

## 10 PC 8009028



C1 4130096 22 nF 10% 400 V

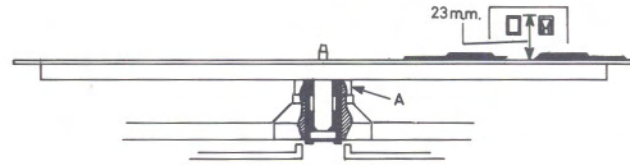
7400115 Microswitch for 6140418



C1 4130096 22 nF 10% 400 V

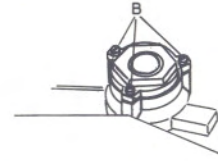
7402081 Microswitch for 6140419

## MECHANICAL ADJUSTMENT Height Adjustment of Turntable



Loosen nut A at turntable bearing and adjust the height of the bearing so that the spacing between the turntable and detector arm is 23 mm.

Tighten nut A lightly.



## Vertical Adjustment of Turntable Bearing

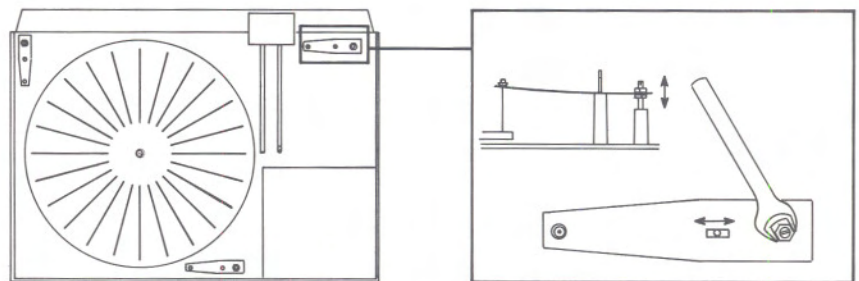
Turn transit screws to lock the floating chassis.

With screws B, adjust turntable bearing to the perpendicular to the chassis - in other words, the surface of the turntable must be parallel with the cover plate.

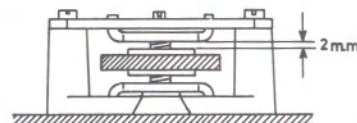
Check height adjustment (23 mm), both near the rim and near centre of the turntable.

## Height and Side Adjustment of Chassis

Loosen transit screws so that chassis floats freely.



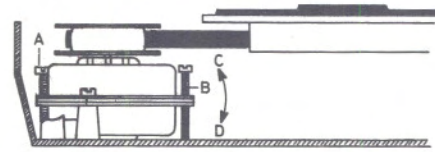
By means of the suspension springs adjust the chassis so that turntable is flush with the cover plate and so that the chassis is placed in middle of the transit screws.



Moreover slide the springs backwards or forwards so that the turntable is located in the centre of the hole in the cover plate.

To make the adjustment, first loosen the top nuts and thereafter adjust the screw to the desired height and slide the springs to the desired position. Lastly, tighten the nuts.

## Adjustment of Belt Drive



The drive motor should be adjusted so that the belt runs in the middle of the pulley and the belt face on the turntable.

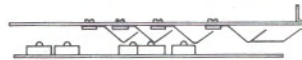
If it is desired to have the belt farther down on the pulley, loosen screw A and tighten screw B, causing the motor to tilt in the direction of arrow C.

If it is desired to have the belt farther up on the pulley, loosen screw B and tighten screw A, causing the motor to tilt in the direction of arrow D.

On completion of the adjustment tighten the loose screw. Thereafter check the adjustment.

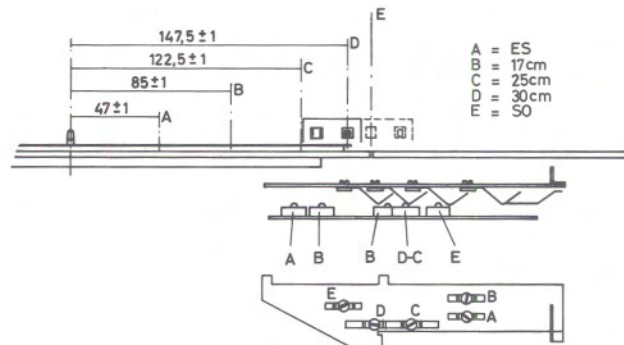
NOTE: The belt should be fitted with its ground (rough) side facing the pulley and belt face.

## Adjustment of Slide Contact Springs Height



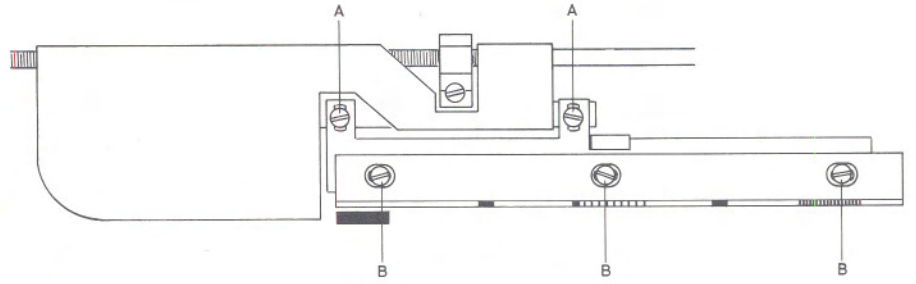
Adjust all contact springs so that they only just actuate the contacts but also so that they do not jam with the contact pins, thus blocking the slide transport.

## Placement



The horizontal placement of the springs should be made so that they will actuate their respective contacts during slide transport when the pickup is spaced from the middle of the centre pin by the amount stated on the sketch.

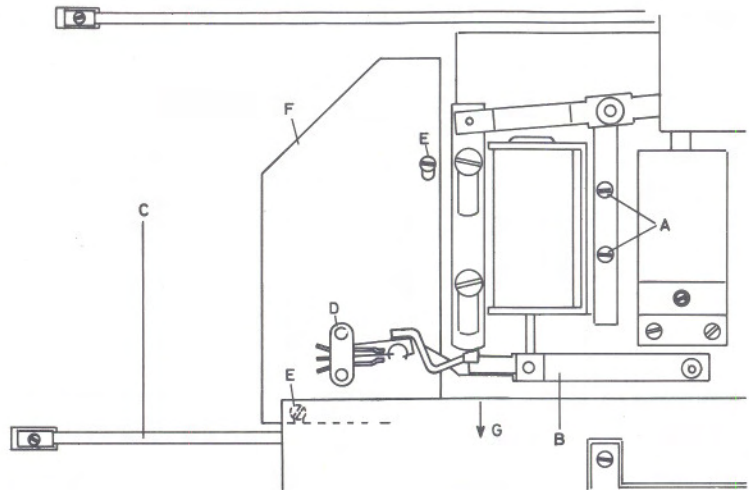
To make the adjustment, loosen the screw holding the spring in question and slide it in the oblong hole.



#### Adjustment of Position Marker

With the screws A loosened, the position marker bracket can be adjusted so that it runs parallel with the photoresistor housing.

With the screws B loosened, slide the position generator backwards or forwards until the arm lowers onto a 30 cm disc at a distance of between 146.5 mm and 148.25 mm from the centre of the disc.



#### Adjustment of Solenoid System

Solenoid.

Loosen screws A.

Slide solenoid to the place where arm B is parallel with rod C when solenoid armatur is pulled home.

Tighten screws A.

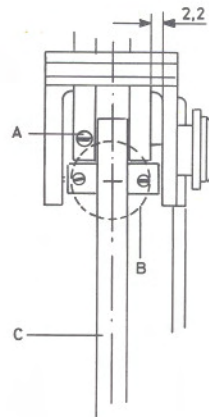
Switch D.

NOTE: Make this adjustment without power applied to the unit.

Loosen screws E and slide plate F backwards or forwards so that positive action of switch D is only just obtained when arm B is pulled against the stop in the direction of arrow G.



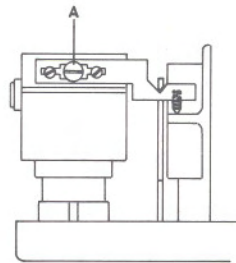
## Horizontal Placement (Fixing)



Place pickup arm in pivot bracket so pickup-arm centre line C is located in the centre line of the pin B with an accuracy to  $\pm 0,2$  mm. Adjustment is made by loosening screw A and sliding the pickup arm to one side or the other, thereafter retightening screw A.

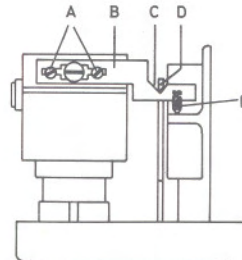
Adjustment is made by means of a plug jig (e.g. a 2.2 mm drill) placed as shown in the sketch.

## Static Balance



Set stylus force adjustment screw at „0”.  
Release pickup arm from lift arm.  
Adjust screw A until system balance is obtained.

## Parallelism



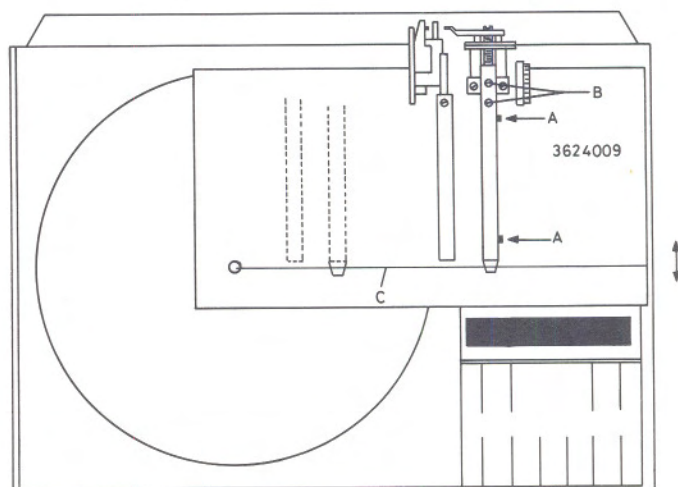
The pickup arm should be adjusted parallel with pins A in tool 3624009.

To make the adjustment, loosen screws A and thereafter slide arm B backwards or forwards. To check for parallelism, see that arm D is fully down in notch C.

Fine adjustment, if necessary, is made by bending arm C.

With screw E, adjust pickup arm to be horizontal. Reference: detector arm.

## Adjustment of pickup arm Length

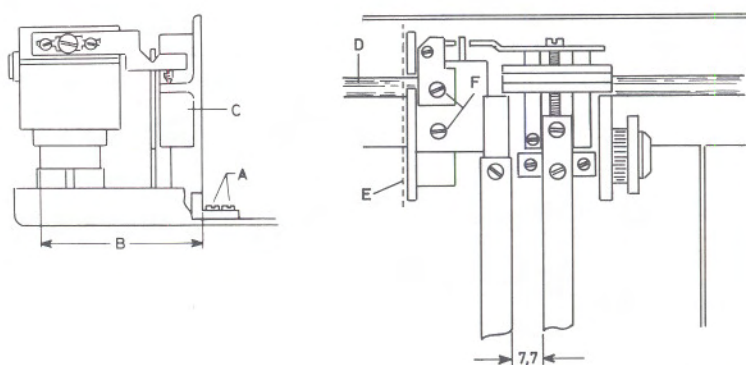


Adjust stylus force to 1 gr. Take off turntable. Run pickup arm in towards the centre.

Mount tool 3624009 on the Beogram 4002/6000 as shown by sketch. Run pickup arm out close to pins A. Lower pickup on to tool. Slide tool backwards or forwards so that stylus drops into groove C. Keep tool fixed in this position. Raise pickup and run it towards the centre. Lower pickup into the position shown in the sketch. If the stylus hits outside groove C, adjust screw B so that the deviation in question is halved. Run the pickup arm all the way out close to pins A. At this point lower the pickup and slide tool 3624009 so that the stylus is exactly in groove C. Raise the arm and now check if the arm is equally spaced from the pins A. Also make sure that the lifting arm rests in the bottom of the V-notch C on the arm B.

(See Parallelism Adjustment)

## Detector Arm Adjustment



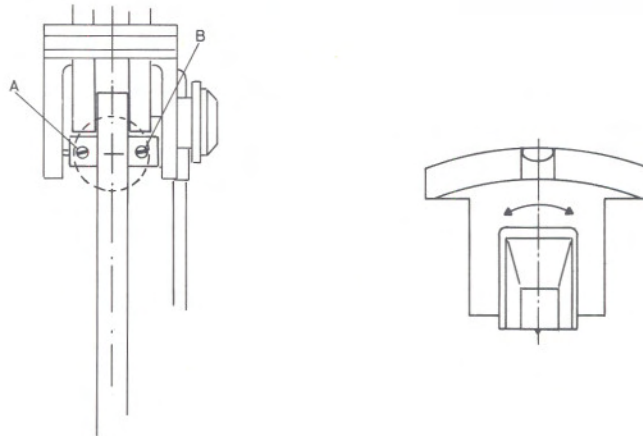
Loosen screws A.

Adjust detector arm holder C so that distance B is 49.4 mm. Make sure that surface E is at right angles to pole D.

With screws F loosened, adjust detector arm so that it is parallel with pickup arm at a distance of 7.7 mm (the pickup arm should be adjusted for horizontal placement and parallelism).

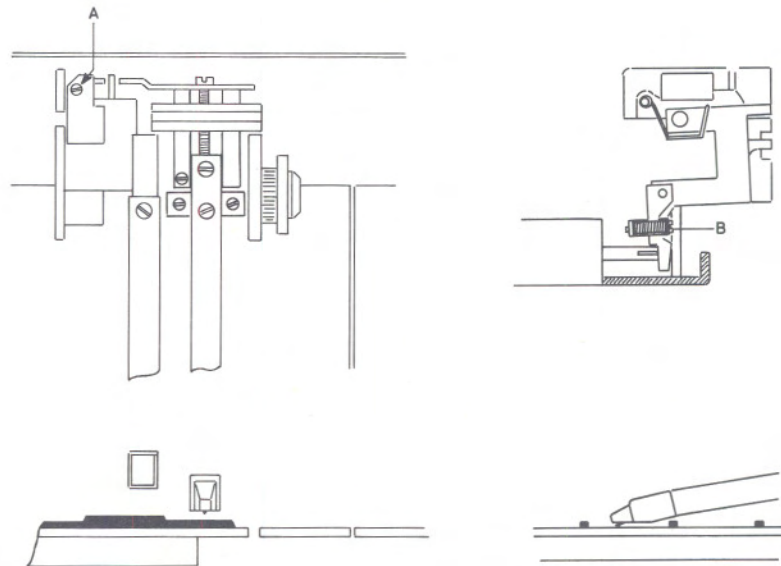
The adjustment may also be made with the pickup-arm cover plate mounted. Adjust the detector arm so that the air gap between the cover plate and the arm is the same on all three sides and the same for both arms while being parallel with the pickup arm at a distance of 7.7 mm.

## Rotation



By loosening screw A and tightening screw B or vice versa adjust the rotation of the pickup arm so that its top side is parallel with the rods. Use a spirit level for checking this adjustment.

## Lowering Adjustment

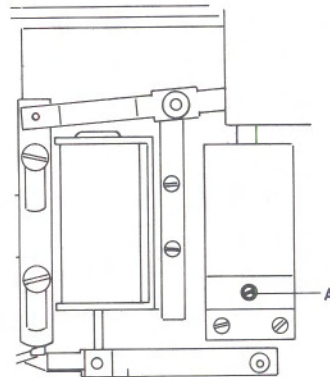


Loosen screw A.

Adjust screw B so that the pickup stylus, in the lowered condition of the pickup arm, only just touches the turntable between the ribs.

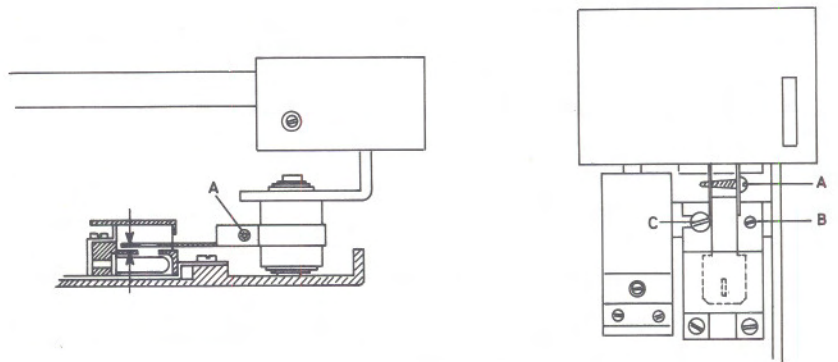
Thereafter adjust screw A, also in the lowered condition of the pickup arm, so that the pickup stylus positively clears the low portion of the turntable ribs (by approx. 0.5 mm).

## Adjustment of Damper Cylinder



Adjust valve A so that pickup lowers smoothly. Lowering time: approx. 1 sec.

## Adjustment of Shutter



To adjust the shutter, loosen screw A and slide it on the arm pivot.

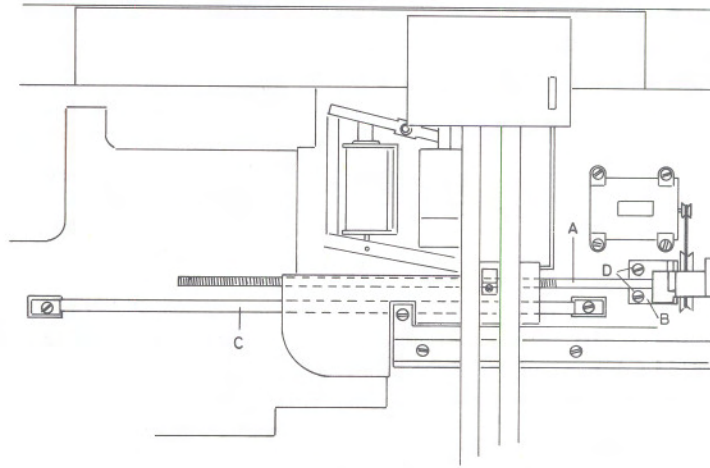
The shutter should be adjusted to be as close as possible to the housing without touching it. Also adjust the shutter so that the shutter arm will be parallel with pickup arm.

Fine adjustment of the shutter is made with a disc on turntable and with the turntable belt removed.

- 1: Run arm in across disc.
- 2: Lower pickup.
- 3: Turn turntable by hand and check to see that the servo regulates the first time after 1 - 3 revolutions and thereafter at each revolution.
- 4: If the servo does not regulate within 1 - 3 revolutions, loosen screw C and adjust eccentric B; Thereafter raise the arm and repeat items 2 to 4.
- 5: When eccentric B has been adjusted, tighten screw C.



## Adjustment of Spindle

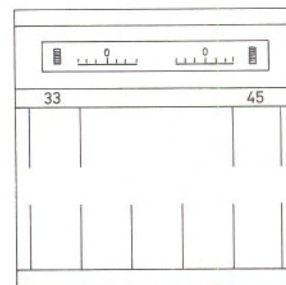
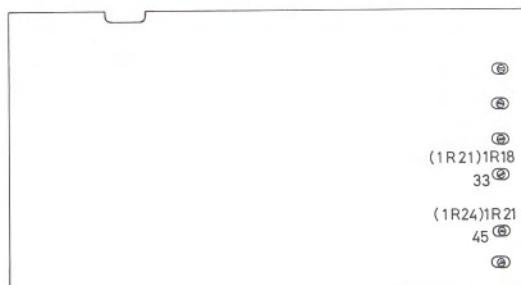


Adjust spindle A to be parallel with rod C.  
To adjust, loosen screws D and turn cap B.

## ELECTRICAL ADJUSTMENT Speed

References to adjustment potentiometers without brackets apply to:  
BEOGRAM 4000 until No. 257556  
BEOGRAM 6000 until No. 260028

References in brackets apply to units after the above numbers.



Set 33 and 45 r.p.m. dials to 0.

33 r.p.m. is adjusted with potentiometer 1R18 (1R21)

45 r.p.m. is adjusted with potentiometer 1R21 (1R24).

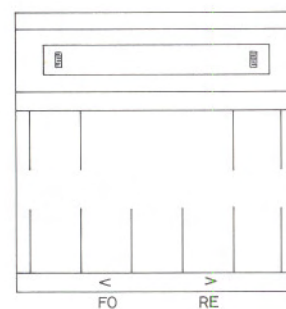
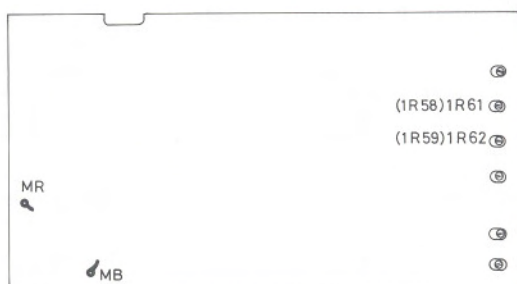
Speed may be checked in several ways:

1: Stroboscope disc and lamp connected to mains. This check involves an inaccuracy of approx. 2% due to the fact that the 50 Hz mains frequency varies by approx.  $\pm 1$  Hz.

2: Stroboscope disc and stroboscope lamp. This check provides an accuracy comparable to the tolerance of the stroboscope lamp which as a rule is considerably better than that of the mains frequency.

3: The reference to the production adjustment appears as the result of division to 50 Hz from a crystal of 1 MHz  $\pm 1$  Hz, providing an accuracy of the order of  $\mu$ %.

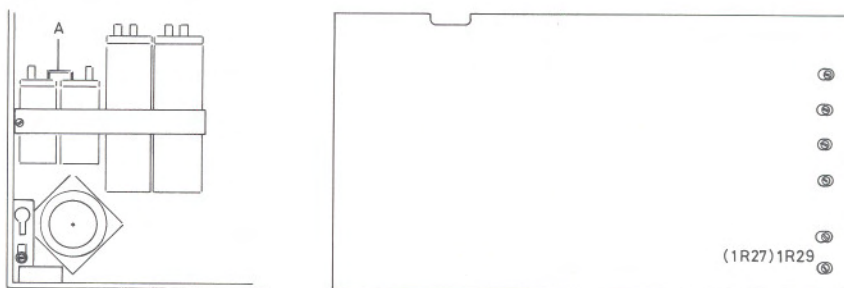
## Slow slide transport



Connect vacuum-tube voltmeter at point MR. Depress FO button and adjust voltage at point MR to 5,5 V, using 1R61 (1R58).

Connect vacuum-tube voltmeter at point MB. Depress RE button, and adjust voltage at point MB to 5,5 V, using 1R62 (1R59).

## Voltage for drive motor

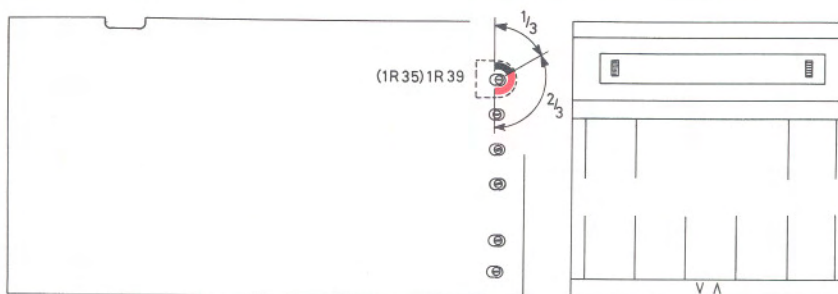


Connect LF vacuum-tube voltmeter and oscilloscope at point A so that measurements will be made with respect to chassis (zero) potential.

Adjust 1R29 (1R27) for maximum voltage and minimum 4.5 Vrms at both speeds.

No clipping (distortion) must occur.

## Detector arm sensitivity



Adjustment of sensitivity on the detector arm circuit is carried out in the interest of transparent disc.

Turn 1R39 (1R35) (DRS) anti-clockwise against the stop; thereafter turn slowly clockwise until the pickup arm, by pressing LIFT, can be lowered to a transparent disc; making sure, however, that the pickup arm cannot be lowered when no disc has been placed on the turntable.

1R39 (1R35) (DRS) must be used only within the first 1/3 of the mechanical adjustment range; see sketch.

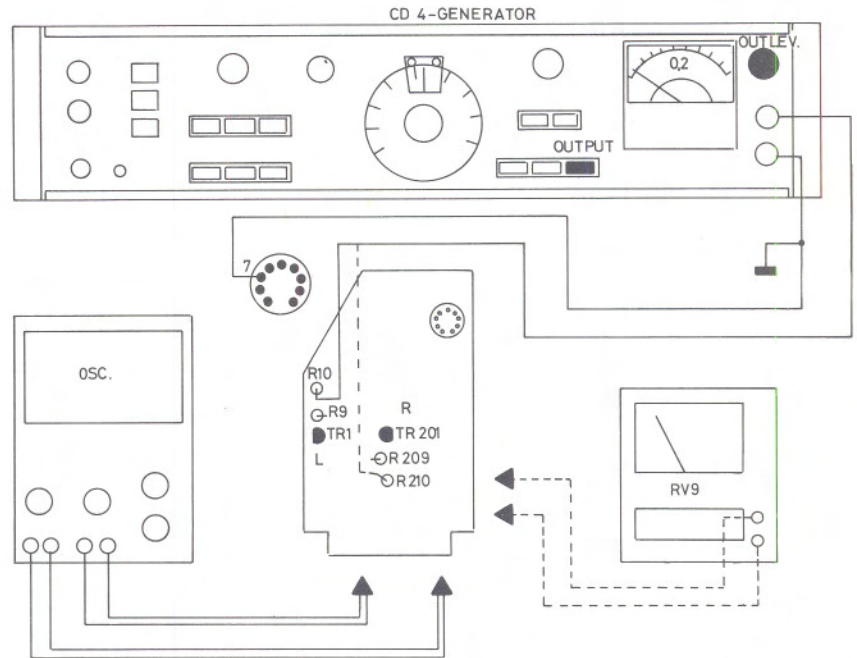
NOTE: The red sector for 1R39 (1R35) symbolises the range to which 1R39 (1R35) must not be set as it will then load the circuit.

This may have the consequence that the pickup arm can be lowered when no disc has been put on the turntable.

## ADJUSTMENT OF CD-4 DECODER Instruments

|                           |  |
|---------------------------|--|
| CD-4 Generator:           | MSG 213, Meguro                        |
| LF Vacuum-tube voltmeter: | RV 9, B&O                              |
| Oscilloscope:             | OS 1000, Advance<br>D 65, Telequipment |
| Test disc:                | 4 DE - 205, JVC                        |

### Set-up



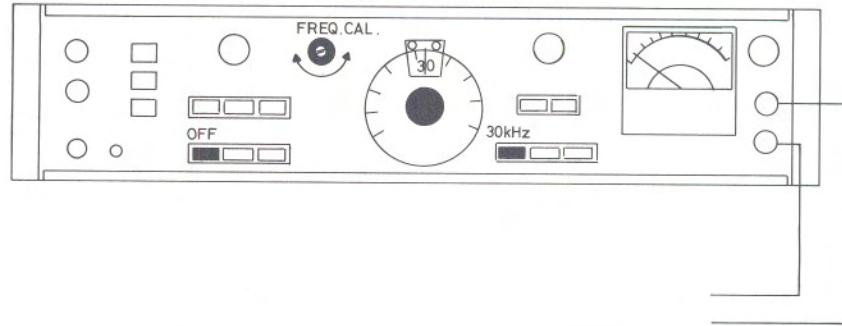
References are for left channel. Bracketed references are for right channel.  
Before connecting the generator to the decoder, adjust output voltage to  
to 400 mV (0,2 on black scale with OUTPUT depressed).

The generator should be connected to the base of 6TR1 (6TR201).

**NOTE:** measuring instruments, generator and decoder should have power  
applied to them for not less than 15 mon. before making any adjustments.

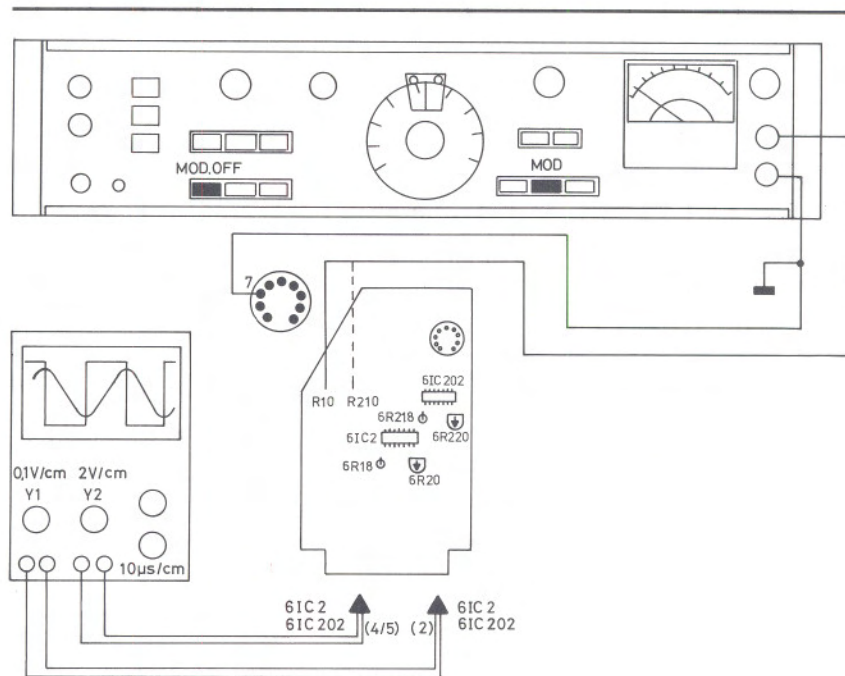


## Calibration of CD-4 Generator



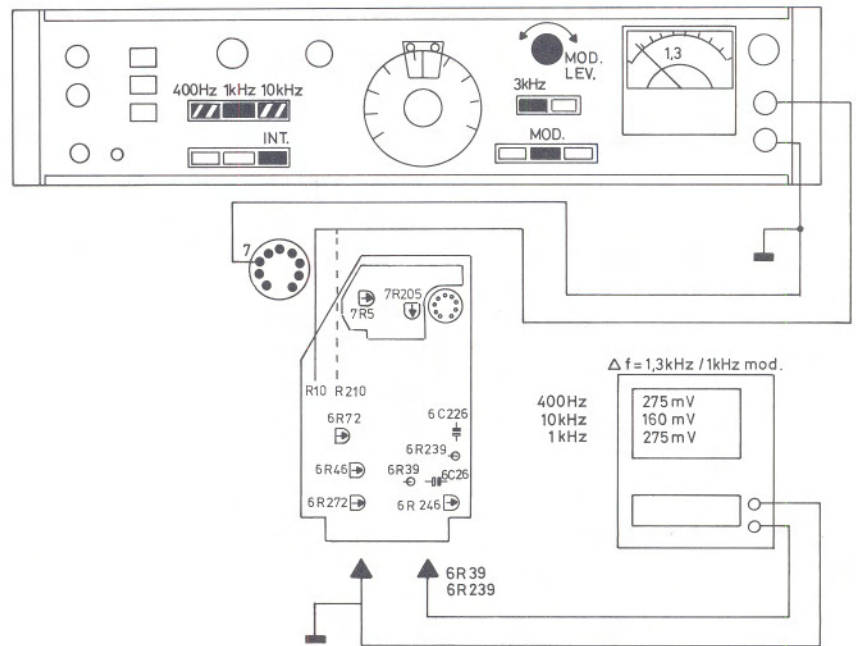
Depress MOD. SELECTOR „OFF”.  
 Depress FREQ. CAL. 30 kHz.  
 Set FREQUENCY dial to 30 kHz.  
 Adjust FREQ. CAL. for minimum meter reading. Three dips will be noted during adjustment. Select dip giving lowest meter reading.

## VCO



Depress MOD. SELECTOR „OFF”.  
 Depress MOD.  
 Start BEOGRAM (press „ON” and thereafter „<”).  
 Connect Y 1 input of oscilloscope to pin 2 of 6IC2 (6IC202).  
 Connect Y 2 input of oscilloscope to pins 4 and 5 of 6IC2 (6IC202).  
 Sensitivity: Y 1 = 0,1 V/cm; Y 2 = 2 V/cm; 10 µS/cm.  
 Adjust 6R20 (6R220) so that the leading and trailing edges of square-wave voltage intersect bottom and top of sine-wave voltage as shown in the sketch.

## ANRS Coarse Adjustment

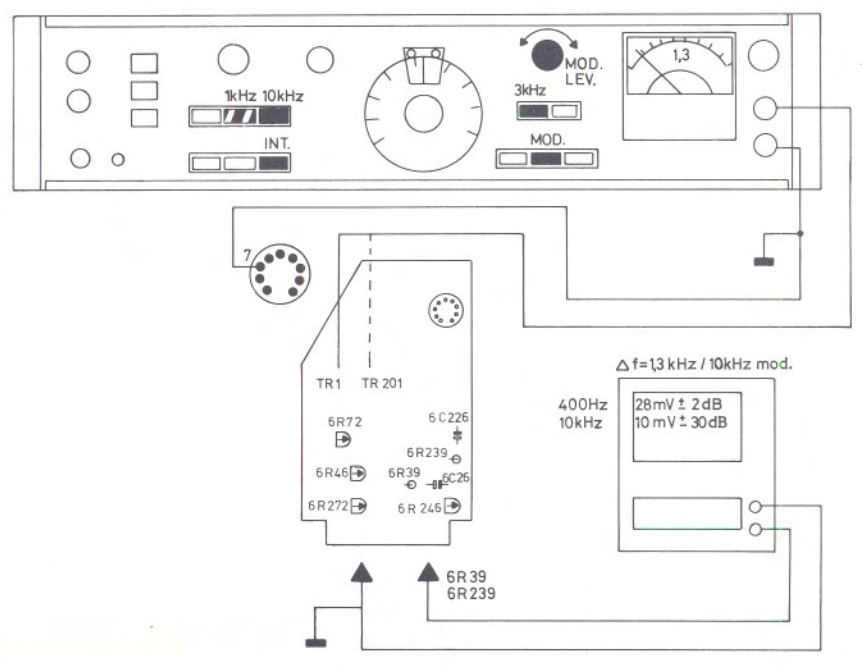


The dB values specified in the Adjustment Procedure refer to 0 dB = 1 V RMS.

- (1) Turn 7R5 (7R205) clockwise against the stop.
- (2) Turn 6R72 (6R272) anti-clockwise against the stop.
- (3) Depress MOD. SELECTOR „INT”
- (4) Depress „1 kHz”.
- (5) Depress METER RANGE „3 kHz”.
- (6) Depress „MOD”.
- (7) Adjust „MOD. LEVEL” for 1,3 on meter (0-3 scale).
- (8) Connect LF vacuum-tube voltmeter to 6R39 (6R239).
- (9) Depress „400 Hz”.
- (10) Adjust 6R46 (6R246) for 275 mV (-11 dB) at 6R39 (6R239)
- (11) Depress „10 kHz”.
- (12) Adjust 6R72 for 160 mV (-16 dB).
- (13) Depress „1 kHz”.
- (14) LF vacuum-tube-voltmeter reading should be 275 mV (-11 dB)  $\pm 1$  dB.

If tolerance is not met, check adjustment of CD-4 generator, 6R46 (6R246) and 6R72 (6R272)

## Fine Adjustment



- (15) Depress „10 kHz”
- (16) Depress METER RANGE „3 kHz”
- (17) Depress MOD.
- (18) Adjust „MOD LEVEL” so that meter reads 1,3 (0-3 scale).
- (19) Voltage at 6R39 (6R239) should be 10 mV (-40 dB)  $\pm$  3 dB.
- (20) If tolerance is not met, perform fine adjustment of 6R72 (6R272).
- (21) Depress „400 kHz”.
- (22) Voltage at 6R39 (6R239) should be 28 mV (-31 dB)  $\pm$  2 dB.
- (23) If tolerances are not met, perform fine adjustment of 6R46 (6R246).
- (24) In the cases where fine adjustments have been performed after the coarse adjustments, recheck items (4) to (14) under Coarse Adjust ment above.  
400 Hz  $\pm$  1 dB; 10 kHz  $\pm$  3 dB
- (25) If tolerances there are not met it may be found useful to check the gain of the ANRS circuit;  
this will reveal any failures in said circuit.

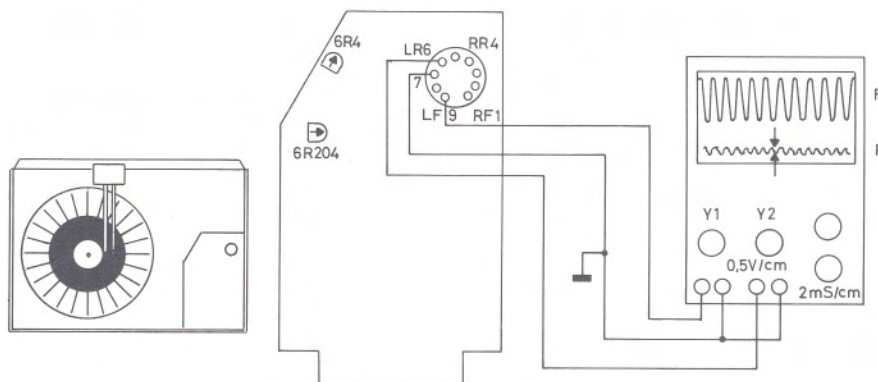
The chart, which is intended as a guide, is to be used during checking of in-put level relative to output level.

|   | mod.<br>freq. | *inp. |     | outp. |     |
|---|---------------|-------|-----|-------|-----|
|   | Hz            | mV    | -dB | mV    | -dB |
| $\Delta f = 1,3 \text{ kHz v. } 1 \text{ kHz}$  | 400           | 180   | 15  | 275   | 11  |
|   | 10 k          | 90    | 21  | 160   | 16  |
| $\Delta f = 1,3 \text{ kHz v. } 10 \text{ kHz}$ | 400           | 40    | 28  | 28    | 31  |
|   | 10 k          | 25    | 32  | 10    | 40  |

\*

Input level to be measured between 6L2 (6L202) and 6R35 (6R235).

#### Separation



Remove connections to CD-4 generator.

Separation can be measured in different ways.

1: By means of an oscilloscope.

Connect Y 1 input of oscilloscope to decoder output, pin 9 (1) (hot) and pin 7 (7) (cold) of socket.

Connect Y 2 input of oscilloscope to decoder output, pin 6 (4) (hot) and pin 7 (7) (cold) of socket.

Sensitivity: 0.5 V/cm; 2 mS/cm.

Play test record, e.g. JVC 4DE - 205, section 3, with the MMC 6000 to be used with the decoder. Adjust 6R4 (6R204) for minimum at Y 2 input of oscilloscope, corresponding to minimum in rear channel.

2: By means of a 4-channel amplifier.

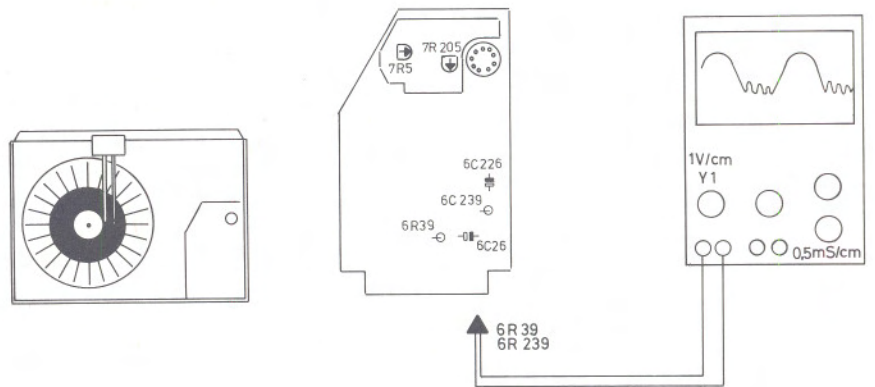
Turn off front channels.

Play test record JVC 4DE - 205 with the MMC 6000 to be used with the decoder.

Adjust 6R4 (6R204) for minimum sound in rear channels.



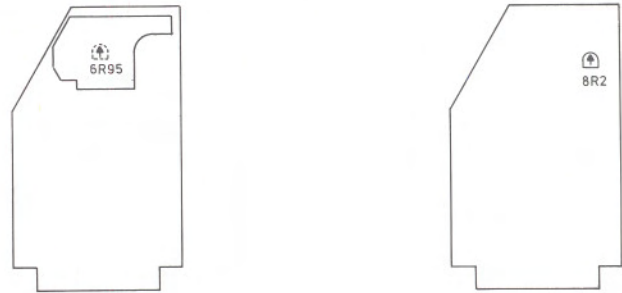
## Carrier Detector



## SILENT CIRCUIT

Adjust carrier detector by means of JVC test record 4DE - 205, section 2.  
Adjust 7R5 (7R205) so that 400 Hz sine-wave curve is only just undistorted.

**NOTE:** After replacement of pickup it is necessary to perform adjustment of channel separation and carrier.



## Beogram 6000

Adjust 6R95 to admit passage of pickup signal between 1 and 2 disc revolutions after pickup has been lowered (33 r.p.m.)

## Beogram 4002

Adjust 8R2 as described for 6R95 above



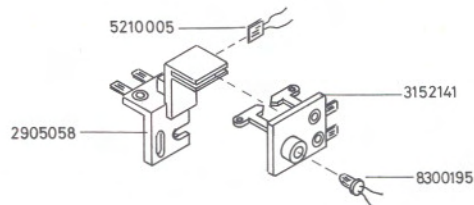
PARTS LIST FOR BEOGRAM 4002-6000  
TYPE 5501 - 5502

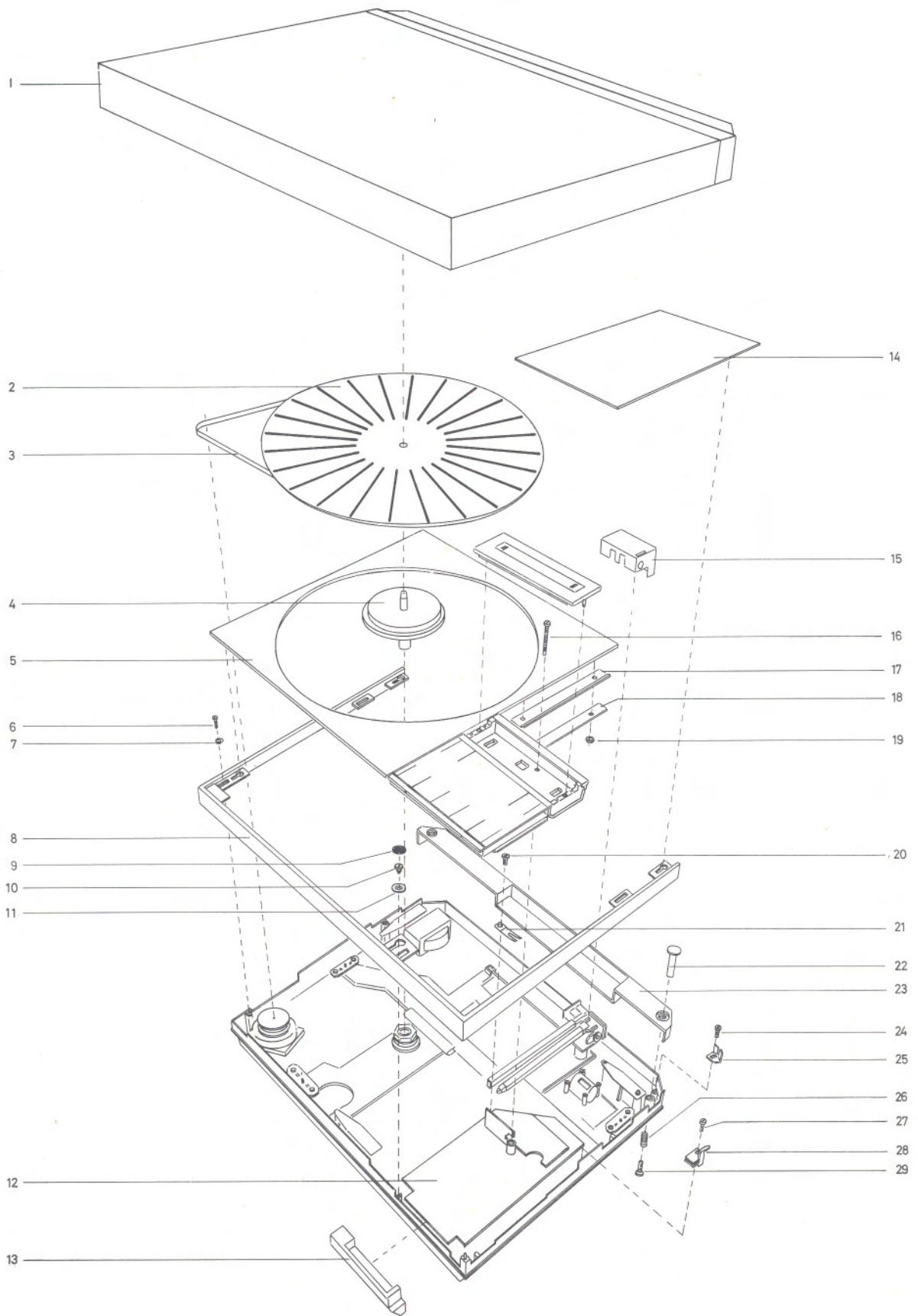
|    |         |  |
|----|---------|--|
| 1  | 3164184 | Lid collected - BEOGRAM 4002                         |
|    | 3164183 | Lid collected - BEOGRAM 6000                         |
| 2  | 2726086 | Turntable  |
| 3  | 2732018 | Driving-belt   |
| 4  | 2726078 | Turntable lower                                      |
| 5  | 3458113 | Top plate  |
| 6  | 2038009 | Screw AM 3 x 8 mm DIN 963                            |
| 7  | 2803004 | Steering washer                                      |
| 8  | 3412051 | Cabinet, teak 4002                                   |
|    | 3412053 | Cabinet, rosewood 4002 + 6000                        |
|    | 3412054 | Cabinet, oak 4002                                    |
|    | 3412055 | Cabinet, white 6000                                  |
| 9  | 3912037 | Felt washer  |
| 10 | 2038901 | Screw  |
| 11 | 2620019 | Washer   |
| 12 | 8009029 | PC board muting BEOGRAM 4002                         |
|    | 8005012 | PC board decoder BEOGRAM 6000                        |
|    | 8009026 | PC board carrier frequency detectors<br>BEOGRAM 6000 |
| 13 | 3152159 | Holder   |
| 14 | 3458114 | Top plate  |
| 15 | 3164142 | Cover for PU-arm                                     |
| 16 | 2038237 | Screw AM 3 x 30 mm DIN 84                            |
| 17 | 2816085 | Spring   |
| 18 | 3014023 | Steering plate                                       |
| 19 | 2380093 | Nut M3 nylon   |
| 20 | 2042205 | Screw AM 4 x 6 mm DIN 84                             |
| 21 | 2816083 | Holder   |
| 22 | 2994012 | Bushing  |
| 23 | 3452204 | Back piece for BEOGRAM 4002                          |
|    | 3452205 | Back piece for BEOGRAM 6000                          |
| 24 | 2038208 | Screw AM 3 x 5 mm DIN 84                             |
| 25 | 3014028 | Rule for back piece right                            |
|    | 3014029 | Rule for back piece left                             |
| 26 | 2810066 | Spring   |
| 27 | 2038220 | Screw AM 3 x 12 mm DIN 84                            |
| 28 | 3152135 | Lead holder  |
| 29 | 2042216 | Screw AM 4 x 16 mm DIN 84                            |

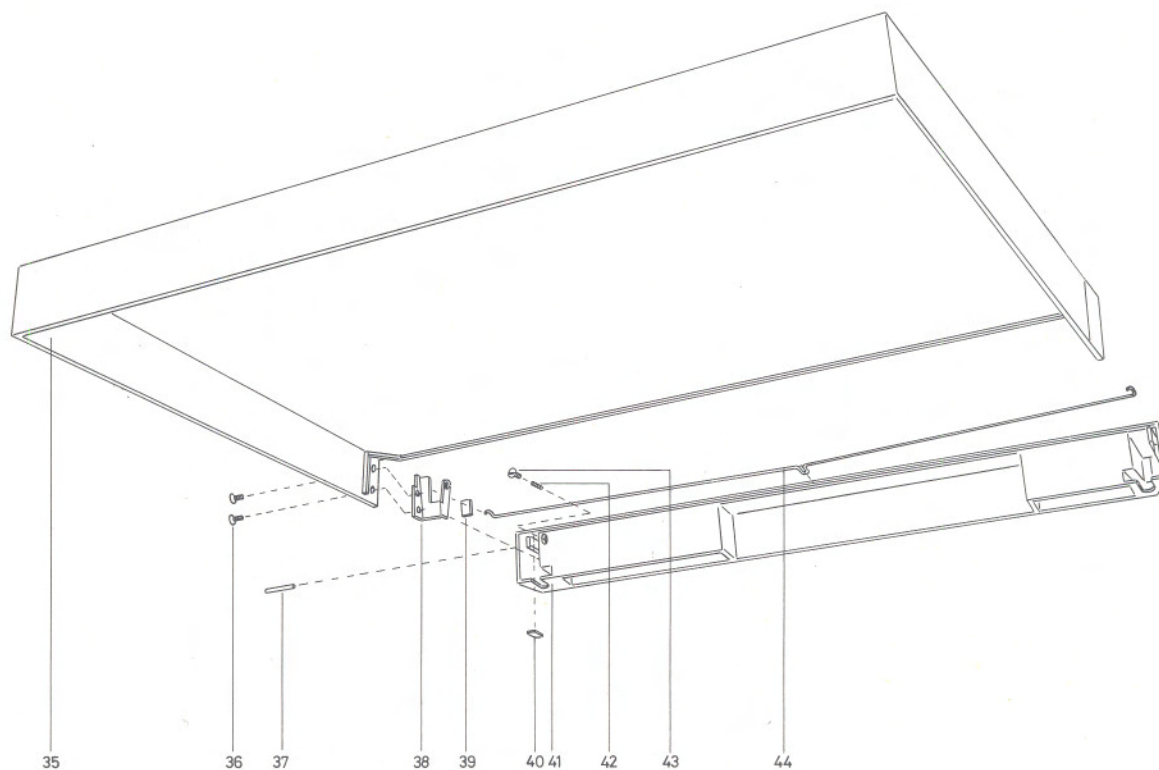
Comment on pos. 137, page 7-8:

BEOGRAM 4002, type 5501 till No.  
277556  
BEOGRAM 6000, type 5502 till No.  
260028

When ordering parts for run-off stop please  
apply the numbers shown on the sketch







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|    |         |                                  |
|----|---------|----------------------------------|
| 35 | 3164190 | Dust cover                       |
|    | 3010007 | Stop for cover                   |
|    | 2560039 | Decorative list for BEOGRAM 4002 |
|    | 2560040 | Decorative list for BEOGRAM 6000 |
| 36 | 2038055 | Screw AM 3 x 6 mm DIN 63         |
| 37 | 2830014 | Bearing needle                   |
| 38 | 3030023 | Hinge left                       |
|    | 3030022 | Hinge right                      |
| 39 | 3015030 | Guide piece                      |
| 40 | 3010011 | Stop for cover                   |
| 41 | 3452145 | Back piece                       |
| 42 | 2072704 | Treaded pin M3 x 2,5 mm DIN 438  |
| 43 | 2038050 | Screw AM 3 x 4 DIN 63            |
| 44 | 2819062 | Spring                           |

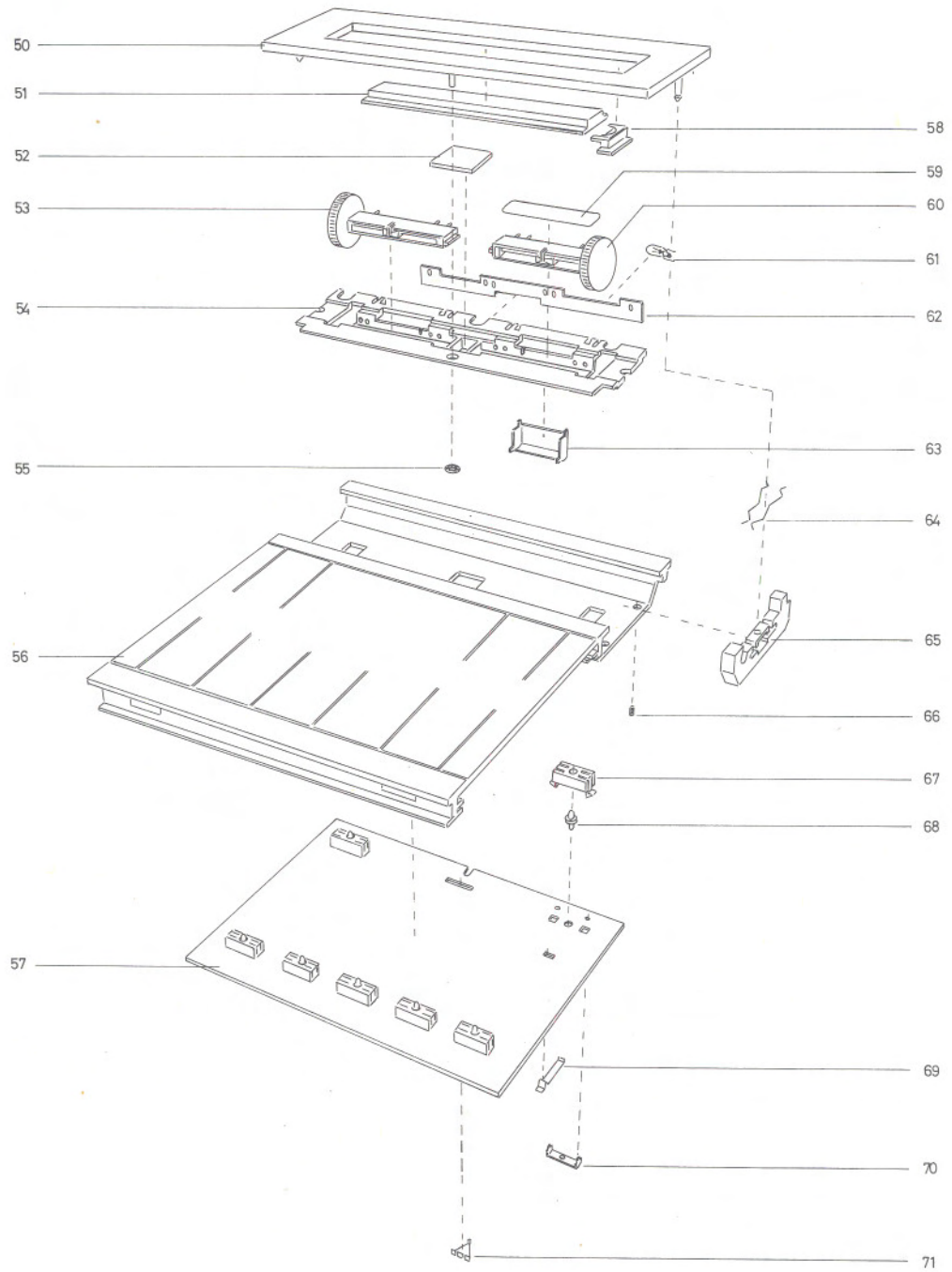
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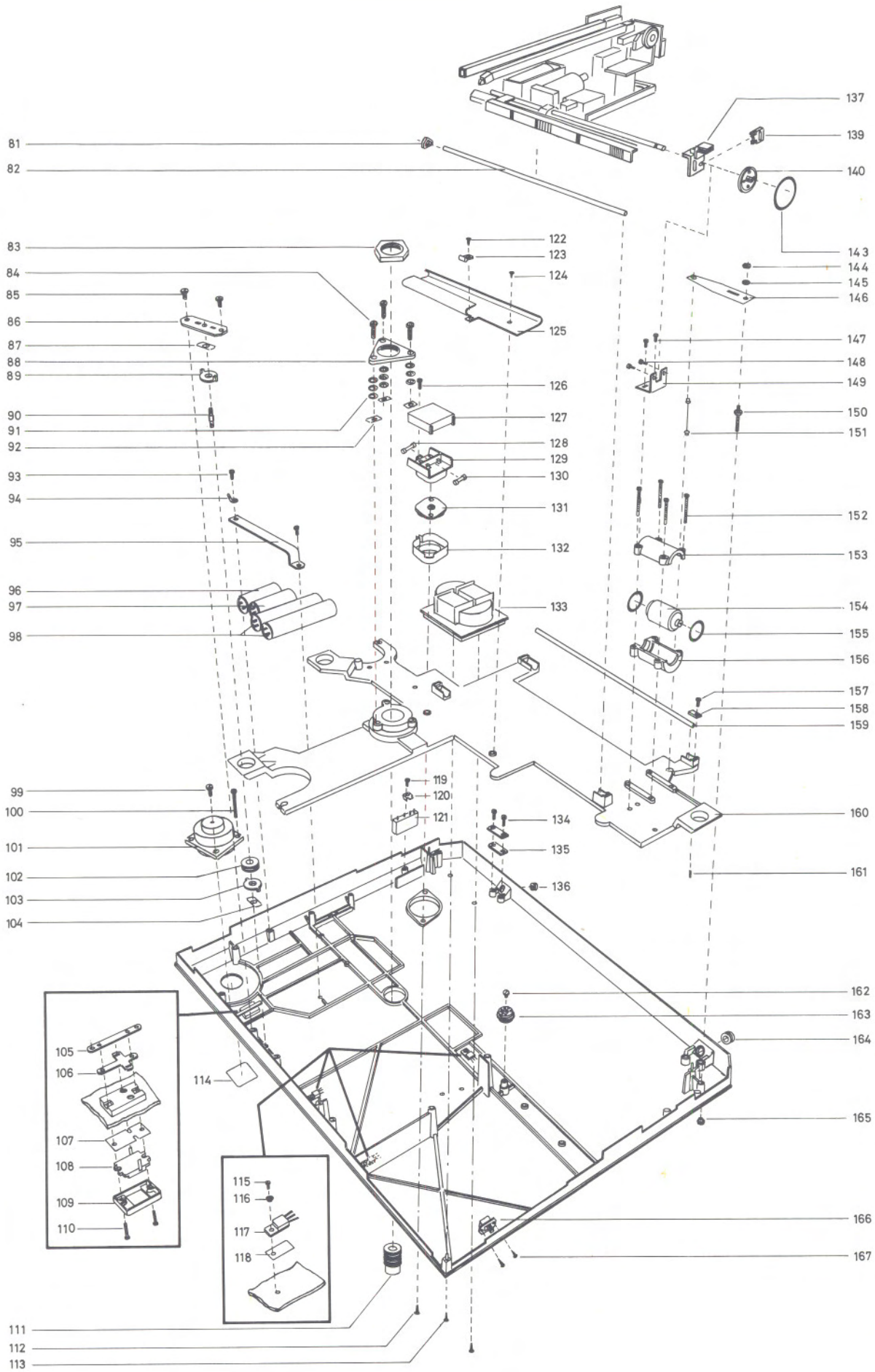


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|    |         |                                 |
|----|---------|---------------------------------|
| 50 | 3458121 | Top plate                       |
| 51 | 3199046 | Dial                            |
| 52 | 3164179 | Cover                           |
| 53 | 5300090 | Potentiometer, left             |
| 54 | 3131085 | Housing for potentiometer       |
| 55 | 2395034 | Spire                           |
| 56 | 3168049 | Chassis complete, BEOGRAM 4002  |
|    | 3168048 | Chassis complete, BEOGRAM 6000  |
|    | 2361018 | Pin 2 x 5 mm                    |
| 57 | 8009020 | PC-board, terminal print        |
| 58 | 3199047 | End piece                       |
| 59 | 3180621 | Sticker                         |
| 60 | 5300091 | Potentiometer, right            |
| 61 | 8230052 | Lamp                            |
| 62 | 6140376 | PC-board                        |
| 63 | 3300044 | Cover                           |
| 64 | 2819096 | Spring                          |
| 65 | 3152129 | Holder                          |
| 66 | 2072701 | Threaded pin M 3 x 4 mm DIN 438 |
| 67 | 3152068 | Holder                          |
| 68 | 2992059 | Contact pin                     |
| 69 | 7500075 | Contact spring                  |
| 70 | 7500050 | Contact bridge                  |
| 71 | 2816111 | Locking spring                  |

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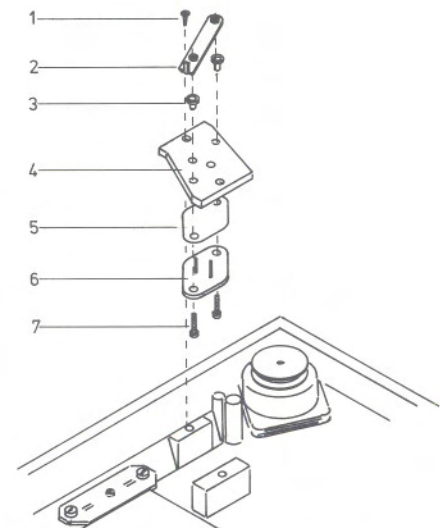


|      |         |                                  |     |         |                           |
|------|---------|----------------------------------|-----|---------|---------------------------|
| 81   | 2905045 | Bearing for slide                | 135 | 0287155 | Clamp                     |
| 82   | 2830049 | Shaft                            | 136 | 2938077 | Rubber                    |
| 83   | 2380096 | Nut                              | 137 | 2905056 | Bearing for spindle       |
| 84   | 2038216 | Screw AM 3 x 10 mm DIN 84        | 139 | 2905055 | Bearing                   |
| 85   | 2042211 | Screw AM 4 x 12 mm DIN 84        | 140 | 2722014 | Pulley                    |
| 86   | 3014021 | Rule                             |     | 2072920 | Treaded pin M 2 x 6 mm    |
| 87   | 2628005 | Spring                           |     | 2380068 | Square nut M2             |
| 88   | 2641076 | Clamp                            | 143 | 2732032 | Servobelt                 |
| 89   | 2381008 | Wing nut                         | 144 | 2380016 | Nut                       |
| 90   | 2993024 | Threaded pin                     | 145 | 2622022 | Washer                    |
| 91   | 2624027 | Washer                           | 146 | 2816081 | Blade spring              |
| 92   | 2390020 | Spire nylon                      | 147 | 2038208 | Screw AM 3 x 5 mm DIN 84  |
| 93   | 2038208 | Screw AM 3 x 5 mm DIN 84         | 148 | 2038208 | Screw AM 3 x 5 mm DIN 84  |
| 94   | 7530008 | Solder tag                       | 149 | 2530253 | Bracket                   |
| 95   | 2510108 | Clamp                            | 150 | 2072914 | Adjustment screw          |
| 96   | 4200260 | 150 µF BIPOLAR                   | 151 | 3955022 | Strop                     |
| 97   | 4200259 | 4000 µF/25 V                     | 152 | 2038235 | Screw AM 3 x 25 mm DIN 84 |
| 98   | 4200310 | 4000 µF/50 V                     | 153 | 3131048 | Housing for motor         |
| 99   | 2038216 | Screw AM 3 x 10 mm DIN 84        | 154 | 8400062 | Servomotor                |
| 100  | 2038233 | Screw AM 3 x 20 mm DIN 84        |     | 2722016 | Pulley                    |
| 101  | 8400066 | Motor                            | 155 | 2732015 | O-ring                    |
|      | 2722010 | Belt washer                      | 156 | 3131048 | Housing for motor         |
| 102  | 2938099 | Rubber bushing                   | 157 | 2038216 | Screw AM 3 x 10 mm DIN 84 |
| 103  | 2381007 | Wing nut                         | 158 | 2644003 | Clamp                     |
| 104  | 2628005 | Spring                           | 159 | 2830045 | Shaft                     |
| 105  | 7530045 | Solder tag                       | 160 | 3114066 | Chassis                   |
| 106  | 3172027 | Insulating piece                 | 161 | 2072705 | Treaded pin M 3 x 4 mm    |
| 107  | 3170047 | Mica sheet                       | 162 | 2038901 | Screw                     |
| 108* | 8320103 | Transistor, OTR1                 | 163 | 7200031 | Noval socket              |
| 109  | 3164027 | Cover                            |     | 7220066 | Noval plug                |
| 110  | 2034215 | Screw AM 2 x 8 mm DIN 84         | 164 | 2938004 | Rubber bushing            |
| 111  | 2905064 | Bearing                          | 165 | 3103067 | Feet                      |
| 112  | 2013012 | Screw 2,84 x 12,7 ART 4260       | 166 | 6273712 | Switch                    |
| 113  | 2013002 | Screw 2,84 x 6,35 ART 4260       |     | 7500014 | Contact bushing           |
| 114  | 3180632 | Sticker, black                   | 167 | 2011304 | Screw                     |
| 115  | 2038206 | Screw AM 3 x 4 mm DIN 84         |     |         |                           |
| 116  | 2938097 | Insulating bushing               |     |         |                           |
| 117  | 8320266 | Transistor OTR2                  |     |         |                           |
|      | 8320265 | Transistor OTR3                  |     |         |                           |
|      | 8320312 | Transistor OTR4                  |     |         |                           |
| 118  | 3170121 | Mica sheet                       |     |         |                           |
| 119  | 2038247 | Screw AM 3 x 6 mm DIN 84         |     |         |                           |
| 120  | 2574043 | Bracket                          |     |         |                           |
| 121  | 8310020 | Rectifier                        |     |         |                           |
| 122  | 2013200 | Screw 2,84 x 6,35 ART 4261       |     |         |                           |
| 123  | 2514023 | Lead holder                      |     |         |                           |
| 124  | 2013002 | Screw 2,84 x 6,35 ART 4260       |     |         |                           |
| 125  | 3013017 | Rule                             |     |         |                           |
| 126  | 2038247 | Screw AM 3 x 6 mm DIN 84         |     |         |                           |
| 127  | 3164109 | Cover                            |     |         |                           |
|      | 3180607 | Plate                            |     |         |                           |
| 128  | 6600000 | Fuse 250 MA-250VT                |     |         |                           |
| 129  | 3131060 | Fuse holder                      |     |         |                           |
| 130  | 6600000 | Fuse 250MA-250V-T                |     |         |                           |
| 131  | 7401001 | Mains-voltage switch             |     |         |                           |
| 132  | 3131050 | Housing for mains-voltage switch |     |         |                           |
| 133  | 8013137 | Mainstransformer                 |     |         |                           |
| 134  | 2038222 | Screw AM 3 x 14 mm DIN 84        |     |         |                           |

\* Pos. 108

When replacing OTR1 in chassis with transistor mounting as shown on the drawing to the right order No. 8320222.  
(Production of transistor 8320103 has stopped)

- |   |         |                            |
|---|---------|----------------------------|
| 1 | 2013004 | Screw 2,84 x 9,52 ART 4260 |
| 2 | 7530045 | Soldering lug              |
| 3 | 2938009 | Insulating bushing         |
| 4 | 3358101 | Heat sink                  |
| 5 | 3170002 | Mica sheet                 |
| 6 | 8320222 | Transistor OTR1            |
| 7 | 2038216 | Screw AM 3 x 10 DIN 84     |





|      |         |                                |     |         |                               |
|------|---------|--------------------------------|-----|---------|-------------------------------|
| 174  | 2038952 | Screw 3 x 4 DIN 963            | 226 | 2072701 | Treaded pin M 3 x 4 mm        |
| 175  | 2038206 | Screw 3 x 4 DIN 84             | 227 | 2034231 | Screw AM 2 x 4 mm DIN 84      |
| 176  | 2038247 | Screw AM 3 x 6 mm DIN 84       | 228 | 2854023 | Arm                           |
| 177  | 2072918 | Treaded pin M 3 x 15 mm        | 229 | 2390001 | Circlip                       |
| 178  | 3151086 | Holder                         | 230 | 3342030 | Counterweight                 |
| 179  | 2038247 | Screw AM 3 x 6 mm DIN 84       | 231 | 3152162 | Holder for counterweight      |
|      | 2625002 | Tooth-lock washer 3,2          | 232 | 2390046 | Circlip                       |
|      | 7530008 | Solder tag                     | 233 | 2070400 | Treaded pin                   |
| 180  | 3152076 | Holder                         | 234 | 3150032 | Bearing holder                |
| 181  | 2032208 | Screw AM 3 x 5 mm DIN 84       |     | 2900003 | Ball bearing                  |
| 182  | 3391407 | Transport protection           |     | 2622168 | Washer, brass                 |
| 183  | 2034236 | Screw AM 2 x 3 mm DIN 84       |     | 2812036 | Spring                        |
| 184  | 3152145 | Holder for cover               |     | 2390047 | Circlip                       |
|      | 3947421 | Tape                           | 235 | 2548109 | Bracket                       |
|      | 2645025 | Plate                          | 236 | 2700008 | Adjustment bushing            |
| 185  | 3937808 | Slave arm                      | 237 | 2834041 | Shaft collected               |
| 186  | 2390004 | Circlip UG 3 x 0,6             | 238 | 2831025 | Shaft                         |
| 187* | 3152179 | Holder for pickup arm complete | 239 | 2365085 | Valve                         |
| 188  | 2810044 | Spring                         | 240 | 2390046 | Circlip                       |
|      | 6420044 | Insulation                     | 241 | 2038206 | Screw AM 3 x 4 mm DIN 84      |
| 189  | 8760002 | Foto cell                      | 242 | 3131059 | Damper cylinder               |
| 190  | 2853025 | Arm                            | 243 | 2038222 | Screw AM 3 x 14 mm DIN 84     |
| 191  | 8230047 | Lamp 6 V                       | 244 | 3164196 | Housing with lamp             |
| 192  | 3375023 | Optics                         | 245 | 2854024 | Diaphragmarm                  |
| 193  | 2853039 | Arm                            | 246 | 2013203 | Screw 2,84 x 12,7 mm ART 4261 |
| 194  | 2810024 | Spring                         | 247 | 3131052 | Housing for foto resistor     |
| 195  | 6810001 | Magnet coil                    |     | 5210004 | Fotoresistor                  |
| 196  | 2850047 | Press bar                      | 248 | 3151085 | Holder                        |
| 197  | 2038948 | Screw                          | 249 | 2038946 | Screw                         |
| 198  | 2854022 | Change lever                   | 250 | 2794029 | Roller                        |
| 199  | 2034236 | Screw AM 2 x 3 mm DIN 84       | 251 | 2622041 | Washer                        |
| 200  | 2850077 | Pickup arm                     | 252 | 2038208 | Screw AM 3 x 5 mm DIN 84      |
| 201  | 2038216 | Screw AM 3 x 10 mm DIN 84      | 253 | 2798003 | Exentrik                      |
| 202  | 2641075 | Clamp                          | 254 | 3114068 | Chassis, slide                |
| 203  | 2072911 | Adjustment screw               |     | 3180536 | Sticker for transport screw   |
| 204  | 8954410 | Pickup MMC 4000 - BEOGRAM 4002 |     | 2038946 | Screw                         |
|      | 8954400 | Pickup MMC 6000 - BEOGRAM 6000 |     | 2620028 | Rubber disc                   |
|      | 3624008 | Service-kit for pickup         | 255 | 2624028 | Thrust washer                 |
| 205  | 3302230 | Cap for pickup                 | 256 | 2390046 | Circlip                       |
| 206  | 2038948 | Screw                          | 257 | 2510086 | Bracker                       |
| 207  | 2624021 | Washer                         | 258 | 6140417 | PC-board                      |
| 208  | 2038206 | Screw AM 3 x 4 mm DIN 84       | 259 | 2038206 | Screw AM 3 x 4 mm DIN 84      |
| 209  | 8009028 | PC-board                       |     |         |                               |
|      | 7400115 | Microswitch                    |     |         |                               |
| 210  | 2389031 | Bearing nut                    |     |         |                               |
| 211  | 2038208 | Screw AM 3 x 5 mm DIN 84       |     |         |                               |
| 212  | 3152074 | Holder                         |     |         |                               |
| 213  | 2993028 | Spindle                        |     |         |                               |
| 214  | 3199048 | Dial                           |     |         |                               |
| 215  | 3151139 | Holder for dial                |     |         |                               |
| 216  | 2816116 | Spring                         |     |         |                               |
| 217  | 2034220 | Screw AM 2 x 12 DIN 84         |     |         |                               |
| 218  | 2034211 | Screw AM 2 x 6 DIN 84          |     |         |                               |
| 219  | 2819061 | Spring                         |     |         |                               |
| 220  | 2851083 | Lifting arm complete           |     |         |                               |
|      | 2812065 | Spring                         |     |         |                               |
|      | 2034219 | Screw AM 2 x 10 DIN 84         |     |         |                               |
| 221  | 2812041 | Spring                         |     |         |                               |
| 222  | 2390004 | Circlip                        |     |         |                               |
| 223  | 2894029 | Armature                       |     |         |                               |
| 224  | 2802023 | Washer                         |     |         |                               |
| 225  | 2038233 | Screw AM 3 x 20 mm DIN 84      |     |         |                               |

## NOT SHOWN PARTS

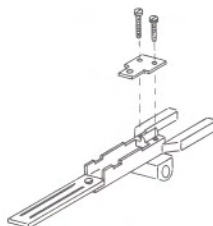
|         |                                 |
|---------|---------------------------------|
| 6271048 | Mains lead                      |
| 6270169 | PU-wire with plug               |
| 3535039 | Instruction diaphragm 5501/5502 |
| 3391384 | Outer carton                    |
| 3391385 | Top/bottom inserts              |
| 3397157 | Packing - lidinserts            |
| 3397158 | Packing - left                  |
| 3397159 | Packing - right                 |

SUBJECT TO CHANGE WITHOUT NOTICE

\* Pos. 187

Two types of holders for pick-up arm have been used in production. The type shown to the right is no longer available. If one of the parts for this holder is defective and must be replaced it will be necessary to replace the following parts:

|     |         |                                  |
|-----|---------|----------------------------------|
| 187 | 3152179 | Holder for pick-up arm, complete |
| 200 | 2850077 | Pick-up arm                      |





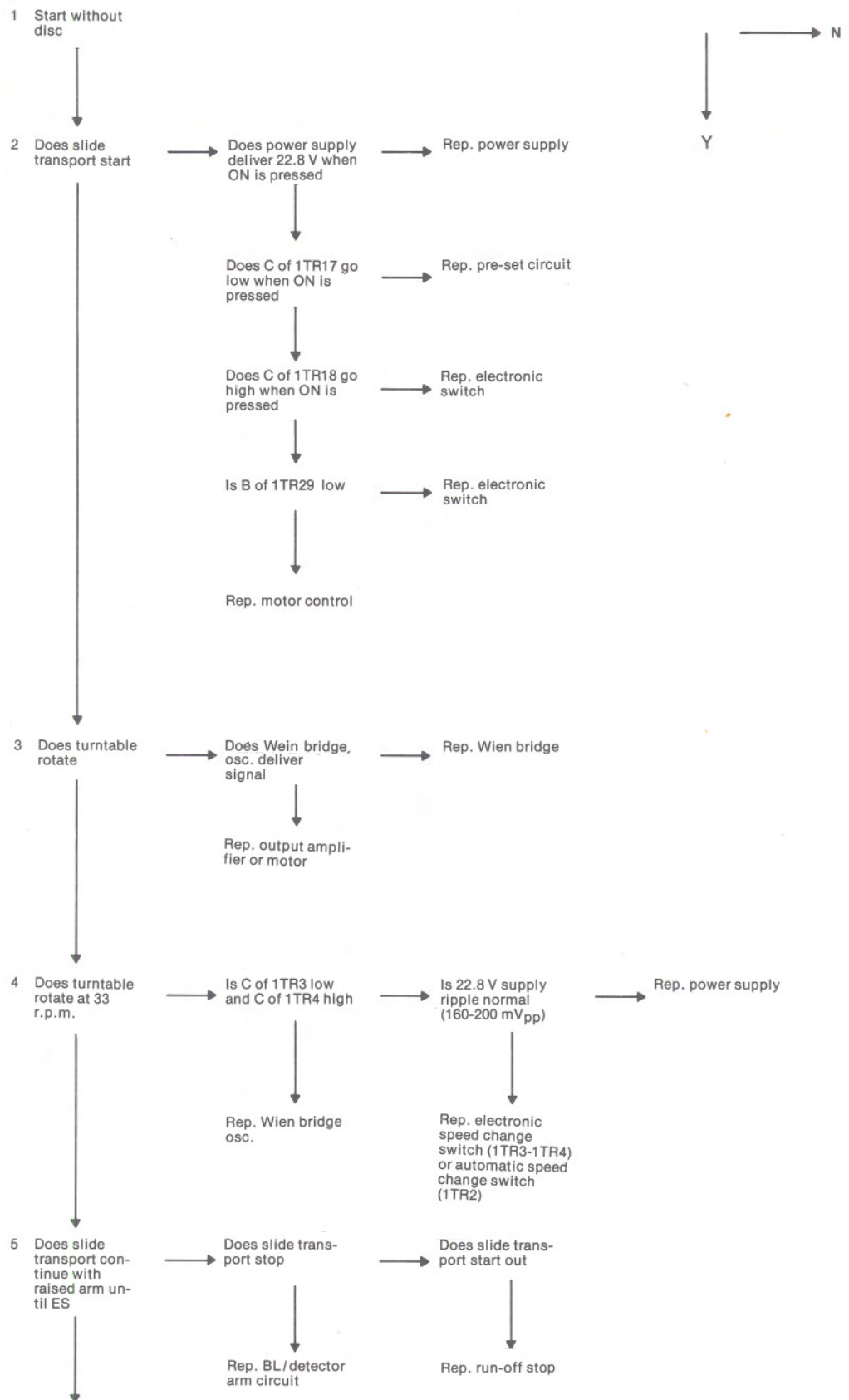
## LUBRICATION

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The need for relubrication is negligible.

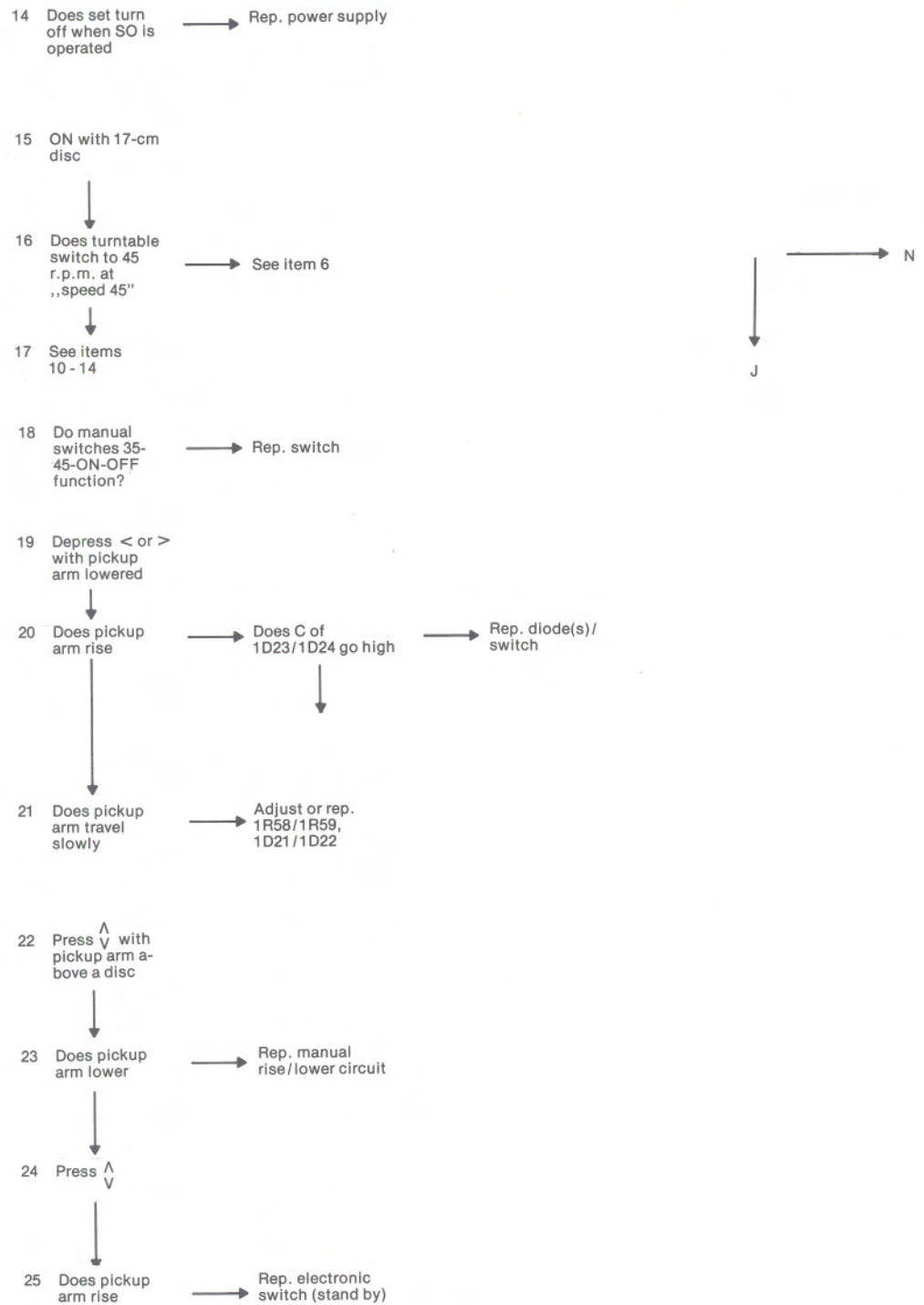
In the case of overhauls and replacement of mechanical parts the directions given below should be followed.

| Pos. No. | Description         | Lubricant  |
|----------|---------------------|--|
| 190      | Arm                 | 3984211, Castrol everyman oil  |
| 193      | Arm                 |  |
| 198      | Arm                 |  |
| 220      | Arm                 |  |
| 250      | Roller              |  |
| 242      | Damper cylinder     | 3984214, Dow corning 200 fluid   |
| 194      | Magnet-coil spring  | 3984222, Valvata oil 79  |
| 137      | Bearing for spindle | 3984218, Mylocote DX paste (white)                                     |
| 213      | Spindle             | 3984216, Rocol MTS 1000. Diluted to oily viscosity with ESSO NUTO H 44 |
| 111      | Main bearing        | 3984221, ESSO NUTO H 44<br>Alternative: Teresso 43                     |
|          |                     |  |
|          |                     |  |
|          |                     |  |









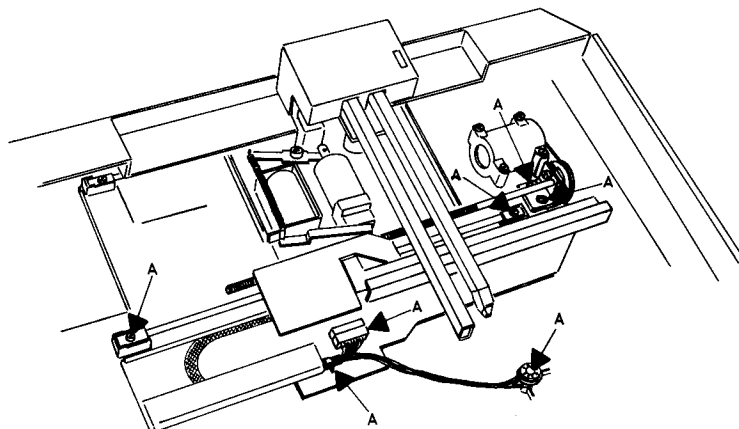


## SERVICE TIPS

Demontering af slæde

Dismounting of slide

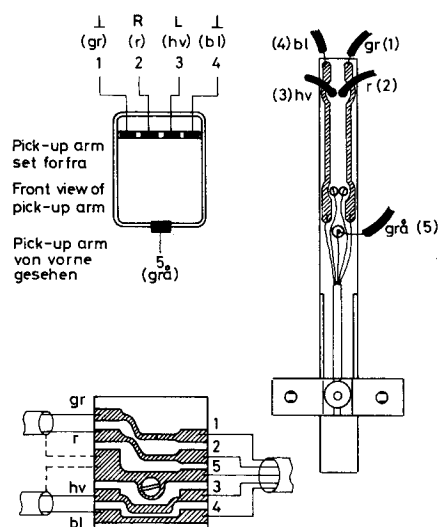
Demontierung vom Schlitten



Ledningsmontering i pick-up arm

Mounting of cable in the pick-up arm

Montierung einer Leitung im Tonabnehmerarm



NOTATER/NOTES/NOTIZEN

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