〈R42-227-0〉

Service Manual

8-TRACK QUADRAPHONIC TAPE DECK

QT-2100/F

〈7IJ02M3IF〉

PIONEER®

CONTENTS

1 · SPECIFICATIONS

System	8-Track Cartridge	
	2-channel stereo playback	
	4-channel stereo playback	
	Automatic selection	
Program	4 programs for 2-channel stereo playback	
	2 programs for 4-channel stereo playback	
	Manual or Automatic change	
Tape speed	3-3/4 ips / 9.5 cm / s	
Frequency response	30 to 12,000Hz	
SN ratio	More than 48dB	
Wow & flutter	Less than 0.2% (WRMS)	
Crosstalk	More than 50dB (Between program tracks)	
	More than 40dB (Between channel tracks)	
Outputs	Output jacks	
	FRONT LEFT, FRONT RIGHT, REAR LEFT, REAR RIGHT	Max. 0.775V / 50kΩ
	Headphones jacks	
	FRONT, REAR	4 to 16Ω
Control & switch	Output level control	
	Mode switch (4-channel – AUTO)	
	Program repeat preset switch	
	Program selecting button	
Power requirements	110V, 120V, 130V, 220V and 240V (switchable)	
	50Hz or 60Hz	
Power consumption	32W (Max.)	
Dimensions	5-11/16"(H) x 16-15/16"(W) x 12-15/16"(D)	
	144(H) x 430(W) x 320(D) mm	
Weight	With package	27 lb. 8 oz. / 12.5 kg
	Without package	22 lb. 11 oz. / 10.3 kg
Furnished Accessories	4-channel music cartridge	1
	Accessories box	1
	Connection cords	2
	Operating instructions	1
	Hexagonal wrench	1
	1A fuses	2
	0.5A fuses	2
	Motor pulley (50Hz or 60Hz)	1

NOTE: Specification and the design subject to possible modification without notice due to improvements.

2 · STEREO SYSTEM ASSEMBLY

The 4-channel/2-channel compatible 8-track cartridge tape deck, Model QT-2100, will provide a 4-channel stereo playback when connected to a 4-channel stereo amplifier as shown in Fig. 1.
It will also provide a 2-channel stereo playback when connected to a conventional 2-channel stereo amplifier as shown in Fig. 2.

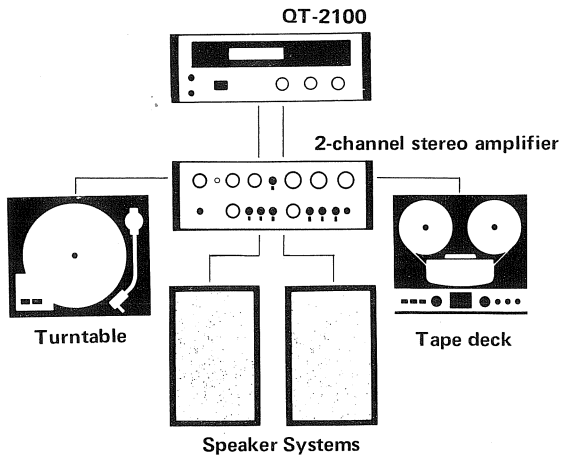


Fig. 2

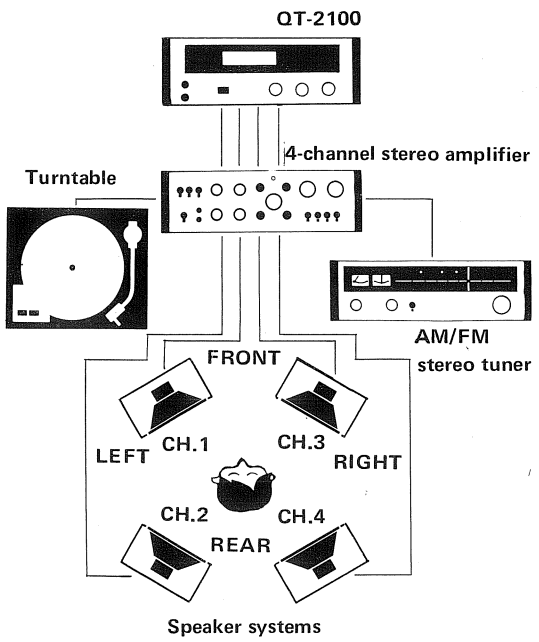


Fig. 1

3 · ABOUT CARTRIDGE TAPES

3·1 4-CHANNEL STEREO TAPE

Two programs are recorded on an 8-track 4-channel cartridge tape as shown in Fig. 3.

Program 1
- Track 1 ..... FRONT LEFT (CH.1)
- Track 3 ..... REAR LEFT (CH.2)
- Track 5 ..... FRONT RIGHT (CH.3)
- Track 7 ..... REAR RIGHT (CH.4)

Program 2
- Track 2 ..... FRONT LEFT (CH.1)
- Track 4 ..... REAR LEFT (CH.2)
- Track 6 ..... FRONT RIGHT (CH.3)
- Track 8 ..... REAR RIGHT (CH.4)

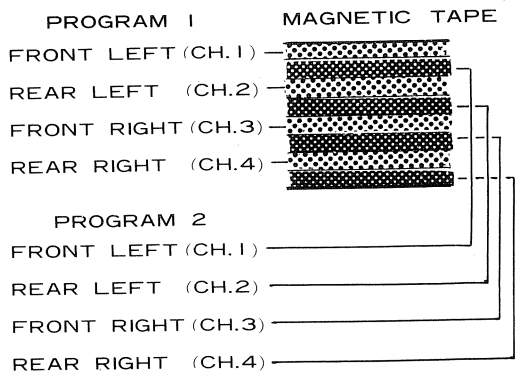


Fig. 3

3·2 2-CHANNEL STEREO TAPE

Four programs are recorded on an 8-track 2-channel cartridge tape as shown in Fig. 4.

Program 1	Track 1	LEFT
	Track 5	RIGHT
Program 2	Track 2	LEFT
	Track 6	RIGHT
Program 3	Track 3	LEFT
	Track 7	RIGHT
Program 4	Track 4	LEFT
	Track 8	RIGHT

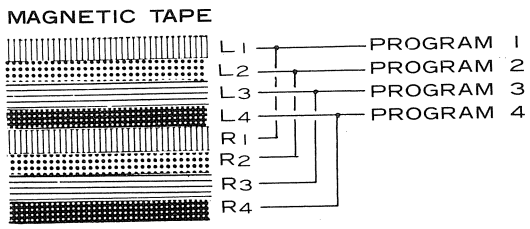


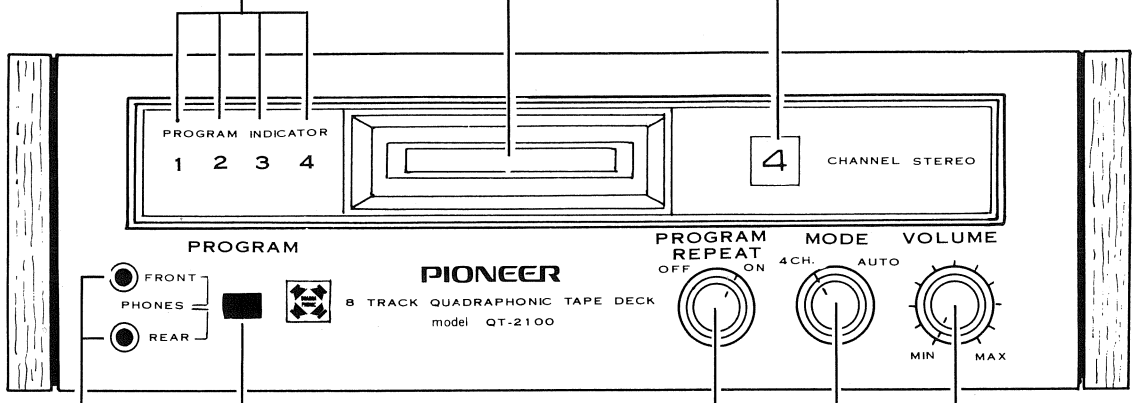
Fig. 4

4 • FRONT AND REAR PANEL FACILITIES

4-1 FRONT VIEW

PROGRAM INDICATORS (1,2,3,&4)

When the unit is playing a 4-channel stereo cartridge, indicator 1 or 2 will light alternately. When playing a 2-channel cartridge, one of the four indicators 1 through 4 will light in succession.



CARTRIDGE ENTRANCE

Place the front end of the cartridge against the cartridge entrance and push it straight into the opening as far as it will go. The unit is operating now. Pulling the cartridge out of the opening will turn the power off.

NOTE: To protect the tape head from possible damage during transit, a paper spacer is packed in the opening. Remove the spacer when operating the unit for the first time.

CHANNEL INDICATOR

When the unit is playing on a 4-channel cartridge tape with the MODE switch set at AUTO, this indicator will indicate (4); likewise, when the unit is operating on a 2-channel cartridge tape, the indicator will indicate (2). With the MODE switch set at 4 CH, the indicator will always indicate (4) regardless of the kind of cartridge.

VOLUME CONTROL

Controls the output levels from the output jacks and the phones jack.

PHONE JACKS

For connecting stereo headphones. With the headphones plugged into the FRONT jack, you will hear the FRONT LEFT (CH. 1) sound in the left ear, and the FRONT RIGHT (CH. 3) sound in the right ear. With the headphones plugged into the REAR jack, you will hear the REAR LEFT (CH. 2) sound in the left ear, and the REAR RIGHT (CH. 4) sound in the right ear.
The output level for the headphones can be adjusted with the VOLUME control.

PROGRAM SELECTOR

To change from one program to the next, depress this pushbutton.

PROGRAM REPEAT SWITCH

ON : The chosen program will be repeated over and over.

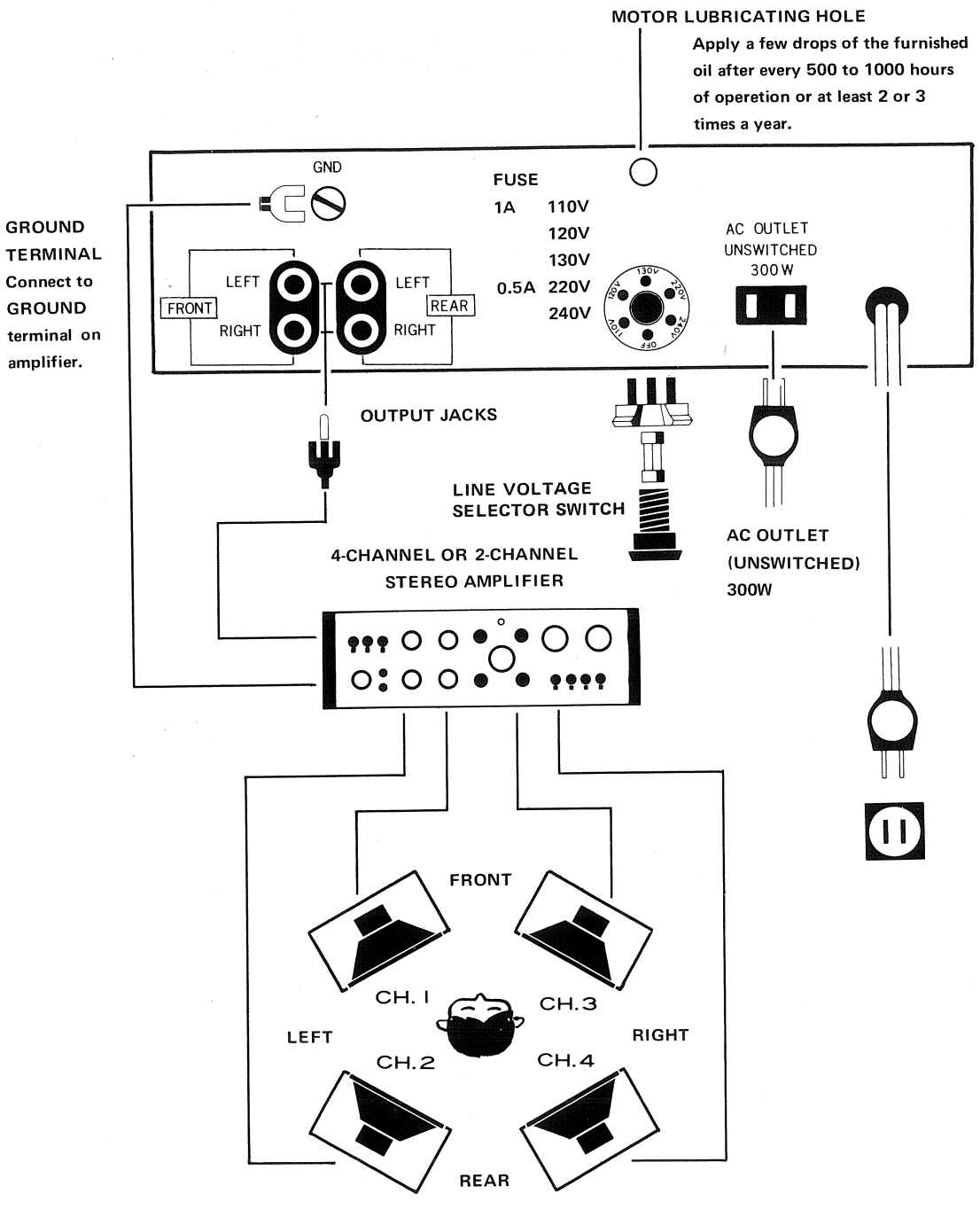
OFF : Program switching is made automatically by a sensing foil affixed at the program change point on the tape. Manual program change is also possible at any time by the PROGRAM SELECTOR SWITCH.

MODE SWITCH

AUTO : When you insert a 4-channel cartridge tape, the unit plays in a 4-channel mode; if the tape is a 2-channel tape, the unit plays in 2-channel mode.

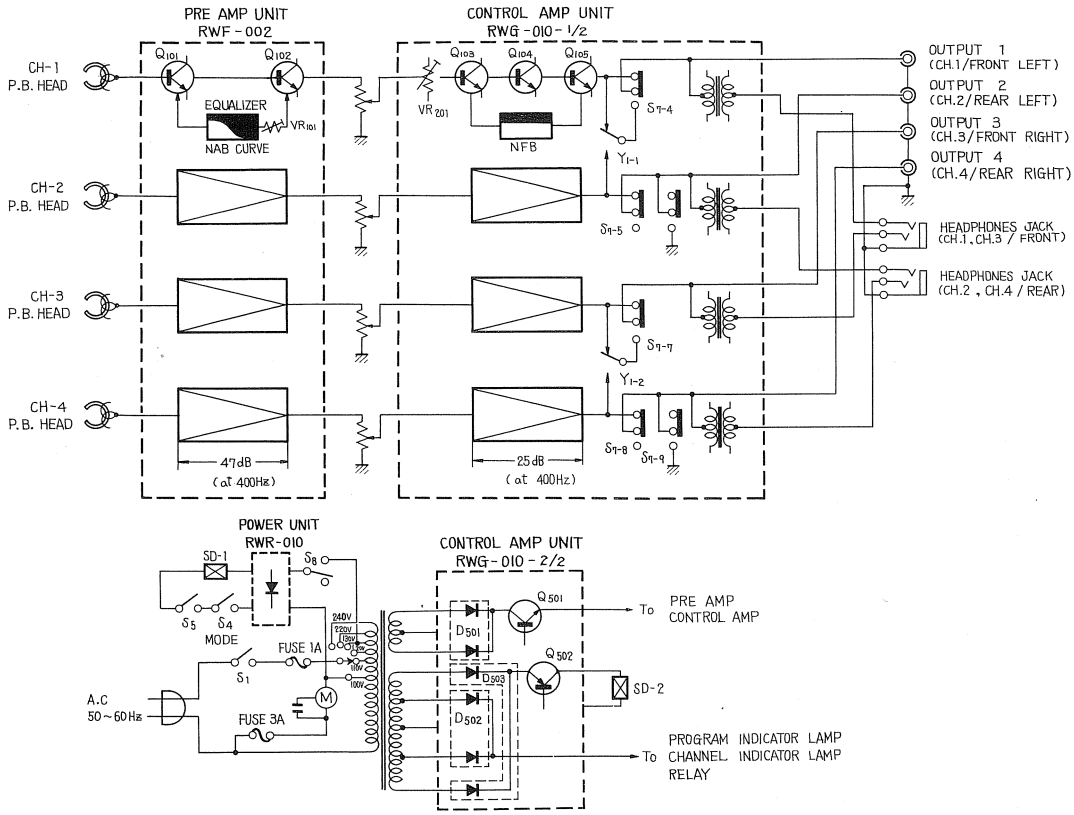
4 CH : 4-channel playback. Set the switch at this position when playing a tape cartridge (without notch) on which 4-channel music is recorded; the unit will provide 4-channel playback.

4-2 REAR VIEW

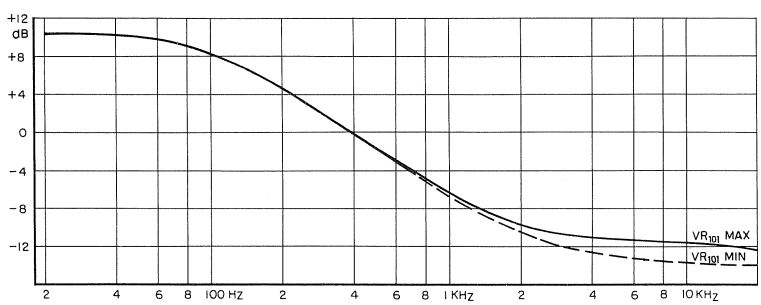


4-CHANNEL SPEAKER SYSTEMS
(Only front speakers required for 2-channel operation)

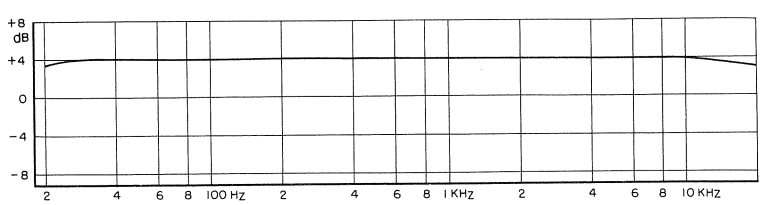
5 • BLOCK DIAGRAM



PREAMP. EQUALIZER CURVE



CONTROL AMP. FREQUENCY RESPONSE



6 • CIRCUIT DESCRIPTION

The circuitry of Model QT-2100 consists of preamplifier unit, control amplifier unit and power supply unit.
As the circuit for each channel of both preamplifier and control amplifier units is designed based on the same circuit constant, the CH.1 circuit operation common to other channels is described below.

6·1 PREAMPLIFIER UNIT (RWF-002)

The playback signal picked up by the head is amplified up to a predetermined level in this circuit, providing a compensation for the recording characteristics by means of NAB characteristic (Fig. 5).

1. The playback signal is amplified by transistors Q101 and Q102.
2. The amplified signal is negative fed back from the collector of Q102 to the emitter of Q101 through the equalizer elements (C108, R109, VR101 and R108) to compensate for the frequency response.
3. Two capacitors C103 and C104 provided between the base collector of Q101 and Q102 prevent an oscillation, thus assuring a stable amplification of the signal up to a higher range.
4. The output from Q102 is led to the control amplifier circuit through the volume control (VR1).

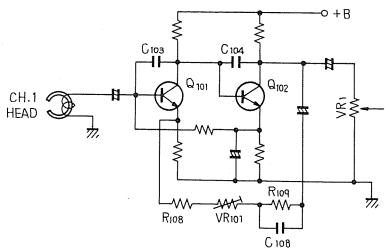


Fig. 5

6·2 CONTROL AMPLIFIER UNIT (RWG-010)

The signal provided from the preceding preamplifier circuit is further amplified in this circuit and led to the OUTPUT jack.
Power rectifying circuits for amplifier circuit, indicator lamp, relay circuit, and program switching circuit are also included in this control amplifier unit circuit (Fig. 6).

1. The signal provided through the volume control VR121 is amplified by transistors Q103, Q104, and Q105, and led to the OUTPUT jack for CH.1.
2. Q105 gives negative feedback to the emitter of Q103 to improve the frequency response. It is an emitter-follower to obtain low output impedance.
3. The matching transformer T101 is connected in parallel with the OUTPUT jack, and provides output to the headphones through the secondary coil.
4. The voltage, which has been full-wave rectified by diode D501, is stabilized by transistor Q501, and is provided to the amplifier circuit with ripple suppressed. ↑
5. The voltage, which has been full-wave rectified by diode D502, lights the channel indicator, program indicators and operates the relay while a 2-channel tape is being played back.
6. The voltage, which has been full-wave rectified by diode D503, is supplied to transistor Q502 which activates the plunger SD-2.

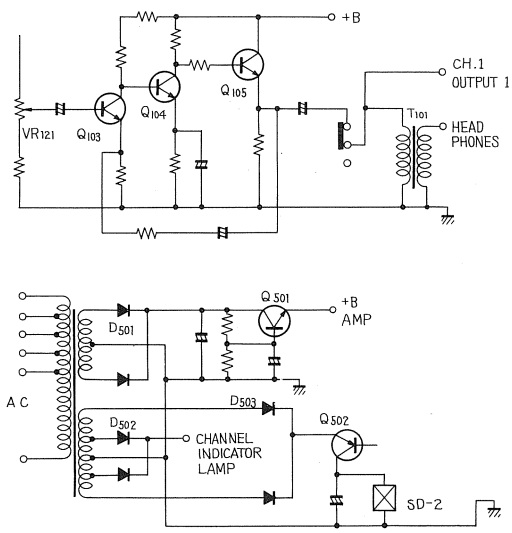


Fig. 6

6·3 POWER SUPPLY UNIT

This circuit activates plunger convertible from a 2-channel into a 4-channel, or vice versa.
For details, refer to Item 8 entitled: "CIRCUIT DESCRIPTION OF CHANNEL SELECTING CIRCUIT" on page 8.

7 • CHANNEL SELECTING MECHANISM

Most 4-channel stereo cartridges have a notch on the left-top corner. Model QT-2100 is equipped with an automatic channel selecting device as shown in Fig. 7, with which automatic 2- or 4-channel mode selection is made when the cartridge is pushed into the opening. (The MODE switch should be set at AUTO.)

A 4-channel cartridge with the notch, when pushed into the opening, causes the small wheel at the end of the microswitch lever to ride in the notch, thereby keeping the microswitch deactivated.

On the contrary, a 2-channel cartridge without the notch, when pushed in the opening, permits the microswitch lever to activate microswitch with the wheel pushed up, causing the plunger designed to be electrically interconnected with the microswitch circuit, to function with the microswitch activated.

This wheel-ended lever arrangement lends itself to stable operation of the cartridge by preventing unbalanced, unnecessary power from being applied to the left-hand side of the cartridge pushed into the opening, thus functioning best to eliminate any possibility of sound distortion etc. due to improper or insufficient contact of the tape to the head or also to the pinch roller.

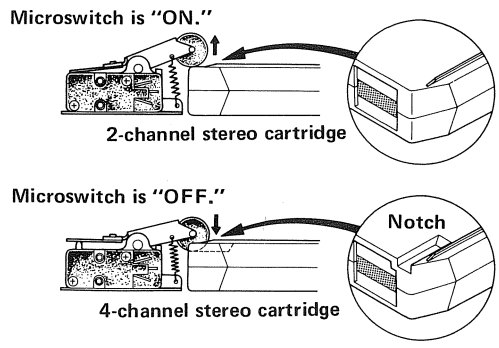


Fig. 7

8 • CIRCUIT DESCRIPTION OF CHANNEL SELECTING CIRCUIT

In conventional 2-channel cartridge tape decks, the playback head is moved up or down in four steps by means of a cam according to each of the four programs on the tape. In Model QT-2100, however, the playback head is moved up or down in two steps according to each of the two programs on the 4-channel cartridge tape. Therefore, Model QT-2100 is provided with a relay circuit which permits a changeover of amplifier for a playback of a 2-channel cartridge tape.

8-1 2-CHANNEL TAPE OPERATION

INDICATOR CIRCUIT

1. When a 2-channel tape is pushed into the opening with the MODE switch set at AUTO, the microswitch S5 is closed by the channel selecting mechanism. With the S5 closed, the current rectified by the diode D601 activates the plunger SD-1, switching the channel selecting switch S7 over to 2 CH. side (Fig. 8).
2. During the operation of the plunger SD-1, microswitch S8 remains closed with about 42V (DC), preventing the plunger from getting heated.
3. The direct current rectified by diode D502 flows to the ground through the route of resistor R505 ~ lamp 2CH ~ S7-1 ~ Earth, causing the channel indicator lamp (2) to light.
4. The direct current, which has passed through diode D502, is applied to the program indicator lamp switch S6. When the switch S6 is set at ① , the program indicator lamp "1" lights; likewise, when the switch S6 is set at ② , the indicator lamp "2" lights.
5. If the switch S6 is set at ③ , the current flows through the route of S7-2 ~ D505 ~ relay Y1, allowing the relay Y1 to operate, and the program indicator lamp "3" lights. The diode D506 prevents the reverse current from lighting the program indicator lamp "4."
6. If the switch S6 is set at ④ , the current flows through the route of S7-3 ~ D506 ~ relay Y1, allowing the relay Y1 to operate, and the program indicator lamp "4" lights. The diode D505 prevents the reverse current from lighting the program indicator lamp "3."

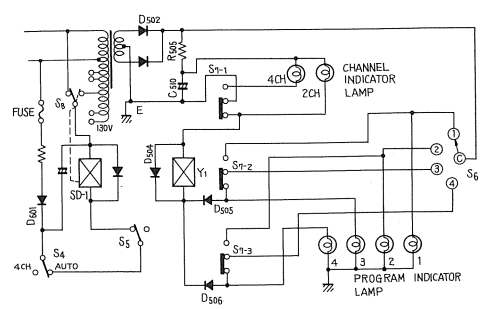


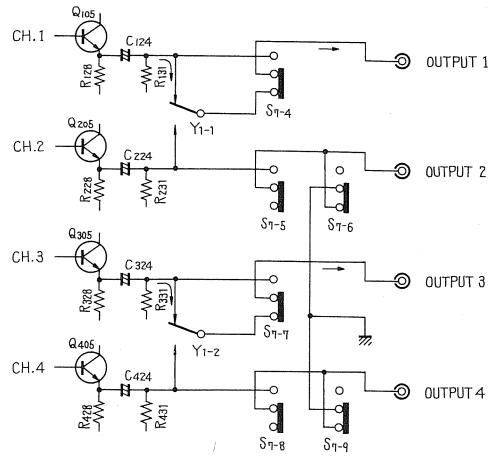
Fig. 8

ROUTE FOR OUTPUT SIGNAL

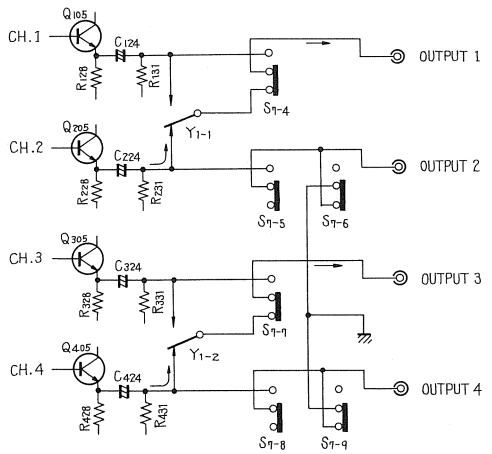
Since the channel selecting switch S7 remains closed by the operation of the plunger SD-1, allowing relay Y1 to operate only when program 3 or 4 is played.

1. When programs 1 and 2 are played, the playback heads and the amplifier for CH.1 and CH.3 are used, respectively.
   The output signal for CH.1 is provided to OUTPUT 1 through the route of Y1-1 and S7-4; the output signal for CH.3 is provided to OUTPUT 3 through the route of Y1-2 and S7-7 (Fig. 9).
2. When programs 3 and 4 are played, the playback heads and the amplifier for CH.2 and CH.4 are used, respectively.
   The output signal for CH.2 is provided to OUTPUT 1 through the route of Y1-1 and S7-4; the output signal for CH.4 to OUTPUT 3 through the route of Y1-2 and S7-7 (Fig. 10).
3. No output signal is provided to OUTPUT 2 and OUTPUT 4 because of the short-circuiting across S7-6 and S7-9.

NOTE: If the MODE switch is set at 4 CH., the switch S4 opens, deactivating the plunger SD-1 (Fig. 8). With the plunger deactivated, Model QT-2100 is placed on 4-channel stereo performance mode.



Playback of programs 1 and 2 Fig. 9



Playback of programs 3 and 4 Fig. 10

8-2 4-CHANNEL TAPE OPERATION

INDICATOR CIRCUIT

1. When a 4-channel tape is pushed into the opening with the MODE switch set at AUTO, the microswitch S5 remains open by the channel selecting mechanism. With the S5 opened, no current flows to activate the plunger SD-1 (Fig. 11).
2. The direct current rectified by diode D502 flows to the ground through the route; resistor R505 ~ lamp 4 CH. ~ S7-1 ~ Earth, causing the channel indicator lamp (4) to light (Fig. 11).
3. The direct current, which has passed through the diode D502, is applied to the program indicator lamp switch S6.
4. When the switch S6 is set at ① or ③, the program indicator lamp "1" lights; when the switch S6 is set at ② or ④ the program indicator lamp "2" lights.

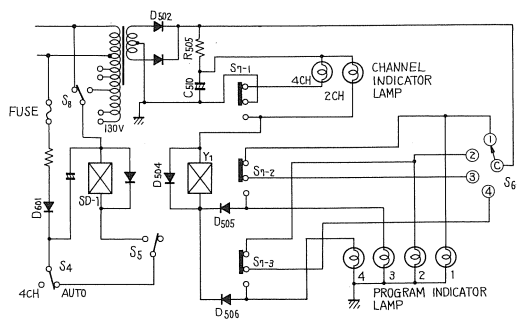


Fig. 11

ROUTE FOR OUTPUT SIGNAL

As mentioned in 1 of 8.2, the plunger and the relay remain deactivated.

1. The output signal for CH.1 is provided to OUTPUT 1 through the terminal S7-4 (Fig. 12).
2. Likewise, the output signals for CH.2, CH.3, and CH.4 are provided to the corresponding OUTPUT jacks 2, 3, and 4 through terminal S7-5, S7-7 and S7-8, respectively.

The table below shows channel and program indications and operating status of relay and switch, etc. for both 2-channel and 4-channel performance.

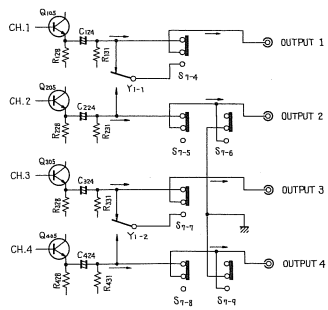


Fig. 12

	4-Channel Performance		2-Channel Performance			
Program	1	2	1	2	3	4
SD-1, S7	Deactivated		Activated			
Channel Indication	4		2			
Program Indication	1	2	1	2	3	4
Relay	Released		Released		Operated	
S6	1, 3	2, 4	1	2	3	4

9 • PROGRAM SWITCHING

9·1 MANUAL SWITCHING

1. When the program selector switch S2 remains released, the capacitor C507 is short-circuited at both ends by the resistor R506 (Fig. 13).
2. When the switch S2 is depressed, base current flows through the resistor R503 to the capacitor C507, placing the transistor Q502 to ON, thus activating the plunger SD-2.
3. If the switch S2 is depressed continuously, the capacitor C507 is charged up to +B, cutting the Q502 OFF, thus deactivating the plunger SD-2.
4. If the switch S2 is released, the capacitor C507 discharges and readies itself for next switching operation.

9·2 AUTOMATIC SWITCHING

1. When the tape has traveled up to the program changing point where the sensing foil affixed is to be activated, with the program repeat switch S3 set at OFF, both ends of the contact pole is short-circuited by the sensing foil.
2. Base current flows through the resistor R503 to the capacitor C508, placing the transistor Q502 to ON, thus activating the plunger SD-2.
3. When the contact pole is released from the short-circuiting condition, the base current flowing to the capacitor C508 is interrupted, cutting the Q502 OFF, thus deactivating the plunger SD-2.
4. Even if the contact pole terminal remains short-circuited by the sensing foil is stuck on the terminal, the voltage charged in the capacitor C508 rises to such an extent that Q502 is CUT OFF.
5. When the contact pole terminal is short-circuited, with the program repeat switch S3 set to ON, the capacitor C508 is not charged, and thus, the Q502 remains OFF.

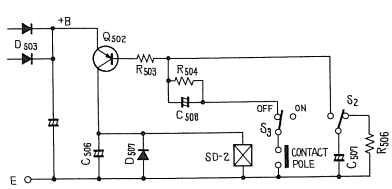


Fig. 13

10 • TROUBLESHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Power is not turned on even if a cartridge is pushed into the opening.	1. Power cord is plugged in outlet loosely. 2. Power cord is open. 3. Fuse has blown. 4. Microswitch S1 is defective.	1. Plug the cord tightly. 2. Replace. 3. Replace. 4. Replace.
Power is turned on, but motor is frozen.	1. Wiring to motor is poor. 2. Motor is defective. 3. Fuse for motor has blown.	1. Check, and repair if necessary. 2. Replace. 3. Replace.
Motor revolves, but the unit does not play.	1. Tape is broken. 2. Tape has entangled. 3. Belt has come off pulley, flywheel. 4. Motor pulley is loosened. 5. Flywheel bearing is stuck. 6. Amp. circuit is defective.	1. Repair or replace. 2. Repair or replace. 3. Check the belt for damage, etc. Set it back to pulley or flywheel. 4. Secure it to correct position. 5. Replace. 6. Check, and repair if necessary.
Programs cannot be changed manually.	1. Microswitch S2 is defective. 2. Spring of microswitch S2 is not properly positioned. 3. Wiring to plunger is poor. 4. Transistor Q502 is defective.	1. Replace. 2. Bend the spring as required. 3. Replace. 4. Replace.
Program cannot be changed automatically.	1. No sensing foil is affixed on tape, or broken. 2. Pad pressure is weak. 3. Contact failure of repeat switch S3, or switch is defective.	1. Repair or replace. 2. Bring the pad forward. 3. Repair or replace.
Wow and flutter.	1. Cartridge is defective. 2. Tape is wound too tightly. 3. Tape is defective. 4. Pinch roller is dirty. 5. Top cover of cartridge is secured too tightly. 6. Drive belt is slackened. 7. Oil is adhered on drive belt, flywheel, pulley. 8. Rotating parts are short of oil. 9. Motor is defective. 10. Cartridge contact pressure is faulty.	1. Replace. 2. Repair or replace. 3. Replace. 4. Clean. 5. Loosen. 6. Replace. 7. Clean. 8. Lubricate. 9. Replace. 10. Adjust.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Tape travel is slow.	1. Drive belt is slackened. 2. Motor fan contacts other parts. 3. Wrong pulley for the line frequency.	1. Replace. 2. Adjust the pulley height. 3. Change the pulley.
Output is not balanced.	1. Poor recording. 2. Pad pressure is not proper. 3. Pad adjustment is poor. 4. Head is not clean. 5. Amp. circuit is defective.	1. Replace the cartridge. 2. Bring the pad forward. 3. Readjust. 4. Clean. 5. Check, and repair if necessary.
Output sound is too small.	1. Tape is inside out. 2. Head is not clean.	1. Repair or replace. 2. Clean.
No output sound.	1. Output pin jack contact failure. 2. Wiring in head is poor. 3. Amp. circuit is defective.	1. Check, and repair if necessary. 2. Replace. 3. Check and repair.
Too much distortion.	1. Channel switching is not proper. 2. Amp. circuit is defective.	1. Check, and repair if necessary. 2. Check, and repair if necessary.
Output sound vanishes in high range.	1. Pad pressure is weak. 2. Pad is defective. 3. Head is not clean. 4. Head adjustment is not proper. 5. Head is worn out.	1. Bring the pad forward. 2. Replace. 3. Clean. 4. See 12.2. 5. Replace.
Crosstalk is noticed.	1. Cartridge is defective. 2. Cartridge has not been pushed in the opening properly. 3. Head adjustment is not proper. 4. Cam is worn out. 5. Head height does not shift.	1. Replace. 2. Push it again into the opening. 3. See 12.2. 4. Replace. 5. Adjust hinge pressure.
Channel indicator lamps "2" and "4" light.	1. Channel selecting operation is not proper.	1. Check, and repair if necessary.
Channel indicator lamp(s) does not light.	1. Indicator lamp(s) is burnt out.	1. Replace.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Program indicator lamps do not light.	1. Indicator lamps are burnt out. 2. Contact failure between the selector PCB and sliding piece.	1. Replace. 2. Clean the contacts.
Unit does not operate on 2-channel mode.	1. Position of automatic channel selector switch S5 is not proper. 2. Plunger guard fuse has blown. 3. Position of plunger frame is not proper. 4. Slide switch is defective.	1. Check, and repair if necessary. 2. Replace. 3. Adjust. 4. Operating tension should be less than 1 lb 1.6 oz (500g). Replace if necessary.
In 2-channel mode operation, programs 3 and 4 cannot be reproduced.	1. Contact failure between selector PCB and sliding piece. 2. Relay Y1 does not operate properly. 3. D505, D506 are defective.	1. Clean the contacts. 2. Replace. 3. Replace.
Unit does not provide 4-channel performance with a 4-channel tape, with MODE switch set at AUTO.	1. Position of automatic channel selector switch S5 is not proper.	1. Check, and adjust if necessary.
4-channel/2-channel switching plunger get heated.	1. Microswitch S8 is defective. 2. Plunger adjustment is not proper.	1. Replace. 2. Readjust.

11 • PARTS REPLACEMENT

11·1 MOTOR

1. Take off the drive belt (Fig. 14).
2. Remove the yellow and blue leads soldered to the motor capacitor.
3. Remove the green lead soldered to the power supply unit.
4. Remove the vinyl tube from the oil cup.
5. Unscrew the four screws securing the motor, together with the screw securing the grounding lug.
6. Loosen the screws securing the motor pulley, and remove the pulley.
7. Secure the pulley to the new motor, and reassemble the motor unit by the reverse order of the above steps.
8. Set the drive belt on the pulley and flywheel. Give the flywheel a few turns by hand. Adjust pulley height so that the drive belt runs around the center of the flywheel rim. Fasten the pulley in that position.
9. Wipe the belt, the pulley and the flywheel clean with a soft cloth dampened with pure alcohol.

NOTES:
- To attach the vinyl tube to the oil cup, pull out the string from the tube, and place a piece of felt on it.
- Check the oil cup, and if necessary, replenish oil to the oil cup.
- Set the drive belt with its shiny side showing outside.

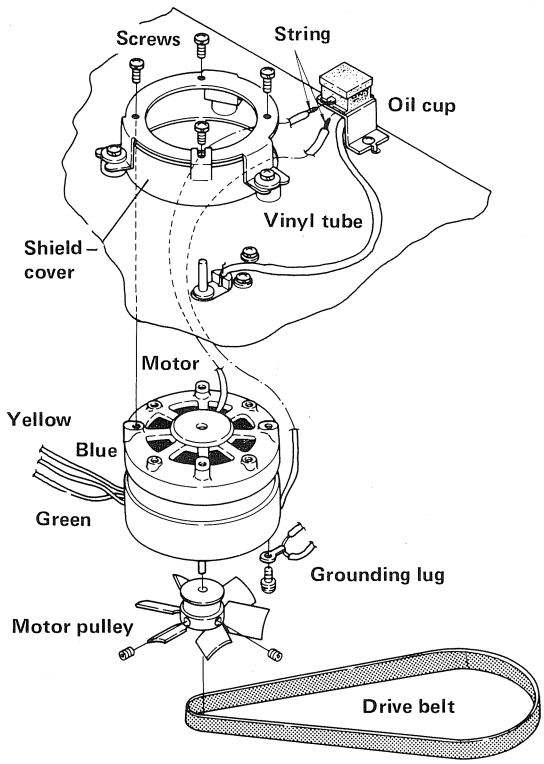


Fig. 14

11·2 PROGRAM INDICATOR LAMPS

1. Remove the leads from the burnt lamp.
2. Hold the metal bottom of the lamp with a pliers, and pull it out of the socket (Fig. 15).
3. Install the new lamp by the reverse order of the above steps.

NOTES:
- Do not yank the lamp with the leads.
- Do not hold the lamp too fast. Otherwise it may break.

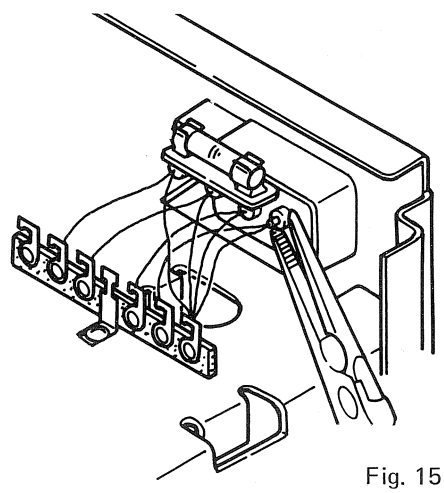


Fig. 15

11-3 PLUNGER

1. Remove the two black leads soldered to the control unit (Fig. 16).
2. Unscrew the three screws ①, ②, ③ securing the sub-chassis.
3. Move the sub-chassis and unscrew the two screws ④, ⑤ securing the plunger.
4. Remove the plunger. Save the iron core, the cam lever and the spring to reassemble them to the new plunger.

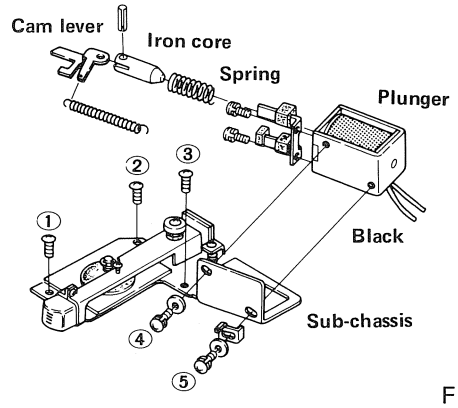


Fig. 16

11-4 PLAYBACK HEAD

1. Loosen the screw, and remove the head.
2. Remove the shielded wires soldered to the head.
3. Solder the shielded wires back to the new head.
4. Put the head back into the head holder, and secure the head with the screw to the dimension shown in Fig. 21.

NOTE: When soldering the shielded wires to the head, make sure to complete the correct wiring as quickly as possible.

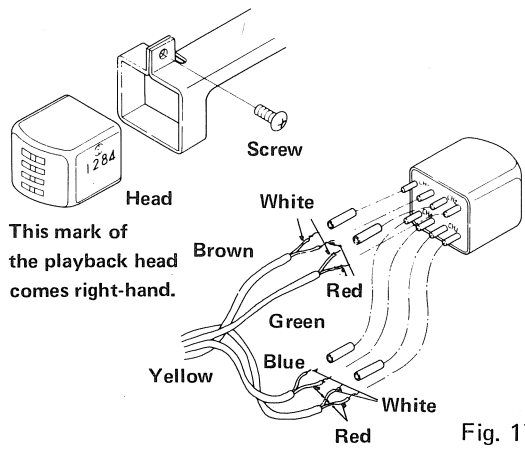


Fig. 17

11-5 FLYWHEEL AND FLYWHEEL BEARING

1. Remove the dust-proof rubber washer, and then take off the drive belt.
2. Unscrew the two screws from the flywheel support plate (Fig. 18).
3. Remove the vinyl tube from the flywheel bearing.
4. Remove the flywheel bearing by unscrewing the two screws.
5. Place the oil felt on the bearing, and secure the bearing with the two screws.
6. Wipe the flywheel shaft clean with a soft dry cloth, and apply oil to the shaft.
7. Fit the cushion felt to the shaft, and insert the shaft into the bearing.
8. Secure the flywheel support plate with the two screws.
9. Insert the vinyl tube into the bearing and give a few drips of oil to the oil felt.
10. Set the drive belt to the flywheel, and mount the dust-proof rubber washer.
11. Wipe the drive belt, the flywheel, the flywheel shaft, and the motor pulley clean with a soft cloth dampened with pure alcohol.

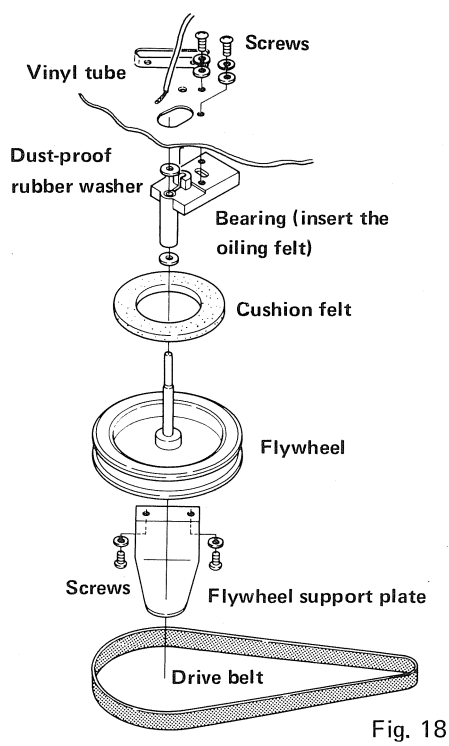


Fig. 18

12 • ADJUSTMENT

12·1 PLUNGER POSITION

1. Determine the plunger position temporarily by loosening the two screws so that the stroke of the iron core becomes 11/32" (9 mm).
2. Adjust the position of the stopper so that the clearance between the stopper and the spring pin of the iron core becomes from 1/128" to 1/64" (0.2 mm to 0.4 mm) (Fig. 19).
3. Secure the plunger with the two screws at the position where the clearance between the cam and the cam lever becomes from 1/128" to 1/64" (0.2 to 0.4 mm) as shown in Fig. 19.

   NOTE: If the plunger is positioned, leaving the clearance of less than 1/128" (0.2 mm), impact is applied directly to the cam; if the clearance is more than 1/64" (0.4 mm), the rotational position of the cam changes, causing a crosstalk.

4. Move the spring pin to right or left by hand, and confirm that the lever does not contact the circumference of the cam or it does not come off.

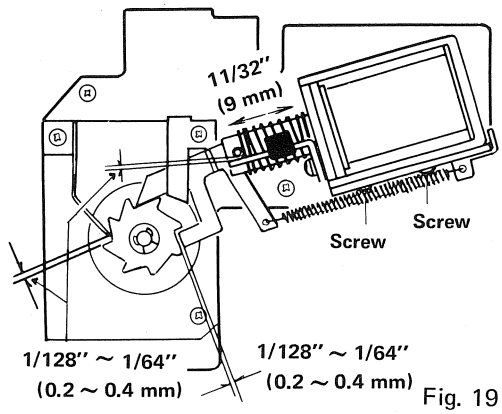


Fig. 19

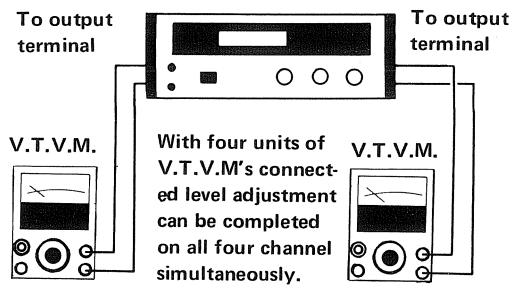


Fig. 20

12·2 HEAD ADJUSTMENT

1. Connect the V.T.V.M's to the output terminals (Fig. 20).
2. See if the head is positioned to the dimension shown in Fig. 21.
3. Loosen the azimuth adjusting screw ① by turning it 1/3 or 1/2 turn.
4. Adjust the head azimuth. Play the test tape "326" (8,000Hz) and adjust the azimuth adjusting screw ② so that the V.T.V.M's may deflect to the maximum reading.
5. Adjust the crosstalk. Play the crosstalk-adjustable test tape "328", and adjust the height of the head by means of the screw ③, so that the difference of output among each track may be maximum.
6. After tightening the azimuth adjusting screw, repeat the steps 4 and 5 several times with respect to each track.
7. Check the head pressure (Fig. 22).
   Leave the head tilted downward. Hook the tension gage at the front bottom of the head and pull the head up. See if the tension gage reads 2.5 to 4.2 oz (70 to 120g). If it does not, adjust the position of the head by means of the hinge pressure adjusting screw.
8. When all the necessary adjustments have been completed, lock each adjusting screw with paint.

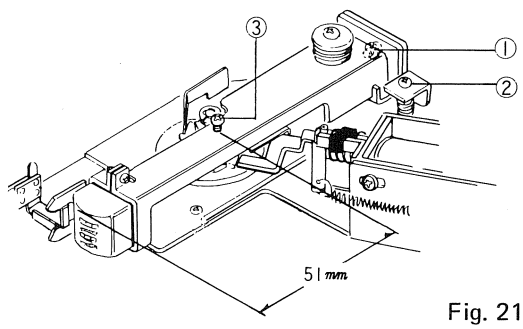


Fig. 21

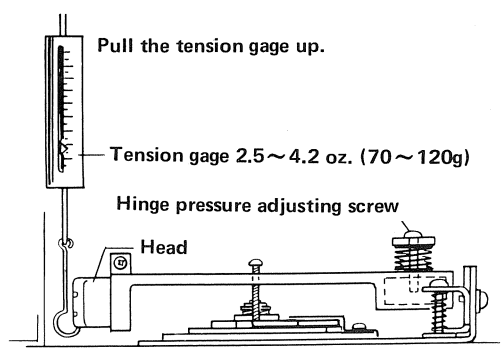


Fig. 22

12-3 ADJUSTMENT OF CARTRIDGE CONTACT PRESSURE AND POWER SWITCH

1. Hook the tension gage to the guide plate unit and pull the gage. See if the gage reads more than 3 lb 12 oz (1.7 kg) (Fig. 23).
2. If the contact pressure is too much, loosen the nut; and if the pressure is weak, tighten the nut.
3. When the cartridge is pushed into the opening, the bottom of the cartridge presses down the microswitch and turns the power on before the tape contacts the head. If the power is not turned on before the tape contacts the head, bend the plate spring of the microswitch a little and see if the power is turned on.
4. Confirm that the power is tuned off when the cartridge is pulled out of the opening.

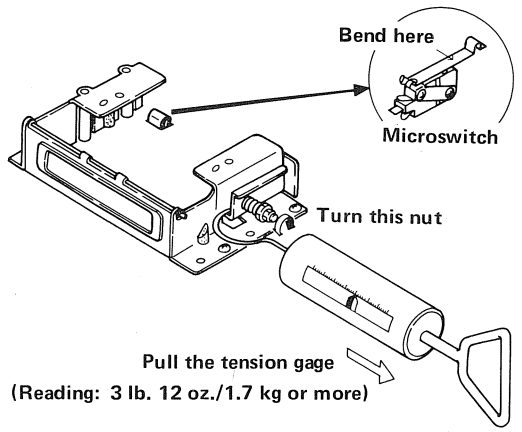


Fig. 23

12-4 ADJUSTMENT FOR CHANNEL SWITCHING FUNCTION

PLUNGER POSITION

1. Loosen the four screws securing the plunger (Fig. 24).
2. Push a 2-channel cartridge into the opening and keep the plunger activated.
3. Secure the plunger at the position where the spring presses the microswitch.

PLUNGER FRAME POSITION

1. Push a 2-channel cartridge into the opening, and keep the plunger activated.
2. See if the plunger is secured at the proper position by referring to the preceding item "Plunger position."
3. Loosen the two screws securing the slide switch frame so that the slide switch lever may contact the frame.
4. Confirm the positions of the plunger and the plunger frame once again, and lock the adjusting screws with paint.

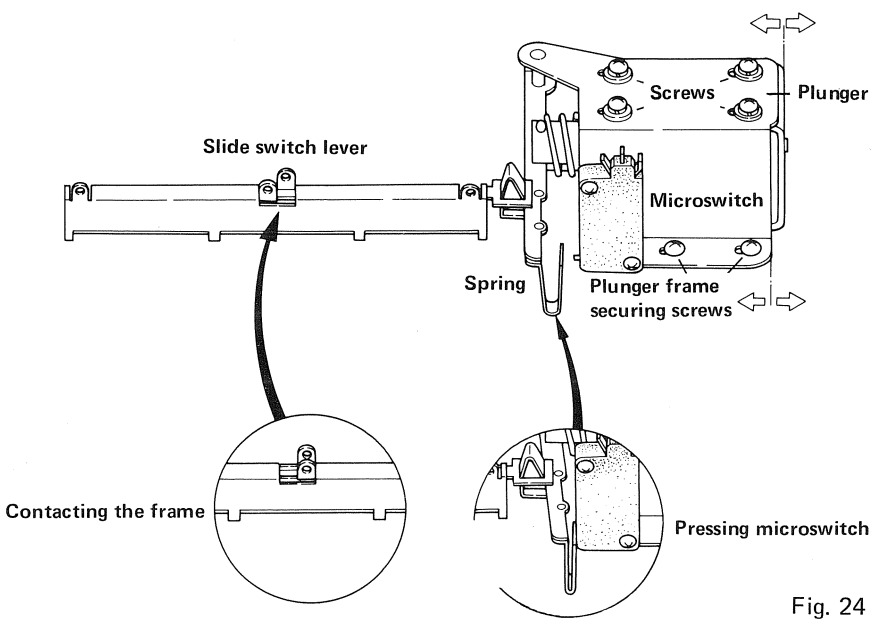


Fig. 24

12·5 PLAYBACK EQUALIZER ADJUSTMENT

1. Connect the V.T.V.M's to the output terminals.
2. Set the VOLUME control at MAX.
3. Play the test tape "323" (400Hz) and read the output level.
4. Play the test tape "312" (3,000Hz), and adjust the output level to the output level of playing the 400Hz test tape by turning the potentiometers on the preamplifier unit (Fig. 25).
5. Make this adjustment for all channels (CH.1 to CH.4).

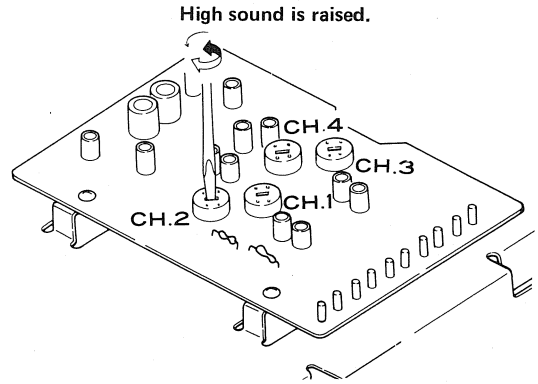


Fig. 25

12·6 PLAYBACK LEVEL ADJUSTMENT

1. Connect the V.T.V.M's to the output terminals. Set the VOLUME control at MAX.
2. Play the test tape "323" (400Hz).
3. Turn the potentiometers on the control amplifier unit so that the output level may read 0.775V for each channel (CH.1 to CH.4) (Fig. 26).

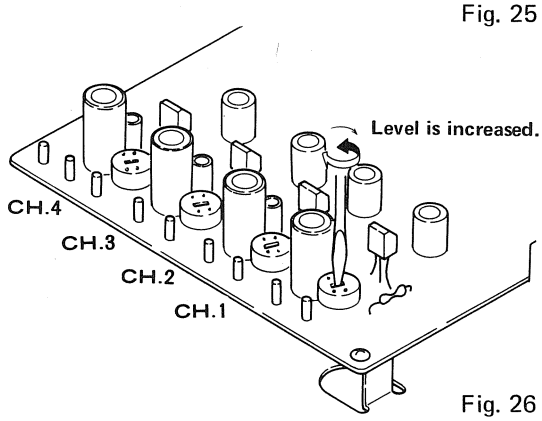


Fig. 26

12·7 TYPICAL TEST TAPES

Brand	No.	Test Purpose	Recorded Track	Recording freq. (Hz)	Recording Level
RCA by USA	312	Tape speed Wow & Flutter	Full tracks	3,000	SRL
	326	Head angle	Full tracks	8,000	—13dB
	323	Output level Distortion	Full tracks	400	SRL
	328	Crosstalk check	1 — 5 3 — 7	400	SRL
	330	Crosstalk check	2 — 7	100	SRL
	327	Crosstalk check	2 — 6 4 — 8	400 400	SRL

SRL: 0dB

13 • ADJUSTMENT TO AC LINE FREQUENCY

Check to see if the QT-2100 is properly factory-adjusted for the AC line frequency in your area. When the unit is readjusted from 50Hz to 60Hz or vice versa, proceed as follows:

1. Remove the bottom panel.
2. Take off the drive belt.
3. Remove the pulley from the motor shaft.
4. Remove the fan from the pulley by unscrewing the two screws (Fig. 27).
5. Attach the fan to the pulley for the line frequency in your area.
6. Secure the pulley to the motor shaft temporarily.
7. Set the drive belt to the pulley and the flywheel.
8. Give the flywheel a few turns by hand. Adjust the pulley height so that the belt runs around the center of the flywheel rim. Then, secure the pulley to that position.
9. Wipe the belt, the pulley and the flywheel clean with a soft cloth dampened with pure alcohol.
10. Set the motor capacitor switch to the proper position.
    For 60Hz operation: 2 μF
    For 50Hz operation: 2.2 μF
11. Reassemble bottom panel.

NOTE: There is a groove on the pulley for 60Hz.
To remove the pulley from the motor shaft, use the furnished hex. wrench.

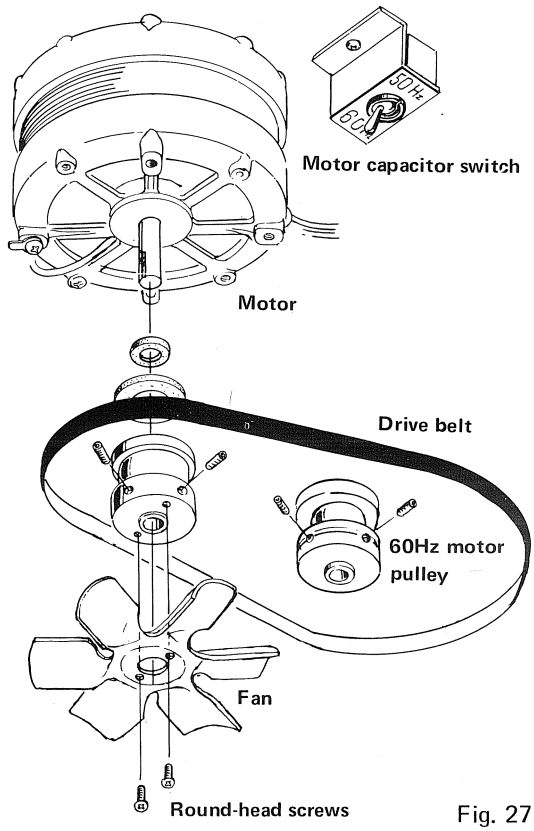


Fig. 27

14 • MAINTENANCE

CLEANING

Dust, airborne particles, iron particles from the tape, or oil will cause sound distortion, a decrease in output, wow and flutter. When servicing the unit, make sure to wipe them clean with a soft cloth dampened with pure alcohol.

LUBRICATION

After the unit has been operated from 500 to 1,000 hours, apply a few drops of the furnished oil or quality machine oil to the motor lubricating part. The unit should be oiled at least two or three times a year.

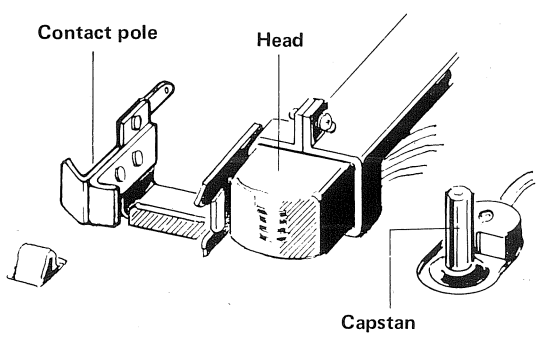


Fig. 28

15 • MECHANICAL PARTS LIST

Key No.	Description	Part No.	
1	Wooden case	M52-139-B	
2	Fixed screw	B11-041-A	
3	Locking washer		
4	MP capacitor	RCL-006-0	
5	⊕machine screw M3 x 6		
6	Cartridge guide L assembly	W73-410-0	
7	Cartridge guide roller shaft	RLA-004-0	
8	Guide pole	E32-466-0	
9	Screw for pressure spring	B11-401-0	
10	Cartridge guide R assembly	W73-411-A	
11	Cartridge guide assembly	W72-466-A	
12	Tray-type washer	N62-690-0	
13	Pressure spring	B31-718-0	
14	Nut M3		
15	Guide pole B	E32-468-A	
16	Retaining washer E-type (E-1.5)		
17	Cartridge door	N64-439-0	
18	Cartridge door shaft	B33-613-A	
19	Cartridge door spring	B31-447-0	
20	Microswitch A	S21-409-0	
21	⊕machine screw M2.6 x 12		
22	Selector frame	RXA-102-0	
23	Selector assembly	RXA-125-0	
24	Selector spring	RBH-039-0	
25	Flat washer 3ϕ	B22-420-0	
26	Retaining washer E-type (E-2)		
27	Motor holder	RNE-014-0	
28	⊕machine screw M4 x 10		
29	⊕machine screw M4 x 20		
30	Washer for motor	B21-665-0	

Key No.	Description	Part No.	
31	Anti-vibration rubber grommet	E31-421-0	
32	Anti-vibration rubber tube	N54-486-0	
33	Shield cover	RNE-138-0	
34	Motor	N11-412-0	
35	Motor pulley 50Hz	N24-423-A	
	Motor pulley 60Hz	N24-422-B	
36	Setscrew M3 x 6		
37	Fan	N64-434-0	
38	Spring washer M4		
39	Spring washer M2.6		
40	⊕machine screw M2.6 x 6		
41	Head arm	RNE-115-0	
42	⊕machine screw M3 x 20		
43	Tray-type washer	N62-690-0	
44	Spring for head arm	RBH-001-0	
45	Head-adjustable screw	B21-619-A	
46	Lock sheet	E31-712-A	
47	Head	RPB-006-0	
48	Adjusting metal	N62-497-0	
49	⊕machine screw M2.6 x 6		
50	⊕machine screw M3 x 14		
51	Adjusting spring	B31-681-0	
52	⊕machine screw M3 x 6		
53	Ratchet brake spring	B32-418-0	
54	Cam lever	N64-634-A	
55	Spring for lever	B31-680-0	
56	Spring pin AW2.5 x 22		
57	Plunger spring	B31-702-A	
58	Plunger stopper spring	W72-483-0	
59	Plunger	RXP-003-0	
60	Spring washer M3		

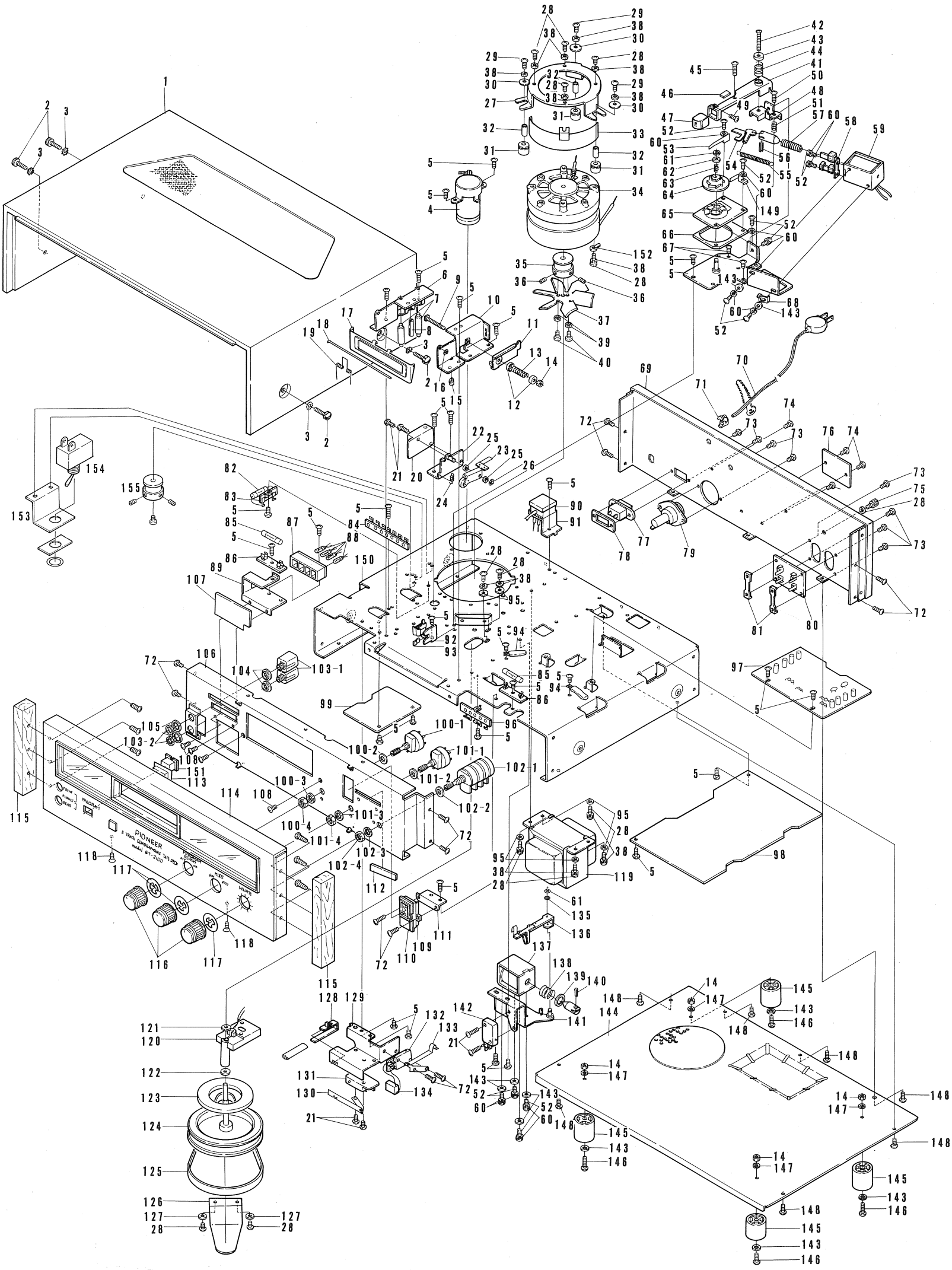
Key No.	Description	Part No.	
61	Retaining washer E-type (E-3.2φ)		
62	Washer D	B22-615-0	
63	Spring	B31-707-0	
64	Cam B	RNK-012-0	
65	Lamp P.C.B. unit	M91-608-0	
66	Insulator	M98-622-A	
67	Sub-chassis assembly	W72-468-A	
68	Spring hook	N61-802-0	
69	Rear panel assembly	RXA-108-0	
70	Power cord	D11-003-E	
71	Cord stopper	E32-056-0	
72	Tapping screw M3 x 8		
73	⊕machine screw M3 x 8		
74	Tapping screw M3 x 8		
75	Screw	B11-012-A	
76	Nameplate	RAL-014-0	
77	Socket	K82-012-A	
78	Bracket for socket	M49-127-0	
79	Fuse holder	S11-018-A	
80	4p pin jack terminal	RKB-001-0	
81	Bracket for terminal	M49-128-A	
82	Fuse 3A	E21-022-0	
83	Terminal strip lug-type 1L2P	K13-043-A	
84	Terminal strip lug-type 6P	K13-045-0	
85	Pilot lamp	E22-017-0	
86	Fuse holder	RKC-001-0	
87	Lamp holder	M49-631-B	
88	Program indicator lamp	E22-607-0	
89	Lamp holder	RNE-106-0	
90	Oil cup	RNK-022-0	

Key No.	Description	Part No.	
91	Oil cup holder	RNE-120-0	
92	Tape guide assembly	W75-696-0	
93	Tape protector	E32-656-0	
94	Cable clamp	N46-025-0	
95	Flat washer 4φ x 10φ x 0.8t		
96	4P pin jack terminal	K13-042-A	
97	Preamplifier unit	RWF-002-0	
98	Control amplifier unit	RWG-010-0	
99	Power supply unit	RWR-010-0	
100	Repeat switch A	RSA-002-0	
101	Repeat switch	S11-404-A	
102	Volume control	RCV-003-0	
103	Headphones jack	RKN-002-0	
104	Insulator plate	E32-045-0	
105	Insulator washer	E34-004-0	
106	Front chassis	RNA-030-B	
107	Indicator A	RAM-039-0	
108	Tapping screw M3 x 6		
109	Dial plate	RWX-006-A	
110	Masking	REB-016-0	
111	Bracket for dial plate	RNE-107-0	
112	Indicator B	RAM-040-0	
113	Program knob (Rear)	RNK-020-0	
114	Front panel assembly	RXA-147-0	
115	Side pole	A66-029-0	
116	Knob	A12-232-0	
117	Washer for knob	REC-021-0	
118	⊕Fillister M3 x 6		
119	Power transformer	RTT-005-0	
120	Flywheel bearing	W73-407-A	

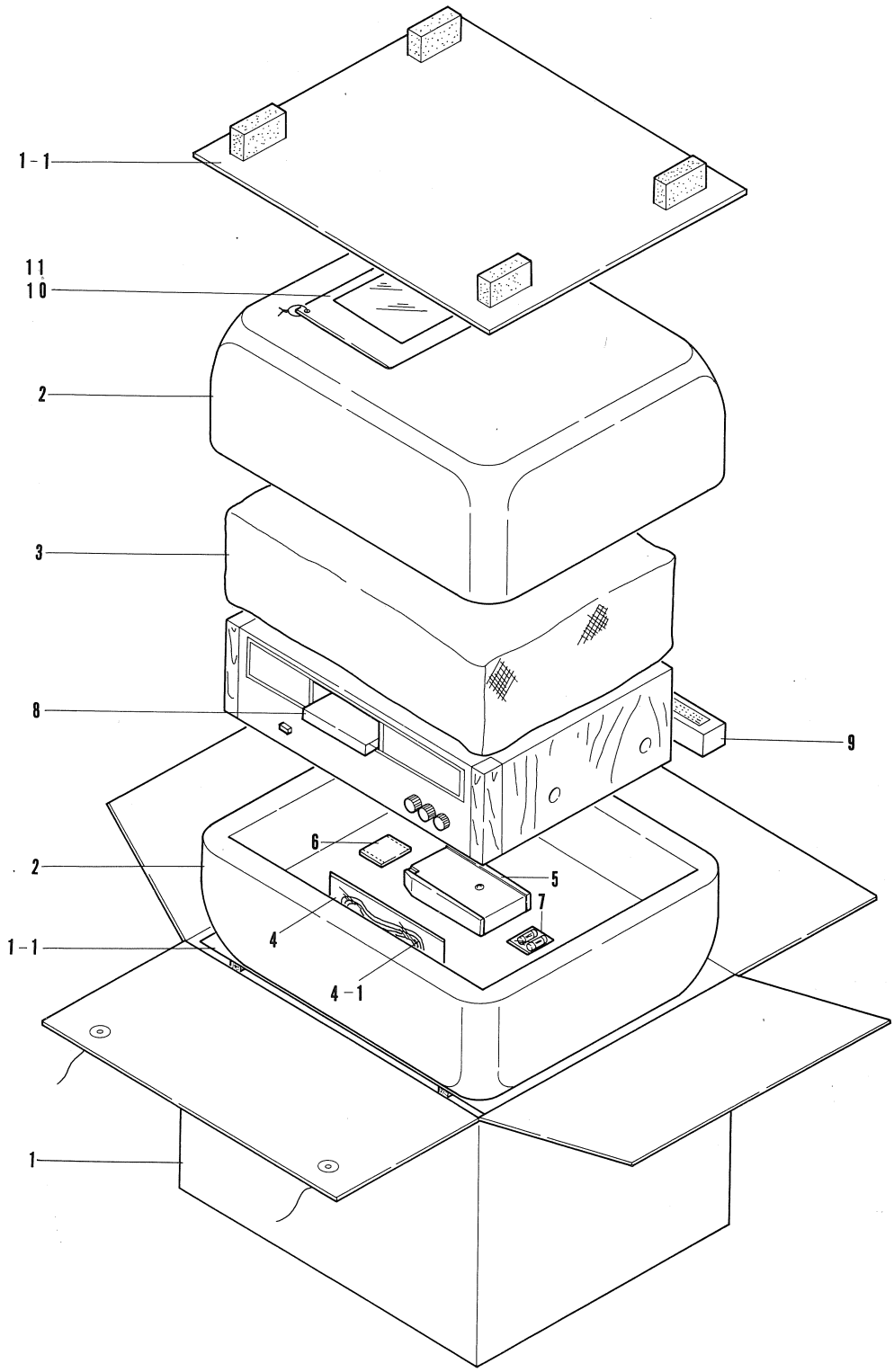
Key No.	Description	Part No.	
121	Rubber washer	B23-604-B	
122	Cushion felt	E33-431-0	
123	Flywheel felt	E33-419-0	
124	Flywheel assembly	W73-408-A	
125	Belt	N28-414-A	
126	Flywheel support	N62-503-A	
127	Spring washer M4		
128	Lever A	RNE-110-0	
129	Bracket for microswitch	RNE-015-0	
130	Spring plate B	RBK-018-0	
131	Microswitch A	S21-409-0	
132	Microswitch	RSF-001-0	
133	Spring plate A	RBK-017-0	
134	Spark killer	W53-045-0	
135	Spring washer 3ϕ	B22-420-0	
136	Plunger arm assembly	RXA-096-0	
137	Plunger B	RXP-004-0	
138	Spring for plunger	RBH-040-A	
139	Washer for plunger	RNE-123-0	
140	Pin 3 x 15		
141	Plunger frame	RXA-133-0	
142	Microswitch	S21-404-A	
143	Flat washer M3		
144	Bottom plate	RNC-019-B	
145	Foot	M61-017-A	
146	⊕machine screw M3 x 20		
147	Spring washer M3		
148	⊕machine screw M4 x 6		
149	Lever guide	N61-686-0	
150	Chassis	RNB-009-A	

Key No.	Description	Part No.	
151	Program knob (Front)	RAA-007-0	
152	Solder lug 4ϕ	N64-444-0	
153	Bracket for toggle switch	RNE-153-0	
154	Toggle switch	RSL-001-0	
155	Motor pulley 50Hz	N24-423-A	
	Motor pulley 60Hz	N24-422-B	

16 • EXPLODED VIEW

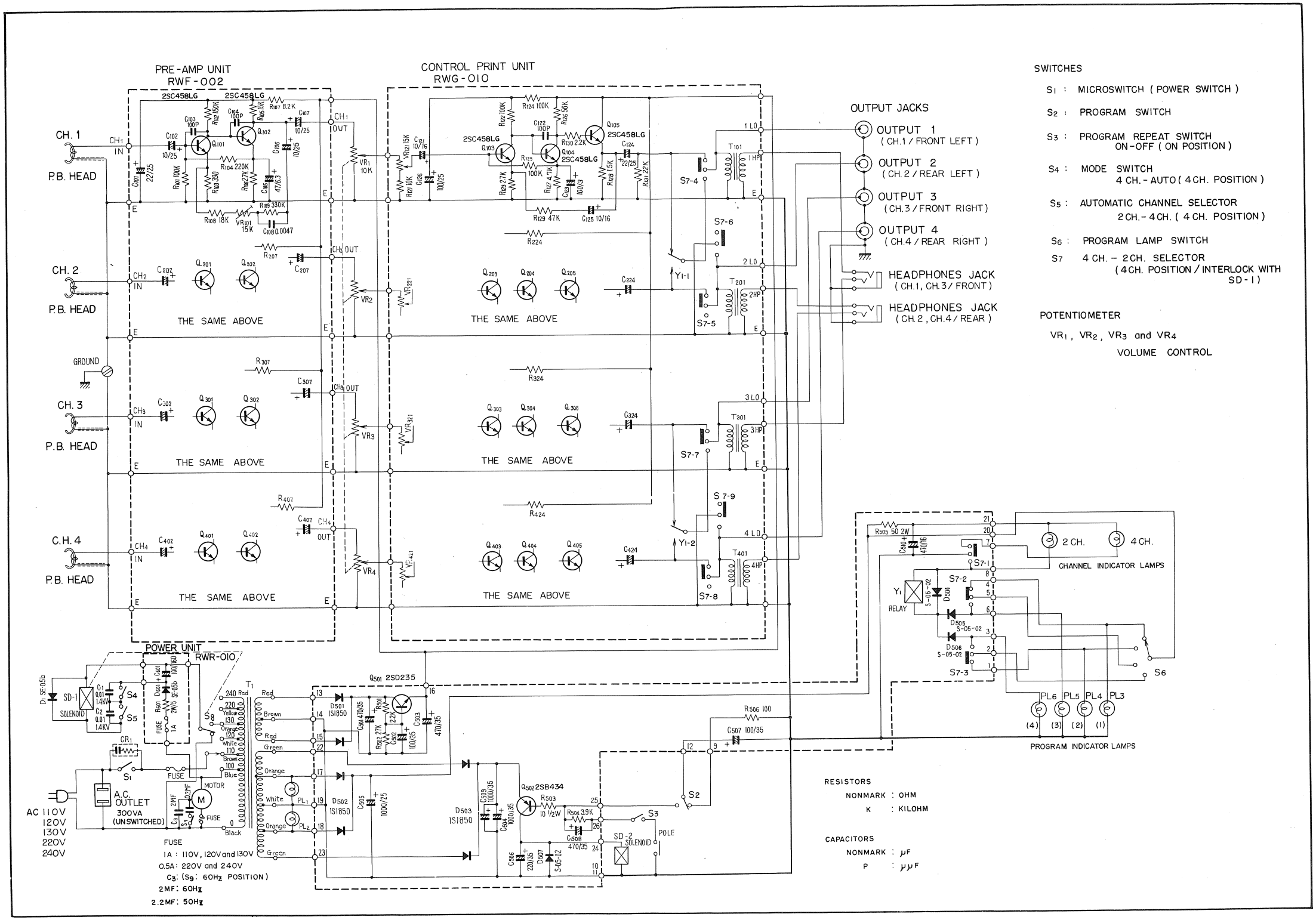


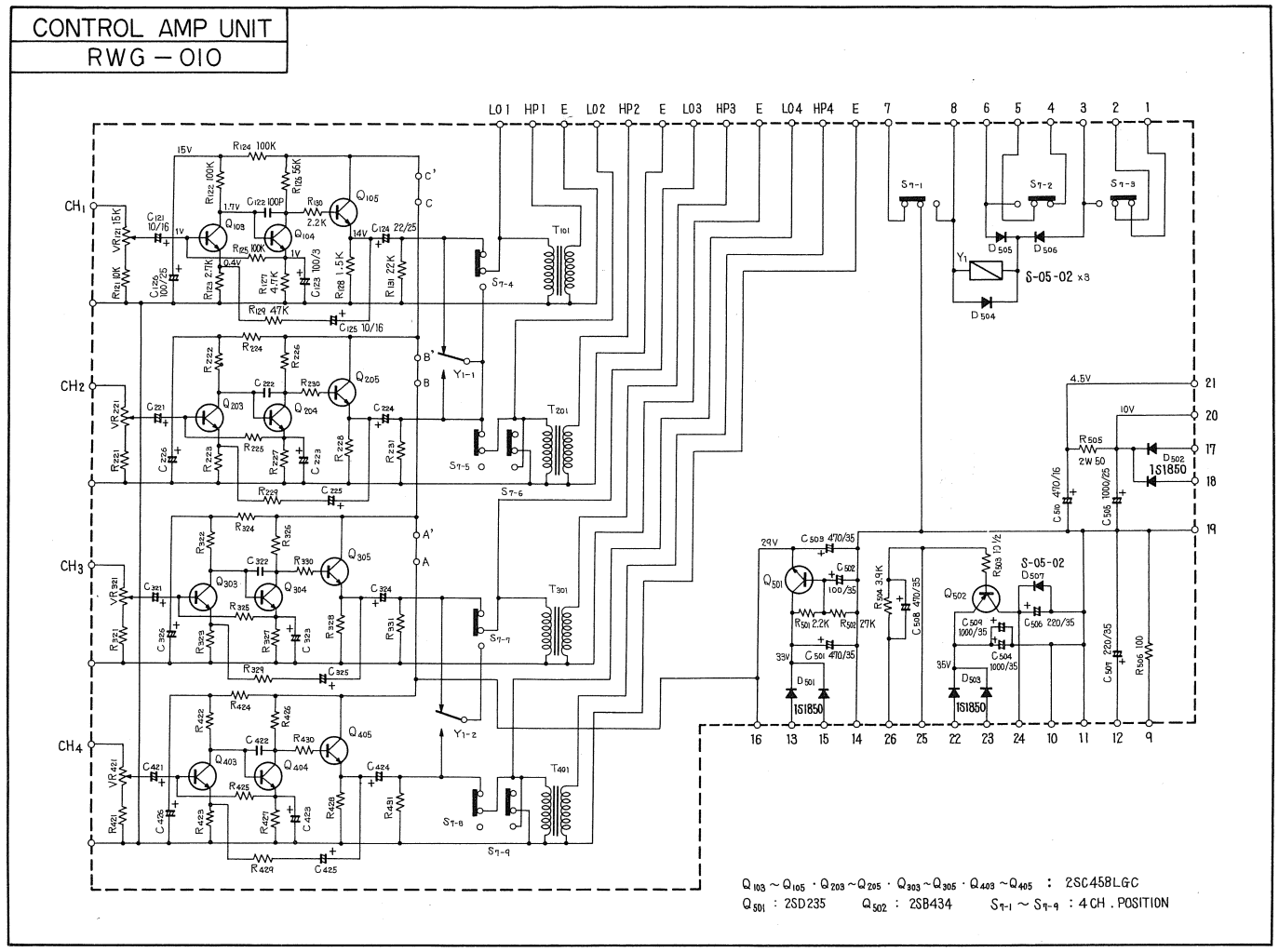
17 • PACKING METHOD AND PARTS LIST

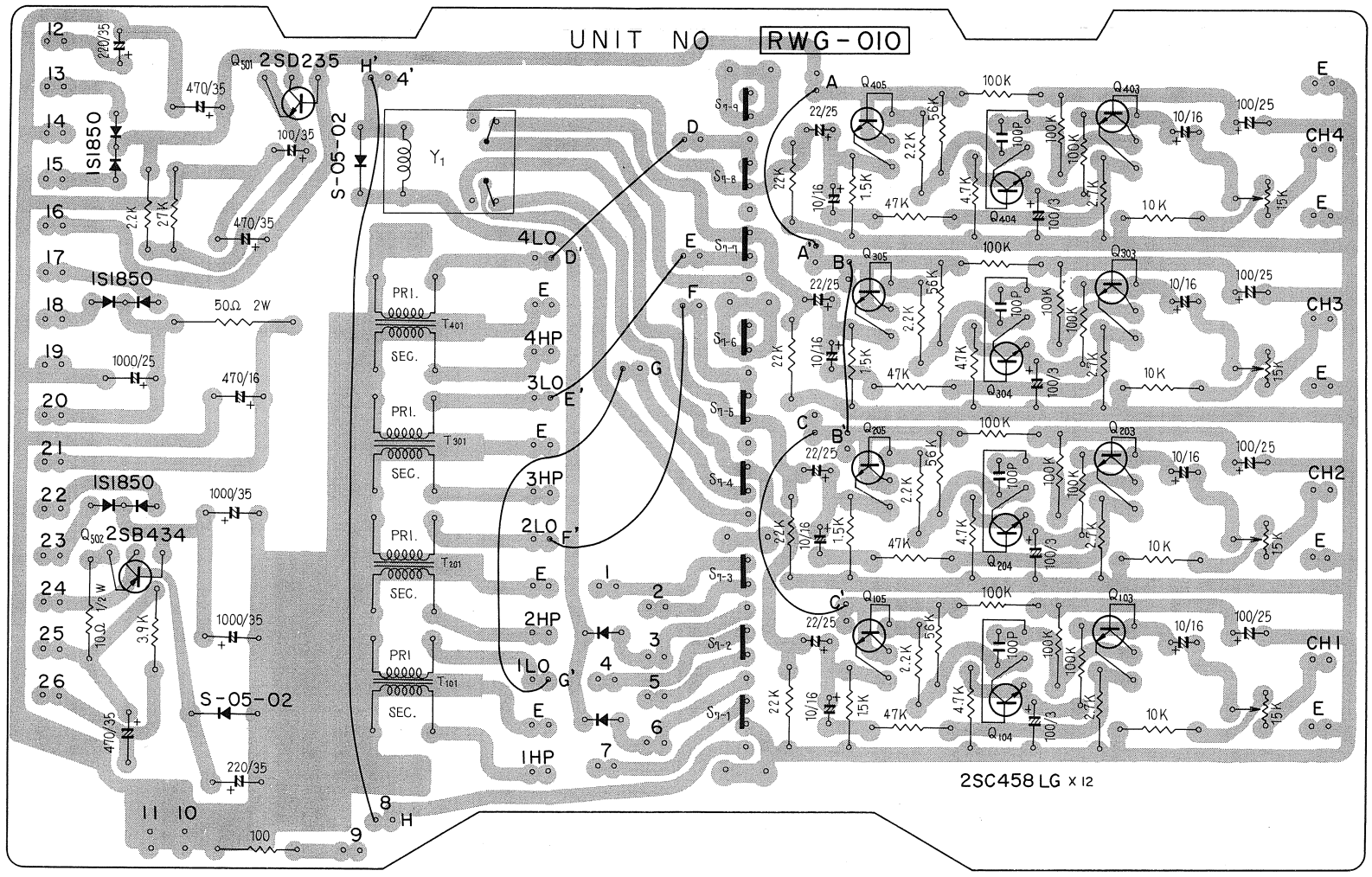


Key No.	Description	Part No.	
1	Packing case	RHK-024-0	
1-1	Top packing	RHC-007-0	
2	Styrotector	H11-070-B	
3	Cloth bag	H14-019-0	
4	Vinyl bag	E36-411-0	
4-1	Connection cord	D53-851-0	
5	Cartridge tape	RPX-001-0	
6	Silica gel	E32-432-0	
7	Vinyl bag C	H46-854-0	
7-1	Fuse 1A	E21-402-0	
7-2	Fuse 0.5A	E21-007-0	
7-3	Hexagonal wrench 3ϕ		
8	Paper spacer	REE-011-0	
9	Accessories parts box	REA-001-0	
10	Operating instructions	RRB-007-0	
11	Caution card	R19-219-A	

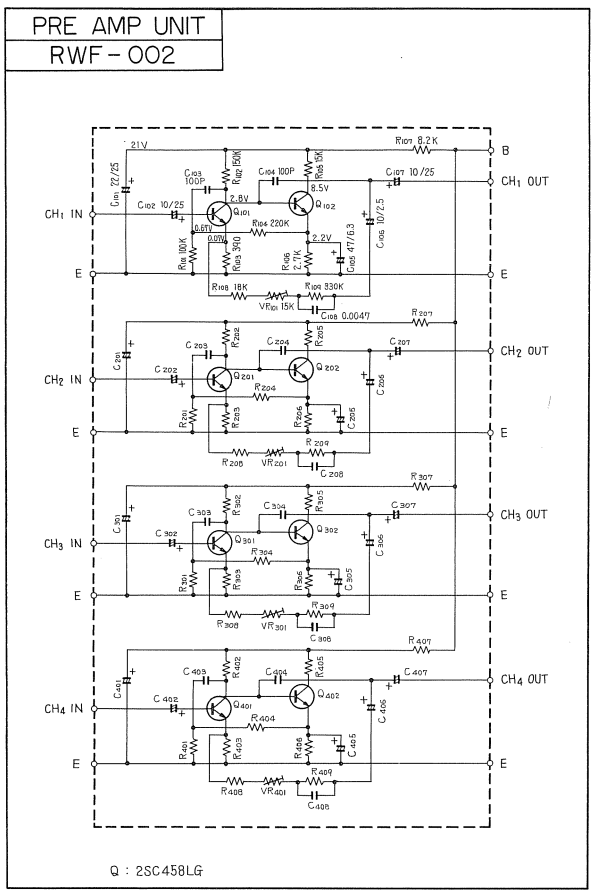
18 • SCHEMATIC DIAGRAMS AND PCB PATTERNS

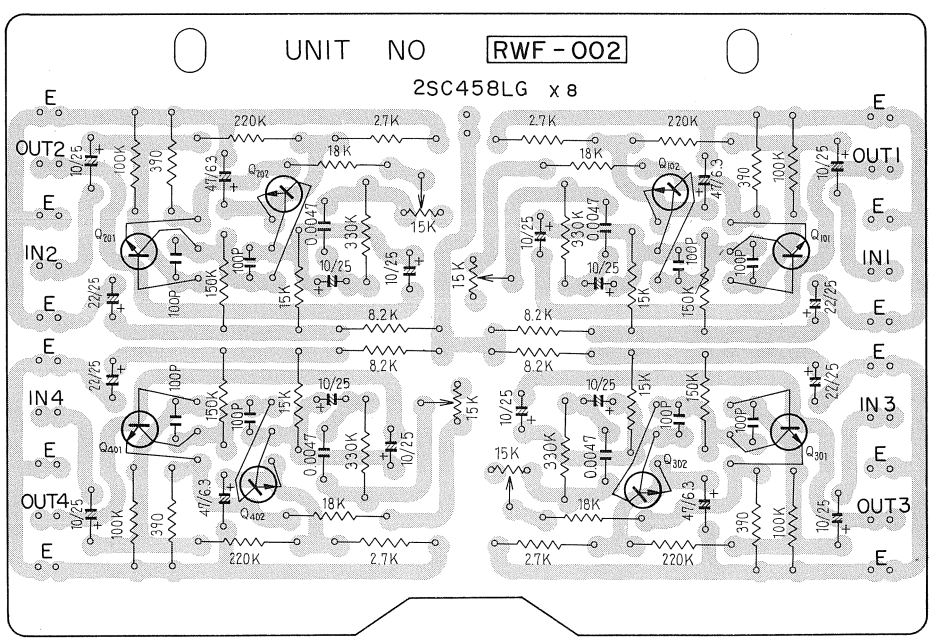



CONTROL AMP UNIT
RWG－010
LO1 HP1 E LO2 HP2 E LO3 HP3 E LO4 HP4 E 7 8 6 5 4 3 2 1
CH1
CH2
CH3
CH4
S-05-02 ×3
S-05-02
1S1850
4.5V
10V
29V
33V
35V
Q501 : 2SD235 Q502 : 2SB434 SW-1 ～ SW-9 : 4CH . POSITION

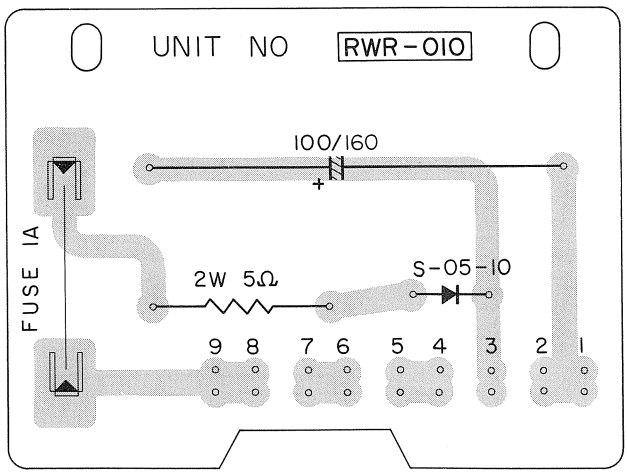

UNIT NO RWG-010
Q501 2SD235
Q502 2SB434
S-05-02
1S1850
2SC458 LG x 12

18-2 PREAMP UNIT (RWF-002)





18-3 POWER SUPPLY UNIT (RWR-010)



19 • ELECTROLYTIC PARTS LIST

19·1 MISCELLANEOUS

Symbol	Description	Part No.	
FUSE 1	Fuse holder	S11-018-A	
FUSE 2	Fuse 3A	E21-022-0	
OUT-PUT 1 ~ OUT-PUT 4	4P pin jack terminal	RKB-001-0	
PL1	Pilot lamp	E22-017-0	
PL2	Pilot lamp	E22-017-0	
PL3	Program lamp	E22-607-0	
PL4	Program lamp	E22-607-0	
PL5	Program lamp	E22-607-0	
PL6	Program lamp	E22-607-0	
VR1 ~ VR4	Volume control	RCV-003-0	
M	Motor	N11-408-C	
S3	Program repeat switch	S11-404-A	
S4	Mode switch	RSA-002-0	
SD-1	Plunger B	RXP-004-0	
SD-2	Plunger	RXP-003-0	
D1	Diode S-05-01		
CR1	Spark killer	W53-045-0	
C1	Ceramic capacitor	C43-003-0	
C2	Ceramic capacitor	C43-003-0	
C3	MP capacitor	RCL-006-0	
T1	Power transformer	RTT-005-0	

Symbol	Description	Part No.	
	Preamplifier unit	RWF-002-0	
	Control amplifier unit	RWG-010-0	
	Power supply unit	RWR-010-0	
	Head	RPB-006-0	
	Connection cord	D53-851-0	

19·2 POWER SUPPLY UNIT

Symbol	Description	Part No.	
D601	Diode S-05-10		
C601	Electrolytic capacitor 100 μF 160V	CEB101P160	
R601	Wire wound resistor 5 Ω 2W	RW2L050K	
	Fuse holder	K91-006-0	
	Fuse 1A	E21-004-0	

19-3 CONTROL AMP UNIT (RWG-010)

SEMICONDUCTORS

Symbol	Description	Part No.	
Q103	Transistor 2SC458LG-C		
Q104	Transistor 2SC458LG-C		
Q105	Transistor 2SC458-LG-C		
Q203	Transistor 2SC458LG-C		
Q204	Transistor 2SC458LG-C		
Q205	Transistor 2SC458LG-C		
Q303	Transistor 2SC458LG-C		
Q304	Transistor 2SC458LG-C		
Q305	Transistor 2SC458LG-C		
Q403	Transistor 2SC458LG-C		
Q404	Transistor 2SC458LG-C		
Q405	Transistor 2SC458LG-C		
Q501	Transistor 2SD235		
Q502	Transistor 2SB434		
D501	Diode 1S1850		
D502	Diode 1S1850		
D503	Diode 1S1850		
D504	Diode S-05-02		
D505	Diode S-05-02		
D506	Diode S-05-02		
D507	Diode S-05-02		

RESISTORS

INΩ, ¼W UNLESS OTHERWISE NOTED, k: kΩ, M: MΩ

Symbol	Description		Part No.	
VR121	Semi-fixed	15k	RCP-004-0	
VR221	Semi-fixed	15k	RCP-004-0	
VR321	Semi-fixed	15k	RCP-004-0	
VR421	Semi-fixed	15k	RCP-004-0	
R121	Carbon film	10k	RD¼PS103K	
R122	Carbon film	100k	RD¼PS104K	
R123	Carbon film	2.7k	RD¼PS272K	
R124	Carbon film	100k	RD¼PS104K	
R125	Carbon film	100k	RD¼PS104K	
R126	Carbon film	56k	RD¼PS563K	
R127	Carbon film	4.7k	RD¼PS472K	
R128	Carbon film	1.5k	RD¼PS152K	
R129	Carbon film	47k	RD¼PS473K	
R130	Carbon film	2.2k	RD¼PS222K	
R131	Carbon film	22k	RD¼PS223K	
R221	Carbon film	10k	RD¼PS103K	
R222	Carbon film	100k	RD¼PS104K	
R223	Carbon film	2.7k	RD¼PS272K	
R224	Carbon film	100k	RD¼PS104K	
R225	Carbon film	100k	RD¼PS104K	
R226	Carbon film	56k	RD¼PS563K	
R227	Carbon film	4.7k	RD¼PS472K	
R228	Carbon film	1.5k	RD¼PS152K	
R229	Carbon film	47k	RD¼PS473K	
R230	Carbon film	2.2k	RD¼PS222K	
R231	Carbon film	22k	RD¼PS223K	

Symbol	Description			Part No.	
R321	Carbon film	10k		RD¼PS103K	
R322	Carbon film	100k		RD¼PS104K	
R323	Carbon film	2.7k		RD¼PS272K	
R324	Carbon film	100k		RD¼PS104K	
R325	Carbon film	100k		RD¼PS104K	
R326	Carbon film	56k		RD¼PS563K	
R327	Carbon film	4.7k		RD¼PS472K	
R328	Carbon film	1.5k		RD¼PS152K	
R329	Carbon film	47k		RD¼PS473K	
R330	Carbon film	2.2k		RD¼PS222K	
R331	Carbon film	22k		RD¼PS223K	
R421	Carbon film	10k		RD¼PS103K	
R422	Carbon film	100k		RD¼PS104K	
R423	Carbon film	2.7k		RD¼PS272K	
R424	Carbon film	100k		RD¼PS104K	
R425	Carbon film	100k		RD¼PS104K	
R426	Carbon film	56k		RD¼PS563K	
R427	Carbon film	4.7k		RD¼PS472K	
R428	Carbon film	1.5k		RD¼PS152K	
R429	Carbon film	47k		RD¼PS473K	
R430	Carbon film	2.2k		RD¼PS222K	
R431	Carbon film	22k		RD¼PS223K	
R501	Carbon film	2.2k		RD¼PS222K	
R502	Carbon film	27k		RD¼PS273K	
R503	Carbon film	10	½W	RD½PS100K	
R504	Carbon film	3.9k		RD¼PS392K	
R505	Carbon film	50	2W	RT2P500K	
R506	Carbon film	100		RD¼PS101K	

CAPACITORS

INμF, UNLESS OTHERWISE NOTED, p: $\mu\mu$F

Symbol	Description			Part No.	
C121	Electrolytic	10	16V	CEA100P16	
C122	Ceramic	100p	50V	CCDSL101K50	
C123	Electrolytic	100	3V	CEA101P3	
C124	Electrolytic	22	25V	CEA220P25	
C125	Electrolytic	10	16V	CEA100P16	
C126	Electrolytic	100	25V	CEA101P25	
C221	Electrolytic	10	16V	CEA100P16	
C222	Ceramic	100p	50V	CCDSL101K50	
C223	Electrolytic	100	3V	CEA101P3	
C224	Electrolytic	22	25V	CEA220P25	
C225	Electrolytic	10	16V	CEA100P16	
C226	Electrolytic	100	25V	CEA101P25	
C321	Electrolytic	10	16V	CEA100P16	
C322	Ceramic	100p	50V	CCDSL101K50	
C323	Electrolytic	100	3V	CEA101P3	
C324	Electrolytic	22	25V	CEA220P25	
C325	Electrolytic	10	16V	CEA100P16	
C326	Electrolytic	100	25V	CEA101P25	
C421	Electrolytic	10	16V	CEA100P16	
C422	Ceramic	100p	50V	CCDSL101K50	
C423	Electrolytic	100	3V	CEA101P3	
C424	Electrolytic	22	25V	CEA220P25	
C425	Electrolytic	10	16V	CEA100P16	
C426	Electrolytic	100	25V	CEA101P25	

Symbol	Description			Part No.	
C501	Electrolytic	470	35V	CEA471P35	
C502	Electrolytic	100	35V	CEA101P35	
C503	Electrolytic	470	35V	CEA471P35	
C504	Electrolytic	1000	35V	CEA102P35	
C505	Electrolytic	1000	25V	CEA102P25	
C506	Electrolytic	220	35V	CEA221P35	
C507	Electrolytic	220	35V	CEA221P35	
C508	Electrolytic	470	35V	CEA471P35	
C509	Electrolytic	1000	35V	CEA102P35	
C510	Electrolytic	470	16V	CEA471P16	

OTHERS

Symbol	Description	Part No.	
	TECK-MBB Relay	RSR-002-0	
	Slide switch	RSH-001-A	
	Heat sink	RNB-122-0	
T101	Matching transformer	T61-408-A	
T201	Matching transformer	T61-408-A	
T301	Matching transformer	T61-408-A	
T401	Matching transfomrer	T61-408-A	

19-4 PREAMP UNIT (RWF-002)

SEMICONDUCTORS

Symbol	Description	Part No.	
Q101	Transistor 2SC458LG-C		
Q102	Transistor 2SC458LG-C		
Q201	Transistor 2SC458LG-C		
Q202	Transistor 2SC458LG-C		
Q301	Transistor 2SC458LG-C		
Q302	Transistor 2SC458LG-C		
Q401	Transistor 2SC458LG-C		
Q402	Transistor 2SC458LG-C		

RESISTORS

Symbol	Description		Part No.	
VR101	Semi-fixed	15k	RCP-004-0	
VR201	Semi-fixed	15k	RCP-004-0	
VR301	Semi-fixed	15k	RCP-004-0	
VR401	Semi-fixed	15k	RCP-004-0	
R101	Carbon film	100k	RD¼PS104K	
R102	Carbon film	150k	RD¼PS154K	
R103	Carbon film	390	RD¼PS391K	
R104	Carbon film	220k	RD¼PS224K	
R105	Carbon film	15k	RD¼PS153K	
R106	Carbon film	2.7k	RD¼PS272K	
R107	Carbon film	8.2k	RD¼PS822K	
R108	Carbon film	18k	RD¼PS183K	
R109	Carbon film	330k	RD¼PS334K	

Symbol	Description		Part No.	
R201	Carbon film	100k	RD¼PS104K	
R202	Carbon film	150k	RD¼PS154K	
R203	Carbon film	390	RD¼PS391K	
R204	Carbon film	220k	RD¼PS224K	
R205	Carbon film	15k	RD¼PS153K	
R206	Carbon film	2.7k	RD¼PS272K	
R207	Carbon film	8.2k	RD¼PS822K	
R208	Carbon film	18k	RD¼PS183K	
R209	Carbon film	330k	RD¼PS334K	
R301	Carbon film	100k	RD¼PS104K	
R302	Carbon film	150k	RD¼PS154K	
R303	Carbon film	390	RD¼PS391K	
R304	Carbon film	220k	RD¼PS224K	
R305	Carbon film	15k	RD¼PS153K	
R306	Carbon film	2.7k	RD¼PS272K	
R307	Carbon film	8.2k	RD¼PS822K	
R308	Carbon film	18k	RD¼PS183K	
R309	Carbon film	330k	RD¼PS334K	
R401	Carbon film	100k	RD¼PS104K	
R402	Carbon film	150k	RD¼PS154K	
R403	Carbon film	390	RD¼PS391K	
R404	Carbon film	220k	RD¼PS224K	
R405	Carbon film	15k	RD¼PS153K	
R406	Carbon film	2.7k	RD¼PS272K	
R407	Carbon film	8.2k	RD¼PS822K	
R408	Carbon film	18k	RD¼PS183K	
R409	Carbon film	330k	RD¼PS334K	

CAPACITORS

Symbol	Description			Part No.	
C101	Electrolytic	22	25V	CEA220P25	
C102	Electrolytic	10	25V	CEA100P25	
C103	Ceramic	100p	50V	CCDSL101K50	
C104	Ceramic	100p	50V	CCDSL101K50	
C105	Electrolytic	47	6.3V	CEA470P6R3	
C106	Electrolytic	10	25V	CEA100P25	
C107	Electrolytic	10	25V	CEA100P25	
C108	Ceramic	0.0047	50V	CCDSL472K50	
C201	Electrolytic	22	25V	CEA220P25	
C202	Electrolytic	10	25V	CEA100P25	
C203	Ceramic	100p	50V	CCDSL101K50	
C204	Ceramic	100p	50V	CCDSL101K50	
C205	Electrolytic	47	6.3V	CEA470P6R3	
C206	Electrolytic	10	25V	CEA100P25	
C207	Electrolytic	10	25V	CEA100P25	
C208	Ceramic	0.0047	50V	CCDSL472K50	
C301	Electrolytic	22	25V	CEA220P25	
C302	Electrolytic	10	25V	CEA100P25	
C303	Ceramic	100p	50V	CCDSL101K50	
C304	Ceramic	100p	50V	CCDSL101K50	
C305	Electrolytic	47	6.3V	CEA470P6R3	
C306	Electrolytic	10	25V	CEA100P25	
C307	Electrolytic	10	25V	CEA100P25	
C308	Ceramic	0.0047	50V	CCDSL472K50	
C401	Electrolytic	22	25V	CEA220P25	
C402	Electrolytic	10	25V	CEA100P25	
C403	Ceramic	100p	50V	CCDSL101K50	
C404	Ceramic	100p	50V	CCDSL101K50	
C405	Electrolytic	47	6.3V	CEA470P6R3	

Symbol	Description			Part No.	
C406	Electrolytic	10	25V	CEA100P25	
C407	Electrolytic	10	25V	CEA100P25	
C408	Ceramic	0.0047	50V	CCDSL472K50	

PIONEER ELECTRONIC CORPORATION
15-5, 4-Chome, Ohmori-nishi, Ohta-ku, Tokyo, Japan
U.S. PIONEER ELECTRONICS CORPORATION
178 Commerce Road, Carlstadt New Jersey 07072 U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V.
Noorderlaan 83, 2030 Antwerp, Belgium