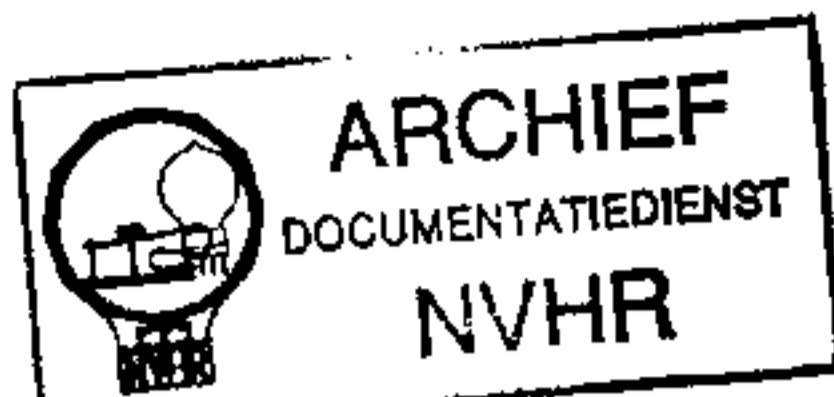


Ned. Ver. v. Historie v/d Radio



Synsacord

Met dank aan Peter van der Aa **F**

ECHO- AND REVERBERATION UNIT



**For trick, echo and reverberation with push-button controls *
5 mixable inputs (mixer amplifier) * Monaural and stereo effect *
Wide frequency response * Remote control and remote switch *
Reverberation controls * Individual tone control for all inputs *
Speed-switching system * Optical modulation indicator *
Automatic tape release ***

ECHOCORD SUPER 65

ECHOCORD

SUPER 65



Dynacord

TECHNICAL DATA

Mains voltage:	adjustable 110, 130, 220, 240 volts A. C.
Power consumption:	65 VA (motor "on")
Tubes:	5 x ECC 83, ECC 82, EM 84, B 300/C 70
Technical arrangements:	7 tube system for recording amplifier; 3 tube system for playback amplifier; Push-pull erasing generator; Modulation control; Power Supply: Dry rectifier in bridge circuit.
Frequency response:	20 - 16.000 c/s
2 Microphone inputs:	10 mV/200 Ohm individual mixing, volume and tone controls
2 Instrument inputs:	17 mV/1 MOhm, individual mixing, volume and tone controls
Input for electronic instruments:	75 - 1000 mV/200 KOhm
Output to amplifiers:	0,5 - 1,0 V / 250 KOhm and 10 - 50 mV/500 KOhm
Reverberation:	produced by magnetic tape and 5+1 magnetic heads.
2 Tape speeds:	22 respectively 44 cm/sec.;
Tape length:	20 ¹ / ₁₆ in. (51 cm) endless loop, Agfa PE 31
Magnetic heads:	48 mm distance between recording heads, 24 mm distance between playback heads.
Reverb. duration:	variable from 0,1 - 3 sec.;
Reverb. characteristic:	achieved: 1.) by 2 tape speeds, 2.) by variable feedback
Numbers of echos:	adjustable by 3 controls variable from 1 to 10 and more. achieved: 1.) by switching magnetic heads, 2.) by variable feedback.
Modulation:	visual indication by "magic band"-indicator.
Fuses:	100 - 130 V = 0,6 A, 220 - 240 V = 0,4 A all fuses medium-slow, length 20 mm
Pilot lights:	2 dial lights 6 V - 3 W; 1 pilot light 7 V - 0,3 A
Dimensions:	Width 13 in., height 5 ¹ / ₂ in., depth 9 in.
Weight:	16 lbs. 12 oz.
Cabinet:	Compact portable steelhousing with carrying handle in two-tone colour. Push-button assembly with 8 keys on black and gold front plate.
Accessories:	1 slip cover (Plastic) 1 tape loop (spare)

Subject to modifications.

Dynacord

ELECTRONIC UND GERÄTEBAU

Index:

	Page
Cover with Short Description	1
S 65 in Different Views	3
Component Guide by Numbers	4
General Description	4
Mains Supply	5
Setting the Equipment up	5
Input and Output Connectors	5-7
Operating Keys and Controls	7-9
Remote Control Operations	9
a) Microphone DD 65/R	9
b) Foot Control FR 2	9
c) Foot Switch FS 2	9
Circuit Diagram	10-11
Important Control and Key Settings	12
Experimental Examples	12-13
Adjusting the Set for Operation	13-14
Care and Maintenance	14
Combination Rack KR 2	15
Connecting the S 65 with different Amplifiers (list)	15
Connecting the S 65 to Amplifiers (block diagram)	16
Accessories	17
Technical Specifications and Data	18

Connecting to the Mains Supply:

The line cord is to be connected with the Interlock Jack (50). The set must be connected only to an A. C. Supply.

Before turning the set on, check if the voltage selector (48) at the rear panel is adjusted to the proper line voltage. Voltage change is done by pressing and turning the fuse holder (49) with a screwdriver to the appropriate position. Care should be taken that the cutout carrier returns to its initial position after rotation. The fuse is located inside the center cap (49) of the voltage selector (48). The center cap (49) will snap out after a turn and will release the fuse.

Repeated blowing of the proper fuse indicates a defect in the unit. Do not attempt to bridge the fuse by wire or other objects for this may cause severe damage to the unit which will not be covered by warranty.

The size of the main-fuse should be:

for 110–130 V = 0,63 A

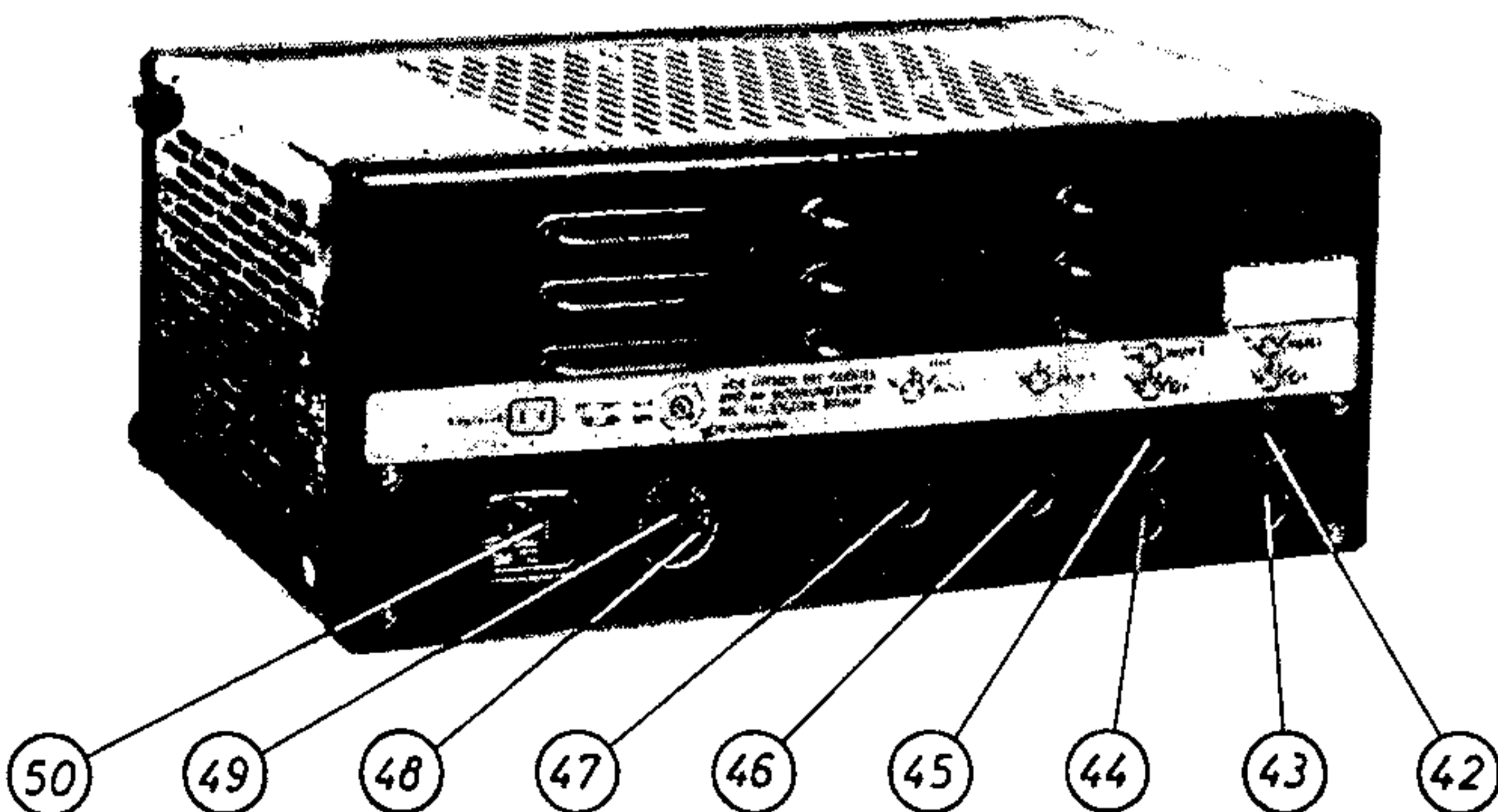
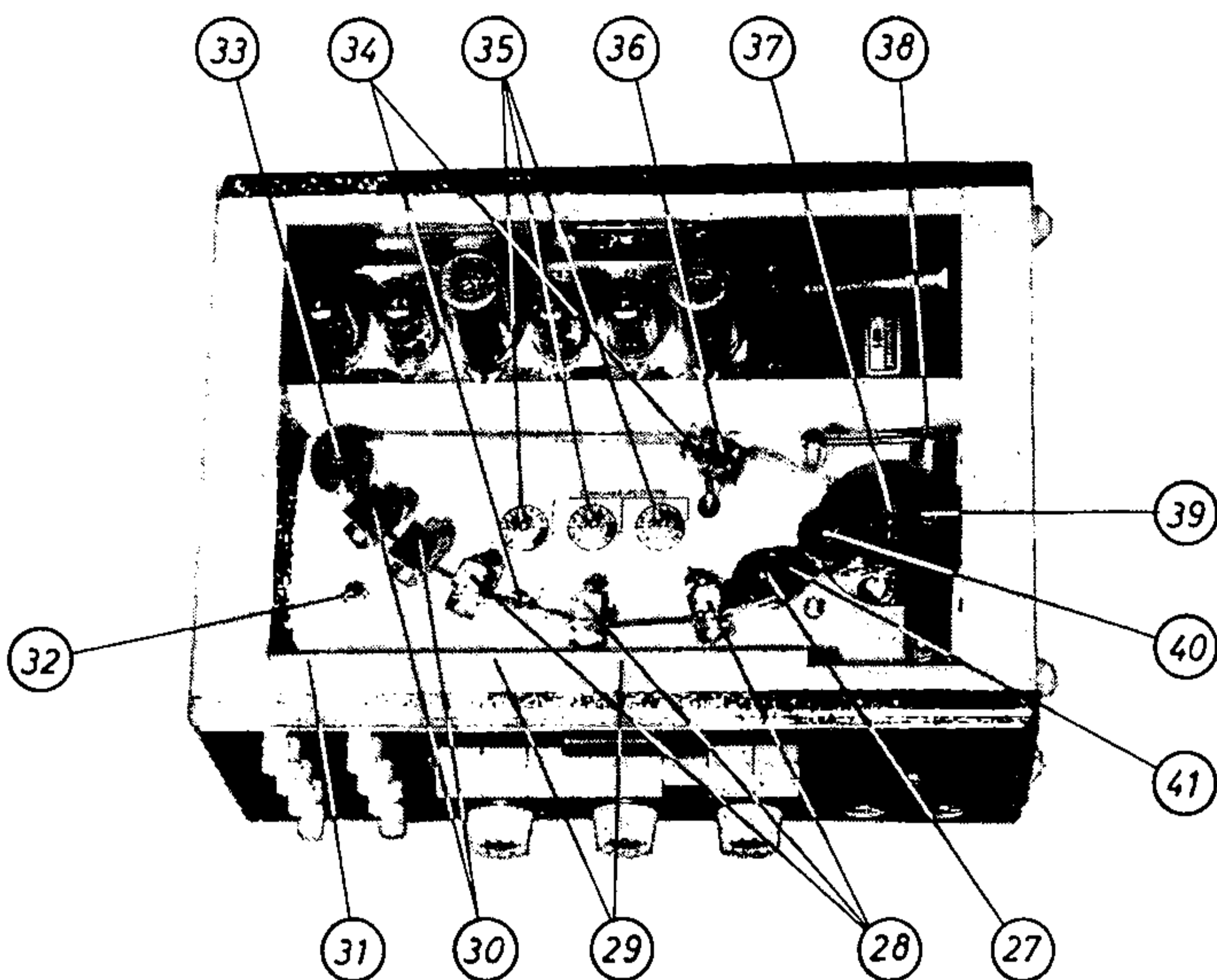
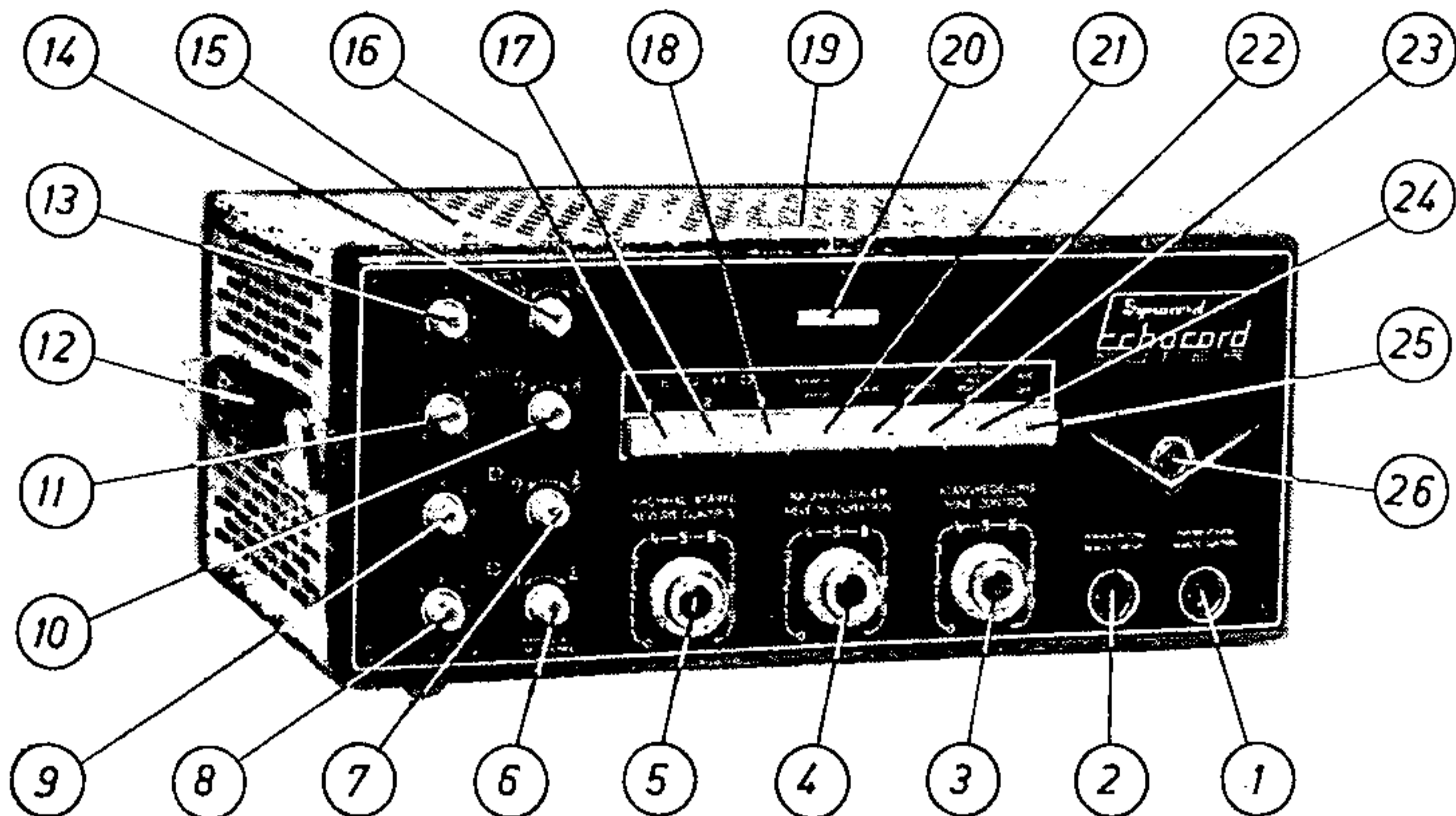
for 220–240 V = 0,4 A

Setting the Equipment up:

In order to put the unit into service conditions, open cover (15) by pushing it backwards so that it can be lifted. This operation is facilitated by finger hole (19) which is provided in the cover. Before shipping the unit a small stopper is placed at the tape loop for protection during transportation. The same is placed between the upper tension lever (38) and the cylindrical pull-spring. See indication plate on the unit! Remove this stopper by pressing slightly against the tension lever.

Check, if the tape loop is located properly as shown in the diagram (inside the cabinet lid). Changing the tape loop must be done only while the set is switched off. To change the tape loop, lift the shields off the playback heads (30). Note that the shields will be replaced after threading the tape properly to prevent hum. While threading the tape, pull back the springs of the tape-guide shaft (34) slightly and places the tape in the provided groove. Note also, that the glossy side of the tape is located to the outside of the loop. The endless tape PE 31 loop is especially manufactured of highly durable material in a special process creating a practically jointless loop. These tapes can be obtained from our distributors and dealers. A spare tape is supplied with each set, to be found inside the cabinet.

The unit may be turned on by pressing anyone of the keys (22) (23) or (24). Practically the key (24) (Ceverb. "Off") is to be used. This puts the unit in "Stand-by"-position for immediate use, because the tubes will be heated. The red pilot light (26) (on the front panel) indicates whether the motor is running or not.



- | | |
|-------------------------------------|--|
| ① = Remote Control Jack | ②⑦ = Movement Roller |
| ② = Remote Switch Jack | ②⑧ = Recording Heads |
| ③ = Tone Control for echo/reverb. | ②⑨ = Mounting Screws for Shield |
| ④ = Reverb. Duration Control | ③⑩ = Playback Heads with Shields |
| ⑤ = Reverb. Volume Control | ③⑪ = Metal Frame for Magic Band Indicator |
| ⑥ = Tone Control for Microphone 2 | ③⑫ = Level Control for Instrument 3 |
| ⑦ = Tone Control for Microphone 1 | ③⑬ = Turningpoint Roller |
| ⑧ = Volume Control for Micr. 2 | ③⑭ = Tapeguiding Shaft |
| ⑨ = Volume Control for Micr. 1 | ③⑮ = Reverberation Controls |
| ⑩ = Tone Control for Instrument 2 | ③⑯ = Erasing Head |
| ⑪ = Volume Control for Instrument 2 | ③⑰ = Sound Axle |
| ⑫ = Carrying Handle | ③⑱ = Upper Pressure-Lever |
| ⑬ = Volume Control for Instrument 1 | ③⑲ = Pressure Roller |
| ⑭ = Tone Control for Instrument 1 | ④① = Tension Roller |
| ⑮ = Removable Lid | ④② = Tension Lever |
| ⑯ = Key "Echo 1" | ④③ = Input Jack "Instr. 1"/connection to amplifier EMINENT |
| ⑰ = Key "Echo 2" | ④④ = Input Jack "Microphone 1" |
| ⑱ = Key "Echo 3" | ④⑤ = Input Jack "Microphone 2" |
| ⑲ = Hole to Lift the Lid | ④⑥ = Input Jack "Instrument 2" |
| ⑳ = Modulation Indicator | ④⑦ = Input Jack "Instrument 3" |
| ㉑ = Key "Reverb." | ④⑧ = Input Jack "Output" |
| ㉒ = Key "Adagio" | ④⑨ = Line Voltage Selector |
| ㉓ = Key "Presto" | ④⑩ = Fuse Holder |
| ㉔ = Key "Reverb. off" | ⑤① = Line Cord Interlock |
| ㉕ = Key "Off" | |
| ㉖ = Pilot Light for Motor | |

General:

The instrument serves in connection with an amplifier for producing artificial reverberation or echos.

The necessary time delay and repetition is obtained by storing the signal at an endless magnetic tape loop and the retarded pick up from the tape. The tape will be erased at each revolution. 3 recording- and 2 playback heads make it possible to produce all kinds of echo-, reverberation- and trick effects. Through a two-channel transformation of the original signal and the echo it is possible to reproduce the playback in two different directions. This is creating a stereo-like effect.

Input- and Output Connectors:

All input- and output cables must be shielded.

The shielding is to be connected on pin 2 of the 3-prong and the 5-prong connectors.

The following jacks are located at the rear panel:

1. Microphone 1 (43): Jack for dynamic microphones (Ribbon-type Microphone)
 - pin 1+3: Audio input
 - pin 2: Ground (shield)
 - pin 4: Control-lead "Basic signal" (can be remote-controlled by means of DYNACORD microphone DD 65/R).
 - pin 5: Control-lead "Echo" (can be remote-controlled by means of DYNACORD microphone DD 65/R).
 2. Microphone 2 (44): like microphone 1.
 3. Instrument 1 (42): Input for instrument pick-ups or high impedance microphones and output for DYNACORD amplifiers.
 - pin 1: Audio input
 - pin 2: Ground (shield)
 - pin 3: Output for L. F. Voltage (Echo/Reverb. and Original). To establish connection to DYNACORD amplifier (EMINENT or another model). When tone control knob (3) is pulled: echo output only 0,5–1 V.
- Attention! When the echo unit S 65 is combined with our DYNACORD amplifier "Eminent", instructions indicated on the rear panel must be followed. Connection is made by the connecting cable VK 1,5 from the "echo input" jack of the echo unit. Both of these input jacks are marked correspondingly with a red dot.
4. Instrument 2 (45): Input for instrument pick-ups or high impedance microphones.
 - pin 1: Audio input
 - pin 2: Ground (shield)
 - pin 3: Not used
 5. Instrument 3 (46): Input for electronic instruments (Organ etc.) with own volume control (level control (28)).
 - pin 1: Audio input
 - pin 2: Ground (shield)
 - pin 3: Not used.
 6. Output (47): a) Tone control knob (3) pressed.
 - pin 1: 0,5–1 V Audio for amplifier inputs with low sensitivity.
 - pin 2: Ground (shield)
 - pin 3: 30 mV Audio for sensitive amplifier inputs.

b) Tone control knob ③ pulled: for stereo effects.

- pin 1: 0,5–1 V. Audio (basic signal)
- pin 2: Ground (shield)
- pin 3: 0,5–1 V. Audio (echo or reverb. signal)

The following controls are located at the front panel:

7. Remote Switch ②: This jack is used to connect a remote switch for switching the reverb., echo signal and basic signal on or off.
 - pin 1: Lead "Basic signal" and "echo" or "reverberation".
 - pin 2: Ground (shield)
 - pin 3: Lead "echo" or "Reverb." signal
8. Remote Control ①: This jack is used to connect a remote control to regulate the volume of the basic signal, the echo and reverb.
 - pin 1: Control lead "Basic signal" and "echo" or "reverberation"
 - pin 2: Ground (shield)
 - pin 3: Control lead "echo" or "Reverb."

Operating Keys and Controls:

At the left-hand side of the front panel are all input controls located. The outside row of controls ⑧ ⑨ ⑪ ⑬ are the input volume controls. The second row ⑥ ⑦ ⑩ ⑭ represents the input tone controls. These controls are numbered according to the input jacks at the rear panel. The "Magic band"-indicator ⑳, located in the center of the front panel, provides visual control of the modulation.

For proper adjustment, the magic bands should be brought close together, but should not touch each other.

Below the "Magic band" – indicator are the 8 operating push-buttons located.

The functions of these keys are the following (right to left):

1. Main switch ⑳ (pressed "Off"). If the unit is not used for longer periods and during transportation it must be switched off by pressing the key "Off" ⑳. Only in this position the tension roller ㉓ is lifted from the sound axle ㉑ to prevent damage to the tension roller.
2. Reverb. key ㉒ pressed: "Echo and Reverb. cut off". The basic signal remains on.
3. "Presto" ㉓
This key is employed for fast musical pieces. The echos are short.
4. "Adagio" ㉔
This key is employed for low musical pieces. The echos are longer. The keys ㉔ ㉓ ㉑ release each other.

5. Reverberation ⑳

In this position all magnet heads are switched on and a reverberation effect. This reverberation can be equally adapted to the user's requirements by means of three controls ㉓ provided on the plate carrying the mechanism, provided key „Reverberation“ ㉑ is pressed down.

The three controls may be set according to requirements either by means of a small screwdriver or even with the hand.

The reverberation consists of several echos in rapid succession. Control 1 is setting the first and second echo, control 2 the third and fourth, and control 3 the fifth and sixth echo. Turning to the left stop means reducing the corresponding echos to zero, whilst turning to the right, i. e. clockwise, means increasing echos. Standard setting, as regulated in the manufacturers' work, is colour marked for each control. Thus it is easy to re-establish the standard regulation by turning the screwdriver slot in direction of the colour mark.

6. „Echo 3“ ㉒ pressed. In this position a prolonged echo is produced. The length of this echo can be varied by changing the keys „Presto“ and „Adagio“.
7. „Echo 2“ ㉑: like „Echo 3“ but shorter echo.
8. „Echo 1“ ㉐: like „Echo 2“ and „Echo 3“, to produce the shortest echo. The keys ㉐ ㉑ ㉒ ㉓ also release each other. Other reverberation effects can be produced by simultaneously pressing down the echo key.

Below the push-button assembly are the following controls located:

1. „Reverb. Control“ ㉕:

This control changes the proportion of reverb. or echo volume to the basic signal. In the end position the echo and reverberation have a little more volume than the basic signal.

2. „Reverb. Duration“ ㉔:

This control changes the numbers of repetitions of the echo or the reverb. duration. In position 0 a single echo is produced and in the end position ech of 10 times and more.

3. „Tone Control“ ㉓:

The tone control changes the tone characteristics of the echo. With this control it is for instance possible to create a kind of „cave-effect“.

It is advisable to try several effects in relation to the actual acoustics of the place where the equipment is used.

4. Stereo Switch:

The knob "Tone Control" ③ is coupled with a push-pull switch. In the pressed position the basic signal and the echo are mixed for monaural reproduction. By pulling the tone control knob, the basic signal is separated from the echo for 2 channel stereo operation (see "Input- and Output connection", fig. 6).

The push-pull switch ③ is also employed for remote control and remote switching operations (see "Remote Control Operation").

Remote Control Operations:

a) Microphone DD 65/R

The DD 65/R provides 2 controls, for the "Basic signal" and the "echo" (or reverb.) The operation is possible by using the input jacks: "Microphone 1" ④③ and "Microphone 2" ④④.

The following operations are possible:

Tone control knob on "S 62 a" pressed:

The basic signal control on the DD 62/R changes the volume of the basic signal **and** the echo.

Tone control knob on the "S 62a" pulled:

The basic signal control on the DD 65/R changes the volume of the basic signal only.

The echo control on the DD 65/R changes the volume of the echo (or reverb.) only.

b) Foot Control FR 2

Operation of the "S 65" is possible by means of a remote control connected to the jack "Remote control" ①.

When using a DYNACORD foot control FR 2 or an other remote control system it is important to make the right connections to the connector pins. Should the foot control be used just for the "echo" or "Reverb.", the pin No. 3 is to be connected (pin 2 for ground). Using pin 1 (pin 2 for ground) it is possible to provide the stereo effect by means of the stereo switch (see explanation under "DD 65/R" above).

c) Foot Switch FS 2

This foot switch provides similar conditions as the FR 2 when connected to the jack "Remote switch" ②. The echo or reverb. can be switched on or off when pin 3 is used. Using pin 1 it is possible to switch either the echo or the basic signal as explained in the description of the "DD 65/R" and "FS 2". The selection of the channel depends on whether the tone control knob is pressed or pulled. Pin 2 on the plug is always connected to ground (shielding).

Using a combination of two microphones DD 65/R, one DYNACORD foot control and one DYNACORD foot switch, it is important to note, that the remote control and the remote switch are operating in parallel.

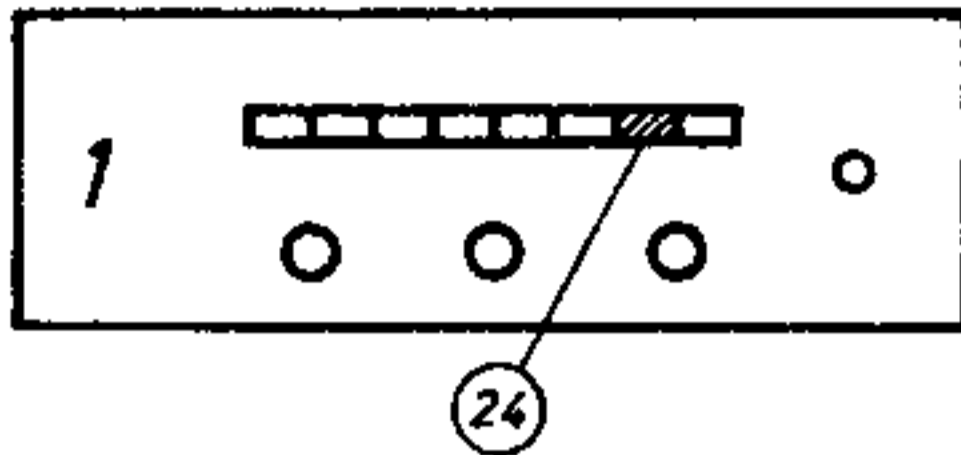
For instance if one control is in zero position, there is no control possibility for the other control.

How to set the controls and keys:

Experimental Examples:

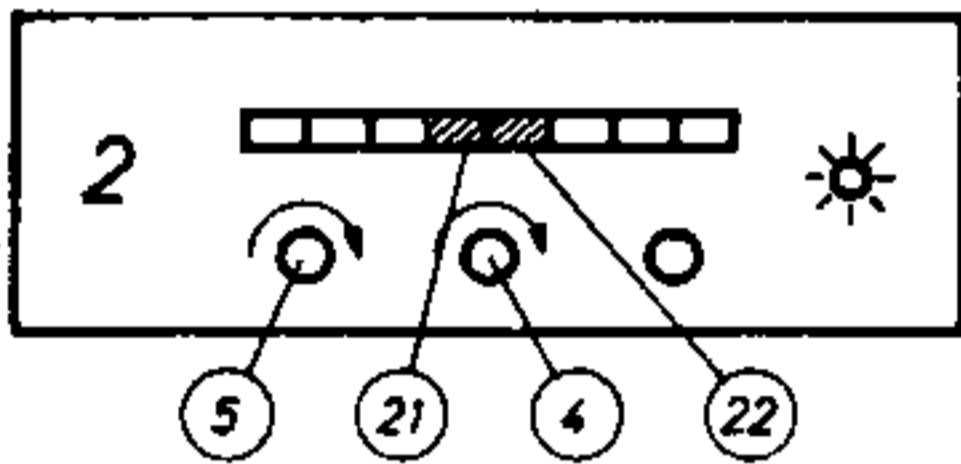
It requires little experience to realize the many possibilities of the Echocord in producing echos, reverb. and trick effects. The possibilities are depending on the adjustment of the controls and keys. The push-button keys are providing extreme simplification of the different adjustments.

Operating Examples:



1. Stand-by position:

The key "Reverb. off" (24) is pressed, the motor is not running. Adjust microphones and instruments.

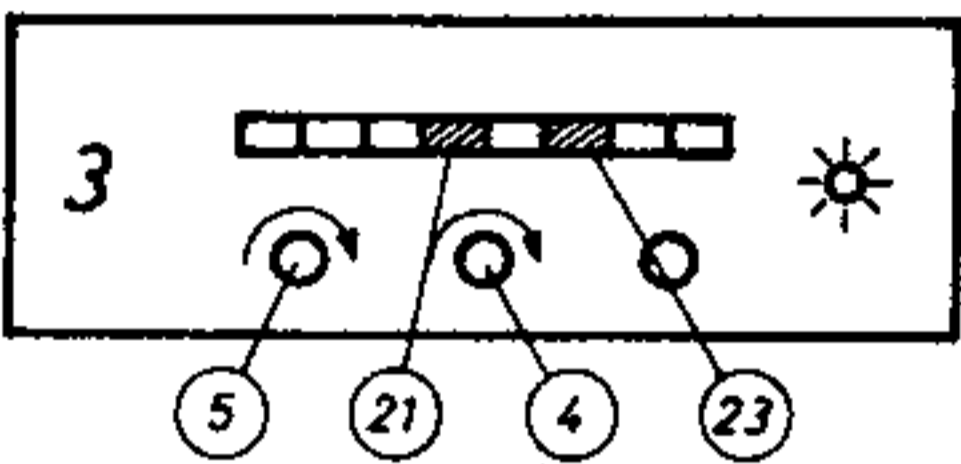


2. Reverb. for slow musical pieces:

The keys "Reverb." (21) and "Adagio" (22) are pressed. Adjust the reverb. control with knob (5).

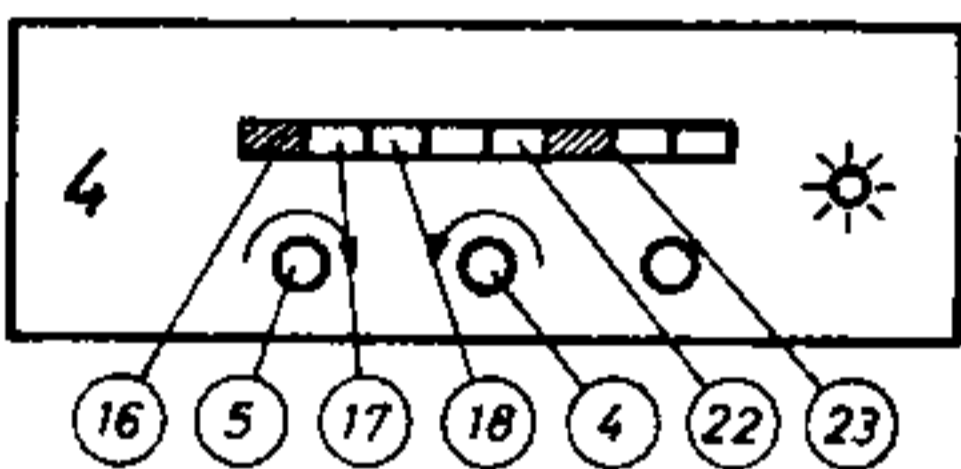
Adjust reverb. duration with knob (4).

Adjust reverb. characteristics with controls (35) which are provided on the plate carrying the mechanism.



3. Reverb. for fast musical pieces:

Keys "Reverb." (21) and "Presto" (23) are pressed. Adjust the reverb. control with knob (5). Adjust reverb. duration with knob (3). Adjust reverb. characteristics with controls (35) which are provided on the plate carrying the mechanism.



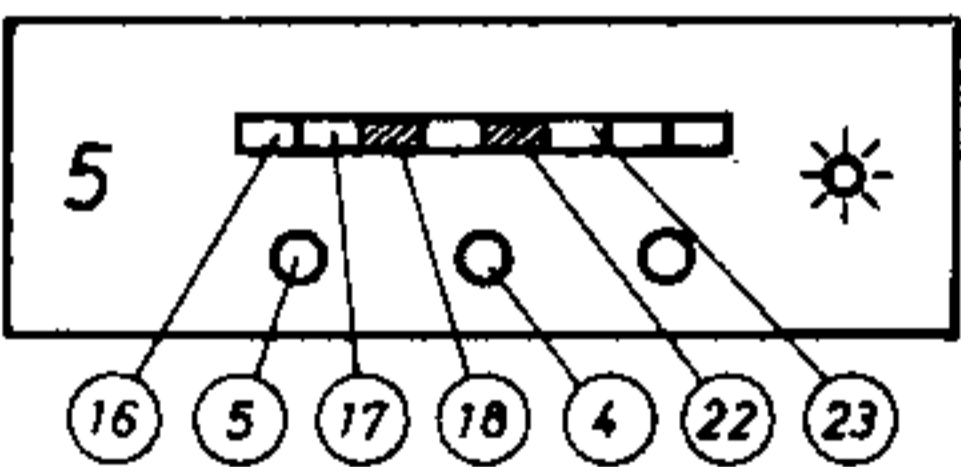
4. Single echos (short or long):

a) short echos: keys "echo 1" (16) and "Presto" (23).

b) medium long echos: keys "echo 2" (17) and "Presto" (23).

c) long echos: keys "echo 3" (18) and "Presto" (23)

d) the longest echo: keys "echo 3" (18) and "Adagio" (22).
Open "Reverb. control" (5) as necessary. "Reverb. duration" control (4) closed.



5. Multiple echos:


a) short echo: keys (16) and (22) are pressed.

b) medium long echo: keys (17) and (22) are pressed.

c) long echo: keys (18) and (22) are pressed.

Open "Reverb. Control" (5) as required, change "Reverb. duration" (4) control for the numbers of echos desired (up to 10 single echos). To support high notes, press key (23) instead of (22). In this case the time between the echos is shortened.

schrattierte Flächen = gedrückt

 = pressed

6. Special hall effects:

By pressing the keys "echo 1, 2 and 3" (16) (17) (18) together or in pairs it is possible to create different kinds of hall effects.

Adjusting the Set for Operation:

After connecting the microphones or instruments to the appropriate jacks ④② ④③ ④④ ④⑤ of the "S 65", the corresponding input controls ⑧ ⑨ ⑪ ⑬ are adjusted for proper modulation. The light bands at the modulation indicator ⑳ should be close together, but not touch each other. The corresponding input control for instr. 3 ④⑥ is located inside the unit under the lid ⑮, marked "Pegel" ③②.

Now the amplifier should be adjusted for the desired volume and tone.

If the keys "Presto" ②③ and "Echo 3" ⑱ are pressed and the "Reverb. control" ⑤ opened, a single echo is heard. This echo will repeat itself up to 10 times and more by turning the "Reverb. duration control" ④ clockwise. By opening the "Reverb. volume control" ⑤ and the "Reverb. duration control" ④ too far, a feedback noise might appear. It is therefore recommended to find the proper setting of these controls before using the equipment in public.

Changing the keys from "Adagio" to "Presto" ②② ②③ it is necessary to turn the "Reverb. volume control" ⑤ down to prevent the acceleration noise of the motor being amplified. Using remote operation this can also be done by means of the remote control ①.

Before they are shipped, the units are adapted by the manufacturer so as to be connected to all DYNACORD amplifiers under the most favourable conditions. Should a subsequent correction of the reverberation time prove to be desirable owing to particular acoustical conditions, such corrections can be achieved by means of tone control R 38.

This control is accessible through the perforation of the side panel by means of a screw driver without any necessity of opening the apparatus.

HOW TO COMBINE the ECHOCORD SUPER 65 with DYNACORD Amplifiers

If the ECHOCORD SUPER 65 is combined with DYNACORD amplifiers EMINENT, MV 17, KING, REX or EXCELLENT, there is the possibility to provide the microphones and instruments which are connected to the amplifier, with reverberation or echo effect.

Connection of the units is described on page 6 and in the subsequent Table. ECHOCORD S 65 is operated as described in previous chapters, but the input "Instr. 1" cannot be used to connect an instrument since the amplifier has to be connected to it.

In order to put the plant into service conditions, set the microphones and instruments which are connected to the ECHOCORD according to the description contained in the precedent paragraphe. Regulate then the volume of the sound voltage sources which are connected to the amplifier by means of the corresponding controls. By operating the Echo-Reverb. switches of the amplifiers, the inputs of the amplifiers are equally connected to the ECHOCORD. Reverberation or echo volume control is achieved by turning button "Instr. 1" ⑬ in clockwise direction without any necessity of changing previous settings.

Moreover, the tone colour of the reverberation or echo of the sound voltage sources which are connected to the amplifier can be additionally controlled by means of tone control (14) which is provided at the right of button (13), in such a way that both reverberation and echo of the microphones and instruments connected to the amplifier or the ECHOCORD can be set individually. Thus, reverberation and echo can be individually switched on and off for the microphones and instruments connected to the amplifier by means of the echo/reverb. switches.

Care and Maintenance:

Sufficient air circulation should be provided for cooling the Echocord in operation. The "Echocord Super 65" should not be placed in the immediate vicinity of other heat-producing equipment. Also no other equipment or articles should be placed on top of the Echocord, in order to allow free air circulation.

The cleaning of the magnetic heads should be done with a soft brush.

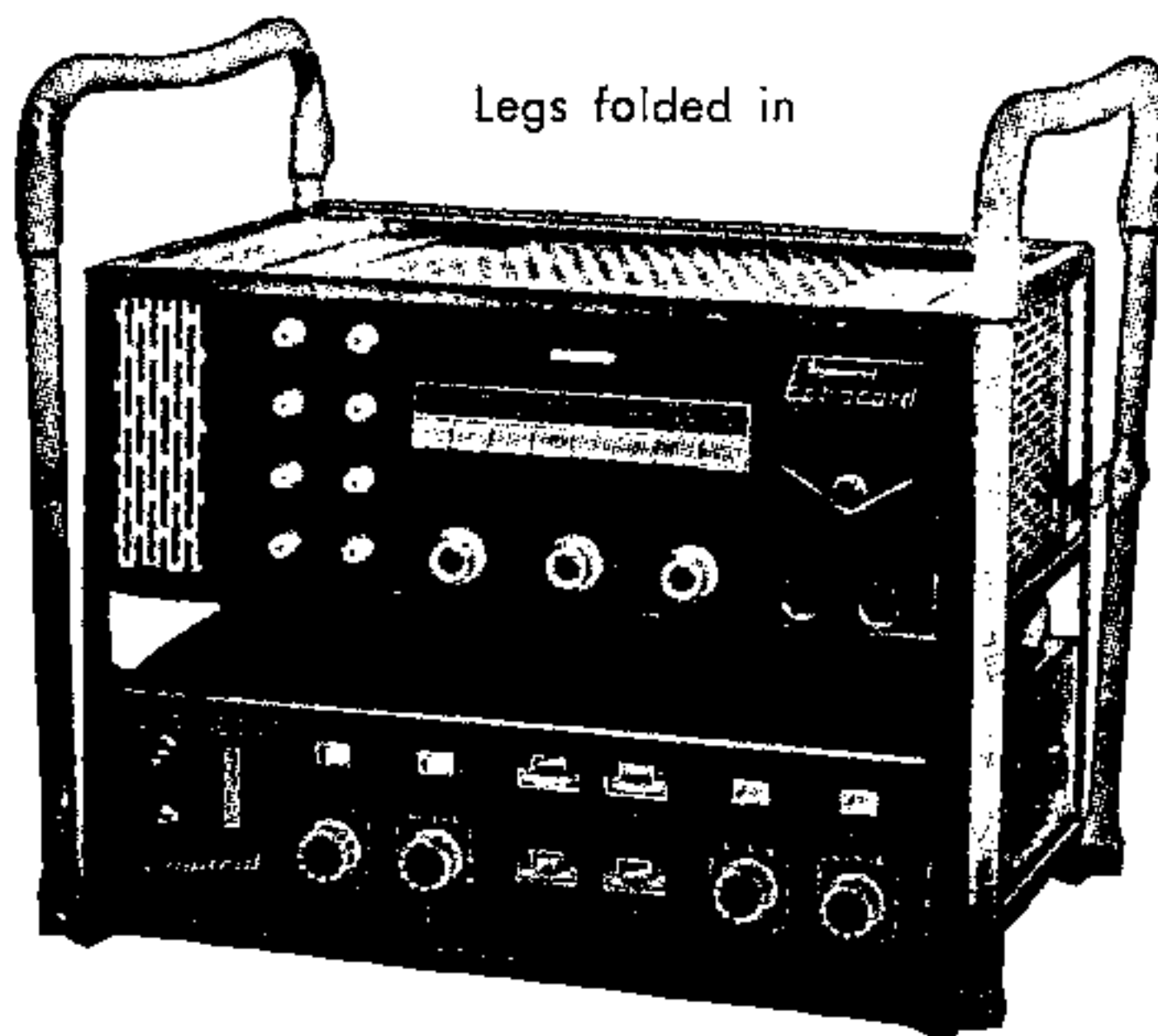
In case the heads are heavily soiled, they may be cleaned with contact cleaner or alcohol. Metallic objects (e. g. a knife) should by no means be employed for cleaning the heads in order to prevent unrepairable damages. The rollers (27) (33) (39) (40) are self-lubricating. Oil or grease must not be used for lubrication.

The life time of an endless magnetic tape PE 31 extends to approximately 500 working hours. To prevent unnecessary deterioration of the magnetic tape it is recommended to press the key "Reverb. off" (25) during operation without "Reverb." and "Echo". In this position the power motor is not running, while all other circuits remain in operation.

Combination Rack

KR 2

Legs folded in



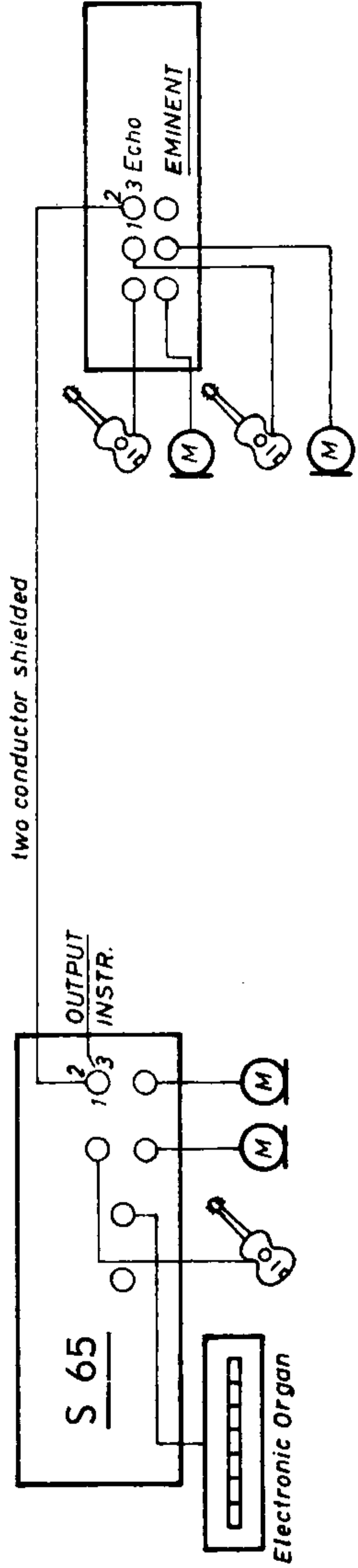
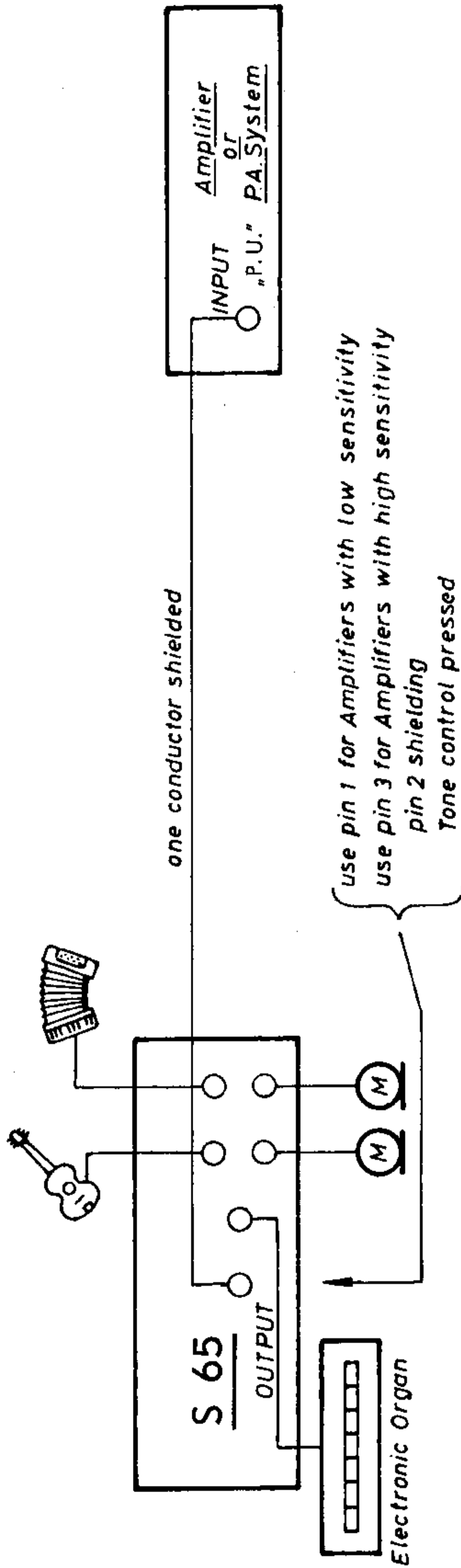
To simplify the uses of the "Echocord Super 65" and the DYNACORD amplifier "Eminent" a combination rack "KR 2," has been designed. Both units can be mounted in this rack for easy operation and transportation. The 2 folding legs raise the units in extended position at an ideal level for convenient operation

Folded in, the legs serve as practical handles during transportation.

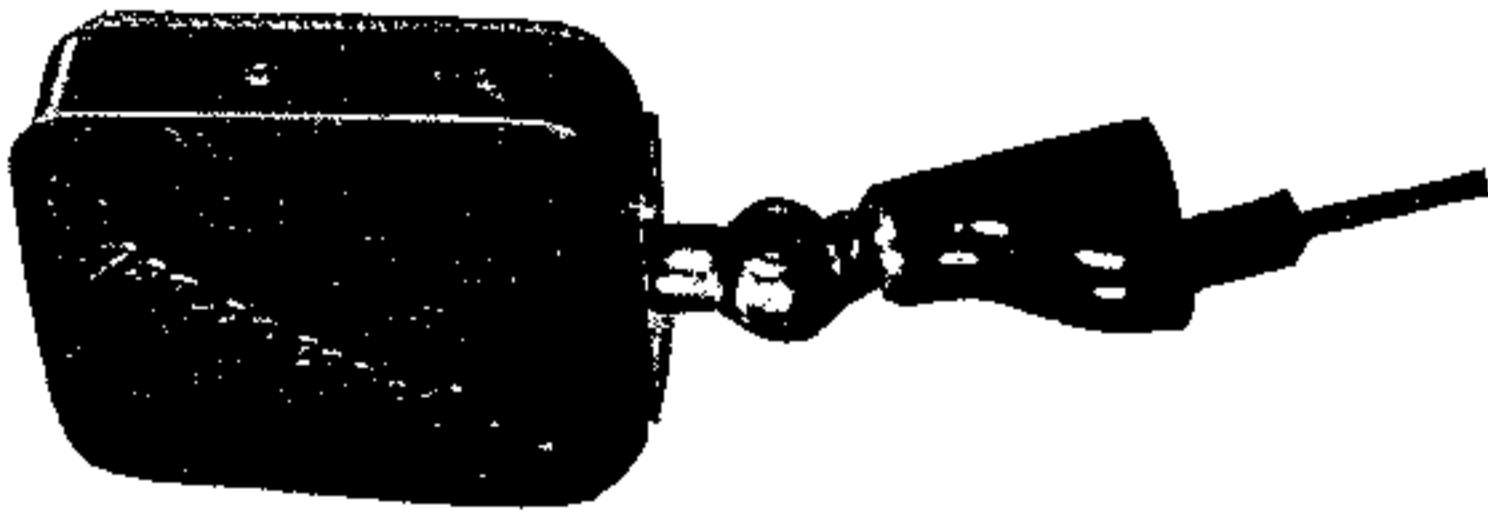
Beside the Echocord is a compartment for storing cables accessible from behind

Connecting the "S 65" with different amplifiers:

Type of amplifier	Amplifier jacks	Jacks on "S 65"	Connecting cable
DYNACORD amplifier: DA 16, DA 18, DA 20, Expusit, De Luxe, Excellent (older model)	"Echo" pin 1 pin 2 (ground)	"Output" pin 1 pin 2 (ground)	single conductor shielded
DYNACORD amplifier: Eminent, Excellent (new model) and the models of the "King"-series.	"Echo" pin 1 pin 3 pin 2 (ground)	"Instr. 1" pin 1 pin 3 pin 2 (ground)	two conductor shielded
Older DYNACORD amplifiers and other makes	"Phono" "Microphones" (high impedance)	"Output" pin 1 pin 2 (ground) "Output" pin 3 pin 2 (ground)	one conductor shielded one conductor shielded

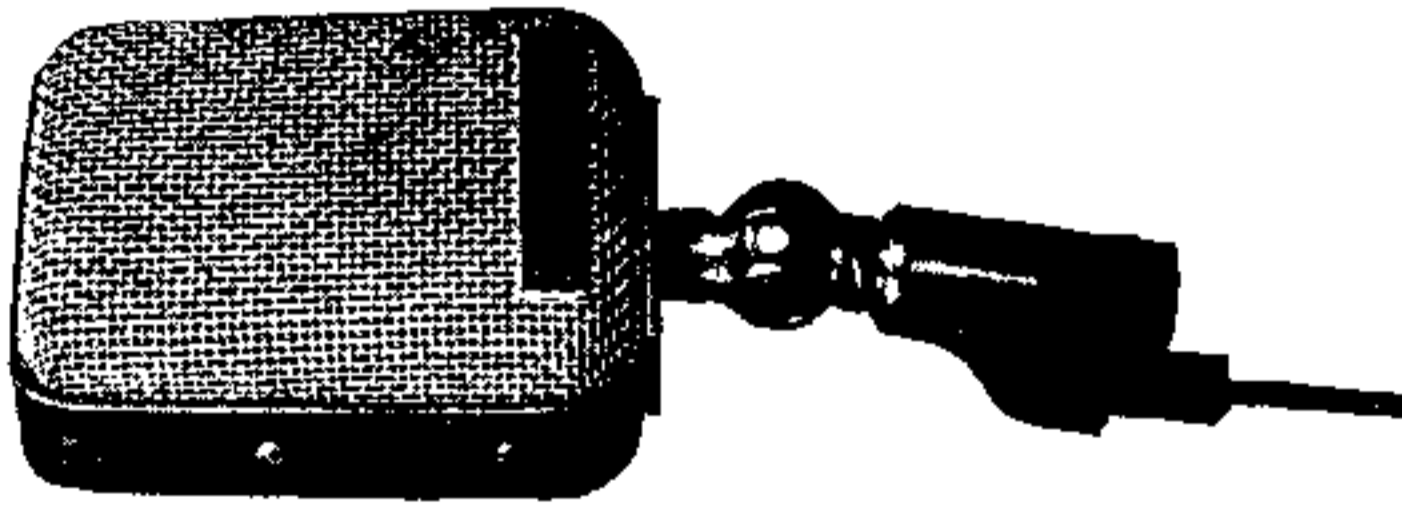


MICROPHONES AND ACCESSORIES



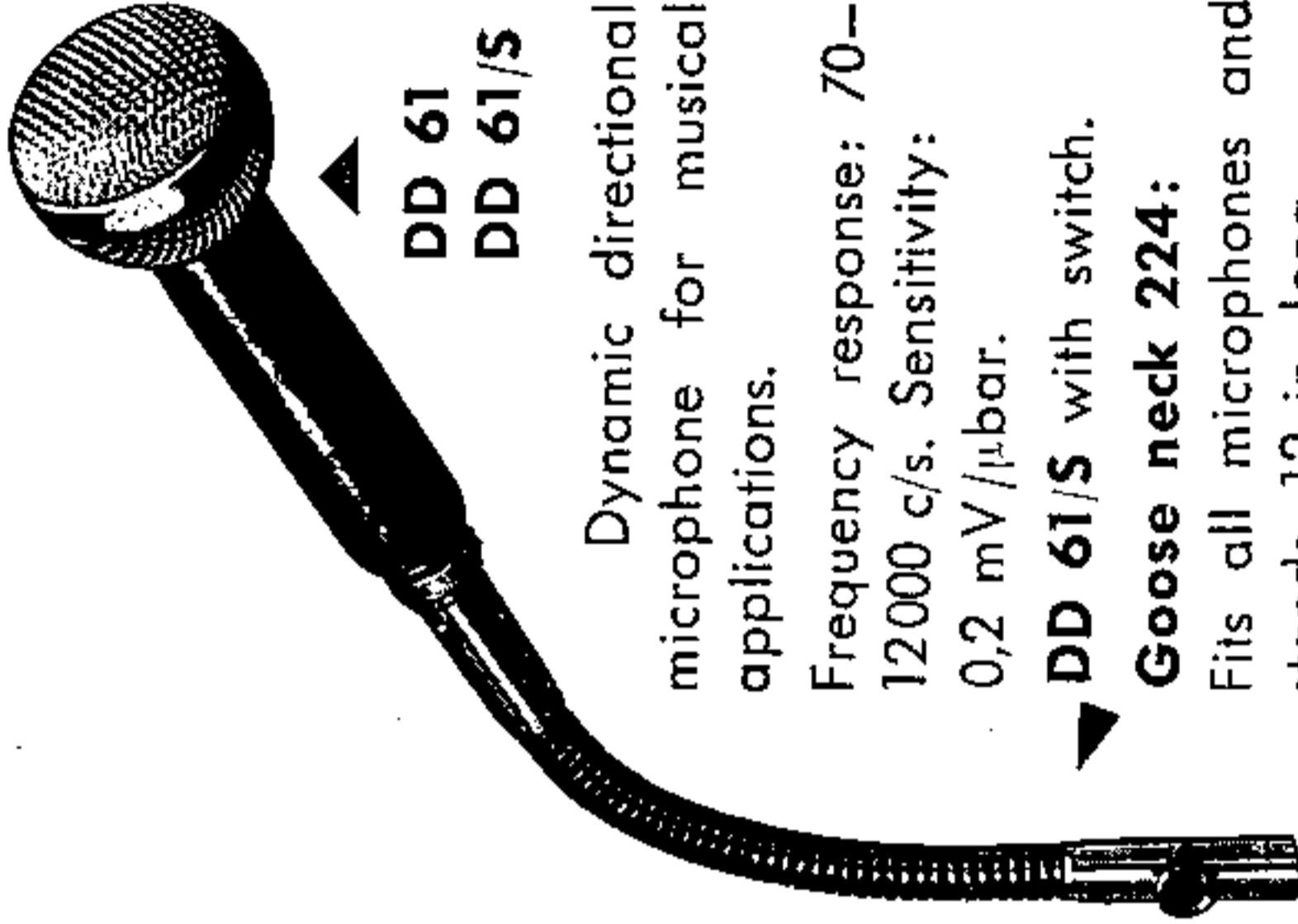
DD 65

Directional microphone, low feedback-type for acoustically difficult applications, 15ft. cable. Frequency response: flat from 30 c/s—10 Kc/s ± 3 db. Sensitivity: 0,3 mV/ μ bar ± 2 db.



DD 65/R:

Like DD 65, however with built-in controls for remote operation of the echo- and reverb. units. Separate control of the echo and original sound possible directly from the microphone.



DD 61
DD 61/S

Dynamic directional microphone for musical applications. Frequency response: 70—12000 c/s. Sensitivity: 0,2 mV/ μ bar.

DD 61/S with switch.

Goose neck 224:

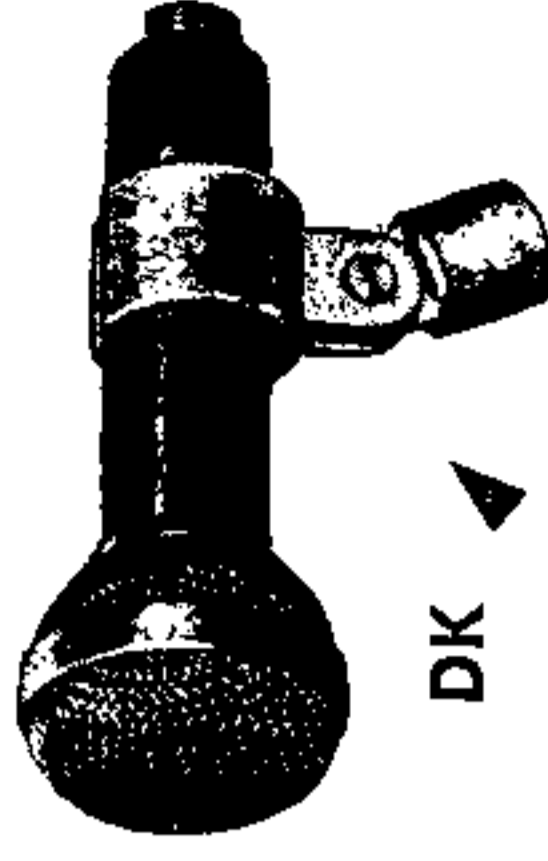
Fits all microphones and stands, 12 in. long.



DD 260

Dynamic ribbon-microphone of studio quality with very low feedback.

Frequency response: 50-18000 c/s. Sensitivity: 0,08 mV/ μ bar.



DK

Microphone bracket:

for mounting on stands for the microphones DD 61 and DD 260



Footswitch FS 2:

Remote control switch for all sets ("On-Off" operation of different circuits). 15 ft. cable with plug.



Foot control FR 2:

Rugged foot control for remote operation of units or instruments. 15 ft. cable with plug.

These microphones are selected to match all **Dynabond** units!