ILLUSTRATION

March 1957

GENERAL DESCRIPTION

Twenty years of continuous experience in sound recording technique and the application of modern ideas led to the development of NEUMANN DISK RECORDING MACHINES, which are designed in accordance with internationally stipulated sound recording and reproducing standards.

The above illustration shows a complete DISK RECORDING MACHINE, which is deliberately composed of several self-contained units, at which — in any case — the RECORDING MACHINE, Model AM 32 or AM 32a, and its AUTOMATIC CUTTERHEAD MOVING UNIT, Model VA 32a, represent the basic units.

This way of construction makes it possible to take at any time individual wishes into consideration by combining the RECORDING MACHINE and its AUTOMATIC CUTTERHEAD MOVING UNIT with the various complementary units according to the intended use. Moreover, it involves some further advantages such as: best accessibility for survey and maintenance as well as most comfortable and simple operation.

These features together with the high uniformity in running and a minimum of wow and flutter make the NEUMANN DISK RECORDING MACHINES suitable for cutting cellulose- or lacquer-coated disks
of highest quality, especially those which are to be used for the purpose of making masters.

The two different kinds of cutterhead suspension arrangements — in standard design for the Model AM 32 and in special design for the Model AM 32a — allow in any case the application of the most customary cutterhead types with or without feed-back system.

On special request, the RECORDING MACHINE, Model AM 32a, can be provided with a special microscope of high quality and some additional complementary parts.

The AUTOMATIC CUTTERHEAD MOVING UNIT, Model VA 32a, drives the lead screw of the RECORDING MACHINE. With this unit the groove pitch on the recorded can continuously be varied within the limits stated below under "TECHNICAL DATA".

In order to make it possible to operate a combined TAPE PLAYBACK- AND-DISK RECORDING MACHINE by one operator only and to avoid possible errors in operating the RECORDING MACHINE and the AUTOMATIC CUTTERHEAD MOVING UNIT are furnished with pilot relays and a combined start-and-stop mechanism, which enable the machine to perform the following actions fully automatically:

1.) Start of the TAPE PLAYBACK MACHINE.
2.) Cutting of concentric circles.
3.) Cutting of run-in spirals.
4.) Cutting of run-inspirals with simultaneous interruption of the stylus heating circuit.
5.) Cutting of run-in, marking and run-off spirals with interruption of depth in connection with the RECORDING MACHINE, Model AM 32a, only. (With Model AM 32 mechanically by hand).
6.) Cutting of marking- and run-off spirals according to the number of scrolls contained in the tape to be reproduced in connection with the PHOTOCELL CONTROL AMPLIFIER SV 32 and the TAPE PLAYBACK MACHINE, which has to be provided with a special head arrangement for this purpose.

TECHNICAL DATA

Turntable Diameter .......... 16 1/2 in. (420mm)
Turntable Speeds .......... 33 1/3, 45 and 78 rpm (16.2/3 rpm in connection with ZA 33 unit)
Wow and Flutter .......... < 0.5 /±0.0%
Disk Holding .......... by special suctiontable
Rumble Attenuation Factor .......... > 55 db
Start Mechanism for run-in spirals .......... adjusted for 6.3/4", 9.3/4" and 11.3/4" disk diameter in standard design for DIN systems calibrated in terms of "mm" in special design for RCA a.o. systems calibrated in terms of "inch"

Cutterhead Suspension Arrangement:
Model AM 32 .......... standard design
Model AM 32a .......... special design with electrical controlled depth of cut adjusting device

Concentric Circle .......... automatically
Eccentric Circle .......... mechanically by hand
Groove Pitch Ranges
continuously variable for grooves/ modulated grooves
33 1/3 rpm: 125 ... 772 " inch
45 rpm: 125 ... 617 " inch
78 rpm: 58.4 ... 279 " inch
continuously variable for run-in, marking- and run-off spirals
33 1/3 rpm: 30.5 ... 156 " inch
45 rpm: 22.8 ... 127 " inch
78 rpm: 15.3 ... 78 " inch

Mains Supply .......... 3 x 380 V ± 50 or 60 c/s (for 220V single phase current in connection with ZA 32 unit)
Dimensions: AM 32 .......... 38 x 14 inch. (base plate)
VA 32a .......... 15 x 14 inch. (base plate)
Weight: AM 32 .......... ~ 95 Kg without accessories
VA 32a .......... 30 kg

All automatic actions to be performed by the spiralling motor in the AUTOMATIC CUTTERHEAD MOVING UNIT during the process of recording as well as the lifting up of the cutterhead and the interruption of the styli heating circuit when recording has come to an end are effected by a combined start-and-stop mechanism, which is attached on a ruler on front of the RECORDING MACHINE below the carriage. The scale of the ruler is calibrated in terms of "inch" and the the three starting cams as well as the adjustable stop pin of the start-and-stop mechanism are designed in their length and position according to the relative diameters of the most customary disk sizes.

The disks to be cut are hold to the turntable by special suction tables of different types, the suction areas of which can mechanically be adjusted to the different disk sizes.
The AUTOMATIC CUTTERHEAD MOVING UNIT, Model VA 32a, is also set on four adjustable rubber feet. The most essential parts of this unit are two voltage-controlled Ferraris motors, which show — due to their special circuit arrangements — a very high constancy within a large speed range. Both these motors are connected with a two-step gear, which in turn is coupled with the lead screw of the RECORDING MACHINE. The number of revolutions of the "main motor" in the VA 32a unit can continuously be adjusted by the main potentiometer on the front panel of the VA 32a unit. The dial of this potentiometer is calibrated in terms of "grooves per inch" for the three speed ranges 33 1/3, 45 and 78 rpm. The brake current for the "main motor" can be taken from the GROOVE PITCH CONTROL AMPLIFIER SV 32, thus effecting a speed variation of this motor dependent on the modulation to be recorded. The number of revolutions of the "spiralling motor" in the VA 32a unit, the speed of which is much higher than that of the "main motor", can be adjusted by three potentiometers for run-in and marking spirals and three further potentiometers for run-off spirals.

For best and most suitable installation, the complete RECORDING EQUIPMENT should be mounted in the CABINET ZT 32, which was deliberately designed for this purpose.

The RECORDING MACHINE consists of the following basic units:

a) Recording Machine AM 32 or AM 32a
b) Automatic Cutterhead Moving Unit VA 32a
c) Suctiontable ZA1, ZA2, ZA3 or ZA4
d) Turntable Driving Motor SM 8/3 or SM 8/3-A (auto-synchronous type)

inclusive: Chip, Glass, Hose Pipes and Groove Inspection Microscope.

ACCESSORIES

e) Cabinet ZT 32
f) Groove Pitch Control Amplifier SV 32
g) Phase Advancer ZA 32
h) Vacuum Plant (S & H. Protos)
i) Meyer Light Source Z 21
j) Photocell Control Unit ZA 34/35
k) Special Microscope with Stroboscope-Lamp
l) Tone Arm with dyn. Pick-Up
m) Supplementary Device ZA 33 for operating the equipment with 16.2/3 rpm.
n) Cutterhead and Accessories on special request