

Edition May 1971

Dual 1211 Service Manual

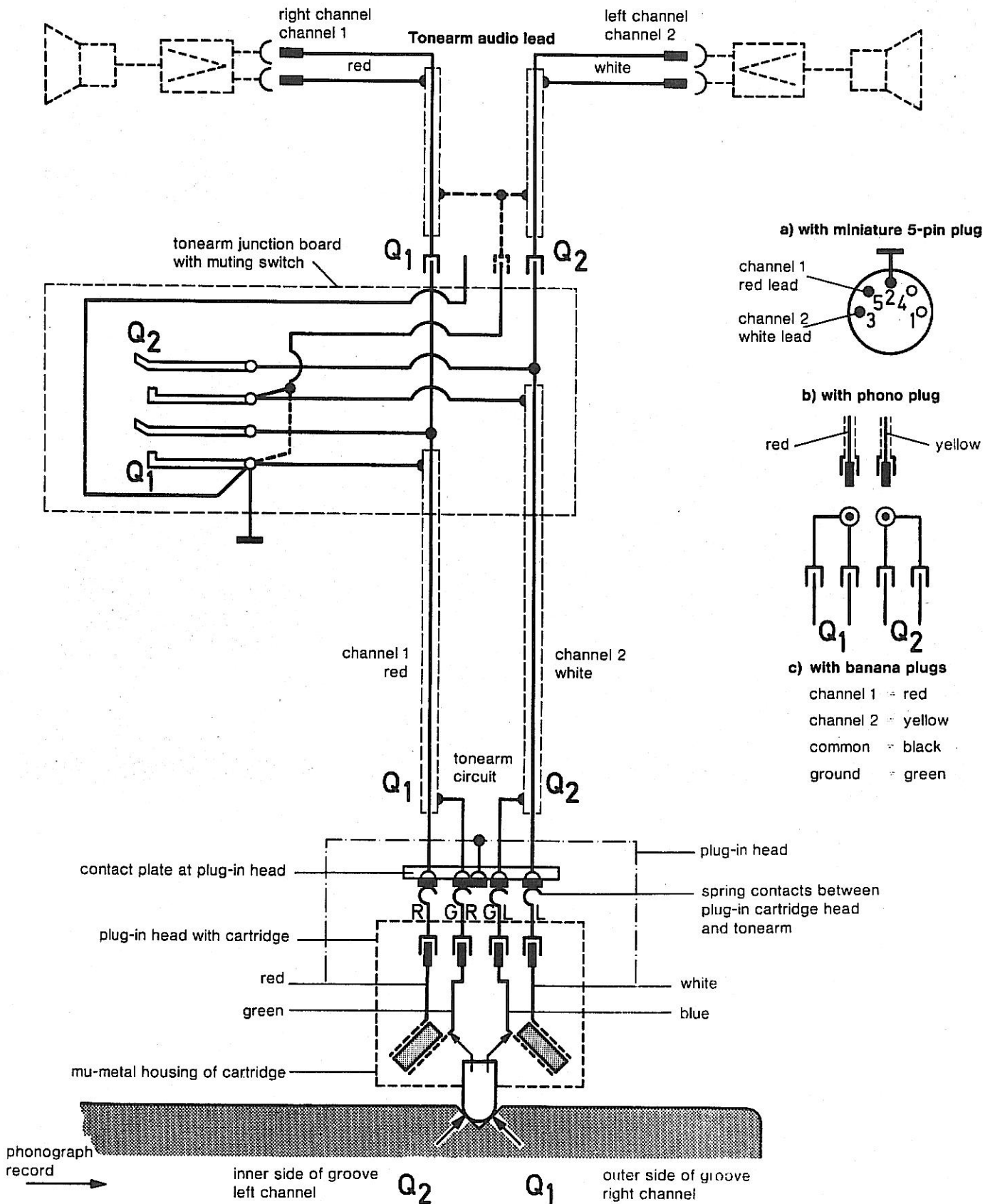


Technical data

Line frequency:	alternating, 50 or 60 cycle, with appropriate motor pulleys
Line voltage:	selector for 110 or 220 volts
Drive:	2-pole Dual single-phase induction motor or 4-pole asynchronous motor with radialelastic suspension
Power consumption:	10 watts approximately at 220 V, 50 cycle
Current requirements:	60 ma. maximum at 220 V, 50 cycle 115 ma. maximum at 117 V, 60 cycle
Turntable speeds:	33 1/3, 45 and 78 r.p.m.
Speed adjustment:	adjustment of 1 semitone (6 %) at all three turntable speeds
Turntable:	weight 3.2 lbs., dia 10 5/8"
Wow and flutter:	less than ± 0.17 %
Rumble:	less than 35 dB below signal level
Signal-to-noise ratio:	less than 55 dB below signal level
Tonearm:	torsionally rigid, tubular metal arm with vertical needle bearings, horizontal ball bearings. Min. stylus force: 3 p
Cartridge holder:	removable, suitable for acceptance of cartridges having 1/2" mounting and possessing a weight of 1 - 8 grams
Weight:	9.7 lbs. without packing
Dimensions and mounting cutouts:	see installation instructions

Dual Gebrüder Steidinger · 7742 St. Georgen/Schwarzwald

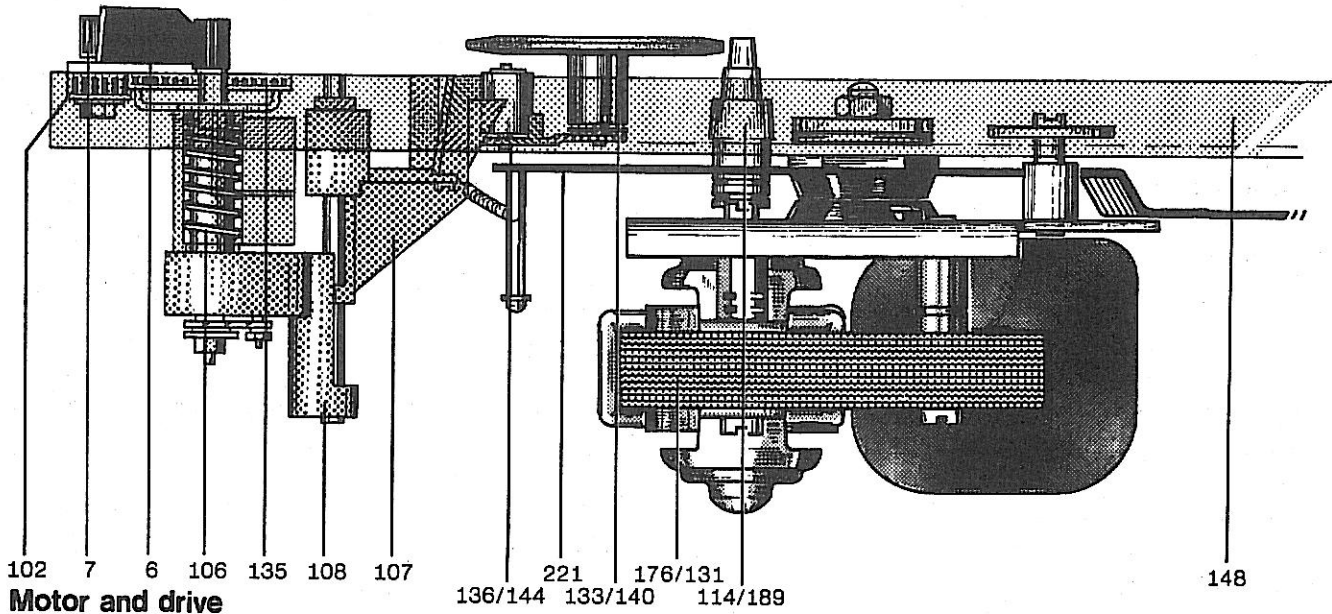
Fig. 1 Tonearm hookup schematic



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Fig. 2 Motor suspension and turntable drive



The turntable platter and the mechanism are driven by either a 4-pole (131) or a 2-pole (176) induction motor. Both motors have a balanced armature, polished bearing surfaces and are guaranteed vibration-free. The 4-pole motor has the additional advantage of a very small stray magnetic field.

The speed of the motors is constant over a supply voltage range of $\pm 10\%$. Deviations in speed depend on, and are proportional to, line frequency. Adaptation of the motor to 50 or 60 Hz power is accomplished by changing the motor pulley (114/189).

2-pole motor:
 pulley for 50 Hz part no. 212 135
 pulley for 60 Hz part no. 212 136

4-pole motor:
 pulley for 50 Hz part no. 220 970
 pulley for 60 Hz part no. 220 971

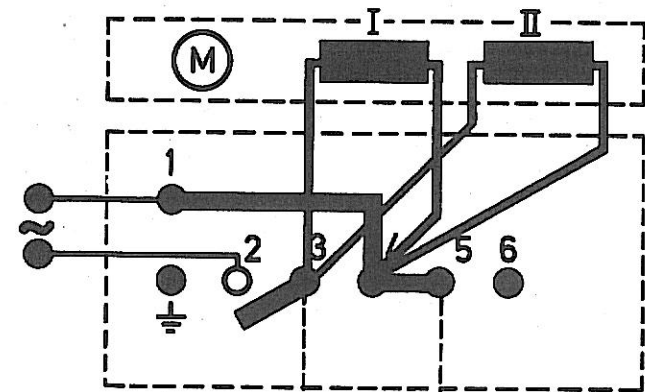
The motor pulley is secured to the motor shaft by a setscrew. When a pulley is replaced or exchanged, it must be set at the correct height (see Figs. 5 and 6).

The turntable platter is driven by the idler wheel (133/140) which is automatically disengaged from the motor pulley when the unit is shut-off, in order to protect its driving surface.

Turntable speeds of $33 \frac{1}{3}$, 45, 78 rpm are selected by raising or lowering the idler wheel (133/140) to the appropriate step on the motor pulley.

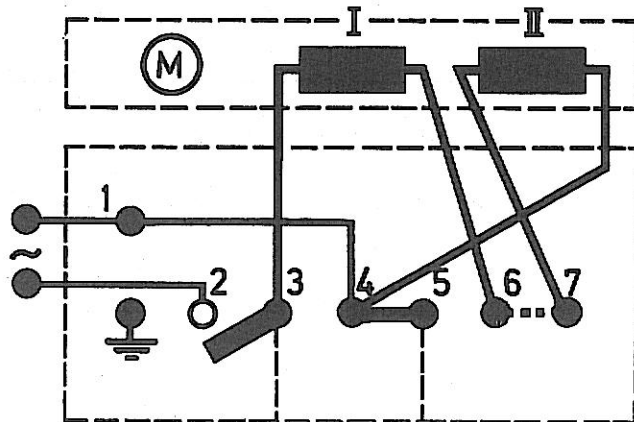
When the selector lever (6) is moved, the selector segment (105) rotates. This causes the lever (107) fitted in the slot of the selector segment to move in a vertical direction. The idler wheel (133/140) mounted on the swinging arm (136/144) is lifted off the motor pulley and set down again on the motor pulley step for the adjacent speed.

Fig. 3 Motor field connections (less voltage selector)



110/125 V

Fig. 4 Motor field connections (with voltage selector)

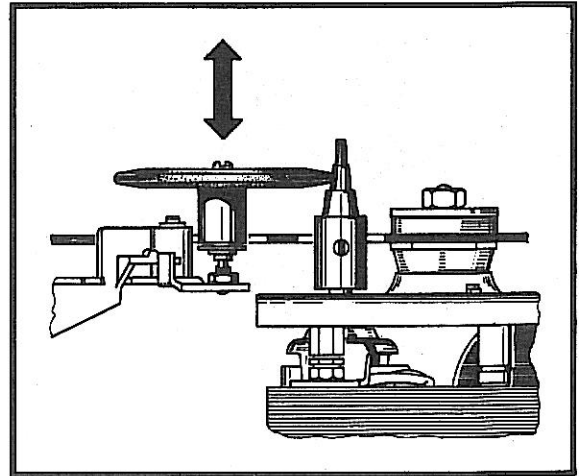


220/240V

Pitch Control

For turntable speeds 33 1/3, 45 and 78 rpm, the unit incorporates a voltage-independent pitch control, which permits a turntable speed variation of up to 6% (approximately one semitone). When the pitch control knob (7) is turned, the switch segment (105) and the switch lever (107) attached to it are moved up or down. This vertical displacement changes the position of the idler wheel on whatever step of the motor pulley it has been placed on (by the speed selector), and, due to the tapered shape of the pulley, effects approximately $\pm 3\%$ variation in speed.

Fig. 5 Motor pulley position
(2-pole motor)



Symptom	Cause	Remedy
Turntable does not run when unit is plugged in and start switch operated	a) Current path to motor interrupted b) Idler wheel (133/140) not in contact with platter c) Motor pulley loose	a) Check connection at switch plate and voltage selector b) Check switch lever assembly (107) c) Tighten motor pulley
Turntable does not come up to speed	a) Motor pulley is not correct for local line frequency b) Slippage between idler wheel (133/140) and motor pulley or platter c) Excessive friction in motor, drive wheel or platter bearings	a) Change motor pulley b) Clean friction surfaces of idler wheel, motor pulley and turntable platter. If necessary, replace drive wheel. Once the drive surface of the platter has been cleaned, do not touch it with your fingers c) Clean and oil bearings
Rumble in reproduction	Worn idler wheel	Replace idler wheel (133/140) and clean platter drive surface and motor pulley with greaseless solvent. Once surface are cleaned, do not touch them with your fingers.

Symptom

Correct nominal speed obtained only at extreme settings of pitch control

Cause

Idler wheel does not contact motor pulley correctly

Remedy

- 4-pole motor
Loosen setscrew (115) and by means of setscrew (113) adjust the motor pulley on the motor shaft so that when the fine speed adjustment knob is in the center of its range, the idler wheel is positioned in the center of the appropriate motor pulley step. (Fig. 6). When adjustment is completed, tighten setscrew (115).
- 2-pole motor
After loosening locknut (143), correct the idler wheel position by turning its shaft (142) so that when the fine speed adjustment knob (7) is in the center of its range, the idler wheel is centered in the appropriate step of the motor pulley (Fig. 5). After adjustment, tighten locknut.

Fig. 6 Motor pulley position
(4-pole motor)

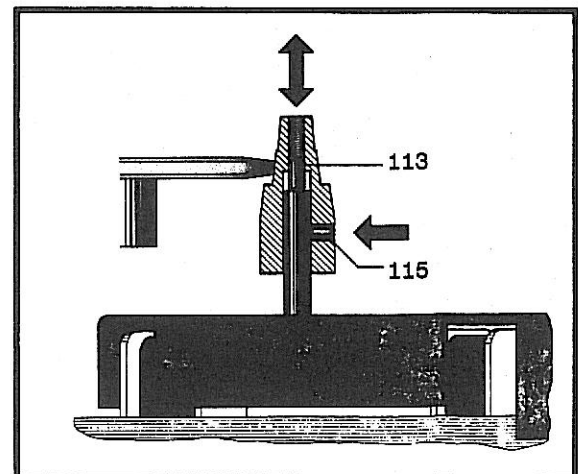
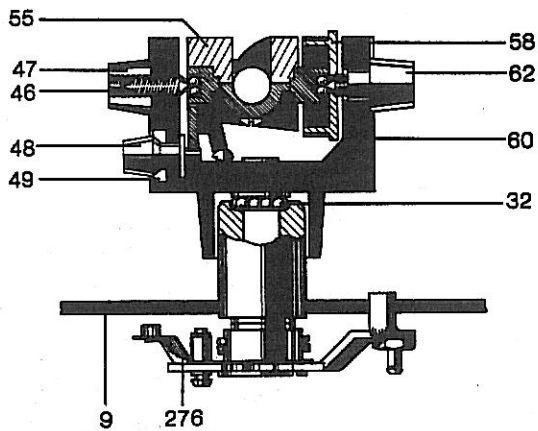


Fig. 7 Tonearm bearing assembly



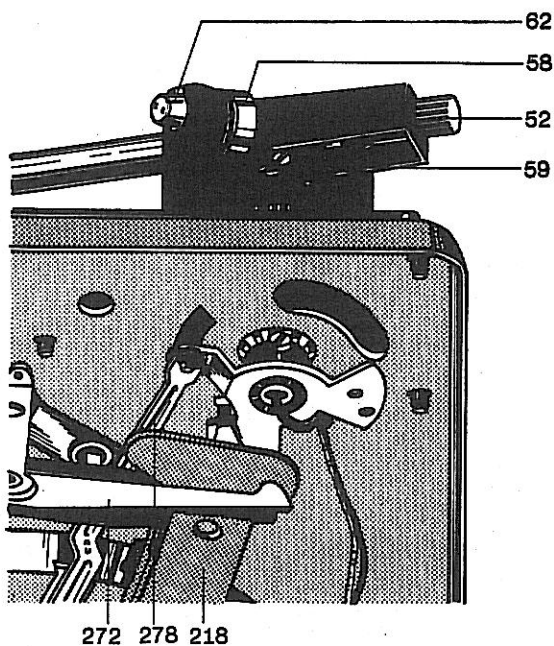
The tonearm and its suspension

The tonearm of the Dual 1211 is balanced by springtension, held vertically by needle bearings and horizontally by ball bearings. The tonearm head is removable. Before setting stylus pressure according to the cartridge used, the arm has to be balanced at zero. The tonearm is lifted by turning knurled screw (52) counterclockwise (as seen from the front), and moved down by turning it clockwise. Cartridges between 1 to 8 grams can be balanced, piezo-electric (crystal) cartridges have to be used on units with 2 pole motors. The stylus pressure is changed by turning the numbered springhousing (58), which increases or decreases the tension on the enclosed spring. Pressure can be regulated from 0 to 5.5 grams continuously, minimum pressure 3.0 grams.

Instructions to replace the complete tonearm and bearing assembly

1. Tighten set in repair-jig, set pressure-dial to zero and lock tonearm in rest.
2. Turn unit upside down and unsolder tonearm leads.
3. Remove main-lever (218) and linking-lever (272).
4. Remove lock-washer (280) and skating-disc (279), remove shut-off slide (278) from eccentric bolt on segment.
5. Loosen cylinder-head screws (274/275) and remove segment (276) with lifting bolt (250).
6. Loosen lock-washer (177), turn unit right-side up and pull the complete tonearm with bearing frame assembly upwards out.

Fig. 8 Tonearm bearing assembly (under view)



Installation of tonearm complete with bearing frame assembly has to be done in reversed order. The unit is in normal position. Check ball bearings (14 steel-balls 2 mm diameter), insert tonearm complete with bearing frame assembly and lock in rest. With tonearm held in place, turn set upside down, push lock washer (177) into the notch at the shaft of the bearing frame assembly. Put on segment (276). Before tightening screws (274/275), check tonearm position on tonearm rest, which is correct, if tonearm sinks into rest without hesitation.

Replacement of tonearm

To remove the tonearm from the bearing frame, the pressure dial has to be set at zero, after unsoldering the tonearm leads. Unhook tension spring (59). Remove locknut (47) with threaded rod (46) and bearing screw (62) (left threaded), remove tonearm carefully out of bearing frame.

Symptom

Tonearm head is not parallel to turntable platter

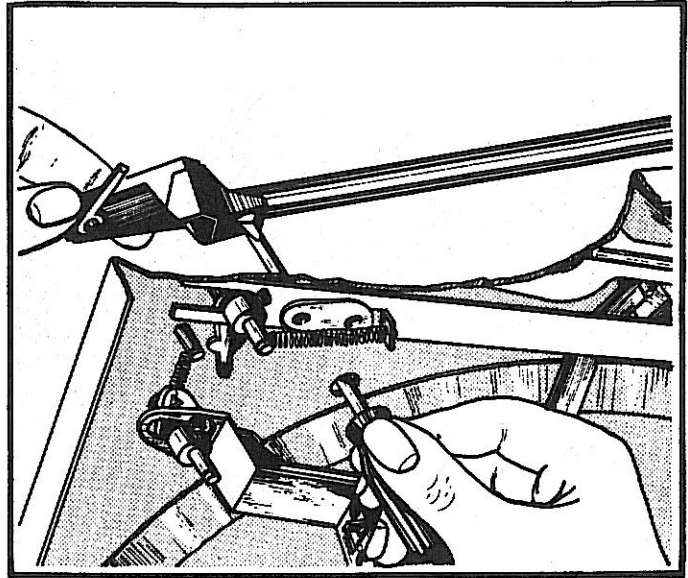
Cause

Orientation of tonearm head on tonearm tube has altered because of jolting in transport (shipping)

Remedy

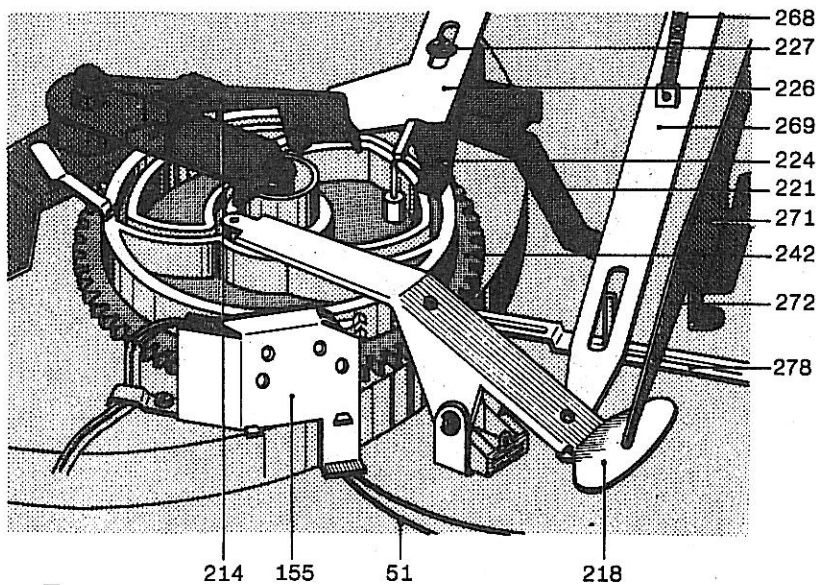
Remove turntable platter with the help of a screwdriver inserted through the hole in the chassis placed there for the purpose. Loosen screw on tonearm head. After correcting the tonearm head, tighten screw. (Fig. 9)

Fig. 9



Symptom	Cause	Remedy
Stylus skips	a) Tonearm not balanced	a) Balance tonearm according to operating instructions
	b) Stylus force too low	b) Set stylus force to cartridge manufacturer's recommended value
	c) Stylus worn or chipped	c) Replace stylus
	d) Excessive friction in tonearm bearing	d) Check tonearm horizontal pivot
	e) Ball (255) missing from shut-off rail	e) Replace ball (255)
Tonearm sets down beside tonearm rest	Arm segment(276) incorrectly adjusted	Correct adjustment: Loosen machine screw (274/275) and rotate segment(276) until adjustment is correct, namely when arm lowers onto rest without binding. Tighten screw
Horizontal pivot friction too high	Tonearm is set too high on tonearm lift. Main lever jams against guide pin of lift screw assembly	Stylus should be no farther from record surface than 1/4". Adjust
Vertical movement of tonearm is impeded during set-down cycle	a) Bearing friction too high	a) Check bearing screw (46) and arm balance
	b) Lift screw (250) jams in guide sleeve of arm segment (255)	b) Remove and clean lift screw

Fig. 10 Tonearm guide mechanism



Tonearm movements

A guide groove located on the underside of the main cam (242) controls the automatic lift and set-down of the tonearm as the cam rotates through 360°. Tonearm

Tonearm lift (Cue control)

The tonearm lift permits the tonearm to be set down on the record safely at any desired point except the shut-off area (near the record label).

Pulling the tonearm lift towards the front turns the drive washer (261). This moves the connecting lever (272), main lever (218) and lift screw (250) to raise the tonearm.

After the tonearm is moved (by hand) to the desired spot on the record, the tonearm lift handle is lightly tapped towards the rear to

lift and lowering are controlled by the main lever (218) and the lift screw (250). Horizontal movements are controlled by the main lever (218) and the segment (276). Setting the changer for playback of 7", 10" or 12" discs is done with the indexing lever (24). Setdown points are determined by the eccentric portion of the arm positioning slide (269) and the indexing lever (267).

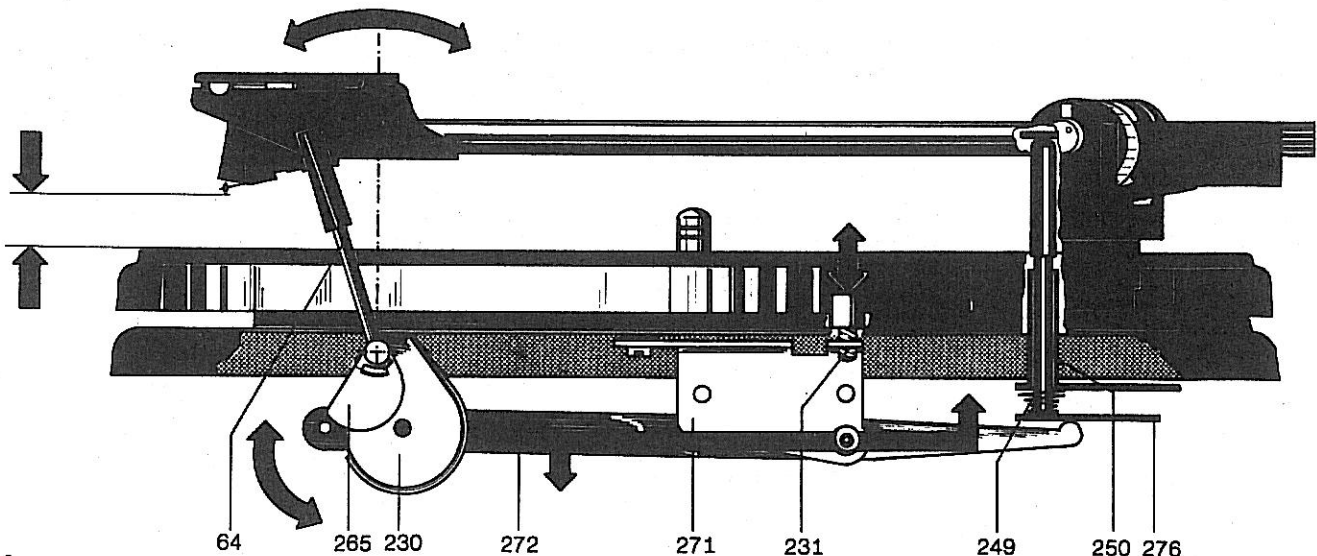
Horizontal movement of the tonearm is limited by the arm segment striking the arm positioning slide (269). During the change cycle, the main lever (218) raises the arm positioning slide, bringing it within reach of the spring stud. On completion of the change cycle (setdown of the tonearm on the record), the arm positioning slide (269) is again released and returns to its normal position. It thus moves out of reach of the spring stud, permitting the tonearm to move horizontally without hindrance, while playing the record.

release the mechanism. The connecting lever (272) and the leaf spring (215) of the main lever (193) are freed, allowing the tonearm to fall. The rate of fall is controlled by silicone grease on the drive washer (261).

The height of the stylus above the record can be varied from zero to about 1/4" by adjusting setscrew (231).

Turning it to the right increases the height, turning it to the left decreases the height.

Fig. 11 Tonearm lift (tonearm raised)



Symptom	Cause	Remedy
Tonearm misses edge of record	<p>a) Set-down incorrectly adjusted</p> <p>b) Record not standard size</p> <p>c) Friction surfaces of tonearm clutch dirty</p>	<p>a) Adjust set-down with a 12" record so that stylus touches record approximately 1/16" inside edge of record. Adjustment will be correct for other sizes</p> <p>b) Use standard records</p> <p>c) Clean clutch surfaces</p>
Tonearm strikes record during change cycle	Tonearm height incorrectly set	Adjust arm height with screw (48). Height is correct when stylus tip is 1/16" to 1/8" above start switch (25) when arm is removed from rest lowered
Tonearm does not move on to record when drop cycle is started	Damping too great, drive washer dirty	Loosen nut (229) and washer (230) and drive washer (261). Clean thoroughly. Coat both sides evenly with silicone grease, re-assemble and wipe off excess
Tonearm lowers too quickly when drop cycle is started	Too little damping	Loosen nut (229) and washer (230) and drive washer (261). Clean thoroughly. Coat both sides evenly with silicone grease, re-assemble and wipe off excess
Tonearm returns to rest immediately after being placed on record manually	Shut-off mechanism has shifted out of position during shipping	Before using changer after moving, run it through start cycle with tonearm locked on rest

Start cycle

Moving the start switch (25) moves the switch lever (224) towards the main cam (242), initiating the following sequence.

- a) The set screw of the switch lever assembly (224) turns the switch arm (221) mounted on the grooved shaft (227). Via a tension spring, this actuates the rocker assembly (107) and engages the idler (133/140) between the platter (5) and the motor pulley (114/189). At the same time, the power switch (182) is actuated by the switch slide (184) through the switch arm, and the turntable begins to rotate.
- b) The switch lever (224) is brought within reach of the cam follower lever (245), so that it is pushed into the change position after the rotation of the main cam.

Fig. 12 Start position

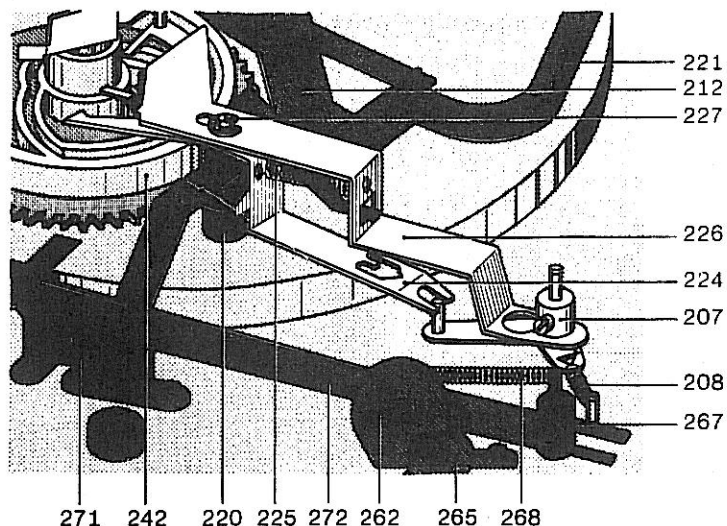
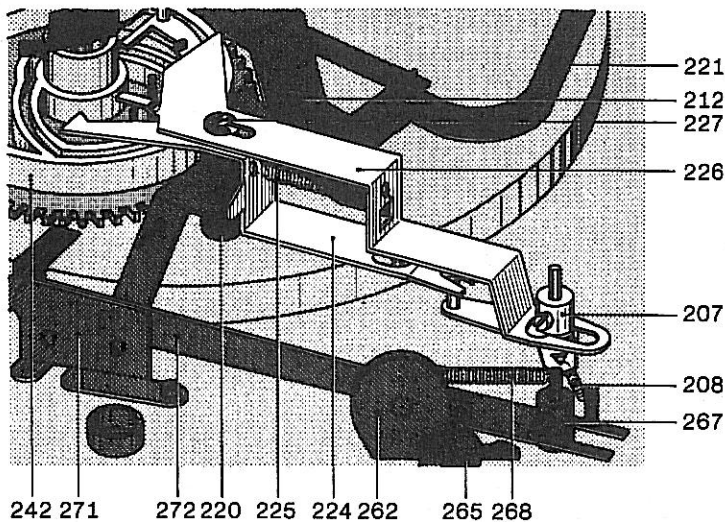


Fig. 13 Stop position

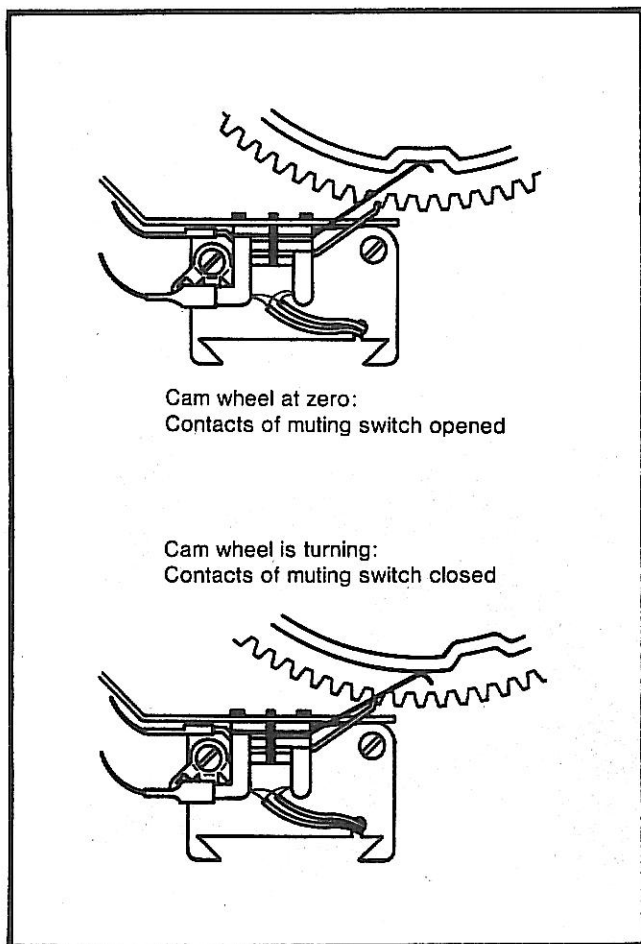


Moving the operating switch also releases the start lever (226), pulling it towards the main cam by means of the tension spring (225). This causes coil spring to bring the shut-off lever (238) within range of the main cam dog. Thus the shut-off lever drives the main cam.

To prevent malfunctioning, the operating switch is locked during the start cycle (that is, while the main cam is turning). Just before the main cam reaches its neutral position (at the end of the change cycle), the start lever is pushed clear of the main cam by the start pin of the main cam. This restores the switch lever and operating switch to their original positions.

After installation and also after moving the changer, the unit should be started with the tonearm locked on the rest. This will automatically re-adjust the shut-off lever, which may have shifted out of position.

Fig. 14 Muting switch



Manual start

When the tonearm (15) is swung inward by hand, the pawl on the switch arm drops into a support on the base plate, holding the switch arm in this position and the idler wheel (133/140) in contact with the platter. The slide (184) linked with the switch arm actuates the power switch and sets the turntable platter rotating.

On reaching the run-out groove, the tonearm automatically returns to its rest position and the unit shuts itself off. (See shut-off mechanism, next side). However, if the tonearm is lifted off the record manually and returned to the rest, the tabs of the arm segment (276) release the pawl. The torsion spring (220) then returns the switch arm to its initial position, opening the power switch and disengaging the idler wheel.

Stop switching

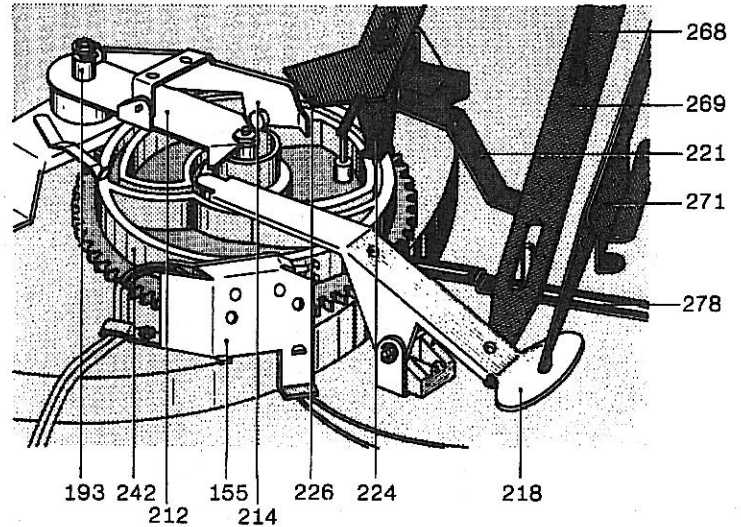
When the operating lever is moved to "stop", the starting lever (226) is pushed forward. As a result the shut-off linkage comes into contact with the main cam. The swinging lever (245) remains in its stop position.

When the tonearm is on its rest and the operating lever is pushed to "stop", the operating lever must not jam.

Muting switch

To prevent the noises of the change cycle from being sent through the audio system, the apparatus is fitted with a short-circuiting (muting) switch (155). The switch springs for both channels are actuated by the main cam (242). In the tonearm rest position, the muting switch is opened.

Fig. 15 Record drop

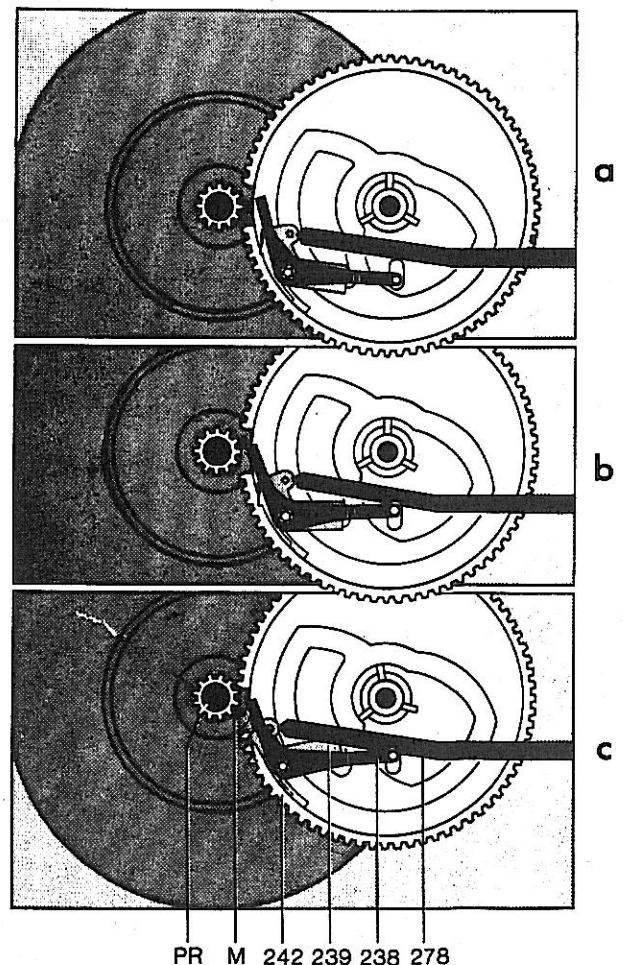


Record drop

Insert the appropriate spindle - AW 3 for standard records (7 mm center hole) or AS 12 for 45 rpm records (38 mm center hole).

Record-drop is initiated by the rotation of cam, whose cam surface guides the cam rocker, pushing the change actuator stud and releasing a record by means of the automatic spindle. The main cam is designed so that a record can drop only when the tonearm is above the tonearm rest and thus out of the reach of the largest possible records (12" diameter).

Fig. 16 Actuating "change" or "shut-off"



Shut-off and change cycle

The dog (M) on the turntable platter gear (PR) and the shut-off lever (238) actuate both the change cycle at the end of the record as well as the shut-off after the last record in a stack is played.

At the end of a record, the tonearm moves towards the center at an accelerated rate due to the increased pitch of the grooves. This motion carries the shut-off lever (238) towards the dog by means of the shut-off slide (278). The eccentric dog pushes the shut-off lever (238) back at each revolution as long as the tonearm advance is only one normal record groove.

The run-out groove with its steeper pitch moves the shut-off lever against the dog with greater force, engaging the shut-off lever (238) and causing the main cam (242) to be driven out of its neutral position by the turntable platter gear.

Fig. 17 Change cycle

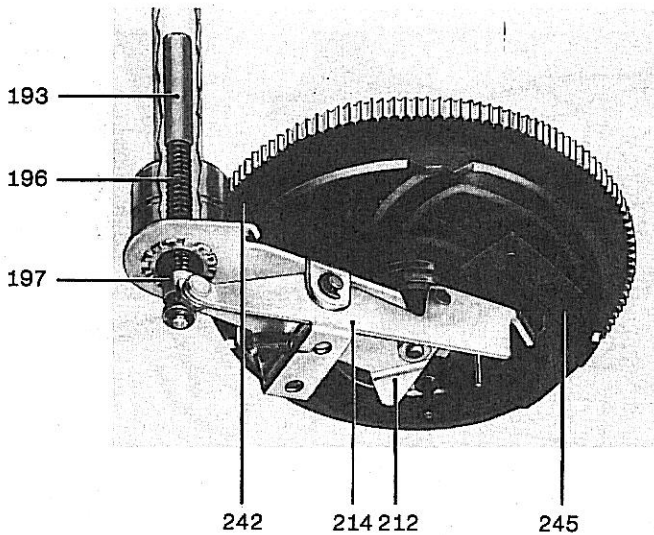


Fig. 18

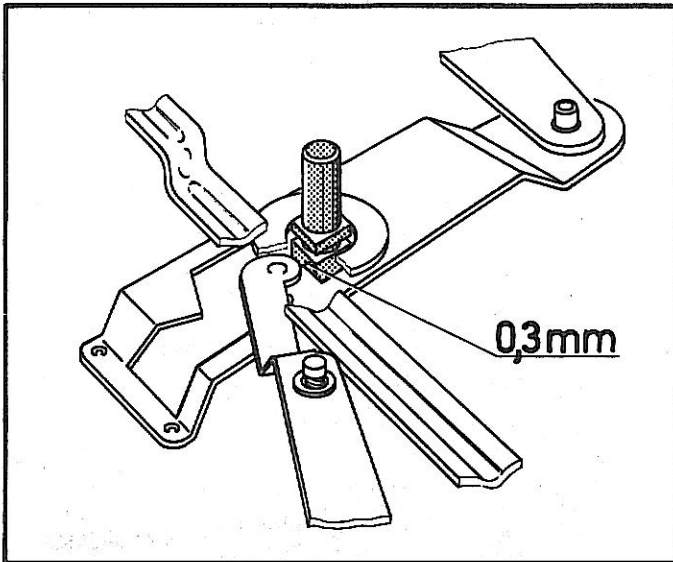
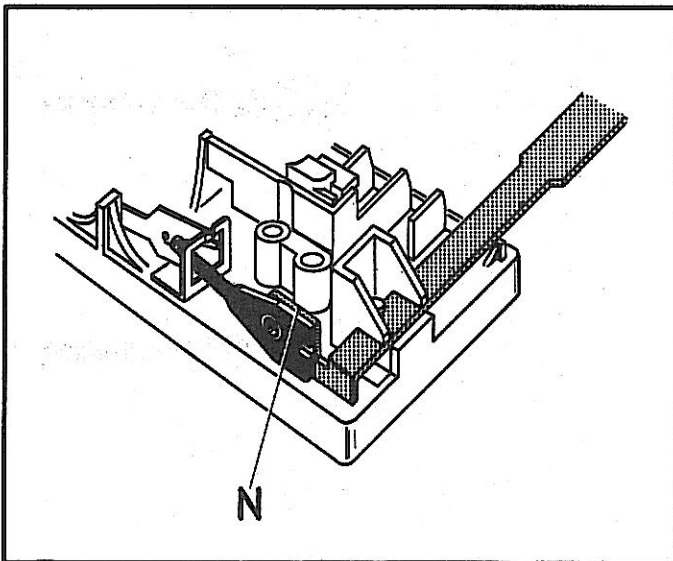


Fig. 19



Shut-off mechanism

Shut-off and change functions are determined by the position of the cam follower lever (245). After every start or record-drop, the cam follower lever is brought to its stop position by the main lever (218) (longer end towards the center of the main cam). As the record is dropped the cam follower lever (245) is turned to its start position by the cam rocker (214), so that the tonearm can swing in toward the record and be lowered on to it. If there are no more records on the spindle, and the cam rocker cannot turn the cam follower lever, the lever remains in its stop position and allows the tonearm to swing to its rest position.

When the main cam (242) returns to its neutral position, the switch arm (221) drops into a cut-out in the main cam, opening the power switch (182) and disengaging the drive idler (133/140).

Symptom

Turntable stops after automatic setdown of the tonearm

Cause

- a) Switch arm (221) is not latched by pawl (234)
- b) Power switch opens

Remedy

- a) Loosen screw and turn the short arm piece on the long switch-arm piece. Move the tonearm in and turn the main cam to its neutral position and adjust for about 1/64" play between cam and rectangular bolts riveted into the chassis.
- b) As the tonearm moves in, switch slide (184) must overtravel by about 1/64". Its tab must engage the switch.

Symptom

Last record keeps repeating

Cause

Defective spindle

Remedy

Replace spindle

Symptom

Record does not drop when unit is switched to "start"

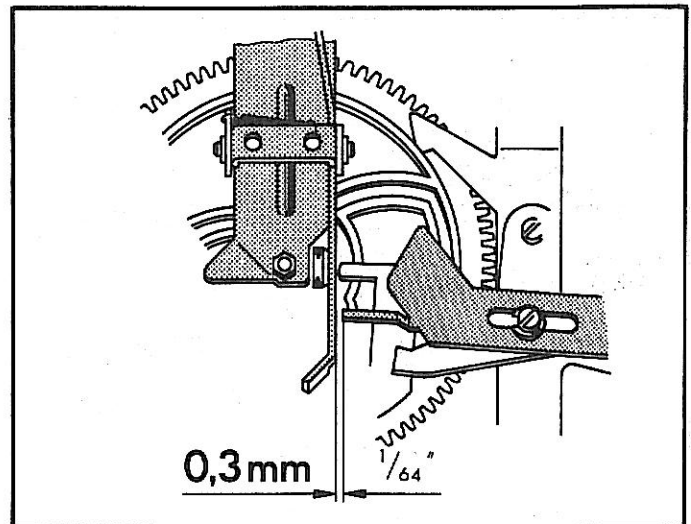
Cause

Inadequate engagement between change lever and cam rocker (214)

Remedy

Adjust clearance between change lever and cam rocker to $1/64$ " minimum with apparatus in "start" position.

Fig. 20



Symptom

Record drops when unit is switched to "stop"

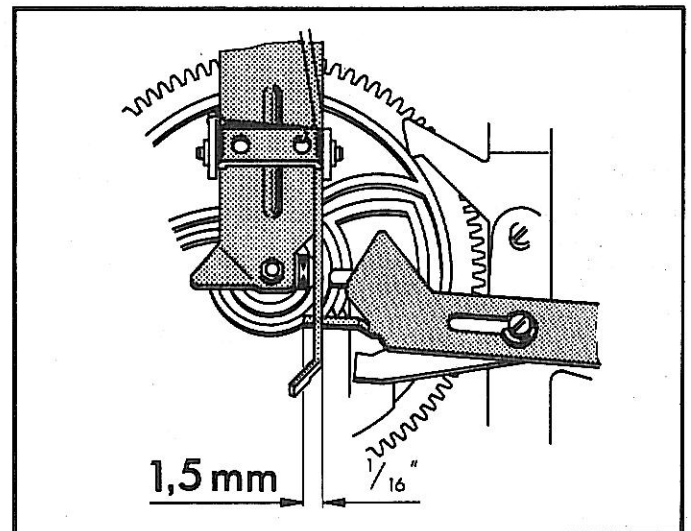
Cause

Cam rocker (214) not caught by start lever

Remedy

Adjust cam rocker so that at the conclusion of the "stop" function the start lever runs about $1/16$ " under the follower.

Fig. 21



Symptom

Records do not drop

Cause

Cam rocker (214) has too little force (travel)

Remedy

Re-adjust eccentric so that when the three supports in the automatic spindle are held in and the main cam is at its neutral, pressing the change screw moves the support about $1/64$ ".

Fig. 22

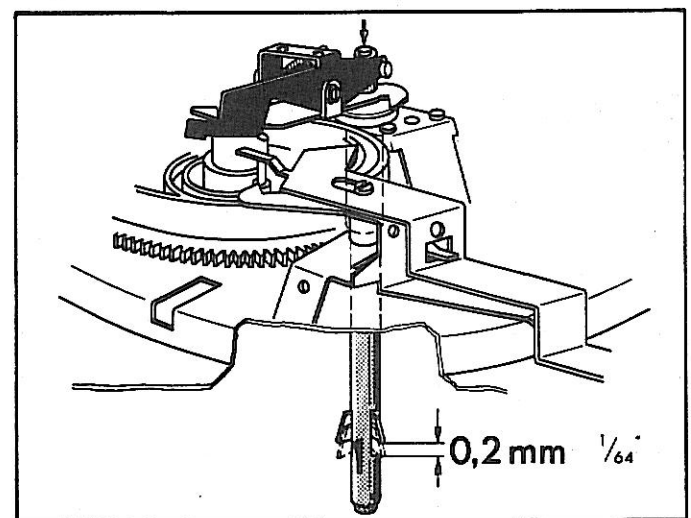
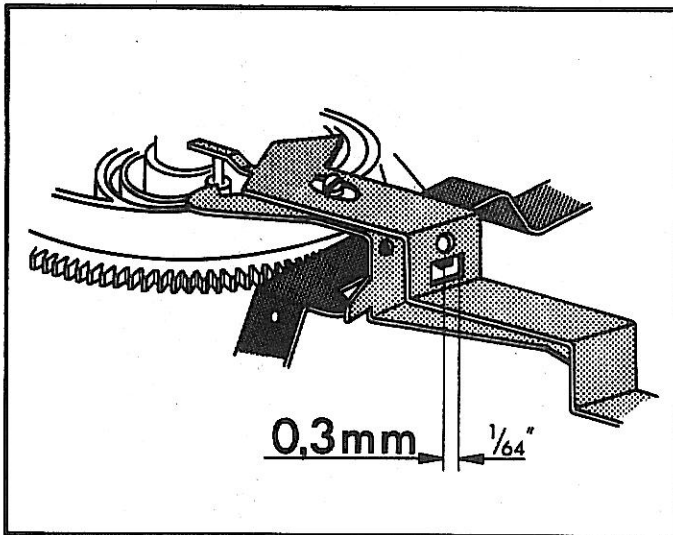


Fig. 23



Symptom

Switch latches into "stop" position when tonearm is at rest.

Cause

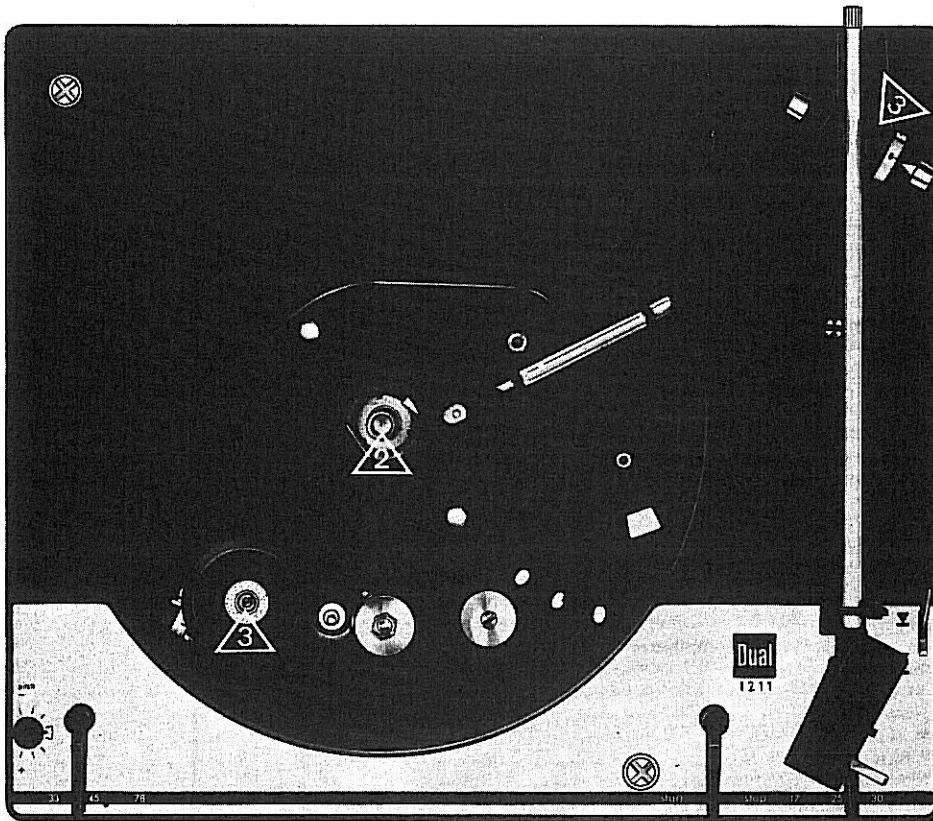
Too much clearance between tab on switch arm (221) and start lever (226).

Remedy

Adjust tab on switch arm so that it clears start lever by $1/64$ " when main cam is in neutral position.

Symptom	Cause	Remedy
During change, stop and start operations, noises from the mechanism can be heard in system speaker	Muting switch misadjusted. Distance between contact springs and shorting contact is too great	Bend contacts so that, in the neutral position of the main cam the spacing between contacts is about 0.02 inch. Clean contacts
No sound	Spacing too small	See above
Motor will not shut off when tonearm is on arm rest	Capacitor across power switch is shorted	Replace capacitor (0.1 μ F, 700 V)
Acoustic feedback	<ul style="list-style-type: none"> a) Chassis parts (for example leads) are touching base cut-out b) Connecting cables are too taut 	<ul style="list-style-type: none"> a) Correct cut-out according to instructions supplied with unit. Move cables b) Allow more slack in cables

Fig. 24 Chassis, viewed from above



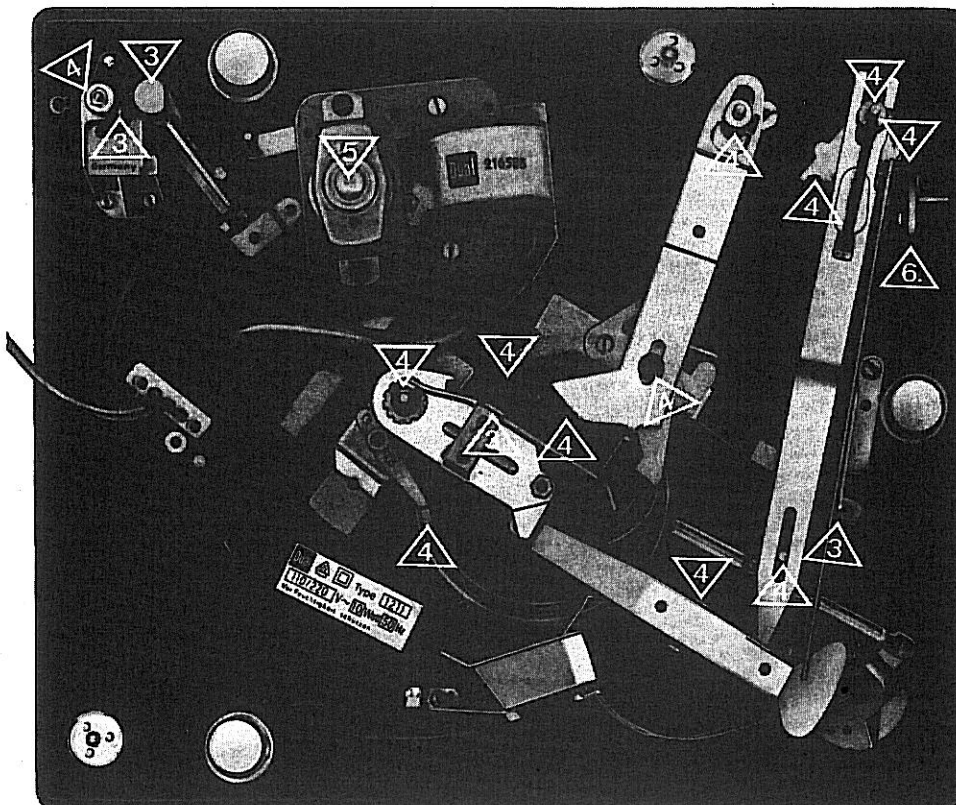
Lubrication






All bearings and sliding points have been properly lubricated during assembly. Re-lubrication is normally not necessary for about two years since all important bearings are provided with oil retainers and sintered bearings.

Lubrication should be applied sparingly. It is of primary importance that no oil grease should get onto the friction surfaces of the drive wheel, motor pulley or turntable, to avoid slippage. For the same reason, avoid touching these parts.

Use the following lubricants:

Fig. 25 Chassis, viewed from below

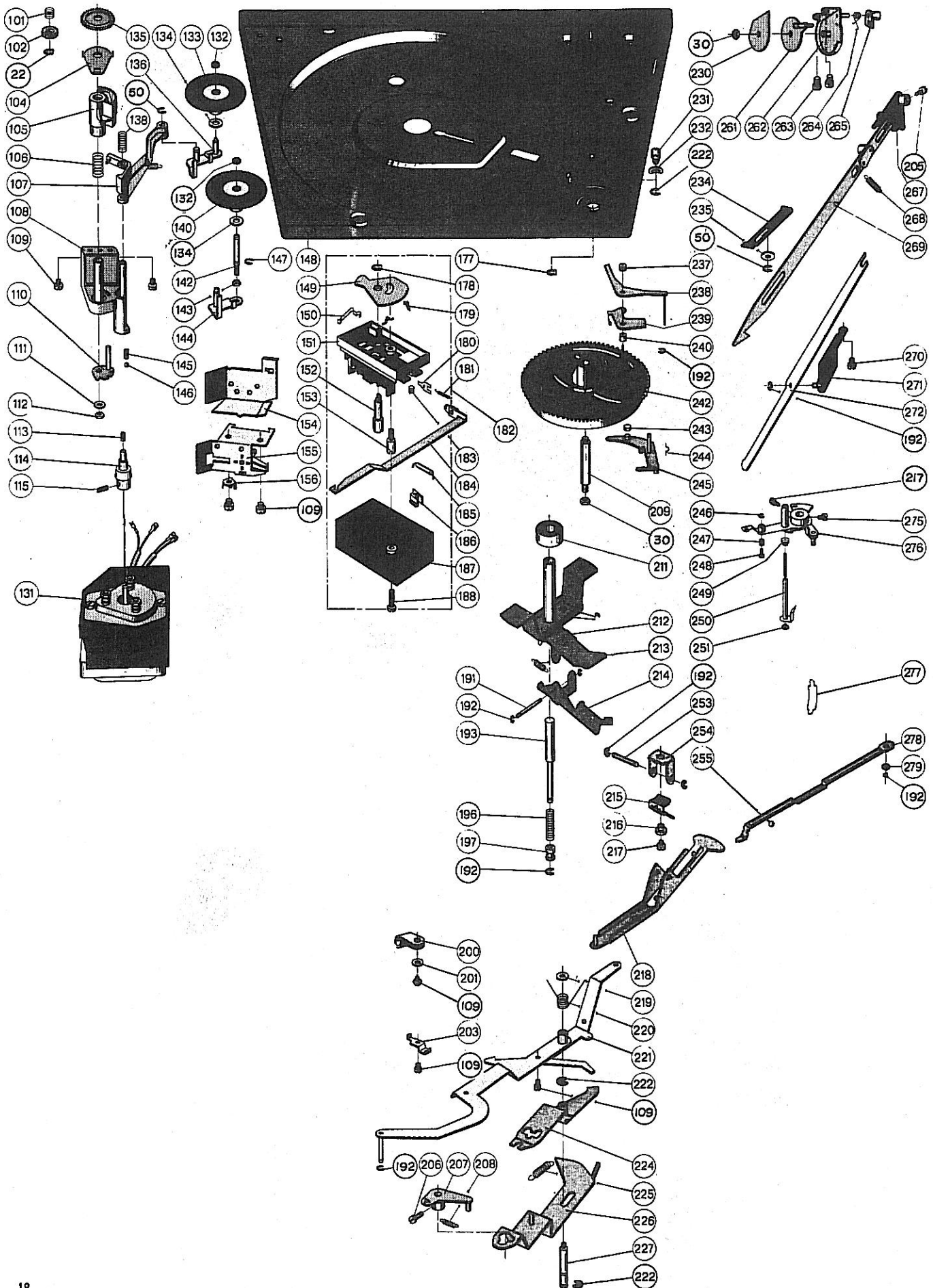


-  Adhesive oil, Renotac No. 342
-  BP oil, Super Viscostatic 10 W/30
-  Shell Alvania No. 2
-  Isoflex PDP 40
-  Wacker siliconoil AK 500 000

Replacement parts

Ref. No.	DUAL Part No.	SONY Part No.	Description	Quantity
2	213 895	3-600-200-00	Changing spindle AW 3	
3	201 452	3-600-201-00	Facing ring 170 mm ϕ	
4	218 667	3-600-202-00	Turntable mat complete, with facing ring 170 mm ϕ	
	214 213	3-600-203-00	Turntable mat	
5	218 666	3-600-204-00	Turntable complete, with turntable mat and facing ring 170 mm ϕ	
	214 212	3-600-205-00	Turntable complete, with mat	
6	219 952	3-600-206-00	Speed change lever, left	
7	219 965	3-600-207-00	Speed regulator knob complete	
8	223 234	3-600-208-00	Blind (cm)	
	223 235	3-600-209-00	Blind (inch)	
9	223 233	3-600-210-00	Chassis complete	
10	214 210	3-600-211-00	Shipping screw assembly complete	
11	220 213	3-600-212-00	Centering disc for single discs	
12	200 709	3-600-213-00	Single play spindle	
13	214 054	3-600-214-00	Washer	
14	200 543	3-600-215-00	Retaining ring	
15	223 230	3-600-216-00	Tonearm complete	
16	223 011	3-600-217-00	Tonearm rest assembly complete	
17	210 362	3-600-218-00	Hex nut BM3	
18	223 001	3-600-219-00	Tonearm head complete	
19	201 132	3-600-220-00	Grip	
20	210 182	3-600-221-00	Bowed lockwasher	
21	210 630	3-600-222-00	Washer 4.2/8/0.5 St.	
22	210 197	3-600-223-00	"C" clip 4 x 0.8	
23	215 430	3-600-224-00	Cartridge mount TK 14	
24	219 954	3-600-225-00	Change lever right	
26	210 816	3-600-226-00	Machine screw M 4 x 4	
27	216 936	3-600-227-00	Spacer (50 Hz)	
28	210 184	3-600-228-00	Bowed lockwasher (50 Hz)	
29	218 155	3-600-229-00	Machine screw M 4 x 6 (50 Hz)	
	217 374	3-600-230-00	Centering screw (60 Hz)	
30	210 366	3-600-231-00	Hex nut BM 4	
31	210 362	3-600-218-00	Hex nut BM 3	
32	209 353	3-600-232-00	Bearing race complete	
33	200 579	3-600-233-00	Spring mounted footing (1 set = 3 pieces)	
35	200 721	3-600-234-00	Bushing isolation mount	
36	200 728	3-600-235-00	Compression spring	
37	200 723	3-600-236-00	Rubber insert isolation mount	
38	200 722	3-600-237-00	Steel cup	
39	210 624	3-600-238-00	Washer 4.2/7/0.3 St	
40	201 623	3-600-239-00	Rubber washer	
41	200 713	3-600-240-00	Washer	
42	200 712	3-600-241-00	Spring cup	
43	200 711	3-600-242-00	Lockwasher	
45	200 718	3-600-243-00	Compression spring	
46	217 438	3-600-244-00	Threaded pin	
47	200 829	3-600-245-00	Stop nut	
48	218 636	3-600-246-00	Set screw	
49	207 839	3-600-247-00	Damping ring	
50	210 146	3-600-248-00	"C" ring 3.2	
51	223 005	3-600-249-00	Contact plate complete	
52	222 125	3-600-250-00	Positioning screw	
53	222 124	3-600-251-00	Holding device	
54	222 122	3-600-252-00	Screw bolt	
55	222 123	3-600-253-00	Cover	
56	222 116	3-600-254-00	Bearing plate complete	
57	211 364	3-600-255-00	Machine screw M 3 x 6	
58	217 894	3-600-256-00	Spring barrel complete	
59	222 115	3-600-257-00	Tension spring	
60	223 231	3-600-258-00	Tonearm bearing support	
61	216 504	3-600-259-00	Indicator	
62	217 436	3-600-260-00	Bearing screw complete	
63	223 009	3-600-261-00	Dress-up plate complete	

Fig. 27 Exploded view, parts below chassis



Ref. No.	DUAL Part No.	SONY Part No.	Description	Quantity
64	216 881	3-600-262-00	Lift lever complete	
65	210 353	3-600-263-00	Hex nut BM 2	
66	217 905	3-600-264-00	Damping piece	
67	213 260	3-600-265-00	Pin 2 x 6	
68	214 047	3-600-266-00	Special screw (pierced)	
	214 211	3-600-267-00	Special screw (threaded)	
101	217 376	3-600-268-00	Compression spring	
102	217 026	3-600-269-00	Cam wheel	
104	217 233	3-600-270-00	Speed regulator detent	
105	217 028	3-600-271-00	Switching segment	
106	216 736	3-600-272-00	Compression spring	
107	217 234	3-600-273-00	Switch lever complete (4-pole-motor)	
108	216 558	3-600-274-00	Support complete	
109	210 475	3-600-275-00	Machine screw AM 3 x 5	
110	217 239	3-600-276-00	Groove detent complete	
111	210 642	3-600-277-00	Washer 4.2/10/1.5 St	
112	210 361	3-600-278-00	Hex nut M 3	
113	217 751	3-600-279-00	Threaded pin M 2.6 x 8	
114	220 970	3-600-280-00	Motor pulley, 50 Hz, complete (4-pole-motor)	
115	220 971	3-600-281-00	Motor pulley, 60 Hz, complete (4-pole-motor)	
115	210 220	3-600-282-00	Threaded pin M 2.6 x 3.5	
131	220 973	1-541-809-00	Motor 110/220 V, complete	
132	200 633	3-600-284-00	Lockwasher	
133	217 888	3-600-285-00	Idler wheel complete	
134	200 110	3-600-286-00	Washer	
135	217 027	3-600-287-00	Speed regulator wheel	
136	217 244	3-600-288-00	Idler arm complete (4-pole-motor)	
138	216 737	3-600-289-00	Compression spring	
140	217 888	3-600-290-00	Idler wheel complete	
145	218 629	3-600-291-00	Compression spring	
146	209 358	3-600-292-00	Steel ball 4 mm ϕ	
148	223 233	3-600-293-00	Chassis complete	
149	214 174	3-600-294-00	Contact support	
150	214 176	3-600-295-00	Screen spring	
151	217 060	3-600-296-00	Switch plate, complete, with voltage selector	
	214 206	3-600-297-00	Switch plate, complete, less voltage selector	
	223 006	3-600-298-00	Switch plate, complete, with voltage selector and SEMKO capacitor	
152	214 173	3-600-299-00	Spindle	
153	214 181	3-600-300-00	Screw bolt	
154	201 240	3-600-301-00	Shield	
155	207 447	3-600-302-00	Muting switch	
156	211 614	3-600-303-00	Solder lug	
177	210 149	3-600-304-00	"C" washer 6.0	
178	210 196	3-600-305-00	"C" clip G 3 x 0.6	
179	214 175	3-600-306-00	Contact spring	
180	213 966	3-600-307-00	Snap spring	
181	213 968	3-600-308-00	Tension spring	
182	217 059	3-600-309-00	Power switch complete with voltage selector	
	214 205	3-600-310-00	Power switch complete less voltage selector	
	222 997	3-600-311-00	Power switch complete with voltage selector and SEMKO capacitor	
183	218 986	3-600-312-00	Roller for switch slide	
184	213 970	3-600-313-00	Switch slide complete	
185	203 725	3-600-314-00	Suppressor capacitor	
	221 186	3-600-315-00	SEMKO capacitor	

Ref. No.	DUAL Part No.	SONY Part No.	Description	Quantity
186	213 978	3-600-316-00	Locking device, small	
	213 979	3-600-317-00	Locking device, large	
187	217 062	3-600-318-00	Cover for power switch with voltage selector	
	214 207	3-600-319-00	Cover for power switch less voltage selector	
	223 007	3-600-320-00	Cover for power switch with voltage selector and SEMKO capacitor	
188	210 492	3-600-321-00	Machine screw AM 3 x 15	
191	217 813	3-600-323-00	Shaft	
192	210 145	3-600-324-00	"C" washer 2.3	
193	213 918	3-600-325-00	Change actuator complete	
196	213 920	3-600-326-00	Compression spring	
197	213 921	3-600-327-00	Bushing	
200	210 099	3-600-328-00	Plastic clamp for motor line	
	220 152	3-600-329-00	Plastic clamp for power line	
201	210 586	3-600-330-00	Washer 3.2/7/0.5 St	
203	200 447	3-600-331-00	Cable clamp	
206	218 583	3-600-332-00	Machine screw M 3 x 4	
207	216 773	3-600-333-00	Switch-on lever	
208	216 777	3-600-334-00	Tension spring	
209	200 519	3-600-335-00	Bearing post for cam wheel	
211	200 554	3-600-336-00	Ball bearing	
212	214 201	3-600-337-00	Bearing support complete	
213	213 925	3-600-338-00	Tension spring	
214	213 922	3-600-339-00	Cam rocker complete	
215	201 186	3-600-340-00	Leaf spring	
216	200 458	3-600-341-00	Spacer	
217	210 480	3-600-342-00	Machine screw AM 3 x 6	
218	201 094	3-600-343-00	Main lever complete	
219	210 586	3-600-344-00	Washer 3.2/7/0.5 St	
220	213 940	3-600-345-00	Torsion spring	
221	217 889	3-600-346-00	Switch arm complete	
222	210 147	3-600-347-00	"C" washer 4	
224	218 538	3-600-348-00	Switch lever complete	
225	200 103	3-600-349-00	Tension spring	
226	217 258	3-600-350-00	Start lever complete	
227	217 334	3-600-351-00	Grooved shaft	
230	201 195	3-600-352-00	Cover washer	
231	220 167	3-600-353-00	Set screw	
232	210 187	3-600-354-00	Bowed lockwasher	
234	213 942	3-600-355-00	Latch complete	
235	202 043	3-600-356-00	Washer 5.8/12/0.5 St	
237	220 235	3-600-357-00	Stop nut	
238	220 232	3-600-358-00	Shut-off lever complete	
239	222 690	3-600-359-00	Friction plate complete	
240	221 935	3-600-360-00	Bushing	
242	220 332	3-600-361-00	Cam wheel complete	
243	200 650	3-600-362-00	Sleeve	
244	200 522	3-600-363-00	Snap spring	
245	214 203	3-600-364-00	Cam follower lever complete with sleeve	
246	210 143	3-600-365-00	"C" washer 1.5	
247	201 174	3-600-366-00	Compression spring	

Ref. No.	DUAL Part No.	SONY Part No.	Description	Quantity
248	200 686	3-600-367-00	Spring pin	
249	221 525	3-600-368-00	Conical spring	
250	218 703	3-600-369-00	Lift rod complete	
251	200 527	3-600-370-00	Shaft pin	
253	200 528	3-600-371-00	Shaft	
254	201 185	3-600-372-00	Main lever bracket	
255	209 358	3-600-373-00	Steel ball 4 mm ϕ	
261	217 290	3-600-374-00	Drive washer complete	
262	217 286	3-600-375-00	Support bracket complete	
263	210 469	3-600-376-00	Machine screw AM 3 x 3	
264	217 296	3-600-377-00	Torsion spring	
265	221 527	3-600-378-00	Drive cam	
267	217 264	3-600-379-00	Record size selector lever complete	
268	200 453	3-600-380-00	Tension spring	
269	217 276	3-600-381-00	Arm positioning slide complete	
270	210 511	3-600-382-00	Machine screw AM 4 x 4	
271	217 297	3-600-383-00	Main lever bracket complete	
272	217 300	3-600-384-00	Connecting lever	
275	210 482	3-600-385-00	Machine screw AM 3 x 6 (pierced)	
276	214 209	3-600-386-00	Segment complete	
277	200 687	3-600-387-00	Cranked spring lever	
278	200 688	3-600-388-00	Shut-off slide	
279	201 187	3-600-389-00	Friction desc	

