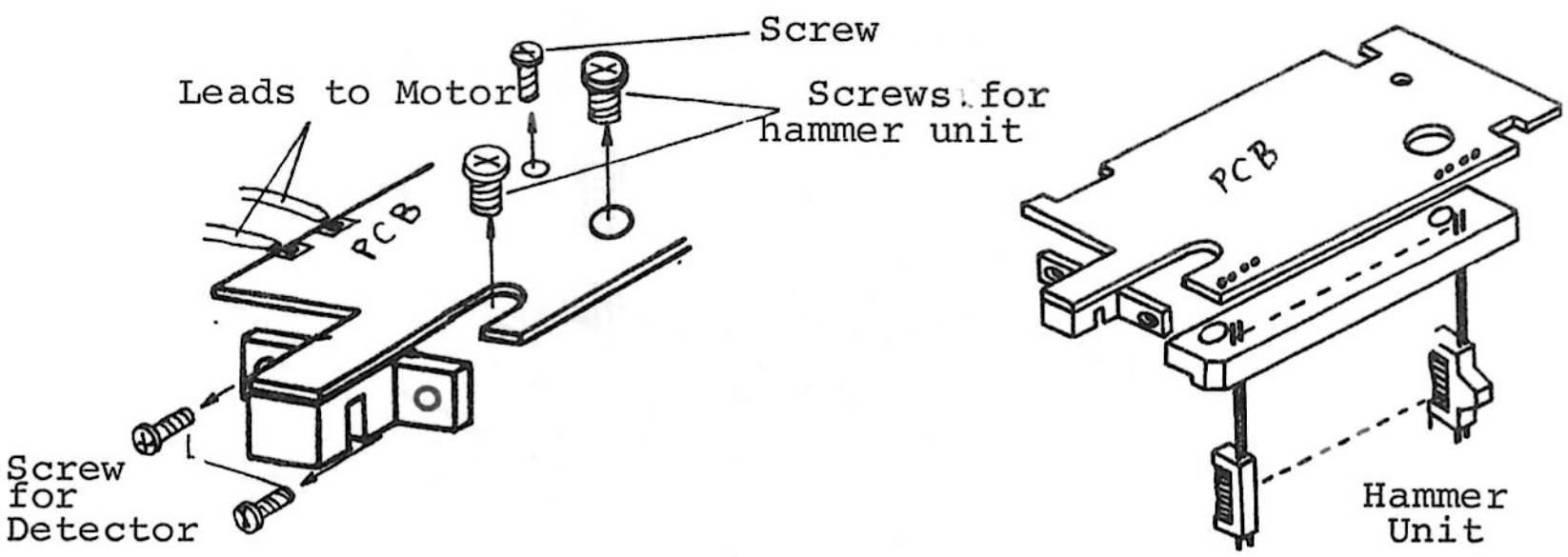


Fig. 16

[Assembly]

(1) Attach hammer unit. (See Fig. 17)

(2) Tighten two screws for hammer unit.

(3) Insert hammer unit leads to PCB and solder them using stainless steel flux such as TKC-0360, solderite XN-10S.

(4) Tighten screw for PCB and two screws for detector.

(5) Attach paper guides.

Note: When attaching hammer unit, be careful that cores of hammer head doesn't damage or dislocate damper on permanent magnet.

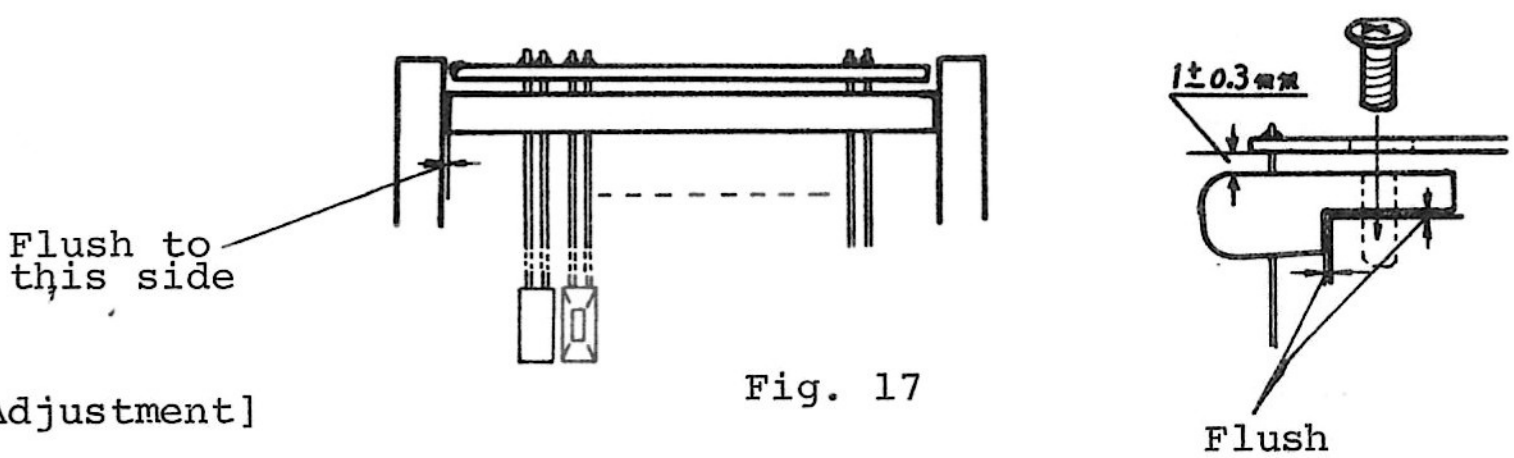


Fig. 17

[Adjustment]

Refer 3-1

3.5 TP Detector

[Disassembly]

(1) Remove paper guides (18, 19).

(2) Remove retaining screws (A) for hammer unit, (B) for PCB and (D) for detector and lift out hammer unit connected with PCB.

(3) Disconnect lead wires of detector to PCB.

(4) Remove screw (C) and take off detector.

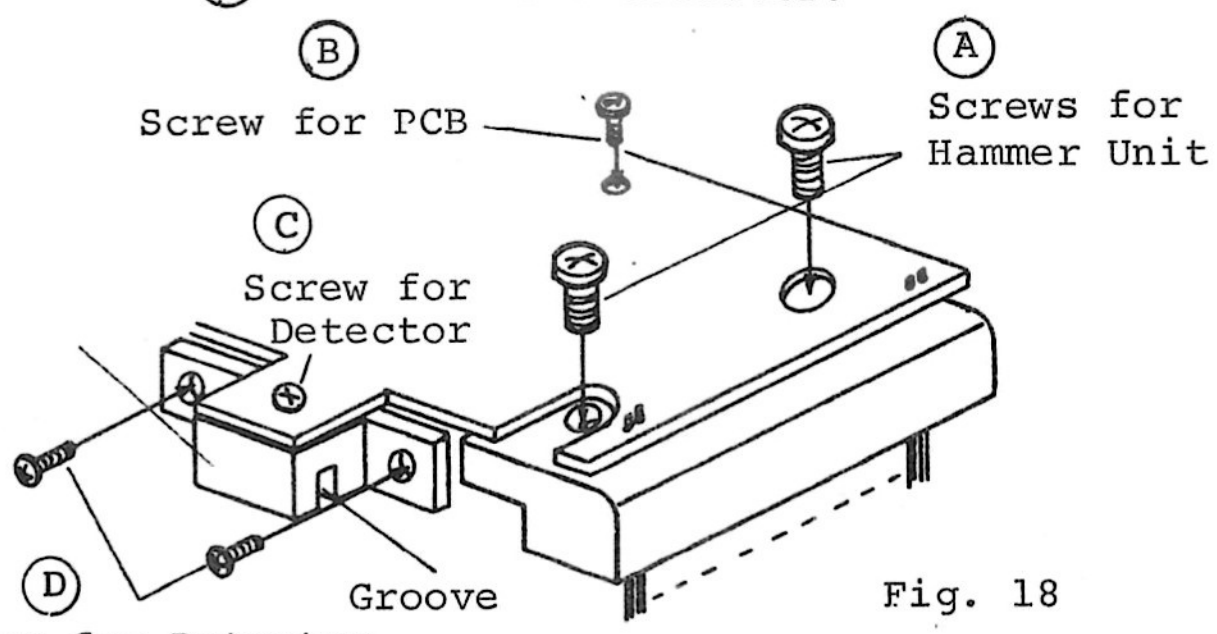


Fig. 18

[Assembly]

(1) Temporarily attach detector to PCB with screw (C).

(2) Attach hammer unit to PCB with screws (A).

Note: When attaching hammer unit, be careful that core of hammer head doesn't damage or dislocate damper on permanent magnet.

(3) Place detector making sure that slit disk doesn't touch detector groove and tighten screw (C).

(4) Connect lead wires of detector to PCB.

(5) Tighten screws (D) for detector.

(6) Attach paper guides.

[Adjustment]

Refer 3-1.

3.6 Pinch Roller

[Disassembly]

(1) Remove release levers (2, 3) and paper guides (18, 19).
(2) Remove idler gear 1 (22).
(3) Remove lid of slit disk (29), slit disk (37), slit disk cover (28) and detector gear (23).
(4) Remove idler gear 2 (21).
(5) Remove paper feed lever (30) and clutch unit (9, 20, 24, 25).
(6) Pull out pinch roller spring stay (8) and remove pinch roller two springs (13, 14).
(7) Remove two retaining washers (60) holding pinch roller (26) in position on the pinch roller shaft (6).

[Assembly]

(1) Attach pinch roller shaft.
(2) Attach stay with springs.
(3) Attach clutch unit (9, 20, 24, 25) and paper feed lever.
(4) Attach idler gear 2 (21). (apply grease to bushing)
(5) Attach detector gear, slit disk cover, slit disk and lid. (apply grease)
(6) Attach idler gear 1. (apply grease)
(7) Attach release lever and paper guides.

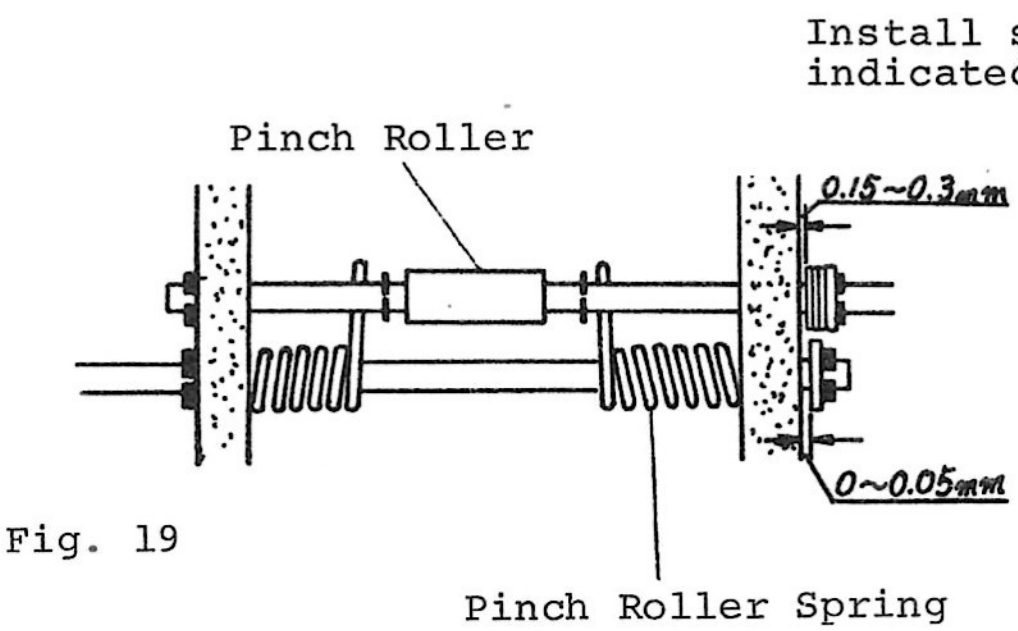


Fig. 19

[Adjustment]
Refer 3-1

3.7 Slit Disk

[Disassembly]

(1) Remove idler gear 1 (22).
(2) Remove lid of slit disk (29) by releasing three spring latches.
(3) Remove two retaining screws (39) of slit disk.
(4) Remove bushing (35) and take out slit disk (37).

[Assembly]

(1) Insert slit disk from bottom.

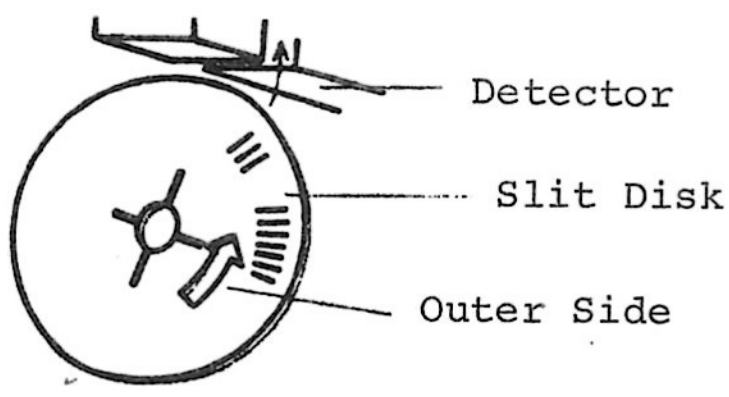


Fig. 20

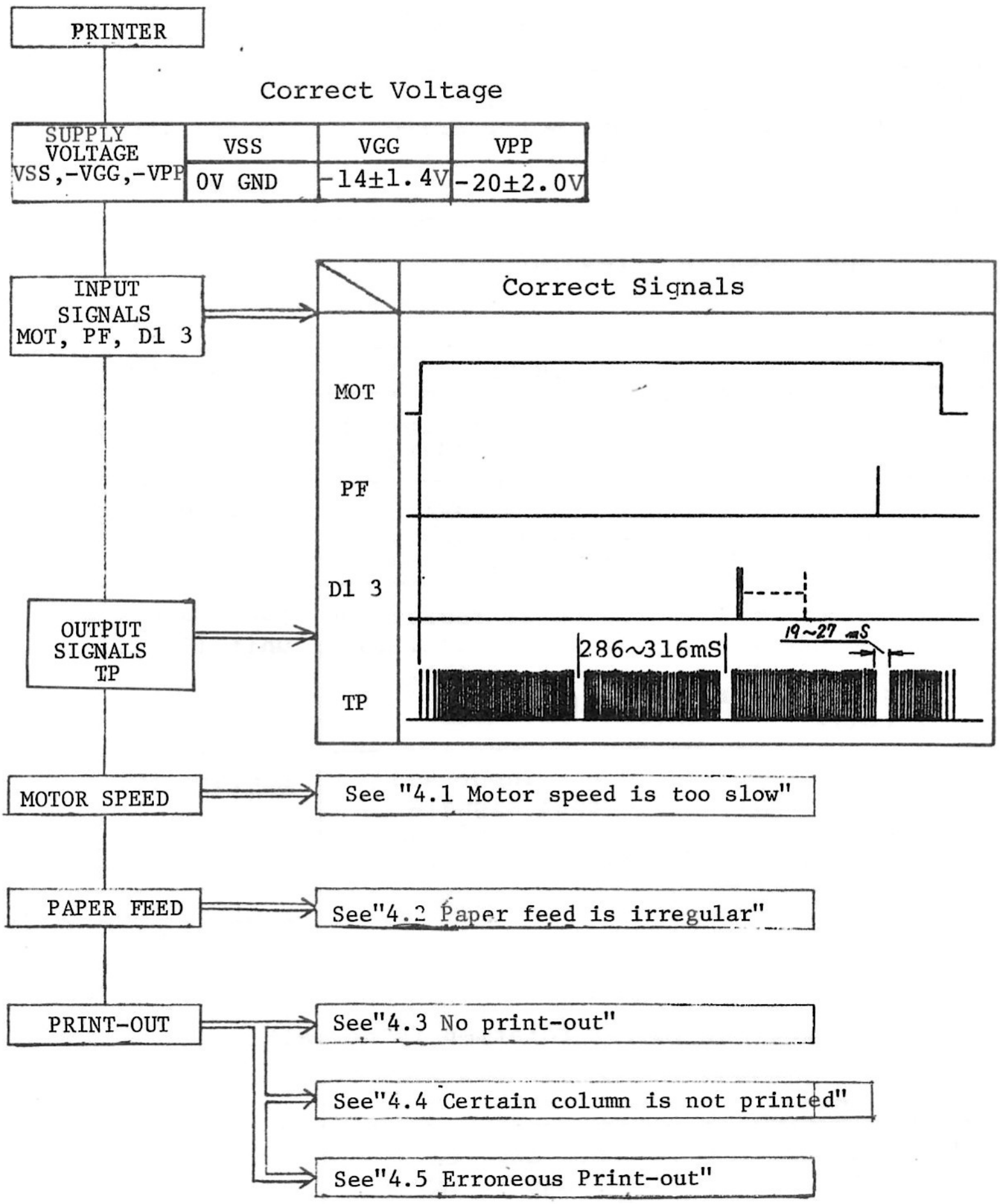
(2) Place bushing and plain washer grip ring on shaft.
(3) Tighten two retaining screws for slit disk.
(4) Attach idler gear 1.

[Adjustment]

Refer 3-1.

4. TROUBLESHOOTING

Before starting any repairwork, always confirm the exact trouble of the printer, and then follow this Flow Chart.



4.1 Print and paper feed is too slow

CAUSE	CHECK	REMEDY
(1) Paper jam	Verify if paper is inside of paper guides.	Remove paper using tweezers.
(2) Lubrication	Check if all gears rotate smoothly.	Lubricate with G-2 grease (See 6-1).
(3) Motor unit is defective	Check MOT signal and motor drive circuit.	Replace motor unit (5) if MOT input signal to motor unit is normal.

4.2 Paper feed is irregular

CAUSE	CHECK	REMEDY
(1) Clutch spring (9) is weak	Check operation of feed pawl (30).	Replace clutch spring.
(2) Cog of ratchet (20) is worn or damaged.	Check if pawl engages ratchet properly.	Replace ratchet (20).
(3) Hammer coil for paper feed is defective. (15th-digit coil)	Check if resistance of hammer coil is approx. 18ohm.	Replace hammer coil unit (68) if too great or 0.
(4) Drive circuit for hammer head is defective.	Check input and output signals of IC TD62003P (See Fig. 8).	Replace IC.
(5) Worn paper feed roller		Replace feed roller unit (17).

4.3 No print-out (motor rotation is normal)

CAUSE	CHECK	REMEDY
(1) Detector is defective	Check applied voltage to LED. Check signal at terminal of photo-transistor. Check TP signal.	Replace detector. Replace defective component.

4.4 Certain column is not printed

<table>
<tr><th>CAUSE</th><th>CHECK</th><th>REMEDY</th></tr>
<tr><td>(1) Electro-magnet of hammer unit is defective</td><td>Check coil resistance.
<table><tr><th colspan="2" rowspan="2">Correct</th><th colspan="2">Faulty</th></tr><tr><th>Broken</th><th>Short</th></tr><tr><td>Forward</td><td>10ohm</td><td>12ohm</td><td>0ohm</td></tr><tr><td>Backward</td><td>18ohm</td><td>∞ohm</td><td>0ohm</td></tr></table>Note: Always check the resistance for both forward and backward directions.</td><td>Replace hammer unit</td></tr>
<tr><td>(2) Drive circuit for hammer head is defective</td><td>See 4.2- (4)</td><td>See 4.2- (4)</td></tr>
</table>

4.5 Erroneous print-out

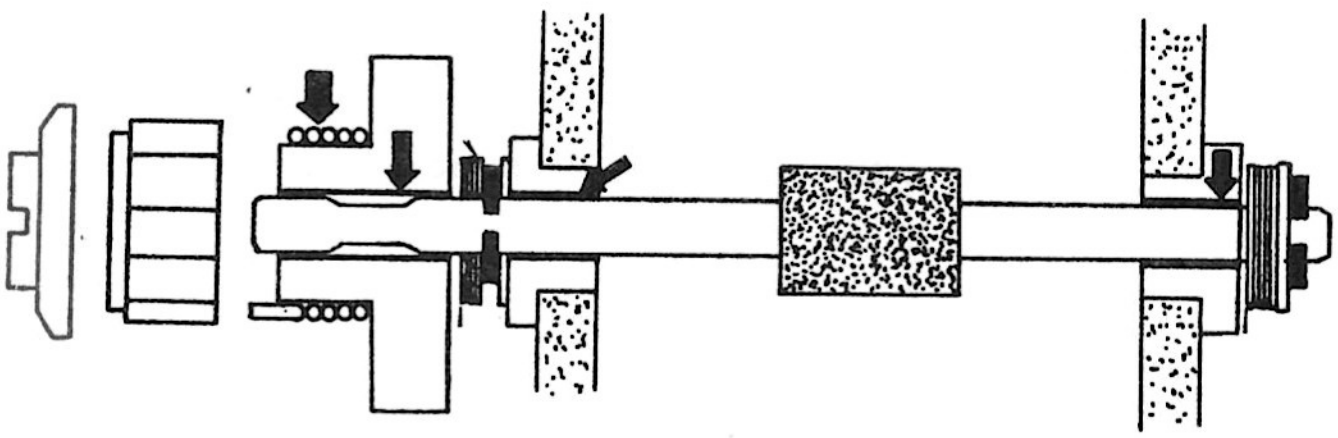
CAUSE	CHECK	REMEDY
(1) Position of slit disk and print wheel gear is out of adjustment		See 3-1, Print wheel adjustment
(2) Defective slit disk	Check if disk is warped.	Replace slit disk (37).

5. BOND AND GREASE

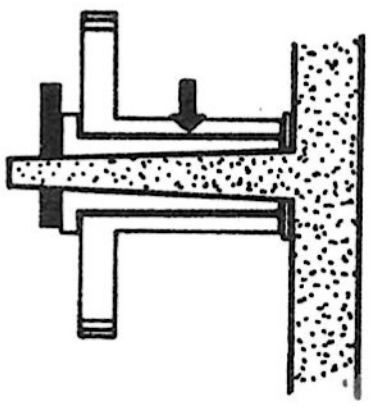
Always lubricate at the indicated point (⬇) whenever the parts have been removed. Apply the bond, Neji Lock #2 TKC-0326 to the removed grip rings and screw heads in assembly.

Lubrication point

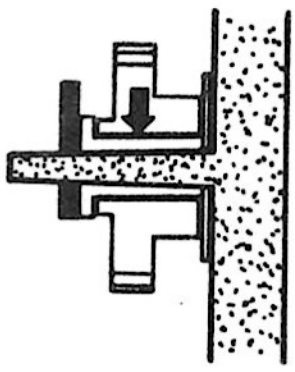
(a) Clutch and Paper Feed Roller Bushing (27)



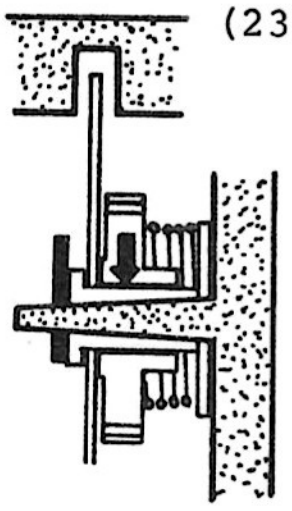
(b) Idler Gear 1 (22)



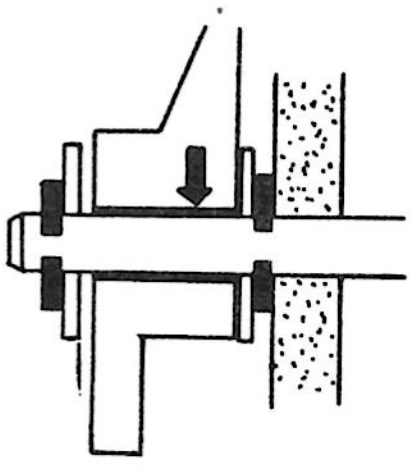
(c) Idler Gear 2 (21)



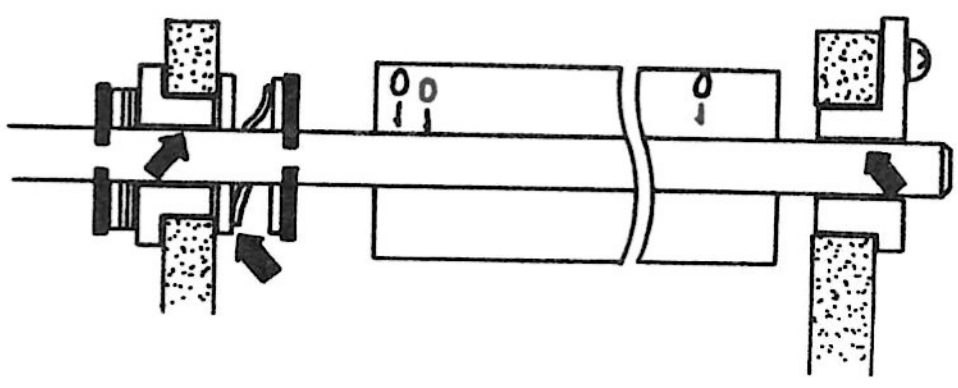
(d) Detector Gear (23)



(e) Paper Feed Lever (30)



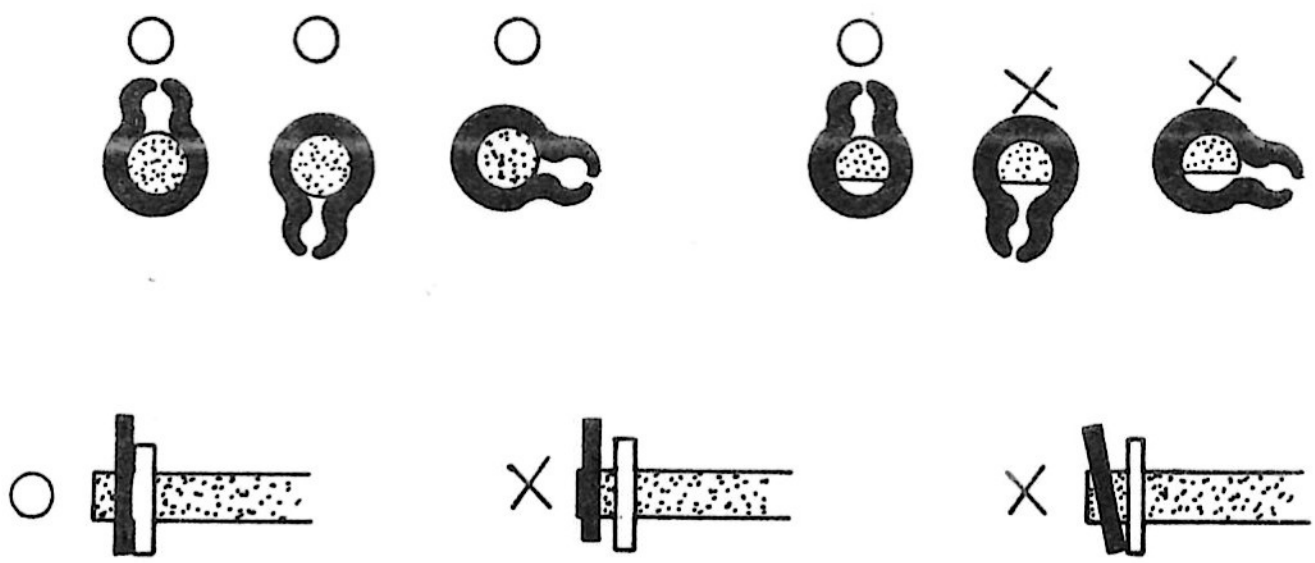
(f) Print Wheel Bushing (31,32)



6. OTHERS

6.1 Replacement of Grip Ring (retaining washers)

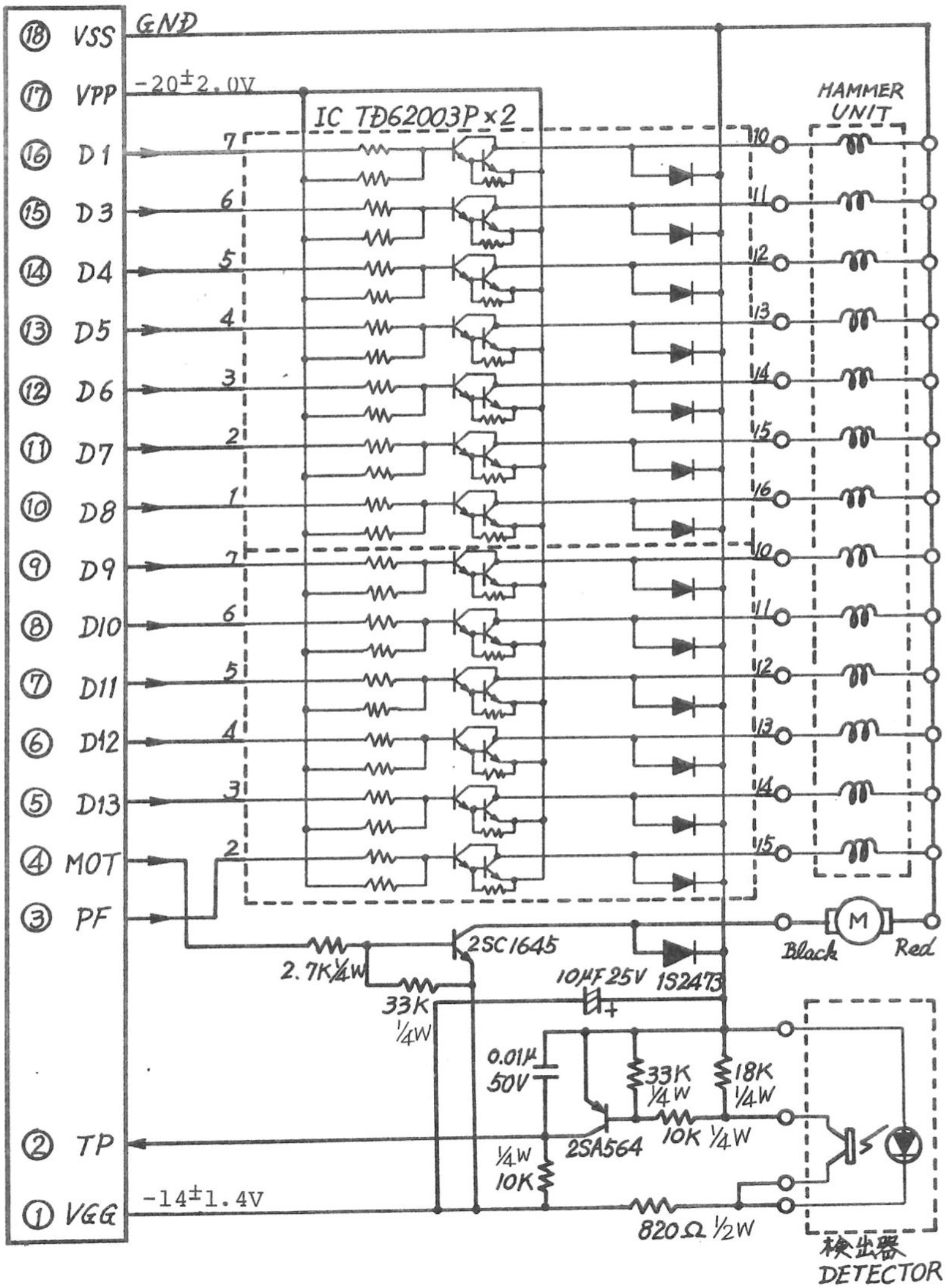
They should be attached flush against the side of the part as shown below.



6.2 Tools and Lubricant

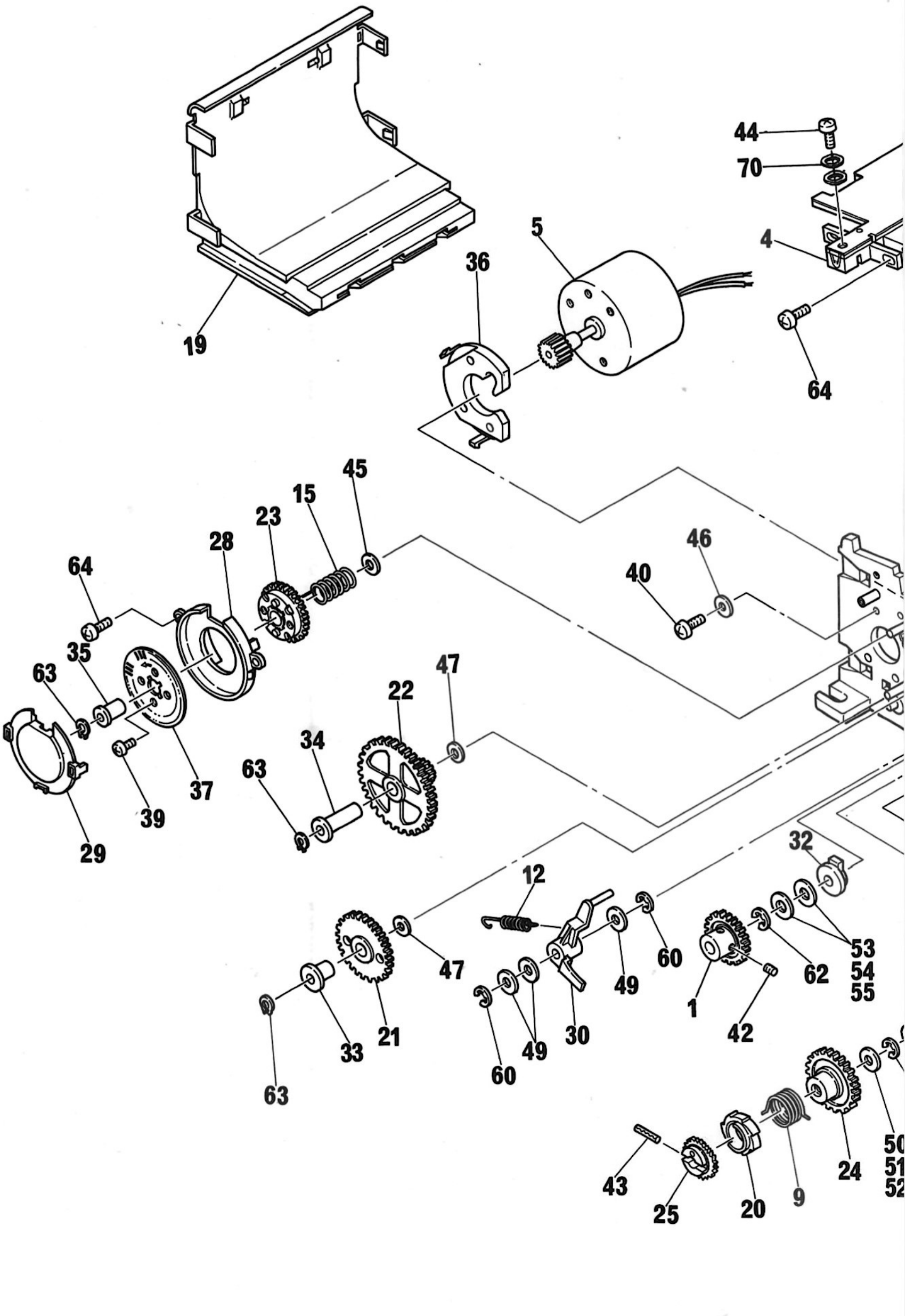
DESCRIPTION	TOOL NUMBER	REMARKS
Multi Meter (Tester)	CK-0007	
Oscilloscope	CK-0012	
Phillips Screwdriver No. 0	CK-0103	
" No. 2	CK-0105	
Hexagonal Wrench	CK-0152	
Nipper	CK-0201	
Needle Nose Plier	CK-0202	
Tweezers	CK-0302	
Soldering Iron	CK-0309	
Grip Ring Plier	CK-0409	To remove & attach ø3 grip ring
"	CK-0410	To remove & attach ø4 grip ring
Retaining Ring Plier #2.5	TKC-0321	
" #5	TKC-0322	
" #4	TKC-0323	
Grease	TKC-0324	
Bond, Neji Lock #2	TKC-0326	
Stainless Steel Flux	TKC-0360	

CIRCUIT DIAGRAM



PARTS CATALOG

EXPI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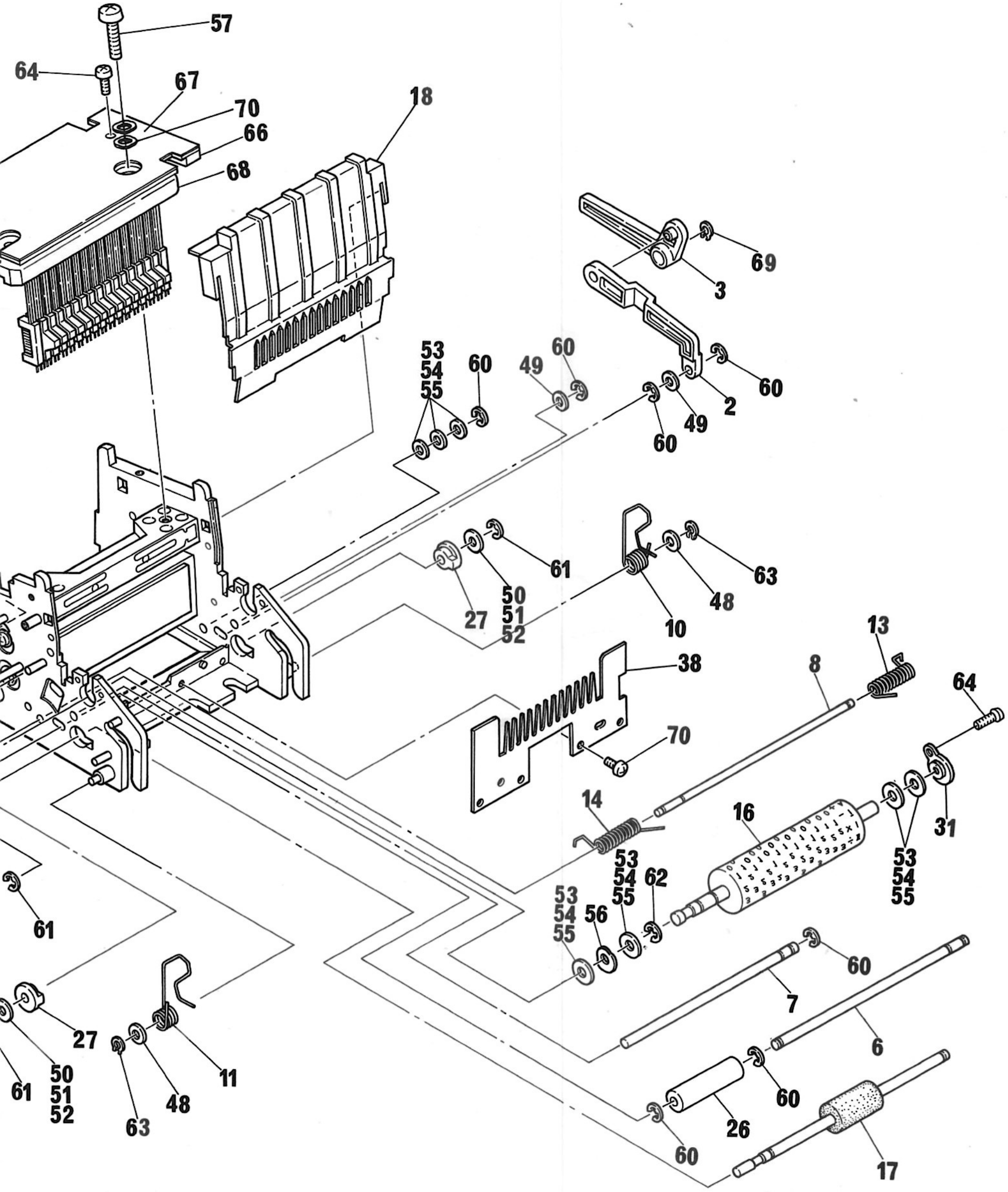
ODED VIEW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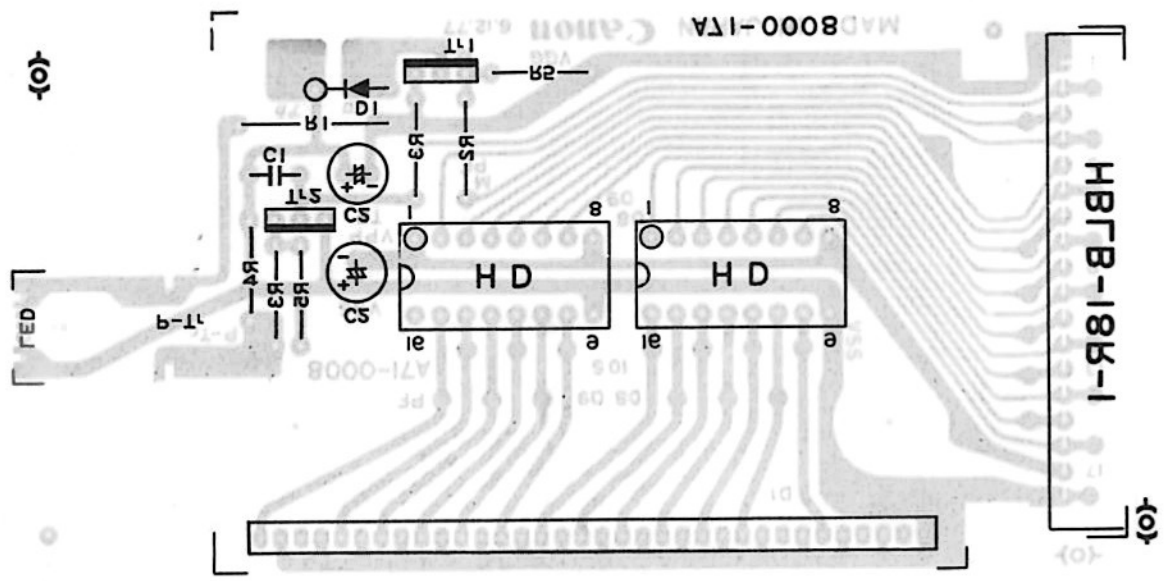
PARTS LIST

N	KEY NO.	PART NO.	Q'TY	DESCRIPTION		REMARKS	REVISION	PRICE( )
*	1	EY7-9082-000	1	GEAR,WHEEL,PRINT	文字車歯車	A90-0095		
*	2	EY7-9083-000	1	LEVER A,PAPER RELEASE	レリーズレバー A	A06-0059		
*	3	EY7-9084-000	1	LEVER B, "	〃 B	A06-0100		
*	4	EY7-9085-000	1	DETECTOR	検出器	A90-0084		
*	5	EY7-9086-000	1	MOTOR UNIT	モータユニット	A90-0087		
*	6	EY7-9087-000	1	SHAFT,PINCH ROLLER	ピンチローラ軸	A25-0038		
*	7	EY7-9088-000	1	STAY	ステー	A25-0048		
*	8	EY7-9089-000	1	SHAFT,SPRING,PINCH ROLLER	ピンチローラバネ軸	A25-0059		
	9	EY7-9046-000	1	SPRING,CLUTCH	クラッチ スプリング	A33-0006		
*	10	EY7-9090-000	1	LEVER,INK ROLLER,RIGHT	インクローラレバー 右	A33-0018		
*	11	EY7-9091-000	1	" " LEFT	〃 左	A33-0019		
*	12	EY7-9092-000	1	SPRING,PAPER FEED	ペーパーフィードレバー バネ	A33-0021		
*	13	EY7-9093-000	1	SPRING,PINCH ROLLER,RIGHT	ピンチローラスプリング 右	A33-0034		
*	14	EY7-9094-000	1	" " " LEFT	〃 左	A33-0035		
*	15	EY7-9095-000	1	SPRING,DETECTOR	検出器歯車スプリング	A33-0036		
*	16	EY7-9096-000	1	WHEEL,PRINT	文字車	A98-0050		
*	17	EY7-9097-000	1	FEED ROLLER	フィードローラ	A90-0070		
*	18	EY7-9098-000	1	PAPER GUIDE,UPPER	紙ガイド 前	A04-0015		
*	19	EY7-9099-000	1	" LOWER	〃 後	A04-0016		
	20	EY7-9047-000	1	RATCHET,FEED,WHITE	ラチェット	A06-0016		
*	21	EY7-9100-000	1	GEAR,IDLER 2	中間歯車 2	A06-0042		
*	22	EY7-9101-000	1	" " 1	〃 1	A06-0043		
*	23	EY7-9102-000	1	GEAR,DETECTOR	検出器歯車	A06-0045		
*	24	EY7-9103-000	1	GEAR,CLUTCH	クラッチ歯車	A06-0046		
*	25	EY7-9104-000	1	DISK, "	クラッチ ディスク	A06-0047		
*	26	EY7-9105-000	1	PINCH ROLLER	ピンチ ローラ	A06-0048		
*	27	EY7-9106-000	1	BUSHING,FEED ROLLER	フィードローラ軸受	A06-0050		
*	28	EY7-9107-000	1	COVER,SLIT DISK	スリット円板 カバー	A06-0051		

*	29	EY7-9108-000	1	LID,COVER,SLIT DISK	〃 〃 フタ	A06-0052		
*	30	EY7-9109-000	1	LEVER,PAPER FEED	ペーパーフィード レバー	A06-0058		
*	31	EY7-9110-000	1	BUSHING,PRINT WHEEL,RIGHT	文字車軸受 右	A06-0061		
*	32	EY7-9111-000	1	" " " LEFT	〃 〃 左	A06-0062		
*	33	EY7-9112-000	1	" GEAR,IDLER 2	中間歯車軸受	A06-0071		
*	34	EY7-9113-000	1	" " " 1	〃	A06-0072		
*	35	EY7-9114-000	1	" " DETECTOR	検出器歯車軸受	AA6-0073		
*	36	EY7-9115-000	1	SPACER,MOTOR	スペーサー	A06-0076		
*	37	EY7-9116-000	1	SLIT DISK,DETECTOR	スリット円板	A13-0018		
*	38	EY7-9117-000	1	SPRING,PROTECTION,SMEAR	汚れ防止板	A17-0005		
*	39	EY7-9122-000	2	SCREW, FT M2x4	ナベ小ネジ	E04-201001		
*	40	EY7-9123-000	2	" BH 2.6x8	バインド小ネジ	E17-260001		
*	42	EY7-9125-000	2	SET SCREW	六角ネジ	X31-623039		
*	43	EY7-9126-000	1	PIN,SPRING	スプリングピン	E71-6002		
*	44	EY7-9127-000	1	SCREWM2.6x4	タッピングネジ	E04-261001		
*	45	EY7-9128-000	1	WASHER,PLAIN Ø3.5x Ø9x0.2	平ワッシャ	E98-030029		
*	46	EY7-9129-000	6	" " Ø2.8x Ø8x0.5	〃	E98-030028		
*	47	EY7-9130-000	2	" " Ø3.5x Ø8x0.2	〃	E98-030027		
*	48	EY7-9131-000	2	" " Ø3.3x Ø8x0.5	〃	E98-030026		
*	49	EY7-9132-000	N	" " Ø3.1x Ø8x0.1	調整用平ワッシャ	E98-030022		
*	50	EY7-9133-000	N	" " Ø4.1x Ø7.8xØ.3	〃	E98-040014		
*	51	EY7-9134-000	N	" " " " 0.2	〃	E98-040015		
*	52	EY7-9135-000	N	" " " " 0.1	〃	E98-040016		
*	53	EY7-9136-000	N	" " Ø5.2x Ø10x0.2	〃	E98-050004		
*	54	EY7-9137-000	N	" " " " 0.1	〃	E98-050005		
*	55	EY7-9138-000	N	" " " " 0.3	〃	E98-050006		
*	56	EY7-9139-000	1	" FRICTION	波座金	E98-050010		
*	57	XB3-2401-605	2	SCREW,TAPPING M4x16	タッピングネジ			
	58	XD1-1103-131	N	WASHER PLAIN Ø3.1x Ø5.6x0.1	調整用平ワッシャ			
	59	XD1-1103-132	N	" " " " 0.2	〃			
	60	XD2-1100-242	8	WASHER,RETAINING 2.4	緊定ワッシャ	X32-4012-420		
	61	XD2-1100-322	2	" " 3.2	〃	X32-4013-220		

N	KEY NO.	PART NO.	Q'TY	DESCRIPTION		REMARKS	REVISION	PRICE( )
	62	XD2-1100-402	2	WASHER,RETAINING	緊定ワッシャ	X32-4014-020		
*	63	XD2-2100-302	6	GRIP RING, 3mm	平グリップ			
	64	XB3-1260-505	6	SCREW,TAPPING M2.6x5	タッピングネジ	X36-2605-050		
*	66	EY7-9118-000	1	CONNECTOR	コネクター	E62-5142		
*	67	EY7-9140-000	1	PCB	プリント板	A71-0008		
*	68	EY7-9141-000	1	HAMMER UNIT	ハンマー ユニット	A90-0075		
*	69	XD2-2100-402	1	GRIP RING, 4mm	平グリップ			
	70	X16-2003-070	2	SCREW, PH2x3	ナベ小ネジ			
*	71	EY7-9142-000	4	WASHER,FRICTION	波座金	A69-0002		
*		EY7-9121-000	2	IC TD62003P	ドライバー	E65-6055		
		WA2-0011-000	1	TRANSISTOR 2SC1645	トランジスタ			
*		EY7-9143-000	1	" 2SA564	〃	E65-6054		
		WA1-0005-000	1	DIODE 1S2473	ダイオード			
		VR1-8143-821	1	COMPOSITION RESISTOR 820 OHM 1/2W	抵抗			
		VR1-8143-272	1	" " 2.7K 1/4W	〃			
		VR1-8143-103	2	" " 10K "	〃			
		VR1-8143-183	1	" " 18K "	〃			
		VR1-8143-333	2	" " 33K "	〃			
		VC4-3503-103	1	CERAMIC CAPACITOR 0.01uF 50V	セラミックコンデンサ			
		VC1-1251-106	1	ELECTROLYTIC CAPACITOR 10uF 25V	電解コンデンサ			

CARD LAYOUT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HBLB-18R-1
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