

The EMT Turntable



1950 to 1982

When the long playing record was introduced in 1948, American radio stations already possessed appropriate turntables. The 33- $\frac{1}{3}$ and 45 rpm speeds could easily be implemented with whole-number reduction ratios of 1:54 and 1:40 with a synchronous motor driven from the 60 Hz mains power. The vinyl record material had already been introduced for 16" pressings for professional program distribution and for V Discs, the light, unbreakable 78 rpm records used to supply "canned music" to the US military throughout the world.

The conditions in Europe were entirely different. Particularly in Germany, the technology of phonograph records had been neglected because the quality of magnetic recordings was far superior at that time. The 78 rpm turntables that were available for shellac records and gelatine foil transcriptions could not be modified for the new standard, since their rumble level was too high and the stylus force too great.

Wilhelm Franz, the untimely deceased founder of EMT, carefully observed foreign developments, notwithstanding domestic uncertainties in postwar Germany. It is likely that he was assisted by his good connections with engineers in nearby Switzerland, where a clear view of occurrences all over the world could be maintained. He thus recognized at an early stage that, because of the significant improvement in quality, the microgroove would again make the phonograph record interesting for local broadcasting companies.

Once this situation was recognized, it was only a small step to the decision to develop and manufacture professional turntables for the new technique. In cooperation with the German Broadcasting Institute, two turntables soon resulted with the broadcaster designa-

1950/51
R 35
R 80 **EMT 927**

tions R35 and R80. The R80 was the predecessor of the first turntable with the company's own name, the EMT 927 "Large Studio Turntable". It was large in order to be able to accommodate the special 16" (40 cm in diameter) phonograph records used by American radio stations, as mentioned above, and was thus equipped with a platter 44 cm in diameter.

1956
EMT 930

When it was recognized that these records would never attain significance in Europe, a smaller companion of the EMT 927 Large Studio Turntable was developed in 1956, the EMT 930 Studio Turntable with 33 cm platter. Both units were driven by a self-starting single-phase synchronous motor, which was specially developed for this application and also manufactured in-house to insure smooth, vibrationless running. The power transmission was implemented by an idler wheel with switchable speed ratio; the wheel was disengaged when stopped to avoid plastic deformations. A special feature of the EMT 927 A Large Studio Turntable was an optical groove indicator using a mirror system. Now, many years later, such an instrument is again available in a special version of the EMT 950 Direct Drive Studio Turntable; of course, it has been realized by electronic means.

The mechanical construction of both turntables proved to be so suitable for the future that a new design principle was introduced only fifteen years later, and then not to supersede the idler wheel drive system, but rather to exist concurrently with it.

In the course of time, naturally, transistors replaced tubes in the amplifiers, and the introduction of stereo grooves necessitated changes in the pickup cartridge, tone arm, and equalizing amplifiers.

The next event worthy of mention in the story of turntable manufacturing at EMT occurred in the year 1966.

To enable the experience gathered to be applied to nonprofessional products, as well, the production of the Swiss turntable brand Thorens was transferred to the Gerätewerk manu-

1966
THORENS

facturing facilities in Lahr. The developments made for the Thorens line also influenced the professional program. Intensive basic research on the vibrational behavior of tone arms was conducted. In 1969, the EMT 929 Tone Arm could be introduced; it continues to be employed today on all 12" EMT turntables. The EMT 997, a long tone arm suitable for 16" turntables, has also been available since 1974.

1969
EMT 929
1974
EMT 997

1968

EMT 928

A professional turntable, the EMT 928, was already introduced in 1968 as a modification of a successful Thorens model. Today, the mechanical configuration of its belt drive system continues to be used unchanged in a Thorens turntable that is considered the peak performer by hi-fi enthusiasts throughout the world. In 1968, however, EMT/Thorens also published considerations indicating the development of a center-drive system as a logical application of the electronic control technology which had become available. The international hi-fi industry developed similar thoughts, and within a short time the consumer market had been flooded with direct drive turn-

1977

EMT 950

tables. At EMT, however, the disadvantages of the technique had also been recognized, and only in 1977 was it considered opportune to present the EMT Direct Drive Studio Turntable, a unit designed to fulfill the stringent requirements for professional users. For the first time, this unit employed an inverted mass configuration with light platter and heavy supported chassis to enable extremely rapid run-up without the use of an auxiliary platter. Its modular construction, which was also employed for the first time, permits special requirements to be fulfilled. The EMT 950 thus soon became the standard unit in European broadcasting institutions, where particular demands must be met as a result of internal company organization. The EMT 948

1979

EMT 948

Broadcast Turntable, first introduced in 1979, is also a direct drive unit. Worthy of special mention is its integrated, elastic suspension system that was to open new possibilities for future designs. It may also be found in the youngest member of the EMT turntable family that was presented in

March, 1982, the EMT 938 Broadcast Disk Reproducer. The appearance of this unit is quite similar to that of the EMT 948, and the suspension systems are actually almost identical. Only the electronic circuitry has been simplified with the goal of creating a modern turntable for every professional application.

1982

EMT 938

The interest shown for this unit has

confirmed that the goal has been achieved for Europe and North America. Broadcasting companies in the developing nations of the world nevertheless continue to order the EMT 930. The reason is easy to understand. The unit contains a minimum of electronics and an unconfined mechanical system. Thus, a screwdriver, an oil can (filled, of course, with EMT special oil), and a new idler wheel now and then are often sufficient for maintenance. When high-quality performance is demanded, however it is necessary, to check and correct, if necessary, the motor phase adjustment so that the level of rumble disturbances does not increase.

The frequency intermodulation (FIM) performance of EMT TSD 15 and XSD 15 pickup cartridges has remained unchanged; nevertheless,

higher FIM figures are measured.

For technical reasons, it recently became necessary to produce a new version of the B side of the DIN 45 542 test record.

Only this new test record (recognizable by the following phrase on the label of the B side: "LAB 012 352 und Aufzeichnung: Deutsche Grammophon Ges.") is now available.

Owing to a modified recording technique (for example, with a tracking angle of 25° instead of the previous approx. 17°), higher FIM levels are obtained when tracking this record.

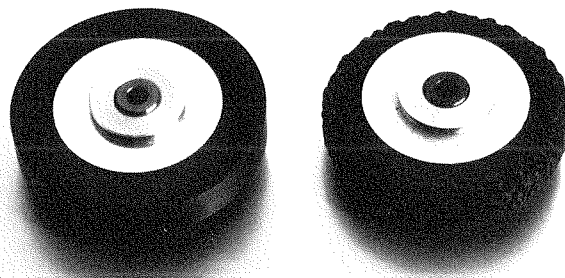
At the same time, the frequency response of the measuring instrument (specified by DIN 45 507) at 300 Hz is considered when FIM

measurements are made according to DIN 45411. This factor alone results in an increase of approx. 3 dB in the registered level.

It has consequently been necessary to raise the guaranteed maximum FIM level specification to "less than 1%", even though the distortion characteristics of the cartridges remain the same. This revision has been included in the new data sheets. FIM levels between approx. 0.4 - 0.8 % are now obtained.

Further details are provided in the Technical Information entitled "EMT TSD 15, XSD 15, Frequency Intermodulation (FIM)", available upon request.

...still going strong...



The idler wheel shown at the right was discovered by our service engineer in an EMT 930 turntable at the radio station of an African country. No complaints had been received about the rumble it produced, which was not so objectional compared to the high level

of atmospheric disturbances that impair AM broadcasting in tropical countries. A new idler wheel from our engineer's maintenance kit will doubtlessly be expected to provide ten more years of service.