

TECHNICAL INFORMATION

FOR NSM-PHONOGRAPH

FIREBIRD II

ES V-CD TECHNOLOGY

with Program V 0003 - 02/93

TO TECHNICAL INFORMATION, ASSY -176 598-

NSM

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GENERAL

The modern technology of this new NSM phonograph **"FIREBIRD II"** with CD changer assures the highest functional reliability. A practical diagnostic system is available for maintenance and service. In order to assure satisfactory operation at all times we recommend reading the technical descriptions carefully so that you are familiar with all service operations.

The following technical documents include:

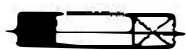
- 1 The **"TECHNICAL INSTRUCTIONS"** with important information regarding set-up of the phonograph, technical data, location of the components, the "cabinet" parts list as well as the electrical plan and various wiring diagrams.
- 2 The **"OPERATING INSTRUCTIONS"** with explanations regarding play and settings as well as short instructions for statistics and service programs.
- 3 The **"STATISTICS AND SERVICE PROGRAMS"** as well as test programs and error displays. The convenient service programs help the user in maintenance and control and permit the transfer of bookkeeping and technical data into the new NSM recording device and the printer **"DATAPRINT"**.
- 4.13 The **"UNIT DESCRIPTIONS"** for control unit, display/keyboard, central unit, output stage, CD changer, title display, electronic coin mechanism and bill validator, remote control and output transformer with their functions and, where applicable, wiring diagram and parts list.
- 14 **"TROUBLE-SHOOTING CHART"**, a description of errors, error displays as well as flow chart to determine errors.
- 15 **"ACCESSORIES"**, information on genuine NSM accessories with instructions for installation and exercising options.

The information and illustrations contained in these technical documents are up to date at the time of publication.

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"Caution: Replace With Same Typ Fuses"

"Attention: Utiliser Un Fusible De Remplacement De Même Typ"

The CD-player with a laser scanning system used in this phonograph is a class I product (no risk, harmless laser system). The respective label is on the front of the changer behind the viewglass.



KONFORMITÄTSERKLÄRUNG

DECLARATION OF CONFORMITY

DECLARATION DE CONFORMITE

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Produkt

declare under our sole responsibility that the product

déclarons sous notre seule responsabilité que le
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NSM-Musikautomat

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JUKE BOX-NSM

THE PERFORMER WALL

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THE PERFORMER WALL

auf das sich diese Erklärung bezieht, mit der/den
folgenden Norm(en) oder normativen Dokument(en)
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to which this declaration relates is in conformity with
the following standard(s) or other normative
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EN 55 022; EN 60 555-2; EN 60 555-3

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Gemäß den Bestimmungen der Richtlinie _____

folbwing the provisions of Directive _____

conformément aux dispositions de Directive _____

89/336/EWG

89/336/EWG

89/336/EWG

Bingen am Rhein
22.09.92

Dr. Thomas Kühl

Bingen am Rhein
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Dr. Thomas Kühl

Bingen am Rhe n
22.09.92

Dr. Thomas Kühl

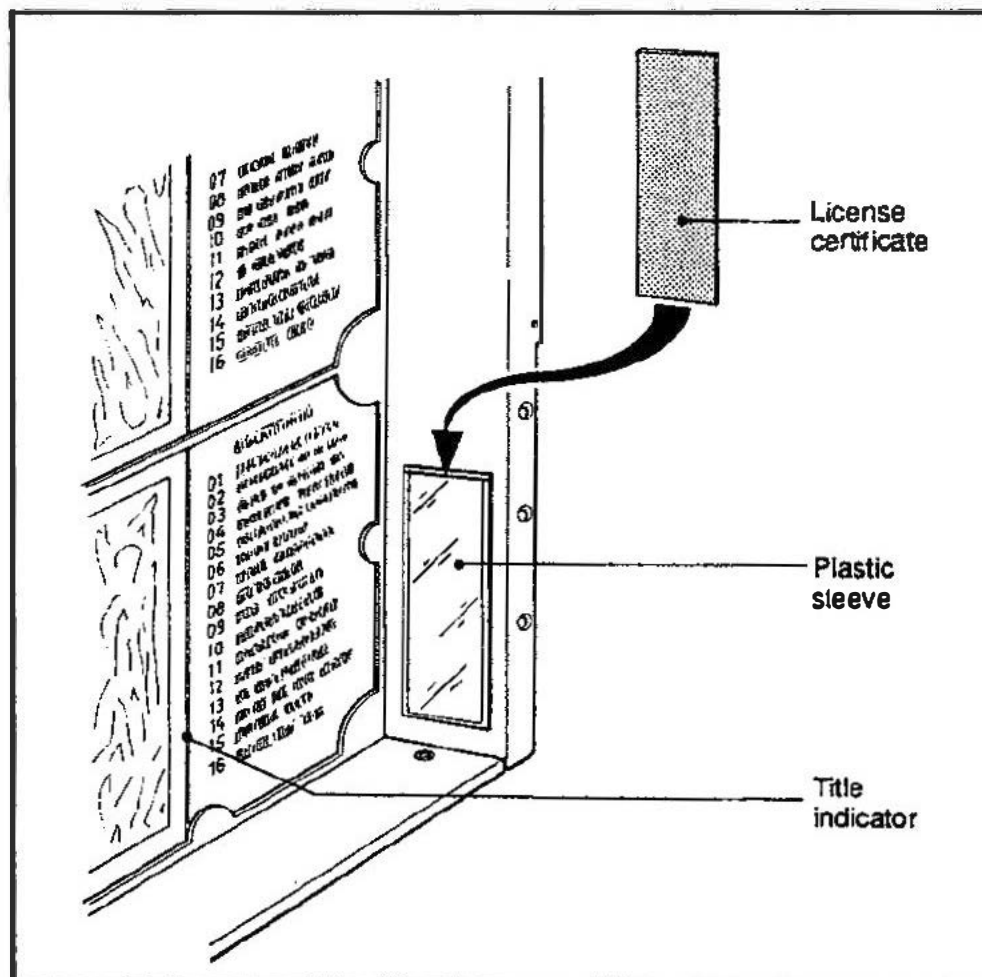
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: These servicing instructions are for use by qualified personnel only. To avoid electric shock do not perform any servicing other than that contained in the Operating Instructions section 2 unless you are qualified to do so. Refer all servicing to qualified service personnel.

Directions for placement of the jukebox license certificate (USA market only).

You will receive the license certificate after paying the necessary fee to the Jukebox License Office. Find the registration documents within the Jukebox.



TECHNICAL INSTRUCTIONS FOR NSM-PHONOGRAPHS FIREBIRD II

ES V-CD TECHNOLOGY

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1 PLEASE READ INSTRUCTIONS

Storage and operation of this device is allowed in dry rooms only.

1.1 Transport Damages

If external damage due to transport is noticed, this should at once be recorded on the delivery slip and endorsed by the person making the delivery.

The manufacturer is not liable for damages during transport!

1.2 Keys

One cabinet key is taped to the front glass. The other keys are in the cashbox.
To open the cabinet unlock on the right side and open the door.

1.3 Use NSM Mounting Bracket (Part-No. 040 739)

So that the coin mechanism can function correctly, mount the phonograph horizontally and vertically correct. Therefore, we recommend the practical NSM mounting bracket.

Take care to mount the bracket untwisted since the rear of the cabinet can otherwise be twisted.

To secure the phonograph to the bracket, hexagonal screw M 10x12 -from the accessory bag- is to be used.

Plug in connection cable before mounting (see 1.6 "Power Connection").

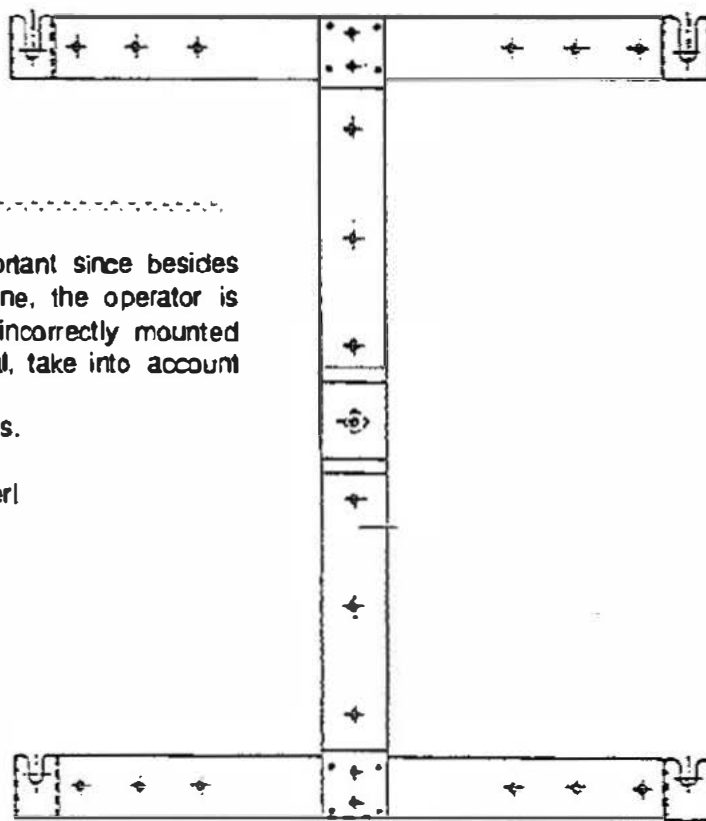
TECHNICAL INSTRUCTIONS!

for Mounting of the machine on the wall

Secure mounting of the machine is very important since besides the danger of severely damaging the machine, the operator is responsible for all damages caused by an incorrectly mounted wallbox; when choosing the fastening material, take into account the machine's weight of 83 kg.

We recommend dowel pins in sufficient quantities.

The screws should be at least 6 mm in diameter!



Instance: Plastic - Wallplug

First a few tips:

- The maximum bearing capacity of nylon expansion plugs may only be achieved with the greatest possible screw diameters and with screws exceeding the plug point by the screw diameter again.
- Please ensure that with fixings in hollow brick and hollow blocks that the expansion zone of the plug is completely anchored in at least one stone web.

- Determination of minimum screw length

1xd (d=nominal diameter of screw)
 + Plug length
 + Thickness of plaster and/or insulating material
 + Thickness of mounting bracket 3 mm

= Min. screw length

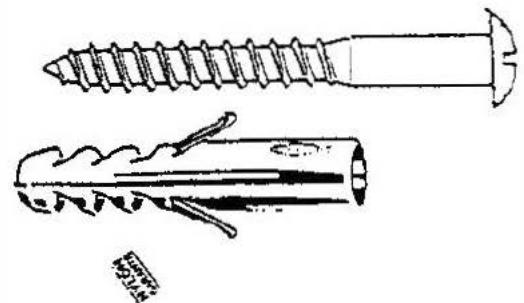
If you observe these tips you will have created the prerequisite for secure fixings.

Pull-out values in kN*. Determined in each case with the largest screw diameter (steel screw) and with flush fixing of the plug in the load-bearing anchorage base.

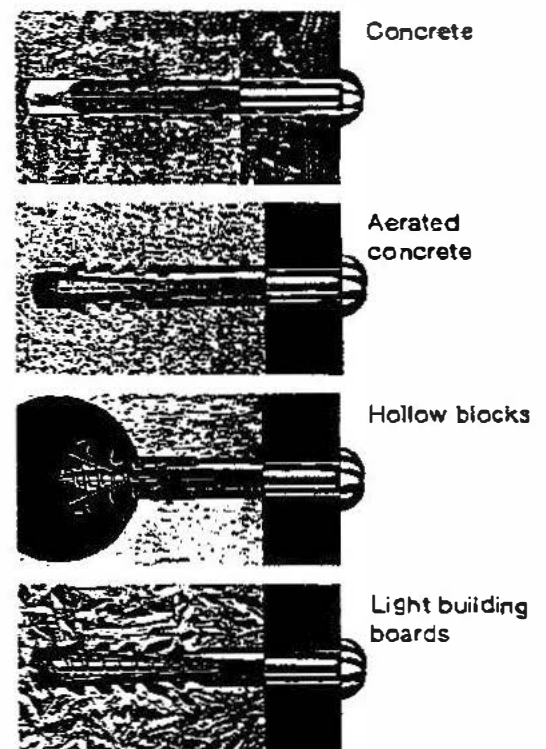
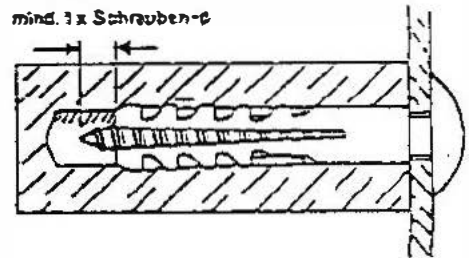
Allowance must be made for an appropriate safety factor.

| Type-Wallplug | Pull-out values (kN) | | | |
|-------------------------|----------------------|----|-----|-----|
| | S5 | S6 | S8 | S10 |
| Wood screws dia in mm | | | 6 | |
| Concrete B25 | | | 4,5 | |
| Aerated concrete G8 3,3 | | | 1,2 | |
| Aerated concrete G 4 | | | 1,3 | |
| Solid brick Mz20 | | | 4,1 | |
| Perforated brick H1220 | | | 3,0 | |

*KN = Kilonewton (1KN = 100 kp)



Wichtig:
 mind. 1 x Schrauben-Ø



The following points must be observed when drilling, irrespective of the material:

1. Drill hole geometry

The exact drill hole geometry dictates the load-bearing capacity of a plug. Therefore always drill at right angles and do not change direction during drilling. This is especially to be observed in the case of soft materials.

2. Drill process

The following drilling methods are possible depending on the type of drilling machine:

- Rotary - without impact
- Impact drill-many impacts with a low amount of impact energy. Fast rotation
- Hammer drill - few impacts with a high amount of impact energy. Slow rotation.

The material determines the drill process:

- Solid materials of dense structure: Impact and hammer drilling.
- Hollow brick, materials of low strength and aerated concrete: Only rotary so that the hole does not become too big and in hollow brick the webs do not break out.

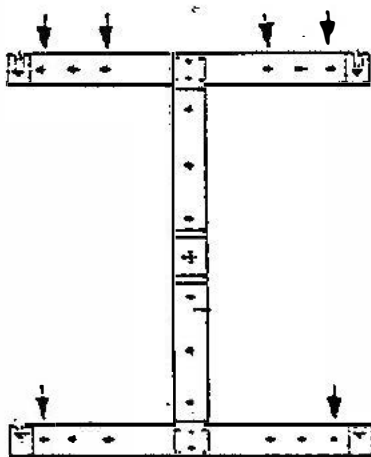
Never forget to remove the dust from the drill hole after drilling. Only then is the plug secure.

Pull - Out Values - Safety Factors:

The pull-out values (breaking loads) given in this catalog are mean failure loads determined in at least 5 tests in uncracked building material. Failure criteria may be: failure of building material, breaking of bolt, loosening of anchor, breaking of anchor.

The maximum working load is calculated by dividing the pull-out value (breaking load) by the safety factor.

As a safety factor we recommend: for nylon wallplugs $\sqrt{\geq 7}$.



Example: In aerated concrete GB 3,3 the pull-out value for 8 plugs with 6 diameter screws is 1,2 KN. Divided by safety factor 7 equals 0,17 KN = 17 Kp for 1 screw. The weight of the machine is 83 kg; therefore, at least 83 kg / 17 Kp = 5 screws are necessary. For safety and symmetry reasons 6 screws are to be used (see sketch).

When fixing the machine to the wall, make sure the vent is not hindered in its function. When using the mounting bracket, there is normally enough distance between cabinet and wall for air circulation. Plush wall hangings decrease this distance; in that case the bracket has to be fastened to a flat board. Do not mount machine above heaters!

1.4 Observe When Using an Upright Stand

If the machine is mounted on a stand, it must be made sure that it cannot fall over. Therefore, it is recommended to use sandbags to weigh down the stand. With approx. 15° angle the open machine should not tip over!

1.5 Transport Devices

Before operating the phonograph all devices for safety and protection during transport have to be removed.

Prior to any further transit the safety and protection devices have to be replaced.

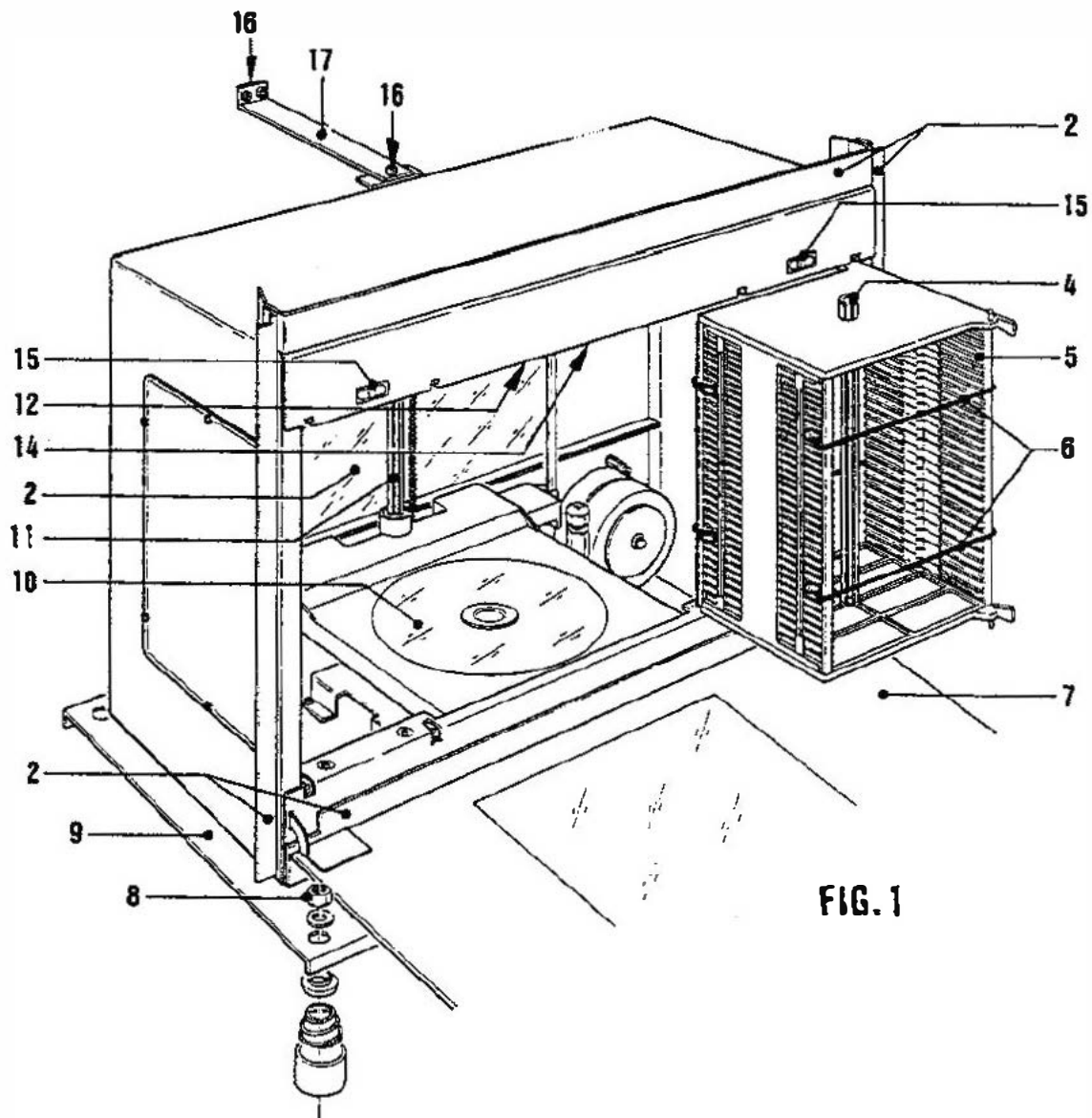


FIG. 1

- If the PCB holding plate (FIG. 1-12) is to be flipped down, the fastening screw is to be removed.
- Push the bar locker (FIG. 1-15) to the center and swing out left and right magazine (FIG. 1-5).
- Remove slotted plastic pipe from the lift axle (FIG. 1-11).

Keep transport devices in a suitable location in cabinet for later transport!

Information for transport of CD changer:

When exchanging the changer, it may only be transported in the original packaging!

- Remove magazine, push the proper button (FIG. 1-15) outwards and remove the unit.
Inserted CD's can be kept from falling out when the plastic pipe from the lift axle as well as a second one from the enclosed package is put through the opening (FIG. 1-4) and all CD's of the magazines.
- Remove design parts: Take out front glass (FIG. 1-7).
- Put in safety and protection devices in proper sequence.

1.6 Power Connection

The label on the power cord shows the voltage setting by the factory.

For other voltages set voltage required on transformers.

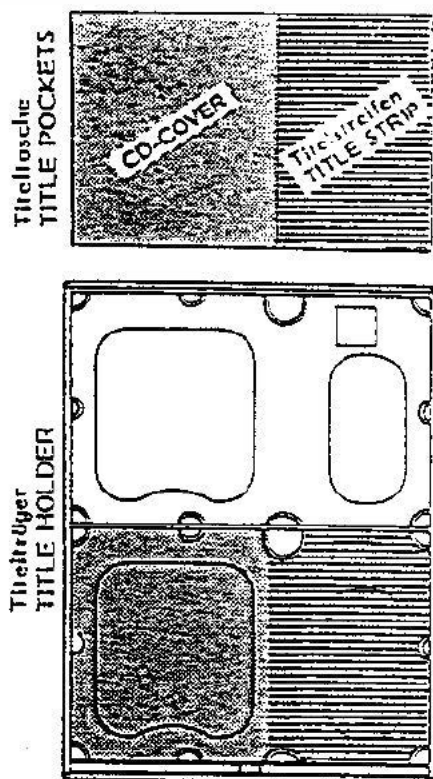
Put in power line into 3-pole socket on rear of cabinet.

Green-yellow of the three-wire power cord must be connected to the ground according to the international safety code.

Check main voltage before connecting!

After plugging in, the phonograph turn on the switch -located under right side of cabinet- fluorescent lights should now light up.

1.7 Insert title strips and CD's



PLEASE OBSERVE!

Equipping of black title holders should be done as follows:

Remove title pockets from accessory pack, insert CD covers on the left side and written title strips on the right side in the title pocket - thicker foil side of title pocket to the outside - and insert them in black title holder.

If the covers are bigger than 120x120 mm, they need to cut to size - please use only title cover.

The title program displays are moved by pressing the <-- key or the --> key on the outside of the machine or the "TL" or "TR" key on the title display PCB.

TITLE STRIP Part-No. 219 185
TITLE COVER Part-No. 212 509

In case of dislocation of title holders due to rough Transportation, please refer to section 9, paragraph 1.4 "Jammed or dislocated title holders".

CD-Changer: In order to avoid movement of the lift (Attract mode) the cabinet switch has to be pulled out. Now the device is in service mode. In addition, the CD will be returned when it remains on the player after the last track (see also: CD-Changer "Return Holder").

Push button (FIG. 1-15) to the center, swing out the magazine, pull out tray and load with CD's. Observe the sequence of the magazine and title strip numbers.

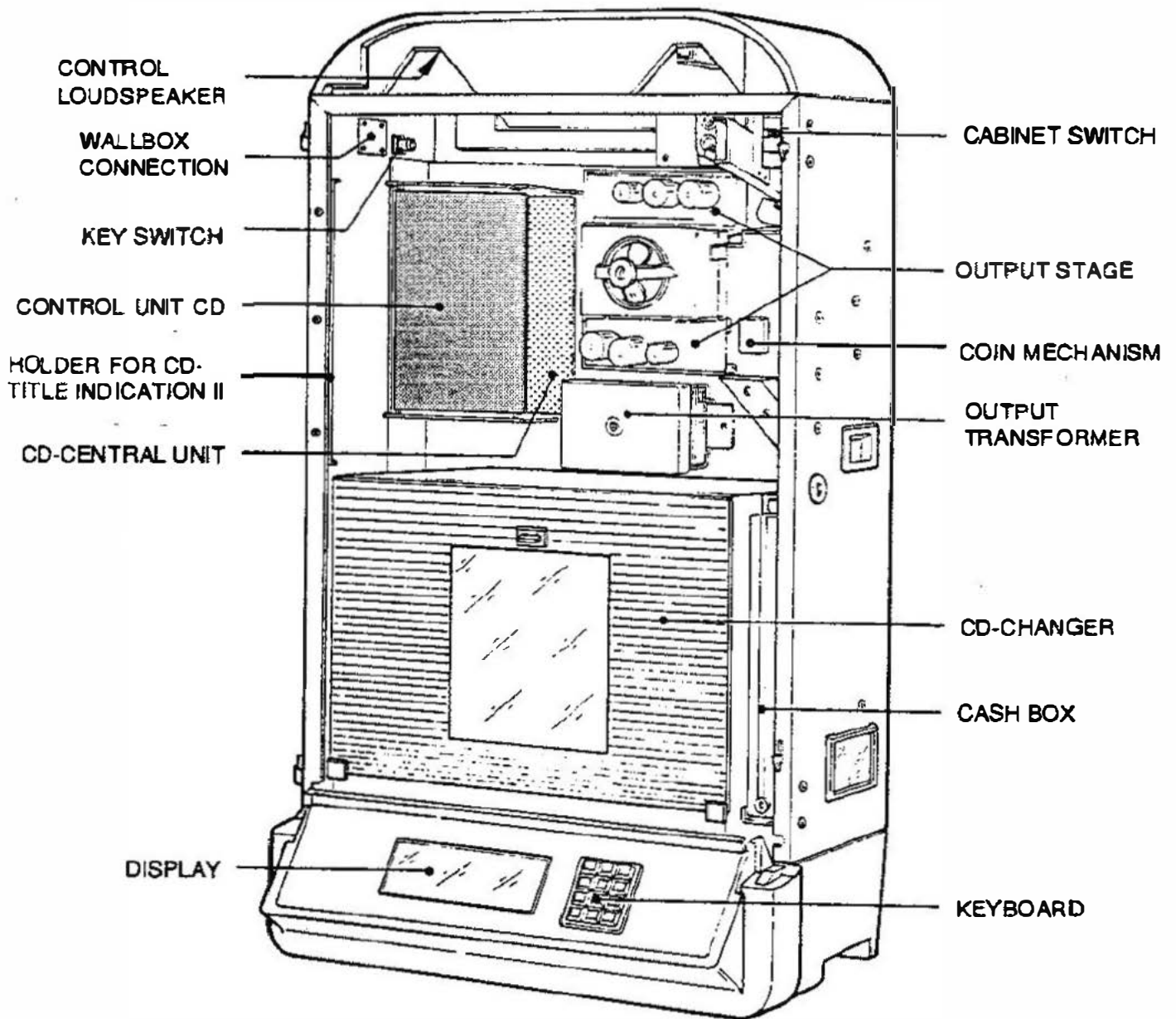
Take care to push in the CD trays until they rest in center and do not hinder the lift.

Note: To take out the magazines push the button (FIG. 1.15) to the outside; take out magazines one after the other!

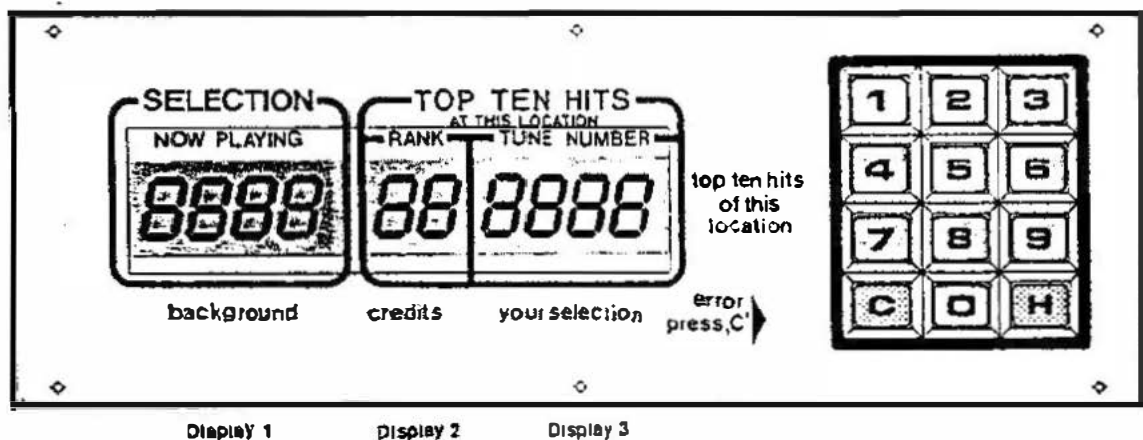
The CD's can be protected against falling out, when transporting loaded magazines, by putting the plastic pipes (FIG. 1-4) through the magazines and all loaded CD's.

Use the enclosed 4 clamps as transportation fixture for the CD-magazines.

2 LAYOUT OF UNITS



2.1 DISPLAY and KEYBOARD



3 SPECIFICATIONS

3.1 Electrical Data

Main voltage: 100-260 V (variable), 50/60 Hz

Power consumption

at stand by 170 W

at play 450 W

3.2 Musik Power

2 x 200 watts music power at 2 ohms

3.3 Fuses

Replace fuses only with those of same value!

3.4 Lighting

Fluorescent lamps = 4 W

Fluorescent lamps = 8 W

Fluorescent lamps = 13 W

Lamps = 12 V / 2 W

3.5 Credit / Cash Input

Maximum credit display is 99.

Price list adjustable individually or as per table.

Free credit adjustment / permanent credit key-operated switch for free credits and background, elect.-mech. cash counter (optional).

3.6 Keyboard

10 number keys 0-9

1 correction key "C"

1 hit-step key "H"

3.7 Displays

Display 1 with 4 seven-segment LED's

Display 2 with 2 seven-segment LED's

Display 3 with 4 seven-segment LED's

1 lamp display "10 top hits"

1 lamp display "background"

1 lamp display "credit"

1 lamp display "your selection"

1 lamp display "error, press key "C"

3.8 CD changer

NSM CD changer for maximum 100 CD's, 5 inch. Disc-player: Philips CD-player unit.

3.9 Loudspeakers

1 loudspeaker SP-3 R 8 ohms (control loudspeaker)

3.10 Special Features

Integrated microphone preamplifier and connection socket for microphone with paging switch.
Computer-controlled amplifier protection for overload (mismatch).

3.11 Dimensions

| | |
|--------|-----------|
| Height | 39,6 inch |
| Width | 23,8 inch |
| Depth | 14,2 inch |

4 LOUDSPEAKER CONNECTION

The wallbox is equipped with a control loudspeaker. For service or repair it can be connected to the terminals of one of the outputs (left or right channel) of the output stage.

The connection wires of the external loudspeakers are led through an opening in the lower cabinet part (left rear) to the inside, through the bottom in the cabinet corner upwards, and then to the connection terminals of the output stage.

The polarity ▼ must be maintained because otherwise bass reproduction would nullify itself!

The ES-IV amplifier serves an output of 2 x 200 watts music power at 2 ohms per channel.

If the loudspeaker impedance is 4 ohms, the loudspeaker will use 2 x 100 watts musik power (Fig. 1) from the amplifier.

In that case, the additional loudspeakers connected cannot have an impedance of less than 4 ohms since the amplifier otherwise would be "mismatched" and the overload protection would operate.

If loudspeakers with a higher impedance are connected (Fig. 2), a number of speakers can be connected parallel. In that case, a loudspeaker with a higher impedance would naturally be lower in volume.

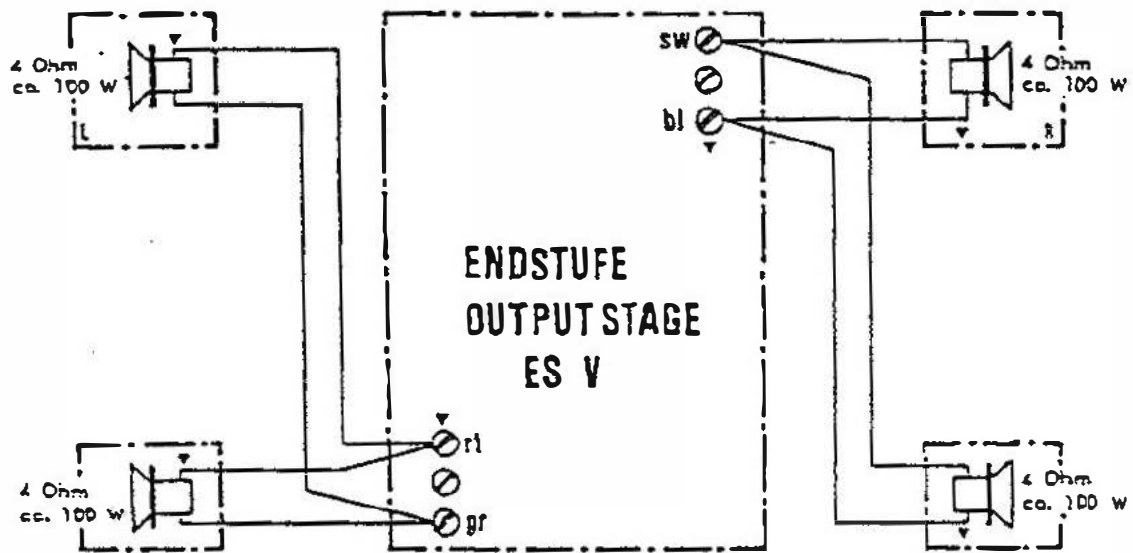


Fig. 1

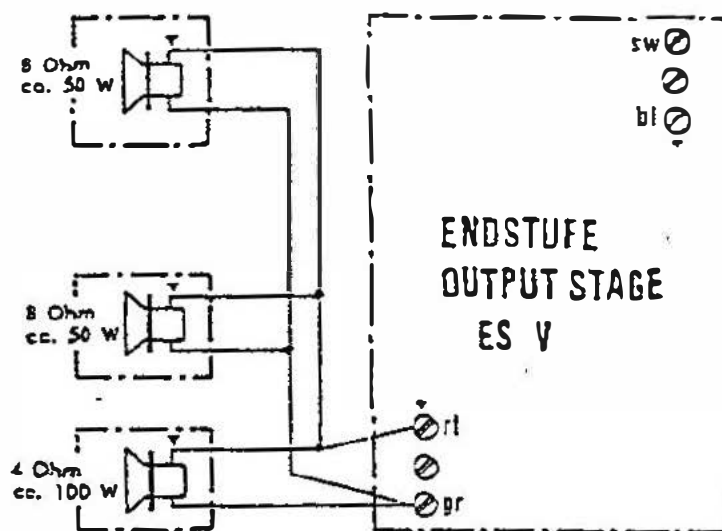


Fig. 2

Mono mode; sound system for separate rooms; see Fig. 3.

If the volume is to be controlled independently from 2 rooms, both cabinet speakers can be connected to one channel. The loudspeaker for the other room can then be connected to the free channel. There for the switch S 1 in the Central Unit has to be put on "MONO". For this independent procedure a volume control with separate controls is necessary (see remote control).

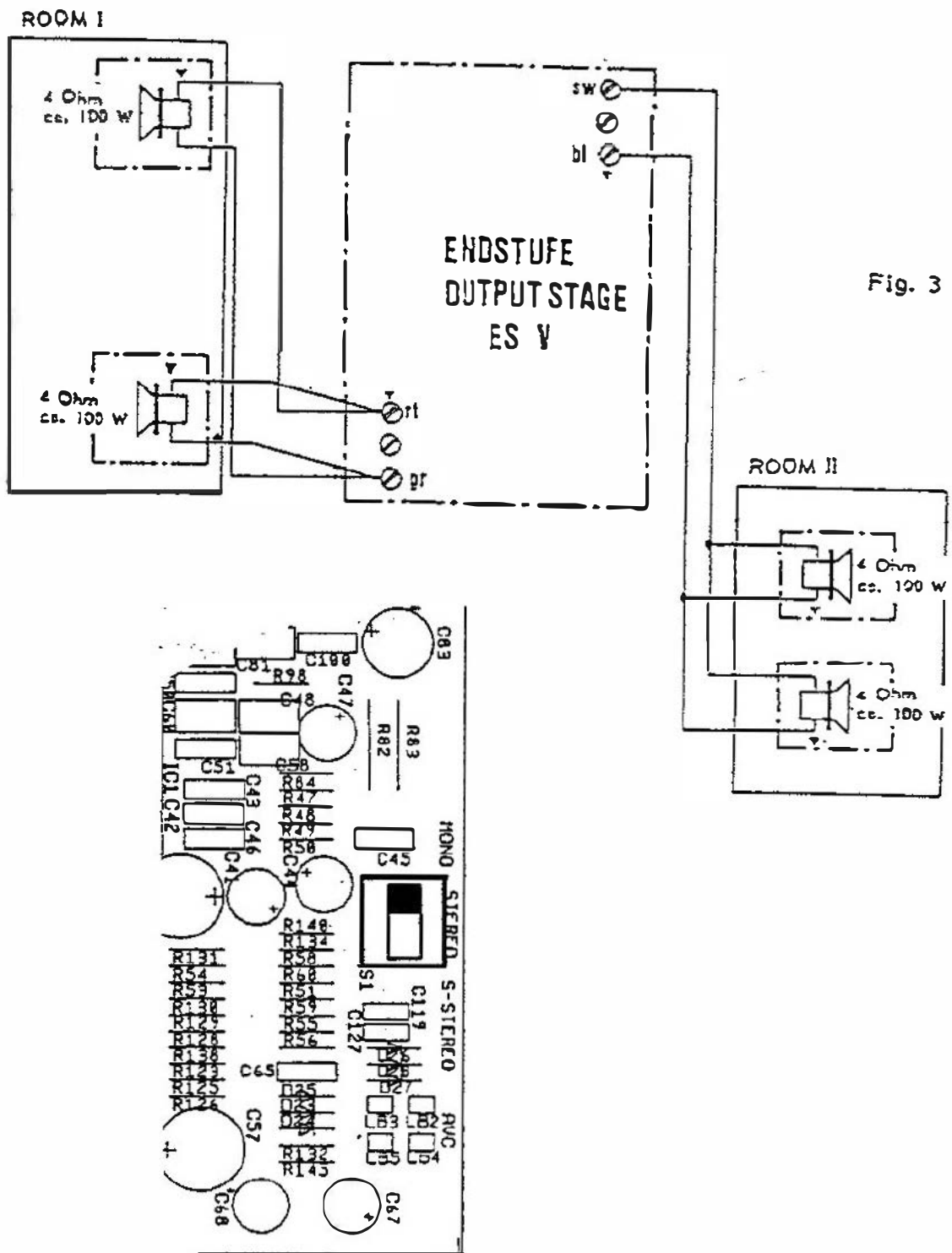


Fig. 3

Additional Loudspeakers and Separate Control

If even more speakers are to be connected whereby the total impedance drops below 2 ohms, an output transformer has to be used (see schematics "loudspeaker connection" and unit description "OUTPUT TRANSFORMER").

Cabinet speakers (Fig. 4) in serial connection result in lower volume!

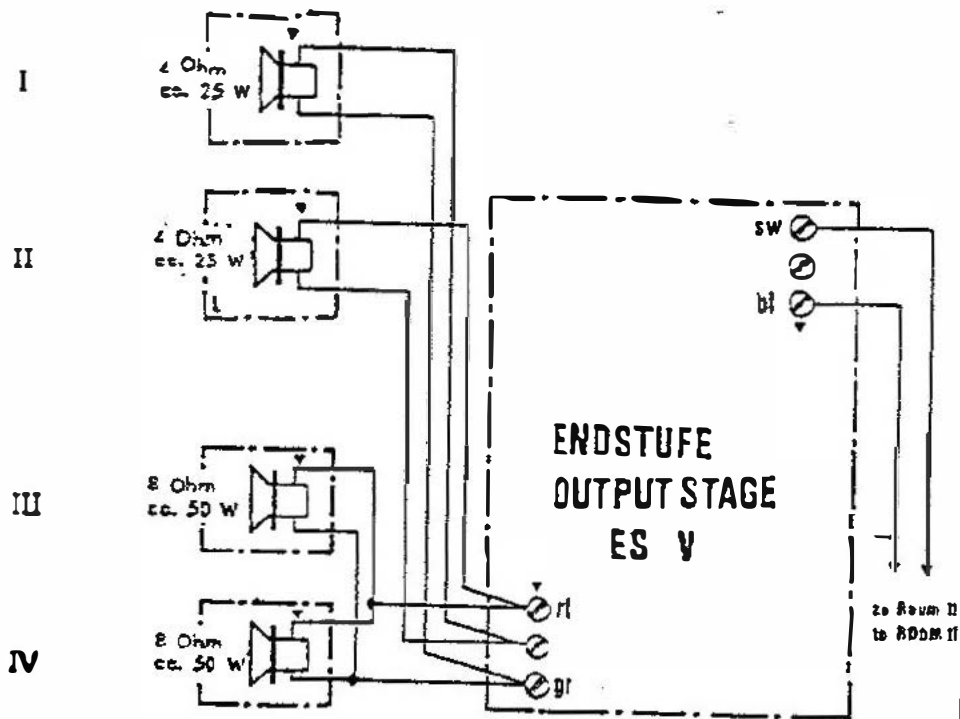


Fig. 4

An auxiliary amplifier can be connected for independent stereo control of other rooms as well as for increased power requirements.

See also unit description "Central Unit", connection of auxiliary amplifier, and "Accessories", tape recorder connection cable or CD-audio connection.

4.1 OUTPUT TRANSFORMER

Extension Speaker Operation

To avoid a poor sounding phonograph, care must be taken when adding extension speakers. Three requirements must be met:

- 1.) Speakers must be wired so that the power consumed by the phonograph speakers and the extension speakers, including wallettes, does not exceed the amplifier power rating.
- 2.) Extension speakers should produce the desired sound level relative to the sound level of the speakers on the phonograph.
- 3.) All speakers must be connected with the correct polarity.

Several charts have been included to assist you with connecting the extension speakers. Figure 2-10 at the end of this section shows the entire sound system.

70-VOLT-SPEAKER

To avoid prohibitive cable losses on long speaker lines, 70-volt speakers should be used as much as possible.

The power level in the 70-volt speakers is set at each speaker.

Low Impedance 8-Ohm Speakers

Low impedance speakers (8 ohms) can be used when the connecting cable is less than 100 feet (AWG 18) / 0,75 mm².

The loss 100 feet (AWG 18)/0,75 mm² of zipcord feeding one 8-ohm speaker is 15 %. The loss for two 8-ohm speakers is 30 %.

4-OHM SPEAKERS

No more than one 4-ohm speaker should be connected to a speaker line. If several 4-ohm speakers are to be used, each speaker should have its own line.

Do not connect a low impedance speaker to a speaker tap that exceeds the speaker's power rating.

CAUTION:

In any speaker installation, the total speaker load (the sum of all power ratings of all speakers) must not exceed 400 watts Musik Power (2x200 W je Kanal).

SELECTING SPEAKER POWER

General Instructions

This section will lead you through the power and speaker selection process. This process consists of three major steps and several smaller steps. The major steps are:

- 1.) Identifying the extension speakers and computing the extension speaker power.
- 2.) Making the external speaker connections.
- 3.) Determining and selecting the phonograph power.

Step-By-Step Instructions

- 1.) Use a pencil (you may want to revise your figures) to fill in the work sheet on the following pages.

Use this work sheet to help you calculate the amount of power consumed by the extension speakers. Use table as a guide to help you select which power tap to use for each type of external speaker that you are using.

Place the quantity of stereo speaker in the blank under QTY and multiply the quantity times the power consumption (show stereo speakers as 2 speakers). Place your results in the TOTAL blank.

Table 1

4-OHM Stereo Speakers

| | QTY | Total | Connections |
|------------------------------------|---------------------------|--------------|--------------------------|
| Speakers for the 1.8 watt taps: | _____ at 1.8 watts each = | _____ watts | (0 to 1) |
| Speakers for the 7.5 watt taps: | _____ at 7.5 watts each = | _____ watts | (0 to 2) |
| Speakers for the 15 watt taps: | _____ at 15 watts each = | _____ watts | (0 to 3) |
| Speakers for the 30 watt taps: | _____ at 30 watts each = | _____ watts | (0 to 4) |
| Speakers for the 65 watt taps: | _____ at 65 watts each = | _____ watts | (0 to 5) |
| Speakers for the 100 watt taps: | _____ at 100 watts each = | _____ watts | (direct to Amplifier) |
| | Total blank 4-Ohm = | _____ | |

8-Ohm Stereo Speakers

| | QTY | Total | Connections |
|-----------------------------------|--------------------------|-------------|---------------------------|
| Speakers for the 1 watt taps: | _____ at 1 watts each = | _____ watts | (0 to 1) |
| Speakers for the 4 watt taps: | _____ at 4 watts each = | _____ watts | (0 to 2) |
| Speakers for the 8 watt taps: | _____ at 8 watts each = | _____ watts | (0 to 3) |
| Speakers for the 16 watt taps: | _____ at 16 watts each = | _____ watts | (0 to 4) |
| Speakers for the 35 watt taps: | _____ at 35 watts each = | _____ watts | (0 to 5) |
| Speakers for the 50 watt taps: | _____ at 50 watts each = | _____ watts | (direkt to Ampliflere) |
| Total blank 8-Ohm = | | _____ | |

70-VOLT SPEAKERS

70-Volt speakers have a power tap on them or on their associated transformer. Add together all of the 70-volt speaker tap settings and enter that value:

_____ watts (A1 to A2)
 (B1 to B2)

Combine all speaker's consumptions:

| | |
|---------|---------------|
| | Stereo |
| 4 Ohm | _____ |
| 8 Ohm | _____ |
| 70 Volt | _____ |

Subtract the Grand Total from 400 and write the result in the blank at the end of this line:
Power Available For The Phonograph _____

The Grand Total is the amount of power that the phonograph will need to supply to the extension speakers. This amount must be less than 400 watts. If this amount is not less than 400 watts, you must reduce the power used by the extension speakers to reduce the total power consumed; then recalculate the total power consumed. (andere Klemme anschließen).

When you subtract the Grand Total from 400, you will get the "Power Available For The Phonograph" figure. Be sure to write this value down in the blank because you will not be using it until you have wired all of the extension speakers.

NOTE:

The amplifier may be connected to a load of 400 watts before distortion will begin to increase beyond specification.

The phonograph wires to change are the red (left channel) and the blue (right channel) on the output transformer assembly (see table 2).

Use table 2 as a guide to select the power used by the phonograph. This power should roughly match the amount indicated in "Power Available For The Phonograph" on the previous page.

Table 2

Phonograph Speaker Power

Select the speaker taps that will use up most of the "available Speaker Power".

You may select more power or less phonograph power to suit you phonograph volume preference.

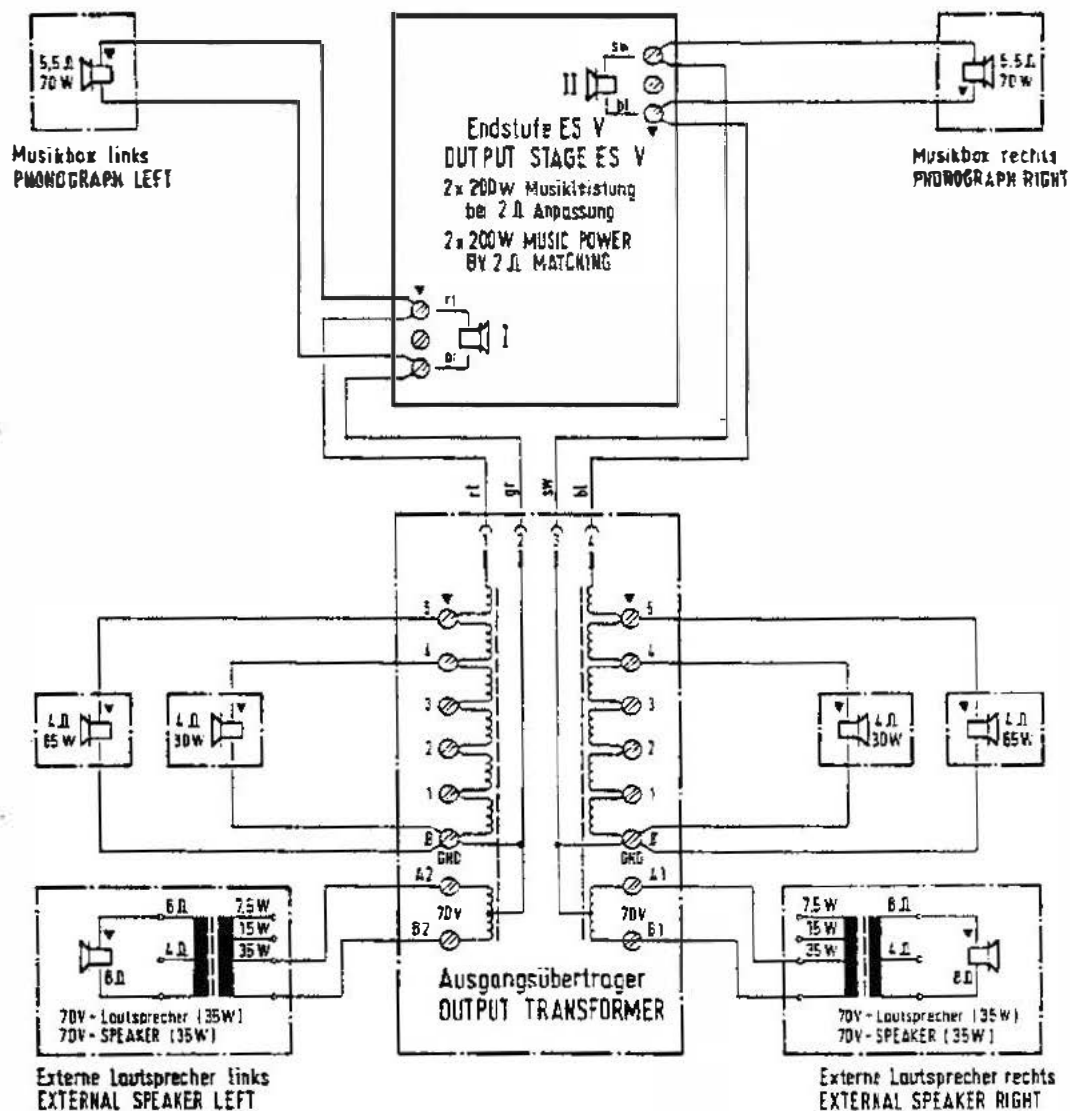
| Phono Power *) [W] | Phono Speaker Connections |
|--------------------|---|
| 2,4 | Red connects to Left E1, blue connects to Right E1 |
| 11,0 | Red connects to Left E2, blue connects to Right E2 |
| 22,0 | Red connects to Left E3, blue connects to Right E3 |
| 44,0 | Red connects to Left E4, blue connects to Right E4 |
| 100 | Red connects to Left E5, blue connects to Right E5 |
| 140 | Red connects to Left direkt Amplifier, blue connects to Right direkt Amplifier |

Do not move the Black wire; it should stay on either the Left or Right E1 terminal.

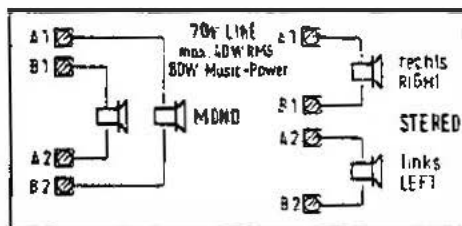
*) This value is the total for both channels. The power consumption for each channel is one-half of this value.

Check that the phonograph is not overloaded by performing the following four steps:

- A. Make sure that the phonograph and extension speakers are connected to the proper speaker taps.
- B. Set the volume control fully clockwise (maximum volume) and make a selection.
- C. While the music is playing, an acceptable load will allow the OVERLOAD INDICATOR(S) to be off or occasionally flicker in a random manner. If the OVERLOAD INDICATOR(S) are always lit or flicker continuously, the amplifier is overloaded and you must perform step D.
- D. Do this step only if the OVERLOAD INDICATOR(S) came on as described in the previous step. Find the source of the overload (shorted speaker wires or too many speakers on line) and repeat step C.



Anschlußschema für Ausgangsübertrager
CONNECTION DIAGRAM FOR OUTPUT TRANSFORMER



| Klemme TERMINAL POSITION | Lautsprecher SPEAKER | | | | |
|--------------------------------|-------------------------|-------|-------|------|-------|
| | 2 Ω | 2.5 Ω | 4 Ω | 8 Ω | 16 Ω |
| 0 - 5 | 130 W | 100 W | 65 W | 35 W | 18 W |
| 0 - 4 | 60 W | 48 W | 30 W | 16 W | 8 W |
| 0 - 3 | 30 W | 24 W | 15 W | 8 W | 4 W |
| 0 - 2 | 15 W | 12 W | 7.5 W | 4 W | 2 W |
| 0 - 1 | 3.7 W | 3 W | 1.8 W | 1 W | 0.5 W |

ANDEUTUNG: IM SINNE DES TYPEN FORTSCHRITTES VORBEHALTEN.
JEDOCHE KEINE WÄHRHAFTIGKEIT!
SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
TO MODIFY EQUIPMENT ALREADY DELIVERED!

NSM MUSIK AUTOMATEN **ES V-CD** TECHNOLOGY
PHONOGRAPHS

Lautsprecheranschluß
SPEAKER CONNECTION

Anschluß für max. Ausgangsleistung
CONNECTION FOR MAX. POWER OUTPUT

1E 01 52 8mm

SPARE PARTS LIST
FOR NSM-PHONOGRAPH
FIREBIRD II

This spare parts list is applicable for NSM-Phonograph: **FIREBIRD II**

Every spare part order should contain the following:

1. Model
2. Serial number
3. Quantity
4. Part number
5. Description

Example

| Model | Serial-Number | QTY | Part-No. | Description | Data |
|-------------|---------------|-----|----------|---------------|------------------|
| FIREBIRD II | 02 904 | 1 | 223 423 | MAINS TRANSFO | VG 13/2 KV S2 |
| | | 2 | 224 188 | BALLAST | |
| | | 1 | 225 343 | STARTER | |

ATTENTION!

Precise orders save unnecessary questions and bring the best results.

ORDER SPARE PARTS THRU YOUR NSM-DISTRIBUTOR!

Information and illustrations contained in this spare parts list, are correct at the time of going to press.

NSM-AKTIENGESELLSCHAFT, Saarlandstraße 240 - 6530 BINGEN am Rhein

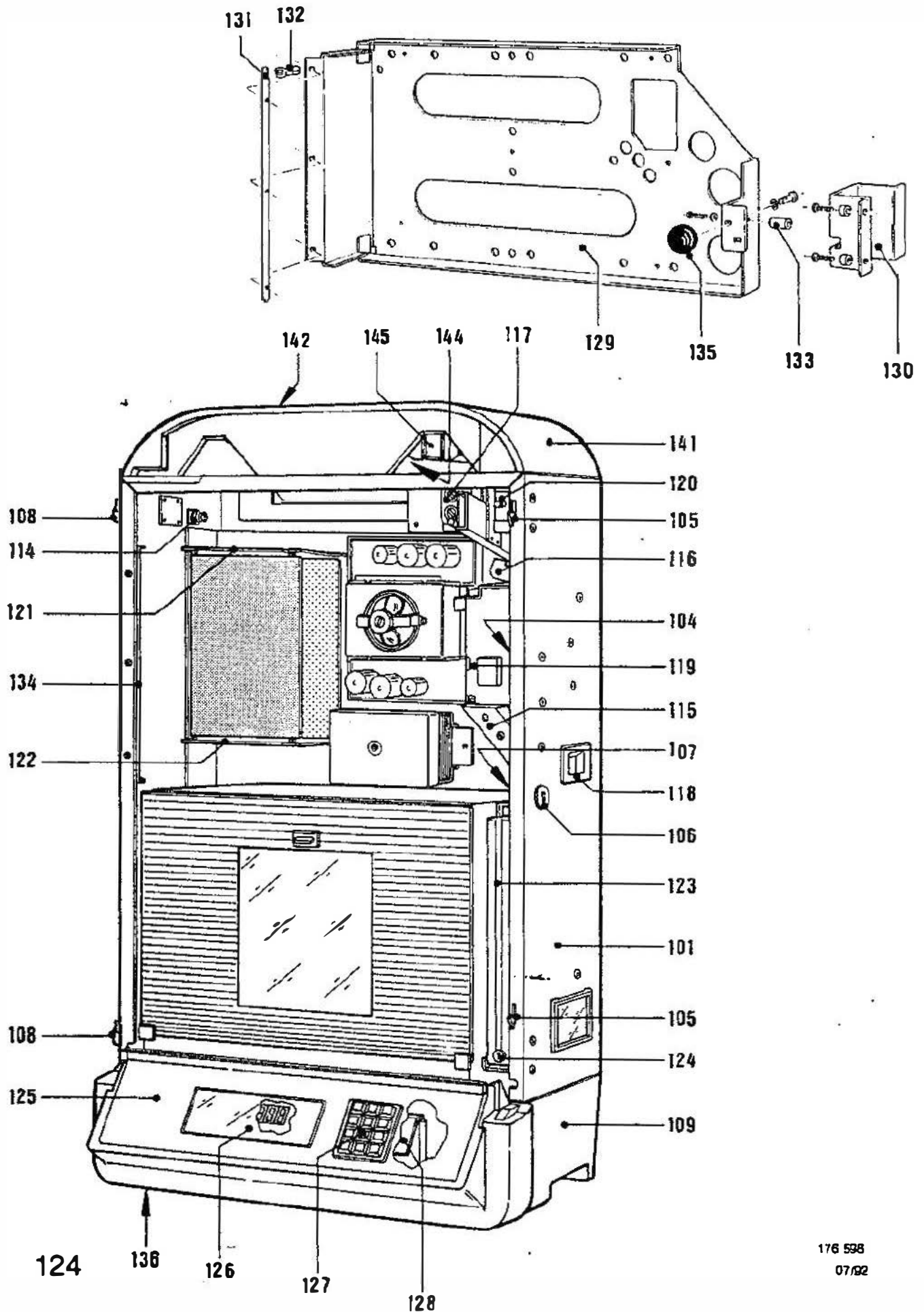
INDEX

| | |
|--------------|---------------------------|
| Page 123 | UNITS and ACCESSORIES |
| Page 124-127 | CABINET |
| Page 128-129 | FRONT FRAME -FIREBIRD II- |
| Page 130-131 | BUTTON |
| Page 132 | CABLE HARNESSSES |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|---------------------------------|--|-------------|------------------|-----|
| <u>PHONOGRAPH "FIREBIRD II"</u> | | | | |
| <u>UNITS</u> | | | | |
| 176 328 | CB-CONTROL UNIT ES V, ASSY | | see page 400 ... | 1 |
| 173 664 | CB-DISPLAY CD, ASSY | | see page 500 ... | 1 |
| 176 326 | CENTRALE ES V, ASSY | 50 Hz | see page 600 ... | > |
| 176 327 | CENTRALE ES V, ASSY | 60 Hz | see page 600 ... | 1 |
| 171 701 | OUTPUT STAGE, ASSY | 50 Hz | see page 700 ... | > |
| 171 702 | OUTPUT STAGE, ASSY | 60 Hz | see page 700 ... | 1 |
| 176 606 | CD-CHANGER, ASSY (without Design Pieces) | | see page 800 ... | 1 |
| 176 362 | VIEW GLASS, MOUNT. | | | 1 |
| 175 316 | TRIMPLATE, ASSY | | | 1 |
| 176 832 | CD-TITLE INDICATION III, ASSY | | see page 900 ... | 1 |
| 040 739 | MOUNTING BRACKET, ASSY | | | 1 |
| 176 719 | BACTA-CONNECTION, ASSY | | (for GB only) | 1 |
| <u>ACCESSORIES</u> | | | | |
| 171 799 | OUTPUT TRANSFORMER | | | 1 |
| 172 504 | CABLE HARNESS | | | 1 |
| 174 258 | IR-REMOTE CONTROL, ASSY | | with 5 m Cable | 1 |
| 206 783 | SENDER | | | 1 |
| 173 178 | RECEIVER | | | 1 |
| 171 743 | REMOTE CONTROL | | with 5 m Cable | 1 |
| 172 077 | REMOTE CONTROL | | with 25 m Cable | 1 |
| 173 996 | WALLBOX-CONNECTION, ASSY | | | 1 |
| 173 464 | WALLBOX-ADAPTER, ASSY | | | 1 |
| 223 422 | TRANSFORMER | | | 1 |
| 173 997 | CABLE HARNESS: TRANSF. -- ADAPTER | | | 1 |
| 173 998 | CABLE HARNESS: WALLBOX-ADAPTER | | | 1 |
| 209 944 | INSTALLATION INSTRUCTIONS | | | 1 |
| 173 348 | CASH COUNTER, ASSY | | | 1 |

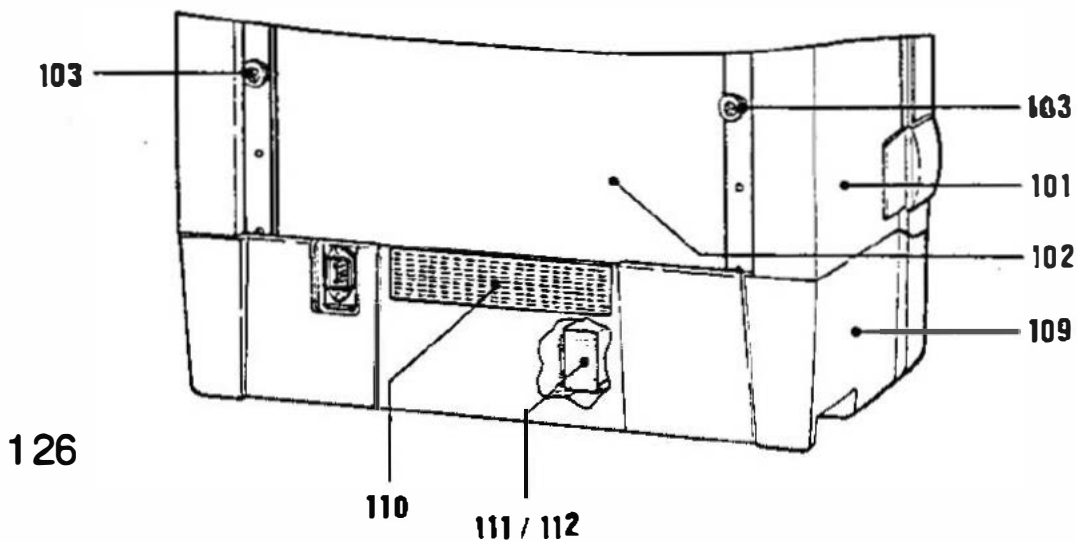
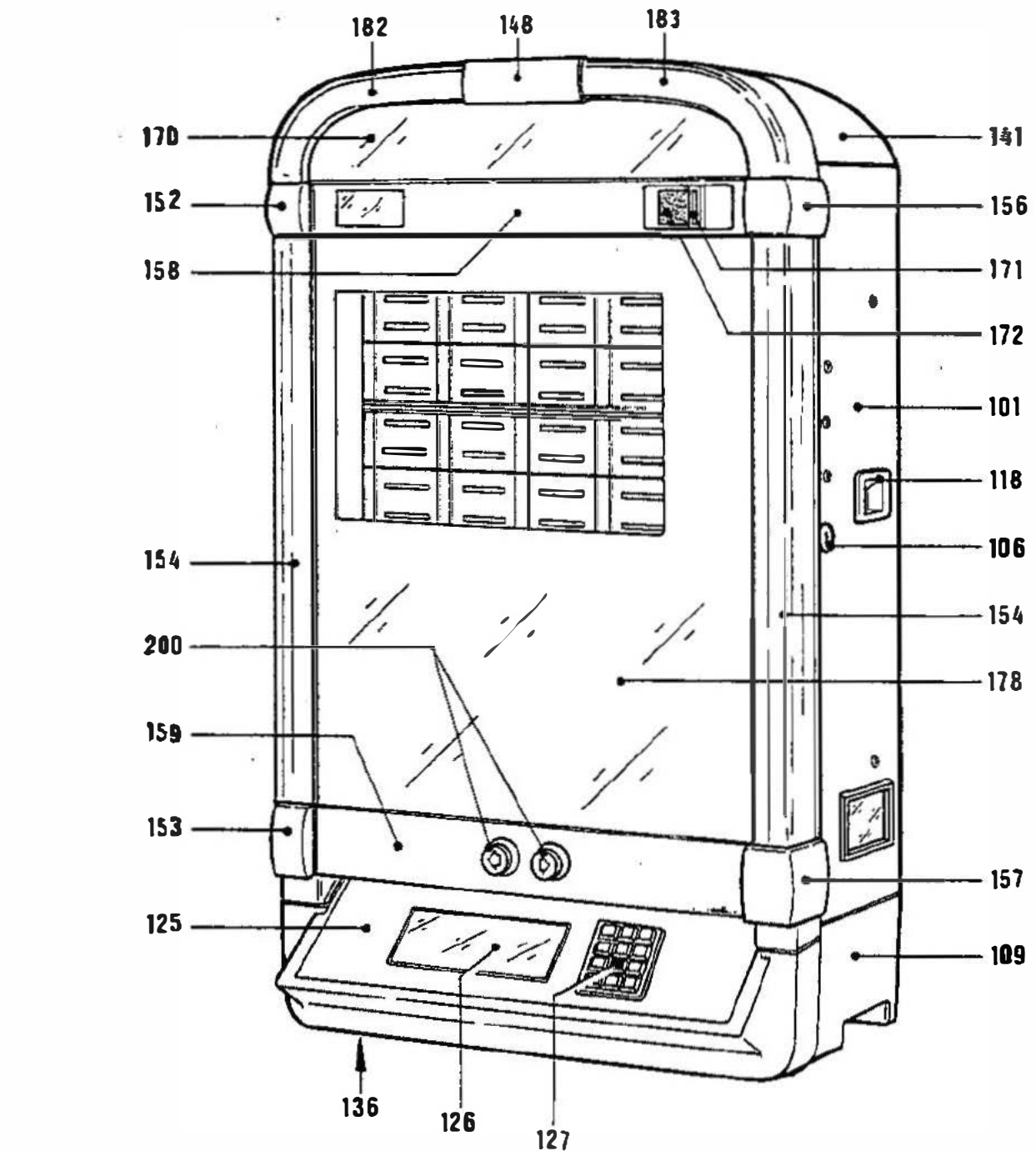
SPARE PARTS LIST



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|--|----------|-------------------------|-------------------------------|-----|
| <u>PHONOGRAPH "FIREBIRD II"</u> | | | | |
| 101 | 175 866 | CABINET, PRE-MOUNTED | for USA | 1 |
| 102 | 211 675 | BACK COVER | | 1 |
| 103 | 112 462 | GUIDE PARTS | | 4 |
| 104 | 114 674 | CLOSING RAIL, ASSY | | 1 |
| 105 | 211 474 | CLOSING BRACKET | | 2 |
| 106 | 206 903 | LOCK | | 1 |
| 107 | 175 121 | CLOSED, STAMPED | | 1 |
| | 205 722 | TENSION SPRING | | 1 |
| 108 | 113 326 | HINGE-BOTTOM PART, ASSY | | 2 |
| 109 | 173 501 | BOTTOM PART | | 1 |
| 110 | 175 750 | VENTILATION PLATE I | | 1 |
| 111 | 173 697 | TRANSFO PLATE | | 1 |
| 112 | 223 423 | MAINS TRANSFORMER | | 1 |
| 114 | 222 505 | KEY SWITCH | | 1 |
| 115 | 175 860 | COIN TUBE (CASH BOX) | | 1 |
| | 174377 | COVER PLATE | | 1 |
| MARS-COIN-ACCEPTOR | 116 | 173 725 | COIN RETURN LEVER, STAMPED | 1 |
| | | 173 726 | BAFFLE LEVER, STAMPED | 1 |
| | 117 | 173 655 | COIN RETURN PLUNGER | 1 |
| | | 205 265 | PRESSURE SPRING | 1 |
| | | 173 727 | HOLDING BRACKET, STAMPED | 1 |
| | | 175 708 | FLAT SPRING | 1 |
| | 118 | 029 335 | COIN RETURN CUP | 1 |
| | | 102 495 | COIN LID | 1 |
| | 119 | 172 139 | CB-MARS-COIN ACCEPTOR, ASSY | 1 |
| | 120 | 222 509 | PUSH BUTTON SWITCH | 1 |
| | | | CABINET SWITCH | |
| | 121 | 176 303 | BRACKET, ASSY RIGHT | 1 |
| | 122 | 176 304 | BRACKET, ASSY LEFT | 1 |
| | | | for CENTRALE and CONTROL UNIT | |
| | 123 | 174 383 | CASH-BOX | 1 |
| 124 | 206 656 | Cyl.-LOCK | | 1 |
| | 173 908 | CLOSING LEVER | | 1 |
| 125 | 173 708 | CONSOLE | | 1 |
| 126 | 176 025 | GLASS, PRINTED | ENGLISH | 1 |
| 127 | 175 905 | KEY BOARD, ASSY | | 1 |

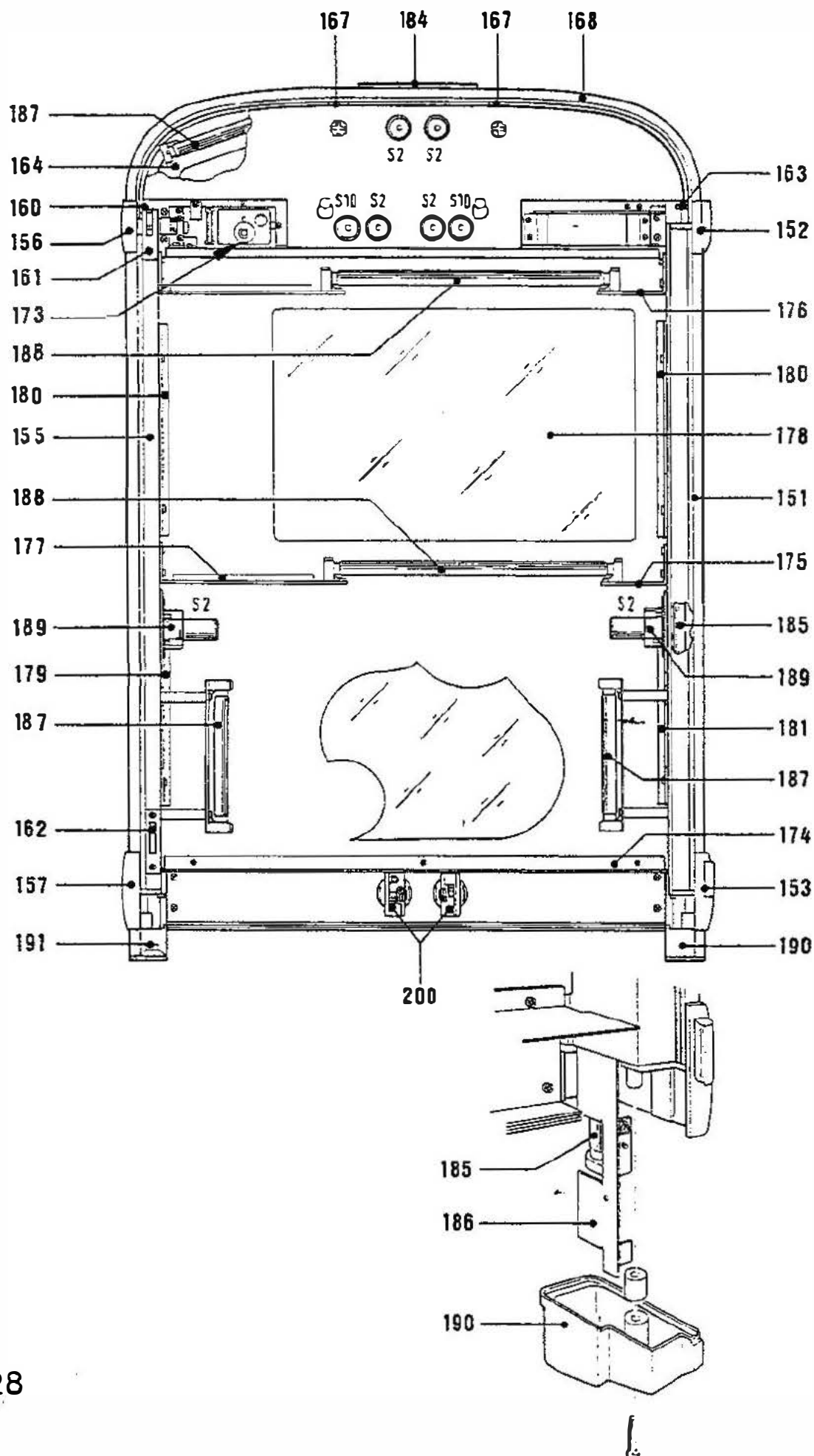
SPARE PARTS LIST



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|---------------------|----------|-----------------------|----------------------|-----|
| 128 | 173 670 | LAMP MASK | | 1 |
| | 225 587 | LAMP SOCKET | | 1 |
| | 226 056 | LAMP | 12 V 2 W | 1 |
| 129 | 176 020 | BACK PLATE II | | 1 |
| 130 | 176 022 | LOCKING PLATE II | | 1 |
| 131 | 17 6 023 | AXLE | f. TITLE | 1 |
| 132 | 175 204 | CLIP | INDICATION II | 1 |
| 133 | 176 024 | BUSHING | | 1 |
| 134 | 176 048 | BEARING PLATE II | | 1 |
| 135 | 217 391 | BALL HANDLE | | 1 |
| 136 | 175 180 | SWITCH PLATE, printed | | 1 |
| | 222 452 | BUTTON, green | | 1 |
| | 222 470 | BUTTON, white | | 1 |
| | 222 471 | BUTTON, red | | 1 |
| <u>GUARD</u> | | | | |
| 141 | 114 654 | GUARD | | 1 |
| 142 | 175 751 | VENTILATION PLATE II | | 1 |
| 144 | 176 354 | HOLDING PLATE I | | 1 |
| 145 | 176 355 | HOLDING PLATE II | | 1 |
| | 224 254 | BALLAST | 60 Hz 13 W 120 V | 2 |
| | 224 256 | BALLAST | 60 Hz 118 V | 6 |
| | 175 749 | SUPPORT | | 1 |
| | 173 777 | HOLDING PLATE | | 1 |
| | 224 215 | BALLAST | 50 Hz KX 4/6/8 D 8 W | 2 |
| | 224 188 | BALLAST | 50 Hz KX 13 D | 3 |

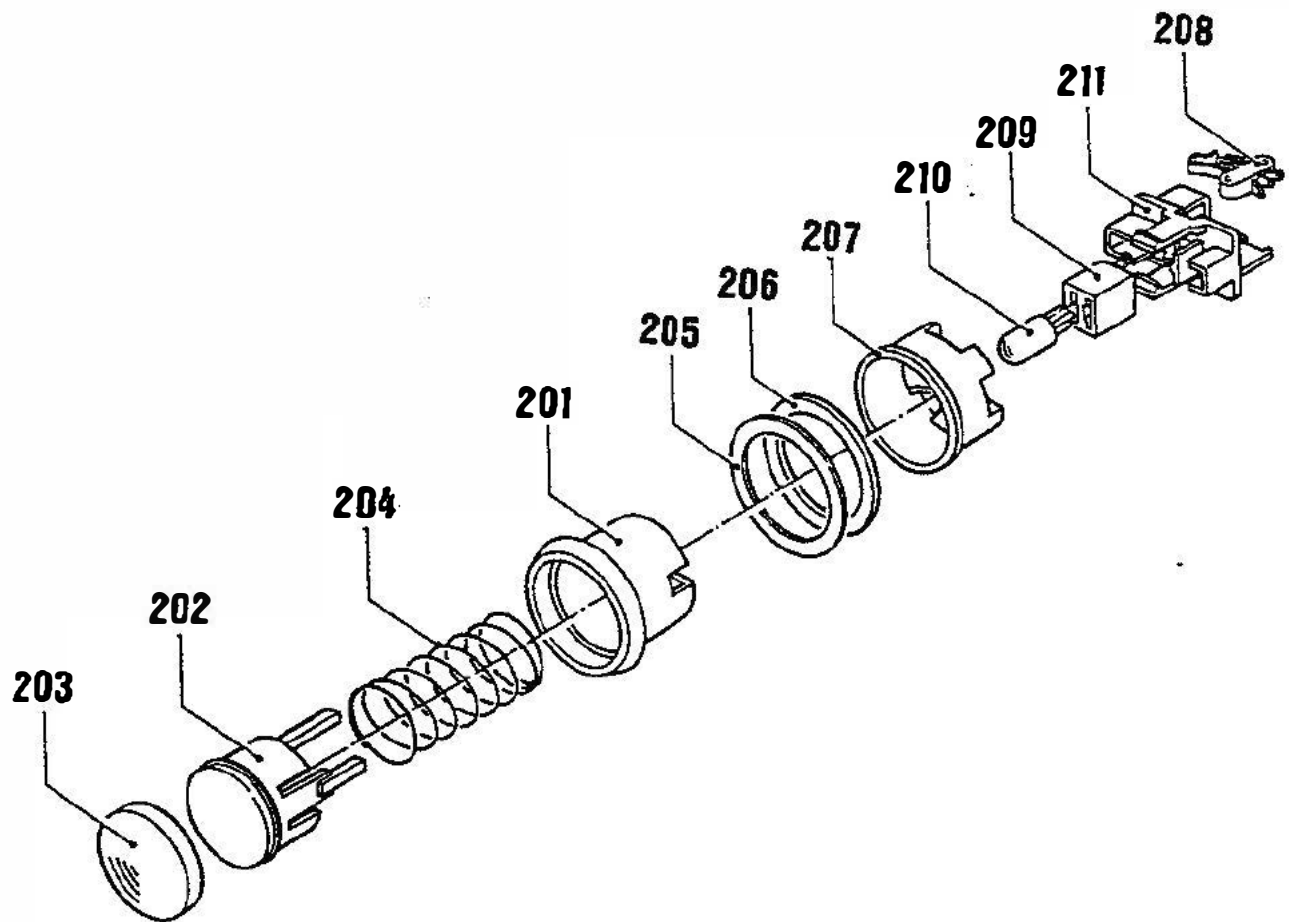
SPARE PARTS LIST



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------|----------|----------------------------------|------|-----|
| 150 | 176649 | <u>FRONT FRAME "FIREBIRD II"</u> | | |
| 151 | 250 336 | LONGITUDINAL PROFILE, LEFT | | 1 |
| 152 | 250 273 | EDGE CONNECTOR, UPPER LEFT | | 1 |
| 153 | 250 275 | EDGE CONNECTOR, LOWER LEFT | | 1 |
| 154 | 212 422 | LAMP MASK | | 1 |
| 155 | 250 337 | LONGITUDINAL PROFILE, RIGHT | | 1 |
| 156 | 250 274 | EDGE CONNECTOR, UPPER RIGHT | | 1 |
| 157 | 250 276 | EDGE CONNECTOR, LOWER RIGHT | | 1 |
| 154 | 212 422 | LAMP MASK | | 1 |
| 158 | 176 475 | CROSS PROFILE, UPPER ASSY | | 1 |
| 159 | 176 474 | CROSS PROFILE, LOWER ASSY | | 1 |
| 160 | 115 082 | HOLDING BRACKET, RIGHT | | 1 |
| 161 | 114 679 | CLOSING PLATE, UPPER | | 1 |
| 162 | 114 680 | CLOSING PLATE, LOWER | | 1 |
| 163 | 115 083 | HOLDING BRACKET, LEFT | | 1 |
| 164 | 175 494 | CARRIER PLATE, STAMPED | | 1 |
| 167 | 114 682 | HOLDING BRACKET | | 2 |
| 168 | 250 340 | TERMINAL PROFILE, UPPER CURVED | | 1 |
| 170 | 212 637 | FRONT PLATE | | 1 |
| | 206 581 | DUPLEX PROFILE | | 1 |
| 171 | 173 710 | COIN INSERT | | 1 |
| 172 | 175 023 | BUTTON I, PRE-MOUNTED | | 1 |
| 173 | 205 720 | PRESSURE SPRING | | 1 |
| | 209 963 | MASK, LEFT | | 1 |
| | 209 964 | MASK, RIGHT | | 1 |
| 174 | 173 905 | COVER, LOWER | | 1 |
| 175 | 175 033 | LAMP HOLDER, LEFT LOWER | | 1 |
| 176 | 175 227 | LAMP HOLDER, LEFT UPPER | | 1 |
| 177 | 175 032 | LAMP HOLDER, RIGHT | | 2 |
| 178 | 204 925 | FRONT GLASS | | 1 |
| | 206519 | RUBBER PROFILE | | 2 |
| | 206520 | RUBBER PROFILE | | 2 |
| 179 | 175 037 | GLASS HOLDER, RIGHT LOWER | | 1 |
| 180 | 175 034 | GLASS HOLDER, UPPER | | 2 |
| 181 | 175 035 | GLASS HOLDER, LEFT LOWER | | 1 |
| 182 | 175 469 | LAMP MASK, UPPER LEFT | | 1 |
| 183 | 175 468 | LAMP MASK, UPPER RIGHT | | 1 |
| 184 | 176 141 | SOCKET for MASK | | 1 |

SPARE PARTS LIST



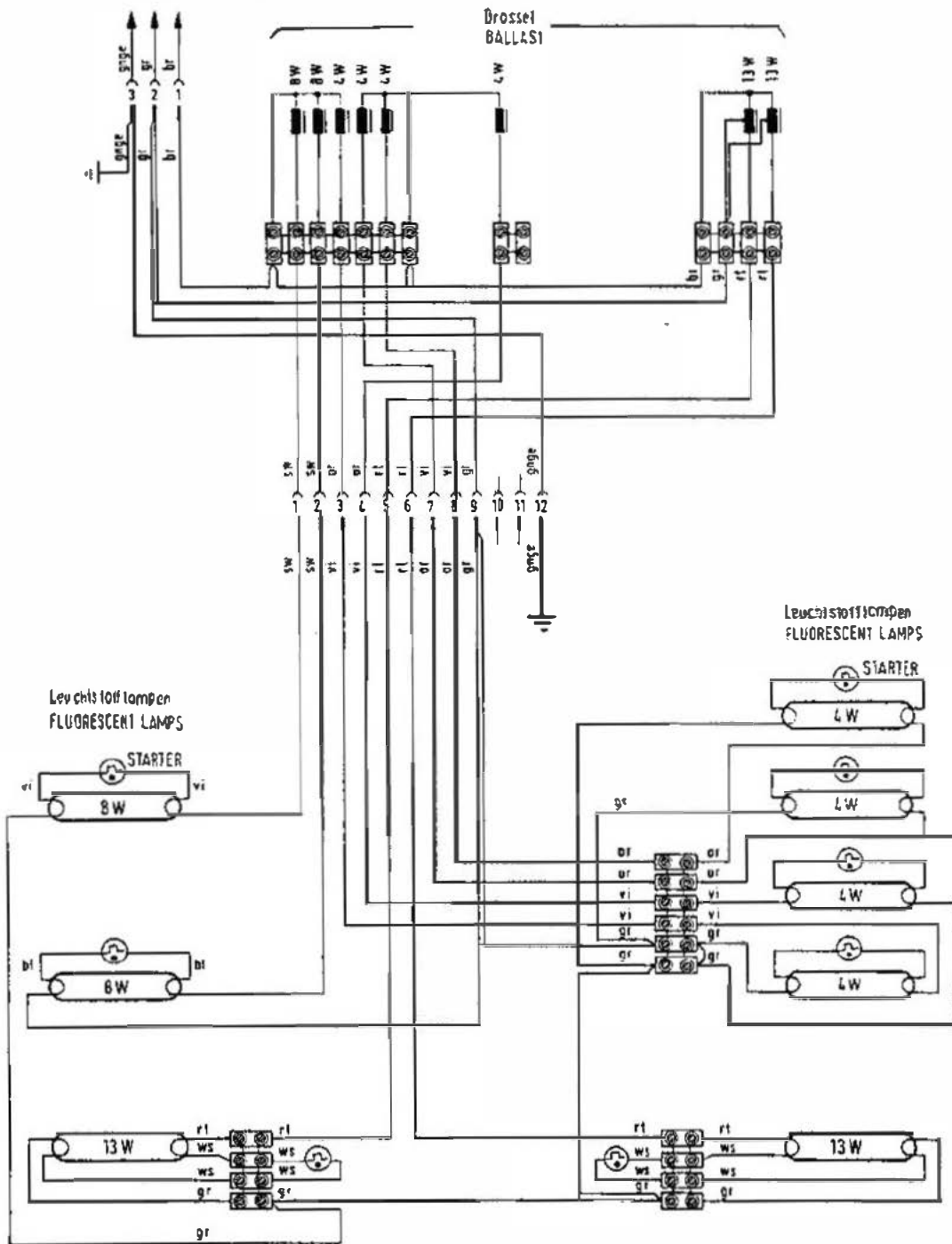
SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------|----------|--------------------------------|-------------|-----|
| 185 | 226 075 | FLUORESCENT LAMP | 13 W | 2 |
| 186 | 175 065 | LAMP HOLDER, LEFT PRE-MOUNTED | | 1 |
| | 175 066 | LAMP HOLDER, RIGHT PRE-MOUNTED | | 1 |
| 187 | 226 072 | FLUORESCENT LAMP | 4 W | 4 |
| | 209 845 | FOIL, SHORT | | 2 |
| | 219 576 | FOIL, LONG | | 2 |
| 188 | 226 038 | FLUORESCENT LAMP | 8 W | 2 |
| 189 | 225 364 | STARTER HOLDER | | 6 |
| | 225343 | STARTER | S 2 | 4 |
| | 225 040 | STARTER | S10 | 2 |
| 190 | 173 712 | ADAPTER, LEFT | | 1 |
| 191 | 173 711 | ADAPTER, RIGHT | | 1 |
| | | | | |
| 200 | 174448 | <u>BUTTON, ASSY</u> | | 2 |
| 201 | 115 608 | HOUSING | small round | 2 |
| 202 | 174 741 | BUTTON, PRINTED | | 2 |
| 203 | 115 627 | BUTTON, COVER | small round | 2 |
| 204 | 205 798 | PRESSURE SPRING | | 2 |
| | | | | |
| 205 | 208 615 | RING (0,5 mm thickness) | | 2 |
| 206 | 175 048 | RING (2,5 mm thickness) | | 2 |
| 207 | 115 612 | COVER | | 2 |
| 208 | 222 515 | MICRO SWITCH | | 2 |
| 209 | 225 587 | LAMP SOCKET | | 2 |
| 210 | 226 049 | LAMP | 12 V 2 W | 2 |
| 211 | 115 611 | ADAPTER | | 2 |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | | QTY |
|-------------------------|--|-------------------|--------|-----------|-----|
| <u>CABLE HARNESSSES</u> | | | | | |
| 171 782 | CENTRALE -- | CONTROL UNIT | 120 lg | 15 prongs | 1 |
| 171 783 | CENTRALE -- | CONTROL UNIT | 120lg | 12 prongs | 1 |
| 174 012 | DISPLAY, ASSY | | | | 1 |
| 174 000 | CENTRALE -- | OUTPUT STAGE | | | 2 |
| 174 022 | CENTRALE -- | MAINS TRANSFORMER | | | 1 |
| 176386 | KEY- and CABINET SWITCH | | | | 1 |
| 174 030 | KEY BOARD -- LIGHTING | | | | 1 |
| 176336 | MAINS WIRING | | | 220/240 V | > |
| 176 337 | MAINS WIRING | | | 100/127 V | 1 |
| 176 490 | CD-AUDIO | | 600lg | 4 prongs | 1 |
| 175 223 | CONTROL UNIT -- CB-TITLE INDICATION | | | | 1 |
| 114 085 | CENTRALE -- | CD-PLAYER | 600lg | 12 prongs | 1 |
| 115 221 | CONTROL UNIT -- | CD PLAYER | 600lg | 8 prongs | 1 |
| 176 338 | BALLASTS | | | 220/240 V | > |
| 176 339 | BALLASTS | | | 100/127 V | 1 |
| 175 067 | KEYS | | | | 1 |
| 175 567 | SERVICE-EXTENSION | | | | 1 |
| 174 047 | DOLLAR BILL ACCEPTOR -- CONTROL UNIT (for USA) | | | | 1 |

Zum Netz-Transformator
TO MAINS TRANSFORMER



Farbspiegel
COLOR CODE

| | | |
|----|---------|--------|
| ws | weiß | white |
| bl | blau | blue |
| br | brown | brown |
| ge | gelb | yellow |
| gn | grün | green |
| gr | grau | grey |
| or | orange | orange |
| rs | rosa | pink |
| ri | rot | red |
| sw | schwarz | black |
| vi | violett | violet |

Fo bandsabnahme Gewähr
COLOR INDICATION WITHOUT WARRANTY

ÄNDERUNGEN IM SINNE DES TECHN. FORTSCHRITTES VORBEHALTEN,
JEDOCK KEINE HAFTUNG!

SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
TO MODIFY EQUIPMENT ALREADY DELIVERED!

NSM PROKAMPALES **ES V-CD** TECHNOLOGY

Schaltbild Beleuchtung [60 HZ]
WIRING DIAGRAM ILLUMINATION

PRR Bird II

| | | | |
|--------------|------------|-------------|------------|
| Dr: 25 06 97 | Art: Bogen | Preis: 2,50 | Best: 1000 |
|--------------|------------|-------------|------------|

OPERATING INSTRUCTIONS

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

Aktiengesellschaft
Saarlandstraße 240
6530 Bingen am Rhein

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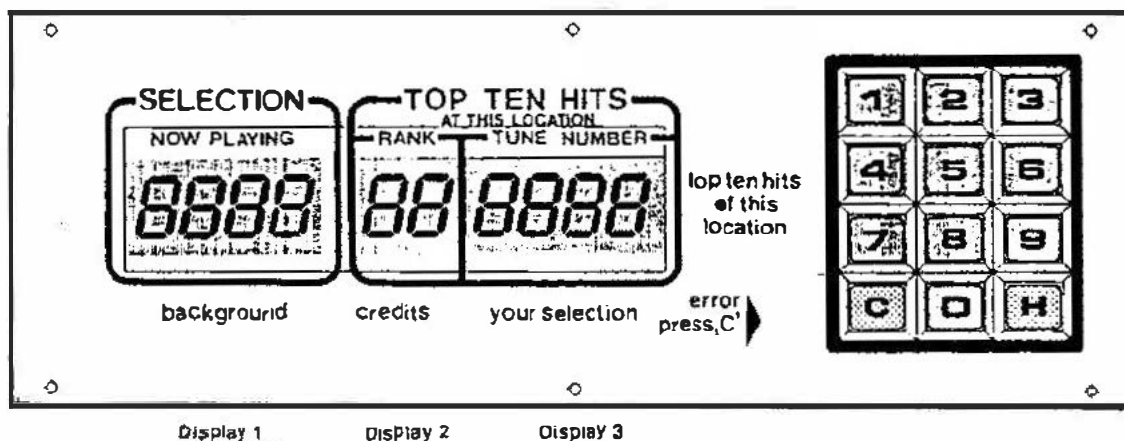
- 1 **PLAYING SEQUENCE**
 - 1.1 Operation after switching on
 - 1.2 Standby
 - 1.3 Credits
 - 1.4 Title display
 - 1.5 Selection
 - 1.6 Play mode
 - 1.7 Advertising
 - 1.8 Lock out titles
 - 1.9 Happy-Hour Credits
 - 1.10 Service and Maintenance

- 2 **ADJUSTMENTS WITH REMOTE CONTROL**
 - 2.1 Volume controls
 - 2.2 Muting
 - 2.3 Free credits
 - 2.4 Background music
 - 2.5 Key switch

- 3 **PROGRAMMING OF PRICE- AND MONETARY VALUE SETTINGS**

- 4 **CD CHANGE / CASH COLLECTION**

SELECTOR and DISPLAY PANEL



1 PLAYING SEQUENCE

The functional sequence, starting with "power on", standby credit, selection and playing of selected title to the rest position is described below.

The technical assembly and the working together of the components can be seen in the "electronic schematics". Compare the descriptions with the illustration of the display / keyboard above.

1.1 Operation after Switching on

Immediately after switch-on the memory components on the CONTROL UNIT and all preprogrammed values are checked.

Display 1 shows then for 2 sec. the program index

If an error is found during checking, error display Er xx is then shown for 2 sec.

With Er 31 (unverified memory contents) and Er 40 (price settings incorrect) Display 1 shows the correct program step with Pxxx which needs to be reprogrammed. See programming manual.

With other Er-numbers in display 3, even during operation, proceed according to the instructions in "Trouble Shooting".

1.2 Standby

Hit display:

The microprocessor of the CONTROL UNIT finds out the ten most played titles of the 30 titles just played before (at this phonograph).

On Display 3 the title numbers of the 10 most popular titles, whose rankings (1-10) are shown on Display 2, are changed in intervals of 2 sec. Also the lamp "top ten hits" lights up.

When pushing "H", the hit display can be stopped for 16 sec; every press the key "H" causes an advance to the next hit.

Note: When the popularity counters are erased (program step P033), the hit parade is erased too. In that case "0" appears for ranking until records are played again.

Autoplay mode:

A time interval can be set by programming the command group P 11x for playing of incentive titles.

Conditions for an incentive title to be played:

- Phonograph in standby mode
- No credit available
- Microphone switch not being used
- No muting

1.3 Credits (not for HIDE-AWAY)

See unit description "Coin and Bill Validation".

After insertion of a coin the hit display is interrupted, lamp "10 top hits" goes off and lamps "credit" and "your selection" light up. Display 2 shows the number of credits.

For every selection credit is deducted.

If not enough credits are available for the selection, the lamp "credit" flashes.

If no more coins are inserted within 16 sec. or no selector key is pressed, the mode changes to "hit display".

Free-credit switch (add. key), below the mechanical coin acceptor or on the adapter PCB with electronic coin validators, is only possible when the cabinet lid is open and the cabinet interlock switch is in service position (press add. button once = 1 credit). These credits are not registered statistically.

Attention! The machine is furnished with an interlock switch which must be manually set in service position (pull out). The switch resets automatically when closing the lid.

Note: Credits remain stored during "power off/on" (P049 = 0).

If the computer detects no activity on the phonograph within a time, the stored credit is cancelled (P049 = time).

1.4 Title display

By pushing the keys respectively title holders are moved into the corresponding direction. Upon each key operation two new CD-covers including titlestrips are shown. In case of a limitation of selectable CDs by programming P042 only the corresponding title holders are shown.

Note: A problem with the title display will initiate error code "Er 9x". Following instructions in "Trouble Shooting".

1.5 Selection

Title Selection: The four-digit number of the desired title has to be entered (2 digits each for CD-No. and title). "Credit" and "your selection" light up. The selection can be corrected by pressing "C" up to 2 sec. after pressing the 4th digit.

Album Selection: When entering Track 00, all titles of a CD are automatically played (i.e. 0300 = all titles of CD 03).

With open cabinet switch (interlock lever pulled out) no credit is deducted when selecting. If the entry is incorrect, e.g. higher than the programmed number of CD titles which can be selected or an unallowed selection of albums, "error" flashes. In that case, press "C" and repeat the selection.

One credit is deducted for each selection of a title. With album selections credits are deducted as per the programming in program step P066. When programming "0", album selection is blocked. If there is not enough credit available, "credit" lamp flashes.

16 sec. after selection "hit display" is switched on automatically again.

Note: If a background or incentive title is playing during selection, the volume is fading and the selected tune is being played.

1.6 Play Mode

After selection of a title the CD which is to be played corresponding to the entries in the selection storage is transported to the player and then played.

Just before start the number of the title is shown on Display 1 ("selection now playing"). After the disc is played, the display is erased and the CD is transported back to its magazine space.

Note: If a error occurs with the CD changer or the player, "Er 7x" or "Er 6x" appears for 2 sec. In that case proceed according to the description in "Trouble Shooting".

Limiting playing time for a title (track)

By programming P045 the time that a title is to be played maximum can be set in minutes.

After expiration of this time the volume for that title is fading and then muted.

When setting "0" (default), there is no limit in playing time.

Sequence of tunes playing

By programming P046 one can set in which sequence the selected titles are played.

Settings: 0 = in sequence of selection (FIFO)
 1 = in numerically increasing sequence
 2 = random sequence

Limit of Playing Titles on the same CD

One can set by programming P047 how many titles can be played consecutively on the same CD. ,
With 0 (default) there is no limit.

Attention!

When playing a test compact disc, the description that comes with the test disc is to be exactly adhered to. By any means, it is to be avoided to give sine signals with peak signal "0dB" at full volume level to the loudspeakers for more than 1 sec.

But also other unfiltered noises and high-frequency signals (which are only used for measuring purposes) can damage the amplifier and loudspeakers at full volume.

When checking channel separation, it is to take in consideration if the box is not switch to "Mono-mode" (see page 110).

1.7. Advertising

With the commands of group 12x it is possible to define timeslices for playing special CD's containing advertising information (ad).

While the ad-mode is active a title is played every x minutes (x ist the time defined in P124) after closing the currently played title. The CD's containing ad can be selected for "not to be played by normal customers" (P126).

1.8 LOCK-OUT TITLES

If one titles of a CD is bad it can be locked out for a defined time at every day by programming the steps in group P13x.

A lock out title can be defined by

- bad quality of reproduction
- bad track within the title
- shocking information.

1.9 Happy-Hour Credits

For additional animation of the audience, a so called Happy-Hour can be programmed to be active at several days.

While active an additional bonus credit is given if the customer has payed a number of credits (defined as calculation number in P144). I.e. After 5 payed credits one Happy-Hour credit is given if the calculation number is programmed as 5. The programming of Happy-Hour is done with the P14x group of commands. See also descriptions in chapter 3.

1.10 SERVICE and MAINTENANCE

With the commands of groups 15x and 16x you can

- read out errors of the phonograph with CD and date of appearance,
- test the CD changer,
- test the CD played,
- test the lamps and keys,
- install new CDs
- remove bad or not actual CDs.

Refer to "Programming of the phonograph" and "Trouble shooting"

2 ADJUSTMENTS WITH REMOTE CONTROL

The phonograph can optionally be equipped with cable-type remote control or infra-red remote control. All functions and the operation of both models are identical. Therefore, this description is valid for both of them.

The button-control box attached to the rear of the cabinet allows common control of both channels "+" or "-" and "REJECT".

Information about the functions of different controls is presented in the unit description "Remote Control".

2.1 Volume Controls

We differentiate between two volumes:

- 1.) The normal volume of selected titles and random play titles
- 2.) The background volume of background titles

For selected titles and random titles or with microphone and tape mode the corresponding volume is adjustable; background volume only with background mode:

Key "I" for the left channel; Key "II" for the right channel; "+" = louder, "-" = quieter. When pushing center key (I+II), the channels are regulated together. If they were differently set, they are first "balanced" and regulated together.

When no selection is taking place, the volume for the channels are shown in Display 3 during the adjustment in steps of "1" to "31".

At "muting" function "OFF" appears in Display 1; no more titles will be played until MUTING is cancelled.

The volume set at the end is stored during "power off".

The maximum possible volume for normal and background mode can be limited By programming P051 and P052 in steps of "1" to "31".

Note: To protect the amplifiers a check is made whether an overload occurs due to mismatching. Upon recognition of an error the volume of the corresponding channel is reduced step by step automatically by the computer until a non-critical point is reached.

2.2 Muting

The volume of both channels can be set to "0" by pressing the MUTING key; "OFF" appears on Display 1. Re-pressing of the MUTING key or one of the VOLUME "+" keys causes the system to switch back to the previously set volume for both channels.

Note: With display "OFF" no more records are played until MUTING is switched off.

2.3 Free Credits

With an "open" key switch free credits programmed in program step P094 can be called up. The following free credits are possible depending upon the settings in step P094:

- 1.) Number of set free credits can be called up individually step by step.
- 2.) Unlimited free credits can be called up individually step by step.
- 3.) Permanent credit when pressing key "FREE CREDIT" for the first time (credit display "99"). When key "FREE CREDIT" is pressed again, permanent credit is blocked.

2.4 Background Music

With an "open" key switch the background mode can be switched on with the BACKGROUND key. "Background playing" lights up.

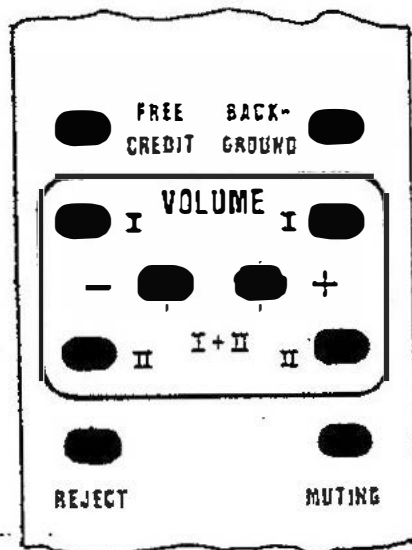
When pressing this key again, the background mode is switched off. In the background mode "random" records are played as defined in P105. The time when background musik is played is to set in P10x.

The records are played at a "specific" background volume which can be changed as desired during playing.

A "normal record", selected while background music is playing, interrupts the background disc and the selected tune is played at "normal volume".

2.5 Key Switch

A key switch at the side wall serves as protection against unauthorized calling up of free credits and switching on the background mode. When the key switch is "locked", settings from the remote control are disregarded. Key switch "open" permits programmed free credits to be called up and the background mode to be switched on.



REMOTE CONTROL

3 PROGRAMMING PRICE- AND MONETARY VALUE SETTINGS

This description is a summary of a section of the service program.

A detailed description and the corresponding tables are contained in chapter "Price Settings" and "Monetary Value Settings" in the programming manual.

Practical example for setting the "price settings" and the "monetary value settings":

1 play = 50p
2 plays = 50 p
5 plays = 1 \$ (1 £)

Programming of price settings:

| Programming information | Operation | Displays | | |
|--|--------------------|--------------|----|------|
| | | 1 | 2 | 3 |
| Switch-over from play mode to service mode | pull out plunger | P010 | xx | xxxx |
| Entering command mode | Press key(s) | Play: price: | | |
| | "C" | P | | |
| Direct selection of a command, Display of previous setting in P061. | "61", "H". | P061 | xx | xxxx |
| New setting in P061 "1 play/50 p". | "01", "0050", "H". | P061 | 01 | 0050 |
| Advance to next command, Display of previous setting in P062. | "H" | P062 | xx | xxxx |
| New setting in P062 "1 plays/50p". | "01", "0050", "H". | P062 | 01 | 0050 |
| Advance to next command, Display of previous setting in P063. | "H" | P063 | xx | xxxx |
| New setting in P063 "5 plays/1 \$". | "05", "0100", "H". | P063 | 05 | 0100 |
| Advance to next command, Display of previous setting in P064. | "H" | P064 | xx | xxxx |
| For only 3 classes setting "00 0000". | "00", "0000", "H". | P064 | 00 | 0000 |
| Advance to next command, Display of previous setting in P065. | "H" | P065 | xx | xxxx |
| For only 3 price classes setting "00 0000" | "00", "0000", "H". | P065 | 00 | 0000 |

Caution! Press "C" key in the event of incorrect programming or when display flashes.

Press "C" key twice or close hood to return to standard program (play mode).

Example of Programming the monetary value settings:

Depending on the type of coin validator the individual coin channels must be programmed for the associated monetary values in the corresponding program steps. Unused channels must be programmed with the monetary value "0"!

See also chapter 3: "Programming of Monetary value settings" and chapter 10: "Electr. coin- and bill acceptor".

Checking the monetary value settings: Select one program step between P071 and P075. After inserting a certain coin the channel associated with the coin is displayed, e.g. 50 pence in channel 2: Display P072 0050.

Changing the monetary settings: As an example, the 20 pence slot (channel 1) is not to be used: First enter program step P071 as described above. In the coin acceptor or on the adapter PCB of electronic coin validators the respective channel has to be blocked also so that these coins drop into the coin return.

Standard settings: The programming of standard settings is done with the command P070 and entering the number of the desired table values (see table "Monetary value settings" in the chapter "Programming of the phonograph"). The correct programming of all channels is done automatically after entering the number and pressing the key "H".

| Programming Information | Press keys | Displays | | |
|---|--------------|----------|---|------|
| | | 1 | 2 | 3 |
| Direct selection of a command, Display of previous setting in P 071. | See text. | P071 | | xxxx |
| New setting; no coin conversion | "0000", "H". | P071 | | 0000 |

If the standard setting according to the table is to be used thereafter, call up program step P070 (as described previously).

| | | | | |
|--|-----------|------|--|---|
| Ready for standard setting P071 through P075 | See text. | P070 | | |
| Program standard table 1. | "1", "H". | P070 | | 1 |

Press "C" key twice or close cabinet hood and return to standard program (play mode).

4 CD CHANGE / CASH COLLECTION

- Open machine and activate cabinet switch (pull out plunger) to enter into service mode. Display 3 automatically shows the least played CD.
- By pressing "1" successively, the next best CD is shown each time.
- Unlock magazine, swing out; pull out the corresponding CD holders to change CD's. After changing push back CD holders until they lock in.
- The title information of the new inserted CD must be recognized to the juke box by calling the command P161. You also may call-up P160 if you have finished the service.
- Change corresponding title cards, unlock flip-chart unit and flap down. Get desired program tables in position with the button on the PCB of the right-hand side of the unit.
- Read counters:
 - P013 = Cash total
 - P016 = Counter for plays
 - P017 = Number of selected titles
 - P018 = Number of selected albums
 - P019 = Number of overplay titles
 - P020 = Number of payed credits
 - P021 = Number of free credits provided
 - P022 = Number of background titles played
 - P023 = Number of autoplay titles
 - P024 = Number of advertisement titles
 - P025 = Number of Happy-Hour credits
- Erase counters: P033, and selected code number.
- After service is finished call-up P160.

The read-in of all CD title information is done also while the cabinet is closed. If the read-in was completed the programm automatically returns to the normal play mode.

For more information see chapter 3 "Programming the phonograph."

PROGRAMMING OF NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|-----------------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD/ OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

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PROGRAMMING OF PHONOGRAPHS

Main Menu

In order to program NSM phonographs in a simple yet extensive fashion, a service program has been installed with which the different settings can be altered via the keyboard of the phonograph. In order to get to operating mode "programming", the following steps must be taken:

Opening of cabinet lid (door) and

pulling out service switch (cabinet interlock switch).

By changing the display, the phonograph indicates that it is in operating mode "programming". The display shows the following text:

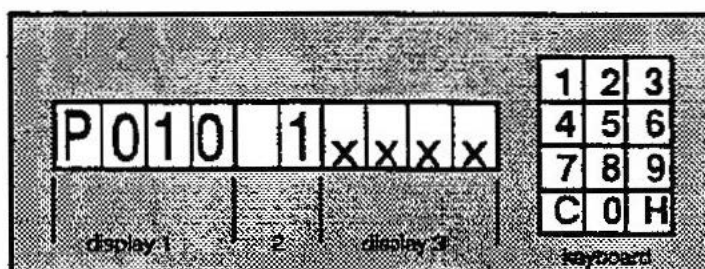


Illustration: "Display after calling up command mode"

The display "popularity" shows the least played CD. When pressing "C", the display is cancelled. To the left the letter "P" appears. Now enter the desired command number. Zeros before the number can be left out. Pressing "H" confirms the entry.

For example:

Enter: *P40 H 1 H* to program the phorthgraph with all default values.

In order to find single commands easier, all possible commands are put together in single groups. Compared to their predecessors, the programming of machines with ES-V technology is much more extensive. The commands of Groups 1 to 6 and 14 have previously existed, but have been revised. The commands in Groups 7 to 13 have been added. By integrating a real time clock, the phonograph has been equipped with some very interesting new commands. Thus, the phonographs have become even more attractive.

In Table 1 "Overview of Commands of the Service Program" the 14 command groups existing now are listed.

Table 1: "Overview of Commands of the Service Program"

| Group | Name of Command Group | Command Numbers |
|-------|--------------------------------|-----------------|
| 1 | Authorization | P001...P002 |
| 2 | Statistics | P010...P026 |
| 3 | Data Transfer/Cancellation | P03C...P0 3 |
| 4 | General Settings | P040...P054 |
| 5 | Price Setting | P060...P066 |
| 6 | Monetary Value Setting | P070...P076 |
| 7 | Programming Real Time Clock | P080...P082 |
| 8 | Programming Free Credits | P090...P 94 |
| 9 | Programming Background Music | P100...P107 |
| 10 | Programming Auto Play | P110...P117 |
| 11 | Programming Advertising | P120...P127 |
| 12 | Lock-out of Different Titles | P130...P135 |
| 13 | Programming Happy-Hour-Credits | P140...P144 |
| 14 | Test Programs | P150...P164 |

The following "Programming table for NSM-phonographs" lists all commands possible with this service program. When entering the respective command number, one can eliminate the leading zeros. A command called up in error can be cancelled by pressing "C".

Table of Programs for NSM Phonographs with ES V-Technology

| | | | | | | | | | |
|--------|--|-------|---|-------|---|-------|---|-------|---|
| P001 | Authorization: Enter code -pppp- | P031* | Datatransfer to DATA PRINT in graphic mode 0- all available data | P063* | ditto for chure 3 | P103* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H | P140* | Program Happy-Hour-credits: 0-H- default; no Happy-Hour |
| P002* | Change authorization code -pppp- | | 1- Cashbox 2- Counter with cashbox | P064* | ditto for chure 4 | P104* | Lock for background music (BGM): 0- No BGM | P141* | Start time for time window 'Happy-Hour' |
| | Statistics: | | 3- General settings 4- Popularity of all CDs | P065* | ditto for chure 5 | | 1- BGM possible in time window 2- BGM automatically in time window | P142* | Stop time for time window 'Happy-Hour' |
| P010 | 0- No. of least played CD 1- No. of second-least played CD | | 5- Top 30 hits 6- Previous 20 error reports | P066* | Bonus setting for album selection 0- No album selection allowed | P105* | Entry of 20 titles or albums Enter: nnn+H | P143* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H |
| | 2- Number of plays 3- Data about any CD | P032* | Option | | 1- No bonus 2- 1 bonus for 5 Titles | P106* | Patron Selection (0-free, 1-locked for guests) | P144* | Calculation number (n=1 to 5) Enter: n+H (0= no Happy-Hour) |
| P011 | 0- No. of the most played (best) CD 1- No. of the second-best CD | P033* | Cancellation routines: 0+H- Cancels all memories | | 3- 1 bonus for 4 Titles 4- 1 bonus for 3 Titles | P107* | Sequence of play (0-FIFO, 1-RANDOM) | | |
| | 2- Number of plays 3- Data about any CD | | 1+H- Cancels top 30 hits 2+H- Cancels popularity | | | | | | |
| P012 | 0- Top-sale, H=1 1- Second-best sale | | 3+H- Cancels counters and cashbox 4+H- Cancels credits | P070* | Monetary value settings: see table "Monetary value settings" | P110* | Program auto play: 0+H- default; cancels entries + time | | CALLING UP TEST PROGRAMS: |
| P013* | 0- Cash amount since last evaluation 1- Accumulated Cashbox amount | | 5+H- Cancels all selection memories 6+H- Cancels all error report memories | | 0+H- Cancels previous monetary value n+H- Selection 'n' in table (a.a) | P111* | Start time for time window "Auto Play" | P150 | Read out error report memory. 0- Last reported error |
| P014* | 0- Number of coins through Ch 1 (K1) 1- Number of coins through Chule 2 (K2) | | | P071* | Arbitrary monetary value setting f. chure 1 xxxx.celnvalue (0500-95 -) "xxx" | P112* | Stop time for time window "Auto Play" | | 1- Previous error report 2- CD-Nr. at which the error occurred |
| | 2- Number of coins through Chule 3 (K3) 3- No. of coins through K4 or bills NP1 | P040* | General settings: 0+H- Default values for 41 to 54, 77, 94 | P072* | ditto for chure 2 | P113* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H | | 3- Time of occurrence 4- Date of occurrence |
| | 4- Number of bills through validator NP2 5- Accumulated counter for K1 | | 1+H- Default values for 41 to 54, 77, 94 104, 107 and 114, 117 | P073* | ditto for chure 3 | P114* | Time between two titles in minutes Enter: nn+H (0=no auto play) | P151 | 0- Continuous run 1: all CDs played for 16 sec. each |
| | 6- Accumulated counter for K2 7- Accumulated counter for K3 | P041* | Define machine code number, maximum 4 digits | P074* | ditto for chure 4 | P115* | Entry of 20 titles or albums Enter: nnn+H | P152 | 0- Selected CDs played for 16 sec. each Enter: nnn+H |
| | 8- Accumulated counter for K4 or NP1 9- Accumulated counter for K5 or NP2 | P042 | Selection limit for CD/TRACK (title) max. 100 CDs, 99 tracks | P075* | ditto for chure 5 | P116* | Patron Selection (0-free, 1-locked for guests) | P153 | 0- Continuous run 2: All CDs are placed in the list, but not played |
| P015** | 0- Cash amount of wall box 1- Accumulated Cashbox amount | P043 | Light show in stand-by, if installed | P076* | Bonus credits for bill insert | P117* | Sequence of play (0-FIFO, 1-RANDOM) | | 1- Continuous run 4: 6 CDs are continual played for 16 sec (1,25,50,51,75,00 |
| P016* | 0- Counter of played titles 1- Accumulated counter | P044 | Light show in operation, if installed | P077* | 0- indirect revelation 1- direct revelation | | | | 2- Continuous run 5: 2x cont. run 3, thereafter repeated cont. run 4 |
| P017* | 0- Counter of selected titles 1- Accumulated counter | P045* | Time limit for play in minutes for one title (0= no limit) | | | P120* | Program advertisement play: 0+H- default; cancels entries + time | P155 | 0- Lamp test (F6); Stop with key 'C' |
| P018* | 0- Counter of album selections 1- Accumulated counter | P046 | Sequence of play for normal selections (0/1/2) | P080* | Program real time clock: Set time | P121* | Start time for time window 'Advertisement' | P156 | 0- Input test (F7); Stop with key 'C' |
| P019* | 0- Counter of overlay titles 1- Accumulated counter | P047 | Maximum number of titles in a sequence from one CD (0 = no limit) | P081* | Set date | P122* | Stop time for time window 'Advertisement' | P157 | 0- manual control of the CD-changer Stop with key 'C' |
| P020* | 0- Counter for paid credits 1- Accumulated counter | P048 | Automatic advancing of title display in minutes (0= none) | P082* | Set week-day (d=1 to 7) | P123* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H | | Stop the continuous runs always with the cabinet switch |
| P021* | 0- Counter for free credits 1- Accumulated counter | P049* | Cancels credits after power off/stand-by (x=0=no, 1 to 2=0-6) x/10 hrs | P090* | Program free credits: 0+H- default; cancels entries + time | P124* | Time between two titles in minutes Enter: nn+H (0=no advts) | | Title memory: |
| P022* | 0- Counter for background titles 1- Accumulated counter | P050* | Cancels selection memory after power off (x=0=no, 1 to 240=yes) x/10 hrs | P091* | Start time for time window "Free Credit" | P125* | Entry of 20 titles or albums Enter: nnn+H | P160 | 0- Read in all CD titles i.e. with initial equipping of all CDs |
| P023* | 0- Counter for autoplay titles 1- Accumulated counter | P051* | Maximum volume in display operation (max 31) | P092* | Stop time for time window "Free Credit" | P126* | Patron Selection (0-free, 1-locked for guests) | P161 | Read in the titles of one newly equip- ped CD. Enter: CD# nn+H |
| P024* | 0- Counter for advertising tracks 1- Accumulated counter | P052* | Maximum volume for background music (max 31) | P093* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H | P127* | Sequence of play (0-FIFO, 1-RANDOM) | P162 | Read the title memory 0- Number of titles from first CD |
| P025* | 0- Counter for Happy-Hour-credits 1- Accumulated counter | P053 | Set volume | P094* | Number of free credits: 0- No free credits | | | | 1- Number of titles from the next CD 2- Number of titles from the last CD |
| P026 | reserve | P054 | Set treble and bass | | -200: No. of free credits individually used -200: Unlimited use | P130* | Lock-out certain titles: 0+H- default; cancels entries + time | | 3- Number of titles from any CD Ent: CD# nn+H |
| P027 | reserve | | | | -201: Switch between no/unlimited use -202: automatically unlimited use | P131* | Start time for time window 'Free title selection' | P163 | Cancels title memory of all CDs 0+H- all entries = 1 |
| P028 | Number of unused credits | P060* | Price settings: see table "Price settings" | | | P132* | Stop time for time window 'Free title selection' | | |
| P029 | Number of selections not yet played | | 0+H- Cancels previous price setting n+H- Selection 'n' from table (a.a) | P100* | Program background music: 0+H- default; cancels entries + time | P133* | Active on weekday(s) 'x' (x = 1 to 7) (0=no, 1=yes)+H | P164 | Switch signal sources: (only necessary when sensing) |
| | | P061* | Arbitrary price setting for chure 1 xx=selections, yyyy=price "xx yyyy" | P101* | Start time for time window 'Background music' | P134* | Active lock 1- Title locked 0- Title in time window available | | 0+H- Mute (no signal source) 1+H- CD-player |
| P030 | Datatransfer to DATA PRINT in text mode 0- cashbox counters popularity, errors, ... | P062* | ditto for chure 2 | P102* | Stop time for time window 'Background music' | P135* | Entry of 20 titles or albums Enter: nnn+H | | 2+H- Tape or cassette player 3+H- Microphone |

*) P not yet implemented

"Values" = factory settings

proof authorization code necessary

1. Authorization P001 to P002

Because the jukeboxes can be programmed with so many important data as well as input in cash counter and statistics, it is even more important than before that only authorized personnel may have access. For this reason access to essential data of the phonograph can be protected by using an authorization code.

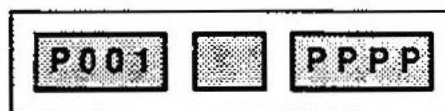
P001 – Authorization: In order to call up the protected commands, one must start authorization by using the P001 command.

Enter: P 001 H P P P P H or P 1 H P P P P H

The authorization code "0000" has been programmed for delivery. The phonograph is not protected and the operator can choose his own code by entering command P002. For security reasons the code number is not shown. In the display each number is shown as "P". When "PPPP" is shown, the secret code number is complete and after pressing "H" and leaving the programming mode, the machine is protected.

P002 – Changing of authorization code: During regular operation changing of the authorization code is only possible after previous authorization. Illegal misuse is thus prevented.

Enter: P 001 H P P P P H (for authorization)



Enter: P 002 H p p p p H (when entering new authorization code)

Caution: As described beforehand, the authorization code is NEVER shown! Therefore, it is important that the code is never lost since there is no opportunity to reprogram the phonograph.

2. Statistics P010 to P029

Within the command group statistics there is information regarding cash and number values as well as statements as to how often CDs are played (popularity, hit parade).

The single commands for cash value and counters are divided into two groups. The regular information is under code "0". Cumulated values are under code "1" which have been added up since the jukebox has been operating.

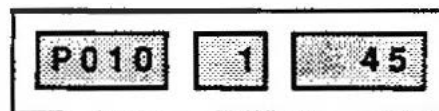
Individual commands:

Popularity: Relating to CD albums, the commands P010 and P011 exist in order to determine the popularity.

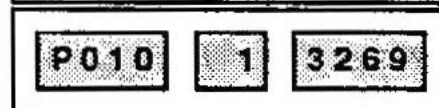
- P010:**
- 0: Display of number of least played CD
 - 1: Display of number of the next higher CD (stepping through with "1")
 - 2: Number of plays
 - 3: Information to any CD (enter CD number)

After entering the proper code, the display shows the information such as the following:

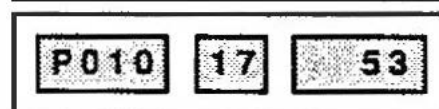
Enter: P 010 H 0 i.e. least played CD No. 45
1



Enter: P 010 H 2 i.e. 13269 plays



Enter: P 010 H 353 H i.e. CD No. 53 in 17th place



- P011:**
- 0: Display of number of most popular CD
 - 1: Display of number of next higher CD (advance with "1")
 - 2: Number of plays
 - 3: Information regarding any CD (enter CD number).

After entering the proper code, the display shows the respective data.

Enter: P 011 H 0 1 i.e. most popular CD No. 19

| | | |
|-------|---|----|
| P 011 | 1 | 19 |
|-------|---|----|

Enter: P 011 H 2 i.e. 731 plays

| | | |
|-------|--|-----|
| P 011 | | 731 |
|-------|--|-----|

Enter: P 011 H 3 24 H i.e. CD No. 24 in 2nd place

| | | |
|-------|---|----|
| P 011 | 2 | 24 |
|-------|---|----|

Hit Parade: One can also call up the top 30 titles.

- P012:**
- 0: Display of top title number, Hit No. 1
 - 1: Display 2nd best title (advance with key "1")
 - 2: Number of plays of the actual title

Enter: P 012 H 0 1 i.e. in 16th place: Title 3 of CD 1

2 i.e. this title was played 169 times until now:

| | | |
|-------|----|------|
| P 012 | 16 | 0103 |
|-------|----|------|

↑ ↑
CD-No. title

| | | |
|-------|----|-----|
| P 012 | 16 | 169 |
|-------|----|-----|

Values of several counters: The following commands display the actual cash contents as well as diverse counter readings since the last collection. One receives statistics concerning the entire time of operation by reading the cumulated counters.

Cashbox: The display of the cash amount is done by total numbers, read out in currency amounts. Contrary to the monetary value setting in command group P07x where the coin value multiplied by factor 100 is displayed, i.e. \$1.— are entered in P07x as 0100, but are shown as 1 in P013.

Display of the cash contents is indicated by maximum 6 spaces (max. display: \$ 99 9.999.—).

- P013:**
- 0: Display of cash contents since the last collection
 - 1: cumulated cash contents

Enter: P 013 H 0 1 i.e. \$34,829.—

| | | |
|-------|---|------|
| P 013 | 3 | 4829 |
|-------|---|------|

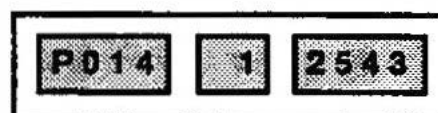
Coin counter/bill counter: Besides displaying the cash levels, the counters of the individual money chutes can be called up. This makes possible an additional control of the cash contents. The five integrated counters are distributed as follows:

- Chutes 1 to 3: only coins (defined by monetary value setting P071 to P073)
- Chute 4: coins as well as bills (can be selected with P074)
- Chute 5: only bills (defined by P075)

The total of the individual counters corresponds to the total of the cashbox contents.

- P014:**
- 0: Number of coins through Chute 1 (enter P071)
 - 1: Number of coins through Chute 2 (enter P072)
 - 2: Number of coins through Chute 3 (enter P073)
 - 3: Number of coins through Chute 4 and/or bills counted in Bill Validator 1 (enter P074)
 - 4: Number of bills counted in Bill Validator 2 (enter P075)
 - 5: Cumulated counter Chute 1 (enter P071)
 - 6: Cumulated counter Chute 2 (enter P072)
 - 7: Cumulated counter Chute 3 (enter P073)
 - 8: Cumulated counter Chute 4 (enter P074)
 - 9: Cumulated counter Chute 5 (enter P075)

Enter: P 014 H 0
 1 i.e. 12.543 coins through
 2 channel 2:
 ...
 9



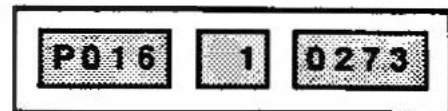
The respective cashbox total is derived by multiplying: number of coins x monetary value of coin.

Additional Counters: With commands P016 to P025 diverse counters can be called up which can be used as actual counters and as cumulative ones as the commands described previously. The statistical data contained therein can be used to settle accounts.

- P016:** 0: Number of titles played
1: Cumulated counter
- P017:** 0: Number of titles chosen
1: Cumulated counter
- P018:** 0: Number of albums chosen
1: Cumulated counter
- P019:** 0: Number of overplay titles
1: Cumulated counter
- P020:** 0: Number of credits paid
1: Cumulated counter
- P021:** 0: Number of free credits
1: Cumulated counter
- P022:** 0: Number of background titles
1: Cumulated counter
- P023:** 0: Number of titles in auto play mode
1: Cumulated counter
- P024:** 0: Number of advertising titles
1: Cumulated counter
- P025:** 0: Number of Happy-Hour-credits
1: Cumulated counter

i.e.: calling up number of titles played; a total of 10273 titles were played on this jukebox.

Enter: P 016 H 1 i.e. 10.273 titles played
 in total



The counters P026 and P027 are not used.

Further interesting data are recorded in counters P028 and P029.

P028: Number of credits unused.
 This shows the number of paid credits available for selections of titles or albums.

P029: Number of chosen unplayed titles.
 This shows how many entries are remaining in the selection storage.

3. Data Transfer/Cancellation! P030 to P033

In this group of service program commands the stored data in the counters mentioned beforehand are prepared for output to a DATA PRINT or to evaluation devices which process the data. Prerequisite is, for instance, the DATA PRINT is already connected to the evaluation connector (ST2 on the control unit). After calling up the command and entering the respective code, data transfer follows.

There are two ways of Print-out possible:

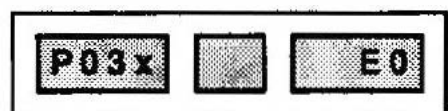
P030 transfers all available data in text mode. The data are stored within the DATA PRINT. They can be printed out or edited on a PC i.e. with the software DATA CONTACT. The counters of the phonograph are deleted after the print-out is done and the cabinet lid is closed.

P031 transfers all data in graphic mode. The data are printed-out directly after receiving.

See also the print-out examples in chapter 15.

If an error is determined, "E0" is shown in Display 3. In that case, please check the connection to DATA PRINT.

Display of the Jukebox if a transfer error occurs:



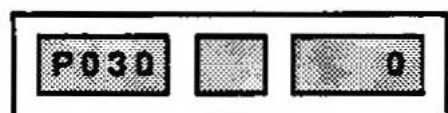
Remember to pull out the interface cord after the print-out is finished.

DATA PRINT Print-out in Text Mode

P030: 0: All data of the statistics counters are processed and sent to DATA PRINT. There they are stored and printed out depending on DATA PRINT setting.

The stored data can continue to be processed by a PC, i.e. by DATA CONTACT.

Enter: P 030 H 0



The counters of the phonograph are deleted after the print-out is done and the cabinet lid is closed.

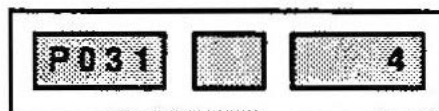
DATA PRINT Print-out in Graphic Mode

Contrary to the output of P030, the entire statistics as well as individual statistical areas can be printed out by P031. But the data are not stored within the DATA PRINT.

P031:

- 0: Print all data
- 1: Cashbox amount
- 2: Counter with cashbox
- 3: General settings
- 4: Popularity of all CDs
- 5: Hit parade of the best 30 titles
- 6: The last 20 errors shown

Enter: P 031 H 0
 1
 ... i.e. 4 print-out popularity:
 6



CANCELLATION

The P30 group contains not only the printing commands but also the cancellation commands of counters P010 to P024. Only the "regular" counters are cancelled. The cumulated counters are excluded from cancellation. The memories for credit and selection of titles as well as the error memory are cancelled. To avoid the cancellation of data by accident or by unauthorized persons, this function can be protected by an authorization code (enter P001).

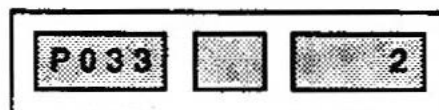
P033:

- 0+H: Cancellation of all memory contents
- 1+H: Cancels hit parade (P012)
- 2+H: Cancels popularity (P010)
- 3+H: Cancels counters and cashbox contents (P013-P024)
- 4+H: Cancels credit memory
- 5+H: Cancels selection memory
- 6+H: Cancels error memory

!!CAUTION!!

To additionally safeguard accidental cancellations, each input has to be confirmed by pressing "H".

Enter: P 033 H 0 H
 1 H
 2 H i.e. cancel popularity:
 ...
 6 H



4. General Settings P040 to P054

In order to adjust each phonograph individually to the location requirements, certain general settings can be individually changed. Basis are detailed values which have been set at the factory (Note: "default values").

P040: 0+H: programming of default values (P041 to P054, P077, P094)
cancellation of values (P091 to P144), set to inactive:

| | | | | | |
|-------|------|------|------|------|---|
| P041: | 0 | P050 | 2 | P077 | 0 |
| P042: | 0024 | P051 | 31 | P094 | 0 |
| P043 | 1105 | P052 | 16 | | |
| P044 | 1000 | P053 | 0505 | | |
| P045 | 0 | P054 | 0808 | | |
| P046 | 0 | | | | |
| P047 | 0 | | | | |
| P048 | 0 | | | | |
| P049 | 2 | | | | |

1+H: as above, additional programming of default values for:
backgroundmusic autoplaytitles with defined acces to all CDs.
P104: 1 P114 15
P107: 0 P117 1

Enter: P 040 H 0 H
1 H i.e. set default values

| | | |
|---------|--|---|
| P 0 4 0 | | 0 |
|---------|--|---|

P041: I.D. Number; every phonograph can be programmed with its own I.D. number. Data print-outs can then be easily identified when several machines are evaluated. The I.D. number has at most 4 digits.

Enter: P 041 H nnnnH

| | | |
|---------|--|---------|
| P 0 4 1 | | 2 6 0 2 |
|---------|--|---------|

P042: Maximum number of selectable CDs and titles; in partially equipped phonographs, unused magazine slots can be excluded. A maximum of 100 CDs (01- to 00) as well as a maximum of 99 titles can thus be selected. (Default value: 24).

Enter: P 042 H 0024 H
i.e. release 100 CDs with
24 titles each to be selected

| | | |
|---------|--|---------|
| P 0 4 2 | | 0 0 2 4 |
|---------|--|---------|

Please remember that with each change regarding the number of CDs, the new parameters will have to be reported to the juke box via program step P160 or P161. Otherwise, there will be problems when playing the CD.

P043: **Light In stand-by;** a light generator can be programmed, which causes the phonograph to attract the patrons' attention as long as no music has been selected. **OPTION!**

Enter: P 043 H

| | | |
|-------|--|---------|
| P 043 | | 1 1 0 5 |
|-------|--|---------|

Programming the running light is done by entering a 4 digit number according to the following scheme:

| | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A: Switch over characteristics | 0= hardly 1= softly | <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>▼</td><td>▼</td><td>▼</td><td>▼</td></tr> <tr><td>1</td><td>3</td><td>1</td><td>5</td></tr> </table> | A | B | C | D | 0 | 0 | 0 | 1 | ▼ | ▼ | ▼ | ▼ | 1 | 3 | 1 | 5 | <table border="1"> <tr><td>1</td><td>1</td><td>0</td><td>5</td></tr> </table> | 1 | 1 | 0 | 5 |
| A | B | | C | D | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | | 0 | 1 | | | | | | | | | | | | | | | | | | | |
| ▼ | ▼ | ▼ | ▼ | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | 1 | 5 | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | 5 | | | | | | | | | | | | | | | | | | | | |
| B: Speed | 0= slowly 3= fast | | | | | | | | | | | | | | | | | | | | | | |
| C+D: various running lights | 01 to 15 | | | | | | | | | | | | | | | | | | | | | | |

1105: Running light no.05, slowly with softly switching light.

P044: **Light during play;** another light generator can be programmed here to differentiate between the two. **OPTION!**

Enter: P 044 H

| | | |
|-------|--|---------|
| P 044 | | 1 0 0 0 |
|-------|--|---------|

Programming the light show is done by entering a 4 digit number according to the following scheme:

| | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|--|--|---|---|--|--|---|---|---|---|---|
| A: Mode of operation | 0= steady light 1= light organ | <table border="1"> <tr><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>▼</td><td>▼</td><td></td><td></td></tr> <tr><td>1</td><td>3</td><td></td><td></td></tr> </table> | A | B | C | D | 0 | 0 | 0 | 0 | ▼ | ▼ | | | 1 | 3 | | | <table border="1"> <tr><td>1</td><td>0</td><td>0</td><td>0</td></tr> </table> | 1 | 0 | 0 | 0 |
| A | B | | C | D | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | | 0 | 0 | | | | | | | | | | | | | | | | | | | |
| ▼ | ▼ | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | |
| B: Basic brightness/contrast | 0= dark 3= bright | | | | | | | | | | | | | | | | | | | | | | |
| C+D: Various light effects | 00= light organ 01 to 15 s.o. | | | | | | | | | | | | | | | | | | | | | | |

1000: light organ, relative dark

P045: **Limit play time of one track** in minutes; in order to suppress too long titles play time can be limited. The title just playing will slowly fade when the time (value "nn" in minutes) is up. When entering 0, there is no limit.

Enter: P 045 H nn H
3 H: titles will slowly fade after 3 min.

| | | |
|-------|--|---|
| P 045 | | 3 |
|-------|--|---|

P046: **Sequence of plays at normal selection:** in order to alter the music menu, three variations can be chosen when playing different titles:
0 – play as selected (FIFO)
1 – play in numerically ascending numbers
2 – play randomly (RANDOM).

Enter: P 046 H n H
2 H i.e. play randomly

| | | |
|-------|--|---|
| P 046 | | 2 |
|-------|--|---|

P047: Maximum number of titles of one CD (value "n" as number) in sequence; here it is determined how many titles of one CD are played in sequence. 0 means no limit.

Enter: P047H n H

0 H i. e. no limit

| | | |
|------|--|---|
| P047 | | 0 |
|------|--|---|

P048: Automatic advancing of title display; 0 = no automatic advancing. If minutes are entered here (value "nn"), the title display is changed accordingly in stand-by.

Enter: P048H nn H

10 H i. e. advancing of
title display every 10 min.

| | | |
|------|--|----|
| P048 | | 10 |
|------|--|----|

P049: Cancel credit after X/10 hrs. (X x 6 min.) power off or stand-by.

P050: Cancel selection memory after X/10 hrs. (X x 6 min.) power off.

Value "X" can be between 0 and 240 with commands P049 and P050.

i. e. X = 1: waiting time = 6 min.

X = 10: waiting time = 1 hr.

X = 240: waiting time = 24 hrs.

"0" does not cancel.

Enter: P049H 2 H

i. e. cancel credit after 12 min.
power off/stand-by (2/10 hrs.):

| | | |
|------|--|---|
| P049 | | 2 |
|------|--|---|

Enter: P050H 4 H

i. e. cancel selection memory
after 24 min. power off:

| | | |
|------|--|---|
| P050 | | 4 |
|------|--|---|

Maximum Volume Levels

Maximum volume levels during play and background mode can be pre-set to a certain limit. The manually adjustable volume level of the phonograph cannot go beyond the set levels.

P051: Maximum volume during play; can be set between 0 (mute) and 31 (loud).

P052: Maximum volume during background mode; can be set between 0 (mute) and 31 (loud).

Enter: P051H 31 H

i. e. maximum volume possible

| | | |
|------|--|----|
| P051 | | 31 |
|------|--|----|







Set volume for play mode

With command **P053** the volume of the phonograph is set. This function can be set in two ways:

In the program mode it can be set via the keypad of the phonograph or the remote control.
In regular play mode it can only occur via remote control.

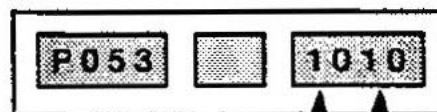
In both cases one hears the volume changes immediately.

Key pad layout for volume setting:

| | | |
|---|---|--|
|  1 left channel louder |  2 both channels louder |  3 right channel louder |
| 4 | 5 | 6 |
| 7  left channel quieter | 8  both channels quieter | 9  right channel quieter |
| C Cancel | 0 | H Step to the next com- mand. |

Enter: P 053 H

Change per pressing keys
i.e. Key "2" = louder









channel value: left, right

Sound setting

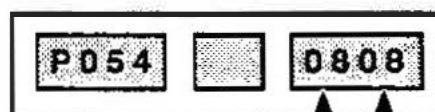
With command **P054** the sound setting is performed in a range from 1 to 10. Here treble and bass volume are set for both channels at the same time. The changed setting can also be immediately heard.

Key pad layout for sound setting:

| | | |
|---|--|---|
|  1 more bass |  2 more bass + treble |  3 more treble |
| 4 mean value | 5 meanvalues | 6 mean value |
| 7  less bass | 8  less bass + treble | 9  less treble |
| C Cancel | 0 | H Step to the next com- mand. |

Enter: P 054 H

Change per pressing keys
i.e. Key "8" = less bass and treble



value of bass, treble

5. Price Settings P060 to P066

To make programming of credit values easier and faster, a table for price settings, standard value via code number, has been programmed for command **P060** in which actual price values have been entered. The programming of the five possible price levels can be automated with the table.

Another possibility is the individual programming of the individual price scales with commands **P061** to **P065**. Entry as per form plays/monetary value: nn xxxx (nn = two-digit number of plays, xxxx = 4-digit monetary value).

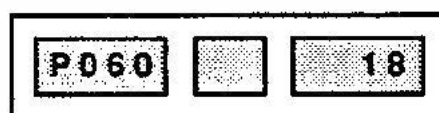
Table 2: "Price Settings"

| Code No. | COUNTRY | P061 | P062 | P063 | P064 | P065 | Remarks |
|----------|-------------------|---------|---------|---------|---------|---------|------------------------------------|
| 0 | _____ | 00 0000 | 00 0000 | 00 0000 | 00 0000 | 00 0000 | no coin conversion in this setting |
| 1 | Germany | 01 0100 | 01 0100 | 03 0200 | 03 0200 | 03 0200 | 1 play = 1.-DM |
| 2 | Belgium | 02 2000 | 02 2000 | 02 2000 | 06 5000 | 06 5000 | |
| 3 | Netherland | 02 0100 | 02 0100 | 02 0100 | 06 0250 | 06 0250 | 2 different settings |
| 4 | France | 02 0500 | 02 0500 | 10 1000 | 10 1000 | 10 1000 | |
| 5 | Switzerland | 02 0100 | 02 0100 | 05 0200 | 05 0200 | 14 0500 | |
| 6 | Austria | 01 0500 | 01 0500 | 03 1000 | 03 1000 | 07 2000 | |
| 7 | Italy | 01 0400 | 01 0400 | 01 0400 | 03 1000 | 03 1000 | |
| 8 | Spain | 01 0050 | 01 0050 | 02 0100 | 02 0100 | 05 0200 | |
| 9 | Greece | 01 2000 | 01 2000 | 01 2000 | 02 5000 | 02 5000 | |
| 10 | Jugoslavia | 01 0200 | 01 0200 | 01 0200 | 03 0500 | 03 0500 | |
| 11 | Denmark | 01 0300 | 01 0300 | 02 0500 | 05 1000 | 12 2000 | 4 different settings |
| 12 | Norway | 01 0300 | 01 0300 | 02 0500 | 02 0500 | 04 1000 | |
| 13 | Finland/Sweden | 01 0300 | 01 0300 | 01 0300 | 02 0500 | 02 0500 | |
| 14 | Hungary | 01 2000 | 01 2000 | 01 2000 | 01 2000 | 01 2000 | |
| 15 | Ireland | 01 0010 | 01 0010 | 03 0020 | 03 0020 | 10 0050 | |
| 16 | Great Britain | 01 0030 | 01 0030 | 02 0050 | 02 0050 | 05 0100 | |
| 17 | USA (1) / Canada | 01 0050 | 01 0050 | 01 0050 | 03 0100 | 03 0100 | Dollarbill on chan.5 (P065) |
| 18 | USA (2) | 01 0050 | 01 0050 | 03 0100 | 03 0100 | 18 0500 | |
| 19 | Africa | 01 0020 | 01 0020 | 03 0050 | 03 0050 | 07 0100 | |
| 20 | Australia | 01 0100 | 01 0100 | 01 0100 | 03 0200 | 03 0200 | |
| 21 | Netherl. Antillen | 01 0400 | 01 0400 | 01 0400 | 01 0400 | 01 0400 | |
| 22 | New Zealand | 01 0050 | 01 0050 | 01 0050 | 01 0050 | 01 0050 | |

Programming the price settings by default values

P060: In order to program the phonograph with the default values of the table, the respective code number is entered after command P060 and confirmed with "H". The setting selected (n = code no. of the table) is automatically conferred to the respective price scales.

Enter: P 060 H n H
18 H i.e. price setting: USA



Programming the price settings with individual (personnel) values

P061 to P065: The stakes for the individual price scales can also be separately defined. With commands P061 to P065 the respective stake can be programmed.

You just have to observe the order of entering the values: P061 is programmed with the lowest and P065 is programmed with the highest Price setting.

Unused Steps may be programmed with zero or with the preceeding value (examples see table)

Example of individual price setting: 12 titles for \$ 5.- (price scale 3).

Enter: P 065 H 120500 H

| | | |
|---------|-----|---------|
| P 0 6 5 | 1 2 | 0 5 0 0 |
|---------|-----|---------|

Programming an album bonus

The setting of bonus credits for album selection is done with command P066 in the service program. The following settings are permitted:

P066:

- 0: no album selection possible
- 1: no bonus (default setting),
- 2: 1 bonus for every 5th track,
- 3: 1 bonus for every 4th track,
- 4: 1 bonus for every 3rd track.

Setting is confirmed by pressing "H".

Enter: P 066 H 0 H
 1 i.e. no bonus
 ...
 4

| | | |
|---------|--|---|
| P 0 6 6 | | 1 |
|---------|--|---|

6. Monetary Value Setting P070 to P077

As with the price setting, the identification of the different coins as related to the monetary values processed by the phonograph, can be done automatically when the pre-defined basic values are sufficient. Table 3 "Monetary Value Setting" shows which setting can be programmed as basic value (see next page).

P070: The standard values of the table are selected with command P070 "n" + "H" (n = code no. from table).

Enter: P 070 H n H
 10 H i.e. USA

| | | |
|-------|--|----|
| P 070 | | 10 |
|-------|--|----|

"n" is the code number for the respective setting. To avoid erroneous entries, each entry has to be confined by "H". This is very important since entry of Code Number 0 cancels the current monetary value setting and no currency acceptance is possible.

P071 to P075: Individual monetary values: as with the price setting, with the monetary value setting the coin value of each chute can be individually identified.

This is easily done by inserting one or more coins after command P070 has been called up. According to coin value the program changes to the proper chute command P071 to P075. On display 1 the monetary value of each coin is displayed. This can be changed as needed. Unused chutes have to be programmed with monetary value 0.

Entries occur in the smallest counting unit of each currency that makes sense, i.e.

USA with \$1.- => 0100,
GERMANY with DM 5.- => 0500 or
AUSTRIA with öS 20.- => 2000.

Normally the standard setting is sufficient.

BONUS CREDITS

With command **P076** another bonus (value n = 0 to 4) is defined. The bonus for paying with bills.

Enter: P 076 H nn H
 3 H i.e. 3 bonus credits

| | | |
|-------|--|---|
| P 076 | | 3 |
|-------|--|---|

When accepting a bill in Chute 5, this bonus is added to the regular credits.

INDIRECT / DIRECT MONEY TO CREDIT REVALUATION

With this command it is possible to differ between the how and when of the revaluation of inserted coins.

P077: "0" + "H" Indirect revaluation: inserted coins are stored. At an appointed coins value the credit is defined from the highest possible price setting, including a possible bonus.
 "1" + "H" Direct revaluation: inserted coins are revaluated directly after insertion. Then no bonus is possible with multiple insertion of coins.

Enter: P 077 H n H
 0 H i.e. indirect revaluation

| | | |
|-------|--|---|
| P 077 | | 0 |
|-------|--|---|

Table 3. "Monetary Settings"

| Table No. | COUNTRY | channel 1(P071) | channel 2(P072) | channel 3(P073) | channel 4(P074) | channel 5(P075) | Remarks, example for 1 chan. |
|-----------|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|
| 0 | | 0 | 0 | 0 | 0 | 0 | no coin conversion |
| | mechanical coin acceptor | | | | | | |
| 1 | Germany, Switzerland, Venezuela | 100 | 500 | 200 | 0 | 0 | 100 = 1.-DM 100 = 1 sfr 100 = 1.-Bol |
| 2 | Belgium | 0 | 2000 | 500 | 0 | 0 | 2000 = 20 Bfr |
| 3 | Netherlands | 25 | 250 | 100 | 0 | 0 | 250 = 2.5 hfl |
| 4 | Denmark, France | 100 | 500 | 1000 | 0 | 0 | 100 = 1 dkr |
| 5 | Austria | 500 | 2000 | 1000 | 0 | 0 | 500 = 5 ÖS |
| 6 | Italy | 200 | 100 | 500 | 0 | 0 | 200 = 200 L |
| 7 | Spain | 0 | 25 | 100 | 0 | 0 | 25 = 25 Pst |
| 8 | Finland, Norway, Yugoslavia | 0 | 500 | 100 | 0 | 0 | 500 = 5 mk 500 = 5 Kr 500 = 5 Din |
| 9 | Great Britain, Ireland | 20 | 50 | 10 | 0 | 0 | 20 = 20 p |
| 10 | USA | 10 | 50 | 25 | 0 | 100 | 10 = 10 c, 100 = 1 \$ |
| 11 | Canada | 0 | 25 | 0 | 0 | 100 | 25 = 25 c, 100 = 1 \$ |
| 12 | Union of South-Africa | 20 | 100 | 50 | 0 | 0 | 20 = 20 c, 100 = 1 R |
| 13 | Australia | 100 | 50 | 20 | 0 | 0 | 100 = 1 \$ |
| 14 | Netherl. Antillen | 0 | 100 | 25 | 0 | 0 | 100 = 1 NAF |
| | elektronic coin acceptor | | | | | | |
| 15 | Germany, Switzerland, Italy | 500 | 100 | 0 | 200 | 0 | 500 = 5.-DM 500 = 5sfr 500 = 500 L |
| 16 | Belgium | 5000 | 500 | 0 | 2000 | 0 | 100 = 1 Bfr |
| 17 | Netherlands | 25 | 250 | 500 | 100 | 0 | 25 = 25 c, 500 = 5 hfl |
| 18 | France | 1000 | 200 | 100 | 500 | 0 | 1000 = 10 F |
| 19 | Denmark, Austria | 2000 | 500 | 100 | 1000 | 0 | 2000 = 20 dkr 2000 = 20 ÖS |
| 20 | Spain | 200 | 50 | 25 | 100 | 0 | 200 = 200 Pst |
| 21 | Greece | 0 | 50 | 20 | 0 | 0 | 50 = 0.5 Dr |
| 22 | Norway | 1000 | 100 | 0 | 500 | 0 | 1000 = 10 Kr |
| 23 | Finland | 0 | 500 | 100 | 0 | 0 | 200 = 200 L |
| 24 | Sweden | 500 | 100 | 0 | 100 | 0 | 500 = 5 Kr |
| 25 | Great Britain | 100 | 20 | 10 | 50 | 0 | 100 = 1£, 20 = 20 p |
| 26 | USA | 100 | 25 | 0 | 50 | 0 | 100 = 1 \$ |
| 27 | Canada | 10 | 100 | 25 | 0 | 0 | 10 = 10 c, 100 = 1 \$ |
| 28 | Australia | 0 | 100 | 20 | 200 | 0 | 200 = 2 \$ |
| 29 | Netherl. Antillen | 0 | 0 | 100 | 0 | 0 | 100 = 1 NAF |
| 30 | New Zealand | 50 | 10 | 5 | 20 | 0 | 50 = 50 c |

Chutes entered with 0 on this table are blocked. One must be careful to block also the coin pathways so these coins will not be accepted and are rather expelled through the coin return.





7. Programming Real Time Clock P080 to P082

The most important modification of the ES-V technology is the implementation of a real time clock. Referring to the data supplied by the clock, a number of functions have been developed that are dependent on chronological data for start and stop times. Together with the weekday programming which continues to be available, an "automatic program" for a whole week can be developed during which all functions operate automatically.

The real time clock runs quartz-precise with a battery backed-up power supply if the phonograph is turned off.

Set time: With command **P080** the time can be set. The newly set minute information starts the counter for seconds automatically at zero.

Keypad layout for command "set time":

| | | |
|--|-------|---|
|  1 | 2 |  3 |
| hour+1 | | minute +1 |
| 4 | 5 | 6 |
| 12:00 | 00:00 | 30 minutes |
| 7 | 8 | 9 |
|  hour-1 | |  minute -1 |
| C | 0 | H |
| Cancel | | Step to the next command |







Enter: P 080 H

change per pressing keys
i.e. 10.45 h

| | | |
|-------|--|------|
| P 080 | | 1045 |
|-------|--|------|

Set date: With command **P081** the date is set. The date is shown on displays 2 and 3.

Keypad layout for command "set date":

| | | |
|--|---|--|
|  1 |  2 |  3 |
| day+1 | month +1 | year +1 |
| 4 | 6 | 6 |
| | | |
| 7 | 8 | 9 |
|  day -1 |  month-1 |  year-1 |
| C | 0 | H |
| Cancel | | Step to the next command |

Enter: P 081 H

change per pressing keys
i. e. May 21, 1992:

| | | |
|-------|----|------|
| P 081 | 21 | 0592 |
|-------|----|------|

Set day code: With command **P082** the day code is set for the week-day of the previous set date.

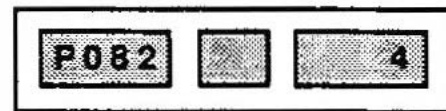
Key pad layout for command "set day code":

- 1 = Monday
- 2 = Tuesday
- 3 = Wednesday
- 4 = Thursday
- 5 = Friday
- 6 = Saturday
- 7 = Sunday

| | | |
|-------------|---|---------------------------------------|
| 1 | 2 | 3 ▲ day code +1 |
| 4 | 5 | 6 |
| 7 | 8 | 9 ▼ daycode-1 |
| C Cancel | D | H Step to the next com- mand |

Enter: **P 082 H**

*change per pressing keys
i.e Thursday is 4:*



After confirming one week-day entry the jukebox switches to the next week-day.

The data supplied by the real time clock are processed by commands P090 to P135 (described as follows) for the so-called time windows. Here the entry of the time window values also occurs via the illustrated key-pad layout.

Furthermore the informations of time and date are used for the print-out of statistical data to the DATA PRINT (P030 and P031).

8. Programming Free Credits P090 to P094

The group of 90th commands allows the operator to give free credits (music selection without coin insert) at certain times of the week.

Amount and type of free credits are set in the program as well as the time periods.

P090: In P090 a standard setting cancels automatically the previous setting.

The time factor is set to zero, so there are no automatic time periods for free credits.

Enter: P 090 H 0 H

| | | |
|------|--|---|
| P090 | | 0 |
|------|--|---|

P091: To set the starting time for the time window "free credit," the keypad is used (see P080).

Enter: P 091 H

Set per pressing keys
i.e. starting time 12:34
confirm setting with key "H".

| | | |
|------|--|------|
| P091 | | 1234 |
|------|--|------|

P092: Here the stop time of the a.m. time window is set (see P080).

Enter: P 092 H

Set per pressing keys
i.e. stopping time 13:45
confirm setting with key "H".

| | | |
|------|--|------|
| P092 | | 1345 |
|------|--|------|

P093: Here the weekday is chosen on which the previously determined time window is to become active.

On the middle display the weekdays (according to the illustration of P082) are shown through Numbers 1 to 7. Each weekday can be activated individually. "1" means active on that day. "0" means non-active. The inputs must be confirmed by pressing "H".

To simplify the entries it is defined that the whole week is active with "0" or "1" (for all days).

Enter: P 093 H 0 or 1 H

Set per pressing keys
i.e. monday is inactive
confirm setting with key "H".

| | | |
|------|---|---|
| P093 | 1 | 0 |
|------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P094: Entering the number of free credits.

Different program types are possible:

- 0: No free credits possible (default setting).
- <200: Limited free credit. Amount corresponds to input number. Free credits can be used individually. In the display the remaining credits are shown.
- =200: Unlimited free credit while time window is active.
- =201: Switching between no free credits and unlimited free credits while time window is active. Switching via remote control.
- =202: Unlimited free credit automatically while time window is active. If non-active switching is done via remote control.

Enter: P 094 H 200 H

i.e. no free credit:

| | | |
|------|--|---|
| P094 | | 0 |
|------|--|---|

9. Programming Background Music P100 to P107

During those times when few people are present or for social festivities, the phonograph operator can call up the background mode. The played music is heard quietly in the background. This operational mode remains even after a power failure. If money is inserted into the machine and a title selected, the background music is interrupted for the duration of play. The factory setting (P040=1) defines that the background mode can be started and stopped by pressing the key "BACKGROUND" (P104=1, P107=0).

P100: If the command P100 is called up and "0" is entered and confirmed with "H", the default setting is activated because all settings of Group P10x will be set to 0.

Enter: P 100 H 0 H

| | | |
|-------|--|---|
| P 100 | | 0 |
|-------|--|---|

With command **P101** the starting time and with command **P102** the stopping time is set for the time window of background music. Key pad layout see P080.

P103: With command P103 the week-days are set when background music should be played. Key pad layout see P082.

Enter: P 103 H 0 or 1 H

Set per pressing keys
i.e. Wednesday inactiv:
confirm settings with key "H"

| | | |
|-------|---|---|
| P 103 | 3 | 0 |
|-------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P104: With command P104 the mode of operation is set. Three types are possible.

P104 "0" no background music.

P104 "1" allows starting and stopping background music by pressing background key on machine or on remote control.

P104 "2" automatically plays background music at defined times of the time window.

Enter: P 104 H n H

2 H i.e. automatically
within the time window

| | | |
|-------|--|---|
| P 104 | | 2 |
|-------|--|---|

P105: What is played as background music, is also determined by the operator. With command P105, followed by 20 four-digit entries, 20 titles or albums can be determined. Without entry in P105 all CDs (defined by P042 to be selectable) are played.

Enter: P 105 H nnnn H

i.e. 1. entry: CD #17 title 3
and so on:

| | | |
|-------|--|------|
| P 105 | | 1703 |
|-------|--|------|

P106: Another new function is the "Patron Selection". With command P106 the operator determines whether the selected titles for background music can also be chosen by other customers.

P106 "0" titles and albums free for selection,

P106 "1" titles or albums are locked.

Enter: P 106 H n H

0 H i.e. titles are not locked:

| | | |
|-------|--|---|
| P 106 | | 0 |
|-------|--|---|

P107: The titles selected in P105 are played in the sequence selected in P107.

P107 "0" sequence of play in order of entry (FIFO), factory setting

P107 "1" random play (RANDOM).

10. Programming Auto Play P110 to P117

The phonograph can be programmed to automatically play a title once in a while to animate the audience during stand-by, the time period when no selections are being made. The factory setting (P040=1) makes it possible that any title is played every 15 minutes (P114=15, P117=1).

P110: The standard setting is "no auto play" since with command P110 "0" + "H" all entries in group P11x are set to zero.

Enter: P 110 H 0 H

i.e. set default values:

| | | |
|-------|--|---|
| P 110 | | 0 |
|-------|--|---|

With command **P111** the starting time and with command **P112** the stopping time is set for the time window of auto play. Key pad layout see P080.

P113: With command P113 the week-days are set at which auto play should be active. Key pad layout see P082

Enter: P 113 H 0 or 1 H

*Set per pressing keys
i.e. Wednesday inactiv:
confirm settings with key "H"*

| | | |
|-------|---|---|
| P 113 | 3 | 0 |
|-------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P114: With command P114 the mode of operation is set. Three types are possible.

P114 "0" + "H" no auto play

P114 "nn" + "H" time between two titles (nn = max. 99 minutes)

Enter: P 114 H nn H

*30 H i.e. all 30 minutes play an
animation title*

| | | |
|-------|--|----|
| P 114 | | 30 |
|-------|--|----|

P115: With command P115 followed by 20 four-digit entries (value nnnn), 20 titles or albums can be defined. Without entry in P105 all CDs (defined by P042 to be selectable) are played.

Enter: P 115 H nnnn H

*i.e. 1. entry: CD# 97 all titles
and so on:*

| | | |
|-------|--|------|
| P 115 | | 9700 |
|-------|--|------|

P116: also defines a "Patron Selection" (see P106) which defines if a title is locked or not

P116 "0" titles and albums are free for selection

P116 "1" titles and albums are locked.

Enter: P 116 H n H

0 H i.e. titles are not locked:

| | | |
|-------|--|---|
| P 116 | | 0 |
|-------|--|---|

P117: defines the sequence of play for the titles or albums chosen under P115.

P117 "0" Play in sequence of entry (FIFO)

P117 "1" Play randomly (RANDOM)

Enter: P 117 H n H

1 H i.e. play randomly:

| | | |
|-------|--|---|
| P 117 | | 1 |
|-------|--|---|

11. Programming Advertisements P120 to P127

The broad distribution of CDs has led to advertising for various areas being recorded on CDs. Thus, you have another source of income with phonographs with ES-V technology.
Standard value is again "no advertising".

P120: With the command P120 "0" + "H" all entries of group P12x are cancelled (set to zero) and no advertising is played.

Enter: P 120 H 0 H

i.e. set default values:

| | | |
|-------|--|---|
| P 120 | | 0 |
|-------|--|---|

With command **P121** the starting time and with **P122** the stopping time is set for the time window of advertisement play. Keypad layout see P080.

P123: With P123 the week-day is set for advertisement play. See P082 for key pad layout.

Enter: P 123 H 0 or 1 H

Set per pressing keys

i.e. sunday inactiv:

confirm settings with key "H"

| | | |
|-------|---|---|
| P 123 | 7 | 0 |
|-------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P124: With P124 it is set if or if not and which time between advertising spots should be waited .

P124 "0" + "H" no advertisement play

P124 "nn" + "H" time between titles (nn = max. 99 minutes).

Enter: P 124 H nn H

30 H i.e. play a title every 30 minutes:

| | | |
|-------|--|----|
| P 124 | | 30 |
|-------|--|----|

P125: With command P125 followed by 20 four-digit entries (value nnnn), 20 titles or albums can be defined.

Enter: P 125H nnnn H

*i.e. 1. entry: CD# 90 3.Mile
and so on:*

| | | |
|-------|---|------|
| P 125 | 1 | 9003 |
|-------|---|------|

P126: defines "patron selection" again. See P106.

P126 "0" titles and albums are free for selection

P126 "1" titles and albums are locked.

P127: defines the playing sequence for advertising spots selected with P125.

P127 "0" Play in sequence of entry (FIFO)

P127 "1" Play randomly (RANDOM)

12. Blocking Certain Titles P130 to P135 (lock-out titles)

At certain times it may be necessary to lock-out one or more titles from being played. Perhaps these titles should not be played by minors or are simply damaged (bad playing quality). Standard is that all titles can be played.

P130: With the command P130 "0" + "H" all entries of group P13x are set to zero and no CDs or titles are locked-out.

Enter: P 130H 0 H

i.e. set default values

| | | |
|-------|--|---|
| P 130 | | 0 |
|-------|--|---|

With command **P131** the starting time and with **P132** the stopping time is set for the time window for lock-out. Key pad layout see P080.

P133: With P133 the week-day is set. See P082 for key pad layout.

Enter: P 133H 0 or 1 H

*Set per pressing keys
i.e. saturday activ:
confirm settings with key "H"*

| | | |
|-------|---|---|
| P 133 | 6 | 1 |
|-------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P134: With P134 "0"+"H" the titles can be selected in the time window, with "1" they are locked-out.

Enter: P 134 H 1 H

*0 H i.e. all titles are
selectable within the
time window:*

| | | |
|-------|--|---|
| P 134 | | 0 |
|-------|--|---|

P135 defines a maximum of 20 titles or albums which are supposed to be locked-out. Input occurs with 4 digits for the CD number (nn__) and the title (__nn).

Enter: P 135 H nnnn H

*i.e. 1.entry: CD #95 all titles
and so on.*

| | | |
|-------|--|------|
| P 135 | | 8500 |
|-------|--|------|

NOTE: Take care to change entries in P135 (if necessary delete entry) to a certain CD number if you change this CD. To delete an entry you step through the list of P135 by pressing key "H" as long as you reach the right entry. Now enter "0" and confirm with "H".

Or you delete all entries by setting default values with command P130 and "0" + "H".

13. Happy-Hour-Credits P140 to P144

For additional animation of the audience this function is implemented.

At defined times of the week additional free credits (Happy-Hour-credits) are given, depending on the number of bought credits.

Standard setting is that no Happy-Hour-credits are given.

P140: With the command P140 "0" + "H" all entries of group P14x are set to zero so that there is no happy-hour.

Enter: P 140 H 0 H

*i.e. set default values
No Happy-Hour:*

| | | |
|---------|--|---|
| P 1 4 0 | | 0 |
|---------|--|---|

With command **P141** the starting time and with **P142** the stoppingtime is set for the time window for Happy-Hour-credits. Key pad layout see P080.

P143: With P143 the week-day is set. See P082 for key pad layout.

Enter: P 143 H 0 or 1 H

*Set per pressing keys
i.e. saturday activ:
confirm settings with key "H"*

| | | |
|---------|---|---|
| P 1 4 3 | 6 | 1 |
|---------|---|---|

With confirming one week-day entry the software steps to the following week-day.

P144: Here a calculation number may be programmed. This number defines how many credits one must have bought to get an additional Happy-Hour-credit.

P144 "0"+"H" no Happy-Hour

P144 "n"+"H" after "n" bought credits (n= 1 to 5) 1 additional Happy-Hour-credit is given.

Enter: P 144 H n H

*3 H i.e. after 3 bought credits
1 additional Happy-Hour-
credit is given*

| | | |
|---------|--|---|
| P 1 4 4 | | 3 |
|---------|--|---|

14. Calling up Test Programs P150 to P164

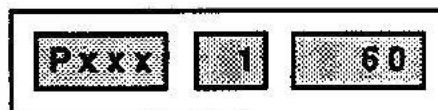
To support the operator when equipping the CD changer with new CDs, trouble-shooting or servicing, several aid functions have been incorporated as known from earlier phonographs. Group 15x of the test programs includes functions such as read-out of error memory, various continuous run tests as well as input and display tests. For these purposes, the respective group code (Fx) is shown in the middle display. Group 16x serves to integrate the CDs and their number of titles in the juke box memory.

14.1 Test Programs for Service Operation P150 to P157

P150: Read-out of Error Memory:

- 0: last registered error; see Table 4 for "Error Codes" on the next page.
- 1: previous error; the phonograph records the last 20 error reports.
- 2: CD number during which the error occurred.
- 3: Time of error and
- 4: Date of occurrence

Display:



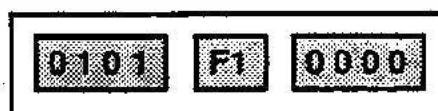
Continuous run tests

With commands P151 to P153 various tests in continuous run mode are executed. A continuous run can only be stopped by pressing the cabinet switch.

P151: Plays all CDs for 16 sec. (F1):

Enter: P 151 H 0

Start continuous run 1:



CD/ Titel

Anzahl der Fehler

P152: Plays selected CDs for 16 sec. (F2):

During CD play another number "nnnn" can be entered (continuous run 2). With each entry "Your Selection" will light up on the display panel.

Enter: P 152 H n n n n H
 (enter a CD-number)

P153: Other Continuous Play Tests (F3 to F5):

Enter: P n

- 0: All CDs are placed on player, but are not played (continuous run 3, F3).
- 1: 6 certain CDs (CD No. 1, 25, 50, 51, 75, 00) are placed and played 16 sec. each continually (continuous run 4, F4)
- 2: Combination of twice continuous run 3 followed by 4 until cabinet switch is turned off (continuous run 5, F5).

P155: Display Test (F6):

During the display test all digits of 7-segment-displays and all control lamps are successively turned on and off. Pressing "H" will stop the test and continue it after pressing "H" again. The display test does not check the lamps of a light organ that might be connected. Pressing "C" stops the test.

Enter: P 155 H

0: Start lamp test
 (Display 2 shows briefly F6)

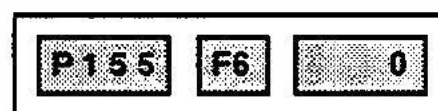


Table 4: "Error Displays"

| Displays 1 2 3 | | | Possible Causes | Corrections |
|-------------------|----|----|--|--|
| Er | 01 | | EPROM contents (CONTROL-UNIT) disturbed. | Change EPROM (IC2) |
| Er | 10 | | RAM (CONTROL-UNIT) defective. | Change RAM (IC 3). After that reprogram all program steps. |
| Er | 11 | | RAM contents (CONTROL-UNIT) short-term disturbance. | No correction necessary; program is reinitialized. Change RAM IC 3 if frequently occurring. |
| Er | 12 | | RAM battery is empty. | Change RAM (IC 3). After that reprogram all program steps. |
| Er | 20 | | Verification errors in program (CONTROL UNIT). | No correction necessary; program is reinitialized. Change CPU IC 1 if frequently occurring. |
| Pxxx | Er | 30 | Memory contents (CONTROL UNIT) invalid. | No correction necessary; program step Pxxx (in Display 1) is automatically reprogrammed. |
| Pxxx | Er | 31 | Memory contents (CONTROL UNIT) invalid or not programmed. | Program step Pxxx shown in Display 1 must be reprogrammed |
| Pxxx | Er | 40 | Wrong price setting. | Check Price setting and reprogram if necessary. |
| Er | 50 | | Coin mechanism defective. Too much credit. | Check coin mechanism. |
| Er | 6x | | Error at CD player. | See Er 60 – Er 63. |
| Er | 60 | | Connection to the CD-player interrupted. No supply voltage present for decoder board or CD player. | Check connection cables to the decoder board, check fuses. |
| Er | 61 | | No CD recognized by CD player. No CD in CD tray, CD defective. Player defective. | Check CD and exchange if needed. Exchange CD player. Exchange decoder board. |
| Er | 62 | | Specified track on the CD not found. | Check the CD. |
| Er | 63 | | Malfunction while playing a CD. | Check the CD player with equipped CD for easy running |
| Er | 7x | | Malfunction on CD changer. | 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 | | Malfunction of operating control. | No correction necessary. |
| Er | 71 | | Error during grip from magazine. | Equip CD-tray to magazine. Check alignment from magazine to pickup assy and adjust if necessary. Check function of light barrier OPPUM. |
| Er | 72 | | Error during replacing CD in magazine. Malfunction of gripper. | Check alignment of magazine to pickup assy and adjust if needed. Check function of grip. Check function of light barriers OPGRL and OPGRR. |
| Er | 73 | | Malfunction during lift drive. Playing of CD not possible. | Check lift for jamming. Check function and correct adjustment of light barrier OPSTP (drive wheel). |
| Er | 74 | | End position of lift not o.k.. Playing of CD not possible | Check function and adjustment of light barrier OPEND. |
| Er | 80 | | Short circuit on wallbox signal wire. | Check wallbox connection. |
| Er | 81 | | Malfunction of the audio processor (CS CENTRALE). | Change IC 1 = TDA 4390 if frequently occurring. |
| Er | 90 | | Title display, three blocking in sequence, not functional anymore. | Blocking remedy see also chapter 9 "Title display" the paragraph 1.4 Jammed or dislocated title holders. |
| Er | 91 | | Blocking title display while left movement. | |
| Er | 92 | | Blocking title display while right movement. | |
| Er | 93 | | Blocking title display, stack left. | |
| Er | 94 | | Blocking title display, stack right. | |

P156: Input Test (F7):

The input test checks all input ports and shows the results in a matrix on Display 3. The test can be stopped by pressing "C".

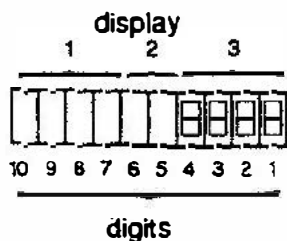
0: Start input test (Display 2 shows briefly F7)

Enter: P 156 H 0

i.e. Key switch operated:



The 4 digits of displays are used as follows:



digit 1: state of operation

i.e. key switch:

0
1

= locked not able to call background musik
= free

digit 2: bit number of input port (see table 5 "Attaching...", s. a. wiring diagram "Control Unit")

digit 3: port number from which input occurs (s.a. table 6: "Port-numbers of input ports").

digit 4: Is not used.

Table 5: "Attaching of bit numbers to input ports"

| Bit number | corresponds to wiring diagram "Control Unit" |
|------------|--|
| 0 | signal line A |
| 1 | B |
| 2 | C |
| 3 | D |
| 4 | E |
| 5 | F |
| 6 | G |
| 7 | H |

Table 6: "Port-numbers of input ports"

| Port number | name of input port |
|-------------|---------------------|
| 0 | Control Unit (IC15) |
| 1 | Control Unit (IC16) |
| 2 | Control Unit (IC17) |
| 3 | Kea pad |
| 4 | Title display (IC1) |
| 5 | Is not used |
| 6 | Pickup driver (IC3) |

Testing the CD changer

P157: Manual control of CD changer via keypad (F8):

In this test program the CD changer is controlled manually via the keyboard (Keys 1 to 0). The illustrated functions are executed by pressing the corresponding key depending on whether a CD is in the pick-up or not.

Lift not set down:

| | | |
|-----------------------|-------------------------------|-------------------------|
| 1 | 2 Lift up | 3 Lift up stepwise |
| 4 Get CD from left | 5 Replace CD | 6 Get CD from right |
| 7 | 8 Lift down | 9 Lift down stepwise |
| C Cancel | 0 Replace CD set lift down | H |

Lift is set down or CD is on player:

| | | |
|-----------------------------------|---|---------------------------------|
| 1 1. Play CD 2. CD in pause | 2 >FF< afterwards 2x key "1" fast forward | 3 Play next track |
| 4 Replace CD get last one | 5 1. Play C, 2. CD in pause | 6 Replace CD get next one |
| 7 | 8 >FR< afterwards 2x key "1" fast reverse | 9 Play last track |
| C Cancel | 0 Stop CD replace CD | H |

This test serves also to check the opto couplers in the various end positions. The status of each opto coupler is displayed. If "1" is displayed, then the opto coupler is disrupted. A "0" means the opto coupler is not disrupted. The following table shows the different combinations. The digits 1, 2, 8, 9 and 10 are employed for this purpose.

Enter: P 157 H 0

| | | |
|-------|----|-----|
| 0 1 0 | F8 | 1 1 |
|-------|----|-----|

| | | | |
|---------|-------|-------------------|-----|
| display | 1 | 2 | 3 |
| | 8 8 8 | F 8 | 1 1 |
| | 10 | 9 8 7 6 5 4 3 2 1 | |
| digits | | | |

Digit 1:
Digit 2:
Digit 8:
Digit 9:
Digit 10:

Counter Wheel (OPSTP)
Final Position (OPEND)
Grip right (OPGRR)
Middle Opto (OPPUM)
Grip left (OPGRL)

On Display 2 (Digit 5+6) code F8 will be displayed during the test.
The test is stopped by pressing "C."

14.2 Recording title quantities in title memory

P160: Recording title quantities of all CDs

After calling up this command, the phonograph searches through all CD slots for the number of CDs defined in P042. During the search it reads the number of titles recorded on each CD into the title memory. This command is used by initial equipping, for example, or if several CDs are exchanged.

The number of titles on each CD is registered in the title memory. Simultaneously, the established values are displayed. The number of titles is also read with each playing a CD

Enter: P 160 H 0

i.e. result: CD 01 has 24 titles

| | | |
|-------|--|---------|
| P 160 | | 0 1 2 4 |
|-------|--|---------|

P161: Recording title quantities of one CD

After calling up this command and entering the number of the newly installed CD, its number of titles is registered in the title memory (nn = 01 to number of P042). The number of titles from one CD is also read with every normal play of it. This function serves as single entry cancellation, if a not equipped CD is selected.

Enter: P 161 H nn H

67 H i.e. = CD#67:

| | | |
|-------|--|-----|
| P 161 | | 6 7 |
|-------|--|-----|

P162: Displaying all title memories

After calling up this command and entering the respective code number, the corresponding title data will be displayed.

- 0: Number of titles from CD #01
- 1: Switch to the next CD #
- 2: Return to the previous CD #
- 3: Title number of any CD

| | | |
|-------|--|---------|
| P 162 | | 0 3 2 0 |
|-------|--|---------|

With P162.3 the two-digit CD number must be entered and confirmed with "H".

P163: Erasing entry in title memory

All entries in the title memory are set to 1. So all CD titles are cleared, but the phonograph furthermore may access any CD tray. The basic function of the phonograph is kept. If new CDs are equipped and the command P160 is confirmed you may be sure that all new titles are stored in the title memory. P163 is to confirm by pressing "H".

Enter: P 163 H 0 H

| | | |
|-------|--|---------|
| P 163 | | 6 7 0 0 |
|-------|--|---------|

After removing a CD you also have to remove the corresponding CD cover of the display unit.

P164: Switching between signal sources

For test purposes different signal input ports for the 3 intended signal sources can be switched individually. This is done with command P164 by entering different code numbers (value "n" of command):

- 0: No signal source active, mute (amplifier turned off)
- 1: CD changer is signal source
- 2: A cassette player is signal source.
- 3: A microphone is signal source.

This "manual" switching occurs automatically in normal play according to the signal source that is turned on.

Enter: P 164 H n H

2 H i.e. for cassette player:

| | | |
|---------|--|---|
| P 1 6 4 | | 2 |
|---------|--|---|

UNIT DESCRIPTION

CONTROL UNIT

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

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6530 Bingen am Rhein

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1 FUNCTIONAL DESCRIPTION OF THE CONTROL UNIT ES V

Spare parts list

Schematics CONTROL UNIT CD

1 FUNCTIONAL DESCRIPTION OF THE CONTROL UNIT ES V

The microprocessor (IC 1) on the CONTROL UNIT is the central control chip of the phonograph. It drives, controls and monitors all of the functions of the appliance, e.g. display, keypad, remote control, light organ, coin mechanism, title display, sound and volume and the drive of the CD changer.

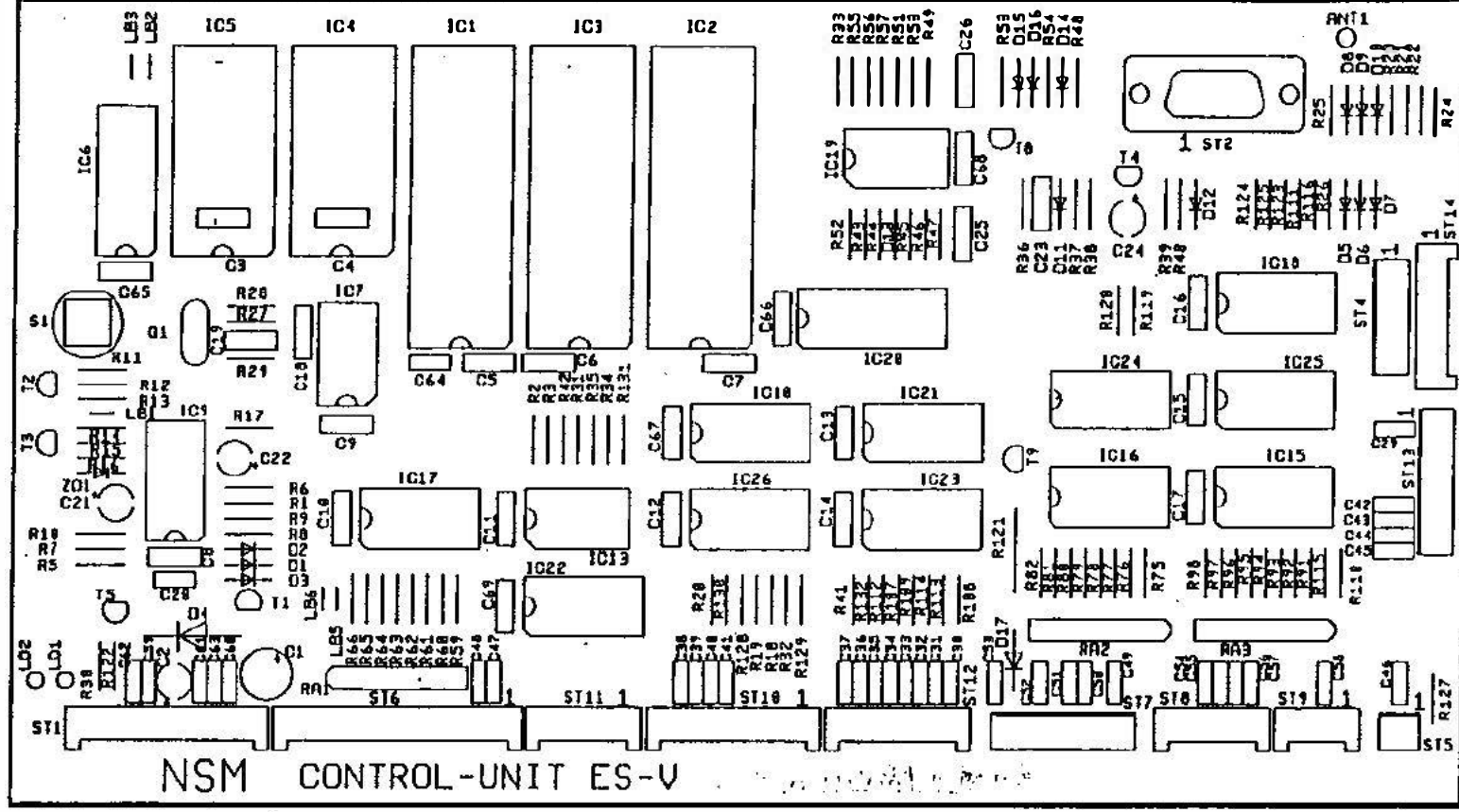
The control unit is equipped with a battery buffered RAM (IC 5) including a real time clock. The values of selected titles, credits and actual adjustments of sound and volume are stored in this RAM.

With the service programs several adjustments can be programmed and stored. E.g. general settings, price and monetary settings, free credits, backgroundmusic, autoplay and lock-out titles and so on. The integrated real time clock allows to activate several functions automatically depending on the actual date and time.

Within the RAM of the control unit voluminous statistic counters are stored. They can be evaluated with help of the service programs. They also can be printed out on the DATA PRINT. E.g. popularity of the CDs, top 30 hits, cash box, counters of coin mechanism, selected or played titles, overplays, free credits, background titles, autoplay titles, and so on.

Additional the least 20 error reports are stored in a error stack with date and time of occurrence. This stack can be evaluated and printed out for diagnostics.

Note: The case number of each CD which is placed on the player is stored in the battery buffered RAM. So in case of exchanging either the RAM or the hole CD changer it is to take care that there is no CD on the player. If needed replace the CD with help of the service programs (see chap. 3, "P157").

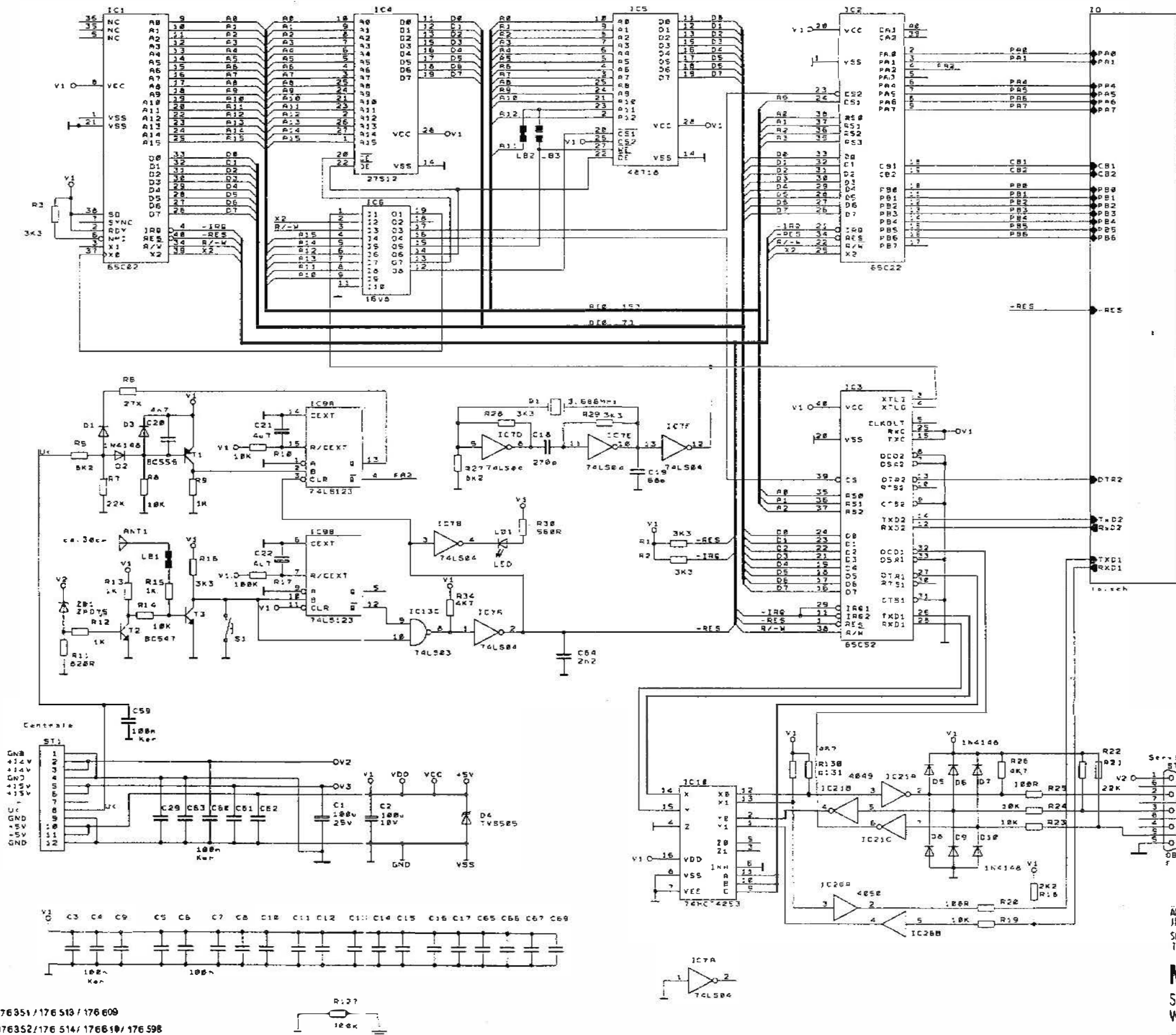


SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|-----------|---------------|--|------------------|----------|
| | 176328 | <u>CB-CONTROL UNIT ES V, ASSY</u> | | 1 |
| | 173 698 | PROFILE, ASSY | | 1 |
| | 171 629 | HOLDER | | 2 |
| ST9 | 225651 | PIN PANEL | 4 prongs | 1 |
| ST8 | 225652 | PIN PANEL | 6 prongs | 1 |
| ST11 | 225 992 | PIN PANEL | 6 prongs red | 1 |
| ST12 | 225 653 | PIN PANEL | 8 prongs | 1 |
| ST10 | 225654 | PIN PANEL | 10 prongs | 1 |
| ST1 | 225655 | PIN PANEL | 12 prongs | 1 |
| ST6 | 225 656 | PIN PANEL | 15 prongs | 1 |
| ST5 | 225439 | PIN PLUG | 3 prongs | 1 |
| ST7,13 | 225440 | PIN PLUG | 10 prongs | 2 |
| ST2 | 225 828 | D-SUB-CONNECTOR | SOCKET 9 prongs | 1 |
| Q1 | 231 621 | OSCILLATOR QUARTZ | 3,6864 MHz HC 49 | 1 |
| | 222473 | IC-SOCKET | 20 prongs | 2 |
| IC6 | 176397 | IC-PAL, programmed | DECO 1.0 | 1 |
| IC20 | 176561 | IC-PAL, programmed | MUX 1.0 | 1 |
| | 222447 | IC-SOCKET | 28 prongs | 2 |
| IC4 | 176396 | IC-MEMORY, programmed | 64 K x 8 | 1 |
| IC5 | 231 497 | IC-MEMORY, programmed | MK 48 T 18 B-20 | 1 |
| | 222448 | IC-SOCKET | 40 prongs | 3 |
| IC1 | 231 412 | IC-MICROCOMPUTER | R 65 C02- P2 | 1 |
| IC2 | 231 414 | IC-MICROCOMPUTER | R 65 C22- P2 | 1 |
| IC3 | 231 462 | IC-MICROCOMPUTER | R 65 C52 - P3 | 1 |
| IC13 | 221 525 | IC-TTL | SN 74 LS 03 | 1 |
| IC7 | 221 652 | IC-TTL | SN 74 LS 04 | 1 |
| IC9 | 221 792 | IC-TTL | SN 74 LS 123 | 1 |
| IC10 | 231 339 | IC-CMOS | 74 HCT 4053 | 1 |
| IC15,17 | 221 763 | IC-CMOS | HEF 4021 B | 3 |
| IC21 | 221 541 | IC-CMOS | HEF 4049 BC | 1 |
| IC 22-24, | | | | > |
| 26 | 221 810 | IC-CMOS | HEF 4050 BP | 4 |
| IC18 | 221 771 | IC-CMOS | HEF 4094 | 1 |
| IC19 | 221 813 | IC-LINEAR | LM 339 | 1 |
| D1-16 | 221 114 | SI-DIODE | 1 N 4148 | 15 |
| D17 | 221 822 | SI-DIODE | BA 157 | 1 |
| D4 | 221 539 | TRANSORB-DIODE | TVS 505 | 1 |
| ZD1 | 231 601 | ZENER-DIODE | ZPD 7,5 | 1 |
| LD 1,2 | 231 475 | LUMINESZENZ-DIODE | LTL-4223-021 | 2 |
| T2,3 | 221 757 | SI-TRANSISTOR | BC 547B | 2 |
| T9 | 221 492 | SI-TRANSISTOR | BC 517 | 1 |
| T1,4,5,8 | 221 549 | SI-TRANSISTOR | BC 556B | 4 |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | | QTY |
|--------------|----------|------------------|-------------|-------|-----|
| C3,4,9,29, | | | | | > |
| 60-63 | 220 481 | CER.-CAPACITOR | 0,1 μ F | | 8 |
| C 18 | 220 242 | CER.-CAPACITOR | 68 pF | | 1 |
| C 25 | 220 342 | CER.-CAPACITOR | 100 pF | | 1 |
| C 18 | 220 185 | CER.-CAPACITOR | 270 pF | | 1 |
| C 47, 49 | 220 365 | CER.-CAPACITOR | 120 pF | | 2 |
| C 37, 64 | 220 231 | CER.-CAPACITOR | 2200 pF | | 2 |
| C 20 | 220 435 | KT-CAPACITOR | 4,7 nF | | 1 |
| C 5-8, | | | | | > |
| 10-17, 23, | | | | | > |
| 26, 65-69 | 220 334 | MKT-CAPACITOR | 0,1 μ F | | 20 |
| C 21, 22 | 220 159 | LYTIC | 4,7 μ F | 63 V | 2 |
| C 24 | 220 162 | LYTIC | 10 μ F | 63 V | 1 |
| C 2 | 220 160 | LYTIC | 100 μ F | 10 V | 1 |
| C 1 | 220 250 | LYTIC | 100 μ F | 25 V | 1 |
| R38 | 221 620 | RESISTOR | 22 Ohm | 1/4 W | 1 |
| R 20, 25, | | | | | > |
| 123, 125, | | | | | > |
| 132 | 221 600 | RESISTOR | 100 Ohm | 1/4 W | 6 |
| R 122 | 221 099 | RESISTOR | 470 Ohm | 1/4 W | 1 |
| R30 | 221 621 | RESISTOR | 560 Ohm | 1/4 W | 1 |
| R 11, 54 | 221 622 | RESISTOR | 820 Ohm | 1/4 W | 2 |
| R9, 12, 13, | | | | | > |
| 15, 36, 40 | 221 029 | RESISTOR | 1 KOhm | 1/4 W | 6 |
| R 18, 35 | 221 031 | RESISTOR | 2.2 KOhm | 1/4 W | 2 |
| R 1, 3, 16, | | | | | > |
| 28, 29, | | | | | > |
| 108, 110 | 221 033 | RESISTOR | 3.3 KOhm | 1/4 W | 9 |
| R26, 31, 34, | | | | | > |
| 41-43, 49, | | | | | > |
| 51, 53, 119, | | | | | > |
| 130, 131 | 221 034 | RESISTOR | 4.7 KOhm | 1/4 W | 14 |
| R 5, 27 | 221 172 | RESISTOR | 8.2 KOhm | 1/4 W | 2 |
| R8, 10, 14, | | | | | > |
| 19, 23, 24, | | | | | > |
| 45, 46, 50, | | | | | > |
| 52, 107 | 221 035 | RESISTOR | 10 KOhm | 1/4 W | 11 |
| R7, 21, 22, | | | | | > |
| 39, 55, 56, | | | | | > |
| 112, 115, | | | | | > |
| 120, 128, | | | | | > |
| 129 | 221 604 | RESISTOR | 22 KOhm | 1/4 W | 13 |
| R 6 | 221 601 | RESISTOR | 27 KOhm | 1/4 W | 1 |
| R47, 48, | | | | | > |
| 57, 59, 60, | | | | | > |
| 66, 75-82, | | | | | > |
| 91-98 | 221 038 | RESISTOR | 47 KOhm | 1/4 W | 27 |
| R 17, 37, | | | | | > |
| 44, 127 | 221 048 | RESISTOR | 100 KOhm | 1/4 W | 4 |
| R 121 | 221 273 | RESISTOR | 10 Ohm | 1/2 W | 1 |
| RA 1-3 | 231 239 | RESISTOR NETWORK | 8 x 22 KOhm | | 3 |

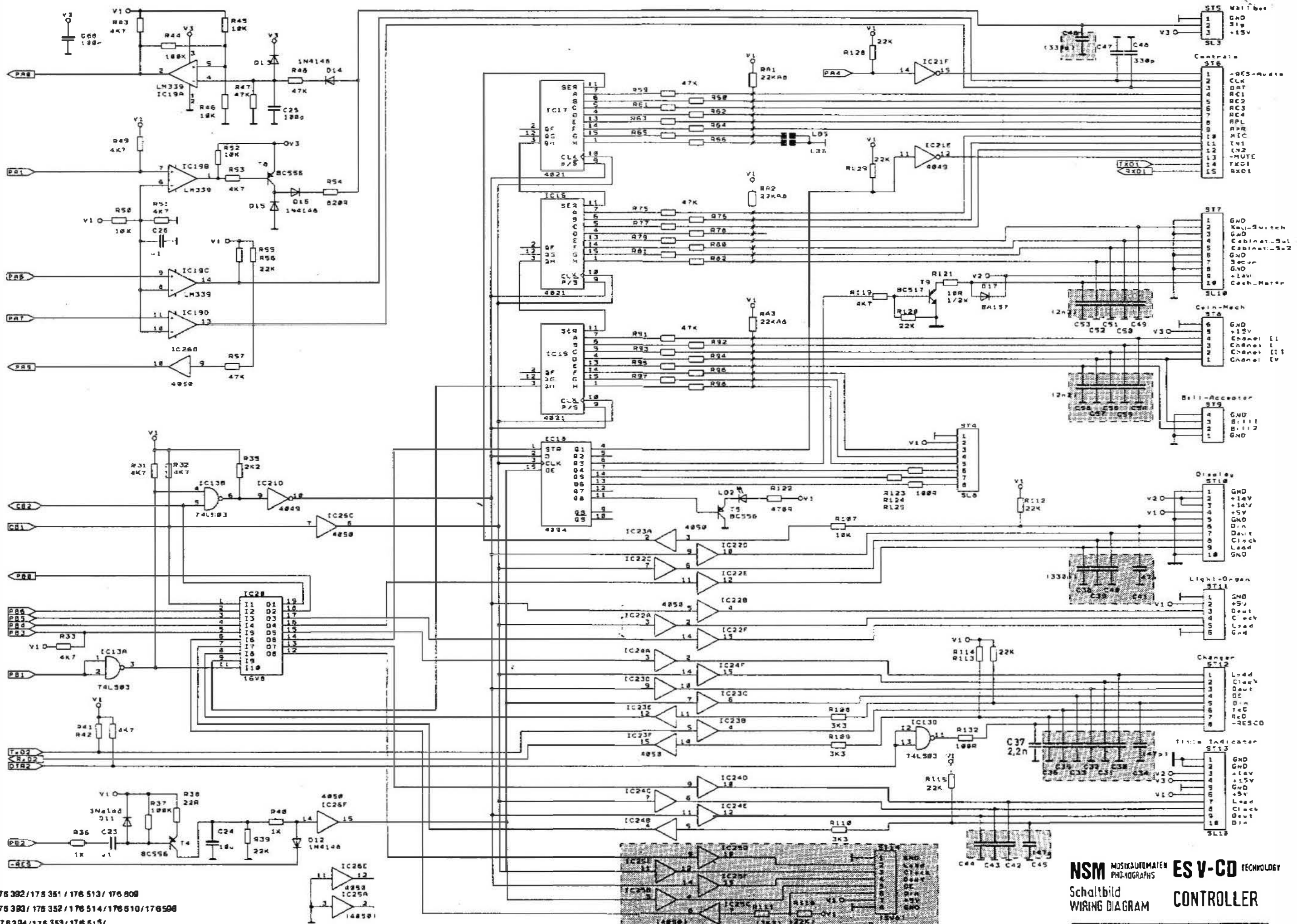


ÄNDERUNGEN IM SINNE DES TECHN. FORTSCHRITTES VORBEHALTEN,
JEDEN FÄHIGKEITEN NACHRICHTEN
SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
TO MODIFY EQUIPMENT ALREADY DELIVERED

NSM MUSIKAUTOMATEN **ES V-CD** TECHNOLOGY
Schaltbild **CONTROL UNIT**
WIRING DIAGRAM

29.05.92 Braum

176392/176351/176513/176609
176393/176352/176514/176610/176598
176394/176353/176515/
07/92



176 392/176 351 / 176 513/ 176 809
 176 383/ 176 352 / 176 514/176 510/176 508
 176 394/176 353/ 176 515/
 07/92

ÄNDERUNGEN IM SINNE DES TECHN. FORTSCHRITTES VORBEHALTEN.
 JEDOCHE KEINE NACHTRAGS-PFLICHT!
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 TO MODIFY EQUIPMENT ALREADY DELIVERED!

gerasterte Bauteile sind nicht eingebaut!
 DOTTED COMPONENTS ARE NOT INSTALLED!

NSM MUSIKAUTOMATEN PHOTOGRAPHS **ES V-CD** TECHNOLOGY
 Schaltbild WIRING DIAGRAM **CONTROLLER**

29.06.92 21 Brown 21

UNIT DESCRIPTION

DISPLAY / KEYBOARD

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

10

Technical Information, Assy

176 393

176 352

176 514

176 610

176 598

176 705

THE PERFORMER GRAND II

THE WIZARD /

OLD FASHION WIZARD

THE PERFORMER CLASSIC

CD HIDE-AWAY II

FIREBIRD II

THE PERFORMER WALL

NSM

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6530 Bingen am Rhein

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- 1 FUNCTION
- 1.1 Display
- 1.2 Keyboard
- Spare parts list

1 FUNCTION

1.1 Display

The shift registers IC 301 through IC 303 are the output ports for the display control.

The display is operated in the multiplex mode.

The segment information is prepared for one digit with IC 302 and IC 303 via drivers IC 308 and IC 309.

The transistors T 303 through T 305 are controlled by IC 307 via IC 301 and switch on the appropriate multiplex level for 4 milliseconds.

Resistors R 332 to R 345 determine the segment current.

Lamps L 1 to L 5 are controlled statically via IC 307, Pin 12 and 14 and IC 306, Pin 19, 11, 12.

Resistors R 325 to R 329 limit the transient current.

The load signal for the output shift registers is monitored by circuit IC 306, Pin 4 and 13; R 306; C 303; D 301.

During the duration of the load signal the display is dark.

C 303 is discharged via D 301 and IC 306, Pin 13.

OE of IC 301 to IC 303 becomes LOW and thereby inactive.

If no load signal occurs, OE becomes inactive via R 305.

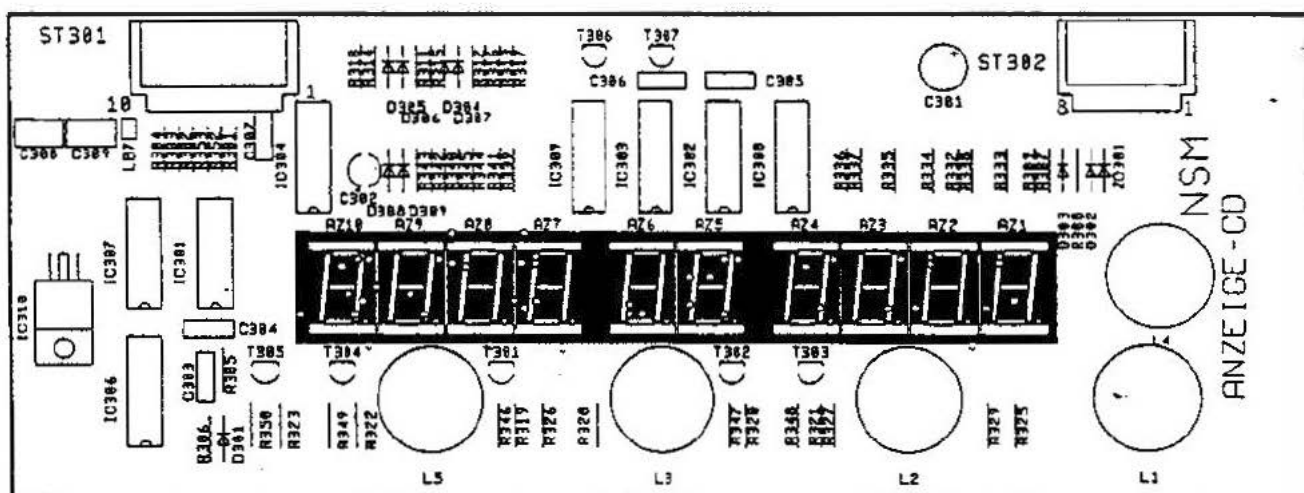
Capacitor C 302 avoids lighting up of the digits after switching on.

1.2 Keyboard

IC 301 is an input port for the keyboard which is connected to plug ST 302.

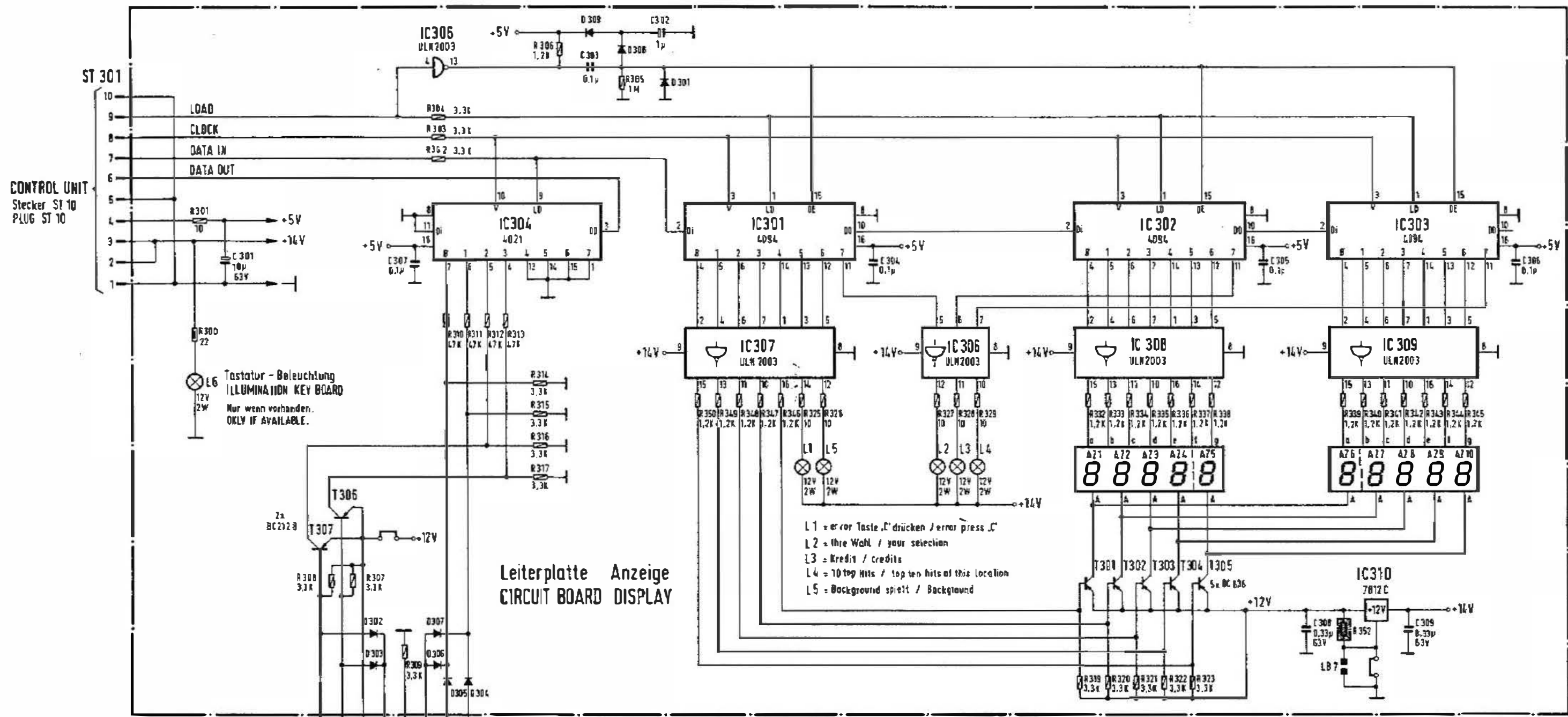
The circuit with diodes D 302 - D 307 and transistors T 306, T 307 codes the keyboard matrix to a 4-bit signal combination.

SPARE PARTS LIST



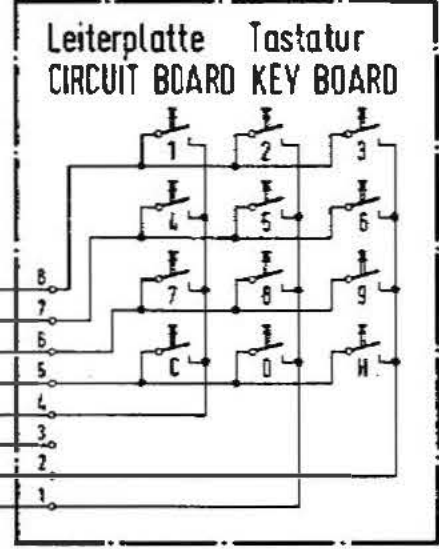
SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------------|----------|----------------------------|----------------|-----|
| | 173 664 | <u>CB-DISPLAY CD, ASSY</u> | | 1 |
| ST302 | 225 663 | PIN PANEL | 8 prongs 90° | 1 |
| ST301 | 225 664 | PIN PANEL | 10 prongs 90° | 1 |
| AZ 1-10 | 231 416 | DISPLAY | TD SL 5150 | 10 |
| | 176 413 | TUBUS | | 1 |
| | 171 629 | HOLDER | | 4 |
| IC 310 | 221 573 | IC-VOLTAGE | 12 V 1 A | 1 |
| IC 301-303 | 221 771 | IC-CMOS | HEF 4094 B | 3 |
| IC 304 | 221 763 | IC-CMOS | HEF 4021 B | 1 |
| IC 306-309 | 221 497 | IC-LINEAR | ULN 2003 A | 4 |
| D 301-309 | 221 114 | SI-DIODE | 1 N 4148 | 9 |
| T 301-305 | 231 240 | SI-TRANSISTOR | BC 63 6 F | 5 |
| T 306-307 | 221 283 | SI-TRANSISTOR | BC 212 B | 2 |
| C 303-307 | 220 334 | MKT-CAPACITOR | 0,1 µF 63 V | 5 |
| C 308-309 | 220 332 | MKT-CAPACITOR | 0,33 µF 63 V | 2 |
| C 302 | 220 249 | LYTIC | 1 µF 63 V | 1 |
| C 301 | 220 162 | LYTIC | 10 µF 63 V | 1 |
| R 301 | 221 611 | RESISTOR | 10 Ohm 1/4 W | 1 |
| R 306-332- | | | | > |
| 350 | 221 627 | RESISTOR | 1,2 KOhm 1/4 W | 20 |
| R 302-304, | | | | > |
| 307-309, | | | | > |
| 314-317, | | | | > |
| 319-323, | | | | > |
| 354 | 221 033 | RESISTOR | 3,3 KOhm 1/4 W | 16 |
| R 310-313 | 221 038 | RESISTOR | 47 KOhm 1/4 W | 4 |
| R 305 | 221 009 | RESISTOR | 1 MOhm 1/4 W | 1 |
| R 325-329 | 231 366 | MET.-RESISTOR | 10 Ohm 1/4 W | 5 |
| L 1-5 | 225 533 | LAMP SOCKET | | 5 |
| | 226 056 | LAMPS | 12 V 2 W | 5 |
| | 173 900 | DISPLAY, ASSY | 12-fach | 1 |

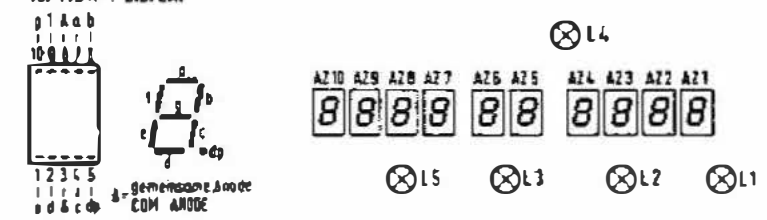


Tastatur - Beleuchtung
ILLUMINATION KEY BOARD
Nur wenn vorhanden.
ONLY IF AVAILABLE.

Leiterplatte Anzeige
CIRCUIT BOARD DISPLAY



Draufsicht: Display
TOP VIEW: DISPLAY



Draufsicht: Spannungsregler IC 310
TOP VIEW: VOLTAGE REGULATOR IC 310



von unten gesehen
BOTTOM VIEW



- ZENER-DIODE
- 1M 1/4W
- 1/2W
- 1/4W

gestrichelte Bauteile sind nicht eingebaut!
DOTTED COMPONENTS ARE NOT INSTALLED!

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

NSM MUSIKAUTOMATEN **ES V-CD** TECHNOLOGY
PHONOGRAPH

Schaltbild Anzeige / Tastatur
WIRING DIAGRAM DISPLAY / KEY BOARD

| | | | |
|----------|-------|--------|-------|
| 10 DL 92 | Braun | Wegert | Meier |
|----------|-------|--------|-------|

UNIT DESCRIPTION

CENTRAL UNIT

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
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 - 1.1 Power Supply
 - 1.2 Amplifier
 - 1.3 Signal path
 - 1.4 Adjustment of volume and sound characteristics
 - 1.5 MIC socket, microphone connection
 - 1.6 Tape recorder connection
 - 1.7 Connection of auxiliary amplifier
- 2 Adjustment instructions for trimmer of central unit and output stage
- 3 Repair aid
 - 3.1 Output stage
 - 3.2 Tracing sound signal

1 FUNCTION

The power supply, fan controls, stereo amplifier with inputs for microphone, CD and tape are all integrated on one circuit board "CENTRAL UNIT".

The output stages and the fan are connected to the central unit via ST 4, ST 8, ST 9. The music power per channel is 200 watts when matched to a loudspeaker impedance of 2 ohms.

1.1 Power Supply

The power transformer supplies 22 V, 2 x 11,5 V and 2 x 43 V from three separate secondary coils.

The supply voltage for the output stages is supplied with 2 x 43 V by a two-way rectifier (D 1) and the center tap of the transformer.

The supply voltage for the voltage regulators VR1 (V3 = +15 V) and VR2 (+VA = +15 V) is supplied with 22 V by a bridge rectifier (D2-D5) from the transformer.

The supply voltage for the voltage regulators VR 3 (V1 = +5 V), VR 4 (+VM = + 10 V) are supplied with 2 x 11,5 V by a two-way rectifier (D6 / D8) and the center tap of the transformer.

Appropriate the supply voltage for VR 5 (-VM = -10 V) is supplied by D7 / D9 and the supply voltage for VR 6 (-VA = -15 V) is supplied by a voltage doubler D13, D14, D15 and C20 from the same cods of the transformer.

Fusing is accomplished with

Si 1, Si 2 = 6,3 A. for the voltage V Amp.

Si 3, Si 4 = 3,15 A for voltages V1, V2, +VM, -VM, -VA

Si 5 = 2,5 A for voltages V3, V4, +VA

The LED's indicate at the same intensity the following supply voltages:

LED 1 = +28 V (V4)

LED 2 = +14 V (V2)

LED 3 = -14 V

LED 4 = -22 V

LED 5 = +60 V (V Amp.).

The TRIAC TC 1 controls the output stage fan depending upon the operational state of the amplifier (REJECT); i.e. the fan only runs when the amplifier is not muted.

1.2 Amplifier

The stereo amplifier is build up with a siemens audio processor TDA 4390 with 3 quadruple OpAmps 54 diodes, 23 transistors and 6 voltage regulators.

The output stage is designed without induction coils or transformers and is therefore ironless.

At full volume level the music power is 200 watts per channel.

1.3 Signal path

The input signals

- MIC is connected via the microphon amplifier IC 4 B and the background mixer IC 4 A to Pin 3 (right channel) and Pin 26 (left channel)
 - TB is connected via the pre-amplifiers IC 3 C respectively IC 3 D to Pin 2 (right channel) and Pin 27 (left channel)
 - CD (symmetrical inputs) is connected via the pre-amplifiers IC 3 A respectively IC 3 B to Pin 1 (right channel) and Pin 28 (left channel)
- of the input selection circuit of the audio processor.

When the microphone switch is actuated (Pin 5 of socket MIC to GND) the MIC is switched precedencely. That means TB or CD are interrupted.

Beginning at a level higher then 3 mV of the signal, the TB input is automatically active, if there is no CD played or no microphone switched 1 on. The control circuit is build with IC 4 C and IC 4 D.

On output BU 4 / BU 5 (Out R / Out L) a signal is served to steer towards an additional amplifier.

Via an AVC-stage (automatic volume control), the switch for MONO, STEREO and S-STEREO the audio signal reaches the sound control network and the volume stage of the I² C-bus controlled audio processor.

The output signals of this processor (Pin 13 / Pin 16) are connected to the inputs of the driver stage T 4 and T 6.

The parallel complementary power Darlington transistors T 151 through T 154 in the output stage allow a minimum loudspeaker impedance of 2 ohms.

Quiescent current compensation and thermic stabilization is accomplished with T 150, the quiescent current setting with TR 250. The amplifier is equipped with two protective circuits against overload mismatching and thermic overload.

T 155 acts as a threshold switch for the electronic fuse. When the emitter current of the output transistors exceeds a certain value, T 8 or T 9 is switched through by T 155 and reduces the volume via the control unit.

The actuation of the electronic fuse is controlled by the control unit.

When its fuse is tripped a number of times within a certain period, the volume is reduced automatically by one step each time until the electronic fuse is no longer activated.

The terminating impedance at the loudspeaker output should not be less than 2 ohms. In the case of mismatching (less than 2 ohms), or short-circuit in the loudspeaker cable, the limiting circuit is actuated.

The result is distorted sound reproduction or reduction of the volume. After elimination of the mismatch the amplifier is ready for operation and the volume can be readjusted.

The thermal switch on the heat sink switches off the power supply to the output stage when the heat sink temperature reaches approx. 90° C (cooling malfunctioning). LED 150 is dark. The switch-on point (following cooling down) is approx. 60° C (switch-on hysteresis).

1.4 Adjustment of volume and sound characteristics

Volume adjustment for normal play mode is done by use of the command P053 of the service programm. It is done separately for the right and the left channel:

keys "1" / "3" give more volume (left/right)
keys "7" / "9" give less volume (left/right)
keys "4" / "6" give a medium value (left/right) of the volume
keys "2" / "8" are controlling both channels (more/less).

Treble and Bass are controlled with P054 for both channels:

keys "1" / "7" more/less of bass key "4" medium value of bass
keys "3" / "9" more/less of treble key "6" medium value of treble.

The necessary adjustment depend on the given environmental conditions.

With the potentiometer POT 2 the volume of microphone signal is controlled and with potentiometer POT 1 the volume of sound while the microphone is active.

The adjustment of POT 2 depends on the distance between the phonograph and the microphone (feedback!)

The switch S1 is for selecting:

MONO: e.g. for separated music in different rooms.
STEREO: normal position
S-STEREO: base wide function

1.5 MIC socket, Microphone Connection

A dynamic microphone with an impedance of 200 ohms - 600 ohms with switch for relay control can be used.

NSM option accessories:

Microphone Order No. 224 223
Connection cable Order No. 171 880 (length: 10 m)

1.6 Tape Recorder Connection

The TB socket (cinch) allows to record the music from the phonograph on a tape recorder as well as to play music from a tape recorder by the phonograph.

The AF signal (analog signal) for recording on a tape recorder is on BU 4 and BU 5 and can be connected directly with a stereo cable.

For playback of a tape via the phonograph BU 2 and BU 3 are used.

1.7 Connection of an additional Amplifier

An additional amplifier can be connected to BU 4 and BU 5.

The input sensitivity of the external amplifier should be 1 V at a minimum input impedance of 10 KOhms.

2 Adjustment Instructions for Trimmer of Central Unit and Output Stage

TR 150 for quiescent current adjustment of the output stage: The quiescent current must be set to 40 mA +5 mA when volume level is 0.

After replacement of the output transistor T 151 through T 154 a correction may be required. Therefore the fuse Si 150 or the thermal switch is to be replaced by an ampere-meter.

3 Repair Aid

Amplifier integrated in central unit ES V

Malfunction: No sound, no output power:

It is assumed that LED 1 to LED 5 light with the same intensity and that the power supply is therefore O.K., the CD is on the CD player being played, and normal volume was set in program step P053 to "31".

3.1 Output Stage

LED 150 on the output stage circuit board is dark. Malfunction probably located in the output stage; check Si 150 and replace if required. If the fuse blows again, the output transistors are defective.

Remove output stage unit, pull out cover plates on the bottom. Check for short-circuit on transistors T 151/T 152 T 153/T 154 with ohmmeter. Since the transistors are connected in parallel, it is only possible to test them in pairs.

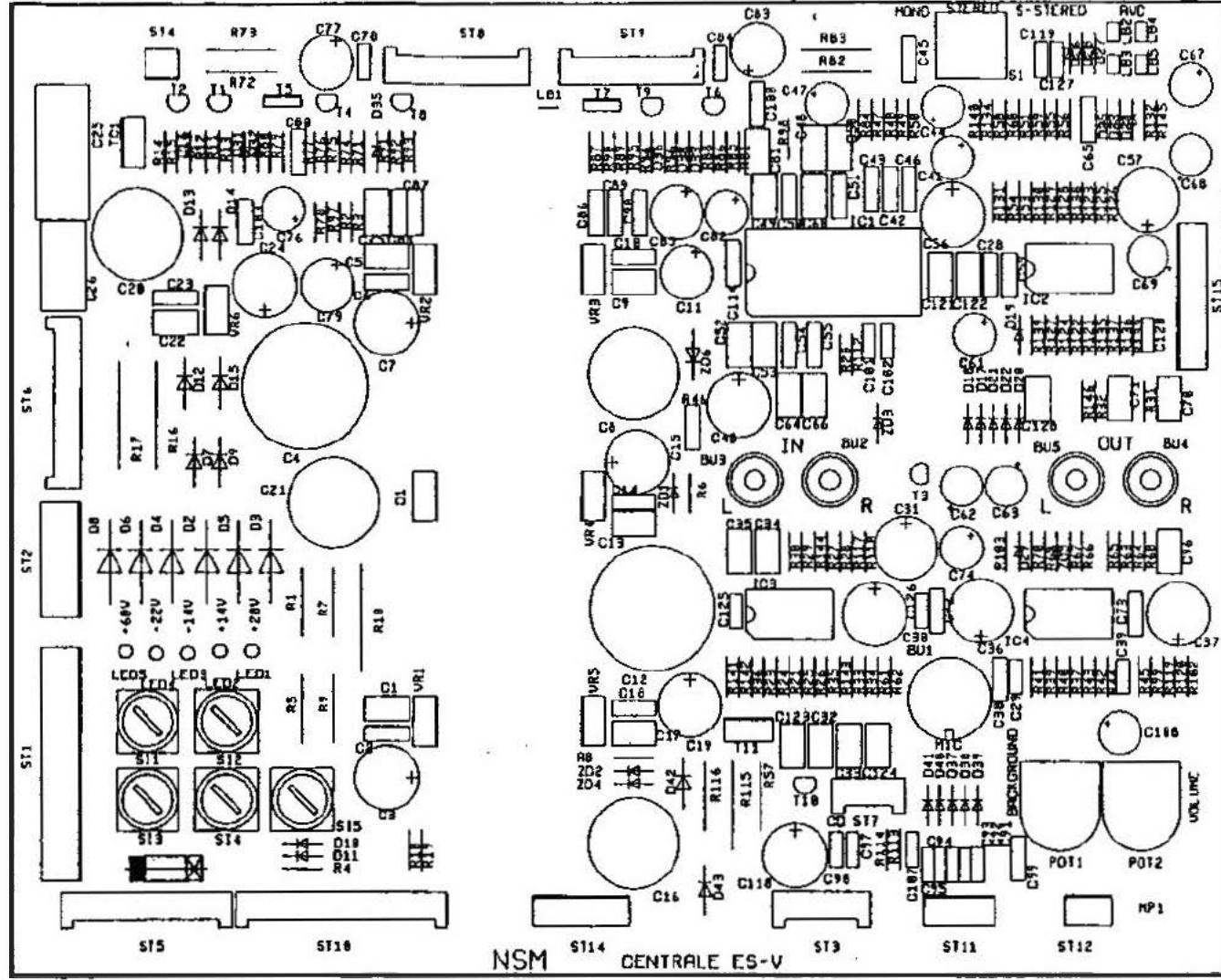
For individual testing one transistor must be unsoldered from the defective pair. After replacement of the defective transistors the quiescent current must be readjusted with TR 150 according to the adjustment instructions.

3.2 Tracing Sound Signal

Trace the sound signal arriving at CD plug according to the table below.
The point where the signal is missing is probably the cause of the malfunction.

| AF Signal Point | Cause of Malfunction When Signal Missing |
|------------------------|---|
| IC 1, Pin 1 or Pin 28 | IC 3 |
| IC 1, Pin 5 or Pin 24 | IC 1 |
| IC 1, Pin 6 or Pin 23 | IC 2 (AVC) |
| IC 1, Pin 13 or Pin 16 | IC 1 |
| T 5 / T 7 (collector) | T 4, T 6, T 5, T 7 |

If the signal is there up to T 5, T 7, but no output signal arrives at the output stage, plug connectors ST 8 / ST 9 as well as the output stage have to be checked.



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY | |
|--------|--------------------|-----------------------------------|---------------------|-----------|---|
| | 176 326 | <u>CENTRALE ES V, ASSY</u> | <u>50 Hz</u> | 1 | |
| Si5 | 225 538 | FUSE | T 2,5 A | 1 | |
| Si3, 4 | 225 029 | FUSE | T 3,15 A | 2 | |
| Si1, 2 | 225 374 | FUSE | T 6,3 A | 2 | |
| | 225 747 | CAP | | 5 | |
| | 176 327 | <u>CENTRALE ES V, ASSY</u> | <u>60 Hz</u> | 1 | |
| Si5 | 225 222 | FUSE | 2,5 A | 1 | |
| Si3, 4 | 225 225 | FUSE | 3,2 A | 2 | |
| Si1, 2 | 225 218 | FUSE | 6,25 A | 2 | |
| | 225 748 | CAP | | 5 | |
| | 150 687 | COOLING PLATE | | 2 | |
| | 225 746 | FUSE HOLDER | | 5 | |
| | 173 698 | PROFILE, ASSY | | 1 | |
| | 171 629 | HOLDER | | 2 | |
| BU1 | 225 244 | SOCKET | S 5 prongs | 1 | |
| BU2-5 | 225 986 | RCA-SOCKET | BTOR 1 L | 4 | |
| S3 | 222550 | SLIDE SWITCH | 25149 NLDH 6 | 1 | |
| ST2 | 225 804 | PIN PLUG | RM 3,96 | 6 prongs | 1 |
| ST1 | 225 807 | PIN PLUG | RM 3,96 | 12 prongs | 1 |
| ST4 | 225 439 | PIN PLUG | RM 2,5 | 3 prongs | 1 |
| ST12 | 225 418 | PIN PLUG | RM 2,5 | 4 prongs | 1 |
| ST11 | 225 443 | PIN PLUG | RM 2,5 | 6 prongs | 1 |
| ST14 | 225 444 | PIN PLUG | RM 2,5 | 8 prongs | 1 |
| ST7 | 225 651 | PIN PANEL | RM 2,5 | 4 prongs | 1 |
| ST3 | 225 711 | PIN PANEL | RM 2,5 | 6 prongs | 1 |
| ST8,9 | 225 654 | PIN PANEL | RM 2,5 | 10 prongs | 2 |
| ST15 | 225 655 | PIN PANEL | RM 2,5 | 12 prongs | 1 |
| ST5,6 | 225 714 | PIN PANEL | RM 2,5 | 12 prongs | 2 |
| ST10 | 225 656 | PIN PANEL | RM 2,5 | 15 prongs | 1 |
| VR3,4 | 221 572 | IC-VOLTAGE | + 5 V | 1 A | 2 |
| VR5 | 221 537 | IC-VOLTAGE | - 5 V | 1 A | 1 |
| VR1,2 | 221 476 | IC-VOLTAGE | +15 V | 1,5 A | 2 |
| VR6 | 231 498 | IC-VOLTAGE | -15 V | 1,5 A | 1 |
| | 222447 | IC-SOCKET | 28 prongs | | 1 |
| IC 1 | 231 540 | IC-LINEAR | TDA4390 | | 1 |
| IC 2-4 | 231 355 | IC-LINEAR | TL 074 | | 3 |
| TC1 | 231 028 | TRIAC | TIC 206 D | | 1 |

SPARE PARTS LIST

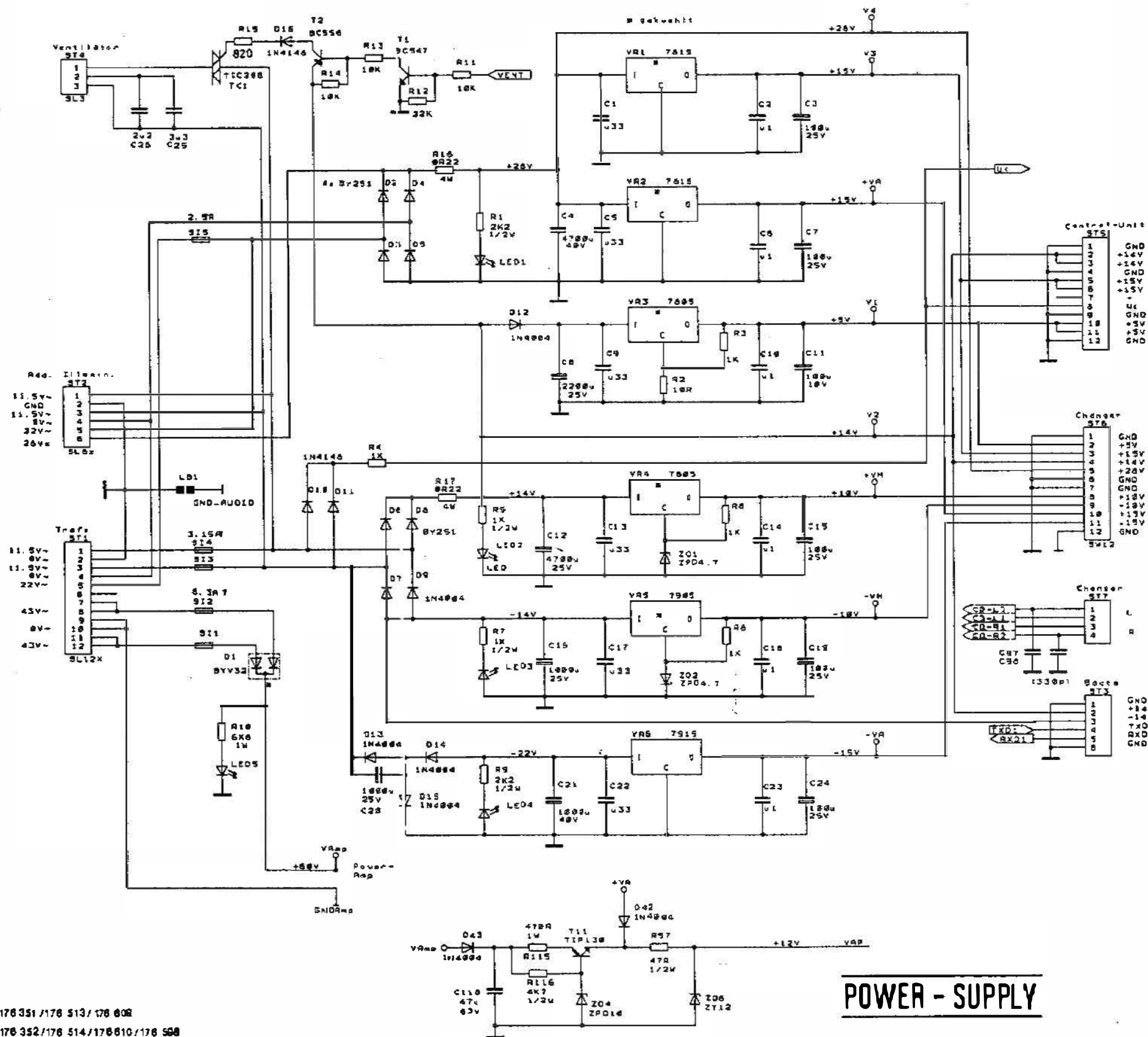
| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|-------------|----------|-------------------|--------------|-----|
| D 10, 11, | | | | > |
| 16-29, | | | | > |
| 31-41 | 221 114 | SI-DIODE | 1 N 4148 | 27 |
| D 7, 9, 13, | | | | > |
| 14, 15, 42, | | | | > |
| 43 | 221 115 | SI-DIODE | 1 N 4004 | 8 |
| D 2-6, 8 | 221 463 | SI-DIODE | BY251 | 6 |
| D 1 | 231 202 | SI-DUO-DIODE | BYV 32/100 | 1 |
| ZD 1, 3, 5 | 231 079 | ZENER-DIODE | ZPD 4,7 | 4 |
| ZD 4 | 231 509 | ZENER-DIODE | ZPD 10 | 1 |
| ZD 6 | 221 406 | ZENER-DIODE | ZY 12 | 1 |
| LED 1, 5 | 231 475 | LUMINESZENZ-DIODE | LTL-4223-021 | 5 |
| T 11 | 231 150 | SI-TRANSISTOR | TIP 130 | 1 |
| T 6, 7 | 221 488 | SI-TRANSISTOR | BD 139-10 | 2 |
| T 1, 3, | | | | > |
| 8-10 | 221 757 | SI-TRANSISTOR | BC 547B | 5 |
| T 2, 4, 6 | 221 459 | SI-TRANSISTOR | BC 556 B | 3 |
| C 29, 39, | | | | > |
| 125, 126 | 220 266 | CER.-CAPACITOR | 27 pF | 4 |
| C 73 | 220 181 | CER.-CAPACITOR | 47 pF | 1 |
| C 80, 86 | 220 185 | CER.-CAPACITOR | 270 pF | 2 |
| C 2, 6, 10, | | | | > |
| 14, 18, 23, | | | | > |
| 38, 41, 42, | | | | > |
| 44, 45, 50, | | | | > |
| 51, 54, 55, | | | | > |
| 59, 65, 87 | | | | > |
| -90, 99, | | | | > |
| 114 | 220 481 | CER.-CAPACITOR | 0,1 µF | 23 |
| C 1, 5, 9, | | | | > |
| 13, 17, 22, | | | | > |
| 28, 32-35, | | | | > |
| 48, 49, 52, | | | | > |
| 53, 58, 60, | | | | > |
| 64, 66, 70, | | | | > |
| 71, 75, 81, | | | | > |
| 96, 121- | | | | > |
| 124 | 220 332 | MKT-CAPACITOR | 0,33 µF | 28 |
| C 107 | 220 335 | MKT-CAPACITOR | 22 nF | 1 |
| C 120 | 220 426 | MKT-CAPACITOR | 47 nF | 1 |
| C 26 | 220 336 | MKT-CAPACITOR | 2,2 µF | 1 |
| C 25 | 220 460 | MKT-CAPACITOR | 3,3 µF | 1 |
| C 101, 102 | 220 400 | KT-CAPACITOR | 1500 pF | 2 |
| C 72, 78, | | | | > |
| 84, 91, 95, | | | | > |
| 119 | 220 435 | KT-CAPACITOR | 4700 pF | 9 |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | | QTY |
|---------------|----------|-------------|-------------|-------|-----|
| C 61, 67 | 220 249 | LYTIC | 1 μ F | 63 V | 2 |
| C 47, 76, | | | | | > |
| 82 | 220 162 | LYTIC | 10 μ F | 63 V | 3 |
| C 74, 77, | | | | | > |
| 83 | 220 158 | LYTIC | 47 μ F | 40 V | 3 |
| C 118 | 220 247 | LYTIC | 47 μ F | 63 V | 1 |
| C 11 | 220 160 | LYTIC | 100 μ F | 10 V | 1 |
| C 3, 7, 15, | | | | | > |
| 19, 24, 30, | | | | | > |
| 31, 36, 37, | | | | | > |
| 40, 56, 57 | 220 250 | LYTIC | 100 μ F | 25 V | 12 |
| C 79, 85 | 220 390 | LYTIC | 100 μ F | 40 V | 2 |
| R 80, 90 | 221 095 | RESISTOR | 6,8 Ohm | 1/4 W | 2 |
| R 2, 21, 37, | | | | | > |
| 51, 71, 81 | 221 611 | RESISTOR | 10 Ohm | 1/4 W | 6 |
| R 87, 88 | 221 096 | RESISTOR | 56 Ohm | 1/4 W | 2 |
| R 54, 83, | | | | | > |
| 96 | 221 600 | RESISTOR | 100 Ohm | 1/4 W | 3 |
| R 44 | 221 099 | RESISTOR | 470 Ohm | 1/4 W | 1 |
| R 112 | 221 100 | RESISTOR | 680 Ohm | 1/4 W | 1 |
| R 3, 4, 6, | | | | | > |
| 8, 43, 65, | | | | | > |
| 91, 94 | 221 029 | RESISTOR | 1 K Ohm | 1/4 W | 8 |
| R 15, 79, | | | | | > |
| 89 | 221 030 | RESISTOR | 1,5 K Ohm | 1/4 W | 3 |
| R 31, 32 | 221 031 | RESISTOR | 2,2 K Ohm | 1/4 W | 2 |
| R 77, 78 | 221 033 | RESISTOR | 3,3 K Ohm | 1/4 W | 2 |
| R 27, 28, | | | | | > |
| 54, 55, | | | | | > |
| 117, 122 | 221 034 | RESISTOR | 4,7 K Ohm | 1/4 W | 10 |
| R 134, 140 | 221 607 | RESISTOR | 6,8 K Ohm | 1/4 W | 2 |
| R 48, 50 | 221 172 | RESISTOR | 8,2 K Ohm | 1/4 W | 2 |
| R 11, 13, 14, | | | | | > |
| 18-20, 67, | | | | | > |
| 114, 125, | | | | | > |
| 127 | 221 035 | RESISTOR | 10 K Ohm | 1/4 W | 10 |
| R 133, 139 | 221 603 | RESISTOR | 12 K Ohm | 1/4 W | 2 |
| R 131, 137 | 221 036 | RESISTOR | 15 K Ohm | 1/4 W | 2 |
| R 132, 138 | 221 501 | RESISTOR | 18 K Ohm | 1/4 W | 2 |
| R 12, 38, | | | | | > |
| 70, 113 | 221 604 | RESISTOR | 22 K Ohm | 1/4 W | 4 |
| R 68 | 221 037 | RESISTOR | 33 K Ohm | 1/4 W | 1 |
| R 145, 146 | 221 623 | RESISTOR | 39 K Ohm | 1/4 W | 2 |
| R 23-26, 28, | | | | | > |
| 30, 41, 42, | | | | | > |
| 45, 58, 69, | | | | | > |
| 92, 85, 99, | | | | | > |
| 120, 130, | | | | | > |
| 135, 136, | | | | | > |
| 141-144 | 221 038 | RESISTOR | 47 K Ohm | 1/4 W | 22 |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | | QTY |
|----------|----------|---------------------|----------|--------|-----|
| R74.84 | | | | | > |
| 97.98 | 221 039 | RESISTOR | 56 KOhm | 1/4 W | 4 |
| R47.49. | | | | | > |
| 53.55 | 221 629 | RESISTOR | 68 KOhm | 1/4 W | 4 |
| R123.124 | 221 044 | RESISTOR | 82 KOhm | 1/4 W | 2 |
| R40.66. | | | | | > |
| 75.85. | | | | | > |
| 126.128 | 221 048 | RESISTOR | 100 KOhm | 1/4 W | 6 |
| R86.76 | 221 045 | RESISTOR | 150 KOhm | 1/4 W | 2 |
| R103 | 221 047 | RESISTOR | 330 KOhm | 1/4 W | 1 |
| R33-36. | | | | | > |
| 59-63 | 221 049 | RESISTOR | 470 KOhm | 1/4 W | 9 |
| R102 | 221 982 | RESISTOR | 3,3 MOhm | 1/4 W | 1 |
| R57 | 221 161 | RESISTOR | 47 Ohm | 1/2 W | 1 |
| R72.82 | 221 230 | RESISTOR | 470 Ohm | 1/2 W | 2 |
| R5.7 | 221 183 | RESISTOR | 1 KOhm | 1/2 W | 2 |
| R73.83 | 221 210 | RESISTOR | 1,5 KOhm | 1/2 W | 2 |
| R1.9 | 221 184 | RESISTOR | 2,2 KOhm | 1/2 W | 2 |
| R116 | 221 397 | RESISTOR | 4,7 KOhm | 1/2 W | 1 |
| R115 | 221 276 | WIRE WOUND RESISTOR | 470 Ohm | 1 W | 1 |
| R10 | 231 232 | WIRE WOUND RESISTOR | 6,8 KOhm | 1 W | 1 |
| R16.17 | 231 176 | WIRE WOUND RESISTOR | 0,22 Ohm | 4 W | 2 |
| Pot 1. 2 | 231 553 | TRIMMER RESISTOR | 500 KOhm | 0,15 W | 2 |
| | 231 235 | SHAFT | red | | 2 |



POWER - SUPPLY

ÄNDERUNGEN IM SINNE DES TECH. FORTSCHRITTES VORBEHALTEN.
 NEDERLANDSE: KEINE NAHRUFTPLICHT!
 SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
 TO MODIFY EQUIPMENT ALREADY DELIVERED!

NSM MUSA UTMAREN ES V-CD TECHNOLOGY
 PHALOGA APKS

Schaltbild
 WIRING DIAGRAM CENTRALE ES V 621/1

| | | | |
|----------|-------|------|--|
| 29.06.92 | Braun | Beck | |
|----------|-------|------|--|

176392/176351/176513/176608
 176393/176352/176514/176610/176568
 176394/176353/176515/
 07/92



62½

UNIT DESCRIPTION

OUTPUT STAGE

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CDHIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

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6530 Bingen am Rhein

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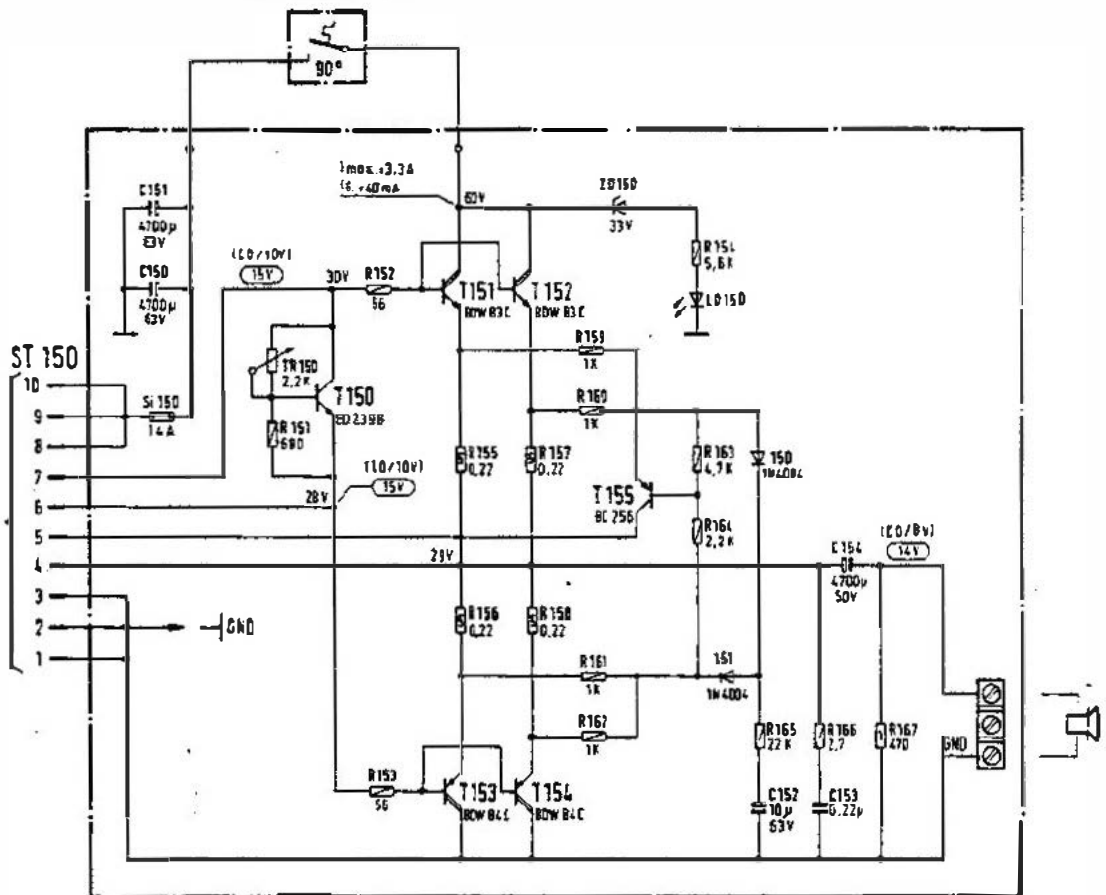
The output stage is designed without induction coils or transformer and is therefore ironless. At full volume the music power is 200 W per channel when connected to a 2-ohm loudspeaker impedance.

Functions such as power supply, signal path and settings as well as repair aids are described in detail in the unit description "CENTRAL UNIT".

SPARE PARTS LIST

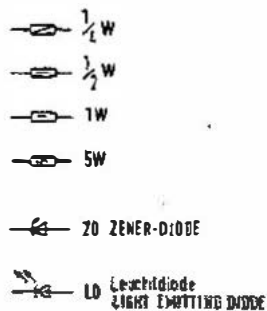
| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------------|----------|---------------------------|----------------|-----|
| | 171 701 | <u>OUTPUT STAGE, ASSY</u> | <u>50 Hz</u> | 1 |
| S 150 | 225 036 | FUSE | T 4 Atráge | 1 |
| | 225 747 | CAP | | 1 |
| | 171 696 | CHASSIS | | 1 |
| | 171 881 | VENTILATOR, ASSY | | 1 |
| | 171 699 | AIR VANE | | 1 |
| | 222 485 | TEMPERATURE CONTROLLER | | 1 |
| | 171 704 | CLAMP, STAMPED | | 2 |
| | 171 758 | HOLDER | | 2 |
| | 250 177 | COOLING PLATE | | 2 |
| | 171 759 | COVER | | 2 |
| | | <u>CB-OUTPUT STAGE</u> | | |
| | 225 422 | TERMINAL BAR | 3 prongs | 1 |
| ST150 | 225 654 | PIN PANEL | 10 prongs | 1 |
| | 225 746 | FUSE HOLDER | SW | 2 |
| D150, 151 | 221 115 | SI-DIODE | 1 N 4004 | 2 |
| ZD150 | 221 650 | SI-ZENER-DIODE | ZPD 33 | 1 |
| LD 150 | 221 466 | LUMINESZENZ-DIODE | CQY 65 | 1 |
| T 150 | 221 883 | SI-TRANSISTOR | NPN BD 239 B | 1 |
| T 155 | 221 459 | SI-TRANSISTOR | PNP BD 256 | 1 |
| T151, 152 | 221 886 | DARLINGTON-TRANSISTOR | NPN BDW83 C | 2 |
| T153, 154 | 221 902 | DARLINGTON-TRANSISTOR | PDP BDW84 C | 2 |
| C153 | 220333 | MET.-CAPACITOR | 0.22 µF 63 V | 1 |
| C 152 | 220 162 | LYTIC | 10 µF 63 V | 1 |
| C154 | 220396 | LYTIC | 4700 µF 50 V | 1 |
| C150, 151 | 220 436 | LYTIC | 4700 µF 63 V | 2 |
| R 166 | 221 094 | RESISTOR | 2.7 Ohm 1/4 W | 1 |
| R152, 153 | 221 096 | RESISTOR | 56 Ohm 1/4 W | 2 |
| R 151 | 231 154 | RESISTOR | 750 Ohm 1/4 W | 1 |
| R 159-162 | 221 029 | RESISTOR | 1 KOhm 1/4 W | 4 |
| R 164 | 221 032 | RESISTOR | 2.7 KOhm 1/4 W | 1 |
| R 163 | 221 034 | RESISTOR | 4.7 KOhm 1/4 W | 1 |
| R 154 | 221 625 | RESISTOR | 5.6 KOhm 1/4 W | 1 |
| R165 | 221 604 | RESISTOR | 22 KOhm 1/4 W | 1 |
| R 167 | 221 276 | WIRE WOUND RESISTOR | 470 Ohm 1 W | 1 |
| R 155, 158 | 221 275 | WIRE WOUND RESISTOR | 0.22 Ohm 7 W | 4 |
| R 150 | 221 305 | TRIMMER RESISTOR | 2.2 KOhm 0.1 W | 1 |

Thermoschalter TEMPERATURE SWITCH



CENTRALE

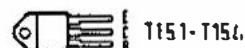
linker Kanal Stecker ST 8
LEFT CHANNEL PLUG ST 8
rechter Kanal Stecker ST 9
RIGHT CHANNEL PLUG ST 9



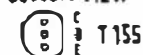
NF-Pegel bei 1 kHz, Lautstärkesteller auf max.
Höhen- und Basses max. ohne (ED/mit) AVC gemessen, elektron. Voltmeter.
Gleichspannung gemessen mit Voltmeter $R_i = 10 \text{ M}\Omega$

AC SIGNAL VOLTAGES AT 1000 cps, VOLUME CONTROL TO MAX, TREBLES AND
BASSES MAX., WITHOUT (ED/WITH) AVC MEASURED WITH ELECTRONIC VOLTMETER.
DC VOLTAGES MEASURED WITH VOLTMETER $R_i = 10 \text{ MEG OHMS}$

Draufsicht
TOP VIEW



von unten gesehen
BOTTOM VIEW



Alle Sicherungen trägt!
ALL FUSES SLD BLO!

Sicherungen nur durch solche mit gleichen Werten ersetzen!
REPLACE FUSES ONLY BY THOSE OF THE SAME VALUE!

ÄNDERUNGEN IM SINNE DES TECHN. FORTSCHRITES VORBEHALTEN,
JEDOCH KEINE NACHRÜSTPFLICHT!

SUBJECT TO TECHNICAL MODIFICATION WITHOUT OBLIGATION
TO MODIFY EQUIPMENT ALREADY DELIVERED!

NSM MUSKAUTOMATEN **ES V-CD** TECHNOLOGY
PHONOGRAPHS

Schaltbild Endstufe
WIRING DIAGRAM OUTPUT STAGE

| | | | | |
|----------|-----|-------|--------|-------|
| 09.04.92 | bez | Braun | beort. | best. |
|----------|-----|-------|--------|-------|

UNIT DESCRIPTION

CD CHANGER

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

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- 1.1 **Transport**
- 1.2 **Pull holder**
- 1.3 **Return holder**

- 2 **PICKUP DRIVER**
- 2.1 **Lift control**
- 2.2 **Grip control**

- 3 **CD-PLAYER**

- 4 **PCB DECODER BOARD**

- 5 **MAGAZINE**

- 6 **CD CHANGER 100, test, set, adjust**
- 6.1 **GENERAL INFORMATION**
- 6.2 **MAGAZINE**
- 6.3 **PLAYING UNIT**
- 6.4 **LIFT**

- Spare parts lists**

1 PICKUP FUNCTION

The pickup serves to transport the CD's between the magazines and the player.

1.1 Transport

The lift is moved via a stepping motor controlled by the microprocessor of the control unit. The distance between 2 CD slots is 8 motor steps (1 counter step of a light barrier).

During the run the light barrier OPTSP, which is directly connected to the drivewheel, checks the motor's position every 4 steps. Stepping errors are immediately recognized and displayed with "Er 73" on display 3.

Together with the light barrier OPEND the end position of the lift is verified. Should a mistake appear here (signal too late or too early) the display shows "Er 74".

1.2 Pull Holder

With both grip levers, brought into lock position by CD motors MOGRL for left and MOGRR for right, the CD holders with their CD's are pulled out of the magazine. The light barrier OPPUM reports the correct position of the CD holder in the pickup unit.

If there is no report 2 sec. after switching on the motor, the display will show "Er 71" for the left and right magazine.

1.3 Return Holder

To return a CD holder to its magazine, either motor MOGRL for the left magazine or MOGRR for the right magazine is switched on in the opposite direction.

Light barriers OPGRL or OPGRR report the end position of the grips.

If the report does not appear within 2 sec. after switching on the motor, the display shows "Er 71" for pull holder or "Er 72" for return holder.

2 PICKUP DRIVER

2.1 Lift Control

With output port of IC1 the microprocessor of the control unit controls the switch transistors T 1-4 via drivers T 5, T 6 and T 8, T 9. These drive the unipolar coil of the stepping motor (ST4, Pin 1-6).

The coil is supplied with a constant current. The current control is done with the current sensor resistors R 44 and R 54 via transistors T 7 and T 10.

The necessary current which depends on the running phase of the stepping motor is switched via R 39, R 40 and R 49, R 50 and IC 1 by the microprocessor.

Using signal OPSTP (ST 5, Pin 2) the microprocessor controls the position of the motors.

Together with signal OPEND (ST 3, Pin 8) the end position of the lift is reported via input port of IC 3.

2.2 Grip Control

Both of the grip motors (MOGRL for the left magazine and MOGRR for the right magazine) are driven from the double motor bridge IC 4 via the output port of IC 2.

While pulling a CD from the magazine the signal OPPUM (ST 3, Pin 7) reports the end position of the CD holder in the pickup to the microprocessor of the control unit.

While returning the CD it recognizes the end position of the grips via signals OPGRL (ST 3, Pin 5) for left and OPGRR (ST 3, Pin 6) for right.

3 CD PLAYER

The disc-player "CDM 4" contains the components laser diode, play motor, radial motor, and focus unit.

It reads the data from the CD. (The density is xxx bits per inch?).

4 PCB DECODER BOARD

The components servoprocessor, decoder, digital filter, DA converter and NF output driver are combined on the decoder board. The digital information read from the CD are transformed into the corresponding audio signal for the amplifiers.

5 MAGAZINES

2 equal magazines that are equipped with 50 CD holders each are in the CD changer. With CD holders it is to play 5-inch CD's.

The magazine can be fold out by pushing the corresponding release button to the center of the changer. The magazine can be taken out by pushing the corresponding button to the outside of the changer.

Equipping with or changing CD's can be done simply by taking out the respective CD holders, inserting the new CD into the holder and pushing it back till it locks in the magazine. For the transportation of a equipped magazine just pull the red transportation fixture of the lift axle through the center holes of all CDs in the magazine.

6 CD CHANGER 100, test, set, adjust

6.1 GENERAL INFORMATION

Please note the illustration of the CD changer on the last page and the informations about the command P 157 in the chapter "Programming of the phonograph" regarding the following text.

After exchanging units their functions must be checked and, if needed, certain adjustments must be made.

To exchange the playing unit the CD changer can remain in the phonograph. But to remove or install the lift the changer has to be removed from the machine; tests and adjustments are only possible at a benchtester or at the machine with appropriate extensions!

Take care that the changer is set down on supports so that the board disc (12) or the main axle (14) which protrude from the cabinet floor are not pushed inside. Otherwise the board disc will jam the gear (2); a displaced axle changes the position of the upper distance sleeve so that the lift drives against it and blocks!

With help of the command P 157 (in the service and programming mode) "Test CD Changer" the grips can be moved left or right with Keys "4"/"5" or "6"/"5" and the lift can be moved up or down with key "2"/"8". With key "1" the CD player can be started and stopped.

For fine adjustments of the lift position the lift can be moved with Key "3" (+) or "9" (-) one motor step at a time (equals about 0,5 mm height difference) either up or down.

The distance between two magazine slots is 8 motor steps (or 1 step. of the light barrier).

In the displays the present status of the respective opto mask and the time in seconds during which the lift position is held are shown.

6.2 MAGAZINE

The magazines are supported by height-adjustable studs in fold-in and locked position. Changing the height setting can be necessary when the lift is exchanged; setting see Pt. 6.4 "Lift".

6.3 PLAYING UNIT

To exchange the playing unit with CD player

- remove both magazines
- pull lift up on gear belt
- remove 4 screws M4
- carefully (!) pick up playing unit, watch balance washers under cabinet
- open plug connections
- installation of playing unit in opposite sequence
- function test:
 - choose CD, check if CD is securely clamped in play position.
 - further tests see Pt. 6.4 "Lift".

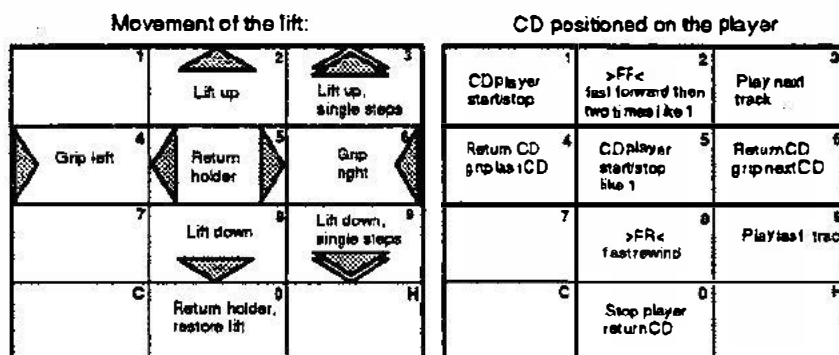
6.4 LIFT

To exchange the lift as well as to check and adjust the optical coupling devices (light barrier) of the CD changer, completely remove the CD changer, disconnect cables, remove rear wall.

- From the rear side of the machine pull lift (04) up by the gear belt (02), interrupt connection between lift and gear belt by unscrewing the gear belt lock (03).
- Pull out plug of connecting cable (06).
- Remove board disc (12) after removal of washer.
- Pull lower distance disc(s) (13) and rubber gasket of main axle (14) from cabinet floor upwards.
- Push main axle down until lower rubber gasket can be removed.
- Remove lift; mount exchange lift in opposite sequence.
- Function test, basic setting; CD changer must be completely connected to operate either with extensions to phonographs or a bench tester:

- After entering the service mode call the command P 157. On display 2 the corresponding number of the test "F8" is displayed. Now the different functions can be tested according to the scheme shown below.

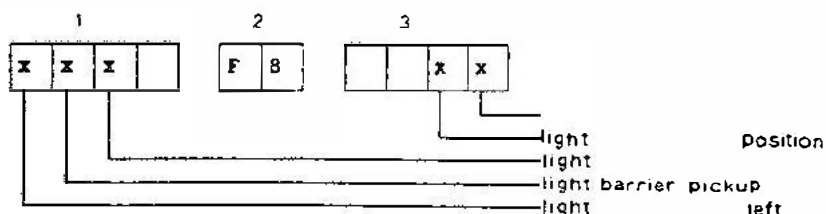
The control is done via the keys of the operating panel.



barriers

1 and 3.

Display:

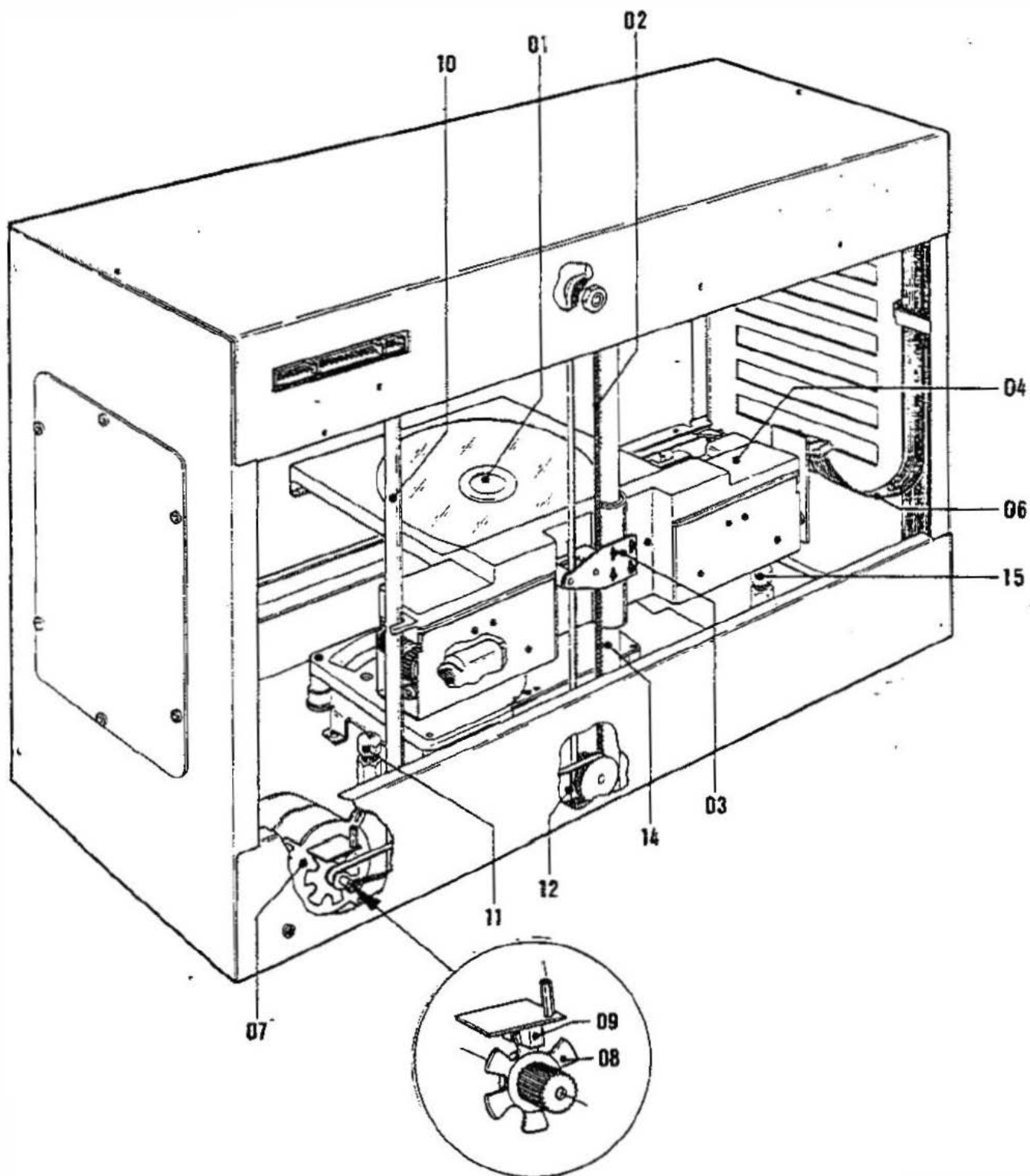


Meaning of displays: light

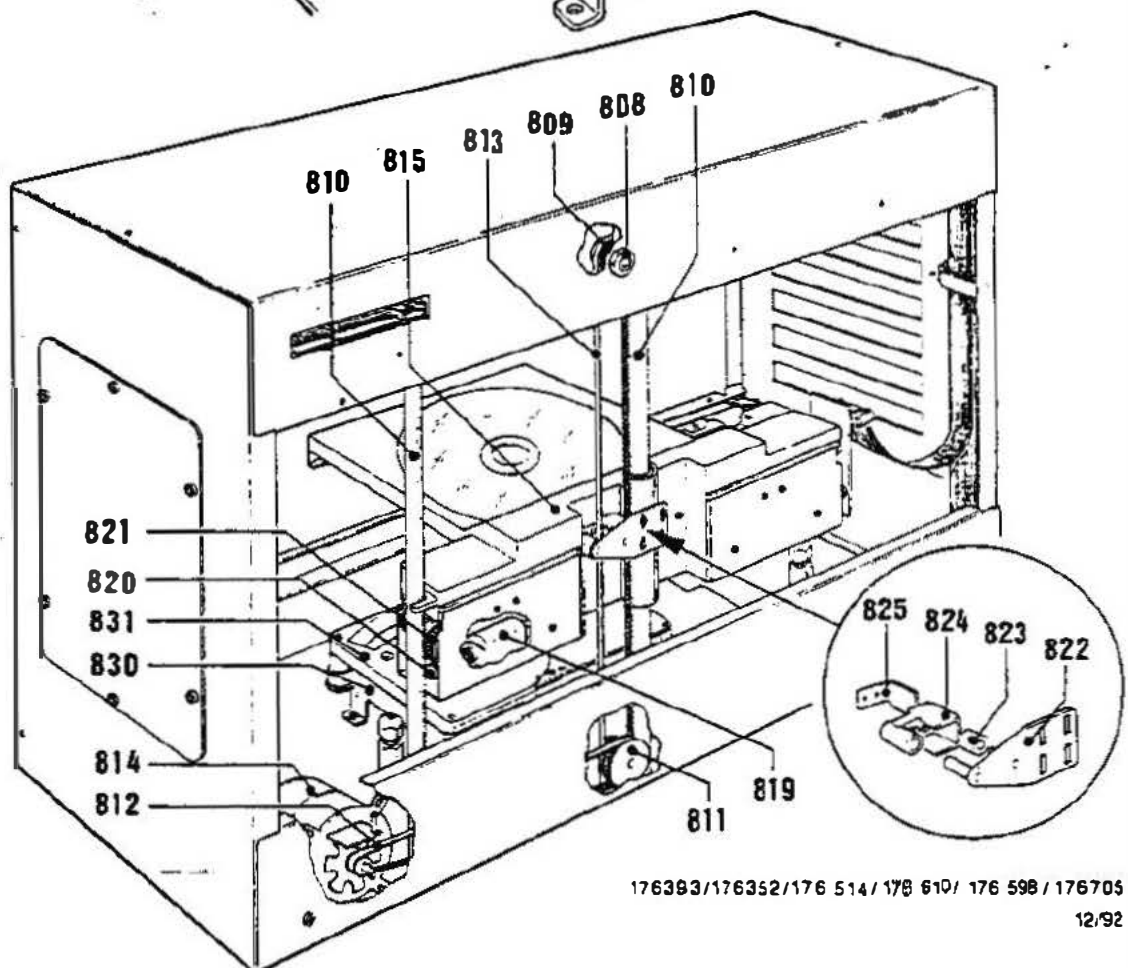
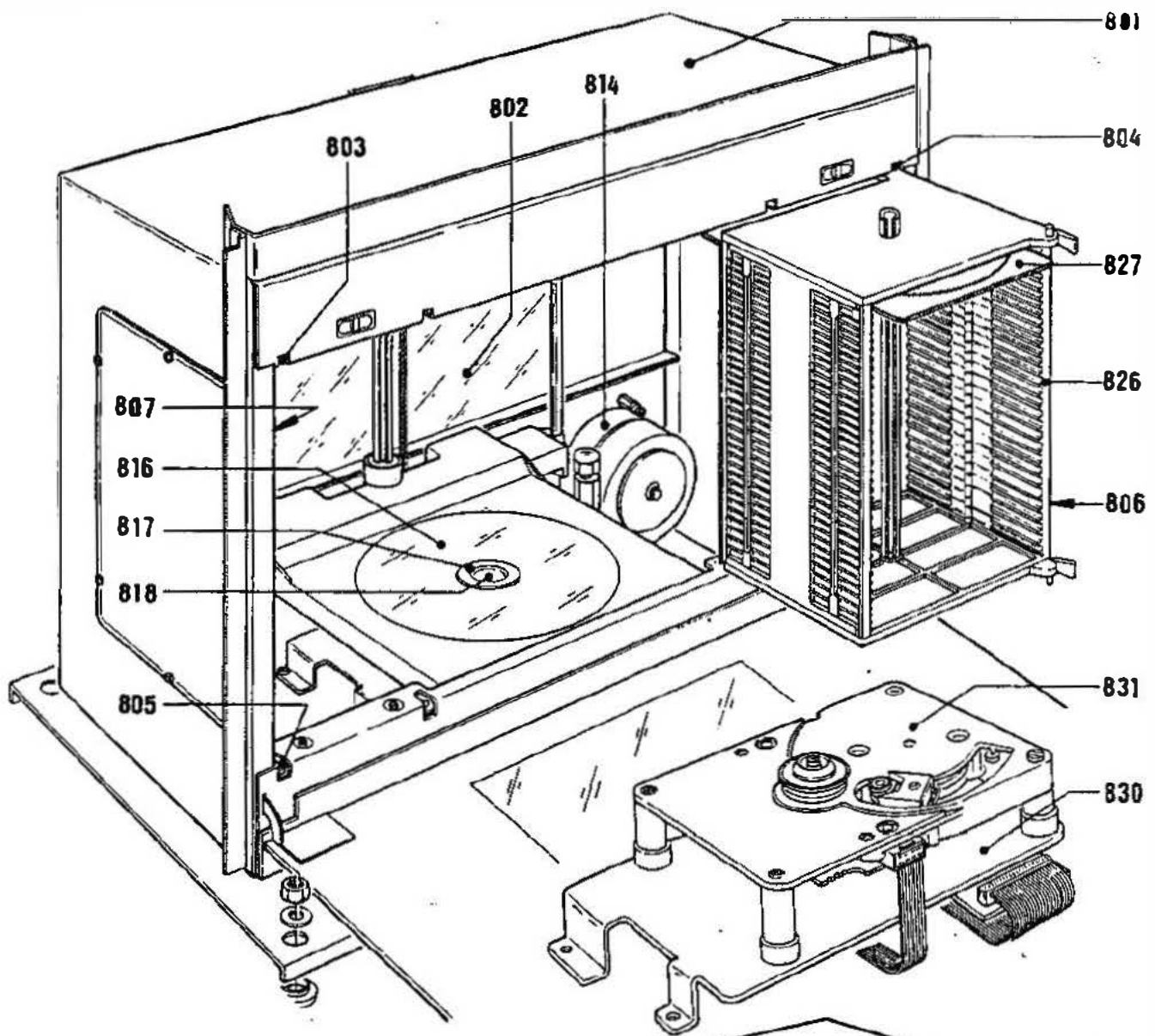
up = "0", darkened = "1".

OPSTP
 OPEND
 OPGRR
 OPPUM
 OPGRL

- The basic setting occurs in parked position at magazine slot 25/75. Drive pick-up to this position with keys "2" or "8".
The lift is held after each function in this position for 2 sec.; with key "0" for 10 sec.
- Drive cassette in and out with Keys "4"/"5" or "6"/"5".
Check function for smooth movement.
The respective grip lever must fall into the cassette without hindrance!
- To adjust lift height loosen belt lock and move up or down; then tighten screws!
- Move lift down one motor step (about 0,5 mm height difference) with key "9" (-); same test for smooth movement.
- Drive to normal park position with key "0" and with key "3" (+); switch lift one motor step above normal position. Same check for smooth movement.
- Set magazine height: If magazine slots do not align with lift, then adjust lift only to one magazine at first. After that the other magazine is adjusted with support screw (11/15) to the correct height.
- The light barrier (08) on the step motor must be in parked position 25/75 in the center of the light barrier OPSTP (09) (status display of OPSTP in display = "1"). If necessary, loosen screw on hexagon bolt and set PCB with light barrier to center of mask.
- To check light barrier OPEND, lift must be driven down to bottom. Drive lift upwards manually or by pressing Key "3" 4 times one half opto step; the mask must release OPEND when OPSTP (09) opens the light mask, displayed by "0" on digit 1.
- Leave the service mode by pressing the housing switch.
- Select CD in normal play mode. In the parked position of the playing position the lift must have a gap to the lower end position.
- The distance between a cassette and the clamping dish should be at least 1 mm during a gripping procedure. So that the clamping dish can be magnetically attracted, the decorative cover must be in place.
- The CD must run without touch and grinding sounds when in a suspended position.
To test the function get cassette with CD from magazine by pressing the corresponding keys and place it on CD player in play position.
Turn on CD player with key "1". After the test is done, turn off CD player by pressing key "0" or any of the other function test keys. The clamping dish must clamp down the CD exactly in center.
- Check function of fork light masks OPGRR, OPGRL, OPPUM as per test "F8". The respective light mask must cover the light barrier in its entire breadth (when status display "1" is shown) and may not touch it physically.



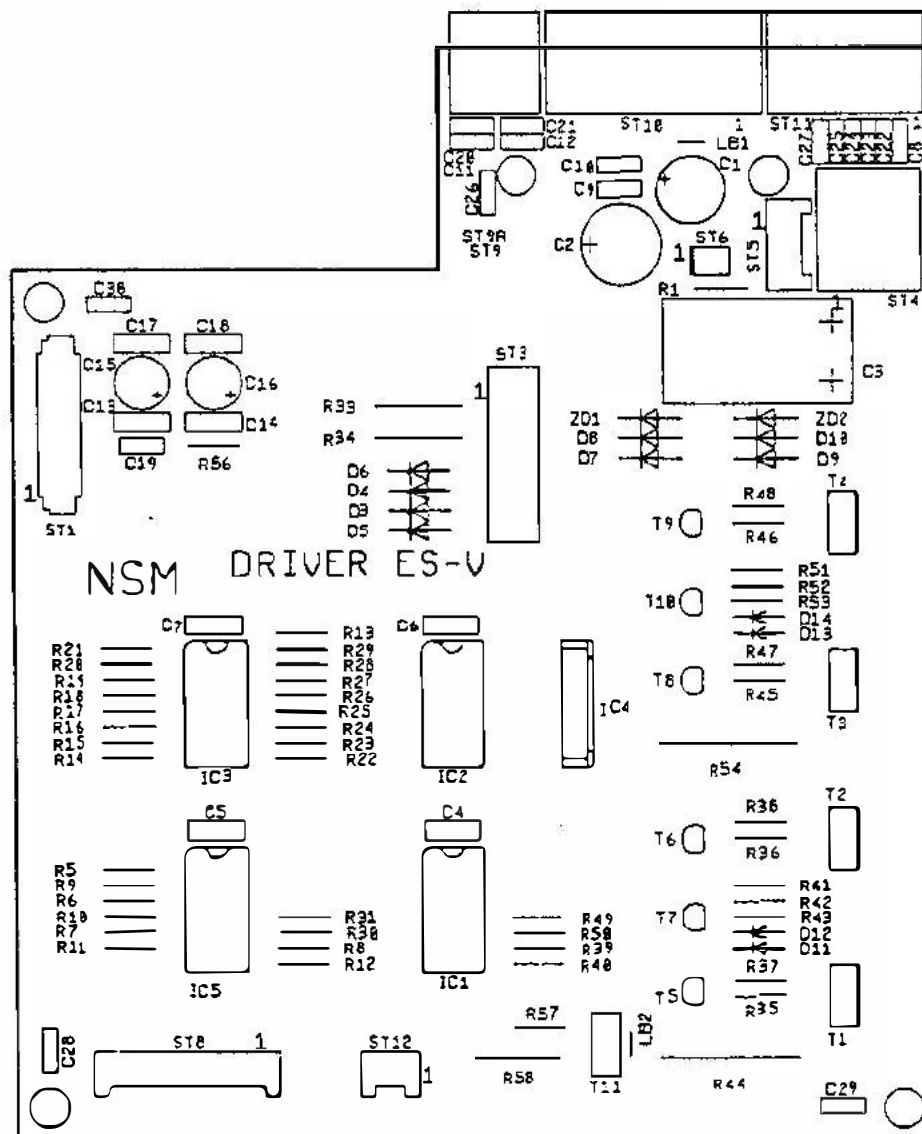
CD CHANGER, COMPL.



810

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------------------|----------|---|--------------------|-----|
| see Page 100/... | | <u>CD-CHANGER 100</u> -CDM 4- | STANDARD | 1 |
| 800 | | | | |
| 801 | 176 320 | CABINET, welded without SIDE PARTS, slotted | | 1 |
| | 175 733 | CABINET, welded with SIDE PARTS, slotted | | 1 |
| 802 | 175 730 | REAR WALL | | 1 |
| 803 | 175 913 | CLOSING LEDGE, UPPER, LEFT, welded | | 1 |
| 804 | 175 914 | CLOSING LEDGE, UPPER, RIGHT, welded | | 1 |
| 805 | 174 294 | CLOSING LEDGE, LOWER, LEFT | | 1 |
| 806 | 174 295 | CLOSING LEDGE, LOWER, RIGHT | | 1 |
| 807 | 206 655 | CONNECTION AXLE | | 2 |
| 808 | 173 538 | SCREW SLEEVE, ASSY | | 2 |
| | 173 526 | BOARD WASHER | | 2 |
| 809 | 173 522 | STEP WHEEL, MOUNTED | | 1 |
| | 173 521 | WASHER 48 | | 1 |
| 810 | 176 134 | AXLE | | 2 |
| 811 | 173 530 | BELT WHEEL, MOUNTED | | 1 |
| 812 | 206 644 | BELT | Typ MXL 195 | 1 |
| 813 | 206 643 | BELT | Typ MXL 298 | 1 |
| 814 | 176 299 | STEPPER MOTOR, ASSY | | 1 |
| 815 | 175 735 | LIFT, ASSY | | 1 |
| | 175 783 | LIFT, welded | | 1 |
| 816 | 176 375 | PROTECTIVE SCREEN, ASSY | | 1 |
| 817 | 175 777 | CD-GUIDE | | 1 |
| 818 | 175 789 | COVER | | 1 |
| 819 | 176 938 | MOTOR, ASSY | | 2 |
| 820 | 175 762 | GEAR, MOUNTED | | 2 |
| 821 | 206 902 | BELT | Typ 30 S 2 M 426 | 2 |
| 822 | 176 298 | HOLDING PLATE, riveted | | 1 |
| 823 | 206 975 | DAMPING | | 1 |
| 824 | 176 293 | LEVER | | 1 |
| 825 | 176 317 | BRACKET | | 1 |
| | 173 491 | MAGAZINE, LEFT, MOUNTED | (without Cassette) | 1 |
| 826 | 173 499 | MAGAZINE, RIGHT, MOUNTED | (without Cassette) | 1 |
| 827 | 176 395 | CASSETTE CD 120 | only 10 piece | - |
| 830 | 175 887 | CHASSIS | | 1 |
| 831 | 176 725 | SERVICE KIT -PLAYER CDM-4 | | 1 |
| | 205 846 | CLAMP | | 8 |
| | 210 486 | CARDBOARD for MAGAZINE | | 1 |
| | 212 542 | TRANSPORT DEVICES for CASSETTE and LIFT | | 2 |
| | 176 010 | CB-CARRIAGE, ASSY | see Page 813 | 1 |
| | 176 249 | CB-STEPPER, ASSY | see Page 813 | 1 |
| | 206 919 | CB-DECODER BOARD, COMPLET ONLY | | 1 |
| | 176 384 | CB-DRIVER | | 1 |
| | 175 964 | TRAILING CABLE | | 1 |
| | 206 943 | CABLE HARNESS 1 CDM 4 | | 1 |
| | 206 942 | CABLE HARNESS 2 CDM 4 | | 1 |



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|-----------|---------------|------------------------------------|----------------|----------|
| | 176384 | <u>CB-DRIVER ES V. ASSY</u> | | 1 |
| | 175976 | COOLING PLATE | | 1 |
| ST3 | 225912 | PIN PLUG | AMP 14 prongs | 1 |
| ST1 | 225959 | FLAT CABLE PLUG | 15 prongs | 1 |
| ST12 | 225650 | PIN PANEL | 2 prongs | 1 |
| ST5 | 225651 | PIN PANEL | 4 prongs | 1 |
| ST9 | 225661 | PIN PANEL | 4 prongs 90° | 1 |
| ST4 | 225662 | PIN PANEL | 6 prongs 90° | 1 |
| ST11 | 225663 | PIN PANEL | 8 prongs 90° | 1 |
| ST10 | 225665 | PIN PANEL | 12 prongs 90° | 1 |
| C3 | 221763 | IC-CMOS | HEF 4021 B | 1 |
| IC1,2 | 221771 | IC-CMOS | HEF 4094 B | 2 |
| IC4 | 231303 | IC-LINEAR | L 298 | 1 |
| D15,17 | 221115 | SI-DIODE | 1 N 4004 | 4 |
| D11,14 | 221114 | SI-DIODE | 1 N 4148 | 4 |
| D3,10 | 221822 | SI-DIODE | BA 157 | 8 |
| ZD1,2 | 231326 | ZENER-DIODE | ZY24 | 2 |
| T5,10 | 221757 | SI-TRANSISTOR | BC 547 B | 6 |
| T1-4,11 | 231150 | SI-TRANSISTOR | TIP 130 | 5 |
| C8 | 220342 | CER.-CAPACITOR | 100 pF | 1 |
| C9,12 | 220274 | CER.-CAPACITOR | 330pF | 4 |
| C20,21 | 220263 | CER.-CAPACITOR | 1 nF | 2 |
| C4,7,13 | | | | > |
| 14,17,18 | 220481 | CER.-CAPACITOR | 0,1 F | 8 |
| C19,26,30 | 220231 | CER.-CAPACITOR | 2,2 nF | 6 |
| C1 | 220162 | LYTIC | 10 µF 63 V | 1 |
| C15,16 | 220493 | LYTIC | 47 µF 25 V | 2 |
| C2 | 220391 | LYTIC | 220 µF 25 V | 1 |
| R13 | 221600 | RESISTOR | 100 Ohm 1/4 W | 1 |
| R1 | 221632 | RESISTOR | 160 Ohm 1/4 W | 1 |
| R37,38, | | | | > |
| 47,48 | 221624 | RESISTOR | 220 Ohm 1/4 W | 4 |
| R42,43, | | | | > |
| 52,53 | 221029 | RESISTOR | 1 KOhm 1/4 W | 4 |
| R9,12,30 | 221033 | RESISTOR | 3,3 KOhm 1/4 W | 5 |
| R41,51 | 221607 | RESISTOR | 6,8 KOhm 1/4 W | 2 |
| R35,36, | | | | > |
| 39,45,46, | | | | > |
| 49,56 | 221035 | RESISTOR | 10 KOhm 1/4 W | 7 |
| R14,21 | 221603 | RESISTOR | 12 KOhm 1/4 W | 8 |
| R22,29 | 221036 | RESISTOR | 15 KOhm 1/4 W | 8 |
| R5-7, | | | | > |
| 31,55 | 221604 | RESISTOR | 22 KOhm 1/4 W | 5 |
| R40,50 | 221618 | RESISTOR | 24 KOhm 1/4 W | 2 |
| R8 | 221048 | RESISTOR | 100 KOhm 1/4 W | 1 |
| R58 | 221685 | RESISTOR | 3,9 Ohm 1/2 W | 1 |
| A33 | 221152 | RESISTOR | 330 Ohm 1/2 W | 1 |
| R44,54 | 221692 | WIRE WOUND RESISTOR | 1 Ohm 1 W | 2 |

SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------|----------------|--|--------------------|----------|
| | 176 249 | <u>CB-STEPPER, ASSY</u> | | 1 |
| | 231 322 | OPTO-COUPLER | LTH-301 | 1 |
| | 225 611 | SOCKET | 4 prongs sw | 1 |
| | 176 557 | <u>CABLE HARNESS - LIFT</u> | | 1 |
| | 176 004 | CB-LIFT ADAPTR, ASSY | | 1 |
| | 176 433 | OPTO, LEFT MOUNTING | | 1 |
| | 231 322 | OPTO-COUPLER | LTH301 | 2 |
| | 220 334 | MKT-CAPACITOR | 0,1 μ F / 63 V | 1 |
| | 176 434 | OPTO, RIGHT MOUNTING | | 1 |
| | 231 322 | OPTO-COUPLER | LTH 301 | 2 |
| | 220 334 | MKT-CAPACITOR | 0,1 μ F / 63 V | 1 |
| | 176 556 | CB-ENDCONTROL | | 1 |
| | 231 322 | OPTO-COUPLER | LTH 301 | 1 |
| | 176 385 | CABLE HARNESS: DRIVER - DECODER | | 1 |

UNIT DESCRIPTION

TITLE INDICATION III

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

Aktiengesellschaft
Saarlandstraße 240
6530 Bingen am Rhein

9

Page 901-913

1 FUNCTION

1.1 PCB Title display

The PCB is connected to the serial interface and +5 V of the control unit via ST 1. +15 V and +14 V are also conducted via ST 1.

The constant voltage of +15 V supplies motors and opto couplers.

Shiftregister IC 2 is the output port for motor driver IC 3, which controls the motor for stacker movement (MO MOV) and the gripper motor (MO GR).

Shiftregister IC 1 is the input port for opto couplers and push buttons.

Light barriers GRL and GRR control the endposition of the gripper (carrier).

MOV1, MOV2 and MOV3 supervise various positions during the stacker movement. Any blocking will be recognized and displayed by error code Er 9x.

Pushbuttons TL and TR in the PCB are service keys for moving title holders.

They are identical with pushbuttons (<-->) and (-->) on the front of the phonograph.

1.2 Movement of title holders

By pushing the keys "left" respectively "right" two title holder will be moved into the corresponding direction.

A complete movement consists out of following phases: If i.e. the key "left" is pushed, at first the position of the gripper will be checked and -if required- the front gripper positioned in front of the right hand stack. Both stacks are level. Now the right stack moves to the front while the left one moves back simultaneously until the grippers enter the carrier slots of the corresponding title holders. Then the grippers move the title holder to the other side. In the final position the right hand stack will be moved forward while the left hand stack will be moved backward until they are level. The grippers will be brought back to their starting position. In case of a limitation of selectable CD's via service step P042 only the corresponding title holders will be shown. A movement to the right beyond the highest cover number as well as to the left below cover number 1 is not possible.

1.3 Exchange of defective title holders

When defective title holders can still be driven to the front by the motor, the exchange of the holder should be performed there.

For removal, the center of the title holder has to be bent slightly forward until it jumps out of the top guide. The insertion of the new title holder works accordingly.

1.4 Jammed or dislocated title holders

When the transportation by motor is impossible due to jamming, all title holders in front of the jamming location have to be removed. After correcting the problem the title holders have to be inserted in the same sequence (Fig. 1).

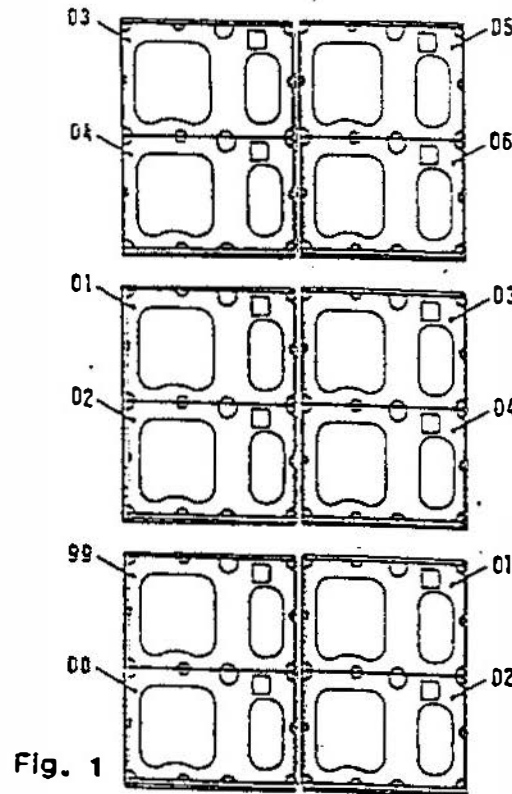


Fig. 1

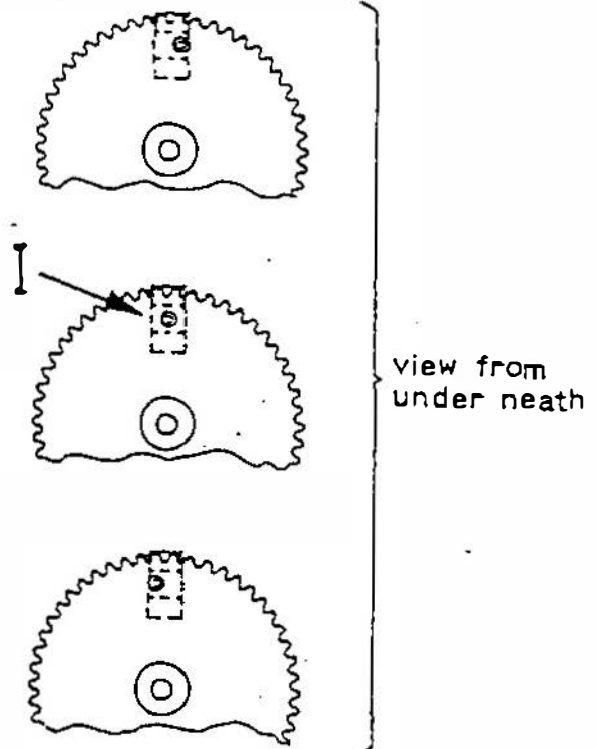


Fig. 2

1.5 Insertion of all title holders (Synchronization)

When all title holders are removed and the motor has turned, the synchronization has to be readjusted. During insertion of the title holders it is important, that the pin of the counter wheel is positioned exactly in the center of the opto coupler "sync" (Fig. 2/I, 3/I). The belt drives for the title holders (Fig. 3/II) have to be in their end position. When this is not the case, one of the pushbuttons $\leftarrow \rightarrow$ or the service button TL/TR has to be used, until position I and the end position are reached.

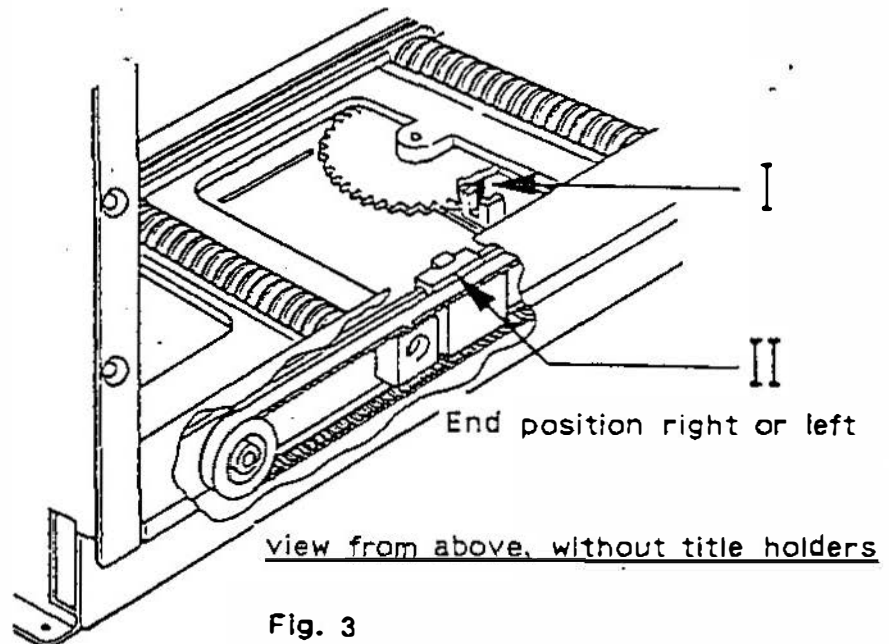


Fig. 3

Now the synchronization has the correct relation to the position of the title holders. The title holders have to be inserted into the worm drives starting from the rear end. In order to do this the title holder has to be bent slightly forward in the center until it fits in the guide.

It should be started at the left rear end with "53" (see Fig. 4) then "55", "57" etc until "01"; on the right side it starts with "51", the "49", "47" until "03".

Sequence of title holders (for synchronization)

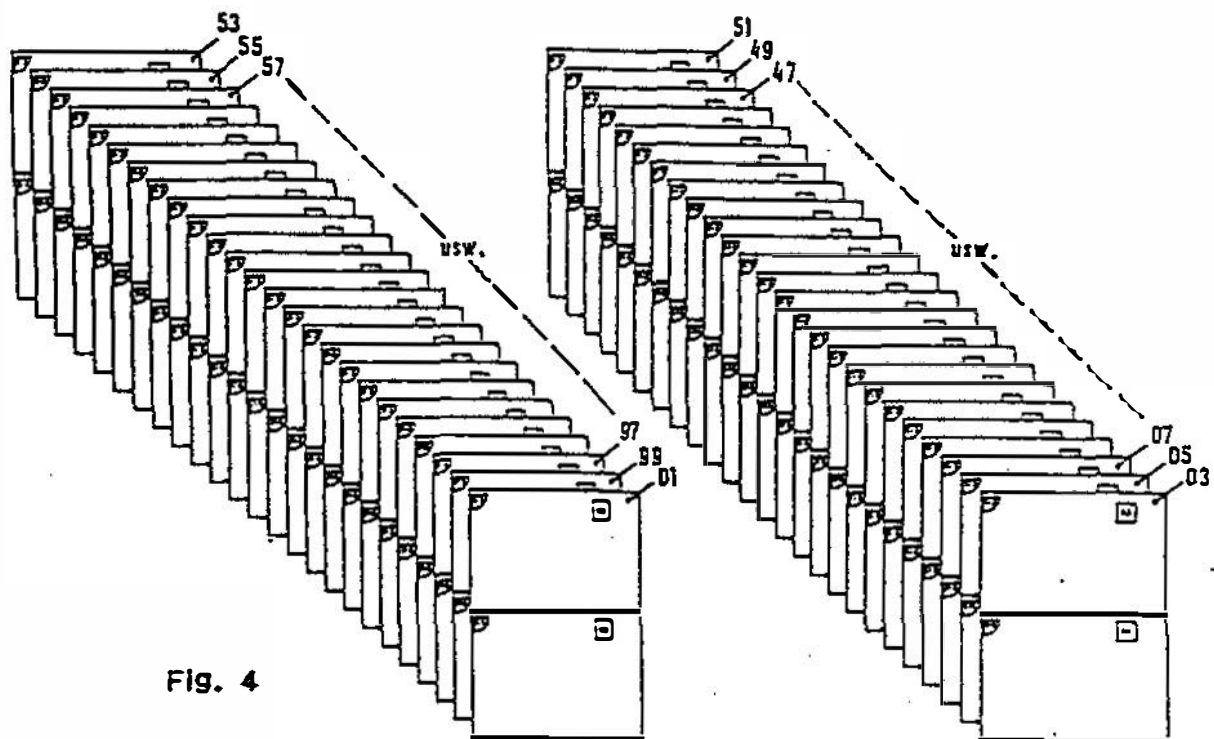


Fig. 4

NOTE! Special care has to be taken during insertion that the first holder has to be inserted into to last slot of the worm drives and the next into the following slot directly in front. If one slot is accidentally skipped, all following title holders have to be removed again.

2 SERVICE

2.1 Operation tests

Service-program-step P156, input test "F7" allows checking of the inputs from the title display. The result is shown on display 3:

- The switching position of any opto couplers is shown on the first digit from the right

"0" = closed,
"1" = open

- The opto coupler is shown on the second digit from the right

Gripper opto "0" = GRL,
 "1" = GRR.

Switching wheel opto "2" = MOV1,
 "3" = MOV2,
 "4" = MOV3.

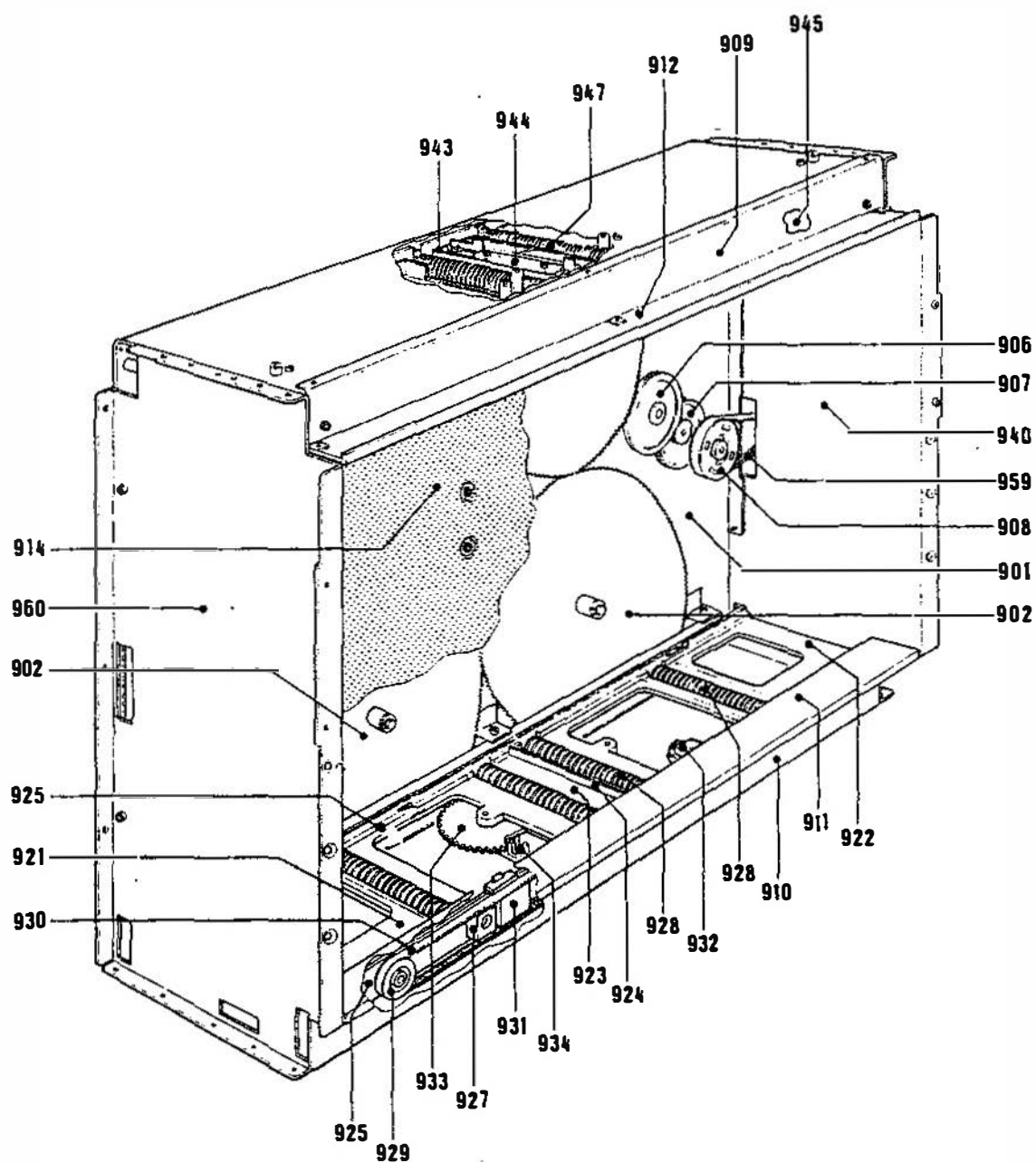
Counting wheel opto "5" = SYNCHRON.

Directional pushbuttons "6" = TL,
 "7" = TR.

- The port number is shown on the third digit from the right.

"6" = Port 6 on IC 1

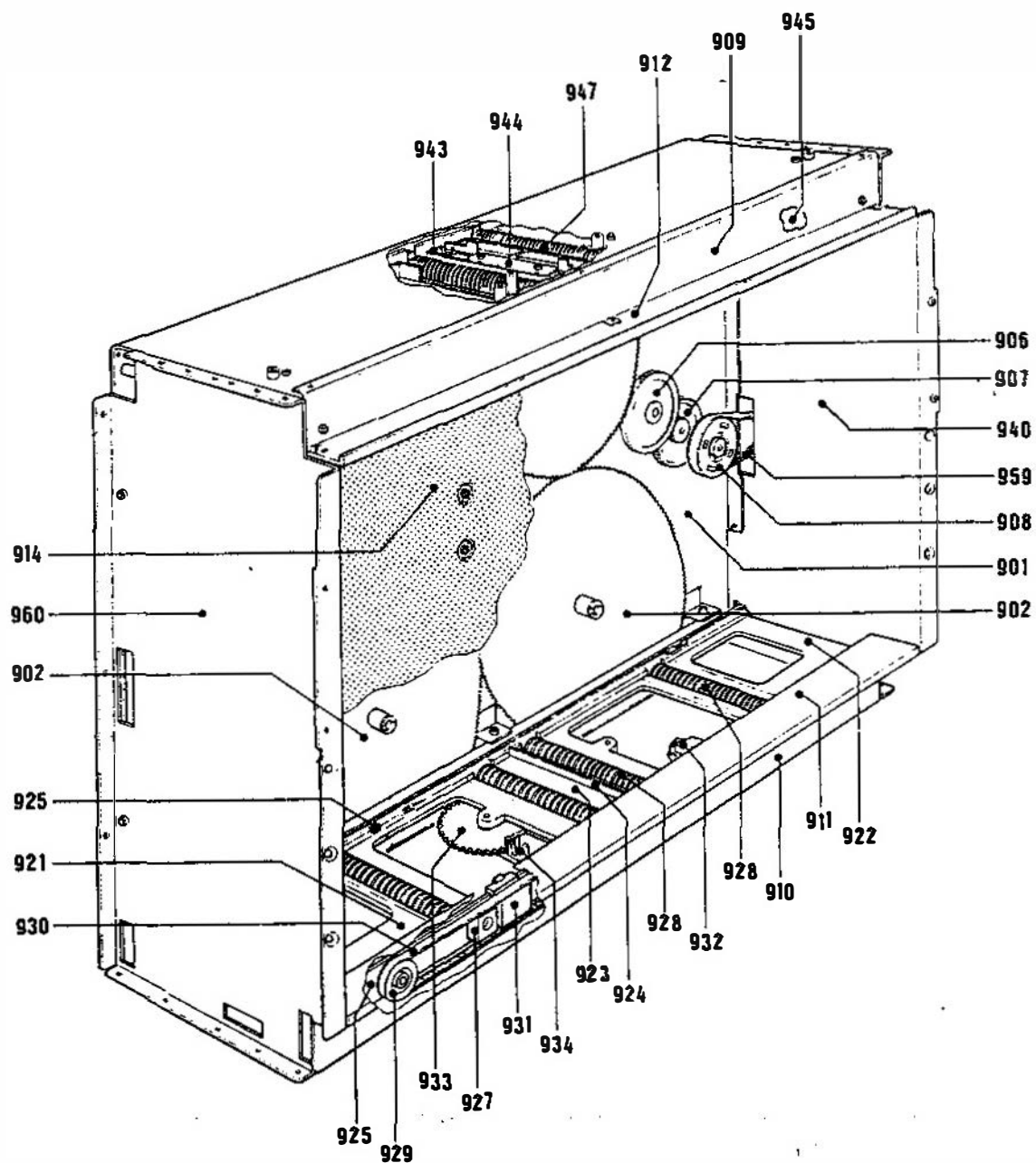
SPARE PARTS LIST



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|------|----------|--------------------------------------|---------------------|-----|
| 900 | 176 730 | <u>CD-TITLE INDICATION III, ASSY</u> | (with Title Holder) | 1 |
| 901 | 174 917 | CABINET PLATE, STAMPED | | 1 |
| | 206 100 | PLASTIC BEARING | STAR-NYLINER | 4 |
| 902 | 174 753 | TOOTHED WHEEL | Z = 160 | 4 |
| 903 | 174 876 | SHIFTING WHEEL | | 1 |
| 904 | 174 929 | CB-SHIFTING WHEEL, ASSY | | 1 |
| 906 | 174 886 | GEAR WHEEL | Z = 58 | 1 |
| 907 | 174 875 | GEAR WHEEL | Z = 48 | 1 |
| 908 | 174 878 | BELT WHEEL | Z = 52 | 1 |
| | 174 879 | WASHER | | 1 |
| 909 | 174 848 | COVER, UPPER | | 1 |
| 910 | 174 847 | COVER, LOWER | | 1 |
| 911 | 174 900 | TRIMPLATE, LOWER | white | 1 |
| 912 | 175 123 | TRIMPLATE, UPPER | blue | > |
| 912 | 175 124 | TRIMPLATE, UPPER | yellow | 1 |
| 913 | 176 832 | TITLE HOLDER SET III, black | | 1 |
| | 175 533 | TRANSPORT DEVICES for TITLE HOLDER | | 1 |
| | 219 185 | TITLE STRIP | | 120 |
| | 212 509 | STICKER | | -- |
| 914 | 175 926 | GUIDE PLATE, REAR SIDE | | 1 |

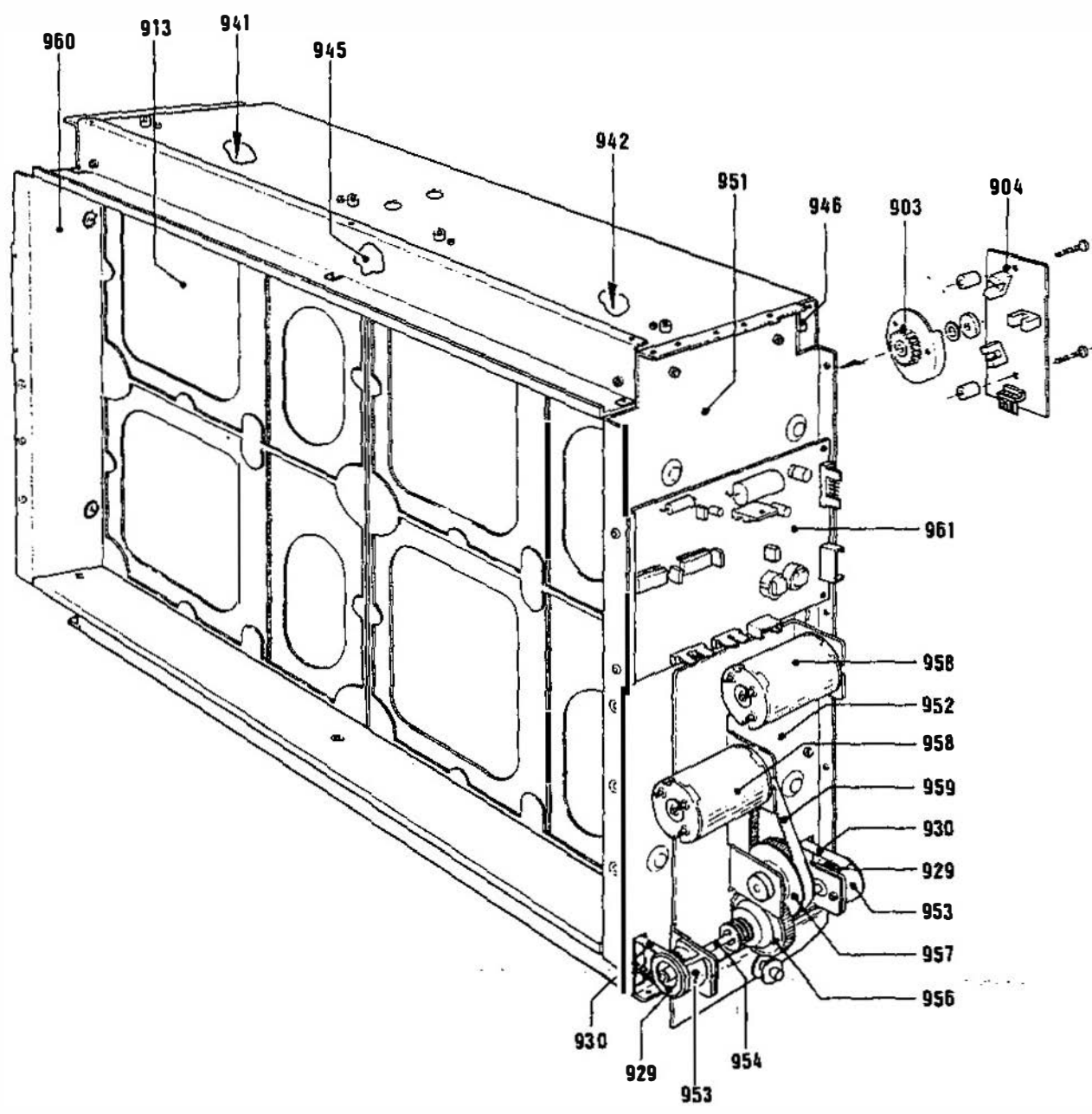
SPARE PARTS LIST



SPARE PARTS LIST

| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|-------------------|----------|--------------------------------|------------------|-----|
| <u>LOWER DECK</u> | | | | |
| 921 | 175 077 | TRAVERSE I, ASSY | | 1 |
| 922 | 175 944 | TRAVERSE II | | 1 |
| 923 | 175 322 | TRAVERSE, MIDDLE | | 1 |
| 924 | 175 321 | BRACKET | | 1 |
| | 741 008 | BALL ø 6 DIN 5401 | | 2 |
| | 205 834 | PRESSURE SPRING | | 2 |
| 925 | 174 906 | HOLDING BAR, MOUNTED | | 1 |
| 946 | 175 923 | HOLDING BAR, REAR SIDE (UPPER) | | 1 |
| 927 | 206 794 | LOSS | | 2 |
| 928 | 174 751 | WORM, ASSY, LOWER | | 4 |
| | 206 100 | PLASTIC BEARING | STAR-NYLINER | 4 |
| 929 | 174 898 | BELT WHEEL | Z = 28 | 2 |
| 930 | 206 776 | BELT | Typ S 2 M 800 | 2 |
| 931 | 174 846 | DRIVE, FRONT SIDE | | 1 |
| | 175 952 | DRIVE II, REAR SIDE | | 1 |
| 932 | 174 930 | CB-DRIVER, ASSY | to TRAVERSE I/II | 2 |
| 933 | 174 885 | COUNTER WHEEL | | 1 |
| 934 | 175 078 | CB-CB-COUNTER WHEEL, ASSY | | 1 |
| | 225 412 | PIN PLUG ST 1 | 4 prongs 90° | 1 |
| | 231 322 | COPPLER PLATE SYNC | LTH-301 | 1 |
| | 175 103 | CABLE HARNESS: SHIFTING WHEEL | | 1 |
| | 175 104 | CABLE HARNESS: DRIVE | | 1 |

SPARE PARTS LIST

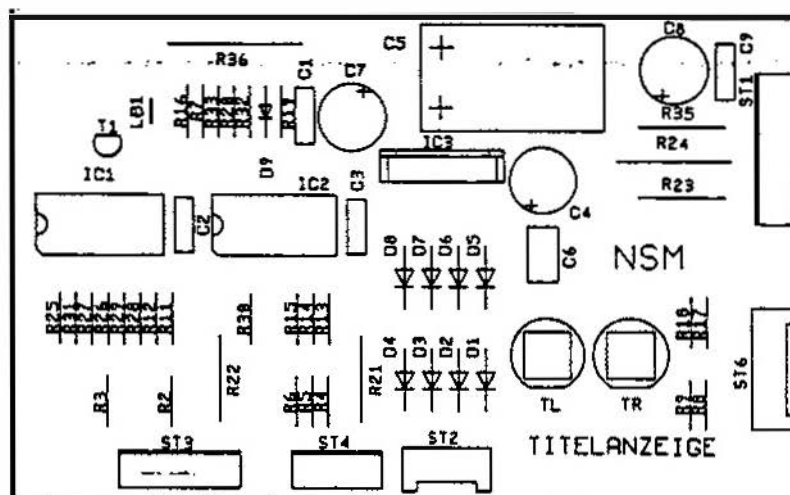


SPARE PARTS LIST

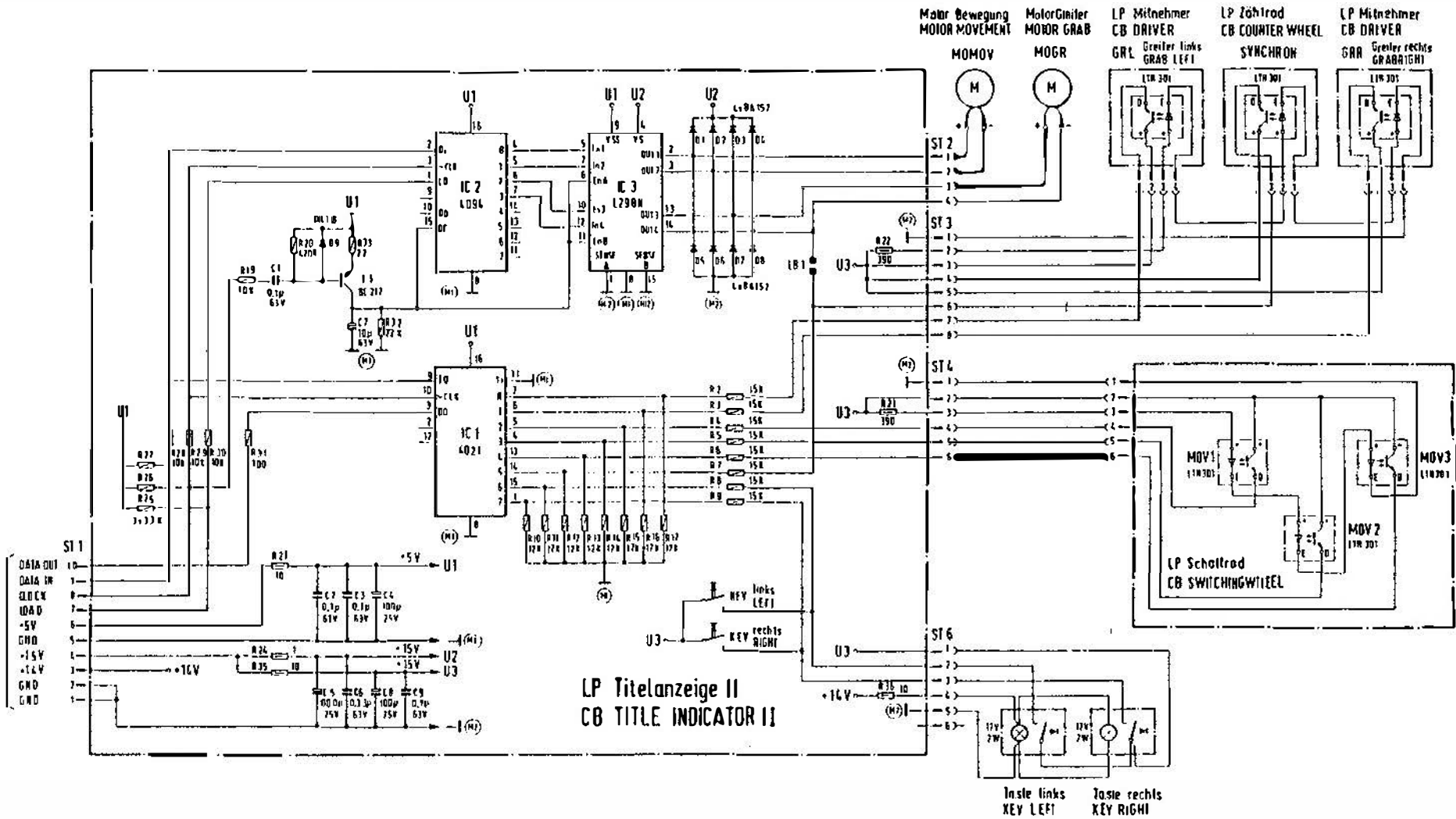
| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|-------------------|----------|--------------------------------|--------------|-----|
| <u>UPPER DECK</u> | | | | |
| 941 | 175 943 | TRAVERSE I | | 1 |
| 942 | 175 944 | TRAVERSE II | | 1 |
| 943 | 175 322 | TRAVERSE, MIDDLE | | 1 |
| 944 | 175 321 | BRACKET | | 1 |
| | 741 008 | BALL ø 6 DIN 5401 | | 2 |
| | 205 834 | PRESSURE SPRING | | 2 |
| 945 | 176 564 | HOLDING BAR I (UPPER) | | 1 |
| | 206 100 | PLASTIC BEARING | STAR-NYLINER | 4 |
| 946 | 176 563 | HOLDING BAR, REAR SIDE (UPPER) | | 1 |
| 947 | 174 764 | WORM GEAR, ASSY, UPPER | | 4 |
| <u>SIDE PARTS</u> | | | | |
| 951 | 174 932 | SIDE PLATE, STAMPED, RIGHT | | 1 |
| 952 | 174 925 | MOTOR- and GEAR PLATE, STAMPED | | 1 |
| 953 | 174 926 | BELT PROTECTION, ASSY | | 2 |
| 957 | 174 878 | BELT WHEEL | Z = 52 | 1 |
| | 174 879 | WASHER | | 1 |
| 958 | 174 889 | MOTOR, ASSY | | 2 |
| | 176 943 | CABLE HARNESS-MOTOR | | 1 |
| 959 | 206 789 | BELT | 40 S 2 M 180 | 2 |
| 960 | 175 946 | SIDE PLATE, LEFT | | 1 |
| | 176 616 | DAMPER | | 8 |
| 961 | 174 928 | CB-TITLE INDICATOR, ASSY | | 1 |
| | 171 289 | DISTANCE SLEEVE | | 1 |

SPARE PARTS LIST

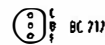
| POS. | PART-No. | DESCRIPTION | DATA | QTY |
|--------------|----------|---------------------------------|----------------------|-----|
| | 174 928 | <u>CB-CDTITLE INDICATION II</u> | | 1 |
| ST4 | 225 443 | PIN PANEL | RM 2,5 6 prongs red | 1 |
| ST3 | 225 444 | PIN PLUG | RM 2,5 8 prongs red | 1 |
| ST1 | 225 440 | PIN PLUG | RM 2,5 10 prongs red | 1 |
| ST2 | 225 710 | PIN PANEL | 4 prongs | 1 |
| ST6 | 225 711 | PIN PANEL | 6 prongs | 1 |
| TL, TR | 222 404 | KEY | D 6 red | 2 |
| IC 1 | 221 763 | IC-CMOS | HEF 4021 B | 1 |
| IC 2 | 221 771 | IC-CMOS | HEF 4094 B | 1 |
| IC 3 | 231 303 | IC-LINEAR | L 298 | 1 |
| D 1-8 | 221 822 | SI-DIODE | BA-157 | 8 |
| D 9 | 221 114 | SI-DIODE | 1 N 4148 | 1 |
| T 1 | 221 283 | SI-TRANSISTOR | BC 212 B | 1 |
| C 1-3, 9 | 220 334 | MKT-CAPACITOR | 0,1 μ F 63 V | 4 |
| C 6 | 220 332 | MKT-CAPACITOR | 0,33 μ F 63 V | 1 |
| C 7 | 220 162 | LYTIC | 10 μ F 63 V | 1 |
| C 4, 5 | 220 250 | LYTIC | 100 μ F 25 V | 2 |
| C 5 | 220 253 | LYTIC | 1000 μ F 25 V | 1 |
| R 33 | 221 620 | RESISTOR | 22 Ohm 1/4 W | 1 |
| R 31 | 221 600 | RESISTOR | 100 Ohm 1/4 W | 1 |
| R 25-27 | 221 033 | RESISTOR | 3,3 KOhm 1/4 W | 3 |
| R 19, 28, 30 | 221 035 | RESISTOR | 10 KOhm 1/4 W | > |
| R 11-18 | 221 603 | RESISTOR | 12 KOhm 1/4 W | 4 |
| R 2-9 | 221 036 | RESISTOR | 15 KOhm 1/4 W | 8 |
| R 32 | 221 604 | RESISTOR | 22 KOhm 1/4 W | 8 |
| R 20 | 221 049 | RESISTOR | 470 KOhm 1/4 W | 1 |
| R 23, 35 | 221 273 | RESISTOR | 10 Ohm 1/2 W | 1 |
| R 21, 22 | 221 392 | RESISTOR | 390 Ohm 1/2 W | 2 |
| R 24 | 221 692 | WIRE WOUND RESISTOR | 1 Ohm | 2 |
| R 36 | 221 169 | WIRE WOUND RESISTOR | 10 Ohm | 1 |



CONTROL UNIT
Stecker S113
PLUG S113



von unten gesehen
BOTTOM VIEW



Digitalisier
TOP VIEW



1/4 W
1/2 W
1 W

ÄNDERUNG IM SINNE DER TECHN. ZEICHENREGLUNG VORZUHALTEN.
ÄNDERUNG IM SINNE DER TECHN. ZEICHENREGLUNG VORZUHALTEN.
SUBJECT TO TECHNICAL MODIFICATION WITHOUT NOTIFICATION
ID-MODIFY EQUIPMENT ALREADY DELIVERED

NSM MUSTAINDIA IN PHOTODUPLICATIONS ES V-CD TECHNOLOGY

Schaltbild Titelanzeige II
WIRING DIAGRAM TITLE INDICATOR II

| | | | | | | | |
|-----|----------|-----|---------|-------|---------|-------|---------|
| Rev | 10.04.92 | Ver | 0.0.0.0 | Druck | 0.0.0.0 | Temp. | 0.0.0.0 |
|-----|----------|-----|---------|-------|---------|-------|---------|

UNIT DESCRIPTION

ELECTR. COIN- AND BILL ACCEPTOR FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176514 | THE PERFORMER CLASSIC |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

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- 1 MECHANICAL COIN CHUTE
- 2 BILL VALIDATION - DOLLAR BILL ACCEPTOR
- 3 MARS ELECTRONIC COIN VALIDATOR
 - 3.1 Monetary Value Settings
 - 3.2 Price Tables
 - 3.3 Other Settings/Information

1 MECHANICAL COIN CHUTE

See also the circuit in the wiring diagram in the appendix of the "Technical Information".

The coins that come out of the "good" channels of the coin acceptor run through different optic barriers. The optic barriers are in the coin chute under the coin acceptor.

Two photo transistors, T III and T I as well as T IV and T II are illuminated by one IR diode each (LED I and LED II).

As long as a light barrier is not interrupted by a coin, all photo transistors, T I to T IV, are switched to logically "0". So all output lines.

1 = T IV,

2 = T III,

3 = T I,

4 = T II are at logically "0", i.e. their voltage level is 1,0 V.

If a coin passes through an optic beam, the respective photo transistor is darkened for that time. The output becomes log. "1" via the pull-up resistors in the control unit, i.e. their level is 10 V.

Since T I is also darkened, when T III is effected by a coin (T I is behind T III, both are illuminated by the same light diode), the output from T I over T V is kept at "0". This occurs via resistors R 72, R 70; they bring transistor T V in a satiated state when T III is open.

The same goes for T IV; it is kept at "0" by T VI when a coin falls through T II. The control for T VI occurs via R 73, R 69.

The addition button is switched in sequence to T IV so that Line 1 becomes log. "1" at service credit.

R 67 limits the current of the luminous diodes LED I and LED II.

The output signals of the four photo transistors are evaluated in the control unit whereby line.

1 = P 074,

2 = P 073,

3 = P 072,

4 = P 071 is assigned to the monetary value setting in the service program and is to be programmed according to the coin value; see also chapter 3 "Programming of NSM-phonographs".

2 BILL VALIDATION - DOLLAR BILL ACCEPTOR

See also the circuit in the wiring diagram in the appendix of the "Technical Information".

The bill validator, after the bill has passed through and been accepted, sends as many pulses to the control unit as correspond to the value of the bill.

The output of the bill validator is connected to the control unit via ST 9, Pins 1 and 2. 1 pulse is sent to the control unit with 1 dollar and 5 pulses with 5 dollars.

The input of the bill validator is assigned to program step P075 and is to be programmed accordingly; see also chapter 3 "Programming of NSM-phonographs".

3 MARS ELECTRONIC COIN VALIDATOR

4 or 5 different coins be checked depending on the type. The three sensors in the validator register each separately the width, material composition and pressure of each deposited coin. If a deposited coin passes the sensors, the prepared data are passed on to a register and compared with the contents of a memory (PROM). If validation criteria are identical with a data set of the PROM, an internal "valid" signal is produced. Depending on the coin value it goes as output signal A1 to A5 to the plug of the PCB adapter (depending on type of validator, 15 or 13 poled). From there the signal goes via the 6-pole plug to control unit CD for processing.

3.1 Monetary Value Settings

The information in the "Operating Instructions" and the statistics and service program about monetary value settings refer to coin mechanisms with mechanical coin acceptors.

If a electronic validator has been installed, the monetary value settings in the individual program steps are assigned to corresponding output signals: P071 to signal A1 or A5, P072 to A3, P073 to A4, P074 to A2.

Notice: When inserting a coin during program steps P070-P075, the program step assigned to the coin is automatically displayed in Display 1.

The monetary values are programmed in monetary value units: "0100" $\hat{=}$ 1 \$, "0025" $\hat{=}$ 25 c, "0050" $\hat{=}$ 50 c. Not used channels are programmed with "0000".

3.2 Price Tables

Set the number of credit per monetary value in program steps P061 to P065 as described in the "Statistics" and Service Program, 1.3.2 Price Tables".

3.3 Other Settings/Information

When exchanging the control unit the programming has to be done in the new unit also.

Attention! Then push button "Service credits" is wired parallel to the signal line of channel 4 (signal A2, program step P074). When the cabinet switch is pulled out one service credit is given with each pressing of the push button "service credit". But no cash registration.

For checking the monetary value setting of channel 4 (signal A2) the cabinet switch has to be pushed in.

Notice: Non-used channels can be blocked. For this purpose the bridge of the corresponding channel (A1-A5 on the PCB) has to be disconnected or conductor A5 is not connected.

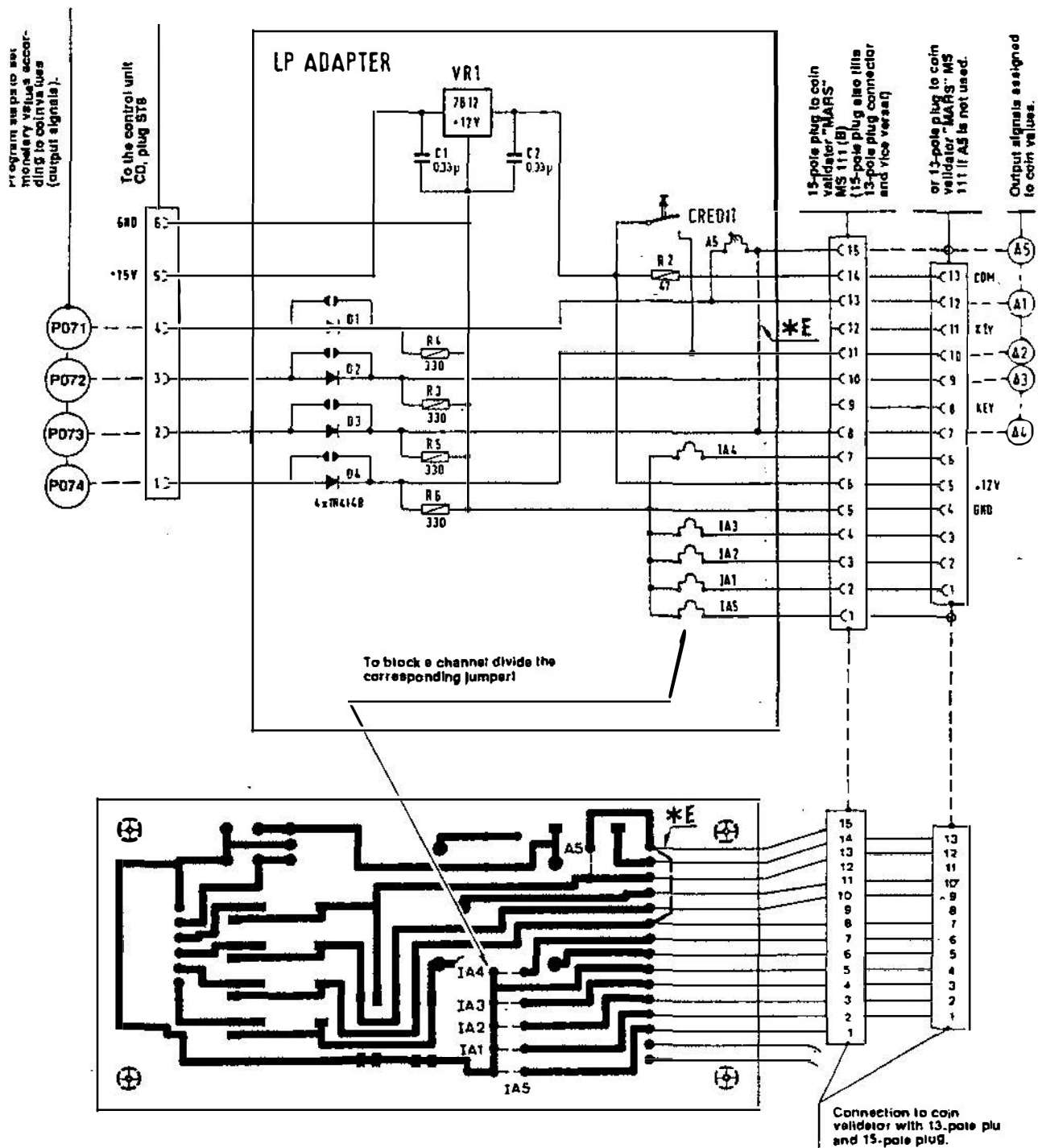


FIG.: "layout of CB-adapter"

Monetary Value Settings

Programming of monetary values and values settings according to the individual coins (see 3.1.).

| Currency | Monetary Values Δ Coin Value P071 (A1/A5) | P072 (A3) | P073 (A4) | P074 (A2) | Discon. Jumpers | Coin Validator Type |
|----------------------|---|--------------------------|----------------------------|---------------------------|--------------------|--------------------------------------|
| Germany | 500 Δ 5.- DM | 100 Δ 1.- DM | 0 | 200 Δ 2.- DM | 1A4/1A5 | GDE58 L00K/B1 / GDE55L00C/B1 |
| Switzerland | 500 Δ 5 Fr | 100 Δ 1 Fr | 0 (1/2 Fr) | 200 Δ 2 Fr | 1A4/1A5 | GCH 31 L00C / B1 |
| Italy | 500 Δ 500 L | 100 Δ 100 L | 0 (50 L) | 200 Δ 200 L | 1A4/1A5 | Git 26 L00C / B1 |
| | 500 Δ 500 L | 0 (100 L) | 0 (50 L) | 200 Δ 200 L | 1A3/1A4 | Git 06 L00C |
| Belgium | 5000 Δ 50 bfr | 500 Δ 5 bfr (new) | 0 (1 bfr) | 2000 Δ 20 bfr | 1A3/1A4 (A3/A4) | GBE 19 L00C / B1 |
| | 50 Δ 50 bfr 1 bfr (new) | 5 Δ 5 bfr (new) | 0 (1 bfr (old)) | 20 Δ 20 bfr | 1A4/1A5 | GBE 25 L00C / B1 GBE 19 L00C / B1 |
| Netherlands | 25 Δ 25 c | 250 Δ 2 1/2 Hll | 500 Δ 5 Hll | 100 Δ 1 Hll | | GNL 37 L00C / B1 |
| France | 1000 Δ 10 F | 200 Δ 2 F | 100 Δ 1 F | 500 Δ 5 F | | GFR 19 L00C |
| | 1000 Δ 10 F (old/new) | 200 Δ 2 F | 100 Δ 1 F | 500 Δ 5 F | | GFR 96 L00C / B1 * F |
| | 1000 Δ 10 F (new) | 200 Δ 2 F | 100 Δ 1 F | 500 Δ 5 F | | GFR 87 L00C 02 |
| Denmark | 2000 Δ 20 dkr | 500 Δ 5 dkr | 100 Δ 1 dkr | 1000 Δ 10 dkr | | GDK 10 L00C / GDK 1N L00C |
| | 0 | 50 Δ 5 dkr | 10 Δ 1 dkr | 100 Δ 10 dkr | | by 3-Canal GDK xx L00C |
| | 100 Δ 10 dkr | 10 Δ 1 dkr | 0 (0,25 dkr) | 50 Δ 5 dkr | 1A4 | by 4-Canal GDK 02 L00C |
| | 100 Δ 10 dkr (new) | 50 Δ 5 dkr | 10 Δ 1 dkr | 100 Δ 10 dkr (old) | | by 4-Canal GDK 1A L00C |
| Austria | 2000 Δ 20 S | 500 Δ 5 S | 100 Δ 1 S | 1000 Δ 10 S | A5/1A5 | GAU 03 L00C |
| Spain | 200 Δ 200 Pst | 50 Δ 50 Pst | 25 Δ 25 Pst | 100 Δ 100 Pst | | GES 11 L00C |
| Greece | (0) MP closed | 50 Δ 50 Dr | 20 Δ 20 Dr | 0 | | GGR 1C L00C |
| Norway | 1000 Δ 10 Kr | 100 Δ 1 Kr | 0 (1/2 Kr) | 500 Δ 5 Kr | 1A4 | GN 008 L00C |
| Finland | 0 | 500 Δ 5 MK | 100 Δ 1 MK | 0 | | GSF 1A L00C |
| Sweden | 500 Δ 5 Kr | 100 Δ 1 Kr | 0 (50 örn) | 100 Δ 1 Kr | 1A4 | GSW 09 L00C |
| Great Britain | 100 Δ 1 £ | 20 Δ 20p | 10 Δ 10p | 50 Δ 50p | 1A5 | GDB 31 L00C / GGB81 L000C / B1 |
| | 100 Δ 1 £ | 20 Δ 20p | 10 Δ 10p (new/old) | 50 Δ 50p | | GGBG3 L00C/02 * GB |
| USA | 100 Δ 1 \$ | 25 Δ 25 c | 0 | 50 Δ 50 c | 1A4 | GUS 20 L00C |
| | 10 Δ (10c) | 50 Δ (50c) | 25 Δ 25c | 100 Δ (1 \$) | 1A5 | GUS 1B L00C / B1 |
| Canada | 10 Δ 10 c | 100 Δ 1 \$ | 25 Δ 25 c | 0 | | GCN 1A L00C |
| Australia | 0 | 100 Δ 1 \$ | 20 Δ 20c | 200 Δ 2 \$ | | GAS XX L00C B1 / GAS 1A L00C |
| | 200 Δ 2 \$ | 0 (50c) | 20 Δ 20c | 100 Δ 1 \$ | 1A3 | GAS 28 L00C |
| Netherlands Antilles | 0 | 0 | 100 Δ 1 NAF | 0 | A5/1A5 | GNA 1A L00G / B1 GNA 1A L00C / 02 |
| New Zealand | 50 Δ 50 c | 10 Δ 10 c | 5 Δ 5 c | 20 Δ 20 | | GN203 L00C |
| | 200 Δ 2 \$ | 50 Δ 50 c | 20 Δ 20 c | 100 Δ 1 \$ | 1A4/1A5/1A5 | GAS 41 L00C / 02 AS / NZ |
| Korea | 0 | 100 Δ 10 NTS | 50 Δ 5 NTS | 0 | | GTW 1A L00C |
| Mexico | 0 | 0 | 1000 Δ 1000 P | 0 | | GME 1A L00C |
| Hong Kong | 500 Δ 5 \$ | 100 Δ 1 \$ | 0 | 200 Δ 2 \$ | | GHK 1A L00C / B1 |
| Hungary | 200 Δ 20 F | 50 Δ 5 F | 0 | 100 Δ 10 F | 1A4/1A5 | GHU 1B L000C / B1 |
| Thailand | 0 | 0 | 500 Δ 5 Baht | 0 | | GTH 1A L00C / 02 |
| South Africa | 200 Δ 2 R (new) | 100 Δ 1 R (old) | 50 Δ 50 C (old/new) | 100 Δ 1 R (new) | A5 | GZA 1B L00C / B1 * E |
| Israel | 0500 Δ 5 Shekel | 0050 Δ 1/2 Shekel | 0010 Δ 0.1 Shekel | 0100 Δ 1 Shekel | 1A3/1A4 | GIS 13 L00C / 02 |

Alternative values depending on the type of coin validator

* E Connection necessary between wire 8 (signal A4) and wire 15 (signal A5) on "CB adapter" (see also figure "layout of CB adapter").

* GB see next page

* F A5 and 1A 5 closed

* GB: Selection of coin acception

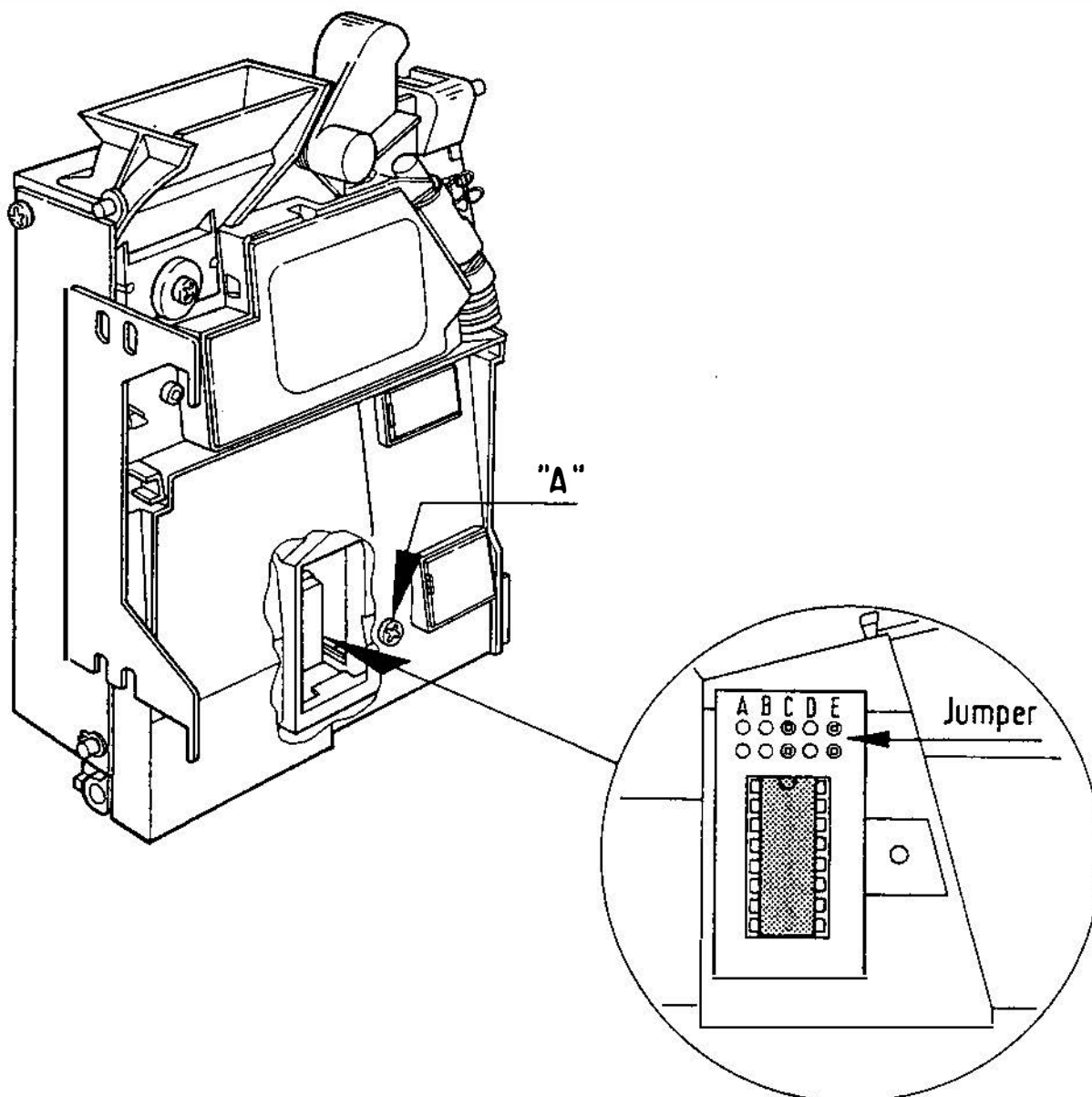
The coin validator is provided with a group of jumpers. These are used to select the coin acception of several coins (old/new).

To select a version:

- unscrew the Phillips screw "A" (see figure),
- open the cabinet.
- Set jumper corresponding to the following table:

| Coin acception of | Jumper | |
|-------------------|--------|--------|
| | C | E |
| 10 p new | open | open |
| 10 p old | closed | closed |
| 10 p new + old | open | closed |

- Close the cabinet of the coin validator after selection.



UNIT DESCRIPTION

REMOTE CONTROL

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

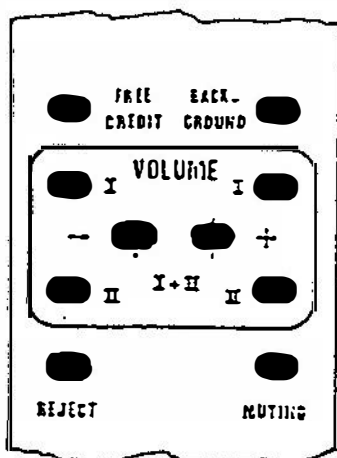
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- 1 **FUNCTION**
- 1.1 **Infra-red remote control (wireless)**
- 1.2 **Wired remote control**
- 1.3 **Installation instructions for infra-red remote control**
- 1.4 **Volume control (on rear cabinet wall)**

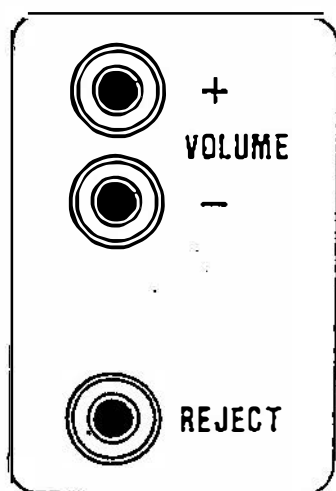


INFRARED REMOTE CONTROL, ASSY.

| | |
|---------------------|---------|
| with 1,5 m Cable | 171 808 |
| with 5,0 m Cable | 174 258 |
| sender | 206 783 |
| Receiver with Cover | 173 178 |

REMOTE CONTROL with 5 m cable

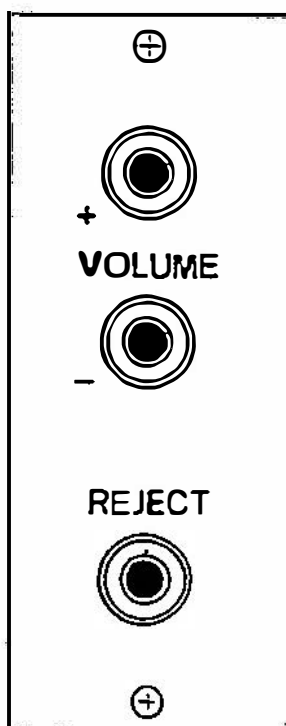
| | |
|----------|---------|
| Part No. | 171 743 |
|----------|---------|



VOLUME CONTROL

| | |
|----------|---------|
| Part-No. | 170 212 |
|----------|---------|

Option: This volume control is a remote alternative to the control installed in the device. (For connections see par. 1.4) The cable has to be extended - any 4 pole cable can be used.



to 1.4

1 FUNCTION

1.1 Infrared remote control (wireless)

The cable of the remote control receiver has to be put into plug ST 11 of the central unit.

Pin 1 supplies the +15 V voltage.

Pin 2 = GND

The commands - as per chart - are fed to the computer inputs via Pins 3 through 6 by switching to ground.

The signals go to the control unit via plug ST 10.

1.2 Wired remote control

For remote controls with cable the plug has to be connected with ST 11 on the central unit (instead of infrared remote control). The corresponding channels (Pins 3 through 6) - as per chart - are connected to GND Pin 2 via the remote control diode linkage.

| TASTE / KEY | AUSGANGS-CODE OUTPUT-CODE | STECKER / PLUG ST 11 / PIN |
|-----------------|------------------------------|-------------------------------|
| VOLUME - I | 2 / 4 | 5 / 3 |
| VOLUME + I | 4 | 3 |
| VOLUME - II | 2 / 3 | 5 / 4 |
| VOLUME + II | 3 | 4 |
| FREE CREDIT | 1 / 3 | 6 / 4 |
| BACKGROUND | 1 / 4 | 6 / 3 |
| REJECT | 2 | 5 |
| MUTING | 1 | 6 |
| VOLUME + (I+II) | 3 / 4 | 4 / 3 |
| VOLUME - (I+II) | 2 / 3 / 4 | 5 / 4 / 3 |

1.3 Installation Instructions for Infrared Remote Control

The receiver with standard connection cable is mounted onto the back of the cabinet or the back of the hood when a small distance is involved. The top (receiving side) of the receiver should be mounted a little underneath the upper edge of the rear cabinet. Wallboxes and Hide-Away's have to be mounted close to the machine.

If a greater distance has to be bridged or an absorbing ceiling is influencing correct functioning the receiver has to be mounted in such a way on the wall or the ceiling that direct radiating of the manual sender is possible. A connection cable (5 m), is available for this purpose.

The connection cable of the receiver is put into plug ST 11 of the central unit.

SECURING MANUAL SENDER

To protect the manual sender from theft, mount the bracket with two screws onto the back of the sender (see fig.). This way the sender can be secured with a chain.

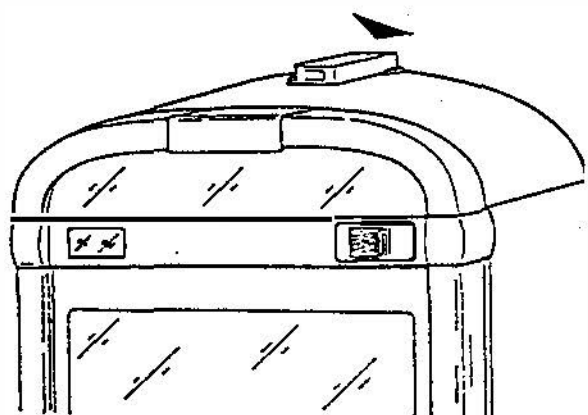


Fig. 1

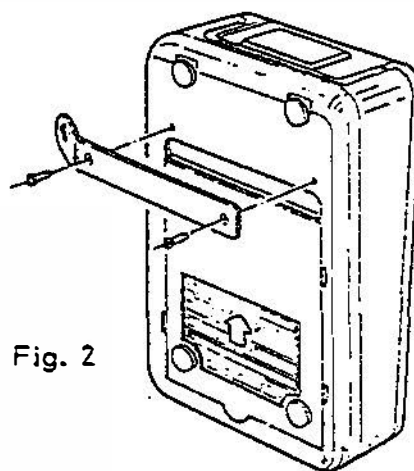


Fig. 2

Manual sender with safety bracket and screws

1.4 Volume Control (On Rear Cabinet Wall does not apply to wallboxes and Hide-Away's).

The connection cable must be put into plug ST 12 of the central unit. When the volume keys are pressed, the computer inputs are switched to GND via the diode linkage D 37-41.

| TASTE / KEY | AUSGANGS-CODE OUTPUT-CODE | STECKER / PLUG ST 10 / PIN |
|-----------------|------------------------------|-------------------------------|
| VOLUME + (I+II) | 3 / 4 | 4 / 5 |
| VOLUME - (I+II) | 2 / 3 / 4 | 4 / 5 / 6 |
| REJECT | 2 | 7 |

UNIT DESCRIPTION

OUTPUT TRANSFORMER

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

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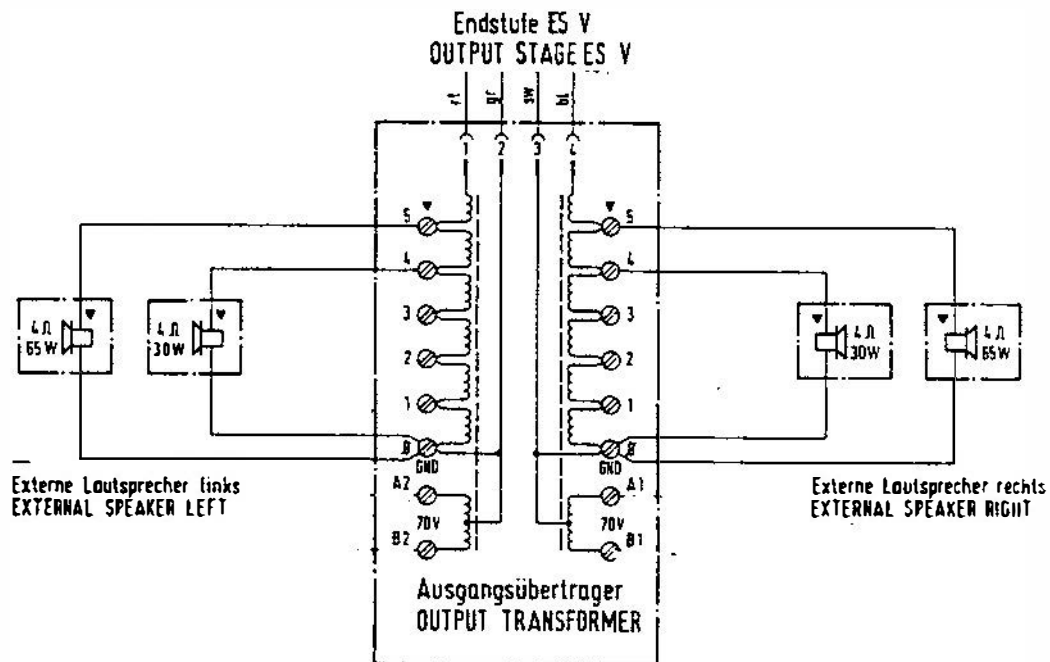
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OUTPUT TRANSFORMER with cable harness

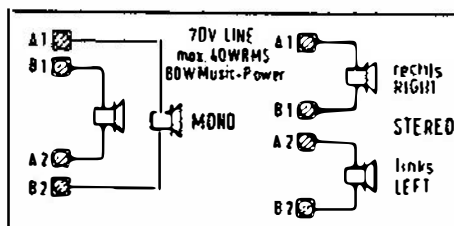
176 393 176 352 176 514

The output transformer is connected directly to the terminals of the output amplifier. It has input impedance of 4 ohms and transforms the input voltage down so that smaller output voltages are available at Connection Terminals 1 through 5 permitting speakers with lower impedances to be connected.

A number of loudspeakers can be connected together (in parallel) up to a total maximum power of 130 W music power per channel; depending on how much power is taken directly from the amplifier. The table below shows the power required for a loudspeaker with the corresponding impedance at Connection Terminals 0-1 through 0-5. Also observe the output transformer diagram and connection schematics. Further information is given in the "TECHNICAL INSTRUCTIONS" under "Loudspeaker Connection".



Anschlußschema für Ausgangsübertrager
CONNECTION DIAGRAM FOR OUTPUT TRANSFORMER



| Klemme TERMINAL POSITION | Lautsprecher SPEAKER | | | | |
|--------------------------------|-------------------------|-------|------|-----|------|
| | 2 Ω | 2.5 Ω | 4 Ω | 8 Ω | 16 Ω |
| 0 - 5 | 130W | 100W | 65W | 35W | 18W |
| 0 - 4 | 60W | 48W | 30W | 16W | 8W |
| 0 - 3 | 30W | 24W | 15W | 8W | 4W |
| 0 - 2 | 15W | 12W | 7.5W | 4W | 2W |
| 0 - 1 | 3.7W | 3W | 1.8W | 1W | 0.5W |

Maximum Power Output Connections

The maximum power output of the amplifier is 2x200 W music power at 2 ohms.

The following is an example of how to connect external loudspeakers to the "CD GALAXY": The phonograph itself consumes (when directly connected at 5,5 ohm impedance) 2x70 watts.

Therefore, 2x130 W is still available for external loudspeakers.

For example, two 4-ohm loudspeakers each can be connected to Terminals 0-5 (see diagram) or four loudspeakers (with 4 ohms each) can be connected to Terminals 0-4.

Example for connection of wallboxes or Hide-Away's

If loudspeakers with 4 ohm are connected directly to a wallbox or Hide-Away, the consumption is 100 watts; therefore there is only 100 watts left for the loudspeaker connected to the transformer.

Connection for Lower Phonograph Output Power

When full power is not required from the phonograph, it can be connected to the corresponding terminals of the transformer and external loudspeakers can then be connected directly to the output amplifier for higher output.

70 V - High Voltage Output

Additionally, the transformer also has a 70 V high-voltage output (A1-B1/A2-B2) for each channel.

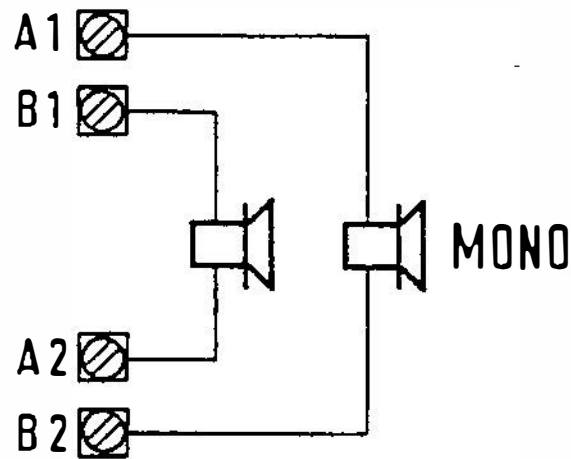
These features are provided for operation of a widespread external loudspeaker system whereby the higher voltage keep the line losses low. Only loudspeakers with input transformers (socalled high-impedance loudspeakers of 50 ohms upwards) can be connected to this terminal. these outputs also provide a maximum of 80 W music power each, e.g. two 50 W loudspeakers (200 ohms) can be connected to each channel.

| A1-B1 A2-B2 | | |
|--|--|--|
| Lautsprecher-Impedanz Loudspeaker-Impedance | Music-Ausgangsleistung Output power (music) | Sinus-Ausgangsleistung RMS Output power |
| 50 Ohm | 80 W | 40 W |
| 100 Ohm | 50 W | 25 W |
| 150 Ohm | 35 W | 18 W |
| 200 Ohm | 28 W | 14 W |
| 250 Ohm | 20 W | 10 W |

The total wattage of all remote loudspeakers connected to one channel of the output transformer (whether low Impedance, high Impedance or combined) may not exceed max. 130W.

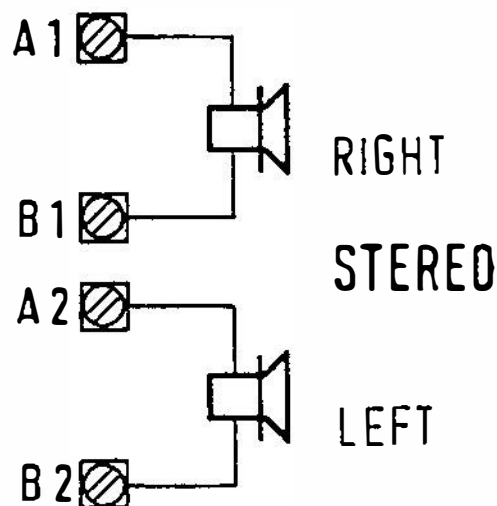
HV - MONO Mode

Since the high-voltage coils are connected with their center, a loudspeaker connected to A1-B2 or B1-A2 radiates sound from both (stereo) channels; for this mono mode no special NF-coupling of the channels is necessary, coupling is provided by the transformer.



HV - STEREO Mode

If the loudspeakers are connected to A1-B1 or A2-B2, stereo mode is possible, but without NF-coupling of the channels.



TROUBLE SHOOTING FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

**to
Technical Information, Assy**

| | |
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| 176 393 | THE PERFORMER GRAND II |
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| 176 598 | FIREBIRD II |
| 176 705 | THE PERFORMER WALL |

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- 1 DESCRIPTION OF MALFUNCTION / CAUSE**
- 2 ERROR DISPLAYS / TABLE OF ERROR MESSAGES**
- 3 TROUBLE SHOOTING FOR NSM PHONOGRAPHS ES-IV/CD TECHNOLOGY**

1 DESCRIPTION OF MALFUNCTION / CAUSE

The following table gives a short reference of the possible solution to repair a phonograph that did not work.

| DESCRIPTION | CAUSE |
|--|--|
| Phonograph illumination and LED's in central unit/CD supply do not light up. | <ol style="list-style-type: none">1. Power cord2. Main switch3. 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 1 of central unit2. Fuses Si 1-5 of central unit3. Power transformer connection |
| Fan for output stage does not run while disc is playing. | <ol style="list-style-type: none">1. Plug connection ST 42. Triac TI 13. Transistor T 2 / T 1 |
| 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 1-6 in central unit defective2. 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 switched on. | <ol style="list-style-type: none">1. loudspeaker connection2. Plug connection of frequency volume is network and output transformer3. Interruption on signal wire |
| 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 9 defective.3. Output transistor defective.4. Control unit defective. |
| Poor bass reproduction. | <ol style="list-style-type: none">1. Loudspeaker connections reversed. |
| Er xx-display. | See "Error Displays". |
| Luminous effect lights do not light phonographs with light generator). | <ol style="list-style-type: none">1. Fuse on PCB light organ (running light)2. Plug connection to PCB light organ |

2. ERROR DISPLAYS / TABLE OF ERROR MESSAGES

After power on the phonograph, respectively after each closing of the programming mode the microprocessor on the PCB Control Unit checks all memoried values. If there is detected an error on the programmable memory area, the corresponding programm step is entered. The display shows the command number Pxxx and "Er 31" is flashing. Also the lamp "error" flashes.

With entering the service mode and input of the correct value and pressing the key "H" this error is cleared.

After power on the phonograph, the malfunction display "Display 3" an the flashing lamp "error" remains visible for 2 sec. Here after the phonograph is operational without regarding the malfunctioning part.

When entering the programming mode there is a possibility for service and maintenance requests. With the command of group 15x and 16x it is possible to check, or to initialise CD's to, the phonograph. By using P150 the last 20 errors occured while operating are display sequentially including the information about CD-no. and date of occurance.

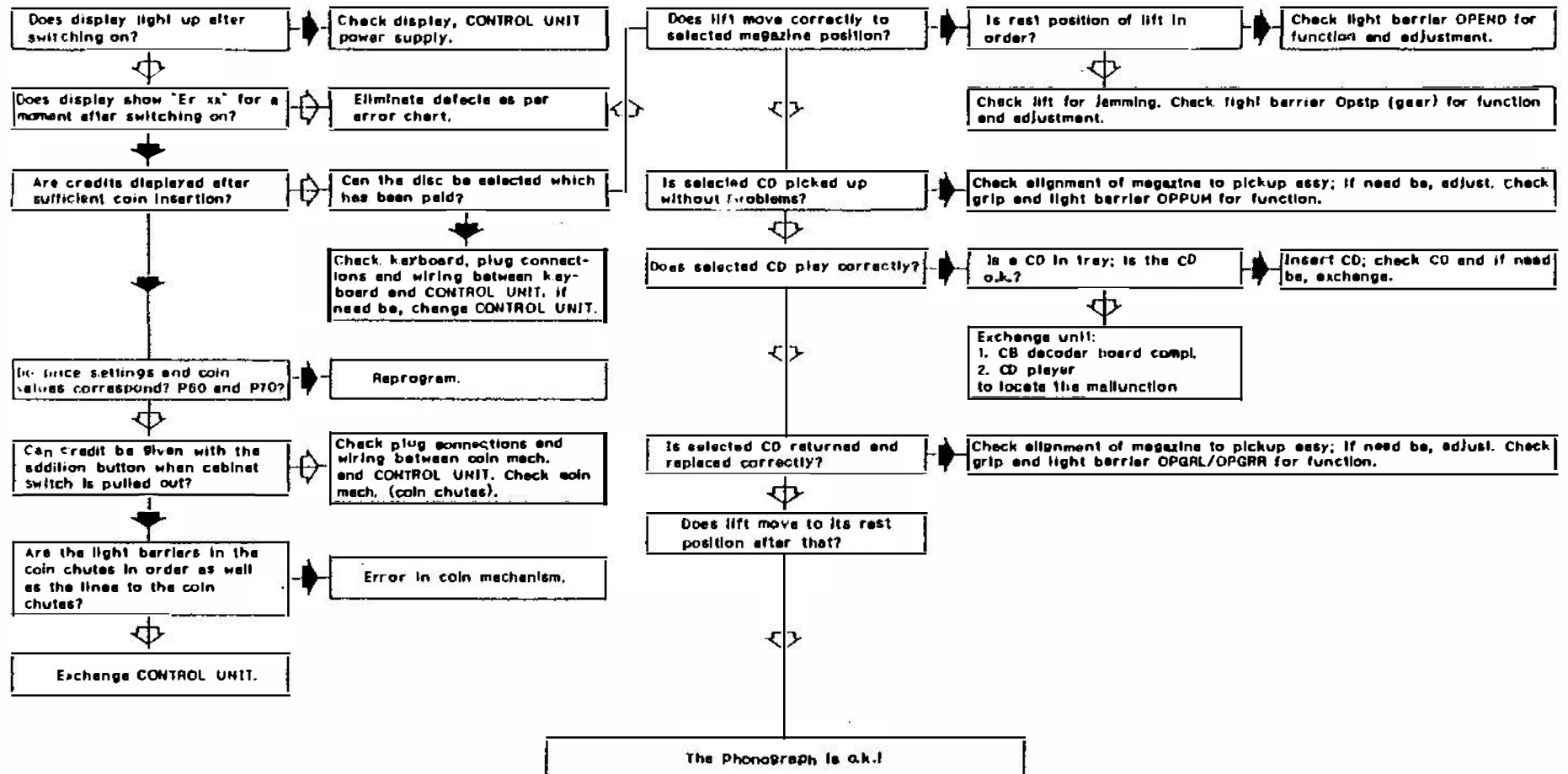
The following table gives an overview of the error messages and the possible corrections.

Table 4: "Error Displays"

| Displays 1 | 2 | 3 | Possible Causes | Corrections |
|---------------|----|----|--|---|
| Er | 01 | | EPROM contents (CONTROL UNIT) disturbed. | Change EPROM (IC 2). |
| Er | 10 | | RAM (CONTROL UNIT) defective. | Change RAM (IC 3). After that reprogram all program steps. |
| Er | 11 | | RAM contents (CONTROL UNIT) short-term disturbance. | No correction necessary; program is reinitialized. Change RAM IC 3 if frequently occurring. |
| Er | 12 | | RAM battery is empty. | Change RAM (IC 3). After that reprogram all program steps. |
| Er | 20 | | Verification errors in program after power on. | No correction necessary; program is reinitialized. Change CPU IC 1 if frequently occurring. |
| Pxxx | Er | 30 | Memory contents (CONTROL UNIT) invalid. | No correction necessary; program step Pxxx (in Display 1) is automatically reprogrammed. |
| Pxxx | Er | 31 | Memory contents (CONTROL UNIT) invalid or not programmed. | Program step Pxxx shown in Display 1 must be reprogrammed. |
| Pxxx | Er | 40 | Wrong price setting. | Check price setting and, if necessary, reprogram (P060). |
| Er | 50 | | Coin mechanism defective. Too much credit. | Check coin mechanism. |
| Er | 6x | | Error at CD player. | See Er 60, Er 62. |
| Er | 60 | | Connection to the CD player interrupted. No supply voltage present for decoder board or CD player. | Check connection cables to the decoder board, check fuses. |
| Er | 61 | | No CD recognized by CD player. No CD in CD tray, CD defective. Player defective. | Check CD and exchange if needed. Exchange CD player. Exchange decoder board. |
| Er | 62 | | Specified track on the CD not found. | Check the CD. |
| Er | 63 | | Malfunction while playing a CD. | Check the CD player with equipped CD for easy running. |
| Er | 7x | | Malfunction on CD changer. | 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 | | Malfunction of operating control. | No correction necessary. |
| Er | 71 | | Error during grip from magazine. | Equip CD tray to magazine. Check alignment from magazine to pickup assy and adjust if necessary. Check function of light barrier OPPUM. |
| Er | 72 | | Error during replacing CD in magazine. Malfunction of grip lever. | Check alignment of magazine to pickup assy and adjust if needed. Check function of gap. Check function of light barriers OPGRL and OPGRR. |
| Er | 73 | | Malfunction during lift drive. Playing of CD not possible. | Check lift for jamming. Check function and correct adjustment of light barrier OPSTP (drive wheel). |
| Er | 74 | | End position of lift not o.k.. Playing of CD not possible. | Check function and adjustment of light barrier OPEND. |
| Er | 80 | | Short circuit on wallbox signal wire. | Check wallbox connection. |
| Er | 91 | | Malfunction of the audio processor (PCB "CENTRALE.CD"). | Change IC 1 - TDA 4390 if frequently occurring. |
| Er | 90 | | Title display, not functional anymore. Three blocking in sequence. | Blocking resp. jamming of the title holders remedy. Remove all title holders up to the jammed one now reinstall them in correct way. See also chapter "title display" point 1.4 "Jammed or dislocated title holders." |
| 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. | |

3 Trouble-Shooting Chart for NSM Phonographs ES-V/CD Technology

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



Compare also 1.2 "Error Displays".

ACCESSORIES

FOR NSM-PHONOGRAPHS

ES V-CD TECHNOLOGY

to
Technical Information, Assy

| | |
|---------|------------------------|
| 176 393 | THE PERFORMER GRAND II |
| 176 352 | THE WIZARD / |
| | OLD FASHION WIZARD |
| 176 514 | THE PERFORMER CLASSIC |
| 176 610 | CD HIDE-AWAY II |
| 176 598 | FIRBIRD II |
| 176 705 | THE PERFORMER WALL |

NSM

Aktiengesellschaft
Saarlandstraße 240
6530 Bingen am Rhein

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- 4 OUTPUT TRANSFORMER with cable
- 5 CASH COUNTER
- 6 DATAPRINT
 - 6.1 Data transfer and memorizing
 - 6.2 Transfer to Printer

1 MICROPHONE with Paging Switch

Connection via microphone socket to the central unit.

Microphone announcements are possible in any phonograph mode.

The microphone amplifier with electronic switch-over is integrated into the central unit.

The volume for the background music and microphone can be adjusted separately in the central unit.

Connection cable with plug and microphone socket-length 10 m or 25 m (Part-No. see Spare Parts List in "Technical Instructions").

2 REMOTE CONTROL WALL BOXES

FIRE STORM w. Title indication II

CARAVELLE II w. Title indication II

For connection to NSM phonographs in CD technology. Connection Adapter belongs to the equipment. (Part-No. see Spare Parts List in "Technical Instructions"). Detailed installation instructions are included in the adapter kit.

3 REMOTE CONTROLS

3.1 Infrared Remote Control

Wireless remote control consisting of transmitter, receiver and parts for installations. See wiring diagram for connections.

(Part-No. see Spare Parts List in "Technical Instructions").

3.2 Remote Control with Cable

The connection points are illustrated in the wiring diagram and described in unit description "REMOTE CONTROL".

(Part-No. see Spare Parts List in "Technical Instructions").

4 OUTPUT TRANSFORMER with cable

Significantly expanded adaptation capabilities and low line losses with 70 V output. (See Unit description "OUTPUT TRANSFORMER").

(Part-No. see Spare Parts List in "Technical Instructions").

5 CASH COUNTER

NSM phonographs can be subsequently modified with an electro-mechanical cash counter (12 V = pulse counter).

(Part-No. see Spare Part List in "Technical Instructions").

6 DATAPRINT

The printer is intended for connection to NSM phonographs ES IV-CD Technology. A detailed description is included with the printer. Putting in the paper roll and color ribbon are described in detail in the "TECHNICAL INSTRUCTIONS" for the DATAPRINT.

6.1 Data Transfer and Memorizing

- Turn on service program by opening cabinet and pull out cabinet switch manually, Display 1 "P010".
- Put in printer connector into "Service Socket" of the Control Unit.
- Enter "C", Display 1 "P".
- Enter "30" and "H", Display "P030".
- Enter Code "0" and "H".

Counters + Errors, as well as popularity are transferred.

Note: Display 3 "E0" appears if an error occurs during data transfer.

Attention: After the data transfer has finished successfully the memory contents of the phonograph are cleared with closing the cabinet lid!

6.2 Transfer to Printer

- Switch on service program by opening cabinet; if needed, pull the cabinet switch manually, Display 1 "P010".
- Plug printer connector into socket of Control Unit.
- Enter "C", Display 1 "P".
- Enter "31" and "H", Display 1 "P031".
- Enter code for the desired print-out and press "H".
 - "0" and "H" = complete information
 - "1" and "H" = all cash counters
 - "2" and "H" = all counters
 - "3" and "H" = settings
 - "4" and "H" = popularity
 - "5" and "H" = hit parade of this location
 - "6" and "H" = last 20 error messages

Note: When a popularity counter has reached value 200, all popularity counters are divided by half of the amount. After dividing the popularity printed out is relative; the number of divisions appears in the printout: "RELATIVE 000" to "xxx".

If the printer does not start, "E0" appears in Display 3.

Examples of print-outs

1. Print-out in text mode P030

Open the cabinet lid (door) of the phonograph with ES-V technology and pull the cabinet switch.
Connect the DATA PRINT to the evaluation socket (ST2 on p.c.b. control unit ES-V).
Enter P030: Key 0 - to start the print-out of all available data.

Counters

```
04.02.93 / 13.58 023.1
* NSM *
BOX ES U 0.0203
BOX-ANALYSE:
BOX-HR 0000
TIME 14:02
DATE 04.02.93
```

```
COUNTERS:
CASH 0
PLAYS 0
TITLE-SELECTIONS 0
ALBUM-SELECTIONS 0
OVERPLAYS 0
FREE PLAYS 0
BACKGROUND PLAYS 0
AUTO PLAYS 0
ADVERTISE PLAYS 0
HAPPY HOUR CREDITS 0
```

Popularity

```
POPULARITY:
CD:
001 092.005.072.100.
006 086.096.072.000.004.
011 066.084.066.032.005.
016 076.001.008.160.072.
021 005.124. 002.
026 .072.100.060.111.
031 061.031.061.031.007.
036 004. 016.038.007.
041 050.127.002.018.120.
046 066.016.075.037.016.
051 025.016.072.034.070.
056 002.108.002.036.052.
061 093.030.004.016.036.
066 001.109.004.066.016.
071 090.090.007.042.016.
076 090.090.007.062.004.
081 066.084.066.016.060.
086 004.106.002.016.000.
091 006.091.016.090.090.
096 050.066.069.106.004.
```

Hitparade with number of plays

```
HITLIST:
RANK CD TRACK PLAYS
1 0401 240 2 003 210
3 3204 216 4 0416 201
5 7501 194 6 2331 193
7 7201 193 10 1401 160
9 5201 173 10 0401 160
11 0401 145 12 7400 144
13 1101 141 14 7201 133
15 0601 122 16 0401 122
17 9201 120 18 6501 100
19 5501 75 20 0301 72
21 4901 51 22 0010 73
23 0401 10 24 0201 14
25 0301 10 25 0001 5
27 4101 3 28 6905 1
29 6903 1 30 0101 0
```

Errors

```
ERRORS:
NO. CODE TIME DATE
NO ERRORS!
```

53940 BYTES FREE

After finishing the print-out and closing the cabinet lid (door) all counters are deleted!

2. Print-out in graphic mode P031

Prepare the appliance as described.

The command P031 offers several options:

- P031:
- 0- All available data
 - 1- Cashbox only
 - 2- Counters and cashbox
 - 3- General settings
 - 4- Popularity
 - 5- Hitparade
 - 6- Errors

BOX ES U U.0003

BOX-ANALYSE:

BOX-NR.....0000
TIME.....14:04
DATE.....04.02.93

COUNTERS:

CASH.....0
PLAYS.....0
TITLE-SELECTIONS.....0
ALBUM-SELECTIONS.....0
OVERPLAYS.....0
FREE PLAYS.....0
BACKGROUND PLAYS.....0
AUTO PLAYS.....0
ADVERTISE PLAYS.....0
HAPPY HOUR CREDITS.....0

BOX-STATUS:

BOX-CODE.....0
CDS / TRACKS.....0024
STAND-BY LIGHTING...1105
ACTIVE LIGHTING.....1000
MAX.TIME/TRACK.....0
ORDER OF PLAY.....0
TRACKS IN A ROW.....0
TITLE DISP. PERIOD.....0
CLR CREDIT.....2
CLR SELECTIONS.....2
MAX.VOLUME.....31
MAX.BGM-VOLUME.....16

PRICE SETTINGS:

| P6X | PRICE | P7X | VALUE |
|-----|--------|-----|-------|
| 1 | 1 0100 | 1 | 100 |
| 2 | 1 0100 | 2 | 500 |
| 3 | 3 0200 | 3 | 200 |
| 4 | 3 0200 | 4 | 0 |
| 5 | 3 0200 | 5 | 0 |

ALBUM SETTING.....1
BILL BONUS.....0
MONEY CONVERSION.....0

FREE CREDIT SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
FREE CREDITS.....200

BGM SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
LOCK FOR BGM.....0

AUTO PLAY SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
AUTO PLAY PERIOD.....0

ADVERTISEMENT SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
ADVERTISEMENT PERIOD...0

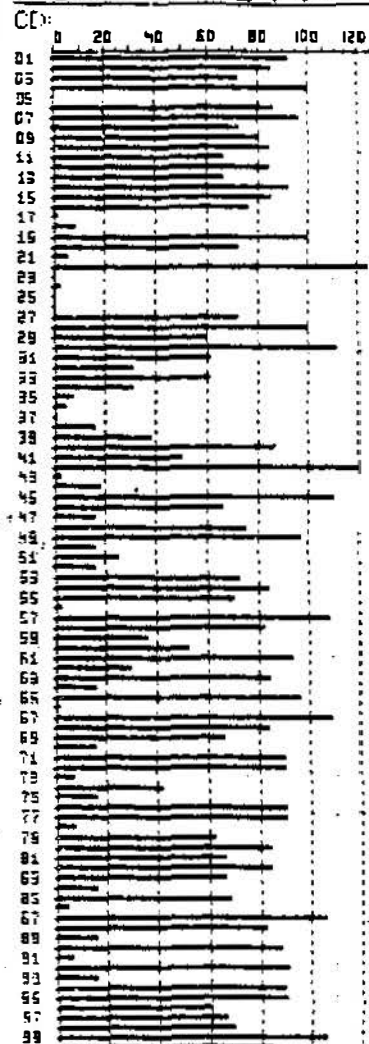
LOCK OUT SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
ACTIVATE LOCK.....0

HAPPY HOUR SETTINGS:

START TIME.....00:00
STOP TIME.....00:00
ACTIVE ON DAYS...0000000
HAPPY HOUR BONUS.....0

POPULARITY:



HITLIST:

| RANK | CD | TRACK | PLAYS |
|------|------|-------|-------|
| 1 | 0401 | 2 46 | 7683 |
| 2 | 0401 | 2 46 | 7683 |
| 3 | 0401 | 2 46 | 7683 |
| 4 | 0401 | 2 46 | 7683 |
| 5 | 0401 | 2 46 | 7683 |
| 6 | 0401 | 2 46 | 7683 |
| 7 | 0401 | 2 46 | 7683 |
| 8 | 0401 | 2 46 | 7683 |
| 9 | 0401 | 2 46 | 7683 |
| 10 | 0401 | 2 46 | 7683 |
| 11 | 0401 | 2 46 | 7683 |
| 12 | 0401 | 2 46 | 7683 |
| 13 | 0401 | 2 46 | 7683 |
| 14 | 0401 | 2 46 | 7683 |
| 15 | 0401 | 2 46 | 7683 |
| 16 | 0401 | 2 46 | 7683 |
| 17 | 0401 | 2 46 | 7683 |
| 18 | 0401 | 2 46 | 7683 |
| 19 | 0401 | 2 46 | 7683 |
| 20 | 0401 | 2 46 | 7683 |
| 21 | 0401 | 2 46 | 7683 |
| 22 | 0401 | 2 46 | 7683 |
| 23 | 0401 | 2 46 | 7683 |
| 24 | 0401 | 2 46 | 7683 |
| 25 | 0401 | 2 46 | 7683 |
| 26 | 0401 | 2 46 | 7683 |
| 27 | 0401 | 2 46 | 7683 |
| 28 | 0401 | 2 46 | 7683 |
| 29 | 0401 | 2 46 | 7683 |
| 30 | 0401 | 2 46 | 7683 |
| 31 | 0401 | 2 46 | 7683 |
| 32 | 0401 | 2 46 | 7683 |
| 33 | 0401 | 2 46 | 7683 |
| 34 | 0401 | 2 46 | 7683 |
| 35 | 0401 | 2 46 | 7683 |
| 36 | 0401 | 2 46 | 7683 |
| 37 | 0401 | 2 46 | 7683 |
| 38 | 0401 | 2 46 | 7683 |
| 39 | 0401 | 2 46 | 7683 |
| 40 | 0401 | 2 46 | 7683 |
| 41 | 0401 | 2 46 | 7683 |
| 42 | 0401 | 2 46 | 7683 |
| 43 | 0401 | 2 46 | 7683 |
| 44 | 0401 | 2 46 | 7683 |
| 45 | 0401 | 2 46 | 7683 |
| 46 | 0401 | 2 46 | 7683 |
| 47 | 0401 | 2 46 | 7683 |
| 48 | 0401 | 2 46 | 7683 |
| 49 | 0401 | 2 46 | 7683 |
| 50 | 0401 | 2 46 | 7683 |
| 51 | 0401 | 2 46 | 7683 |
| 52 | 0401 | 2 46 | 7683 |
| 53 | 0401 | 2 46 | 7683 |
| 54 | 0401 | 2 46 | 7683 |
| 55 | 0401 | 2 46 | 7683 |
| 56 | 0401 | 2 46 | 7683 |
| 57 | 0401 | 2 46 | 7683 |
| 58 | 0401 | 2 46 | 7683 |
| 59 | 0401 | 2 46 | 7683 |
| 60 | 0401 | 2 46 | 7683 |

ERRORS:

NO. CODE TIME DATE
NO ERRORS!

--END--

Abbreviations:

BGM= Background music

Wochentage: MTWTFSS

Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

0 = inactive day

BACTA* – Juke Box Data Output Standard (UK only)

This standard will provide a common hardware interface for all manufacturers equipment with data output in a identical format.

With the optional available BACTA interface one is able to output statistical data of the NSM phonograph to a hand held unit or remote device (Part number of this option: 176 719).

*) BACTA is the Trade Association for the Coin Operated Amusement Machine Industry

DATA TRANSFER TO A HAND HELD UNIT

Therefore a 4-pole jack socket and a 25 way 'D' type socket are used to connect this hand held unit to the NSM phonograph (also see figure on next page).

Several commands entered by the user via the hand held unit offer the possibilities to

read out of statistical data of the phonograph,
delete statistical data of the phonograph,
program a serial number to the phonograph.

A simple ASCII protocol is defined to ensure that data output from the phonograph to the hand held unit or remote device may be checked on receipt and a repeat transmission requested if required.

The phonograph must respond to a command from the hand held unit within a timeout period of 3 seconds by continuously monitoring the data line and waiting for the transmit command from the hand held unit.

The commands:

- "D1" the phonograph transmit the available statistical data to the hand held.
- "C" the phonograph (if in service mode) respond with "ACK" and after closing the cabinet lid (door) the statistical data were deleted.
- "S..." the phonograph accept the 8 byte serial number following "S" as the new serial number. This serial number is transmitted with each data transfer.

PRINT-OUT TO ANY PRINTER

With command P032 entered by the key pad of the phonograph one is able to make a print-out of the statistical data of the phonograph to a serial printer (also see figure on next page).

To make a print-out of the statistical data:

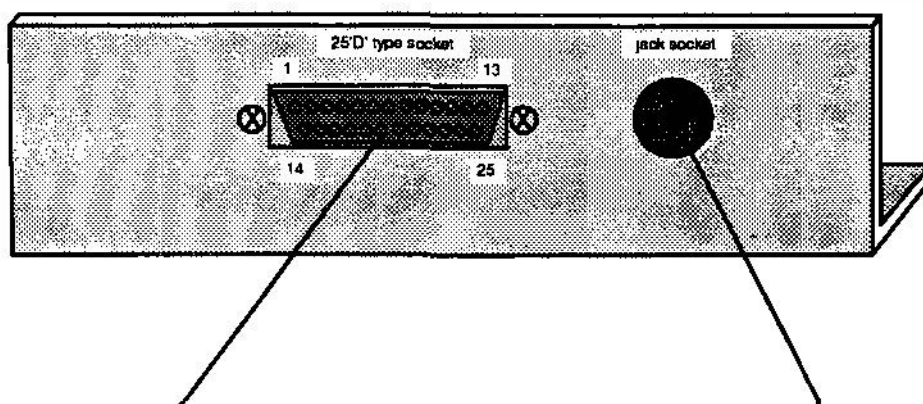
open the cabinet door of the phonograph, set it to service mode and

connect the BACTA compatible printer to the serial interface "BACTA" located left hand at the rear side of the phonograph or at the right inner side of a wall box (see figure below, the 25way 'D' type socket).

Call the command P032 and confirm with key "H".

The data transfer and the print-out too are started immediately. To interrupt the transfer just push the cabinet switch.

After the print-out of the statistical data is finished, the statistical data of the phonograph are not deleted automatically. You have to delete the data of the phonograph with the command P033! See manual.



25'D' type socket

jack socket

| Pin | Signal | Connection |
|-----|----------------------|------------|
| 1 | protective ground | |
| 2 | received data RxD | WHITE |
| 3 | transmitted data TxD | BLUE |
| 7 | signal ground GND | GREEN |
| 11 | -12V | |
| 25 | +12V | |

Transmission parameters:

1200 Baud for printer (selected with P032)
 9600 Baud for hand held
 asynchronous, half duplex
 1 start bit, 8 data bits, no parity, 1 stop bit

For detailed information about the BACTA standard refer to:

BACTA

122 Clapham Common North Side
 London SW4 9SP
 Telephone: 071-2284107
 Telex: 916040
 Fax: 071-2230257