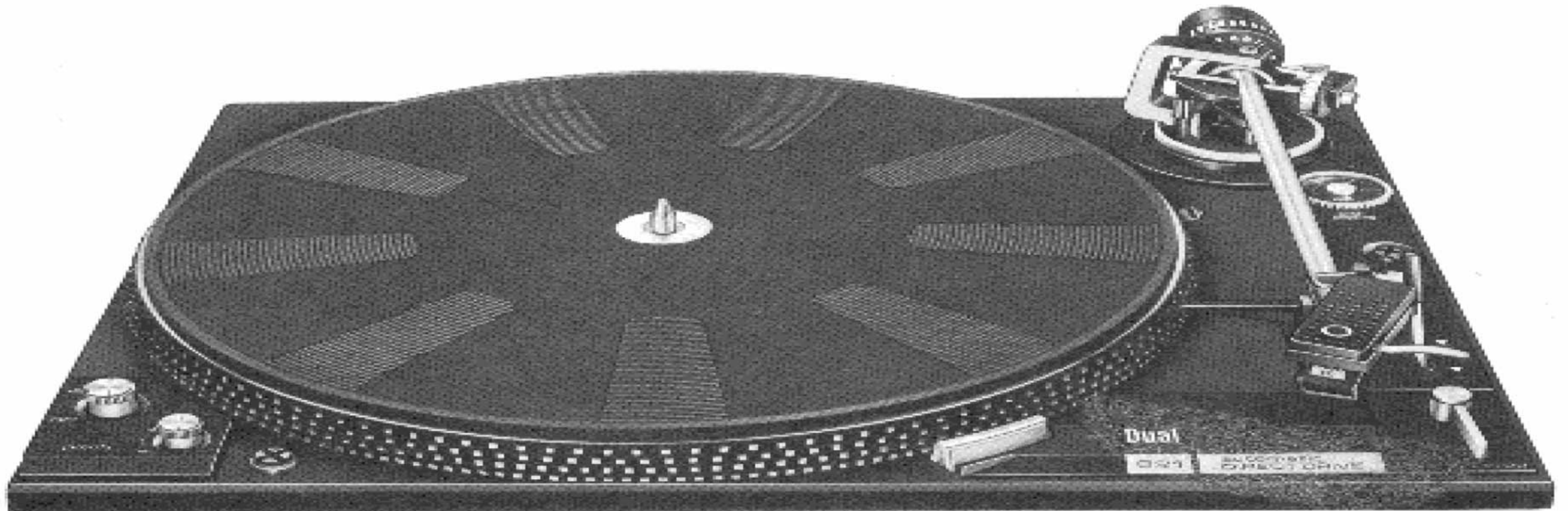


Dual

Edition August 1978

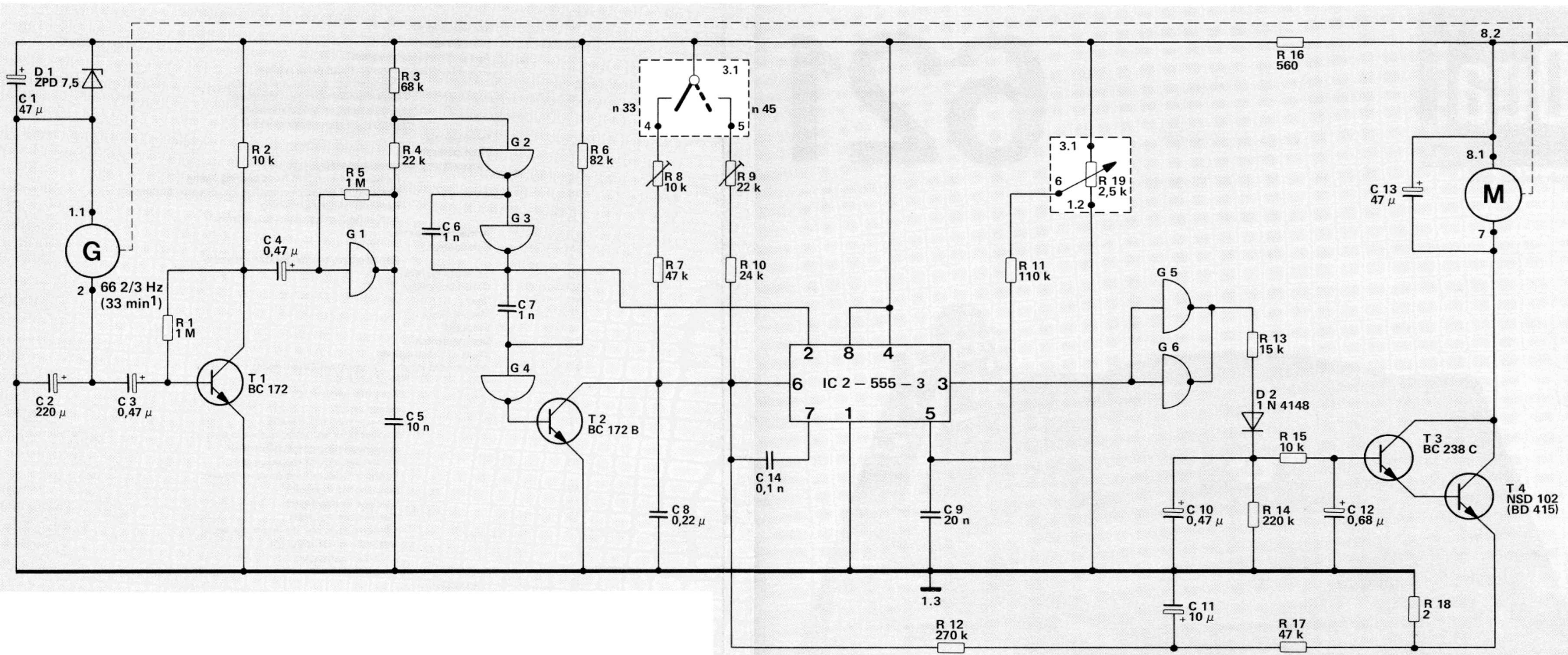
621



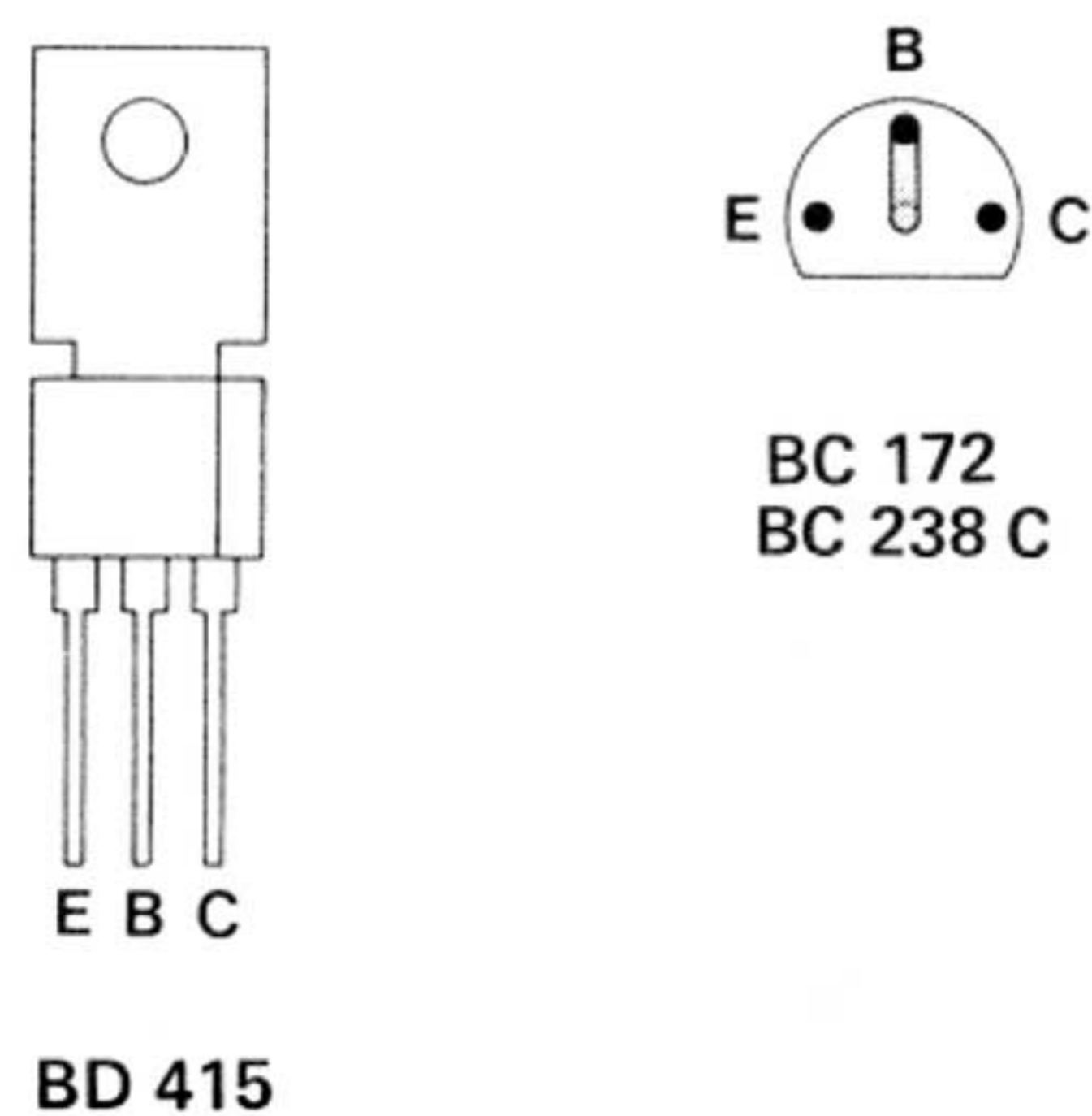
Service - Manual

Dual Gebrüder Steldinger - 7742 St. Georgen/Schwarzwald

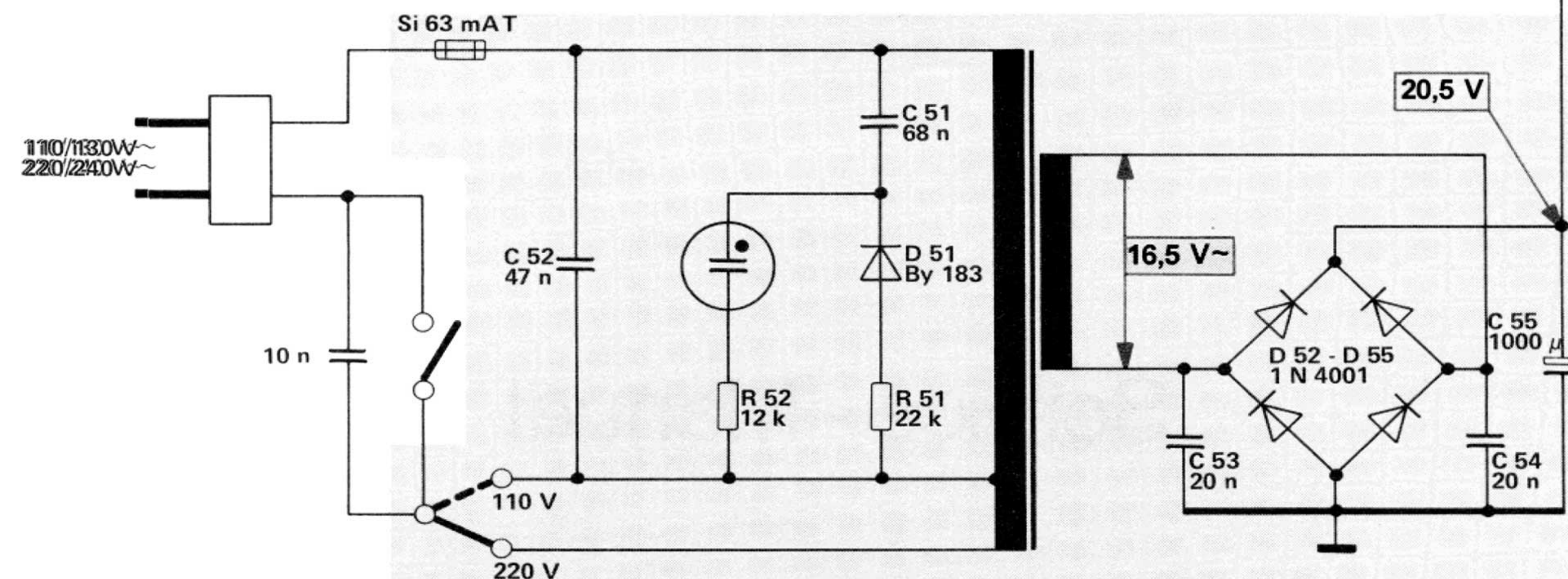
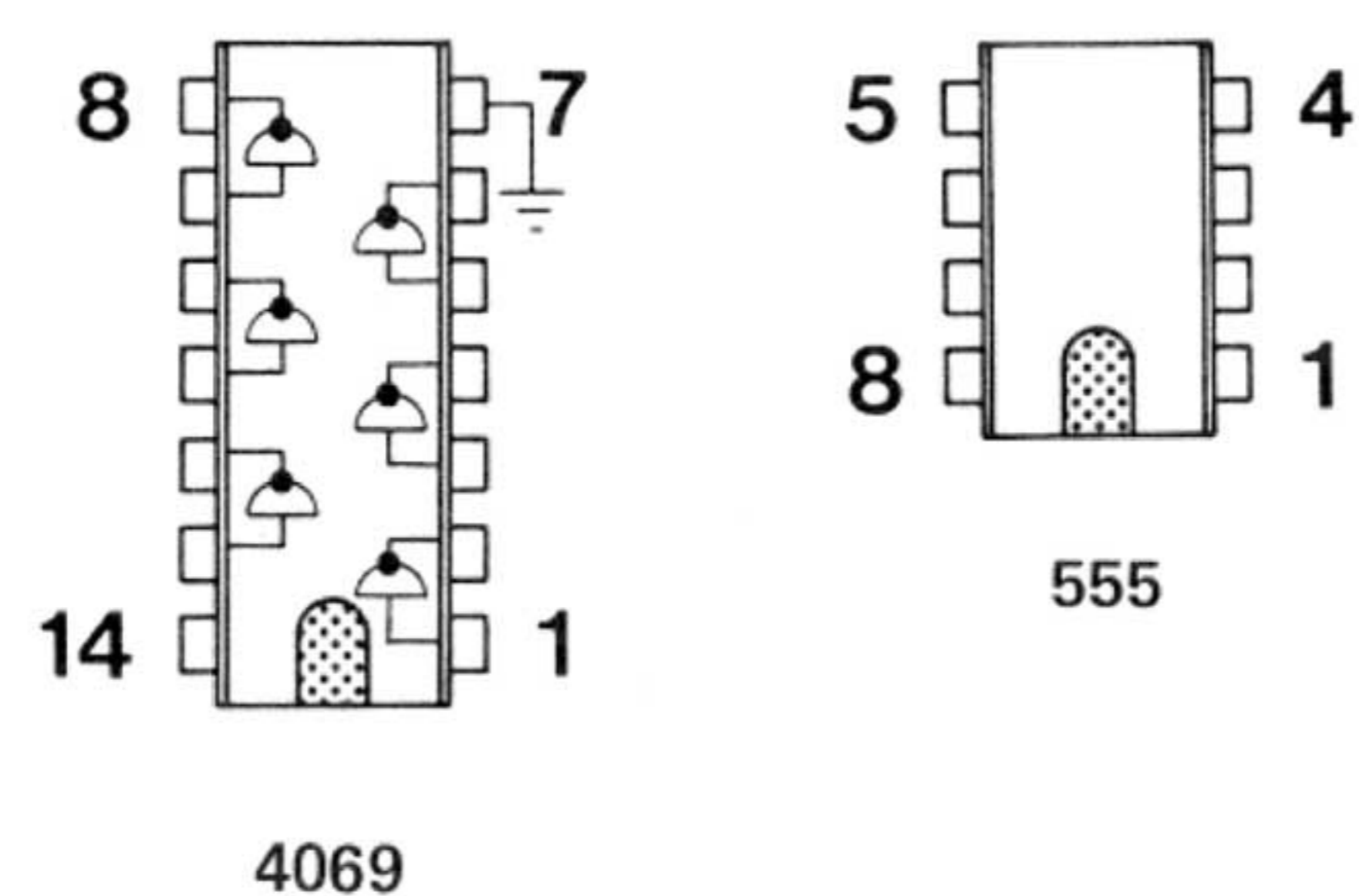
Fig. 1



Transistoren von der Anschlußseite gesehen
Transistors as seen from the connecting side
Transistors vus du côté des connexions



IC
von der Bestückungsseite gesehen
as seen from the top side
vu du côté éléments



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| R | 1 | 2 | 5 | 3 | 6 | 8 | 9 | 12 | 11 | 19 | 13 | 16 | 18 |
| C | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 9 | 52 | 10 | 51 | 14 | 15 |
| | | | | | | | 14 | | 52 | 11 | 51 | 17 | 13 |
| | | | | | | | | | | | | 12 | 53 |
| | | | | | | | | | | | | | 55 |
| | | | | | | | | | | | | | 54 |

Fig. 2 TA-Anschlußschema / Audio Connection Diagram / Schema de branchement / Esquema de conexion del fono captor

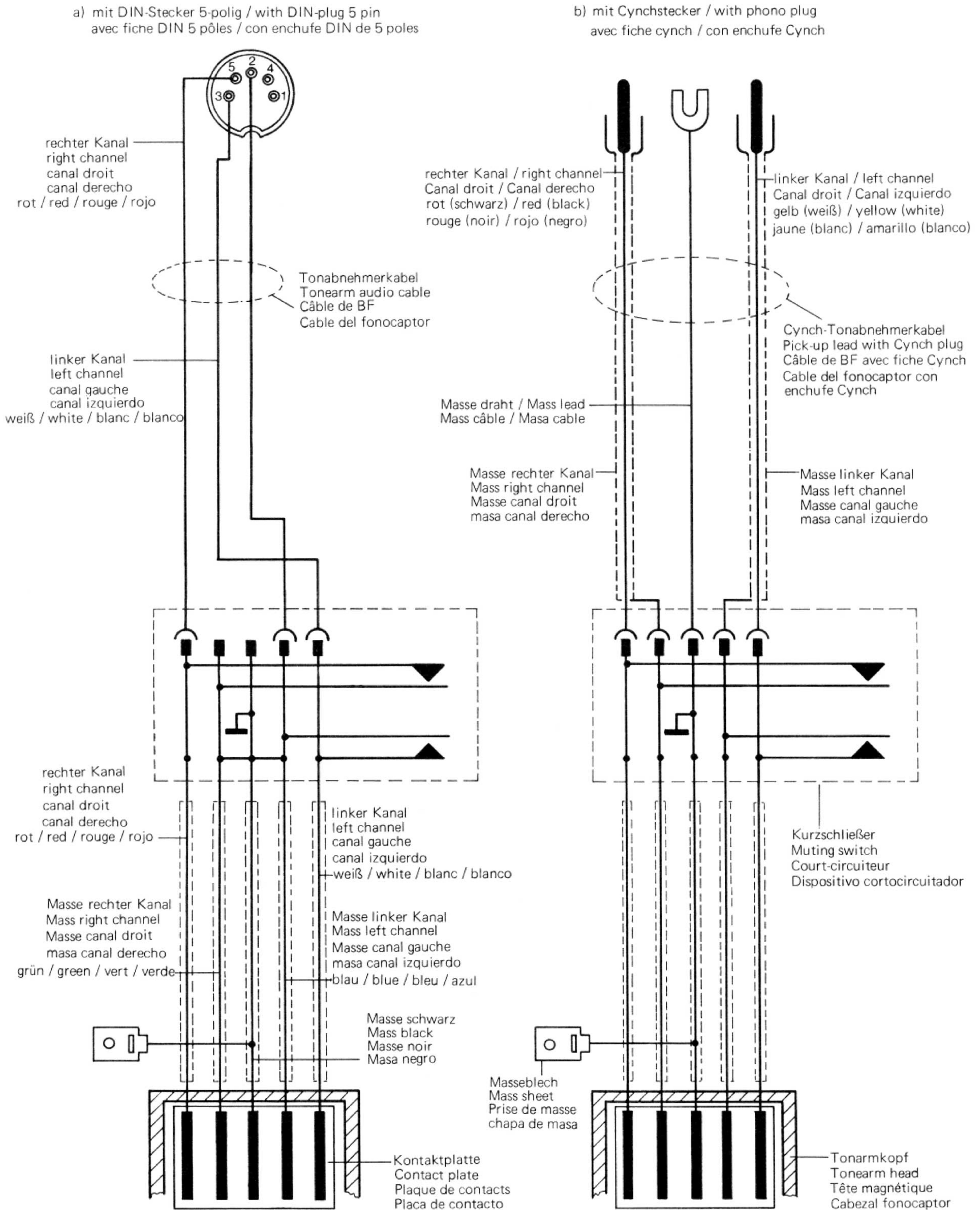
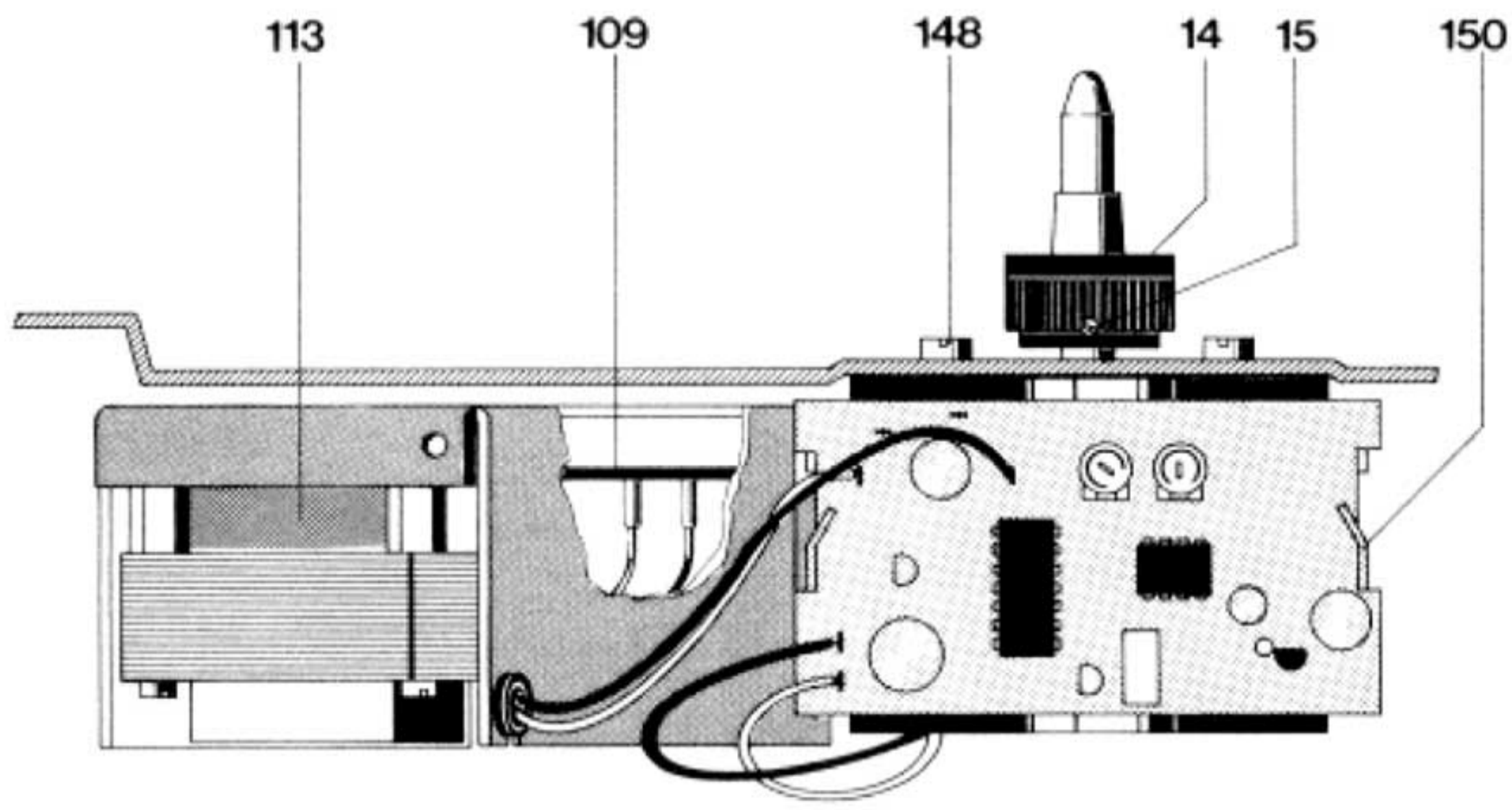


Fig. 3



Direct Drive System Dual EDS 500

For repair of the Dual EDS 500 special tools and measuring means are required. Work on the motor or motor electronics system should, therefore, only be carried out by an authorized Dual service station.

Removal

1. Extract unit plug from power line. Lift off platter (4). Bring unit into head position.
2. Remove self tapping screws (112) and cover of power part (113).
3. Loosen connection for operating voltage on power plate (109). Unsolder connecting leads on speed control (129), turn switch (5) and generator. Open twists of holding angle (150) with flat pliers.
4. Pull off motor electronics (152) system from motor (18) carefully.
5. Fix replacement motor electronics. Solder connecting cables (see connection diagram Fig. 4).
6. Slide cover over power part and fix it by means of machine screws (112).
7. With the unit in normal position connect it to power line. Switch on unit and check power consumption on operation:

220 V/50 Hz approx. 15 mA
110 V/60 Hz approx. 25 mA

Check nominal speeds. If necessary, readjust as described below.

Replacement of Motor Mechanic

1. Extract unit plug from power line. Remove platter (4).
2. With the unit in head position remove self tapping screws (112) and cover of power part (113). Loosen connection for operating voltage on power plate (109).

Fig. 4

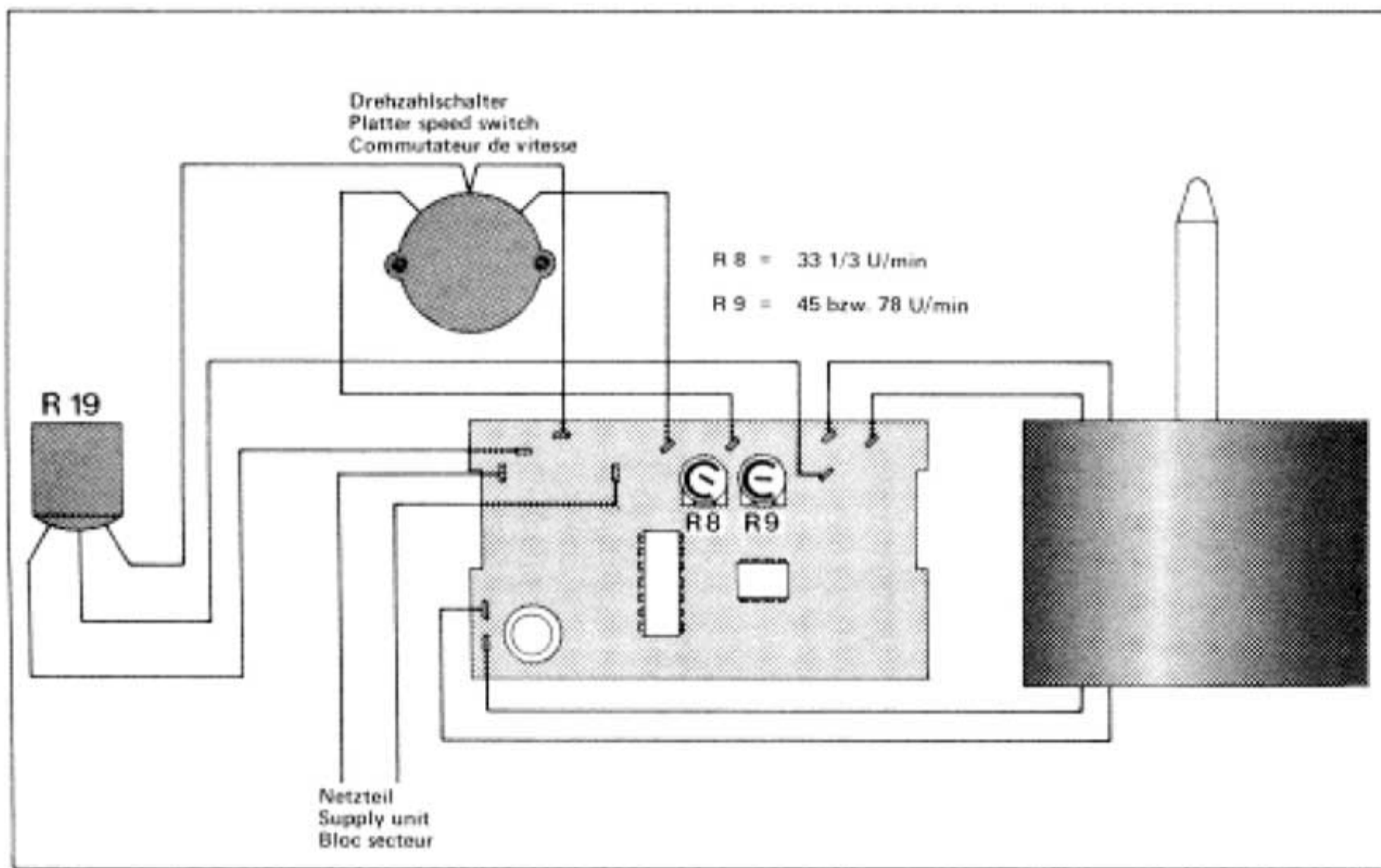
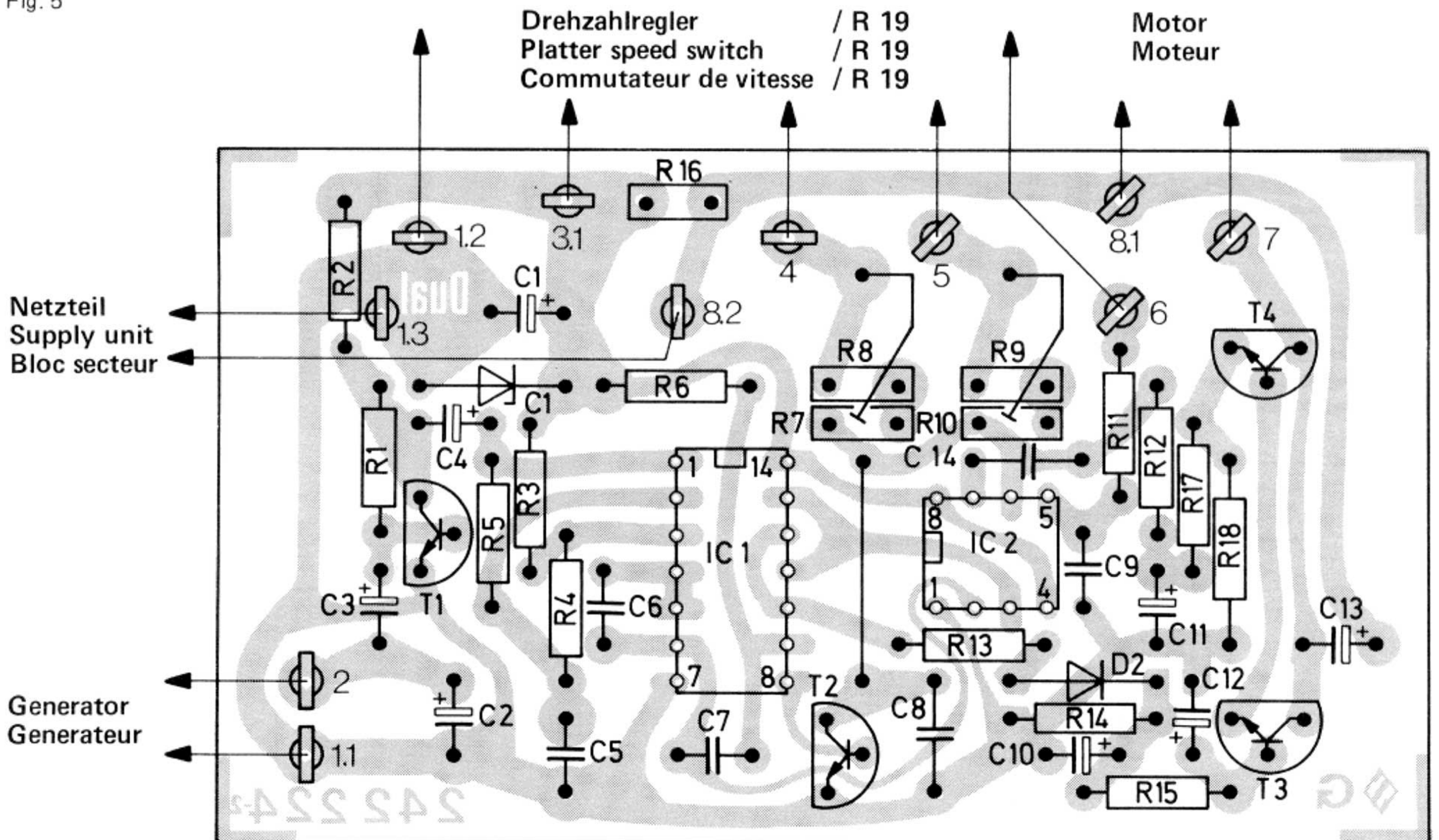


Fig. 5



3. Unsolder connecting leads to rotary switch (5) and the generator. Open twists of holding angle (150) with flat pliers. Lift off motor electronic (152). Remove machine screw (151) and holding angle (150).
4. Loosen threaded pins (15) and remove platter cone (14). Remove the three screws (148). Lift off motor mechanics (149).
5. Put platter cone (14) on new motor mechanics and fix it. Fix new motor mechanics with the three screws (148). Fix holding angle (150) with screws (151). Insert motor electronics (152) and twist holding pieces. Solder on resp. plug connecting leads (Fig. 4). Push cover on power part and fix it with screws (112).
6. With the unit in normal position connect it to the power line. Switch on unit and check power consumption when operating:
 - 220 V/50 Hz approx. 15 mA
 - 110 V/60 Hz approx. 25 mA
 Check nominal speeds. If necessary, readjust as described below.

Setting nominal speeds

With knob (7) bring the fine speed control (129/R 19) into center position. With controls (R 8) and (R 9) on the motor electronic system adjust nominal speeds. Control (R 8) is used for 33 1/3 rpm, R 9 for 45 rpm. Check with strobe disk.

Changeover to 78 rpm nominal speed

Instead of 45 rpm the Dual 621 can be changed to a nominal speed of 78 rpm. To change the speed bring the fine speed control (129/R 19) in center position using knob (7). Using control R 9 on the motor electronics board (172) adjust for 78 rpm. Check with strobe disk.

Stroboscope

Accurate setting of the platter speeds 33 1/3 and 45 rpm can be checked during play with the aid of the stroboscope.

When the platter (4) is rotating at exactly 33 1/3 or 45 rpm the lines of the stroboscope appear to stand still. If the lines move in the direction of rotation of the platter, the platter speed is too high. If the lines move backwards, the platter is rotating more slowly than the nominal speed. Adjustment of platter speeds 33 1/3 and 45 rpm can be made with the "pitch" control (7).

Strobe markings are provided on the outer edge of the platter for 50 and 60 Hz line frequencies.

To replace glow lamp (157) remove machine screws (160) and remove strobe cover (156).

It can happen that the stroboscope lines appear to move slightly although the exact speed setting with stroboscope stationary has not been altered. This apparent contradiction is explained by the fact that the electronic central drive motor operates fully independently of line frequency whilst the only relatively accurate line frequency of the AC current supply is used for speed measurement with the light stroboscope. The constantly detectable fluctuations of line frequency by $\pm 0.2\%$ according to the information of the electricity supply companies brief frequency fluctuations up to 1% are possible – only effect the stroboscope indication and can cause the lines to "wander" although the platter speed is as constant and absolutely accurate as before.

Pitch Control

Each of the two standard speeds 33 1/3 and 45 rpm (78 rpm) can be varied by about 10%. The variable speed control (129/R 19) located in the voltage divider is adjusted by turning the pitch control knob (7). By this the differential amplifier is altered and the motor speed accordingly.

Fig. 6

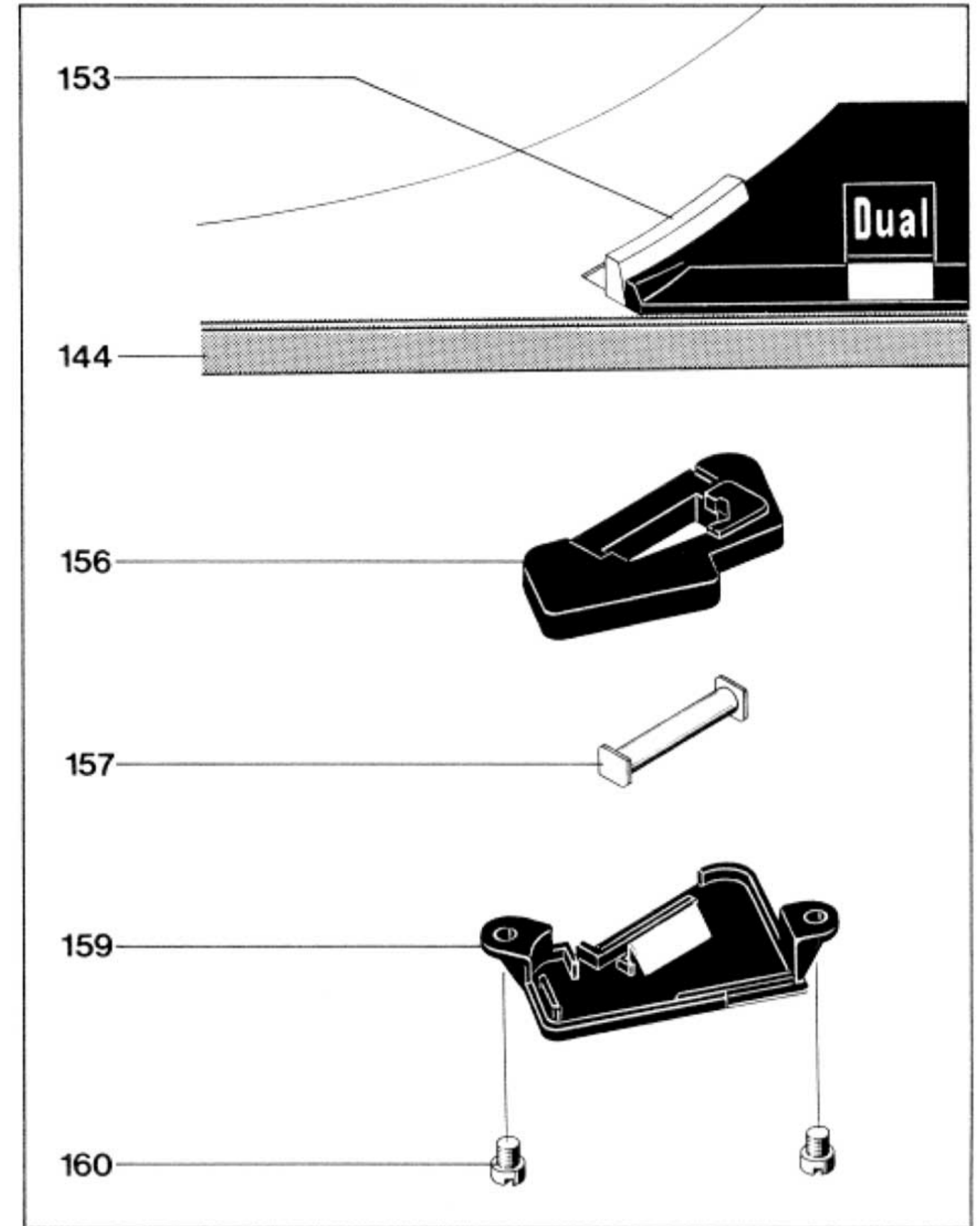


Fig. 7

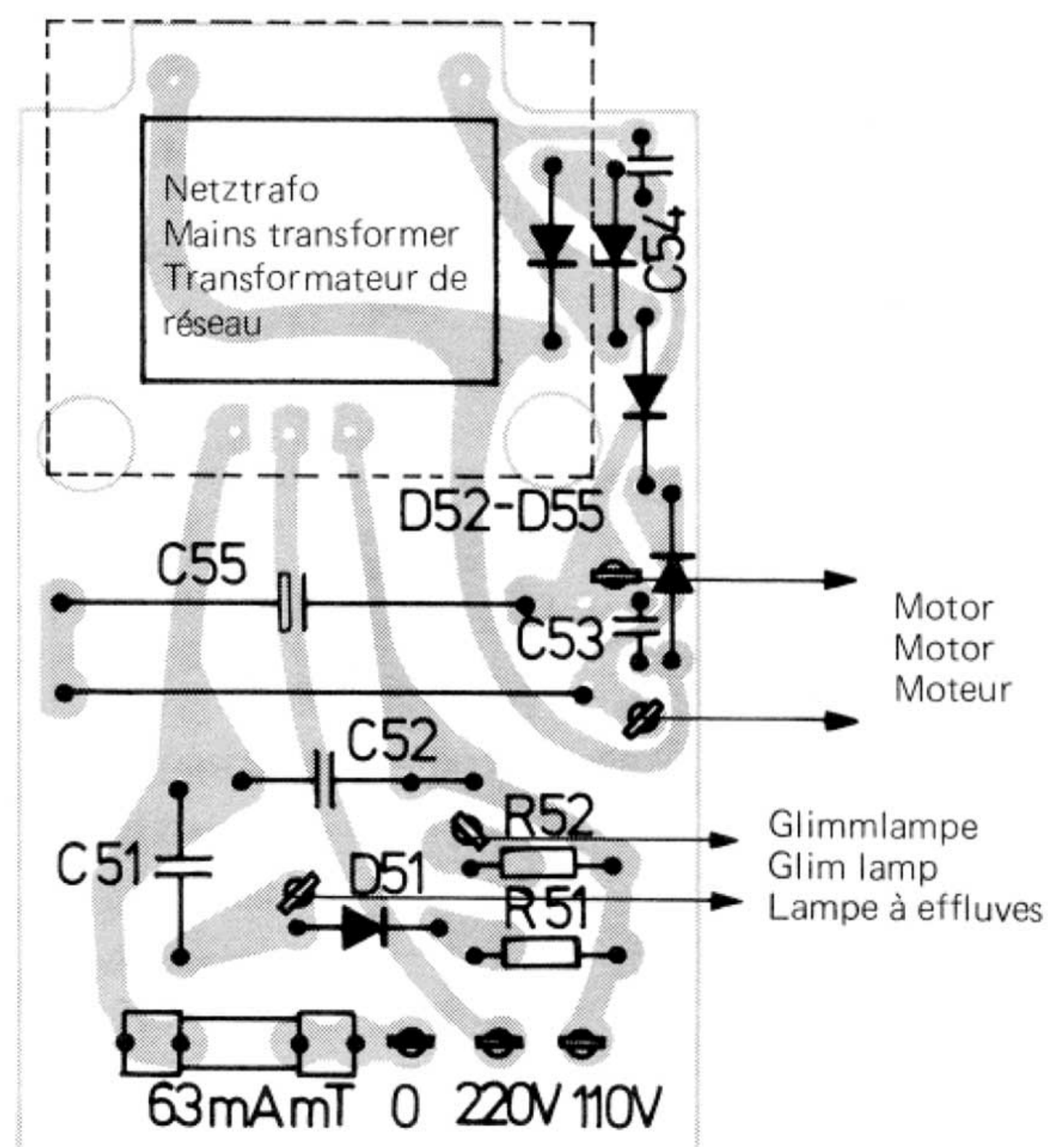
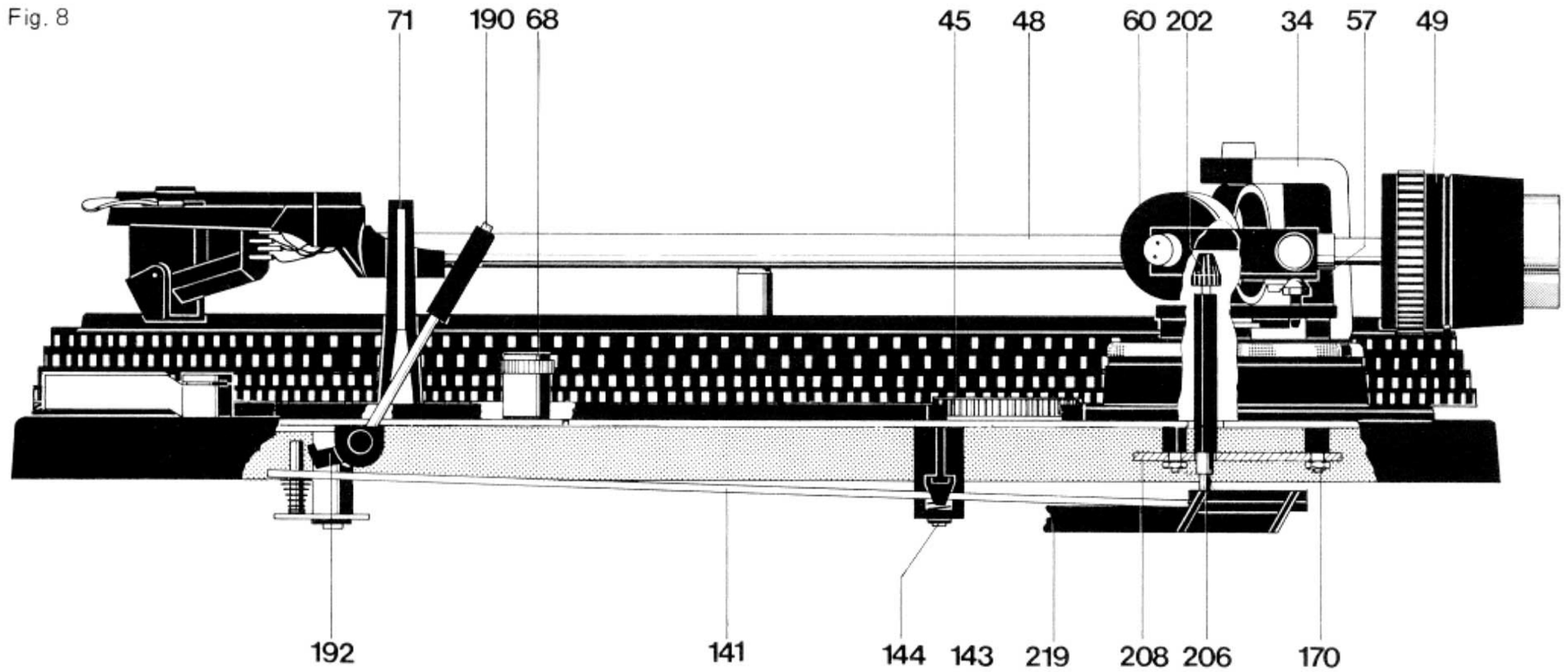


Fig. 8



Tonearm and Tonearm Suspension

The feather-light, extremely torsion resistant all-metal tonearm is suspended in a gimbal. Suspension is by means of 4 hardened and precision polished steel points which rest in precision ball bearings. Tonearm bearing friction is thus reduced to a minimum.

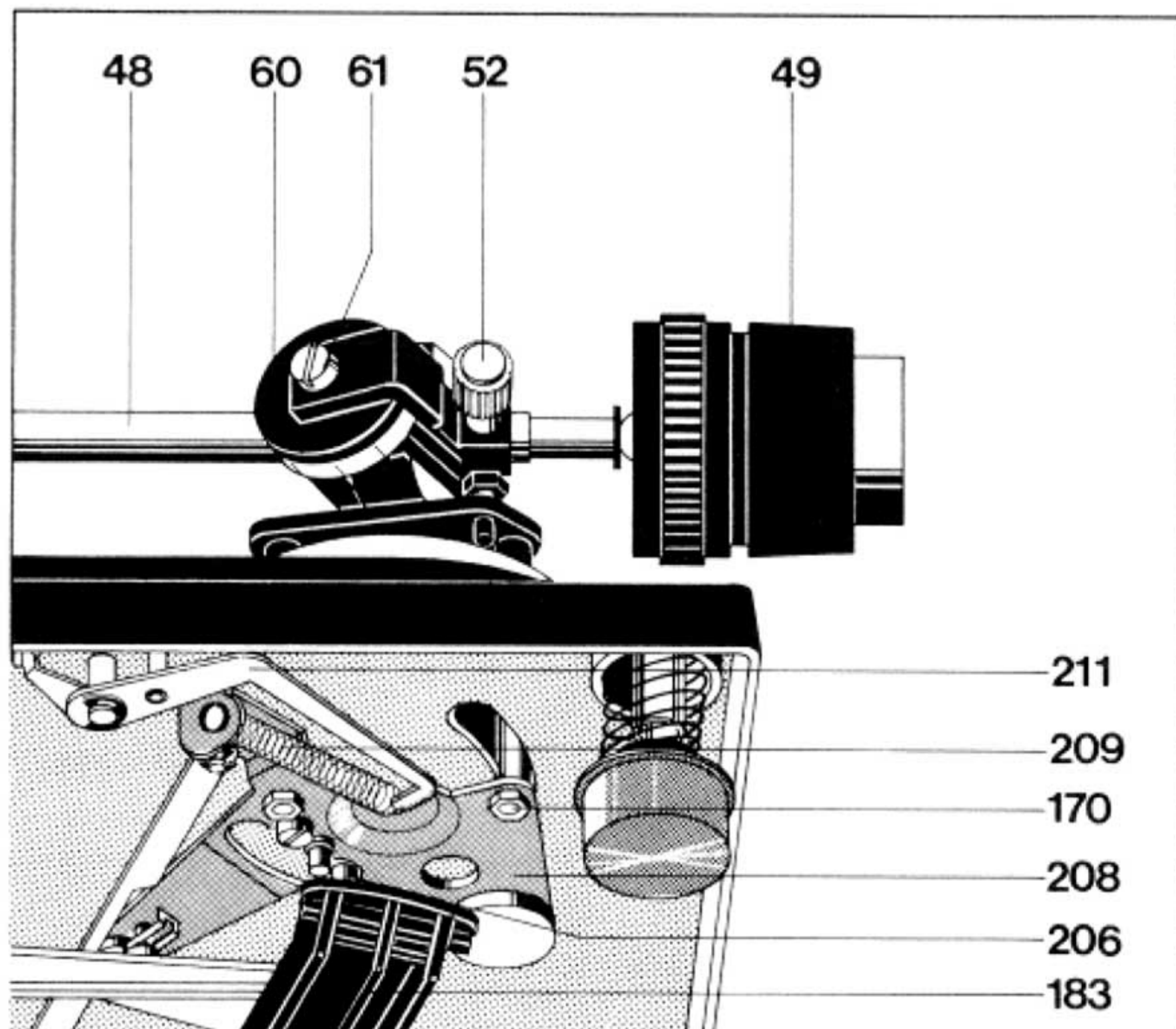
Bearing friction vertical 0.07 mN (0.007 p)
 Bearing friction horizontal 0.16 mN (0.016 p)

as related to stylus point.

As a result, it ensures most favourable pick-up conditions. Before adjusting the tracking force to suit the built-in pick-up cartridge the tonearm is balanced with the scale set to zero. Coarse adjustment is carried out by moving the weight with the stem (49), the subsequent fine adjustment by turning the weight. The balance weight is designed such that pick-up cartridges having a dead-weight of 4.5 – 10 g can be balanced.

The tracking force is adjusted by turning the graduated spring housing (60) incorporating a coil spring. The scale has markings for a range of adjustment from 0 to 30 mN (0 to 3 p) which permit accurate adjustment of the tracking force. One graduation in the range of 2 – 15 mN (0.2 – 1.5 p) corresponds to 1 mN (0.1 p) in the range of 15 – 30 mN (1.5–3p) to 2.5 mN(0.25p).

Fig. 9



Removing the tonearm from the bearing frame

1. Clamp unit in repair jig. Remove weight (49) and turn out fixing screw (52). Set tracking force scale (60) to zero.
2. Move unit into head position. Remove screening plate (140). Unsolder tonearm connecting on muting switch (137).
3. Move unit into normal position. Remove both mounting screws – SW 5.5 (54).

For installation proceed in the reverse order.

Removal of tonearm assembly with tonearm bearing

We recommend the following procedure:

1. Clamp unit in the repair jig. Set spring housing scale (60) to zero. Lock tonearm (48). Remove weight (49).
2. Move unit into head position and remove the screening plate (140). Unsolder the tonearm connections on the muting switch (137).
3. Remove lock washer (184). Lift off main lever (183) and bearing support (182). Remove lock washer (144). Lift off setting rail (141) and rotary bearing (143) and turn towards motor (149).
4. Unlock tension spring (209). Loosen lock washer (212) and remove skating lever (211).
5. Remove lock washer (211) and slide bar (171). Lift off shut-off bar (161) from segment (208).
6. Remove hex nut (170). Remove sink screw (174). Hold tonearm (48) and lift off counter bearing (173) and segment (208).
7. Remove tonearm complete with tonearm bearing.

Reverse this procedure when reassembling. Please bear in mind the threaded pin (33) is correctly positioned in the ball bearing.

Replacing spring housing

Remove tonearm (48) from bearing frame (51) as described above. Loosen lock nut (55) and threaded pin (56). Unscrew bearing screw (61). Lift bearing frame (59). Remove spring housing (60). When installing note that the helical spring catches the bearing frame. Slide in washer (60) and tighten bearing screw (61). Reinstall tonearm (48). Set bearing play as described below using threaded pin (56) and lock nut (55).

Adjusting the tonearm bearing

First balance tonearm exactly. Both bearings must have slight, just perceptible play. The horizontal tonearm bearing is correctly adjusted when at anti-skating settings "0.5" and being touched it slides in without resistance. The vertical tonearm bearing is correctly adjusted when it swings in after being touched. The play of the horizontal tonearm bearing should be adjusted with threaded pin (33) and that of the vertical tonearm bearing with threaded pin (56).

Anti-skating Device

To compensate for skating force use the knurled ring (66). The asymmetric cam plate (213) displaces the skating lever (211) from the tonearm pivoting point. The anti-skating force is transmitted to the segment (208) and to the tonearm (48) by tension spring (209).

Optimum adjustment is carried out at the factory for styli having a tip radius of 15 μm (conical), 5/6 and 18/22 μm (elliptical), and CD 4-cartridges.

Any alteration can only be carried out with the aid of a Dual-Skate-O-Meter and a test record and should only be done by an authorized service station.

Recheck as follows:

Balance tonearm (48) correctly. Set knurled ring (66) to 0. The tonearm should remain at any desired point within its turning range. The hole of the skating lever (211) should be in alignment with the center line of the tonearm. Adjustment is made by the eccentric pulley (E) which is accessible through the hole in the installation plate (23) between the knurled ring (68) and the tonearm.

Then set knurled ring (66) to "0.5". The tonearm should now smoothly rotate from the platter center to its rest (71).

Cue Control

By moving the lever (190) forward (▼) lift cam (192) rotates. The slide bar (141) transmits the lifting movement to the lift pin (206), that raises the tonearm. As a result, the cue control permits raise up the tonearm at any desired point.

The lever (190) is released by moving the cue control lever rearwards (▲). As a result of the action of compression spring (205) the lift pin (206) is brought back to its normal position and the tonearm lowers slowly. Lowering of the tonearm is damped by silicone oil in the lift tube.

Adjustment Point

The lift can be varied by turning the sleeve (45). The distance between the record and the needle should be 5 - 7 mm.

Replacement of Cue Control Plate

Replace cue control plate (207) as follows:

1. Clamp unit in the repair jig. and lock tonearm. Turn unit in head position.
2. Remove safety washer (184). Lift off main lever (183) and bearing support (182).
3. Remove safety washer (144). Lift off positioning bar (141) and rotary bearing (143) and turn towards motor (149).
4. Remove both machine screws (204), remove lift plate compl. (207).

For installation proceed in the reverse order.

Fig. 10

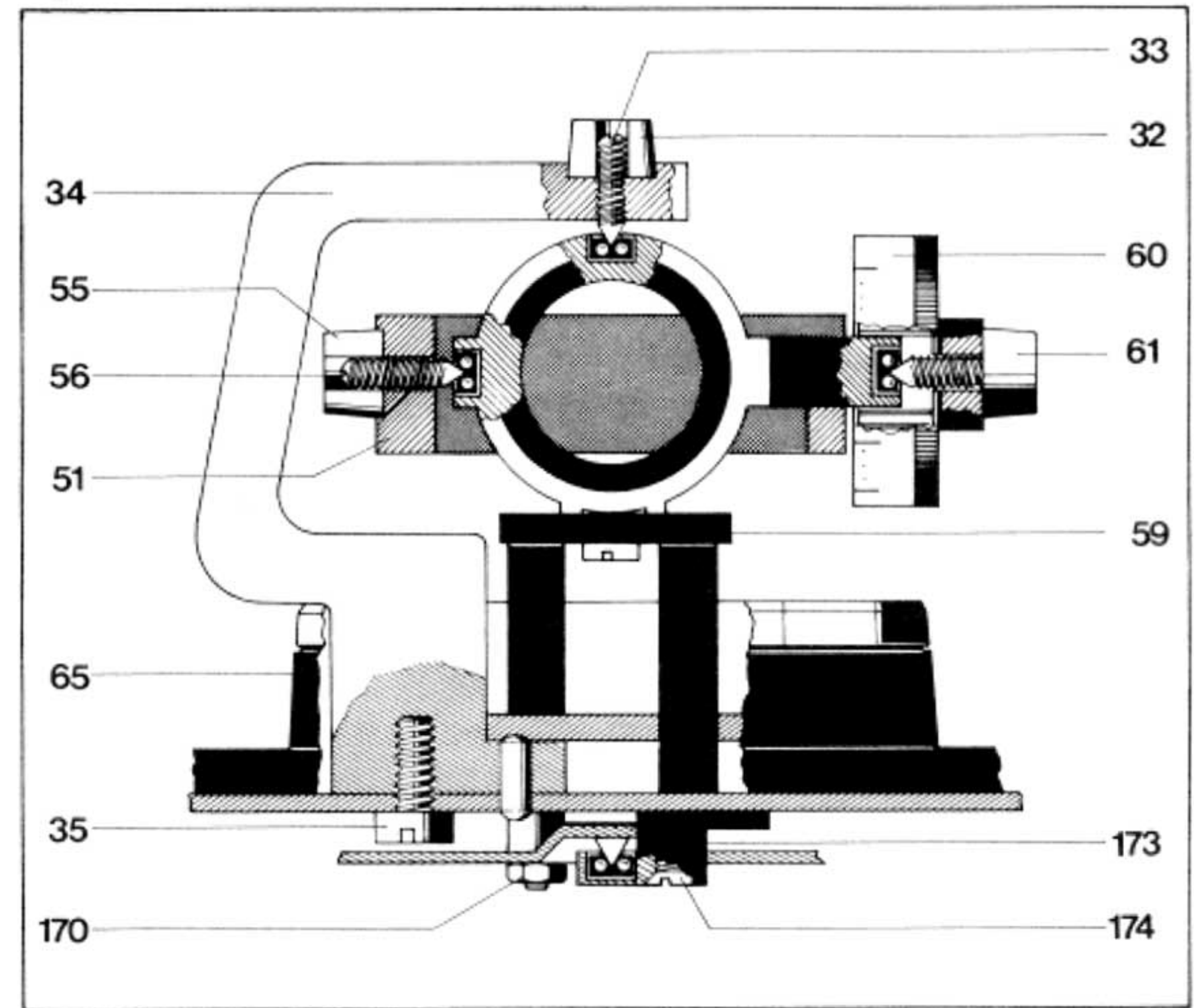


Fig. 11

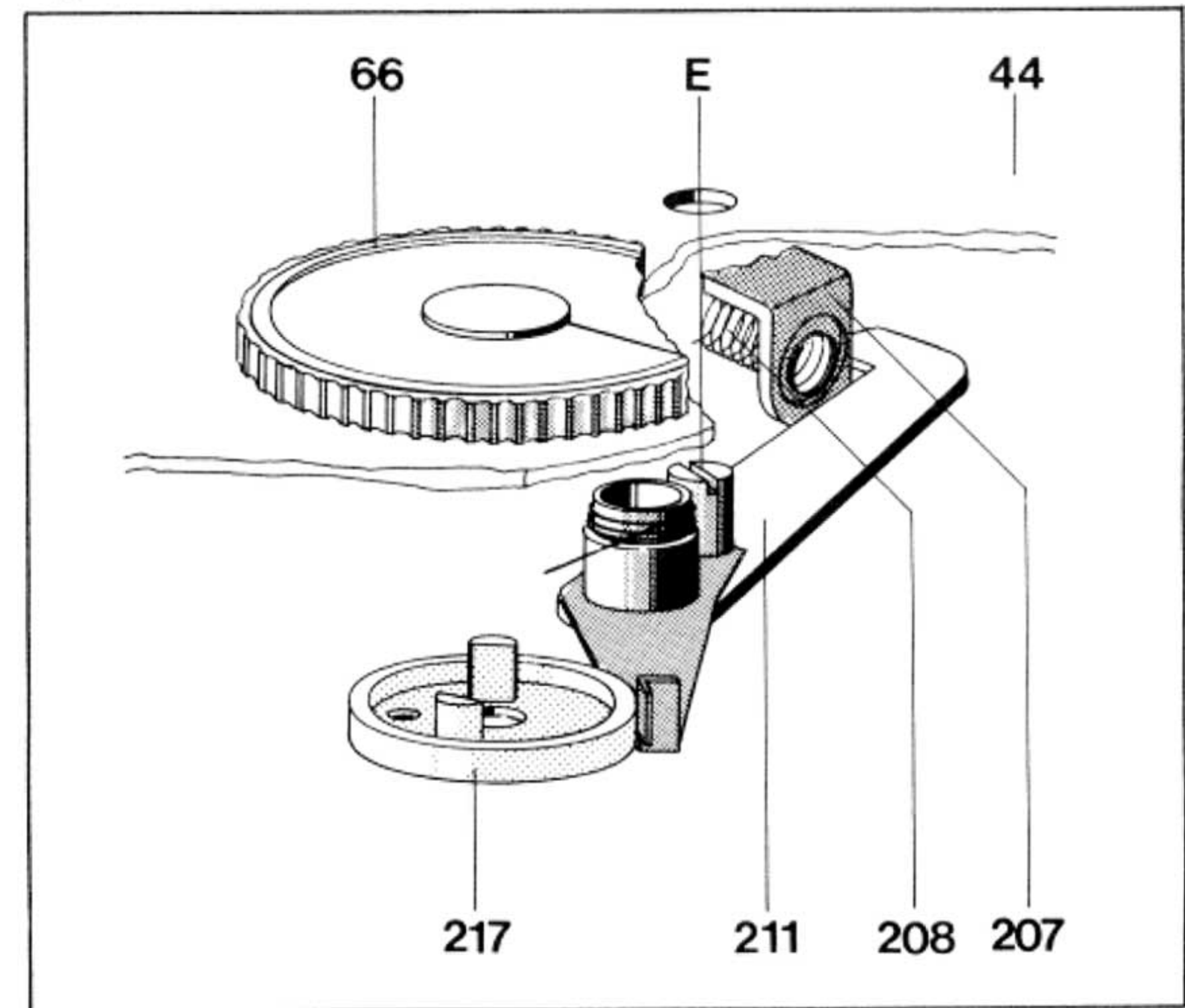
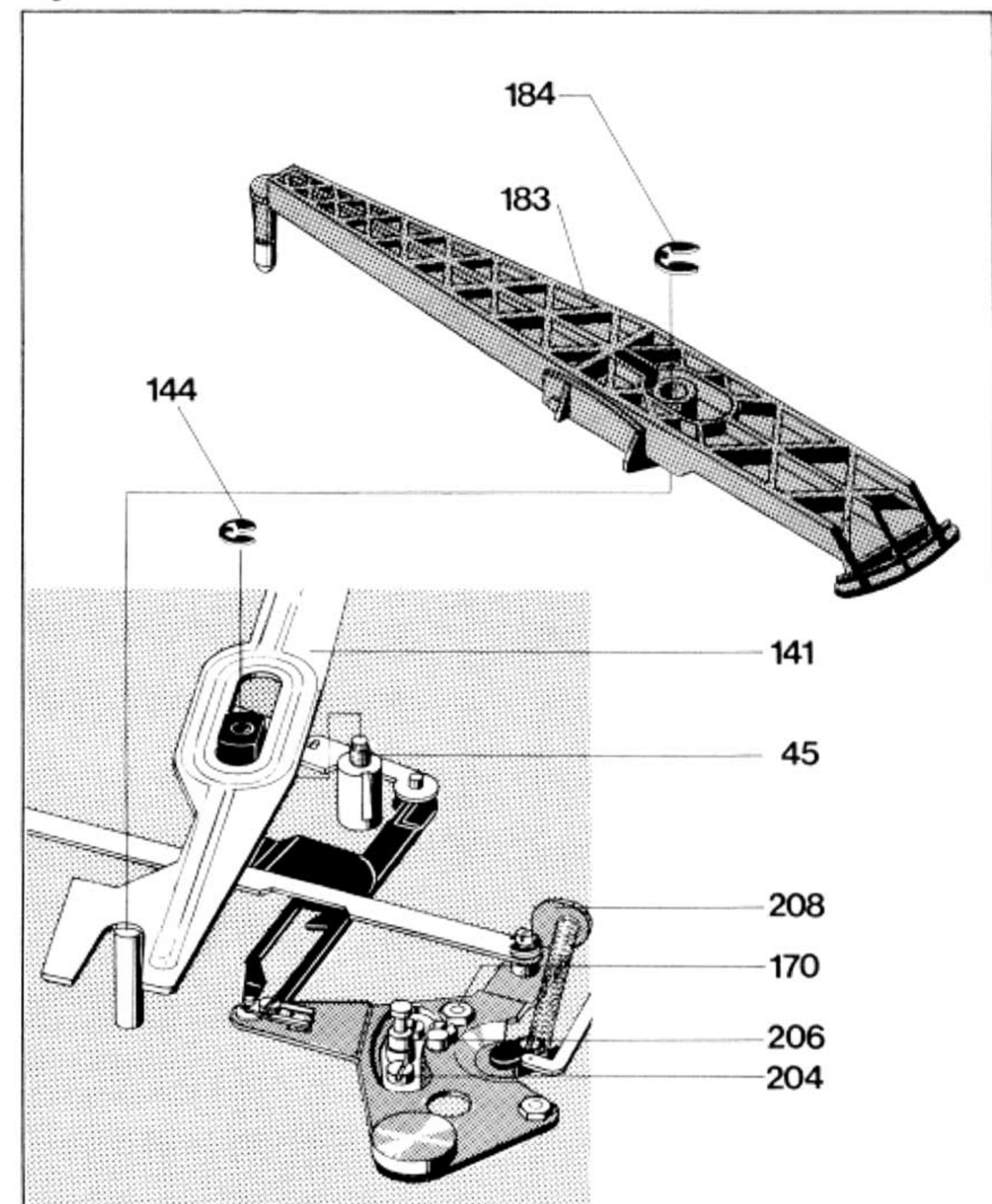


Fig. 12



Tonearm Control

Automatic movement of the tonearm is initiated by the control cams on the inside of the cam wheel (16) on rotating through 360°.

The control elements for raising and lowering are the main lever (183) and lifting bolt (206), for horizontal movement the main lever (183) with segment (208).

The automatic tonearm set down mechanism is designed for 30 cm and 17 cm records and is coupled to the platter speed changeover. The setdown points of the tonearm are determined by the spring pin of segment (208) contacting the slide bar (141). Limitation of the horizontal movement of the tonearm is produced by the pin of segment contacting the stop attached to the slide bar (189). Only during set-down does main lever (183) lift the slide bar (141) and the stop attached to it which, as a result, moves into the swivel range of the stop pin fitted on the segment. After completion of set down (lowering of the tonearm onto the record) slide bar (141) is released again and returns to its neutral position. As a result, the slide bar (141) moves out of the swivel range of the pin, so that unimpeded movement of the tone arm is possible for playing.

Continuous Play

Continuous Play is switched on by turning the rotary knob (67) to "∞". The rotary knob (67) turns the switch angle (185). The switch rod (189) keep the change lever (180) in starting position.

After the record has been played the tonearm returns automatically to the lead-in groove of the record. This procedure is repeated until the switch lever (68) is brought to the "stop" position or the rotary knob (67) to position "1".

Adjustment Point

Pull mains plug. Remove platter (4). Bring rotary knob (67) to position "∞". Turn cam wheel to central position. The change lever (180) turns the guide lever (U) and the top of the guide lever must at least be brought to the cam range. Adjust by bending the switch rod (189).

Start

Switching the switch lever (68) into the "start" position initiates the following sequence:

- The start lever (219) rotates the switch lever (180) which is pivoted about the notched stud. At the same time, the switch arm (41) is moved the motor (149), via the power switch (116), and the platter starts turning.
- Operating the switch lever (68) also releases the start slide (38) which is drawn toward the cam by means of the tension spring (156). By that the shut-off lever engage with the drive pinion and the cam turns.

Manual start

The latch (215) which is connected to the switch arm (41) engages in the four-sided plate when the tonearm is moved manually. The switch arm connects the mains supply to the motor (149) via the power switch (116) and the platter rotates.

When the run-out groove of the record is reached, the tonearm is lifted and returned, the motor is switched off automatically. If the tonearm is lifted off the record before the run-out, and returned by hand to the pillar, then the bolt on the segment (208) engages the latch (215) so that the switch arm is returned to its starting position. This switches off the mains supply.

Fig. 13

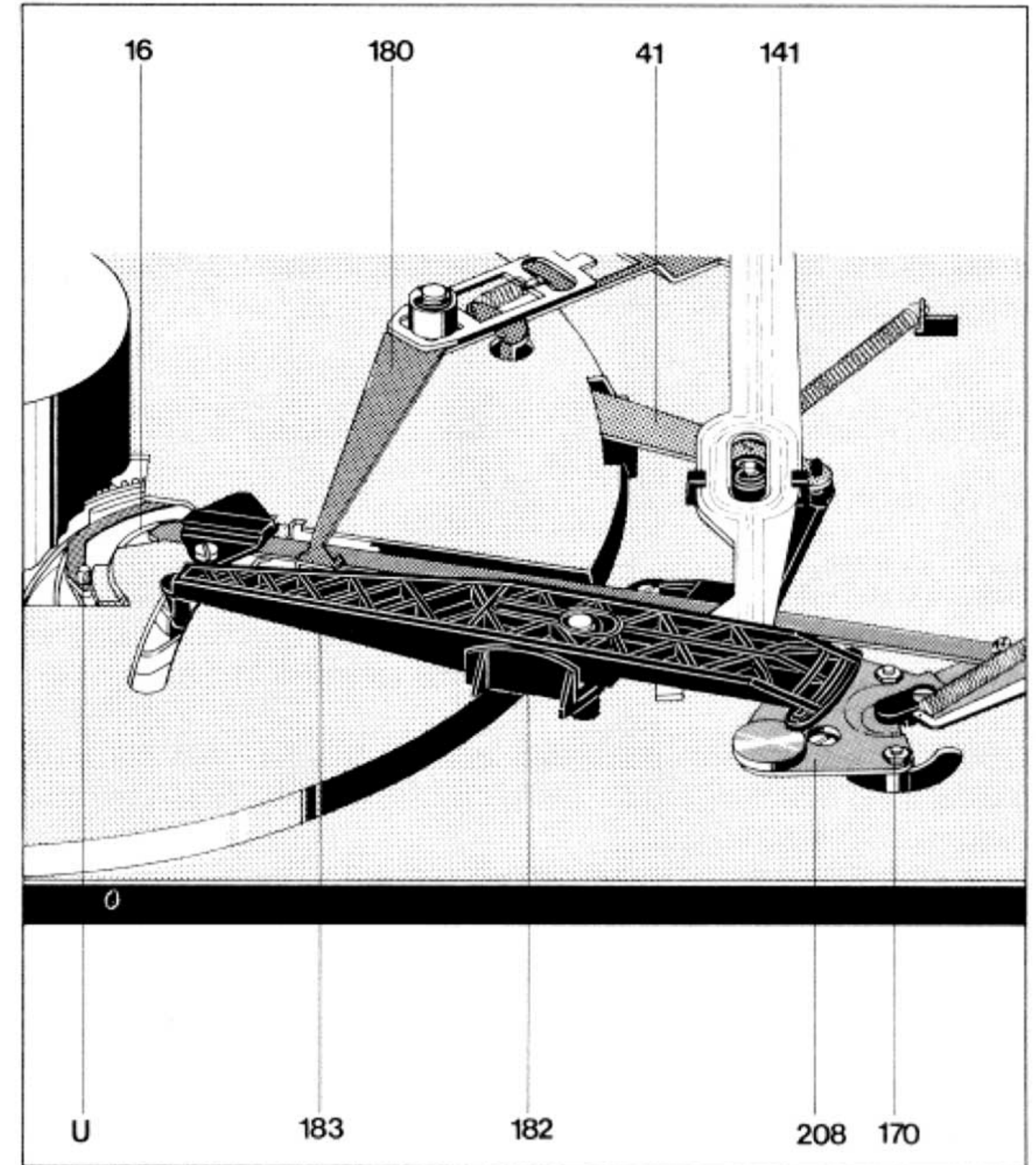
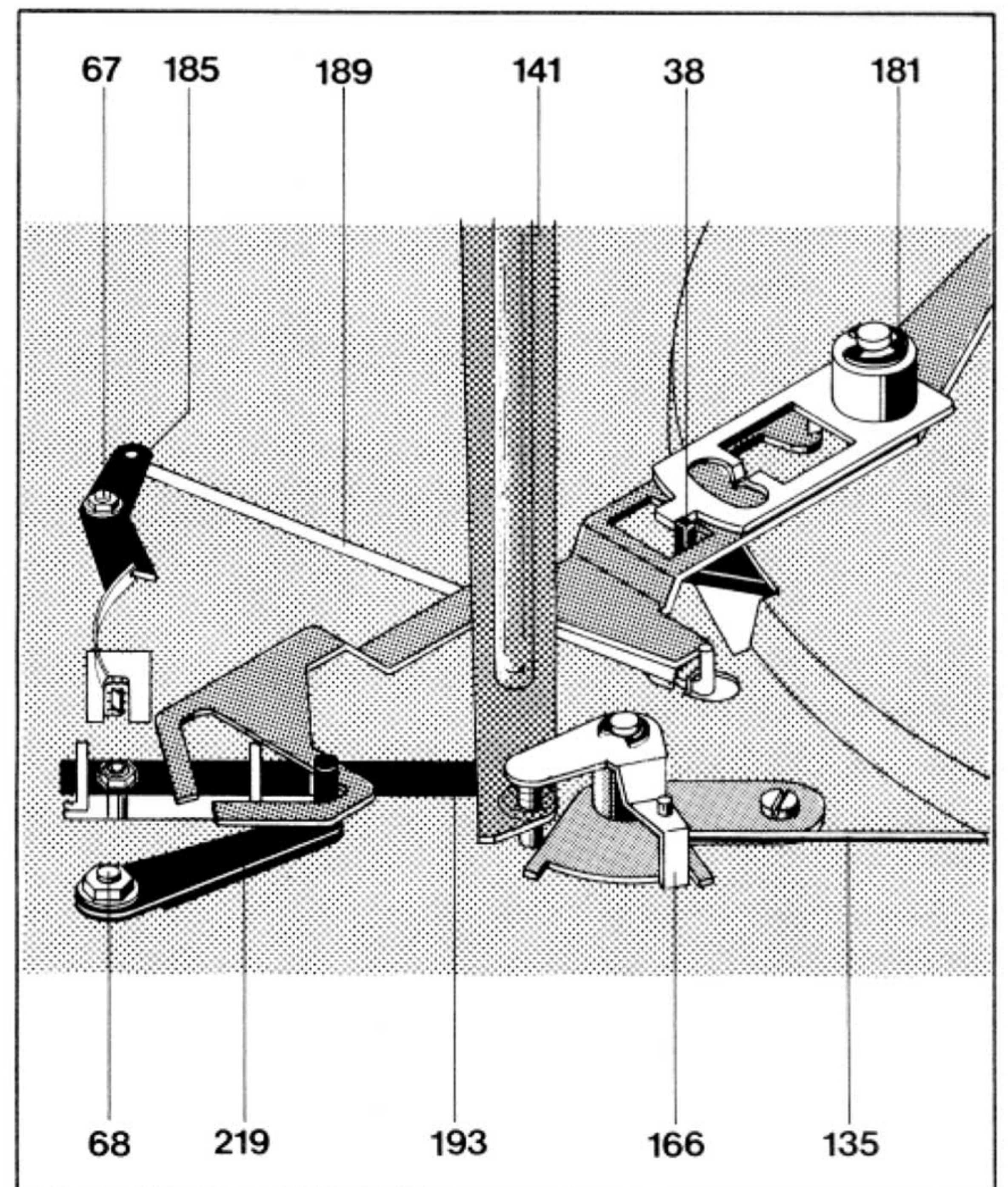


Fig. 14



Stopping

When control lever is set to "stop position the start slide (38) which is pulled towards the cam by means of tension (34), becomes free. As a result, the shut-off lever is moved into the range of dogs cam. The lever remains in its stop position.

Muting Switch

To prevent disturbing noises during automatic operation of the tonearm the unit is fitted with a muting switch. Control of the switch springs for both channels is effected by the camwheel. With the unit in neutral state the short circuit of the pick-up leads is eliminated.

Adjustment

In zero position of the cam there should be a clearance of approximately 0.5 mm between the contacts of the muting switch. This clearance should be adjusted by bending the muting switch contacts. The contacts should be sprayed with a suitable cleaning agent.

Shut-off

The shut-off and stop functions depend on the position of the guide lever (U). The guide lever (U) is brought to stop position by the main lever (183) after every start (longer end of the guide lever towards cam wheel centre).

The shut-off bar (161) is guided along in proportion to the movement of the segment (208).

The shut-off procedure is initiated after a record has been played by the dog (M) of the platter and the shut-off lever (A).

The shut-off lever (A) is moved towards the dog (M) of the platter within the shut-off range (record diameter 116 mm to 122 mm) (Fig. 16 a).

The dog engages the shut-off lever (A). The cam wheel (16) is moved from 0 position and engage with the drive pinion of the platter (Fig. 16 b).

The main lever (183) guides the tonearm back and effected the tonearm to return to its rest position. During the running in of the cam wheel into 0 position the roll (42) of the switch arm (41) can run into the cut-out provided at the cam wheel and achate the power switch (116).

Adjustment Points

Tonearm set-down point

The set-down point can be varied with the eccentric bolt (176). If the stylus sets down onto the record too far inside or outside turn eccentric bolt (176) in left or right direction.

Fig. 15

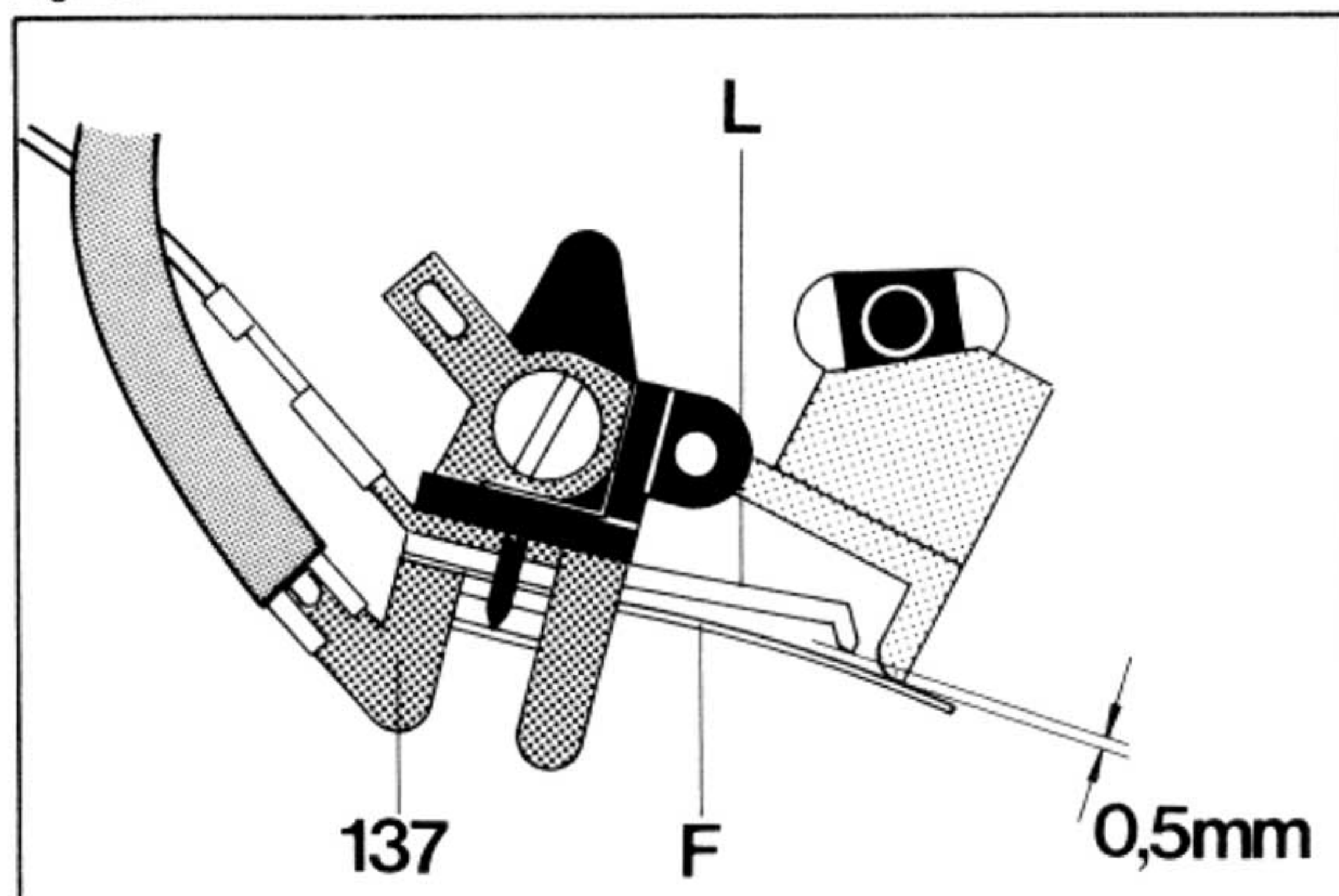


Fig. 16

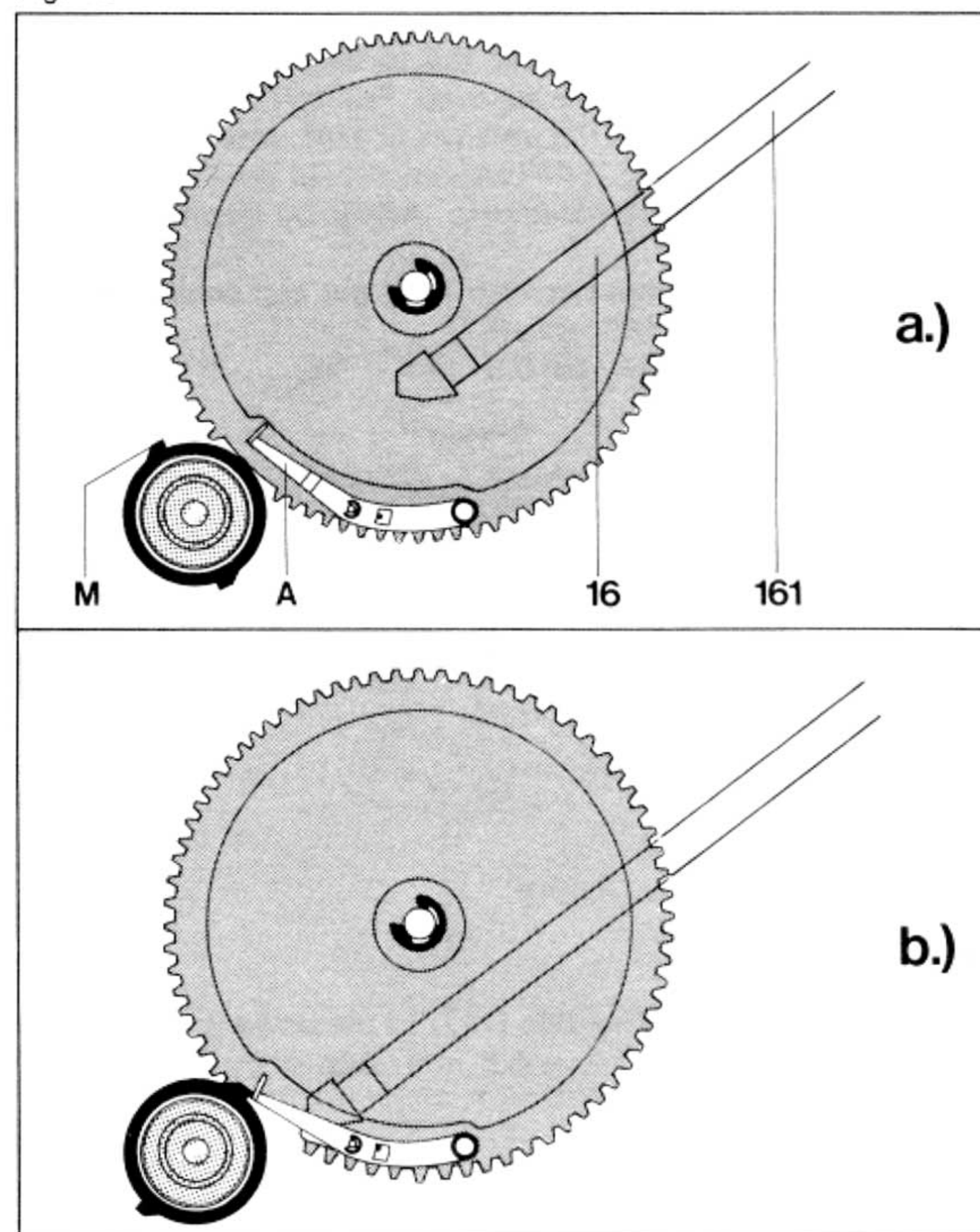
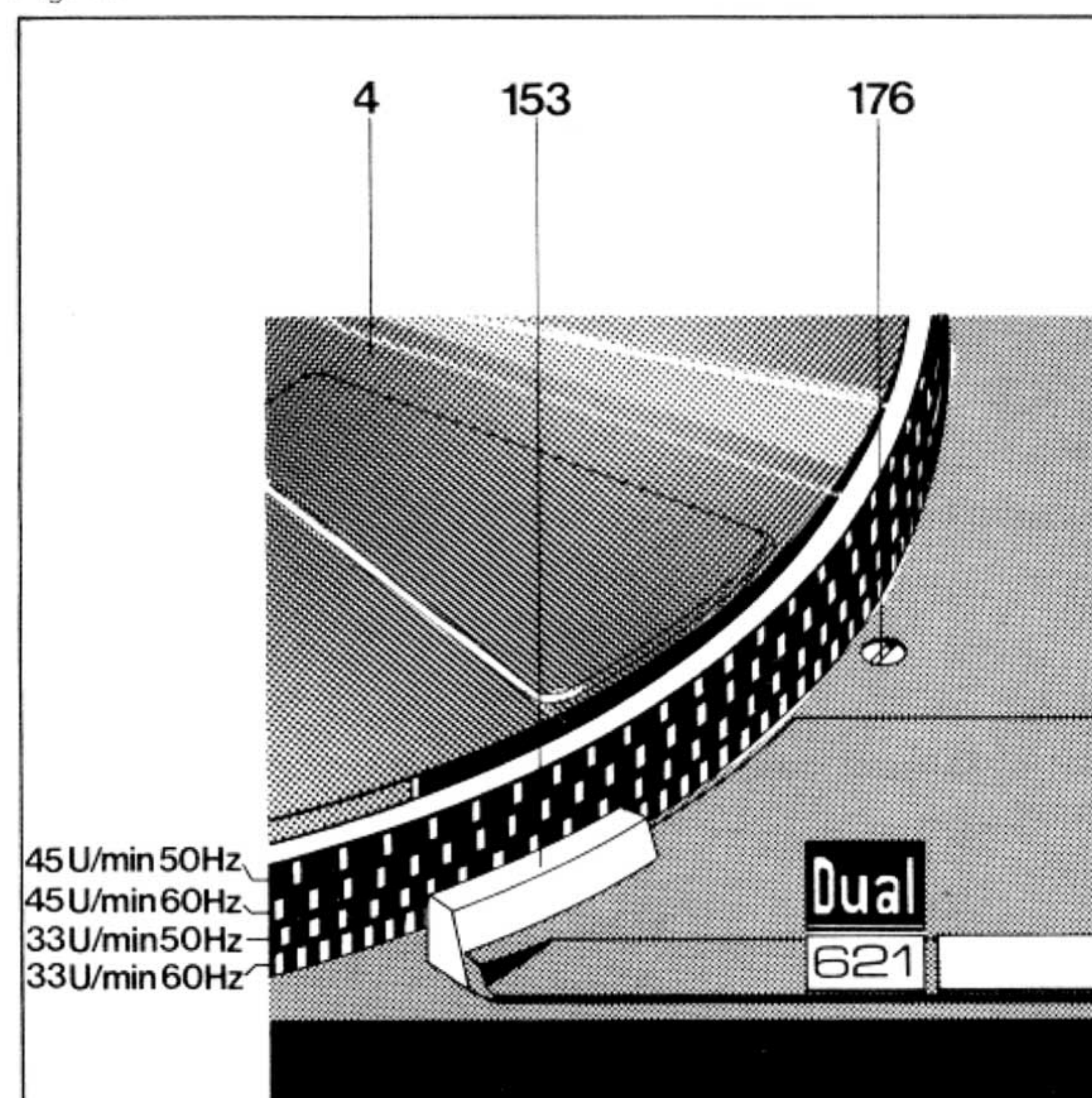


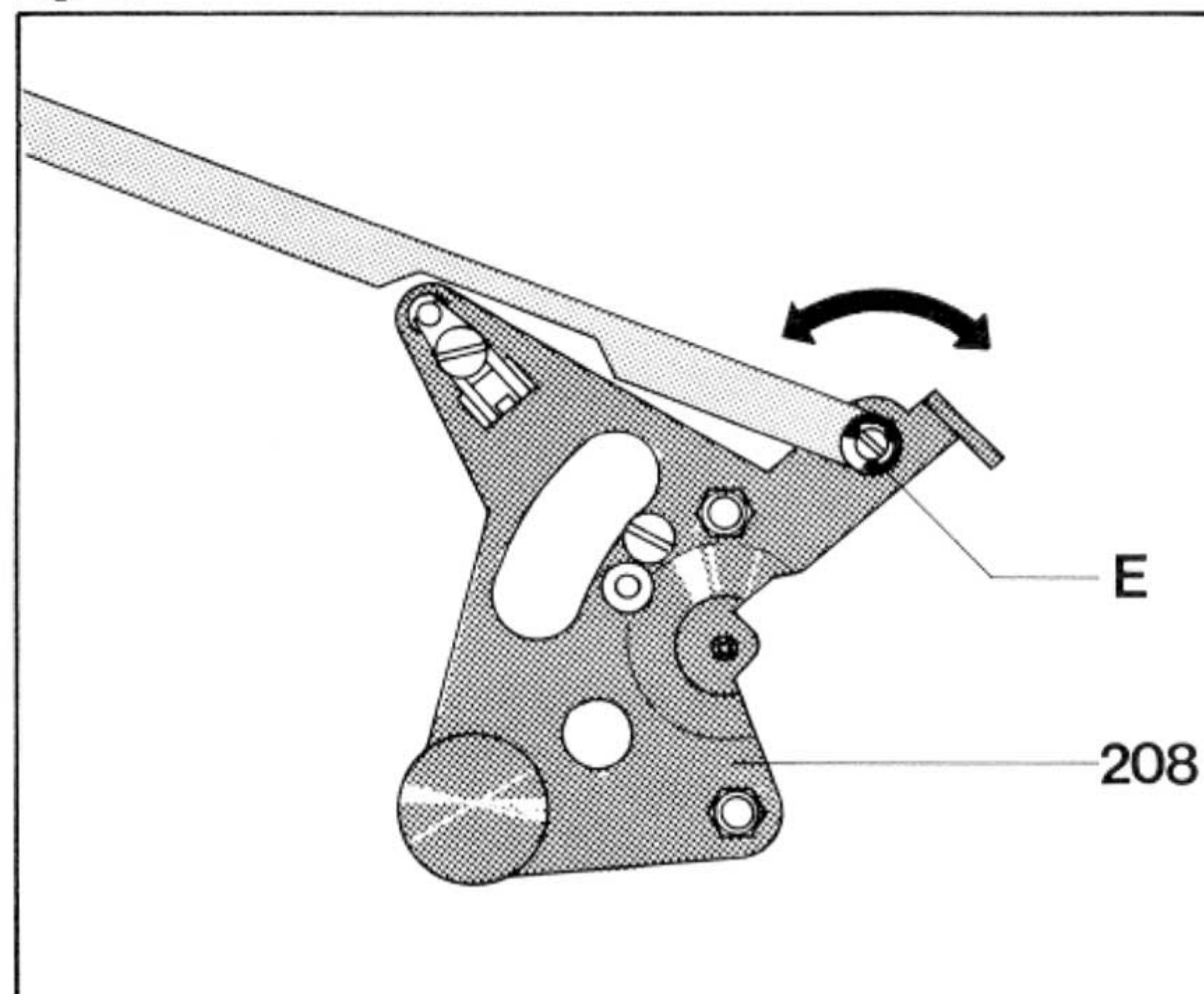
Fig. 17



Shut-off Point

The shut-off point (shut-off area of record diameter (116)/122 mm) can be varied with the eccentric (E) mounted on the segment (208).

Fig. 18

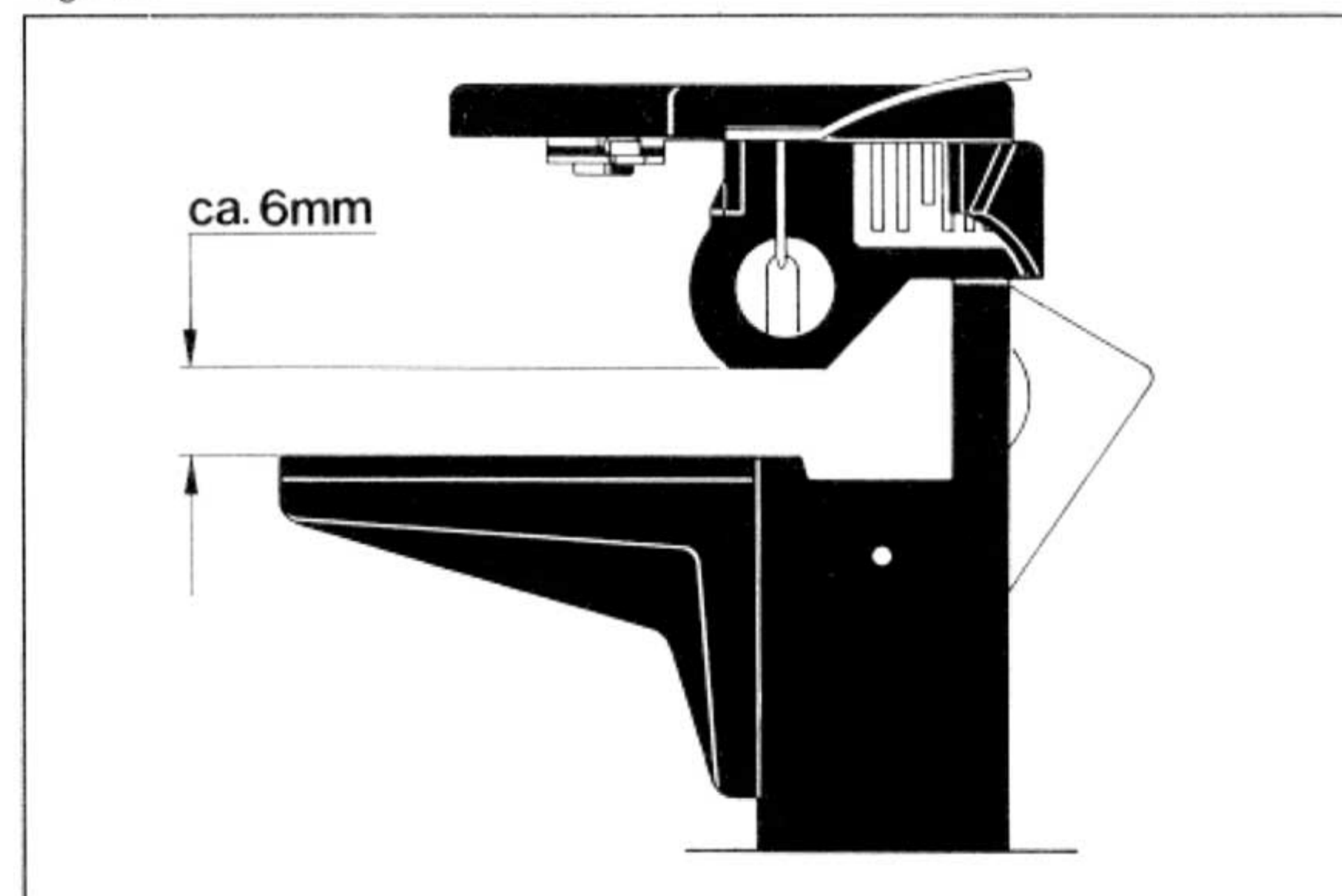


Tonearm vertical lift

With the adjustable sleeve (202) the tonearm vertical lift (for automatic operation) can be adjusted. Pull out the mains plug, unlock the tonearm, turn the cam wheel (16) until the tonearm reaches its highest point. The tonearm should now be approximately 4 mm above the pillar stop. Adjust by means of sleeve (202), turn left or right.

Adjust a play of 0.1 mm between shaft pin and coupling plate (of the tonearm) with the sleeve (57). (Measured at the tonearm app. 0.5 mm).

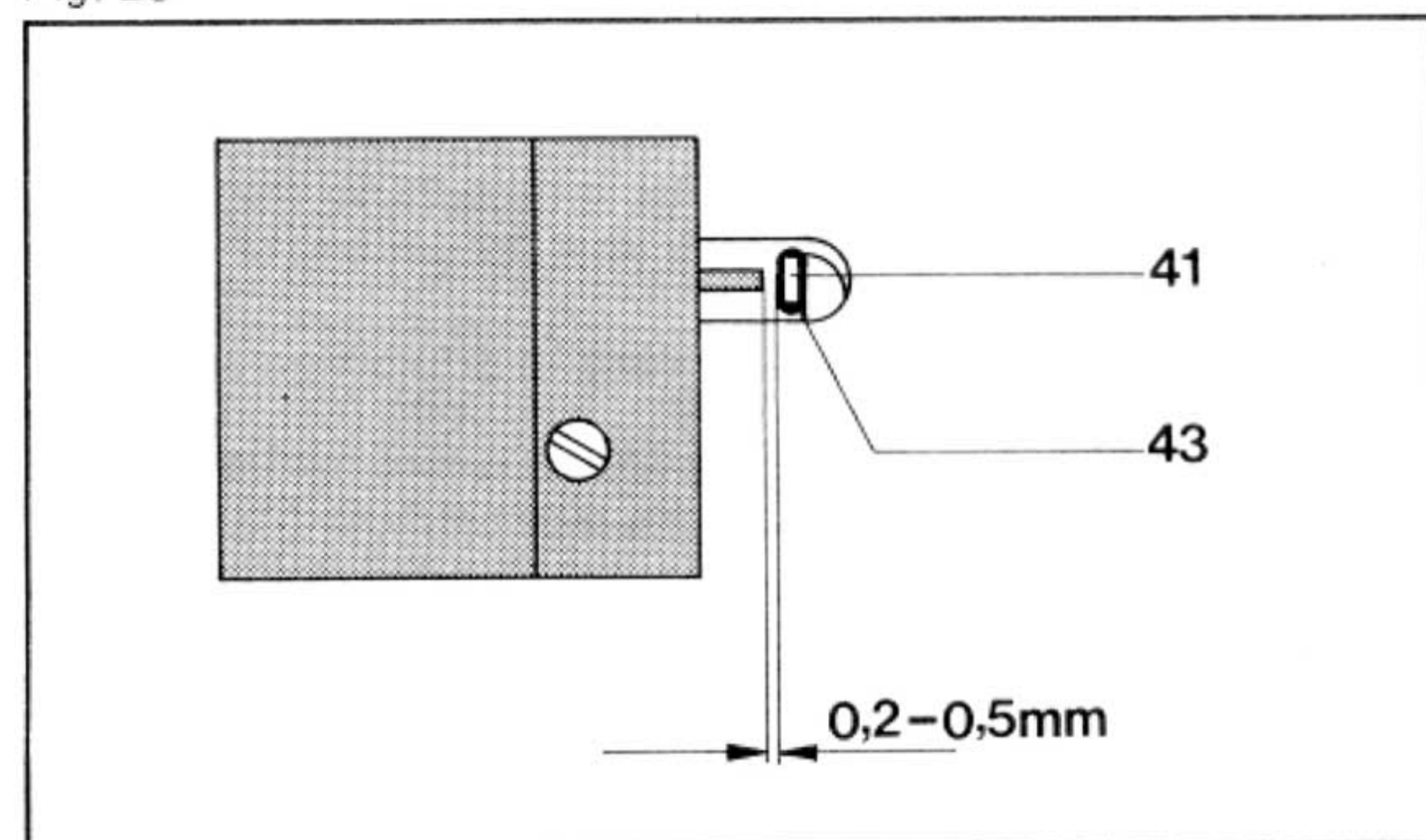
Fig. 19



Power Switch

Turn in tonearm (48). The slide (117) of the power switch (116) should have a play of 0.2 – 0.5 mm. Adjust by bending the switch arm (41).

Fig. 20



Defect

Tonearm head not parallel to platter.

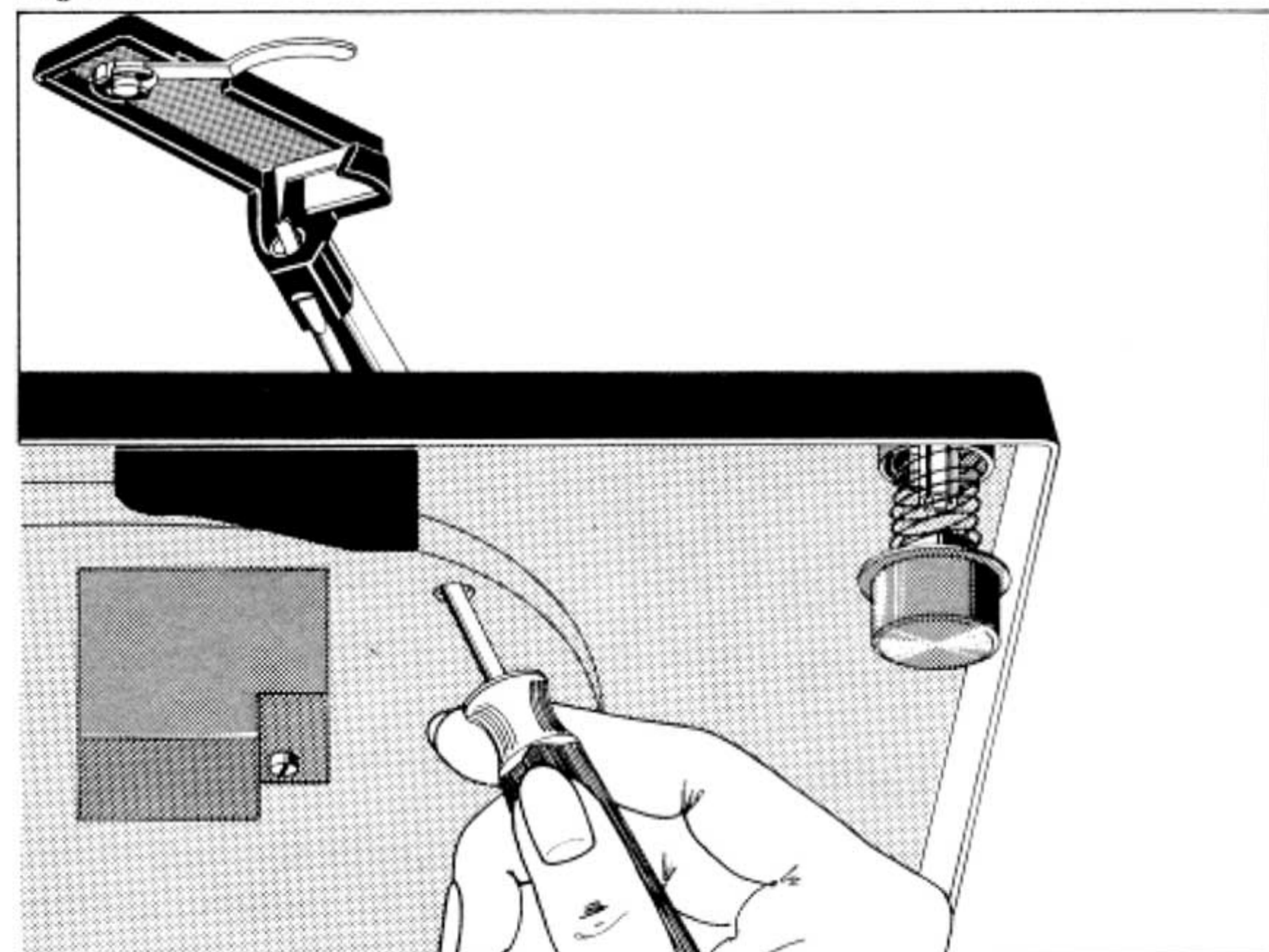
Cause

Seat of tonearm head on the tonearm tube has changed during transit.

Remedy

Remove platter. Insert screwdriver through the hole in the chassis mounting plate. Align tonearm head and retighten screw.

Fig. 21



| Defect | Cause | Remedy |
|--|---|---|
| Speed lies at limit of the range of adjustment of the pitch control | Nominal speed is maladjusted. | Readjust nominal speed, described on page 7. |
| Stylus slides out of playing groove | <ul style="list-style-type: none"> a) Tonearm is not balanced b) Tonearm tracking force is too low c) Anti-skating setting incorrect d) Stylus tip worn or chipped e) Excessive bearing friction in tonearm bearing f) Steel ball (162) of shut-off bar (161) missing | <ul style="list-style-type: none"> a) Balance tonearm b) Adjust force to the value stated by the cartridge manufacturer c) Correct anti-skating setting d) Renew stylus e) Check tonearm bearings and readjust if necessary f) Renew steel ball |
| Tonearm moves with tracking force and anti-skating scale in 0-position outwards or inwards | <ul style="list-style-type: none"> a) Antiskating device maladjusted b) Tight tonearm leads cause a torque | <ul style="list-style-type: none"> a) Readjust anti-skating device as described on page 9. b) Slacken leads |
| Tonearm does not set down on record or lowers too quickly when operating the cue control lever (190) | Excessive or insufficient damping as a result of contamination of the silicone oil in the lift tube | Remove cue control plate (207). Remove shaft pin (200) and washer (201). Remove adjustment bush sleeve (212). Remove washer (203). Remove lift pin (206) and compression spring (205). Clean lift tube and lift pin. Smear lift pin evenly with "Wacker Silicon Oil AK 300 000". Reassemble components. |
| Vertical tonearm movement shows resistance | Excessive friction of Lift Pin (205) in guide tube | See above, if necessary change the lift pin (206) |
| Platter does not turn after switching unit on and moving tonearm in side | Power supply to motor interrupted. Power fuse (110) defect | Replace the fuse (110) |
| Tonearm does not set down at the lead-in groove of the record | Tonearm set-down point is incorrectly set | The tonearm set-down point can be adjust with the eccentric bolt (176) |
| Motor does not switch off when tonearm set down on rest. | Suppressor capacitor in power switch ist faulty (short circuit). | Replace suppressor capacitor in power switch |
| Acoustic feedback | <ul style="list-style-type: none"> a) Chassis components (e.g. connecting leads) rubbing on board cut out b) Connecting leads too tight. | <ul style="list-style-type: none"> a) Line up mounting board cut-out according to installation instructions b) Slacken or lengthen leads. |

Replacement parts

| Pos. | Part.No. | Qty. | Description |
|------|----------|------|--|
| 1 | 220 213 | 1 | Centering disc |
| 2 | 214 054 | 1 | Washer |
| 3 | 244 460 | 1 | Turntable mat compl. |
| 4 | 244 461 | 1 | Turntable compl. with mat |
| 5 | 238 034 | 1 | Rotary switch |
| 6 | 242 184 | 1 | Rotary knob |
| 7 | 242 189 | 1 | Rotary knob compl. |
| 8 | 242 191 | 3 | Threated pin |
| 9 | 244 462 | 1 | Pitch control cover |
| 10 | 200 444 | 8 | Spring washer |
| 11 | 239 414 | 3 | Shipping screw compl. |
| 13 | 210 147 | 3 | Lock washer |
| 14 | 242 192 | 1 | Platter cone |
| 15 | 242 191 | 3 | Threated pin |
| 16 | 246 035 | 1 | Cam wheel compl. |
| 17 | 232 975 | 3 | Spring mount compl. (power transformer side back) |
| | 237 228 | 1 | Spring mount compl. (Tonearm side front) |
| 18 | 230 529 | 4 | Threated piece |
| 19 | 230 523 | 3 | Compression spring (Power transformer side back) |
| | 236 712 | 1 | Compression spring (Tonearm side front) |
| 20 | 200 723 | 4 | Rubber damping |
| 21 | 200 722 | 4 | Steel cup |
| 24 | 234 582 | 1 | Tension spring |
| 25 | 244 463 | 1 | Tonearm head compl. |
| 26 | 237 223 | 1 | Contact plate compl. |
| 27 | 234 611 | 1 | Handle |
| 28 | 210 182 | 1 | Lock washer |
| 29 | 210 630 | 1 | Washer |
| 30 | 210 197 | 1 | "C" clip |
| 31 | 236 242 | 1 | Holder |
| 32 | 234 635 | 2 | Stop nut |
| 33 | 230 063 | 1 | Threated pin |
| 34 | 242 602 | 1 | Frame compl. |
| 35 | 242 677 | 1 | Machine screw |
| 36 | 233 710 | 1 | Tension spring |
| 37 | 210 146 | 8 | Lock washer |
| 38 | 242 786 | 1 | Start slider |
| 39 | 210 361 | 2 | Hex nut |
| 40 | 242 768 | 1 | Bush |
| 41 | 242 765 | 1 | Switch lever |
| 42 | 242 785 | 1 | Roll |
| 43 | 200 650 | 1 | Rubber sleeve |
| 44 | 246 036 | 1 | Mounting plate compl. |
| 45 | 242 770 | 1 | Adjustment screw |
| 48 | 244 466 | 1 | Tonearm compl. |

| Pos. | Part.No. | Qty. | Description |
|------|----------|------|---------------------------|
| 49 | 244 467 | 1 | Balance weight compl. |
| 50 | 239 741 | 1 | Pointer |
| 51 | 246 037 | 1 | Bearing race compl. |
| 52 | 236 051 | 1 | Clamp screw |
| 53 | 244 244 | 2 | Washer |
| 54 | 244 103 | 2 | Hex nut |
| 55 | 234 635 | 2 | Stop nut |
| 56 | 234 634 | 1 | Threated pin |
| 57 | 242 131 | 1 | Adjustment screw |
| 59 | 246 039 | 1 | Bearing compl. |
| 60 | 236 907 | 1 | Spring housing compl. |
| 61 | 234 637 | 1 | Bearing screw |
| 65 | 246 040 | 1 | Cover back |
| 66 | 236 081 | 1 | Ring |
| 67 | 237 544 | 1 | Rotary knob |
| 68 | 242 743 | 1 | Switch lever compl. |
| 69 | 246 041 | 1 | Cover front |
| 70 | 200 444 | 8 | Spring washer |
| 71 | 244 472 | 1 | Support compl. |
| 172 | 210 362 | 1 | Hex nut |
| 101 | 210 517 | 2 | Machine screw |
| 102 | 210 648 | 2 | Washer |
| 103 | 242 283 | 2 | Bush |
| 104 | 209 939 | 2 | Sleeve |
| 105 | 210 480 | 4 | Machine screw |
| 106 | 227 548 | 2 | Grommet with cord stopper |
| 107 | 228 209 | 1 | Sleeving |
| 108 | 242 284 | 1 | Insulating plate |
| 109 | 244 473 | 1 | Power plate compl. |
| 110 | 242 478 | 1 | Fuse |
| C 51 | 225 322 | 1 | Foil |
| C 52 | 224 886 | 1 | Paper |
| C 53 | 222 760 | 2 | Ceramic |
| C 54 | 222 760 | 2 | Ceramic |
| C 55 | 227 880 | 1 | Elyt |
| D 51 | 225 247 | 1 | |
| D 52 | 227 344 | 4 | |
| D 53 | 227 344 | 4 | |
| D 54 | 227 344 | 4 | |
| D 55 | 227 344 | 4 | |
| R 51 | 232 402 | 1 | Carbon |
| R 52 | 232 401 | 1 | Carbon |
| 111 | 244 474 | 1 | Power transformer |
| 112 | 210 283 | 2 | Fillister screw |
| 113 | 244 475 | 1 | Power part compl. |
| 116 | 242 581 | 1 | Power switch compl. |
| 117 | 236 335 | 1 | Slider |

Fig. 22 Exploded View 1

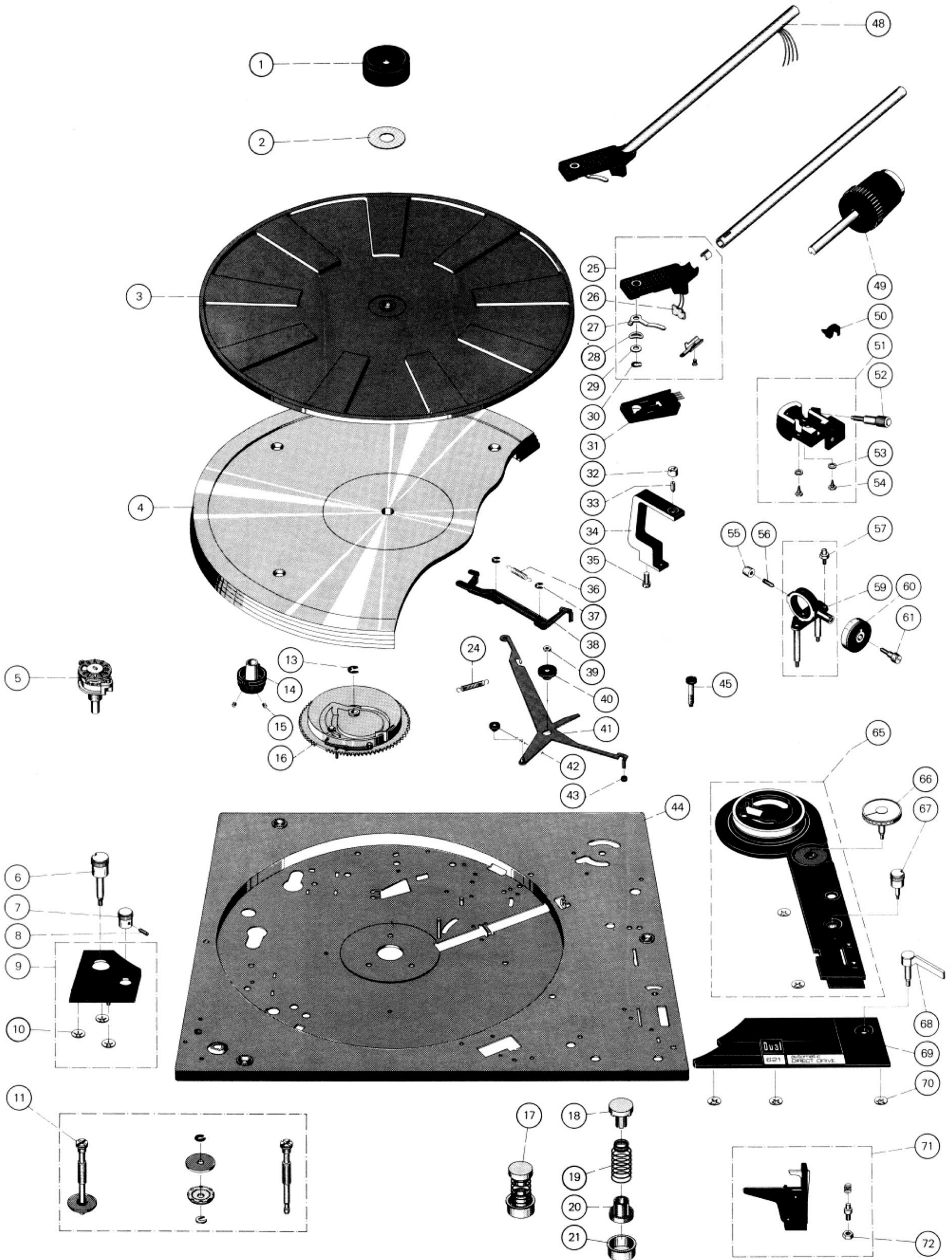
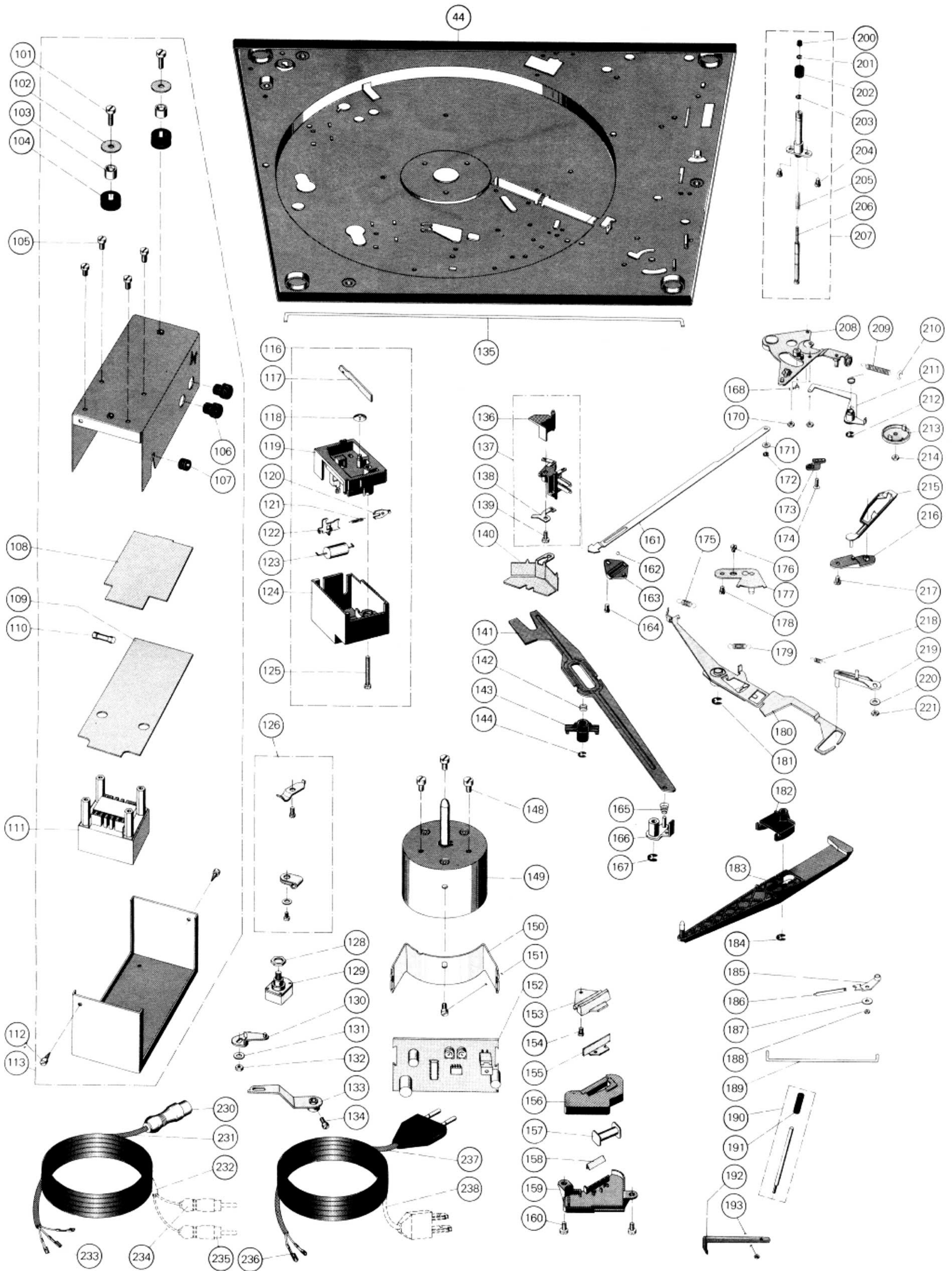


Fig. 23 Exploded View 2



Replacement parts

| Pos. | Part.No. | Qty. | Description | Pos. | Part.No. | Qty. | Description |
|------|----------|------|-----------------------------|------|----------|------|-------------------------------------|
| 118 | 200 444 | 1 | Spring washer | 204 | 210 472 | 2 | Machine screw AM 3 x 4 |
| 119 | 233 012 | 1 | Switch plate comp. | 205 | 234 798 | 1 | Compression spring |
| 120 | 219 200 | 1 | Snab spring | 206 | 242 753 | 1 | Lift pin |
| 121 | 239 732 | 1 | Tension spring | 207 | 246 043 | 1 | Lift plate |
| 122 | 230 148 | 1 | Switch angle | 208 | 246 044 | 1 | Segment |
| 123 | 241 883 | 1 | Capacitor 10 nF/250 V | 209 | 218 591 | 1 | Tension spring |
| 124 | 242 102 | 1 | Cover | 210 | 201 184 | 1 | Adjustment disc |
| 125 | 210 498 | 1 | Machine screw M 3 x 28 | 211 | 238 192 | 1 | Scating lever compl. |
| 126 | 231 079 | 1 | Cable holder | 212 | 210 146 | 8 | Lock washer 3.2 |
| 128 | 237 782 | 1 | Nut for potentiometer | 213 | 225 176 | 1 | Pivoting cam |
| 129 | 238 073 | 1 | Speed control-potentiometer | 214 | 210 362 | 1 | Hex nut |
| 130 | 242 195 | 1 | Contact piece | 215 | 242 764 | 1 | Pawl |
| 131 | 210 587 | 1 | Washer 3.2/7/1 | 216 | 239 915 | 1 | Square plate |
| 132 | 210 362 | 1 | Hex nut BM 3 | 217 | 210 472 | 1 | Machine screw AM 3 x 4 |
| 133 | 242 187 | 1 | Contact assembly | 218 | 218 154 | 1 | Tension spring |
| 134 | 210 469 | 1 | Machine screw AM 3 x 3 | 219 | 242 747 | 1 | Switch lever |
| 135 | 242 741 | 1 | Switch lever | 220 | 210 600 | 1 | Washer 3.2/8/1 |
| 136 | 242 790 | 1 | Contact arm | 221 | 210 361 | 2 | Hex nut |
| 137 | 242 612 | 1 | Muting switch compl. | 230 | 209 424 | 1 | 5 pole plug |
| 138 | 239 806 | 1 | Base shet | 231 | 207 303 | 1 | Audio cable compl. |
| 139 | 210 486 | 1 | Machine screw AM 3 x 8 | 232 | 207 301 | 1 | Audio cable compl. with cynch plugs |
| 140 | 242 791 | 1 | Screening shut | 233 | 209 436 | 3 | Flat connector sleeve |
| 141 | 242 769 | 1 | Positioning slide | 234 | 209 425 | 1 | Cynch plug white |
| 142 | 244 834 | 1 | Compression spring | 235 | 209 426 | 1 | Cynch plug black |
| 143 | 237 498 | 1 | Rotary bearing | 236 | 214 602 | 2 | AMP plug |
| 144 | 210 145 | 2 | Lock washer 2.3 | 237 | 232 996 | 1 | Power cable Europa compl. |
| 148 | 210 511 | 3 | Machine screw AM 4 x 4 | 238 | 232 995 | 1 | Power cable America compl. |
| 149 | 244 476 | 1 | Motor mechanic | *** | 214 120 | 1 | TA mounting parts |
| 150 | 242 233 | 1 | Upholder | *** | 244 347 | 1 | Mounting instruction |
| 151 | 210 511 | 1 | Machine screw AM 4 x 4 | *** | 242 682 | 1 | Operating instruction |
| 152 | 244 477 | 1 | Motor electronic compl. | *** | 242 718 | 1 | Shipping carton CS |
| 153 | 242 160 | 1 | Stroboscope trim plate | *** | 244 312 | 1 | Shipping carton |
| 154 | 210 469 | 1 | Machine screw AM 3 x 3 | | | | Motorelectronic |
| 155 | 242 158 | 1 | Reflector | C 1 | 220 766 | 4 | Elyt 47 μ F/ 25 V |
| 156 | 237 677 | 1 | Unit bottom | C 2 | 224 597 | 1 | Elyt 220 μ F/ 6 V |
| 157 | 225 321 | 1 | Glim lamp | C 3 | 216 410 | 3 | Elyt 470 μ F/ 35 V |
| 158 | 242 201 | 1 | Reflector | C 4 | 216 410 | 3 | Elyt 470 nF/ 35 V/10 % |
| 159 | 237 679 | 1 | Stroboscope cover | C 5 | 227 963 | 1 | Ceramic 10 nF/ 30 V/20 % |
| 160 | 210 472 | 2 | Machine screw AM 3 x 4 | C 6 | 227 390 | 2 | Ceramic 1 nF/ 63 V/20 % |
| 161 | 242 763 | 1 | Shut-off lever | C 7 | 227 390 | 2 | Ceramic 1 nF/ 63 V/20 % |
| 162 | 209 357 | 1 | Ball | C 8 | 202 499 | 1 | Foli 0.22 μ F/100 V/ 5 % |
| 163 | 232 104 | 1 | Ball bearing | C 9 | 222 760 | 1 | Ceramic 20 nF/ 50 V |
| 164 | 210 472 | 1 | Machine screw AM 3 x 4 | C 10 | 216 410 | 3 | Elyt 470 nF/ 35 V/10 % |
| 165 | 243 706 | 1 | Ball spring | C 11 | 235 573 | 1 | Elyt 10 μ F/ 16 V |
| 166 | 242 771 | 1 | Rotary plate | C 12 | 242 314 | 1 | Elyt 0.68 μ F/ 35 V |
| 167 | 210 146 | 8 | Lock washer 3.2 | C 13 | 220 766 | 4 | Elyt 47 μ F/ 25 V |
| 168 | 223 777 | 1 | Control stud | C 14 | 226 459 | 1 | Foil 0.1 μ F/100 V/ 5 % |
| 170 | 210 362 | 2 | Hex nut | D 1 | 227 360 | 1 | ZPD 7.5 |
| 171 | 201 187 | 1 | Washer | D 2 | 223 906 | 1 | 1 N 4148 |
| 172 | 210 145 | 3 | Lock washer | R 1 | 224 603 | 3 | 1 M Ω /0.25 W/5 % |
| 173 | 242 615 | 1 | Bearing | R 2 | 211 202 | 4 | 10 k Ω /0.25 W/5 % |
| 174 | 203 475 | 1 | Sunk screw M 3 x 8 | R 3 | 224 735 | 1 | 68 k Ω /0.25 W/5 % |
| 175 | 242 792 | 1 | Tension spring | R 4 | 239 387 | 1 | 22 k Ω /0.25 W/5 % |
| 176 | 242 751 | 1 | Excenter pin | R 5 | 224 603 | 3 | 1 M Ω /0.25 W/5 % |
| 177 | 242 748 | 1 | Plate | R 6 | 241 342 | 1 | 82 k Ω /0.25 W/5 % |
| 178 | 210 472 | 1 | Machine screw AM 3 x 4 | R 7 | 242 307 | 1 | 47 k Ω |
| 179 | 239 444 | 1 | Tension spring | R 8 | 243 616 | 1 | Potentiometer 10 k Ω |
| 180 | 242 775 | 1 | Changeover lever | R 9 | 243 617 | 1 | Potentiometer 22 k Ω /lin. |
| 181 | 210 146 | 8 | Lock washer 3.2 | R 10 | 245 531 | 1 | 24 k Ω |
| 182 | 242 789 | 1 | Bearing | R 11 | 227 384 | 1 | 110 k Ω /0.25 W/5 % |
| 183 | 246 042 | 1 | Main lever compl. | R 12 | 228 265 | 1 | 270 k Ω /0.25 W/5 % |
| 184 | 210 147 | 4 | Lock washer 4 | R 13 | 239 395 | 1 | 15 k Ω /0.25 W/5 % |
| 185 | 237 382 | 1 | Switch angle | R 14 | 224 590 | 1 | 220 k Ω /0.25 W/5 % |
| 186 | 237 383 | 1 | Spring | R 15 | 211 202 | 4 | 10 k Ω /0.25 W/5 % |
| 187 | 210 549 | 1 | Washer 2.1/5/0.5 | R 16 | 217 868 | 1 | 560 Ω /0.3 W/5 % |
| 188 | 210 353 | 1 | Hex nut BM 2 | R 17 | 239 367 | 1 | 47 k Ω /0.25 W/5 % |
| 189 | 242 774 | 1 | Switch slide | R 18 | 242 311 | 1 | 2 Ω /25 W/5 % |
| 190 | 237 541 | 1 | Lever compl. | T 1 | 229 511 | 3 | BC 172 B |
| 191 | 237 543 | 1 | Rubber sleeve | T 2 | 229 511 | 3 | BC 172 B |
| 192 | 242 742 | 1 | Curve | T 3 | 244 715 | 3 | BC 238 C |
| 193 | 210 353 | 1 | Hex nut BM 2 | T 4 | 242 306 | 1 | BD 415 |
| 200 | 216 844 | 1 | Control stud | IC 1 | 242 303 | 1 | NS 4069 |
| 201 | 210 143 | 2 | Lock washer 1.5 | IC 2 | 242 304 | 1 | NS 555 |
| 202 | 218 318 | 1 | Sleeve | | | | |
| 203 | 210 143 | 2 | Lock washer 1.5 | | | | |

***Not illustrated

Modification reserved!

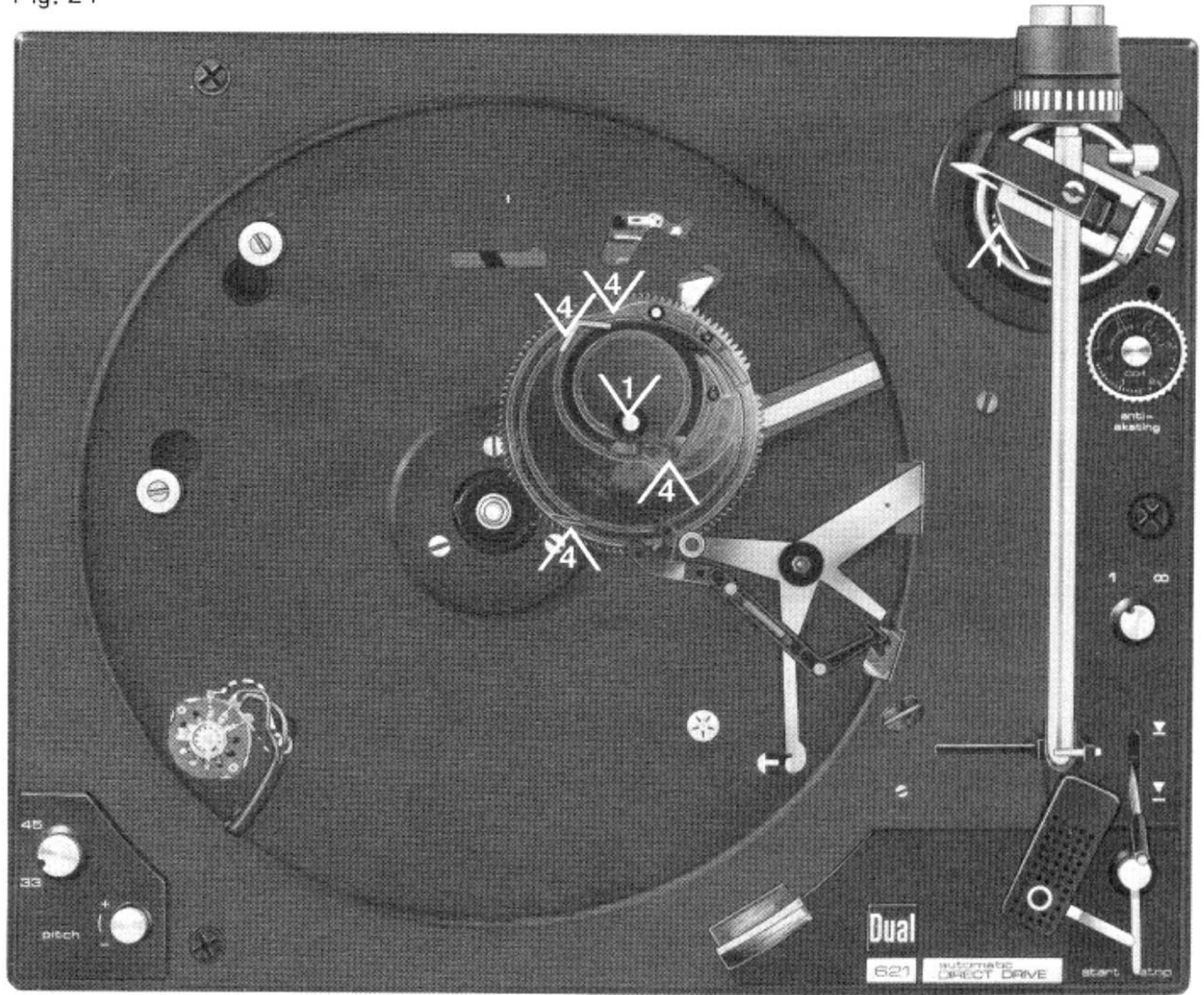
Lubrication

All bearings and friction points are adequately lubricated by the manufacturer. Replenishment of oil and grease is only necessary after approximately 2 years of normal use of the turntable as the most important bearing points (motor bearings) have sintered metal bushes.

Bearing points and friction faces should be lubricated sparingly rather than generously.

When using different lubricants, chemical decomposition can often occur. To prevent failure of lubrication we recommend using the original lubricants stated below.

Fig. 24



Wacker Silicone oil
AK 300 000



BP Super Viskostatik
10 W/40



Shell Alvania No. 2

Fig. 25

