

# PLANUNGSUNTERLAGEN

## PLANNING & INSTALLATION INFORMATION

# EMT 930

## Studio-Turntable

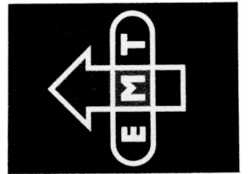


**FRANZ** Vertriebsgesellschaft m.b.H.

ELEKTRONIK, MESS- & TONSTUDIOTECHNIK  
D-763LAHR1 · POSTFACH 1520



**EMT 930**

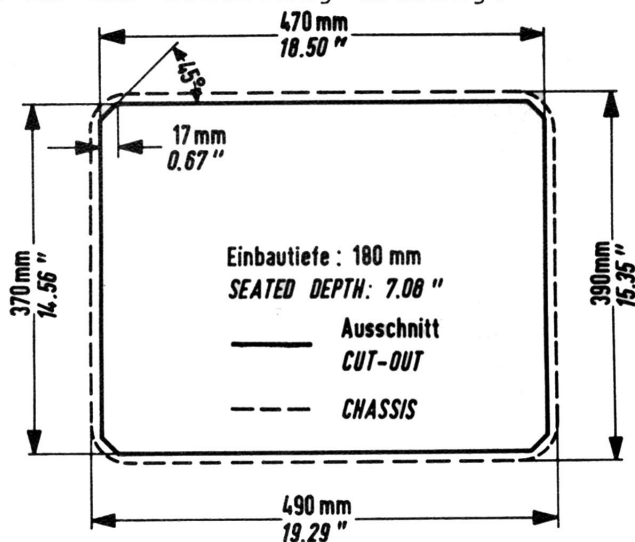


# MECHANICAL INSTALLATION

## MOUNTING INTO CONSOLES AND TABLES

In order to provide proper operating conditions the professional turntable EMT 930 should be mounted in a console or a table. The machine should be suspended in the cut out only by means of the 4 springy corners, without fixation in any other place. The connection cables should be flexible.

The correct dimensions of the cut out in desks, tables, consoles, etc. are shown in the following drawing:



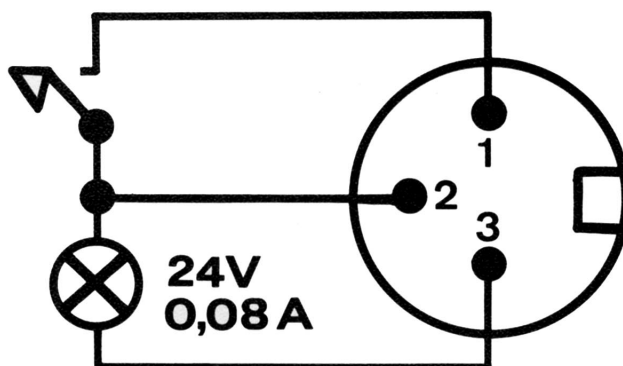
# ELECTRICAL CONNECTION

## AC MAINS CONNECTION

The EMT professional turntables are set at the factory to the mains voltage and are equipped with motors for the mains frequency quoted in the order. These data are also entered in the test report sheet.

## REMOTE START CONNECTION

If the remote start facility is to be used, the remote control connections (3 cores, unscreened) should be soldered onto the supplied 3-pole Tuchel connector (T 3260/1) as follows:



CONNECTING THE SIGNAL OUTPUT LINE (8-pole cable plug)

The EMT professional turntables are equipped with the equalizer amplifier EMT 155 in the mono version and with the equalizer amplifier EMT 155 st in the stereo version.

The output lines (twin screened cable) are connected to the eight-pole cable plug in accordance with the following table (see also overall circuit diagram EMT 930):

Mono machine equipped with EMT 155		Stereo machine equipped with EMT 155 st	
Output		Output left channel	
	Pin		Pin
Core a	4 a	Core a	4 a
Core b	4 b	Core b	4 b
Screen (shield)	3 a	Screen (shield)	3 a
		Output right channel	
			Pin
		Core a	1 a
		Core b	1 b
		Screen (shield)	3 a

Connecting the 8-pole cable plug to the machine:

The pins 2 a and 2 b serve for earthing (grounding). If it is desired to earth (ground) the 0 V (minus) side at a central point of the installation the link between 2 a/2 b and 3 a on the 8-pole connector strip of the machine should be broken (see circuit diagram).

# Technical Data

## Deck

Turntable diameter	33 cm	
Turntable speeds	78 rpm	
	45 rpm	
	33 1/3 rpm	
Accuracy of turntable speed		
78 and 45 rpm (adj. for 33 1/3 rpm)	max. $\pm$ 0.15%	
Run-up time at $T_{amb} = 20^{\circ} C$		
Starting with main switch	max. 1 sec.	
Instantaneous start	max. 0.5 sec.	
Wow and flutter at 33 1/3 rpm		
measured with EMT 420 A, weighted in accordance with DIN 45 507 (ANSI S 4.3-1971)	max. $\pm$ 0.075%	
Rumble		
referred to a peak velocity $\hat{v}=10$ cm/s at 1 kHz	Mono	Stereo
unweighted	46 dB	44 dB
weighted in accordance with DIN 45 539	64 dB	62 dB
Mains voltages		
50 Hz (special version 60 Hz)	117 V	
	200 V	
	220 V	
	240 V	
Maximum power consumption	approx. 30 W	
Dimensions	490 mm	
	390 mm	
	175 mm	
Weight	23 kg	
	(51 lbs)	

# Pick-up Cartridges

## 1. OF series

(for use with Mono-equalizer-amplifier EMT 155)

Type	EMT OFS 25 EMT OFD 25	EMT OFS 65 EMT OFD 65
Application	Mono micro-grooves	Mono standard grooves
Stylus	Sapphire (OFS 25) Diamond (OFD 25)	Sapphire (OFS 65) Diamond (OFD 65)
Tip radius	25 $\mu\text{m}$	65 $\mu\text{m}$
Stylus force	approx. 5 g	approx. 9 g (Pick-up head is 4 g heavier than OF 25!)
Output level at 1 kHz (recorded velocity 1 cm/s)	0.8 mV $\pm 2$ dB	0.6 mV $\pm 2$ dB
Frequency range	30 Hz - 15 kHz	30 Hz - 15 kHz
Frequency response 40 Hz - 12.5 kHz	$\pm 2$ dB	$\pm 2$ dB
Frequency intermodulation	max. 0.5%	max. 0.5%
DC-resistance	approx. 37 ohms	approx. 25 ohms

Note: Stylus assemblies with sapphires are interchangeable.

2. "T" series (stereo and mono)  
 (for use with stereo equalizer-amplifier EMT 155 st)

Type	TSD 15	TMD 25	TND 65
Application	Stereo Stereo grooves	Mono Micro-grooves	Mono Standard grooves
Stylus	Diamond	Diamond	Diamond
Tip radius	15 $\mu\text{m}$	25 $\mu\text{m}$	65 $\mu\text{m}$
Stylus force	2 - 3 g	2 - 3 g	2 - 3 g
Output level at 1 kHz (for 1 cm/s recorded velocity)	0.15 mV $\pm 2$ dB	0.15 mV $\pm 2$ dB	0.15 mV $\pm 2$ dB
Frequency range	20 Hz - 20 kHz	20 Hz - 20 kHz	20 Hz - 20 kHz
Frequency response 40 Hz - 12.5 kHz	$\pm 2$ dB	$\pm 2$ dB	$\pm 2$ dB
Difference in output level between channels 40 Hz - 12.5 kHz	max. 2 dB	-	-
Cross-talk at 1 kHz	min. 25 dB	-	-

Type	TSD 15	TMD 25	TND 65
Frequency intermodulation (FIM)	max. 0.5%	max. 0.5%	max. 0.5%
Vertical tracking angle	15° (+2,5°)	15° (+2,5°)	15° (+2,5°)
DC-resistance	2 x 24 ohms	24 ohms	24 ohms
Compliance	12 x 10 <sup>-6</sup> cm/dyn	12 x 10 <sup>-6</sup> cm/dyn	12 x 10 <sup>-6</sup> cm/dyn
Equivalent mass at stylus tip	approx. 1 mg	approx. 1 mg	approx. 1 mg

Note: The stylus assemblies are not interchangeable.

The above data were obtained using the following test records:

Frequency response - test records DIN 45 541 and QR 2007 (Mono),  
QR 2009 (Stereo)

Distortion - test records DIN 45 542 Stereo  
and DGG 99 011 TM Mono

Distortion measurements correspond with test record DIN 45 542 Stereo with "reference level - 6 dB" full modulation (peak velocity 8 cm/s at 1 kHz) and with test record DGG 99 011 TM Mono track 4: full modulation (peak velocity 12 cm/s at 1 kHz).

Cross-talk - Test record DIN 45 543



# Mono- and Stereo-Equalizer Amplifier

## EMT155 and EMT155 st

### Equalization characteristics

(can be switched during operation)

DIN* 45 536/37	75/318/3180 $\mu$ s	mono and stereo
NAB, RIAA		
DIN* 45 533	50/318/3180 $\mu$ s	} mono
BBC	25/318/3180 $\mu$ s	
FLAT	0/318/3180 $\mu$ s	

Level variation  
by switching

less than 1 dB  
at 1 kHz

### Frequency response

40 Hz to 16 kHz  
at 30 Hz  
at 12 Hz  
at 4 Hz  
below 4 Hz

+ 1 dB  
- 2 dB  
-10 dB  
-30 dB } minimal damping  
descending with 20 dB/octave

### Input

balanced, floating

Level EMT 155  
Level EMT 155st

10 mV  
1 mV

### Impedance

30 Hz to 16 kHz

140 to 200 ohms

### Impedance of cartridges

max. 40 ohms

### Overload capacity

referred to 1 mV at 1 kHz

12 dB

### Output

Gain  
at 1 kHz

75 dB (for T-type cartridges)  
55 dB (for OF-type cartridges)

### Level

matched load impedance  
200 ohms  
600 ohms  
600 ohms

+ 6 dB (1.55 V)  
+12 dB (3.1 V)  
+15 dB (4.4 V) } line level

Output level  
adjustable

from -60 dB  
to +17.5 dB (600 ohms)

### Source impedance

30 Hz to 16 kHz

40 ohms

### Harmonic distortion (full load)

40 Hz  
60 Hz  
from 200 Hz to 12 kHz

less than .4%  
less than .3%  
less than .2%

\*DIN refers to German standards.

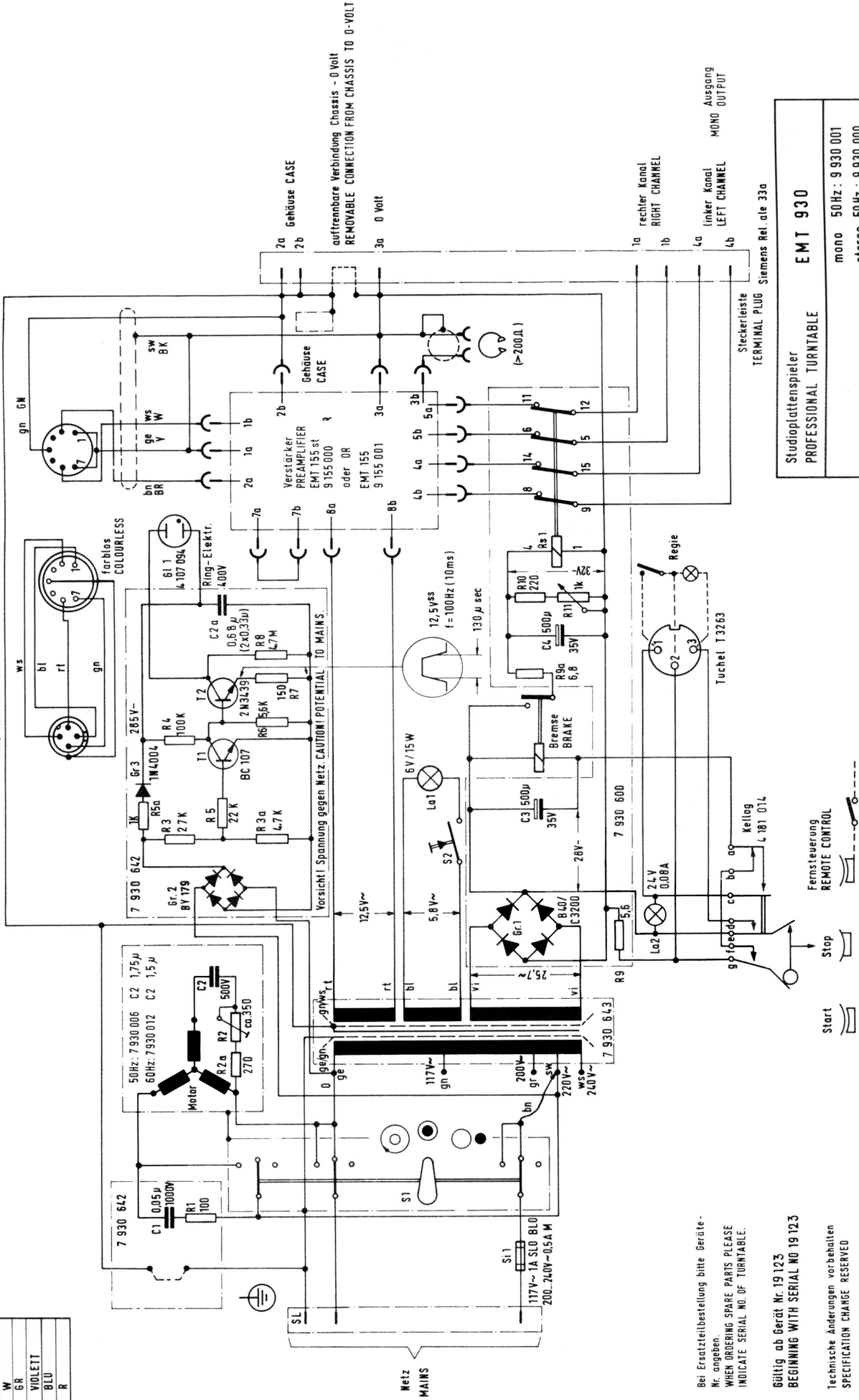
Intermodulation distortion (full load)	less than 1.0%
test frequencies 50 Hz and 4 kHz voltage ratio 4:1	
Overload capacity at 1% distortion and matched load impedance	
200 ohms	+12 dB (3.1 V)
600 ohms	+18 dB (6.2 V)
Signal-to-noise ratio referred to 1.55 V output input matched with 20 ohms	
unweighted (r.m.s.)	better than 60 dB
weighted (peak)	better than 70 dB
Cross-talk figure (EMT 155st)	
from 30 Hz to 16 kHz referred to 4.4 V output	better than 50 dB
Monitoring output for headphones (300 to 400 ohms)	unbalanced
Scratch filter	treble attenuation (10 dB/octave)
cut-off frequencies adjustable	from 2 kHz to 20 kHz
Supply of current	from the power supply of the professional turntables EMT 927 and EMT 930
All technical specifications are guaranteed for the following temperature range	+5° to +50° Celsius
Dimensions	height 3.54" ( 90 mm) width 4.13" (105 mm) depth 7.87" (200 mm)
Weight	approx. 3.3 lbs (1.5 kg)

All data subject to change without notice.

- 1 + 2 linker Kanal LEFT CHANNEL
- 6 + 7 rechter Kanal RIGHT CHANNEL
- L Masse GROUND

Draufsicht auf Einsteckteile des Tonarmes. Steckeransicht von Lötseite  
 TONE ARM CONNECTIONS VIEWED FROM FRONT. VIEW ON WIRED SIDE OF PLUG

sw	BK
gn	GN
bn	BR
ge	Y
ws	W
gr	GR
vi	VIOLETT
bl	BLU
rt	R



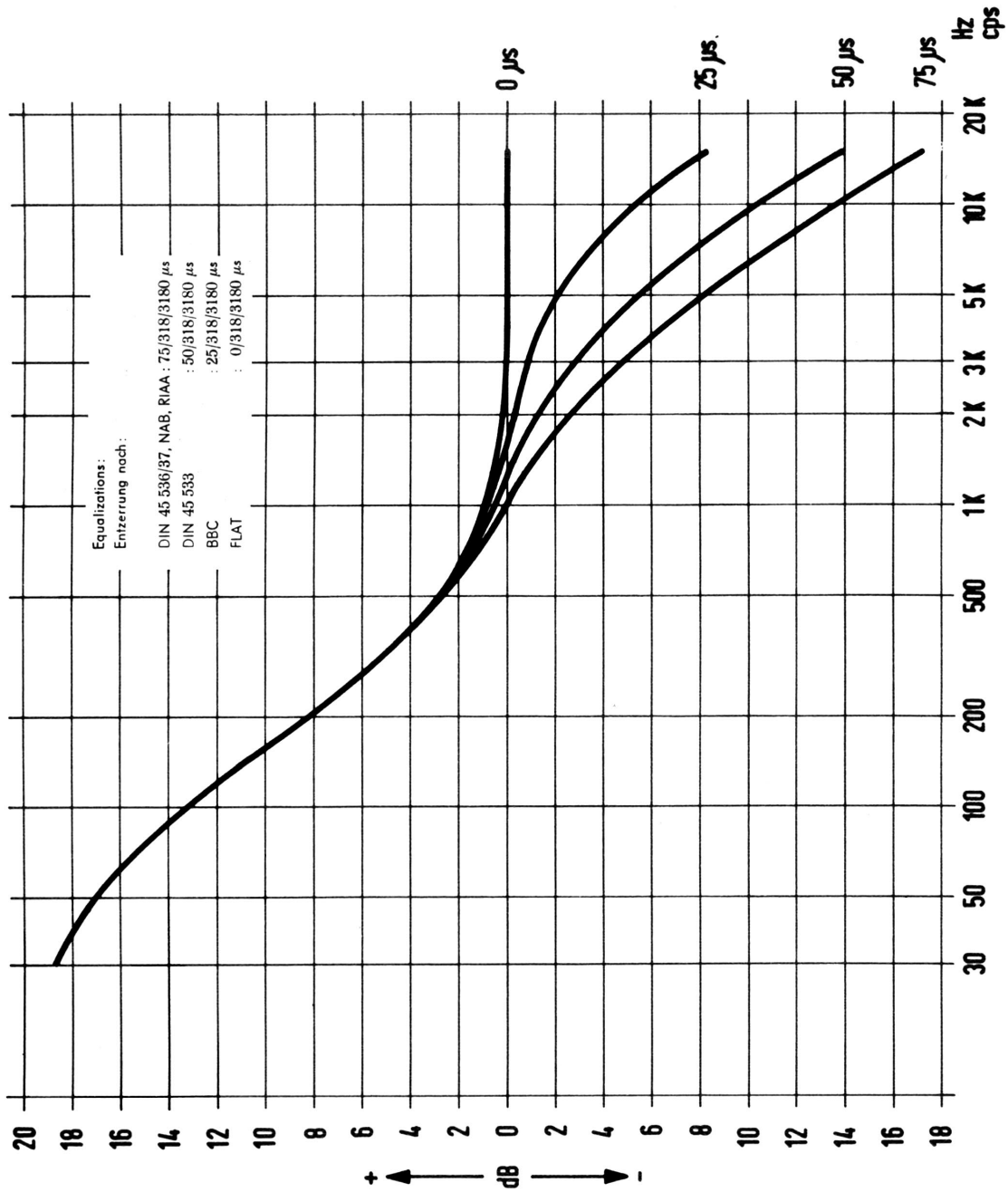
auftrennbare Verbindung Chassis - 0 Volt  
 REMOVABLE CONNECTION FROM CHASSIS TO 0-VOLT

Bei Ersatzteilbestellung bitte Geräte-Nr. angeben.  
 WHEN ORDERING SPARE PARTS PLEASE INDICATE SERIAL NO. OF TURNTABLE.

Gültig ab Gerät Nr. 19 123  
 BEGINNING WITH SERIAL NO 19 123

Technische Änderungen vorbehalten  
 SPECIFICATION CHANGE RESERVED

Studioplattenspieler PROFESSIONAL TURNTABLE		EMT 930	
mono	50 Hz	9 930 001	
stereo	50 Hz	9 930 000	
mono	60 Hz	9 930 003	
stereo	60 Hz	9 930 002	



VALUES IN dB  
TABELLENWERTE IN dB

	0 $\mu$ s	25 $\mu$ s	50 $\mu$ s	75 $\mu$ s
30 Hz	+ 18,6	+ 18,6	+ 18,6	+ 18,6
60 Hz	+ 16,2	+ 16,2	+ 16,2	+ 16,2
200 Hz	+ 8,2	+ 8,2	+ 8,2	+ 8,2
500 Hz	+ 2,7	+ 2,7	+ 2,7	+ 2,7
1 kHz	+ 1,0	+ 0,8	+ 0,5	+ 0
2 kHz	+ 0,2	- 0,4	- 1,3	- 2,6
4 kHz	0	- 1,4	- 4,2	- 6,6
5 kHz	0	- 2,2	- 5,4	- 8,2
8 kHz	0	- 4,1	- 8,7	- 11,9
10 kHz	0	- 5,4	- 10,5	- 13,8
12 kHz	0	- 6,5	- 11,9	- 15,3
15 kHz	0	- 8,2	- 13,8	- 17,2

Schneidkurven-  
Entzerrung  
Equalizer  
Characteristics

# EMT 155 (st)

# INFORMATION FOR ORDERING

## Ordering description:

- EMT 930 Professional turntable mono, prepared for stereo, turntable diameter 33 cm, chassis construction, turntable speeds 33 1/3, 45 and 78 r.p.m. with transistorized mono equalizer amplifier EMT 155 and one each pickup cartridge (Sapphire) EMT-OFS 25 and OFS 65.
- EMT 930st Professional turntable, stereo, turntable diameter 33 cm, chassis construction, turntable speeds: 33 1/3, 45 and 78 r.p.m. with transistorized switchable stereo/mono equalizer amplifier EMT 155st and one stereo pickup cartridge TSD 15.

## Standard accessories (supplied with machine):

- 1 pick-up cartridge TSD 15 (EMT 930 stereo),
- 1 pick-up cartridge OFS 25 (EMT 930 mono),
- 1 pick-up cartridge OFS 65 (EMT 930 mono),
- 1 AC mains cable with plugs,
- 1 eight-pole cable plug,
- 1 three-pole Tüchel plug,
- 1 spare rubber drive pulley with plastic cover,
- 1 bottle (50cc) of special oil, and small parts

## Special accessories (to be ordered separately):

- EMT 930-932 H Twin console (steel) for two machines EMT 930 any version, on castors, grey enamelled.
- EMT 424 Flutter Analyzer for weighted measurements in accordance with DIN 45 507 and IEC Doc. 60 A 12 and for measuring the tracking-distortion on disks (FIM).
- EMT He-16 Single channel, direct recording, rapid pen recorder in a special version for use with the EMT 424.
- TMD 25 Pickup cartridge with diamond, tip radius 25  $\mu$ m, for micro-grooves.
- TND 65 Pickup cartridge with diamond, tip radius 65  $\mu$ m, for standard grooves.
- OFD 25 Pickup cartridge with diamond, tip radius 25  $\mu$ m, for micro-grooves.
- OFD 65 Pickup cartridge with diamond, tip radius 65  $\mu$ m, for standard grooves.
- EMT 930-PC Dust Hood (transparent plastic) for EMT 930 all versions.

## Packing:

### Basic packing:

Styropor in outer carton  
70 x 56 x 50 cm (27.5 x 22 x 20")  
gross weight 25 kg (55 lb)  
net weight 23 kg (51 lb)

### For overseas shipment:

crate with padded corners  
92,5 x 77,5 x 66 cm (36.5 x 30.5 x 26")  
gross weight 65 kg (143.5 lb)

# RECOMMENDED SPARE PARTS

The numbers quoted are intended for 5 years operation. Fractions indicate that we recommend one only spare part where several turntables are operated together. Example: 1/3 = 1 spare part for 3 machines.

Description	Part No.	Recommended Quantity
Rubber intermediate wheel	7 927 052	2
Oil felt ring for intermediate wheel	4 312 111	1
Set of contact springs	4 223 006	1
Brake shoe	7 930 097	3
Pilot lamp	4 107 007	1
Auxiliary turntable (Please indicate frequency!)	7 930 237 (50 Hz) 7 930 398 (60 Hz)	1/3
Braking disk with felt ring	7 930 411	2
Motor assembly (Please indicate frequency and serial No.!)	7 930 006 (50 Hz) 7 930 012 (60 Hz)	1/5
Bulb for pick-up illumination	4 107 001	1
Neon bulb for strobe illumination	4 107 014	1/2
Bottle of oil	7 930 690	1
Relais	4 223 038	1/3
Spare pick-up, depending upon the type		2-5
Precision fuse 500 mA German version (220 V) 5Øx20 mm	4 190 005	2
Precision fuse 1 A German version (110 V) 5Øx20 mm	4 190 053	2
Precision fuse 1 A American version (110 V) 1/4" x 1 1/4"	4 190 050	2



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