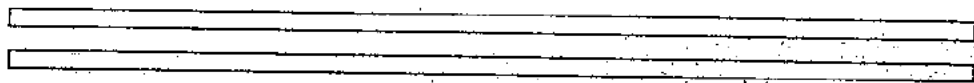


NSM

Service Training



NSM

The Performance Machine

NSM PHONOGRAPHS

MODEL	CCU	CENTRALE	CARRIAGE	AMPLIFIER	POWER SUPPLY	COIN CHNL.	DISPLAY	LIGHT ORG.	TITLE DISPLAY
Soundmaster	108-189				108-453	108-927	109-267		
Hideaway			106-610	103-615	103-954				
Consul Classic *	106-590	106-730	107-510			108-927	106-668		
Festival *	106-590	106-730	107-510			108-927	106-668		
Prestige									
ES (chrome)	108-913	109-830	107-510			108-927	106-668		
ES II (lights) *	171-609	171-880	171-406			108-927	106-668	70-002	
City									
ES *	108-913	109-830	107-510			108-927	106-668		
ES II *	171-609	109-830	171-406			108-927	106-668		
		171-830							
Soundmaster Comp.	108-189	109-830	171-406			108-927	109-267		
240-I	170-160		170-333	170-161	170-168	170-031	170-125	70-232	
Concert 240-II	171-651	171-741	171-226	171-702		170-031	171-652	171-653	
Satellite 200	170-830		170-333	170-161	170-843	170-031	170-651	71-002	
							170-652		
Concert 240-III	171-651	171-741	171-226	171-702		170-031	171-652	71-653	
Galaxy 200	171-651	171-741	171-226	171-702		170-031	171-964	171-653	
City IV/Sound	171-651	171-741	171-226	171-702		170-031	171-964		
* produced with both:	106-590	106-730							
	106-730	109-830							
CD MACHINES									
City IV CD Combo	173-268	173-270	171-226(mech) 173-395 (CD)	171-702		170-031	171-964		
Galaxy CD	173-663	173-666	173-470	171-702		170-031	173-664		
CD Fire	174-663	173-666	173-470	171-702			173-664		173-416
Silver Sky	174-873	173-666	173-470	171-702		170-031	173-664	171-653	174-710
Silver City	174-873	173-666	173-470	171-702		170-031	173-664		174-710
Fire Bird	174-873	173-666	173-470	171-702			173-664		174-710
Fire Country	174-873	173-666	173-470	171-702			173-664		174-710

STATISTIC-AND SERVICE PROGRAMS

FOR NSM-PHONOGRAPHS

ES IV-CD TECHNOLOGY

NSM

Aktiengesellschaft
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PART-№
209 820 C

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1. SERVICE PROGRAM

When opening the cabinet and activating the cabinet interlock switch (pull out plunger), the phonograph is automatically switched from play mode to service mode.

In the service mode the user has available many valuable and easy-to-use aid programs. There are five main sections:

1. Statistical programs which support the reading, evaluating, printing and erasing of all counters (P01 to P12).
2. Programs which permit a standard setting by the manufacturer as well as settings for customers of all machine parameters (P20 to P39).
3. Programs which make possible an individual setting of a price table, but also offer the selection of a standard table out of 20 tables altogether (P40 to P46).
4. Programs which make possible the individual coin value setting for five channels, but also permit programming of one standard setting available for many countries (P50 to P56).
5. Testing programs which support a quick functional test of units as well as locating an error on location (P60/P61).

At delivery the phonograph is "non-coded," e.g. all data and programs are accessible in the service mode. Of course, all confidential data - they are marked in the last column of the following table by an "X" - can be locked via entry of a 4-digit code number (P39).

Short Program

After opening the cabinet and activating the cabinet switch manually, the statistical program "popularity" is automatically turned on. Display 1 shows program step "P01," Display 3 shows the least played CD.

Continue on to the following program steps by pressing "H." When desiring another program step, press "C," Display 1: "P." After that one can select a program step directly by entering the desired program number and pressing "H."

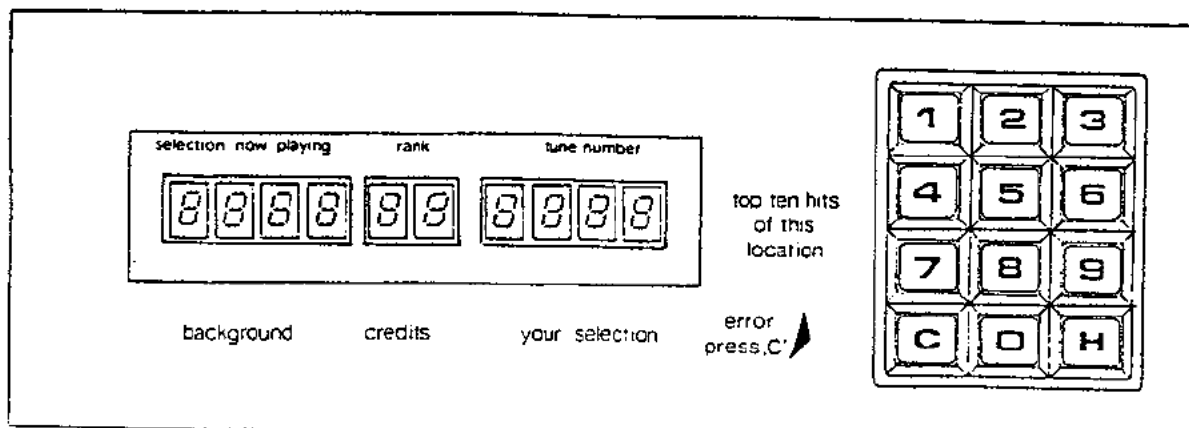
Return to normal program by pressing "C" twice.

Information (read-out of counters) of certain program steps through entry of code numbers.

Additional functions of certain program steps through entry of a code number and "H."

Standard settings in program steps P20, P40 and P50 through entry of table number and "H" within that program step.

SELECTOR and DISPLAY PANEL



1.1.4. Counter and credit reset

Display	Designation	Remarks	
P10	Total reset of popularity (P01, P02) the HIT-parade, the counters P03 through P08 and credits.	Enter number "1" and "H".	x
	Resetting the popularity (P01, P02) and HIT-parade.	Enter number "2" and "H".	x
	Resetting the counters (P03 through P08).	Enter number "3" and "H".	
	Cancel credits.	Enter number "4" and "H".	x

1.1.5. Data transfer

P11	Data transfer and memory (storage) with the NSM DATA PRINT. (from Progr. Index 004)	Plug DATA PRINT into "Service Socket" of control unit. Enter Code "1" and "H". Counters (P03-P08) and popularity will be transferred. Display 3 "E0" appears in case of error during data transfer. Also see description NSM DATA PRINT.	
P12	Transfer to NSM-DATA PRINT. Note: If phonograph is "coded", only the de-coded values are printed out unless the code number is entered. (from Progr.-Index 003)	Plug printer into the "service socket" on the control unit. Enter "1" = counters (P03 through P08) or "2" = counters (P03 through P08), settings (P21 through P37, P39) or "3" = counters (P03 through P08), popularity (P01, P02) or "4" = counters, settings, popularity, if overflow has taken place, the popularity is relative, the multiplying of overflows is printed out also. If the printer does not operate, "E0" appears on display 3.	

1.1. Statistical program

1.1.1. Popularity-from least played title upward

Display	Designation	Remarks	x
P01	Number of least played CD.	Enter number "0" (is switched on automatically)	
	Number of next least played CD, etc. upwards to the most played CD.	Advance with "1".	
	Rank of CD displayed.	Enter the number "2". The next display corresponds to the rank of this record Example display "5" corresponds to the fifth least played record.	
	Total of this CD played (max. 255).	Enter number "3" If a pop. counter is greater than 200 at "power off", all counters are divided by 2 (normalized). An "r" appears on display 2 until the counters are reset (the pop. display is relative).	
	Information on a certain CD.	Enter the number "4", the desired CD number and "H". The desired information on this CD can be called up as described previously with the keys "1" through "3".	

1.1.2. Popularity, from best title upwards

P02	Number of most played CD.	Enter number "0" (is switched on automatically).	
	Number of next most played CD etc. down to the least played CD.	Advance with "1".	
	Rank of CD displayed.	Enter the number "2". The next display corresponds to the rank of this record. Example display "5" corresponds to the fifth least played record.	
	Total of this CD played (max. 255).	Enter number "3" If a pop. counter is greater than 200 at "power off", all counters are divided by 2. An "r" appears on display 2 until the counters are reset. Get actual popularity, multiply all by 2.	
	Information on a certain CD.	Enter the number "4", the desired CD number and "H". The desired information on this CD can be called up as described previously with the keys "1" through "3".	

1.1.3. Counter read-out

P03	Cash balance in monetary units (as programmed by the settings in P51 through P55). 5 digits.	Enter number "0" (is switched on automatically).	x
	Cash balance-accumulated-5 digits.	Enter the number "1" Value shown must be multiplied by 100 to get total monetary units.	x
P04	Play counter.	Enter number "0" (is switched on automatically).	x
	Play counter, accumulated	Enter number "1".	x
P05	Number of selected title.	Enter number "0" (is switched on automatically).	x
P06	Number of album selections.		x
P07	Number of free credits.		x
P08	Number of background titles.		x

1.2. Specific Settings

1.2.1. Standard Settings

Display	Designation	Remarks	x
P20	Programming of steps P21 through P39 (for factory setting see table 1).	Press "I" and "H". If values deviating from the table are desired, they can be entered according to the following program steps.	x
Standard table for specific settings in program step P20. The following table shows the basic setting (factory setting) of the phonograph.			
Tab.No.	Result in the individual program step:		
	P21 0000 = unit code (for recording device)		
	P22 0024 = maximum choice CD/track (100 CD's/24 tracks)		
	P23 200 = free credits		
	P24 15 = interval for random play in minutes		
	P25 10 = Number of CD's for background		
	P26 1105 = light organ during standby	} Only for models with light organ/ luminous effects	
	P27 1000 = light organ during play		
	P28 3116 = maximum Volume of both channels for coin-selected titles and background-CD		
*)	P30 0 = No limit of playing time for a title		
*)	P31 0 = Playing in sequence of selection		
*)	P32 0 = No limit on playing titles on the same CD		
	P39 0000 = code number (data and program settings not coded)		

*) from Progr.-Index 004

1.2.2. Code number for NSM DATA PRINT

P21	Machine code number for NSM DATA PRINT	Enter code number between "0" and "9999" as well as "H".	x
-----	--	--	---

1.2.3. Position Settings

P22	Number of maximum choice CD's and tracks	Enter desired number between "0101" and "0099" as well as "H". CD-Nr. 00 = 100. Example for 100 CD's / 24 tracks: "0024"	
-----	--	---	--

1.2.4. Free credits

P23	Number of free credits.	Enter desired number and "H". "0" to "199" The number of free credits set can be released individually by the FREE CREDIT key on remote control. "200" An unlimited number of free credits can be set and released by the FREE CREDIT key on remote control. "201" The phonograph is continuously switched to "free credits" when the FREE CREDIT key is pressed (Credit Display "99"). The phonograph is switched back to operating mode when the FREE CREDIT key is pressed again.	x
-----	-------------------------	--	---

1.2.5. Random title and Background

P24	Time interval for random title.	Enter desired time interval between "0" and "255" minutes, followed by "H". (No random titles are played when "0" is entered).	x
P25	Number of background music-CD.	Enter desired number between "0" and "100", followed by "H". Background starts counting downwards starting with maximum number of CD's up (P22) to set number of background positions. With setting "0" no background operation.	x

1.2.6. Light Console/Light Organ (Only for models with light organ/luminous effects)

Display	Designation	Remarks				x	
		A	B	C	D		
P26 P27	Luminous effects for "stand by mode" or Luminous effects for "play mode"	0 ↓ 1	0 ↓ 3	0 ↓ 1	1 ↓ 5	Setting "A" corresponds to the switching characteristics: "0"-slow to "1"-fast. Setting "B" corresponds to speed of intervals (0-3). Setting "C-D" corresponds to the various types of light effects "1" through "15". Complete entry with the "H"-button.	x
P26 P27	Continuous light for "stand by mode" or Continuous light for "play mode"	0	0 ↓ 3	0	0	Setting "B" corresponds to the desired brightness ("0" through "3"). Complete entry with "H"-button.	x
P27	Light organ in "play mode".	1	0 ↓ 3	0	0	Setting "B" is for the desired basic brightness ("0" through "3"). Complete entry with the "H"-button.	x

1.2.7. Volumes for Regular and Background Music

P28	Maximum volume.	Enter two digits each for desired maximum volume of normally chosen and background titles as well as "H". e.g.: 31 24 └──┬──┘ └── Background Normal	x
-----	-----------------	---	---

1.2.8. Maximum Playing Time

P30	Maximum playing time for a title (from Progr.-Index 004)	Enter desired time in minutes between 0 and 99 and then press "H". With "0" no limit of playing time.	x
-----	--	---	---

1.2.9. Sequence of CD's playing

P31	Sequence of CD's playing (from Progr.-Index 004)	Enter Number 0, 1 or 2 and then press "H". 0 = in sequence of selection (FIFO) 1 = in numerically increasing sequence 2 = random sequence	x
-----	--	--	---

1.2.10. Maximum of tunes played on the same CD

P32	Maximum of tunes played on the same CD (from Progr.-Index 004)	Enter desired maximum number of tunes played and then press "H". With "0" no limit.	x
-----	--	--	---

1.2.11. Authorization

P38	Authorization.	Enter correct code number and "H". Each of the four digits is confirmed by "P". After closing with "H" "PPPP" is shown and the operator is thereby given authorization. Only the correct code number enables access to protected data. After closing of cabinet or going back to regular program by pressing "C" twice, the programs are protected again.	
-----	----------------	---	--

1.2.12. Code number

P39	Code number.	Changing of code number is only possible when operator has been authorized in program step P38. Enter new code number and "H". Each digit is confirmed after entry with "P". After closing with "H" "PPPP" is shown. Possible entries between "0000" and "9999". If "0000" is programmed, the machine is not protected and access to all programs is possible without authorization. A programmed code number is not show anymore, so please remember your code number!	x
-----	--------------	---	---

1.3.1. Standard Settings, from Progr.-Index 004

Display	Designation	Remarks	x				
P40	Programming of the program steps P41 through P46 (Standard setting).	Enter corresponding table No. and "H". If values deviating from those in the table are desired, they can be changed according to the following program steps (P41 through P46).	x				
<p>Standard settings for plays per monetary value in program step P40. The result of the programming of a table ("0" through "20") shows the number of plays per monetary value allocated to the program steps P41 through P45. The monetary values are programmed in monetary value units as they are set in P50 through P55; example table 17, P41: If no bonus is to be given for a high monetary value, it is sufficient to program only the small monetary value; the total of the small values results in the larger value; example table 17: 1 x 25 c = 1 play + 100 c = 7 plays. Standard settings for P46 = "0".</p>							
Table- No.	Display of Program Number					Remarks/ as set by the factory	
	P41 Sp/Gw	P42 Sp/Gw	P43 Sp/Gw	P44 Sp/Gw	P45 Sp/Gw		
0	00 000	00 000	00 000	00 000	00 000	no coin conversion in this setting.	
1	01 050	01 050	01 050	01 050	01 050	New Zealand 1 play = 50 c	(NZ)
2	01 020	01 020	01 020	03 050	03 050	Belgium 1 play = 20,- Bfr 3 plays = 50,- Bfr	(B)
3	01 005	01 005	03 010	03 010	07 020	If desired, please adjust 1 play = 5,- 3 plays = 10,- 7 plays = 20,-	
4	02 050	02 050	05 100	05 100	12 200	Austria 2 plays = 5,- sS 5 plays = 10,- sS 12 plays = 20,- sS	(A)
5	02 010	02 010	05 020	05 020	12 050	Germany 2 plays = 1,- DM 5 plays = 2,- DM 12 plays = 5,- DM	(D)
6	01 050	01 050	01 050	03 100	03 100	USA 1 plays = 2x 25 c 3 plays = 4x 25 c	(USA)
7	02 010	02 010	02 010	12 050	12 050	Norway 2 plays = 1,- Kr 12 plays = 5,- Kr	(N)
8	01 010	01 010	03 020	03 020	03 020	Venezuela 1 play = 1,- Bol 3 plays = 2,- Bol (7 plays = 5,- Bol)	(YY)
9	01 010	01 010	03 020	03 020	10 050	Ireland 1 play = 10 p 3 plays = 20 p 10 plays = 50 p	(IR)
10	03 010	03 010	07 020	07 020	18 050	Switzerland 3 plays = 1,- sfr 7 plays = 2,- sfr 18 plays = 5,- sfr	(CH)
11	01 030	01 030	02 050	02 050	05 100	United Kingdom Denmark 1 play = 30 p 2 plays = 50 p 5 plays = 1 E	(GB) (DK)
12	01 020	01 020	01 020	03 050	03 050	Jugoslavia (Din) Finland (mk) 1 play = 2x 1,- 3 plays = 5,-	(SF) (YU)
13	01 020	01 020	03 050	03 050	07 100	Union of South Africa (c) France (Fr) 1 play = 20 c 3 plays = 50 c 7 plays = 1,- R	(SAU) (F)
14	01 040	01 040	02 060	03 080	04 100	Australia 1 play = 2x 20 c 2 plays = 3x 20 c 3 plays = 4x 20 c 4 plays = 1 Dollar	(AUS)
15	01 025	01 025	01 025	01 025	01 025	Canada Dutch Antilles 1 play = 25 c 4 plays = 1 NAF	(CAN) (NA)
16	01 025	01 025	01 025	05 100	05 100	Spain (pts) 1 play = 0,25 5 plays = 1,-	(E)
17	01 050	01 050	03 100	03 100	18 500	USA 1 play = 50 c 3 plays = 1 \$ 18 plays = 5 \$	(USA)
18	01 100	01 100	03 250	03 250	07 500	Netherlands 1 play = 4x 25 c 3 plays = 2,5 hfl 7 plays = 5 hfl	(NL)
19	01 100	01 100	03 200	03 200	05 300	Japan 1 play = 100 Yen 3 plays = 2x 100 Yen 5 plays = 3x 100 Yen	(J)
20	01 040	01 040	01 040	03 100	03 100	Italy 1 play = 2x 200 L 3 plays = 2x 500 L	(I)

1.3.2. Price List (Number of Selections/Monetary Value)

Display	Designation	Remarks	
P41	Number of selections per coin (smallest value).	Enter desired number of plays coin (smallest value) and "H". Entry sequence: 2 digits for number of plays. 3 digits for corresponding coin e.g. 01 020 correspond to one play for 20 pence. Largest programmable number of plays up to 63, price list from 005 to 995.	x
P42	Operating and display are analogous to program step P41	Note: All five program steps must be programmed with the price classes in the sequence or their priority. For less than 5 price classes program more than once or set to "00 000".	x
P43			x
P44			x
P45			x
P46	Number of required credits for one album.	Enter desired number and "H". At "0" no album selection allowed.	x

1.4. MONETARY SETTINGS

1.4.1. Standard Settings

P50	Programming of the program steps P51 through P55 (Standard setting).	Enter corresponding table and "H". If values other than those in the table are desired, they can be changed according to the following program steps (P51 through P55).	x
-----	--	--	---

The monetary value settings in the individual program steps are associated with the corresponding coin channel: P51 for channel 1; P52 for channel 2, etc. to P55 for channel 5. This table shows the coin values for the corresponding channel in the currency of the country in columns P51 through P55. Standard setting of P56 = "0".

Table- No.	Display of Program Number					Remarks/ as set by the factory
	P51 (Channel 1)	P52 (Channel 2)	P53 (Channel 3)	P54 (Channel 4)	P55 (Channel 5)	
0	000	000	000	000	000	no coin conversion in this setting
1	010 1,- DM 1 Bol 1,- sfr	050 5,- DM 5 Bol 5,- sfr	020 2,- DM 2 Bol 2,- sfr	000 -,- -,- -,-	000 -,- -,- -,-	Germany Venezuela Switzerland (YU) (D) (CH)
2	050 5 S	200 20 S	100 10 S	000 -,-	000 -,-	Austria (A)
3	020 200 L	010 100 L	050 500 L	000 -,-	000 -,-	Italy (I)
4	000 -,- -,- -,-	050 5 mK 5 Kr 5 Din	010 1 mK 1 Kr 1 Din	000 -,- -,- -,-	000 -,- -,- -,-	Finland Norway Jugoslavia (N) (SF) (YU)
5	025 25 c	250 2,5 hfl	100 1 hfl	000 -,-	000 -,-	Netherland (NL)
6	000 -,-	100 1,- NAF	025 0,25 NAF	000 -,-	000 -,-	Netherland Antillen (NA)
7	000 -,-	020 20 Bfr	005 5 Bfr	000 -,-	000 -,-	Belgium (B)
8	010 1 Fr 1 dkr	050 5 Fr 5 dkr	100 10 Fr 19 dkr	000 -,- -,-	000 -,- -,-	France Denmark (DK) (F)
9	020 20 p	050 50 p	010 10 p	000 -,-	000 -,-	United Kingdom/Ireland (GB) (IR)
10	010 10 c	050 50 c	025 25 c	000 -,-	100 1 Dollar	USA (USA)
11	000 -,-	025 25 c	000 -,-	000 -,-	100 1 Dollar	Canada (CAN)
12	020 20 c	100 1 R	050 50 c	000 -,-	000 -,-	Union of South Afrika (SAU)
13	100 1 Dollar 100 Yen	050 50 c 50 Yen	020 20 c 20 Yen	000 -,- -,-	000 -,- -,-	Australia Japan (J) (AUS)
14	000 -,-	025 25 pts	100 100 pts	000 -,-	000 -,-	Spain (E)

mechanical Coin Acceptor

Monetary Setting for electr. Coin Acceptor see chapter 10,
Program Table 209 955

electr. Coin Acceptor

Table- No.	Display of Program Number					Remarks/ as set by the factory
	P51 (Channel 1)	P52 (Channel 2)	P53 (Channel 3)	P54 (Channel 4)	P55 (Channel 5)	
15	100 10 Fr 1 £	020 2 Fr 20 p	010 1 Fr 10 p	050 5 Fr 50 p	000 -,- -,-	France United Kingdom (F) (GB)
16	050 5,- DM	010 1,- DM	000 -,-	020 2,- DM	000 -,-	Germany (D)
17	050 5,- sfr 500 L 50 c	010 1,- sfr (100 L)	005 1/2 sfr (50 L) 5 c	020 2,- sfr 200 L 20 c	000 -,- -,- -,-	Switzerland Italy New Zealand (I) (CH) (NZ)
18	000 -,-	050 5 dkr	010 1 dkr	100 10 dkr	000 -,-	by 3-Channel Denmark (DK)
	100 10 dkr	010 1 dkr	000 0,25 dkr	050 5 dkr	000 -,-	by 4-Channel (02) Denmark (DK)
	100 10 dkr (new)	050 5 dkr	010 1 dkr	100 10 dkr (old)	000 -,-	by 4-Channel (1 A) Denmark (DK)
19	200 20 S	050 5 S	010 1 S	100 10 S	000 -,-	Austria (A)
20	025 25 c	250 2 1/2 hfl	500 5 hfl	100 1 hfl	000 -,-	Netherland (NL)

1.4.2. Monetary Values (Allocated to coin channels 1 through 5)

Display	Designation	Remarks	
P51	Coin value channel 1. } Monetary Setting for electr. Coin Acceptor see chapter 10, Program Table 209 955 Operation and display are analogous to program step P51.	Enter desired coin value for channel 1 and "H". Example: "010" corresponds to 10p, "020" to 20p and "100" corresponds to 1 £. Note: When a coin is inserted in the program steps P50 through P55 the channel assigned to this coin is automatically displayed on display 1; P51 for channel 2, etc. to P55 for channel 5. Not used channels are set to "0". The programmed monetary units for P51 through P55 must correspond to the unit programmed by the cash counter (P03), e.g. 050 units for 50p, 020 units for 20p and 100 units for 1 £.	x
P52			x
P53			x
P54			x
P55			x
P56	Bonus credits for bills.	Enter desired number and "H". When a dollar bill is inserted (Channel 5/P55), the programmed value is added to the credit.	x

1.5. TEST PROGRAMS

The displays in this program step acts as test aids for testing the phonograph.

In the event of a malfunction the defective unit can be determined or a malfunction resulting from incorrect settings can be recognized in a simple manner with the aid of these tests. Certain displays are aids for the adjustment of the playing mechanism.

Switch on test program: Open cabinet lid pull out interlock cabinet switch
 Display 1 shows "P01", press letter "C".
 Display 1 shows "P".
 Press number 60 and H, Display 1 shows "P60".

1.5.1. Display Test, Display 1 "P60"

This program tests the lights and displays on the display circuit board. After starting "F1" (first function test) appears on display 2.

The test is run through in steps: 1. All 5 display lights together.
 2. The digits are switched on one after another individually with "8".
 3. The display lamps 1 through 5 individually.
 4. Displays together, running through the numbers "0" through "9".

The "F1" is displayed for approx. 2 seconds before the test repeats, itself.

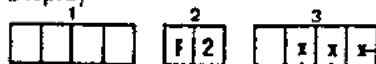
Designation	Remarks
Display test -continuous test-	Enter "1" and "H". Display 2 "F1".
Stop test sequence	Enter "H". The light "10 top hits" comes on.
Continue test sequence	Enter "H" again. The light "10 top hits" goes off.
Terminate test.	Enter "C" once, display 1 "P60" or actuate cabinet switch, the unit returns to the regular program.

1.5.2. Input Test, Display 1 "P60"

In the following test the functions of all entries of Input Ports 1-6 can be tested:

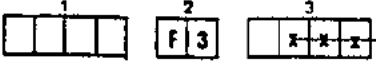
Port 1, Port 2: Control unit
 Port 3 : Keyboard (Display Board)
 Port 4, Port 5: Pickup Driver
 Port 6 : Title Indication

Every input change is shown on the display as follows:

Input Test	<p>Enter "2" and "H", Display 2 "F2" (second function test)</p> <p>Display</p>  <p>Bit information (Switch Status 1 or 0) Bit Number (0 to 7)</p> <p>Port Number; 1 = Control Unit IC 8 2 = Control Unit IC 9 3 = Keyboard IC 304 4 = Pickup Driver IC 1 5 = Pickup Driver IC 2 6 = Title Indication IC 1</p> <p>Meaning of the displays: "F 2" = Input Test "1" = Port 1 (IC 9) "6" = Bit 6 (Key Switch) "0" = Switch Status 0 (closed)</p> <p>Instruction: The accuracy of the inputs from the keyboard can be checked due to the entry connections simply by selecting a title!</p>
Terminate test.	Enter "C" 1, display "P60" or actuate cabinet switch, the phonograph returns to the normal program.

1.5.3. Continuous Run 1

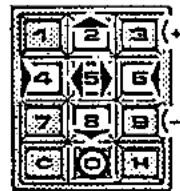
The machine is switched to continuous run. Now every CD is played continuously for 16 sec. beginning with the first selection. All errors of the CD changer or CD player are registered.

Continuous Run 1	<p>Enter "3" and "H", Display 2 "F3". After that select the CD with which to begin.</p> <p>Display:</p>  <p>Number of errors</p>
Terminate test.	Actuate housing switch.

1.5.4. Continuous Run 2

The machine is switched to continuous run. All selected titles are played for 16 sec. All errors of the CD changer or player are registered.												
Continuous Test2	Enter "4" and "H", Display 2 "F4". The select any title. Display: <table style="display: inline-table; border: none;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">1</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">2</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">F</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> </tr> </table> Number of errors				1	2	3	F	4	x	x	x
			1	2	3	F	4	x	x	x		
Terminate test.	Actuate housing switch.											

1.5.5. CD changer Test

All functions of the changer can be tested individually.																																											
CD changer test	<p>Enter "5" and "H", Display 2 "F 5".</p> <table border="1" style="border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Input</th> <th style="width: 80%;">Function</th> </tr> </thead> <tbody> <tr><td>1</td><td>CD-Player, Start/Stop</td></tr> <tr><td>2</td><td>Lift upwardw</td></tr> <tr><td>8</td><td>Lift downwards</td></tr> <tr><td>4</td><td>Grip left</td></tr> <tr><td>6</td><td>Grip right</td></tr> <tr><td>5</td><td>Return holder</td></tr> <tr><td>0</td><td>Stop lift at magazine space</td></tr> <tr><td>3 *)</td><td>Motor steps, upwards (per 0,5 mm)</td></tr> <tr><td>9 *)</td><td>Motor steps, downwards (per 0,5 mm)</td></tr> </tbody> </table> <p style="text-align: right;">Keep in mind the code numbers for the individual changer functions as per the following keyboard illustration:</p>  <p>Displays: <table style="display: inline-table; border: none;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">1</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">2</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">F</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">5</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">y</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">x</td> </tr> </table> </p> <p>The time in sec. during which the lift position is held. The lift position is held after every function for 2 sec., by touching "0" for 10 sec.</p> <table style="border: none;"> <tr> <td>OPTO stepper control</td> <td>OPSTP</td> </tr> <tr> <td>OPTO end position</td> <td>OPEND</td> </tr> <tr> <td>OPTO grip right</td> <td>OPGRR</td> </tr> <tr> <td>OPTO pickup center</td> <td>OPPUM</td> </tr> <tr> <td>OPTO grip left</td> <td>OPGRL</td> </tr> </table> <p>Meaning of displays: OPTO lit up = "0", OPTO darkened = "1".</p>	Input	Function	1	CD-Player, Start/Stop	2	Lift upwardw	8	Lift downwards	4	Grip left	6	Grip right	5	Return holder	0	Stop lift at magazine space	3 *)	Motor steps, upwards (per 0,5 mm)	9 *)	Motor steps, downwards (per 0,5 mm)	x	x	x	1	2	3	F	5	y	x	x	x	OPTO stepper control	OPSTP	OPTO end position	OPEND	OPTO grip right	OPGRR	OPTO pickup center	OPPUM	OPTO grip left	OPGRL
Input	Function																																										
1	CD-Player, Start/Stop																																										
2	Lift upwardw																																										
8	Lift downwards																																										
4	Grip left																																										
6	Grip right																																										
5	Return holder																																										
0	Stop lift at magazine space																																										
3 *)	Motor steps, upwards (per 0,5 mm)																																										
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x	x	x	1	2	3	F	5	y	x	x	x																																
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OPTO pickup center	OPPUM																																										
OPTO grip left	OPGRL																																										
Terminate test.	Actuate housing switch.																																										

*) from Progr.-Index 004

1.5.6. Track selection of CD test records

P61	Track selection of CD test records (more than 15 tracks per record).	Select the required CD record and track number and press "H". e.g. 0123 - Disc 01, Track 23. The selected title will be stored and played after returning to play mode.
------------	--	---

1.5.7. Read-out of errors

P62	Error code of last error (see descr. error displays).	Enter "0". (Is automatically switched on).
	Error code of previous errors (see descr. error displays).	Advance with key "1". Up to max. 10 errors.
	At error code 6x no. of CD at which error occurred. At error code 9x no. of cover at which error occurred.	Enter "2".
	Time since power on or start of test P60/3 or P60/4 when error occurs.	Enter "3". Display in hrs., min.
	Cancellation of stored error code.	Enter "4", "1" and "H".

Statistics and Service Programs CD

P01	Popularity beginning with least played CD upwards		P02	Pop. beginning with most played CD downwards		BUTTON	
	No. of least played CD			No. of most played CD			0
	No. of next least played CD			No. of next most played CD			1
	Rank of CD displayed			Rank of CD displayed			2
	Times played			Times played			3
Information about a certain CD		Information about a certain CD		4			
P03	Total cash in monetary units		P04	Counter of played titles		0	
	Total cash cumulative in monetary units/100.			Counter of played titles accumulated		1	
P05	Number of selected title		P06	Counter of album selections			
P07	Number of free credit		P08	Counter of played album titles			
P10	Cancel of counters		P12	Transfer of NSM DATA PRINT **)			
	Popularity, HIT-Parade, Counter P03-P08, Credit			Counter P03-P08		1, H	
	Popularity (P01, P02), HIT-Parade			Counter P03-P08, Settings P21-P56		2, H	
	Counter P03-P08			Popularity, Counter P03-P08		3, H	
	Credit			Pop. counter P03-P08, Settings P21-P56		4, H	
P11	Data transfer and memory (storage) *)					1, H	
P20	Autom. programming of the prog. steps P21-P39 according to table					1, H	
P21	Unit code	P22	No. max. CD-Tracks to be selected	P23	No. of free credits	x, H	
P24	Random play interval	P25	No. of CD's progr. f. backgr. music	P26	Light gener. f. stand by ***)	x, H	
P27	Light gener./organ for play ***)	P28	Maximum volume			x, H	
P30	Max. play time for a title *)	P31	Sequence of plays *)	P32	Max. titles in CD sequence *)	x, H	
P38	Autorization with code numb.	P39	Code number			x, H	
P40	Autom. programming of the steps P41 thru P46 (play/cash value) according to table					x, H	
P46	No. of credits for an album selection					x, H	
P50	Autom. programming of the steps P51 thru P56 (coin value acceptance) to table					x, H	
P56	Bonus credit for Bill					x, H	
P60	Test programs					x, H	
P61	Programming optional Numbers of CD-Tracks					xxxx, H	
P62	Read-out of error code					0; 1; 2; 3; 4, 1, H	

*) from Progr.-index 004;

**) from Progr.-index 003;

***) If installed

Test Programs

P60	(interrupt/run)					H
	Display and light test:					1, H
	Input test:					2, H
	Continuous Run 1 (playing continuously): F 3 Number of errors					3, H
	Continuous Run 2 (repeatedly playing): F 4 Number of errors					4, H
CD = Changer test: "2" = Lift upwards "8" = Lift downwards "4" = Grip left "6" = Grip right "5" = Return holder "0" = Keep lift position "3" = Motor step, upwards *) "9" = Motor step, downwards *) OPTO stepper control OPSTP OPTO endposition OPEND OPTO grip right OPGRR OPTO pickup center OPPUM OPTO grip left OPGRL With Display "0" = lit up With Display "1" = darkened					5, H	
P61	Number of track numbers					xxxx, H
P62	Error code of least error					0
	Error code of previous errors (up to 10)					1
	No. of CD at which error occurred					2
	Time in hrs./min. since "power on" or start of P60/3 or P60/4 when error occurs					3
	Cancellation of stored error code					4

*) from Progr.-index 004

TROUBLE SHOOTING

FOR NSM-PHONOGRAPHS

ES IV-CD TECHNOLOGY



NSM
APPARATEBAU
GmbH & Co. KG
6530 Bingen
Saarlandsraße 240
Telefon 067 21/4070

PART-№
209 830 B

INDEX

1. TROUBLE SHOOTING
 - 1.1. Description of malfunction/cause
 - 1.2. Error displays
 - 1.3. Trouble shooting for NSM phonographs ES-IV/CD technology

I. TROUBLE SHOOTING

I.1. Description of malfunction/cause

DESCRIPTION	CAUSE
Phonograph illumination and LED's in central unit/CD supply do not light up.	<ol style="list-style-type: none"> 1. Power cord 2. Main switch 3. Power fuse (switch plate/fuse box)
Phonograph illumination okay, LED's in central unit do not light up.	<ol style="list-style-type: none"> 1. Plug connection ST 200 of central unit 2. Fuses Si 201-205 of central unit 3. Power transformer connection
Luminous effect lights do not light up. (Only for phonographs with light generator)	<ol style="list-style-type: none"> 1. Fuse T 8 A on switch plate 2. Fuses Si 701-703 as well as 3. Plug connection of luminous effects PCB
Fan for output stage does not run while disc is playing.	<ol style="list-style-type: none"> 1. Plug connection ST 209 2. Triac TIC 200 3. Transistors T 204/205
+5 V; +15 V LED's in central unit do not light up or are darker Fuses are okay	<ol style="list-style-type: none"> 1. Voltage regulators VR 201-203 in central unit defective 2. Short circuit in connected units. (Pull plugs one after another and observe LED's)
No tone signal at loudspeaker even though a CD is playing and the volume is switched on.	<ol style="list-style-type: none"> 1. Loudspeaker connection 2. Plug connection of frequency network and output transformer 3. Interruption on signal wire (plug connection "ST" 4 pol. of central unit to "ST 2" on changer adapter, from "ST 3" on changer adapter to decoder board).
Volume reduced by electronic protection device	<ol style="list-style-type: none"> 1. Loudspeaker mismatch (less than 2 ohms impedance) due to remote speakers. 2. Transistor T 252 defective 3. Output transistor defective 4. Control unit defective
Poor bass reproduction	Loudspeaker connections reversed
Er xx-display	See "Error Displays"

1.2. Error Displays

Displays 1 2 3		Possible Causes	Corrections	
	Er	01	EPROM contents (CONTROL UNIT) interrupted.	Change EPROM (IC 2).
	Er	10	RAM (CONTROL UNIT) defective.	Change RAM (IC 3). After that reprogram all program steps (P20-P56).
	Er	11	RAM contents (CONTROL UNIT) short-term disturbance.	No correction necessary; program is reinitialized. Change RAM IC 3 if frequently occurring.
	Er	20	Verification errors in program (CONTROL UNIT).	No correction necessary; program is reinitialized. Change CPU IC 1 if frequently occurring.
Pxx	Er	30	Memory contents (CONTROL UNIT) invalid.	No correction necessary; program step Pxx (in Display 1) is automatically reprogrammed.
Pxx	Er	31	Memory contents (CONTROL UNIT) invalid or not programmed.	Service step Pxx shown in Display 1 must be reprogrammed.
Pxx	Er	40	Wrong price setting.	Check price setting and, if necessary, reprogram (P41-P45, check sequence).
	Er	50	Coin mechanism defective. Too much credit.	Check coin mechanism.
	Er	6x	Error at CD player.	See Er 60 - Er 62. Play interrupted after error.
	Er	60	Error before playing CD (track selection). No supply voltage present for decoder or player.	Exchange decoder board, microcomputer T018 on pickup driver (IC8). Check primary fuse in CD transformer.
	Er	61	No CD recognized by player. No CD in CD tray, CD defective. Player defective. Decoder board defective. No supply voltage present for decoder or player.	Check CD and exchange if needed. Laser player (CDM-3). Exchange decoder board. Check primary fuse in CD transformer.
	Er	62	Error after playing CD (stop).	As in Er 60.
	Er	63	Track cannot be played (CD defective) or choosing a track number which is too high (error display appears only during continuous test P 60/3 or P 60/4; during regular operation track No. 1 is played when choosing a track number which is too high).	Exchange CD, check track selection.
	Er	7x	Malfunction on CD changer.	See Er 70 - Er 76. If error display does not disappear after 2 sec., error cannot be automatically corrected. No CD will be played until cabinet switch or "power on" is activated.
	Er	70	CD tray after playing CD incorrect in pickup.	Check function of light barriers OPPUM, OPGR1, OPGR2.
	Er	71	Error during grip from left-side magazine.	Check alignment from magazine to pickup assy and adjust if necessary. Check function of light barrier OPPUM.
	Er	72	Error during grip from right-side magazine.	As in Er 71.
	Er	73	Error during replacing in left-side magazine. Malfunction of left grip lever.	Check alignment of magazine to pickup assy and adjust if needed. Check function of grip. Check function of light barrier OPGR1.
	Er	74	Error during replacing of right-side magazine. Malfunction of right grip lever.	As in Er 73. Check function of light barrier OPGR2.
	Er	75	Malfunction during lift drive.	Check lift for jamming. Check function and correct adjustment of light barrier OPSTP (drive wheel).
	Er	76	End position of lift not o.k.	Check function and adjustment of light barrier OPEND.
	Er	80	Short circuit on wallbox signal wire.	Check wallbox connection.
	Er	90	Title display, three blocking in sequence, not functional anymore.	Blocking remedy.
	Er	91	Blocking title display, gripper left.	
	Er	92	Blocking title display, gripper right.	
	Er	93	Blocking title display, stack left.	
	Er	94	Blocking title display, stack right.	

The memorized values of program steps P20 to P56 are checked after each "power on" and by activating the cabinet switch.

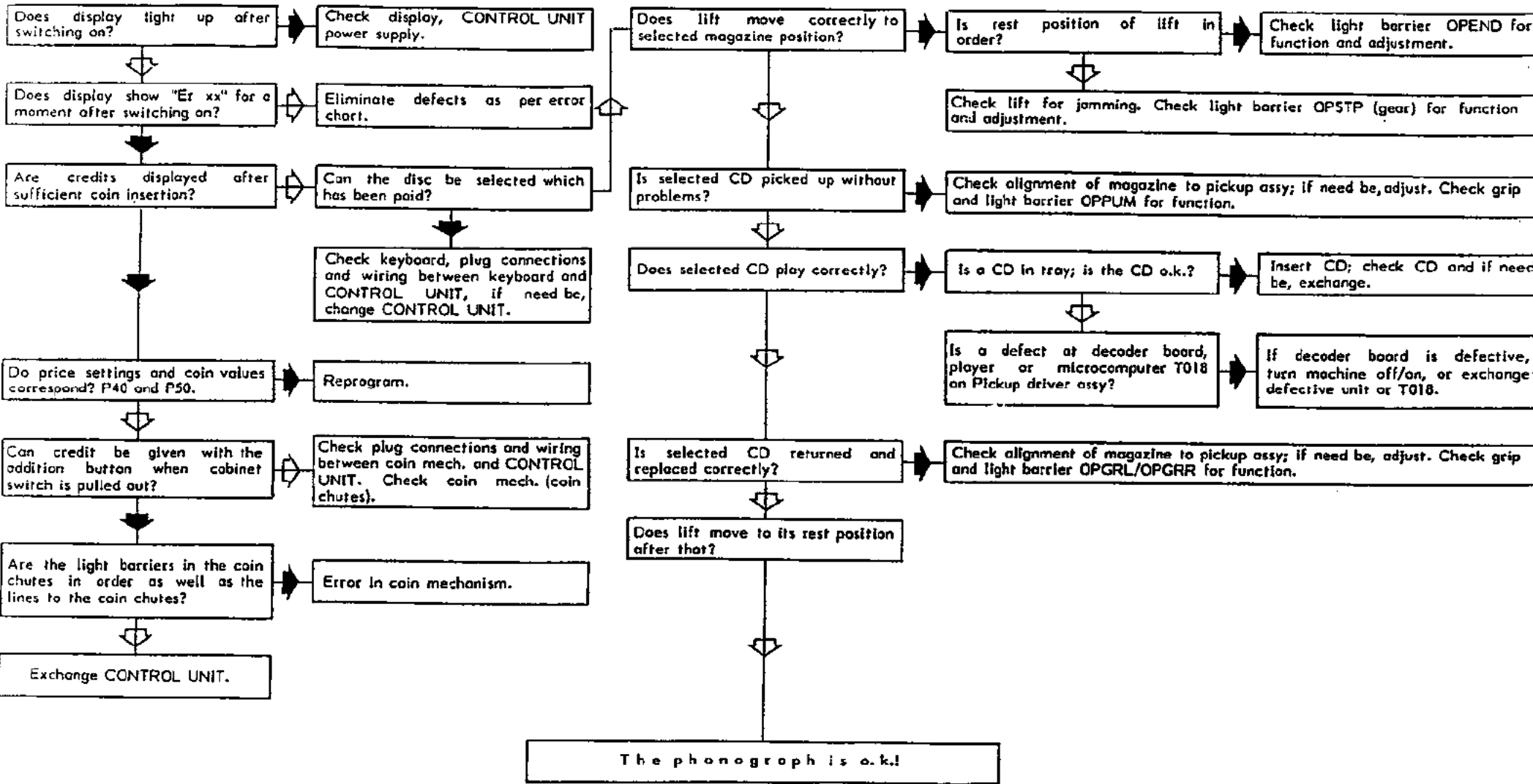
An error on the programmable memory area the corresponding program steps is show on Display 1; Pxx Er 31; the "error" lamp flashes.

After the phonograph is turned on, the malfunction display in Display 3 and the flashing of "error" remains visible for 2 sec. After that the phonograph is operational; without regarding the malfunctioning program step, though.

By using any program step P42, the last 10 error codes can be called; see "Service programs" pt. 1.5.7.

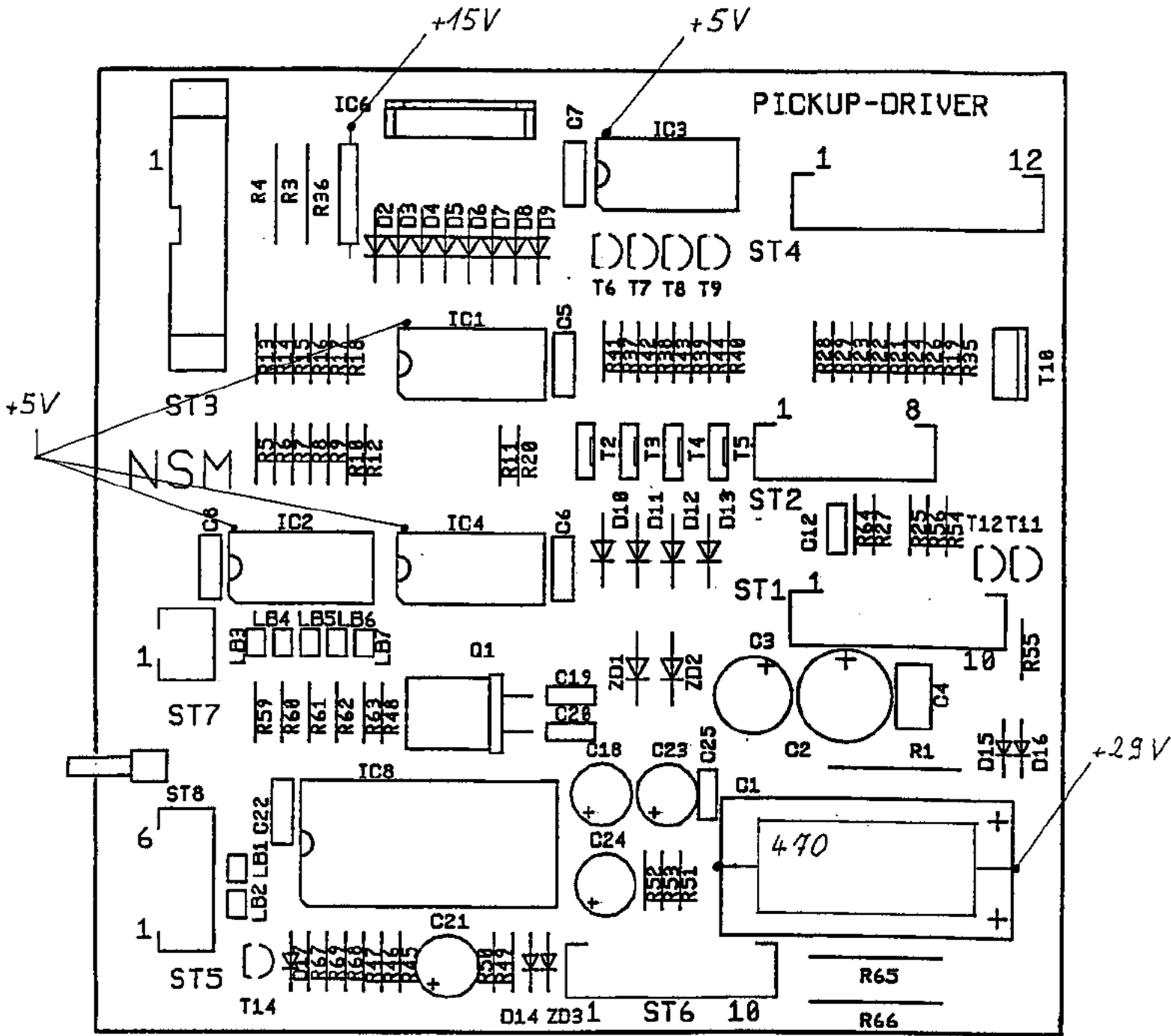
1.3. Trouble-Shooting Chart for NSM Phonographs ES-IV/CD Technology

Conditions: Line voltage present, line connection and power supply in order.



yes
no

Compare also 1.2. "Error Displays".



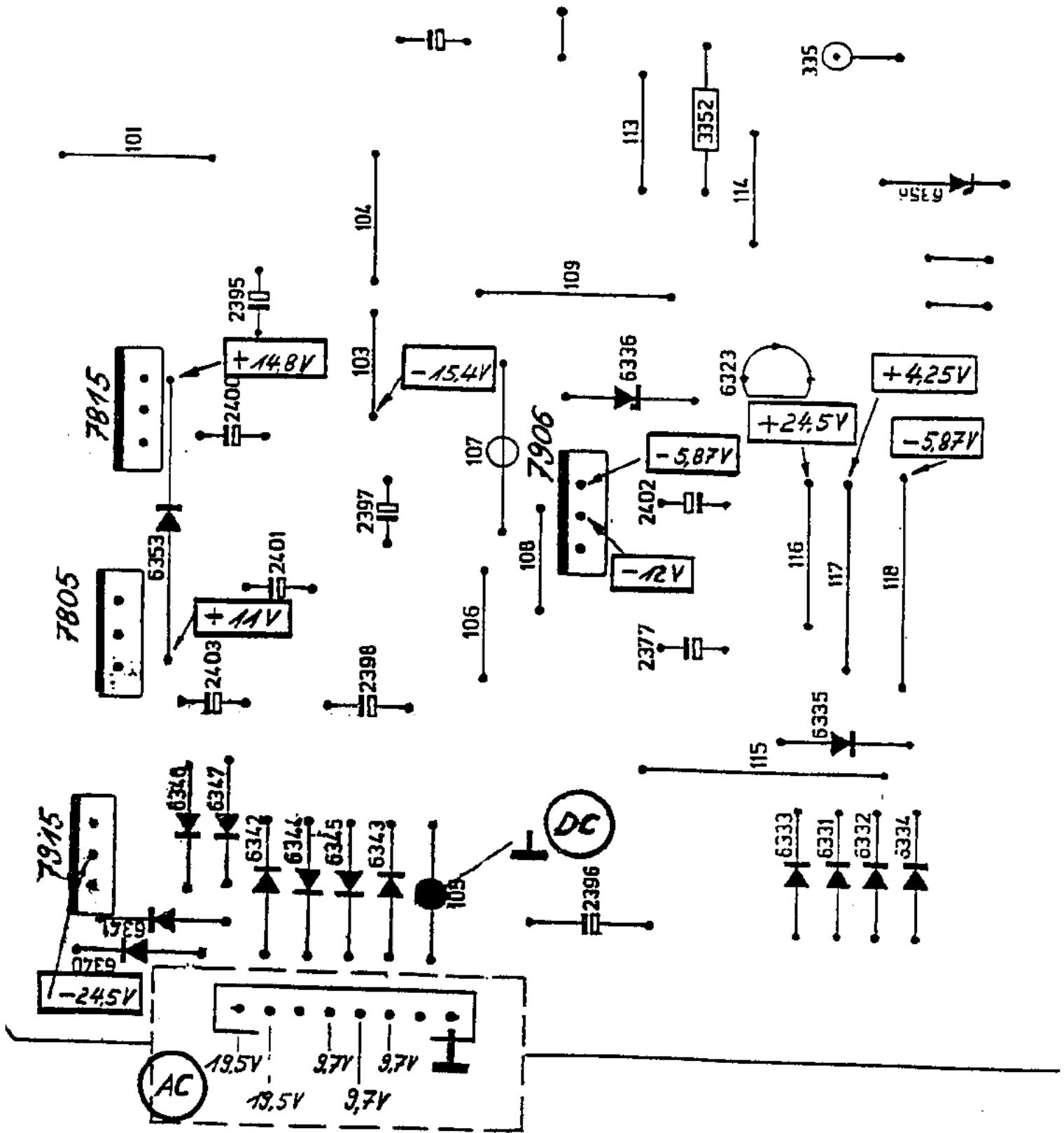
Opto-Coupler Measurvalue on IC1

Ground on C1

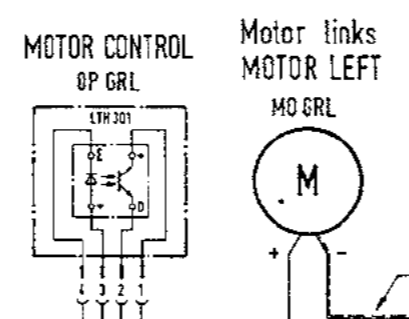
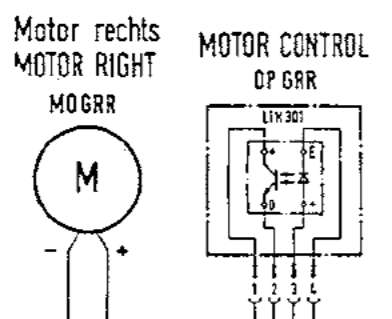
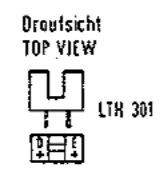
	open	close
Griper-Left Pin 1	5,77 V	0,7 V
END-Position Pin 13	"	"
Pick-Up Middel Pin 14	"	"
Griper-Right Pin 15	"	"

OPEN POS. NEVER LESS THAN 4.6V DC.
IF LOW REPLACE OPTO COUPLER.

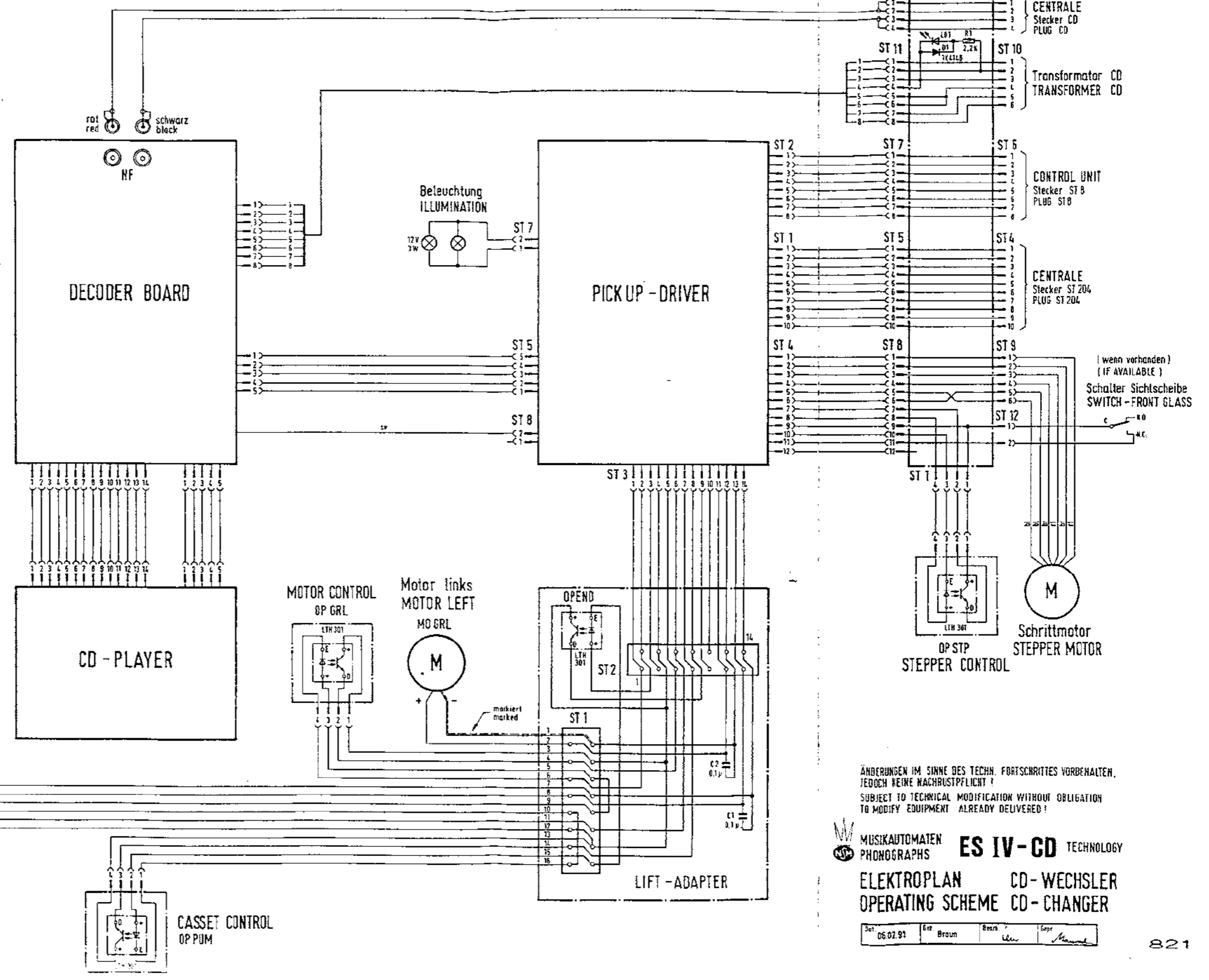
DECODER-BOARD



- OPEND OPTO END POSITION
- OPGRL OPTO GREIFER LINKS
OPTO GRASP LEFT
- OPGRR OPTO GREIFER RECHTS
OPTO GRASP RIGHT
- OPPUM OPTO PICK UP MITTE
OPTO PICK UP CENTER
- OPSTP OPTO STEPPER CONTROL
- MOGRL MOTOR GREIFER LINKS
MOTOR GRASP LEFT
- MOGRR MOTOR GREIFER RECHTS
MOTOR GRASP RIGHT



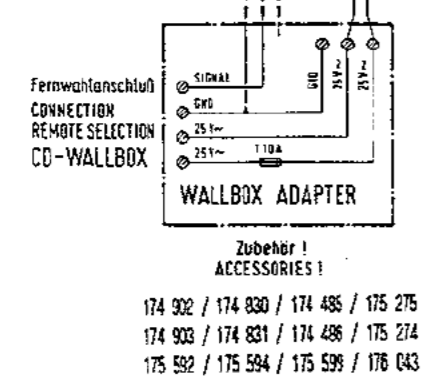
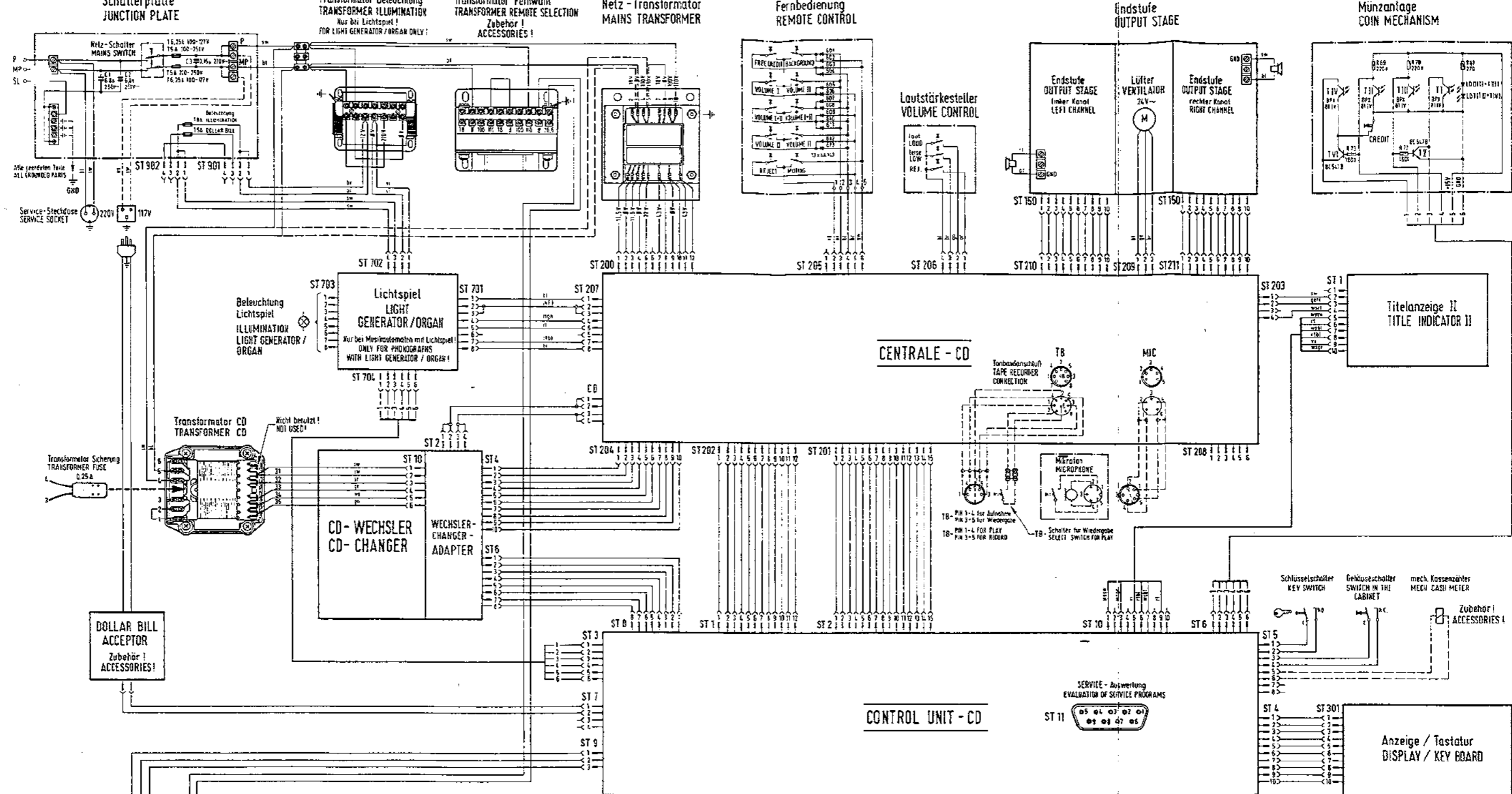
174 902 / 174 830 / 174 495 / 175 275 / 175 039 / 176 046
 174 903 / 174 831 / 174 496 / 175 274 / 175 040 / 176 046
 175 592 / 175 594 / 175 599 / 176 043 / 175 593 / 176 047



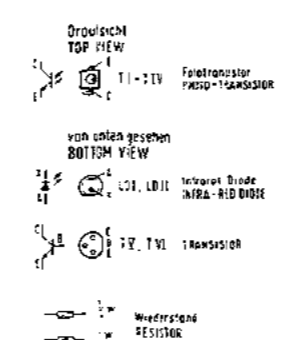
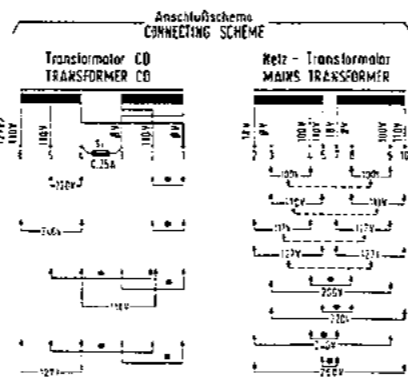
ÄNDERUNGEN IM SINNE DES TECHN. FORTSCHRITTES VORBEHALTEN,
 JEDOCH KEINE NACHRUFPLICHT!
 SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
 TO MODIFY EQUIPMENT ALREADY DELIVERED!

MUSIKAUTOMATEN
 PHONOGRAPHS
ES IV - CD TECHNOLOGY
 ELEKTROPLAN CD-WECHSLER
 OPERATING SCHEME CD-CHANGER

Det. 06.02.91	Er. Braun	Beur. W.	Gepr. M.
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Bei Netzspannung: 100V, 117V, 200V, 250V, ist Transformator CD über Netz-Transformator angeschlossen.
WITH MAIN-POWER SET TO 100V, 117V, 200V, 250V, THE TRANSFORMER CD IS CONNECTED VIA MAINS TRANSFORMER.



Farbtafel COLOR CODE

rot	red	weiß	white
gelb	yellow	schwarz	black
blau	blue	rot	red
grün	green	blau	blue
orange	orange	gelb	yellow
rot	red	rot	red
blau	blue	blau	blue
gelb	yellow	gelb	yellow
schwarz	black	schwarz	black
weiß	white	weiß	white

Gezeichneter Anschluss 220V~ ADJUSTED FOR CONNECTION 220V~
Für alle anderen Spannungen Netztransformator umstellen. FOR OTHER VOLTAGES RESETOUR POWER TRANSFORMER
Gedruckte Schalterstellung Betriebsbereit CONTACT POSITION READY FOR SERVICE
Alle Sicherungen prüfen ALL FUSES SID BLD
Sicherungen nur durch solche mit gleichen Werten ersetzen REPLACE FUSES ONLY BY THOSE OF THE SAME VALUE.
Farbangaben ohne Gewähr COLOR INDICATION WITHOUT WARRANTY

ÄNDERUNGEN IM SINNE DES TECH. FORTSCHRITTES VORBEHALTEN, JEDOCH KEINE HAERUSTPFLICHT!
SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION TO MODIFY EQUIPMENT ALREADY DELIVERED!

MUSIKAUTOMATEN PHONOGRAPHS **ES IV - CD** TECHNOLOGY

ELEKTROPLAN OPERATING SCHEME

- 174 902 / 174 930 / 174 485 / 175 275 / 175 039 / 176 045
- 174 903 / 174 831 / 174 486 / 175 274 / 175 040 / 176 046
- 175 592 / 175 594 / 175 599 / 176 043 / 175 593 / 176 047