

# CLARION SERVICE MANUAL

## 4 CHANNEL IC CAR STEREO PLAYER

### MODEL PE-424A

CLARION SHOJI. CO., LTD.

NEW KOJIMACHI BLDG., 3, 5-CHOME, KOJIMACHI, CHIYODA-KU, TOKYO, JAPAN. PHONE NO. 265-2931~4

USA BRANCH: CLARION SHOJI. CO., LTD. (U.S.A.)

2306 COTNER AVENUE, LOS ANGELES, CALIF., 90064, U.S.A. PHONE NO. 272-1178, 272-1169, 479-5556.

EUROPE BRANCH: CLARION SHOJI (EUROPA) G.m.b.H.

2000 HAMBURG 76, SCHÖNE AUSSICHT 35, GERMANY. PHONE: 2207667



#### \* SPECIFICATIONS

Reproduction method:	8 track, 2 program, 4 channel 8 track, 4 program, 2 channel
4.2 Channel switching method:	Automatic
Tape speed:	9.5cm/sec.
Wow and flutter:	Less than 0.3%
Maximum output:	Greater than 24W (6W x 4)
Rated output:	12W (3W x 4)
Distortion factor:	Less than 5% (at output of 12W [3W x 4])
S/N ratio:	Greater than 45dB
Crosstalk:	Greater than 40dB
Channel separation:	Greater than 30dB
Reproducing frequency range:	30Hz ~ 10,000Hz
Power amplitude:	Greater than 100dB
Load resistance:	4Ω
Power supply voltage:	13.2V, negative ground
Current consumption:	Less than 2A (at maximum output) Less than 3A (under pluger operation)
Operating temperature range:	-20°C ~ +60°C
Weight:	2kg
Dimensions:	Width 200mm Depth 180mm Height 55mm
Semiconductors used:	8 ICs 9 diodes TA-7063P x 4 (IC) TA-7092P x 4 (IC) IS1555 x 8 10D4 x 1
Cartridges used:	8 track, 2 program, 4 channel 8 track, 4 program, 2 channel FM cartridge

#### \* COMPONENTS:

PA -4242-00	Main unit	1 Set
300-0490-00	Rear mounting bracket	1 Each
280-3040-00	Owner's guide	1 Each
921-5818-00	Parts bag	1 Set
852-4649-00	Extension lead	2 Each

#### \* FEATURES:

- **Full use of monolithic ICs**  
Monolithic ICs are used extensively, allowing simplification of circuitry, compact construction and high stability.
- **Automatic switching from 4 to 2 channels**  
Reproduction from 8 track, 2 channel cartridge tapes as well as 4 channel cartridge tapes is possible. Switching is performed automatically due to the shape of the cartridge.
- **Discrete 4 channel method**  
The discrete 4 channel method offers realistic reproduction giving an "on-stage" feeling.
- **The unit is also adaptable for use as a home stereo.**  
By using a power supply adaptor, this unit can be used as a 4 channel home stereo.
- **Burglar alarm**  
A burglar alarm utilizing a key lock special bracket is furnished.
- **FM cartridge**  
FM broadcasting can be received with an FM cartridge.
- **Automatic repeating device**  
An automatic repeating device provides for continuous playing of the same program.



## \* ADJUSTMENTS:

The head section is precisely preadjusted at delivery time. If the adjustment is altered and crosstalk or tone deterioration occurs, readjust in the following manner. (Refer to Fig. 1)

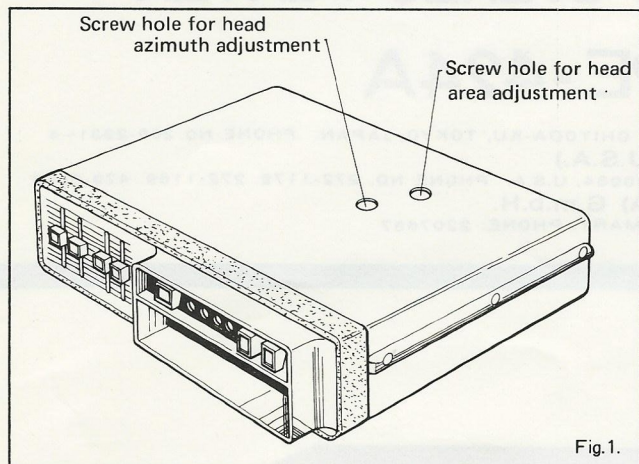


Fig. 1.

### Head area adjustment (Use 2 channel tape)

1. Balance left and right volume with the volume control knob.
2. Balance front and rear volume with the volume control knob.
3. Set the head position to 2 ~ 6 track (program indicator displays [2]). Using a test tape for the area adjustment, adjust to obtain the maximum output by turning the area adjustment screw.

### Head azimuth adjustment

1. Set the head position to 2 ~ 6 track. Using a test tape for azimuth adjustment, adjust to obtain the maximum output.
2. The azimuth adjustment may cause alteration of the area adjustment. Repeat the area adjustment and azimuth adjustment several times.

### 4 channel stereo

There are three 4 channel stereo systems; discrete, matrix and dummy. The discrete system is adopted for this unit. The discrete system is the leading 4 channel stereo system, providing clear separation and directivity to the audience.

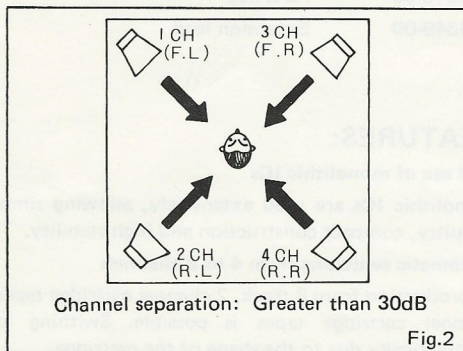


Fig. 2.

### Reproduction of 2 CH — 4 CH

Use recorded track combinations of 1-5, 2-6, 3-7, or 4-8 for a channel reproduction and 1-3-5-7 or 2-4-6-8 for 4 channel reproduction. (Refer to Fig. 3)

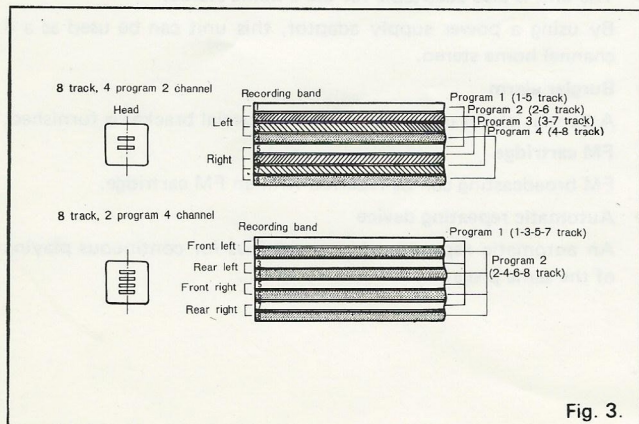


Fig. 3.

### Switching of 2CH — 4CH

A sensing slot is provided on 4 channel cartridges as shown in Fig. 4. The switch on the mechanism is switched on by this sensing slot on the cartridge.

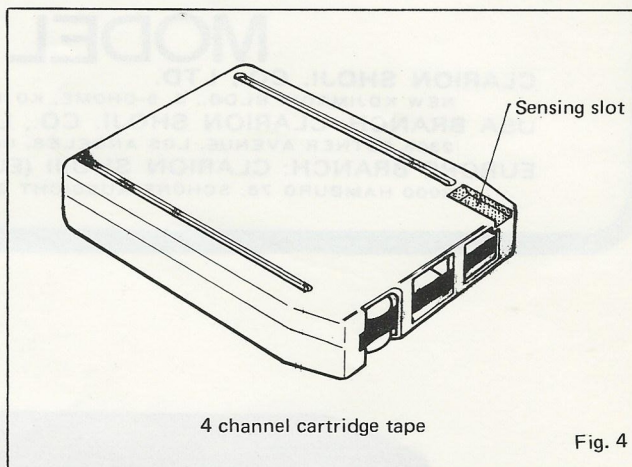


Fig. 4

Note 1: When replacing fuses, always locate and repair shorted points first. Replace with the designated 4A fuses.

Note 2: The head is specially treated to be contamination proof. When the head is dirty, clean with industrial alcohol or carbon tetrachloride.

Note 3: When replacing the flywheel, always insert the E ring or special washer.

Note 4: Since this unit uses monolithic ICs, troubleshoot with special attention to the following points.

- (1) IC pins are very close together. When checking these pins, be careful not to short them.
- (2) A soldering iron may have an electric potential due to interior leakage. Use the iron only after grounding.
- (3) Avoid making contact between IC circuits and large capacity capacitors when checking circuitry. The ICs may be broken due to the charging current.

Note 5: Removal procedures for P.C.B.

Escutcheon

Remove the upper and lower cases. The Mechanism and P.C.B can be pulled out to get her.

Sufficient lead wire is provided. Most repairs can be performed only by disconnecting the lead wire clamps.



# \* TROUBLESHOOTING MANUAL

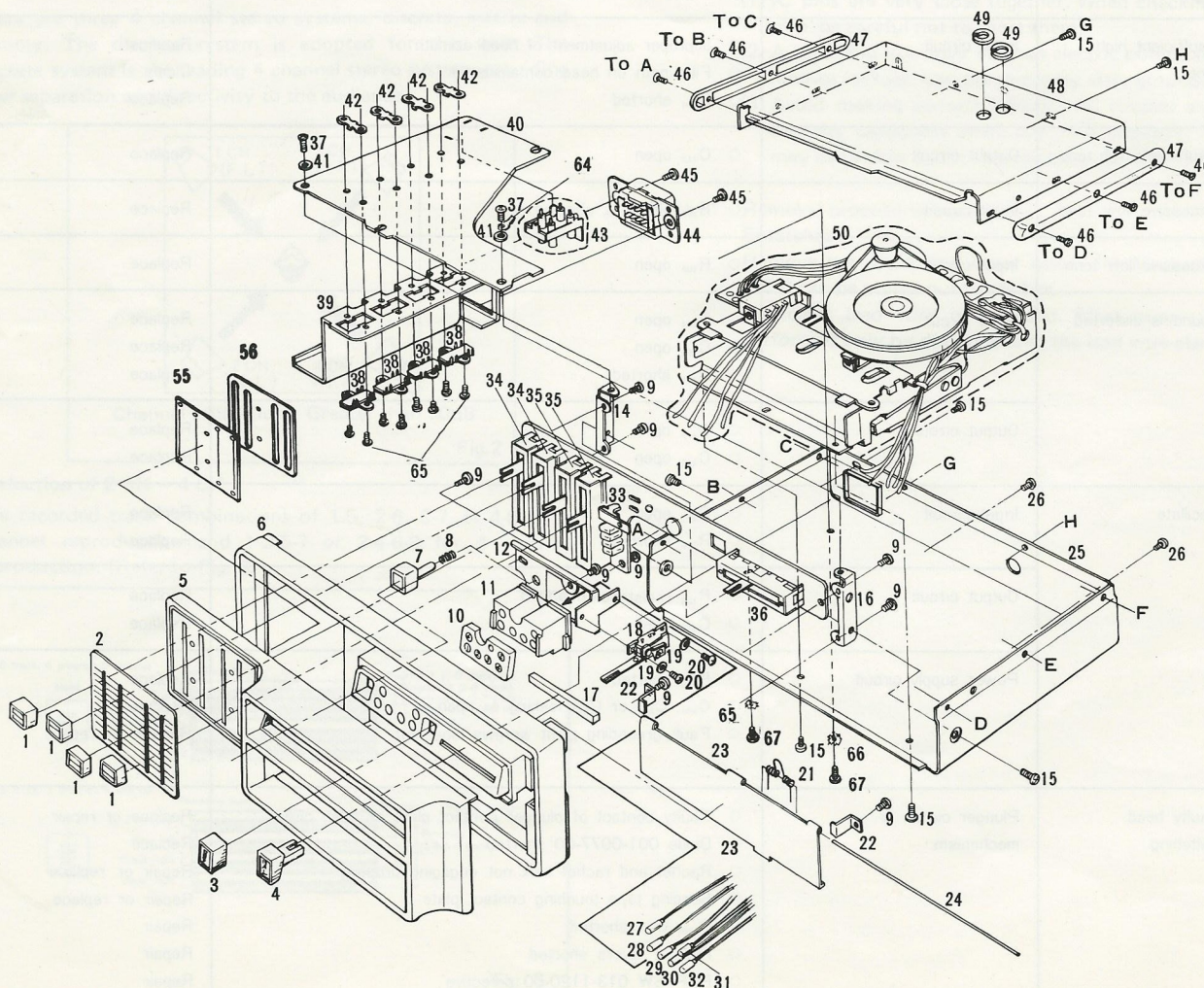
For test points, refer to the attached circuit diagram (Circuit constants are displayed as shown in the FRONT LEFT SPEAKER).

Symptom	Defective circuit	Defective point and cause	Corrective action
No sound	Power supply circuit	<ul style="list-style-type: none"> <li>○ Fuse blown</li> <li>○ Filter coil 010-0820-02</li> <li>○ Choke transformer 009-0570-00 open</li> <li>○ Power supply switch 013-3097-00 defective</li> <li>○ Faulty connector contact</li> <li>○ Hot line parts of wiring open or shorted</li> </ul>	Replace Replace Replace Replace Replace Read just or replace
	Output circuit	<ul style="list-style-type: none"> <li>○ <b>Speaker</b> open or shorted</li> <li>○ Output coil 010-1657-00 open</li> <li>○ Output capacitor C<sub>114</sub> open</li> <li>○ Output lead wire open or shorted</li> <li>○ IC<sub>102</sub> or mounting parts defective</li> <li>○ IC<sub>109</sub> or lead wire open or shorted</li> </ul>	Replace Replace Replace Repair or replace Replace Repair or replace
	Control stage	<ul style="list-style-type: none"> <li>○ Control circuit lead wire open or shorted</li> <li>○ C<sub>107</sub> or lead wire open or shorted</li> <li>○ Volume control 012-3289-02 opened</li> </ul>	Repair or replace Repair or replace Replace
	Input circuit	<ul style="list-style-type: none"> <li>○ IC<sub>101</sub> or mounting parts defective</li> <li>○ Lead wire of diode D<sub>5</sub> and D<sub>8</sub> open</li> <li>○ Head lead wire open or shorted</li> </ul>	Replace Replace Repair
	Motor section	<ul style="list-style-type: none"> <li>○ Motor shorted or open</li> <li>○ Choke transformer 009-5006-00 open</li> <li>○ Contact or mechanism of motor switch 013-3098-00 defective</li> </ul>	Repair or replace Replace Replace
Reproduced sound level low	Input circuit	<ul style="list-style-type: none"> <li>○ Improper adjustment or low sensitivity of head</li> <li>○ R<sub>109</sub> open</li> <li>○ R<sub>103</sub> shorted</li> <li>○ C<sub>105</sub> open</li> <li>○ R<sub>101</sub> shorted</li> <li>○ R<sub>104</sub>, R<sub>105</sub> or C<sub>106</sub> shorted</li> </ul>	Readjust or replace Replace Replace Replace Replace Replace
Insufficient high tone	Input circuit	<ul style="list-style-type: none"> <li>○ Improper adjustment of head azimuth</li> <li>○ Film path on head contaminated</li> <li>○ R<sub>104</sub> shorted</li> </ul>	Readjust Clean Replace
Insufficient high tone	Output circuit	<ul style="list-style-type: none"> <li>○ C<sub>112</sub> open</li> </ul>	Replace
Excessive low tone	Input circuit	<ul style="list-style-type: none"> <li>○ R<sub>105</sub> and C<sub>106</sub> shorted</li> </ul>	Replace
Excessive low tone	Input circuit	<ul style="list-style-type: none"> <li>○ R<sub>105</sub> open</li> </ul>	Replace
Sound is distorted	Input circuit	<ul style="list-style-type: none"> <li>○ R<sub>104</sub> open</li> <li>○ C<sub>106</sub> open</li> <li>○ R<sub>109</sub> shorted</li> </ul>	Replace Replace Replace
	Output circuit	<ul style="list-style-type: none"> <li>○ C<sub>113</sub> open</li> <li>○ C<sub>115</sub> open</li> </ul>	Replace Replace
Oscillate	Input circuit	<ul style="list-style-type: none"> <li>○ C<sub>103</sub> open</li> <li>○ R<sub>109</sub> shorted</li> </ul>	Replace Replace
	Output circuit	<ul style="list-style-type: none"> <li>○ R<sub>108</sub> resistance changed</li> <li>○ C<sub>111</sub> open</li> </ul>	Replace Replace
	Power supply circuit	<ul style="list-style-type: none"> <li>○ R<sub>502</sub> shorted</li> <li>○ C<sub>503</sub>, C<sub>504</sub> or C<sub>512</sub> leaking or open</li> <li>○ Fault grounding point screws loosened</li> </ul>	Replace Replace Replace or repair
Faulty head switching	Plunger circuit or mechanism	<ul style="list-style-type: none"> <li>○ Faulty contact of plunger contact plate or open circuit</li> <li>○ Diode 001-0077-00 shorted</li> <li>○ Ratchet and ratchet kick not engaging properly</li> <li>○ Sensing tape touching contact plate</li> <li>○ C<sub>509</sub>, C<sub>510</sub> shorted</li> <li>○ Plunger layers shorted</li> <li>○ REP SW 013-1120-00 defective</li> </ul>	Replace or repair Replace Repair or replace Repair or replace Repair Repair Repair

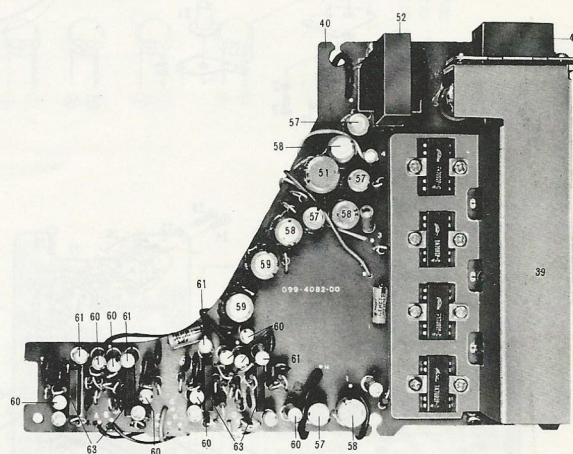
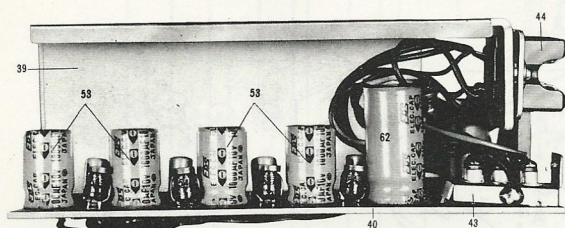


Symptom	Defective circuit	Defective point and cause	Corrective action
Crosstalk	Head sift mechanism	<ul style="list-style-type: none"> <li>○ Defective cartridge</li> <li>○ Faulty area adjustment</li> </ul>	Replace Readjust
Display lamp defective	Display lamp or circuit	<ul style="list-style-type: none"> <li>○ Pilot lamp open</li> <li>○ Lead wire open</li> <li>○ Switch 013-3696-00 defective</li> </ul>	Replace Replace Replace
Abnormal wow	Cartridge with drive mechanism	<ul style="list-style-type: none"> <li>○ Flywheel defective</li> <li>○ Belt defective</li> <li>○ Transmission mechanism contaminated with oil</li> <li>○ Capstan housing defective</li> <li>○ Motor defective</li> <li>○ Cartridge defective</li> </ul>	Replace Replace Clean Replace Replace Replace
Faulty 4CH-2CH switching	Switching circuit	<ul style="list-style-type: none"> <li>○ Changeover switch 013-3696-00 defective</li> <li>○ CA capacitor shorted or open</li> <li>○ Change over switch 013-3639-00 installed out of place</li> <li>○ Rotary switch 099-4062-00 defective</li> </ul>	Replace Replace Repair Repair or replace
No sound with radio cartridge	Power supply circuit	<ul style="list-style-type: none"> <li>○ Plunger circuit defective</li> <li>○ Connector 074-0400-00 faulty</li> </ul>	Repair or replace Repair or replace
	Connection circuit	<ul style="list-style-type: none"> <li>○ Connector 075-0400-00 faulty</li> <li>○ Switch 013-3097-00 defective</li> <li>○ C<sub>135</sub> or circuit open</li> <li>○ Rotary switch 099-4042-00 defective</li> </ul>	Repair or replace Repair or replace Replace Replace
	Antenna circuit	<ul style="list-style-type: none"> <li>○ Lead wire from antenna receptacle 092-0400-01 badly soldered or open</li> <li>○ Faulty contact of outlet socket</li> </ul>	Repair or replace Repair or replace

**\* EXPLODED VIEW:** ⊙ Main unit section



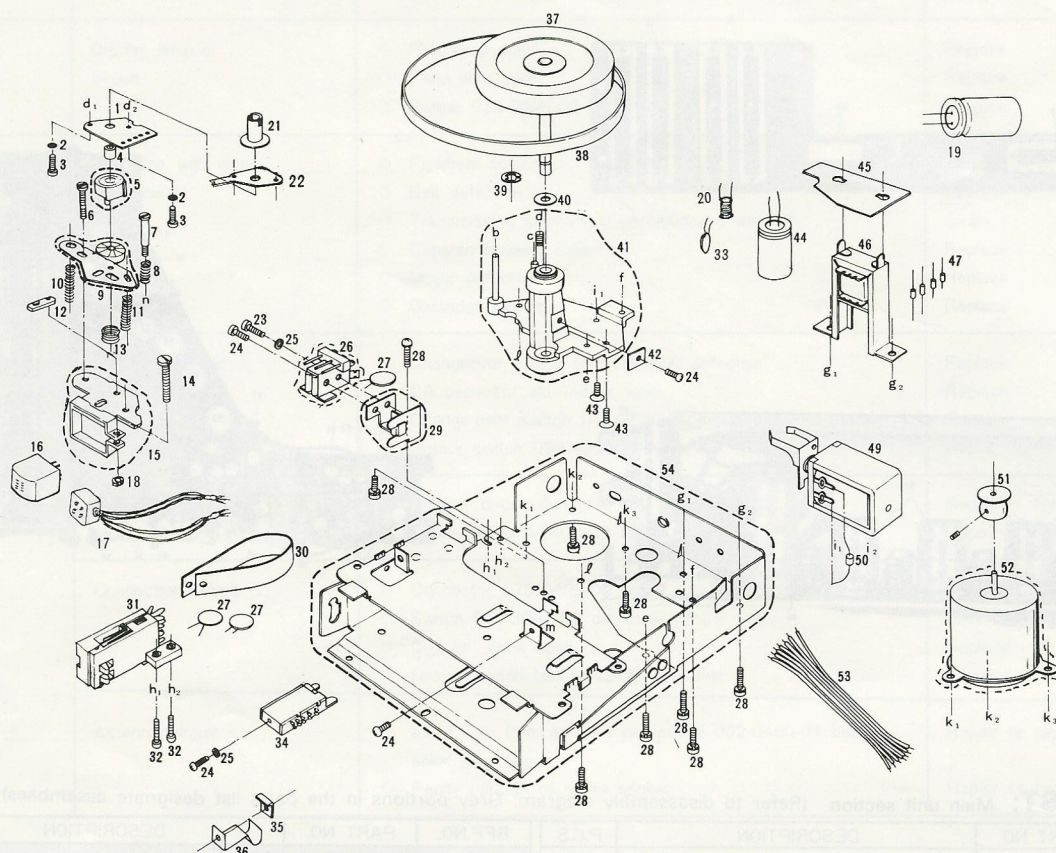






**\* EXPLODED VIEW:**

⊙ Mechanism section



**\* MECHANISMS PARTS LIST:**

REF.NO.	PART NO.	DESCRIPTION	P.C.S	REF.NO.	PART NO.	DESCRIPTION	P.C.S
1	099-4042-04	Printed wiring board	1	28	732-3006-11	Sems screw (M3×6)	9
2	741-2000-21	Spring washer (M2)	2	29	960-2705-01	Tape guide assembly	1
3	714-2006-11	Machine screw (M2×6)	2	30	631-0076-00	Guide plate	1
4	632-0302-00	Sleeve holder	1	31	013-3097-00	Switch	1
5	960-2732-00	Ratchet assembly	1	32	714-2308-11	Machine screw (M2.3×8)	2
6	715-3010-01	Machine screw (M3×10)	1	33	165-3934-02	Ceramic capacitor	1
7	716-0212-01	Special screw	1	34	013-3096-00	Switch	1
8	750-1403-00	Spring	1	35	630-0518-00	Plate	1
9	960-2759-00	Cam assembly	1	36	750-0519-00	Spring	1
10	750-1411-00	Spring	1	37	611-0020-01	Flywheel	1
11	750-1410-00	Spring	1	38	602-0019-00	Belt	1
12	631-0090-00	Spacer	1	39	743-4000-00	E-Ring (M4)	1
13	750-1475-00	Spring	1	40	746-0620-00	Special washer	1
14	715-2308-61	Machine screw (M2.3×8)	1	41	960-2833-00	Housing assembly	1
15	960-2799-00	Head clamp assembly	1	42	630-0612-00	Tape protector	1
16	011-0220-00	Head	1	43	714-3006-41	Machine screw (M3×6)	2
17	852-4629-00	Extension lead	1	44	180-4774-32	Electrolytic capacitor	1
18	722-0311-00	Special nut	1	45	099-4085-03	Printed wiring board	1
19	180-1084-32	Electrolytic capacitor	1	46	009-0583-01	Choke	1
20	010-1657-00	Coil	1	47	001-0081-00	Diode	4
21	631-0089-00	Area adjustment nut	1	48			
22	630-0713-01	Rotary plate	1	49	015-0190-02	Plunger	1
23	714-2608-11	Machine screw (M2.6×8)	1	50	001-0077-00	Diode	1
24	714-2606-11	Machine screw (M2.6×6)	1	51	6C3-0022-00	Motor pulley	1
25	741-2600-21	Spring washer	2	52	960-1970-02	Motor assembly	1
26	960-2755-00	Socket assembly	1	53	816-0074-00	Special lead	1
27	043-0022-00	Special capacitor (0.04μF)	3	54	960-2760-04	Deck plate assembly	1







